‘Far from Moderate’ [1]

An account and appraisal of some aspects
of the human involvement
with the natural environment of
the Falkland Islands and South Georgia

by Stephen Palmer

A thesis submitted in partial fulfilment of the requirements for the award of the degree of Doctor of Philosophy of the University of Portsmouth

December 2003

[1] From a despatch to Governor of the Falkland Islands by the Stipendiary Magistrate on South Georgia. MSS SPRI 240/1; 30 November 1908.

Declaration

This dissertation is the result of my own work unless otherwise stated and includes nothing which is the outcome of work done in collaboration. No part of this dissertation has been submitted for a degree or diploma or other qualification at any other University.

This dissertation represents my own original work and conforms to accepted standards of citation in those instances in which I have availed myself of the work of others.

Stephen Palmer
December 2003
University of Portsmouth.

Abstract

This dissertation examines the main events in the human history of the Falkland Islands and South Georgia which have had an effect upon the natural environment.

The dissertation contains four case studies, *i.e.* Sealing, Whaling, Farming and Fishing. Much of the documentary material used in this dissertation has not been subjected to scrutiny before.

Each case study is examined in its own right; the story is outlined and conclusions are drawn. Common themes between the case studies are noted and comparisons are made.

Sheep farming has been the dominant human activity on the Falkland Islands from first settlement until very recently; the effects of the grazing of large numbers of herbivores on native grasses has been significant. Until recently there has been consistent failure to address the decline in the grasslands, and to adopt a more sustainable farming system.

Sealing was the first human activity associated with these Islands; the various phases of the exploitation of this vast natural resource culminated in the near disappearance of some species and a considerable reduction in all other species.

Southern Ocean whaling began at the beginning of the 20th century; within 60 years whale stocks had been reduced by 90% and all attempts to ensure that whaling companies exercised restraint ultimately failed.

Fishing began in the late 1970s, and is now the foremost economic activity. The revenue accrued from the sale of fishing licences has enabled extensive social change to occur on the Islands. Considerable efforts to control the scale of the fishing effort have been made; the conservation of the stocks, through regulation and enforcement, has been a central concern.

Until very recently, with the exception of the fishing industry, the majority of conservation measures in the Falkland Islands and South Georgia have been largely ineffective. The dissertation considers why this has occurred.

The dissertation shows that the human effects on the natural environment of the Falkland Islands and South Georgia have been far from moderate. It evaluates the reasons for the degradation of the Islands natural environment, and it suggests that rather than giving prominence to one particular aspect as the prime cause of the degradation, in practice there are normally a number of factors involved. Most of the circumstances that are described in the four case studies are usually the product of a combination of a number of factors.

Acknowledgements

Thanks are due to the following for their detailed review and scrutiny of the four case studies:

Farming:	Dr Jim McAdam (Head of Applied Plant Science Department; Queens University, Belfast) Bob Reid (former Director of Agriculture, Falkland Islands Government) Brook Hardcastle (former Colonial Manager of the Falkland Islands Company; died 2003) Tim Blake (former Manager of Holmested Blake Farm, Hill Cove; Speaker of Legislative Council)
Sealing:	Professor Ian Boyd (Director of Sea Mammal Research Unit, St Andrews University)
Whaling:	Sir Gerald Elliot (former Managing Director of Salvesen) Bob Headland (Archivist of the Scott Polar Research Institute) Dr Ray Gambell (former Secretary of the International Whaling Commission)
Fishing:	John Barton (Director of Fisheries, Falkland Islands Government) Dr Alexander Arkhipkin (Senior Scientist, Fisheries Department, Falkland Islands Government) Dr David Agnew (Renewable Resources Advisory Group, Imperial College) Dr Stephen Lockwood (former Senior Fisheries Scientist, UK Ministry of Agriculture, Fisheries and Food) Dr Mark Belchier (Senior Marine Biologist, British Antarctic Survey)

At Portsmouth University the support of the following is gratefully acknowledged:

David Carpenter John Bradbeer John Chapman

In the U.K. support of the following is gratefully acknowledged:

Frank Mitchell	Malcolm Barton	Dr Ed and Mrs Janet King
David and Val Tatham	David Taylor	Robin Coutts
Robin Woods	Terry Louden	Tony and Pam Lindsey
John and Audrey Pelley	Quentin Keynes	Liz Hopkins
Colin and Karen Byatt	Kate Pickard	Ann Johnston
David Whitmarsh	Simeon Hill	Robert Wakeford

In the Falkland Islands support of the following is gratefully acknowledged:

Terry and Joan Spruce	David Lang	Jon Clark
Ian Strange	Mandy Mcleod	David Broughton
Natalie Smith	Dr Aidan Kerr	Greta Skene
Becky Summers	Tim and Sally Blake	Richard Wagner
Conor Nolan	John Fowler	RoddyNapier
Tim Cotter	Marge and Owen McPhee	
John Smith	Gordon Liddle	Russ Jarvis
Becky Inghams	Klemens Pütz	Nick Huin
Dr Roger and Jean Diggle	Msgr. Anton Agreiter	Pat and Sarah Lurcock
Jock and June McPhee	Linda Lyse	Phyllis Rendell
Bonny and Ken Greenland	Les and Agnes Halliday	
Melody and Gardiner Fiddes	Eileen and Brook Hardcastle	

At Scott Polar Research Institute support of the following is gratefully acknowledged:

Hilary Shibata	Shirley Sawtell	William Mills

The financial support of the following is gratefully acknowledged:

The Shackleton Fund
The Portsmouth Diocesan Board of Social Responsibility
The Continuing Ministerial Education Fund of the Diocese of Portsmouth
The Bursary Fund of the Ecclesiastical Insurance Group

The support of the following is gratefully acknowledged:

The Cathedral of Christ Church, Stanley, Falkland Islands
The Anglican parishes of Christ Church Portsdown, Portsmouth; and St. Thomas and St. John Newport, Isle of Wight

The support of the following is especially acknowledged:

Jane Cameron, Archivist of the Falkland Islands Government
Bob Headland, Archivist of the Scott Polar Research Institute
David Tatham, former Governor of the Falkland Islands and Commissioner for South Georgia and the South Sandwich Islands

Contents

Abbreviations

AET	Absolute escapement target
ARC	Agricultural Research Centre
BAS	British Antarctic Survey
BWU	Blue Whale Unit
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CDC	Colonial Development Corporation
CO	Colonial Office (located in London)
CEMAR	Centre for Ecosystem Management and Restoration
CITES	Convention on International Trade in Endangered Species (of wild flora and fauna)
CISRO	Commonwealth Scientific and Industrial Research Organisation
CS	Colonial Secretary (located in Stanley)
CSO	Colonial Secretary's Office (located in Stanley)
DAR	Darwin Archive
DoA	Department of Agriculture
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organisation of the United Nations Organisation
FCO	Foreign and Commonwealth Office
FIC	Falkland Islands Company
FICZ	Falkland Islands Interim Conservation Zone
FIDC	Falkland Islands Development Corporation
FIDS	Falkland Islands Dependencies Survey
FIG	Falkland Islands Government
FIGA	Falkland Islands Government Archive
FIFD	Falkland Islands Fisheries Department
FIJ	Falkland Islands Journal
FIPZ	Falkland Islands Protection Zone
FISOA	Falkland Islands Sheepowners Association
FLH	Falkland Landholdings
FOCZ	Falkland Islands Outer Conservation Zone
GTU	Grasslands Trials Unit
HMSO	Her Majesty's Stationery Office
IUU	Illegal, Unregulated and Unreported (fishing)
IWC	International Whaling Commission
KEP	King Edward Point (located on South Georgia)
MAFF	Ministry of Agriculture, Fisheries and Food
MoD	Ministry of Defence
MRRAG	Marine Renewable Resources Assessment Group
MS/MSS	Manuscript
NERC	Natural Environment Research Council
ODA	Overseas Development Administration
PRO	Public Records Office, Kew
QUB	Queens University Belfast

RAMSAR	Convention on Wetlands of International Importance (ratified at Ramsar, Iran, in 1971)
RGS	Royal Geographical Society
RRAG	Renewable Resources Assessment Group
SAMS	South American Mission Society
SBW	Southern Blue Whiting
SGSSI	South Georgia and South Sandwich Islands
SPRI	Scott Polar Research Institute
TAC	Total Allowable Catch

1. Introduction

This dissertation is an account and appraisal of the human effects on the islands of the Falkland Islands (hereafter called 'the Islands') and South Georgia, and their surrounding waters; *i.e.* a history of the use by human beings of the natural resources of this area. The natural resources found in the area will be outlined, and their management (and the environmental consequences of that management since the 18th century) will be described.

The dissertation is based on four case studies (Farming, Sealing, Whaling and Fishing) which both 'stand alone' as studies in their own right, but are also closely related to each other. Human activity, and its impact, will be compared and contrasted between the case studies throughout the dissertation. There are a number of similarities and linking themes between the case studies.

Not all the effects of human activity in the Islands and South Georgia are covered in this dissertation *e.g.* the effects of an emerging oil industry; the effects of a growing tourist industry; the work and effectiveness of various conservation groups; the effects of the 1982 conflict. However farming, sealing, whaling and fishing constitute the major components of the story of human activity in this area to the present time. In each of the case studies the questions will be asked - how, and why, did human beings seek to exploit and change their natural environment? The dissertation acknowledges the importance of 'story-telling' as an aid to understanding the past and also as a framework for future life and action:

> … stories about the past are better, all other things being equal, if they increase our attention to nature and the place of people within it. They succeed when they make us look at the grasslands and their peoples in a new way.[2]

[2] Cronon, W; (1992) *The Journal of American History*; p1347.

The dissertation will show the interdependence between the environment and the social and cultural histories of 18th/19th century sealers and settlers, and 20th/21st century farmers, sealers, whalers and fishermen.

The methods of research during the writing of this dissertation have included:

- The analysis and comparison of primary and original sources held at:
    i. The Scott Polar Research Institute, Cambridge
    ii. The Public Records Office, Kew
    iii Royal Botanic Garden Kew Archive
    iv. The Falkland Islands Government Archive, Stanley
    v. The Falkland Islands Company Archive held in both Stanley and Bishops Stortford

- A detailed account of the human activity in this area; noting the values, key events, and political and economic attitudes.

- Research during a five year residence in the Islands (1991-1996) and a three month field trip to the Islands in 2001.

- Consultation with various authorities during the draft stage of case studies.

'The Land where nature is still in charge' is the proud slogan of the Islands Tourist Board; this dissertation will demonstrate that this commonly held perception is far from accurate. The dissertation will show that the human effects on the natural environment of the Falkland Islands and South Georgia have been far from moderate, and that the natural environment has been damaged considerably since human discovery and settlement.

The dissertation will evaluate the reasons for the degradation of the Islands natural environment, and it will suggest that rather than highlighting one particular aspect as the prime cause of the degradation, in practice there are generally a number of factors involved. Most of the circumstances that are

described in the four case studies are generally the product of a combination of a number of factors.

The dissertation will also show that, with a few notable exceptions, the desire to preserve and conserve the natural environment has played a relatively minor role in the life and attitudes of those who settled in the Islands. It will also show that, until relatively recently, attempts to construct a practical policy of conservation have faced a constant struggle. The dissertation will show why it has proved to be so difficult to effect beneficial changes in the Islands, and to live on them in a sustainable manner.

This dissertation is the first systematic attempt to review the history of the environmental management of the Islands and South Georgia and to outline the commonalities of that management. A significant proportion of the source material cited in this dissertation has not been previously published.

2. Discovery and human settlement

Figure 1 The Southern Ocean, Peri-Antarctic and Antarctica [3]

[3] I am grateful to Bob Headland, Archivist, Scott Polar Research Institute (SPRI) for permission to reproduce this map.

§ a. The Falkland Islands

Figure 2 The Falkland Islands

Some of the first visitors to the Islands, including Charles Darwin, made less than complimentary remarks concerning their first impressions of the Islands. Fairly typical are these words from the account of the research voyage of HMS *Challenger* in 1873: 'at first glance these islands are not attractive, and I doubt if they will improve greatly on acquaintance.' [4] However once explorers and settlers began to understand the potential of the Islands second impressions were generally more favourable.

The navigator John Davis in the *Desire* discovered the uninhabited Islands on 14 August 1592. Two years later Admiral Sir Richard Hawkins visited the most northerly islands in the archipelago - The Jason Islands - in the *Dainty.* Hawkins did not land on the island because:

[4] Thomson, Sir C. Wyville; (1877)*The Voyage of the Challenger*; Macmillan & Co; p203ff.

> The want of our pinnace … together with a change of wind hindered the further discovery of this land with its secrets; this I have sorrowed for many times since, for that it had the likelihood to be an excellent country … the land was not mountainous and had much of the disposition of England and as temperate.[5]

'But did the Europeans really discover the Islands?'[6] There has been speculation that the now extinct Yahgan Indians of Tierra del Fuego might have crossed from the South American mainland in their dugout canoes, but although such a journey might have been possible, no archæological evidence has yet been found to substantiate such a crossing. It is known that the Yahgans reached Staten Island, which is 200 nautical miles south-west of the Falklands. Some scholars consider that the presence of the Warrah lends support to the possibility that the Yahgan Indians visited the Falklands prior to European colonisation. The Warrah may well have originated from a semi-domesticated dog taken over from Patagonia by canoe.

In 1690 Captain John Strong, in the *Welfare* sailed between East and West Falkland calling the passage Falkland Sound after Viscount Falkland, who was the First Lord of the Admiralty. John Strong made the first recorded landing on the Falklands Islands. Richard Simson, who accompanied John Strong and who wrote the account of the voyage commented: 'The Island, if it were not destitute of wood, would make a noble plantation.'[7]

In 1699 Gouin de Beauchêne discovered the remote island, which now bears his name, to the south of the main Islands group, and which has been declared a wildlife sanctuary.

French traders from the French port of St.Malo gave the Islands the name of Iles Malouines. During the early eighteenth century these mercantile traders often visited the Islands, to replenish their ships with stocks of water and meat, en

[5] Quoted by Cawkell, M; (1960) *The Falkland Islands*; Macmillan & Co; p7ff.
[6] Chater, A; (1993) *The Falkland Islands*; St. Albans: The Penna Press; p11.
[7] Cawkell, M; (1960); op. cit.; p11.

route from France to the Far East, via South America. The first use of Iles Malouines appears in a map published in Paris in 1722.

Mary Cawkell wrote that 'the first to appreciate the importance of the islands was Lord Anson, who, writing in 1740, recommended that a closer inspection should be made.' Anson is quoted as commenting:

> That it was scarcely to be conceived of what prodigious import a convenient station might prove, situated so far southward and close to Cape Horn … and that (these islands) might be of great consequence to this nation and in time of war would make us masters of the seas. [8]

Anson's words were prophetic, because considerable use was made of the natural harbours of the Islands during World War I & II.

The first permanent settlement was established at the head of Berkeley Sound on East Falkland in 1764 and it was called Port Louis (Fort St.Louis Malouines). This was the result of the French expedition led by Louis Antoine de Bougainville. The priest and chronicler of the expedition - Dom Pernety - quickly solved the problem of the lack of wood and fuel. Pernety realised that the peat, when dried, would provide the necessary fuel. This expedition was also the first to give an account of the indigenous species of large fox - the Warrah. Before the introduction of sheep, the Warrah fed largely on shellfish, birds and young seals, and was remarkably tame. The Warrah soon became an effective predator of sheep, and this resulted in persecution by farmers, which led rapidly to its extinction. Charles Darwin wrote of the Warrah thus:

> The number of these animals during the past fifty years have been greatly reduced; already they are entirely banished from that half of East Falkland which lies at the East of the head of Salvador Bay and Berkeley Sound and it cannot, I think be doubted, that as these islands are now becoming colonised, before the paper is decayed on which this

[8] ibid.; p14.

> animal is figured, it will be ranked among those species which have perished from the face of the earth. [9]

The Illustrated London News for 21 November 1868 noted that Aldolphe Alexander Lecomte (the London Zoological Society's Keeper) had brought a live example of the Warrah ('The Falklands Wolf') to London that had been housed at the Zoological Gardens at Regents Park. There are some records, which state that the last Warrah was killed at Shallow Bay, in West Falkland, in 1876, although other records suggest that the last Warrah was killed at Fox Bay in 1873.

The first settlers at Port Louis brought with them some domestic animals including ten pigs, nine cattle, three horses, some sheep and a goat. The rapid increases in the numbers of some of these animals were to have a significant effect on the environment of the Islands. The numbers of wild cattle from the Port Louis settlement, combined with the animals landed by the sealers/whalers, increased to 30,000 - 60,000 within 100 years.

On 12 January 1765 John Byron established a British garrison on Saunders Island. Byron described the anchorage as 'one of the finest harbours in the world. The whole of the navy of England might ride here in perfect safety from all winds.'[10]

> Byron was much impressed with the country. The water was good and plentiful, the soil extremely good and the land covered with wood sorrel and wild celery, the best anti-scorbutic in the world.[11]

In 1766 the French acknowledged the sovereignty of the Spanish over the Islands, and they bought out the French interest in 1767. The Spanish renamed

---

[9] *Zoology of the Voyage of the Beagle*, vol. II, p10; quoted by Armstrong, P;(1992) *Darwin's Desolate Islands: a Naturalist in the Falklands 1833 and 1834*; Rockport, ME: Picton Publishing; p129. Darwin commented that there was a 'constant asserted difference between the wolf-like Fox of East and West Falkland.' see: Journal entry July 1836; cited in: Keynes, R; (2002) *Fossils, finches and Fuegian*; *Charles Darwin's adventures and discoveries on the Beagle 1832-1836*. London: Harper Collins; p372.

[10] Cawkell, M; (1960); op.cit.; p23.

the islands Islas Malvinas. Bougainville, left Port Louis to continue his journey around the world. The Spanish asserted their territorial claims, and under force of arms the British settlement was closed in 1774. A plaque declaring British sovereignty was left behind.

The Spanish abandoned their settlement at Port Louis in 1806.

Under the auspices of the United Provinces of the River Plate Republic (the emerging Argentine Republic) the entrepreneur Louis Vernet (of French origin) established a settlement at Port Louis in 1826. Vernet made a careful geographical survey of East Falkland, and also detailed plans for colonisation. In 1831 Vernet seized three United States sealing ships, which resulted (while Vernet was absent from the Islands) in the crew of the United States corvette *Lexington* destroying the Port Louis settlement. Vernet never returned to the Islands. Bernhardson commented:

> Vernet's project was the first attempt since Bougainville to establish a stable civilian population on the Islands. In theory, the balanced pastoral and maritime economy, which he envisaged, might have laid the foundation for enduring prosperity. In practice, his failure to retain investors or attract new ones and his inability to enforce state authority made long-term success unlikely even had the colony not been attacked in his absence. The periphery of a periphery, a legatee of chaos, the Falkland Islands were a premature candidate for the orderly colonisation which Vernet's mind had imagined. Plunderers profited before planners.[12]

The search to find a balanced pastoral and maritime economy continues to be a challenge facing the Islands community today. How to achieve such an economy has been the subject of much research, report writing and hard work throughout the human history of the Islands.

---

[11] ibid.; p23.
[12] Bernhardson, W; (1989) unpublished Ph.D. dissertation - *Land and Life in the Falkland Islands*; p195.

The British repossessed the Islands in 1833 as a result of the actions of HMS *Clio* (Captain J J Onslow) and HMS *Tyne* (Captain C Hope). The residue of the River Plate settlement was expelled on 5 January 1833.

Charles Darwin visited the Islands, in 1833 and 1834, in HMS *Beagle*. The ships' Surgeon - Benjamin Bynoe - wrote in his account of his visits to the Falklands that:

> The wild Horned Cattle are estimated at about Twenty thousand and the tame at three hundred … Of the wild horses there are about six thousand and one hundred tame … The number of wild hogs is not known, droves of about fifty have been seen on the southern part of the Island, about forty miles from the Establishment (Port Louis) and twenty from the mouth of Port William. Most of the Islands around both the east and west large islands abound with Pigs.[13]

Patrick Armstrong commented that:

> By 1838 the number of cattle was said to have increased to 30,000, and by 1846 to 60,000. Initially the cattle were confined to the lower ground where palatable Tussac Grass grew, but as grazing caused this to diminish and the numbers of cattle grew, they ventured inland. Charles Darwin, in 1834, encountered substantial numbers south of Mount Usborne; some were enormous, 'like ancient sculptures' [Darwin - writing in 1845], and quite ferocious.[14]

The majority of the wild cattle were on East Falkland Island. Charles Melville landed the first cattle introduced to West Falkland Island at White Rock in February 1839, on the instructions of the Senior Naval Officer in the Islands' waters - Captain Sulivan. Melville landed 11 bulls and 55 heifers, transporting

[13] Armstrong, P; (1992) op.cit; p50.
[14] Armstrong, P; (1994) Human Impact on the Falkland Environment; *The Environmentalist*, Volume 14, Number 3; pp. 215-231.

them in the schooner *Montgomery*. Governor Moore reported in 1857 that the West Falkland wild cattle had increased to between 2000 and 3000 animals.

It is probable that the large numbers of wild cattle also included the descendants of animals released by sealers and whalers working on the Islands during the eighteenth and nineteenth century.

> Darwin appreciated that after some 70 years of intermittent human occupation, substantial changes had already been wrought in the environment. Cattle, horses and rabbits had already been introduced, and some of the native species were already coming under pressure.[15]

Although it is clear that Darwin's first visit to the Falklands was not a happy one, during the second visit his long field trip proved to be invaluable to him as his ideas on evolution began to take shape.

> Had Darwin not visited the Falkland Islands, he might well have responded much less immediately to the biological material, later found on the Galapagos Islands that so profoundly affected his evolutionary thinking. Darwin's writings from the Falklands show his first appreciation of the value of islands in studying the geographical distribution of species and their specialisations.[16]

The first British Governor - Lt. Richard Moody, Royal Engineers, was appointed in 1841. Moody arrived in the Islands on 22 January 1842, and he took up residence at Port Louis, and he immediately began to survey the Islands. This enabled Moody to report on the economic and settlement potential of the Islands to the Colonial Office. Moody was greatly impressed with the Islands, and the substance of his surveys is detailed below. During Moody's tenure of office as Governor the capital of the Colony was established on the southern shore of Port William - now known as Stanley. Moody was very

[15] Armstrong, P; (1992); op.cit.; p129.
[16] Gove, R; (1985) Charles Darwin and the Falkland Islands; *Polar Record*, vol 22(139) pp. 413-420.

reluctant to move from Port Louis, but the opinion of the Admiralty prevailed and London insisted on the move to Port William. One of the early settlers described the new location thus: 'of all the miserable bog holes in the Falkland Islands, I believe Mr Moody has selected one of the worst for the site of his town.'[17]

The first planned stages of settlement did not go well until the arrival of a number of Army pensioners. In 1842 John Cully, a Lincolnshire sheep farmer, arrived with his family, a farm servant, and 200 sheep purchased from Montevideo. Another unfortunate arrival at this time was sheep scab, which caused large-scale losses amongst the flocks. The Lafone brothers brought gauchos from Uruguay to hunt the wild cattle in 1840s and The Falkland Islands Company was granted its Royal Charter in January 1852.

The capital of the Islands is Stanley, which is located at the extreme eastern side of East Falkland. Out of total civilian population of 2900 (in 2001), 1850 people reside in Stanley. Apart from a few large farming settlements of approximately 30 people each, the remaining civilian population outside Stanley is scattered throughout the Islands in nearly 80 small single-family farm settlements. The majority of these settlements are located close to the sea for ease of freight and wool shipments. The fact that most settlements were originally located close to the sea had a significant effect on the development of the culture and infrastructure of the Islands. Much of the Islands life and ethos is a result of the need to use ships to provide inter-island and inter-settlement communication. Until the advent of the Government Air Service, and the building of a rural road network, all goods and services, and also wool exports were dependent upon the service provided by sea transport. The coastal location of the settlements, and the development of 'outside houses' for shepherds, meant that isolation became a way of life. The larger settlements did have limited social facilities which ameliorated the sense of remoteness. Access to a clean water supply and good land suitable for vegetable gardens were other factors governing the chosen location of settlements. The main land based industry is still sheep farming, but

[17] Tatham, D; (1996) *The Moody Papers - A Governor's term 1841 – 1848*; Stanley: Falkland Islands Government Printer.

the principal source of Government revenue is now derived from the sale of fishing licences. In 1998 exploration for oil deposits began; the current (2003) prospects of an Islands oil industry are not yet clear.

On the 2 April 1982 the Argentines invaded the Islands; on 14 June 1982 the Argentine forces on the Falklands surrendered to a British Task Force, and British administration was restored. The most visible reminders of the Argentine invasion in 1982 are the 118 minefields, with approximately 40,000 mines, which currently (2003) remain.

There is currently (2003) a military population of approximately 1800 personnel, who are mainly located at RAF Mount Pleasant which is part of the International Airport at Mount Pleasant situated 30 miles west of Stanley.

§ b. South Georgia

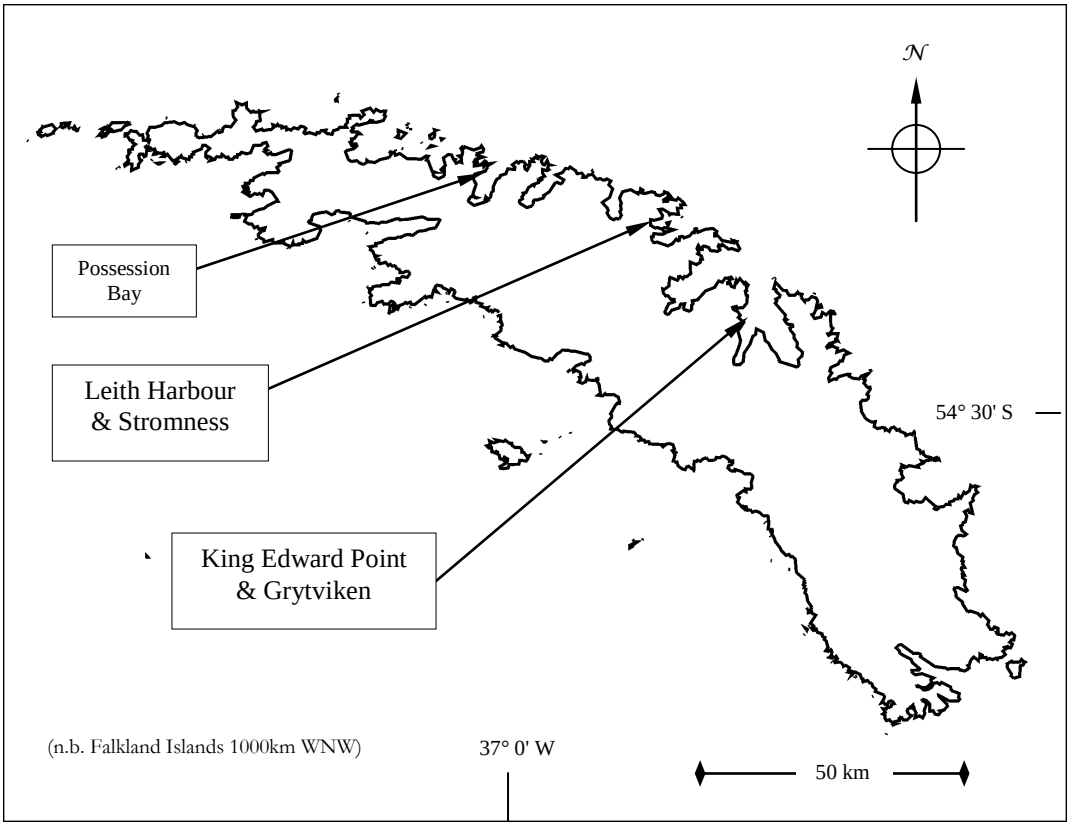


Figure 3 South Georgia

In 1675 the ship of an English merchant, Antoine de la Roche, sailing from Lima to England was carried far to the eastward of Staten Island, and sighted:

> A mountainous snow-covered island … and had spent two weeks anchored in a bay at the south-east end, but due to appalling weather, made no landing. The weather clearing, they had seen to the south-east what appeared to be a small island, [now known as Clerke Rocks], some 30 miles distant.[18]

On the 17 January 1775 Captain James Cook landed on the island at a place now known as Possession Bay. He took possession of the Island and named it in honour of King George III. Moorhead commented on the consequences of Cook's momentous discoveries thus:

> … it was Cook's fate to bring disaster in this wake. He had stumbled upon what was probably the largest congregation of wild life that existed in the world, and he was to let the world know of its existence.[19]

Sealers visited and overwintered on the Island throughout the nineteenth century - although it appears likely that sealing had begun on the Island by 1790. The German International Polar Year Expedition of 1882-83 established a base at Royal Bay where they remained for more than one year. The main settlement on South Georgia, Grytviken was named by members of the Swedish South Polar Expedition who visited the Island in 1902.

A permanent whaling station was established on 16 November 1904 at Grytviken, and at its height, during the whaling season, the population of the Island was in excess of 2000. During the winter the population fell to fewer than 100 men and women. Seven whaling stations were eventually established - the last one closed down in early 1966. For nearly sixty years South Georgia was the centre of the world's whaling industry. South Georgia became a Dependency

[18] Gurney, A; (1997) *Below the Convergence - voyages towards Antarctica 1699-1839*; New York: Norton & Co. p135.

of the Islands in 1908 and a Government Stipendiary Magistrate was appointed by the Islands' Governor in 1909. The Magistrate was resident at King Edward Point.

In 1958, with the decline in whaling underway and the eventual demise of the industry a real prospect, a development plan was drawn up for South Georgia. A wide range of exploitable resources was considered - Elephant Seal oil, Fur Seals, Fishing, Animal husbandry and Minerals.

During the 1970s the British Antarctic Survey (BAS) established a scientific base at King Edward Point. BAS took over responsibility for administration of the island. The last resident manager/caretaker appointed by the Islands Government departed in 1971, which, apart from the scientific staff, left South Georgia uninhabited.

On the 25 March 1982 the *Bahia Paraiso* arrived at Leith Harbour on South Georgia and an Argentine military force invaded. On 3 April the BAS station at King Edward Point was attacked. Later that day the British military garrison surrendered.

'The Argentines at King Edward Point surrendered to the Royal Navy on 25 April … subsequently a (small) British garrison has been maintained on the Island.'[20]

In October 1985 a new constitution came into effect which resulted in South Georgia ceasing to be a dependency of the Islands, and it is now a separate territory.

The Commissioner for South Georgia (and the South Sandwich Islands) maintains a Post Office and Fishery Officer at King Edward Point. The current (2003) civilian population (excluding scientific staff) is four.

---

[19] Moorhead, A; (1968) *The Fatal Impact*; London: Penguin Books; p191.
[20] Headland, R K; (1984); *The Island of South Georgia*, Cambridge: Cambridge University Press. p543.

In 2001 the military garrison was withdrawn from South Georgia, and was replaced by a scientific ‘presence’ provided by the British Antarctic Survey - once again at King Edward Point.

3. Geography and climate

§ a. The Islands

The Islands are an archipelago of 782 islands situated between the parallels of 51° and 52° 45' South and the meridians of 57° 20' and 61° 46' West. The land is generally low, flat and undulating, but rises in various places to 705m particularly in the western and northern mountains. 'The Islands owe their existence to the folding movements of the sedimentary rocks in the Palaeozoic and Mesozoic eras.'[21] A large area in the southern part of East Falkland - known as Lafonia - is the only substantial open/rolling countryside in the Islands, and all of this land is less than 90m above sea level.

The Islands are located approximately 500km north-east from the coast of South America - the nearest point being the island of Tierra del Fuego. From east to west the Islands cover a distance of 240km and from north to south they cover a distance of 150km. The approximate land area of the Islands is 12,200 km^2 (1.2M ha). The Islands vary enormously in size, but only two of them are of any size - East and West Falkland respectively - which occupy 77% of the land area. Falkland Sound separates the two main islands and is 13 km wide at its widest point.

The geological evidence found in the Islands suggests that approximately 400 million years ago the Islands were part of the giant supercontinent of Gondwana. The Islands were adjacent to the south-east coastline of what would become Africa, and part of what would eventually become Antarctica. By approximately 200 million years ago Gondwana began to split apart as plate tectonics began to break up the supercontinent. The Islands broke away from Africa and gradually twisted round - eventually rotating 180°. By about 150 million years ago the Islands were pushed into the margins of the South American continent.

[21] Strange, I; (1992) *A Field Guide to the Falkland Islands*; London: Harper Collins; p19.

The surface soil of the Falklands is predominantly peat overlaying a mixture of clay, shale, sandstone and quartzite. The peat of the Falklands is very different from Northern European peat. It is formed mainly from the roots and foliage of Diddle-Dee (*Empetrum rubrum*), Teaberry (*Myrteola nummularia*), and Whitegrass (*Cortaderia pilosa*). Other plants that form the peat bog include a dwarf variety of Marsh Marigold (*Caltha sagittata*), Brown Swamp Rush (*Rostkovia magellanica*), and the Sedge (*Astellia pumila*).

One of the striking features of the geology of the Islands is the existence of stone runs. The origin of these large accumulations of stone debris - some of which contain very large blocks of stone - is uncertain, but they may be the result of peri-glacial heave, which may have occurred somewhere between 14,000 and 25,000 years ago. The stone runs appear to have been formed over more than one of the many cold stages that have punctuated the recent past. Boulders that are further down the slope, or in the bottoms of the valleys, are older than those that are higher up on the slopes.

Charles Darwin made extensive geological investigations during his visits to the Falklands, and in particular upon the stone runs:

> In many parts of the island, the bottoms of the valleys are filled up with an astonishing number of large angular fragments of Quartz. These are so excessive that I am at a loss to describe the appearance presented by them … the Blocks vary in size from a man's chest to 10 or 20 times that size; and of course occasionally much larger; they must in many places form a mass of considerable depth; the water is often trickling deep below … In the great 'valley of fragments', as we called one valley, it is necessary to cross by jumping from stone to stone an uninterrupted band of about half a mile.[22]

Darwin seems uncertain about the cause of this striking feature; he speculates that earthquakes possibly caused them. But later, when he edited his journals for

[22] Darwin Archive; Cambridge University Library; ref.: DAR 32.2/ pp. 147-148.

his book *The Voyage of the Beagle* he remarks 'the progress of knowledge will probably will someday give an explanation to this phenomenon.'[23]

The most important native plant in the Islands is Tussac Grass. (*Poa flabellata*) These plants can reach immense size - 4m in height - and while plants can grow to 1m high in one season, thereafter they are slow growing. Mature specimens are thought to be possibly 200 years old. The plant provides an environment for many birds and insects, as well as shelter for seals. A survey in 1987 estimated the total remaining area of this grass in the Falklands to be 4,159 ha. The estimated area of the grass on the Islands, which grew prior to human settlement, is estimated to have been 22,181 ha.

The coastline of the Islands is heavily indented, with many bays and harbours, and the main features of these coastal areas are the extensive beds of kelp. The two most common species of these plants are Giant Kelp (*Macrocystis pyrifera*), and Tree Kelp (*Lessononia flavicans*). West Falkland is generally more rugged, with many cliffs, rocky headlands and boulder beaches.

The climatic conditions of the Falklands are similar to those of the Orkney and Shetland Islands, although the Falklands rainfall averages are considerably lower. The climate is cool temperate oceanic, with the predominant wind direction being westerly. Weather fronts pass through the area rapidly, and the Islands are subject to continuous variations in weather. Local folklore describes the Islands weather in terms of 'having all four seasons in one day.' The mean wind speed in knots is 15.1. The average temperature in the summer is 10°C and in the winter 6°C. The highest annual maximum temperature is 22°C and the lowest annual minimum temperature is -8°C. Rainfall is low; the mean annual precipitation in the low lying part of the eastern Islands ranges between 400 - 680mm. There is evidence to suggest that the Islands in the west are significantly drier and warmer than East Falkland. In the winter sunshine averages 2.1 hours/day and the summer 7.3 hours/day. Winter snowfalls are generally light and localised, and lie for an average of 48 days per year.

[23] Darwin, C; (1930) *Voyage of a Naturalist*; Oxford: OUP; p203.

Charles Darwin's initial impressions of the Falkland climate are fairly typical of early visitors to the Islands:

> Everyone has heard of the climate of these regions; it may be compared to that which is experienced at the height of between one and two thousand feet on the mountains of North Wales; having however, less sunshine and less frost, but more wind and rain.

However he later, rather half-heartedly, modified his opinions:

> From accounts published since our voyage, and more especially from several interesting letters from Captain Sulivan, RN employed on the survey, it appears that we took an exaggerated view of the badness of the climate of these islands. But when I reflect on the almost universal covering of peat, and on the fact that wheat seldom ripens here, I can hardly believe that the climate in the summer is so fine and dry as it has lately been represented.[24]

In another letter Darwin compared the Islands with Patagonia thus:

> If I had to choose, I would incomparably prefer the Falkland Islands to Patagonia - there you would have cattle and horses and pigs - peat and brushwood for fire - plenty of fish as is asserted. There are no severe frosts and the snow does not lie long. On [the] other hand no timber, country looks desolate and is very stormy. I have reason to believe that though twice there we happened to be very unfortunate with our weather. An emigrant would there be under British Government and free of Indians. Wild cattle thrive there and most vegetables; I rather think wheat has lately succeeded.[25]

[24] ibid.; p193.
[25] I am greatly indebted to Quentin Keynes - the great grandson of Charles Darwin - for the information contained in this letter, and for the use of his extensive collection of Islands material.

§ b. South Georgia

The Islands of South Georgia are situated between the parallels of 53° 56' and 54° 55' South and the meridians of 34° 45' and 38° 15' West. South Georgia consists of one main island and several smaller islands. The islands have been described as:

> The Alps in mid-ocean; and is roughly crescent shaped along a north-west to south-east axis, about 170km long and from 2 to 30km wide. The surface area is approximately 3,755 km^2, well over half of which is permanently covered with ice and snow.[26]

The highest elevation is Mount Paget at 2,934m. The Island is located approximately 1,450 km. south-east of the Islands.

> South Georgia is largely composed of an approximately 8km. thick sequence of volcaniclastic sandstones and shales, termed the Cumberland Bay Formation … It was derived from a series of active volcanoes during the Late Jurassic to Early Cretaceous ages (about 140 million years ago).[27]

There are four main types of soils on the Island: organic soils, meadow tundra soils, brown soils and raw mineral soils. Large moss banks are a notable feature - many of which are very old (up to 9000 years) and they form a major component of the peat deposits of the Island.

The most notable plant species on South Georgia is the Tussac Grass. It occurs on the coastal areas and also on the steep slopes rising from the shoreline. In the dry areas the Tufted Fescue (*Festuca contracta*) grows widely; the Woody

[26] Headland, R K; (1984) op.cit.; p170.
[27] ibid.; p 16. For details of an early geological survey of South Georgia see: Ferguson, D; (1915) Geological Observations in South Georgia; *Transactions of the Royal Society of Edinburgh*; Vol. L; Part IV; No. 23.

Stemmed Burnet (*Acaena magellanica*) is very common. Ferns, mosses and lichens are widespread.

30 breeding and 27 non-breeding species of bird occur on South Georgia in great numbers. The waters around South Georgia swarm with many marine invertebrates such as the Antarctic Krill (*Euphausia superba*). Two species of seals - the Antarctic Fur Seal (*Arctocephalus gazella*) and the Southern Elephant Seal (*Mirounga leonina*) also occur in great numbers.

'Up to the early part of this century, whales abounded in the Island's fjords as well as in the surrounding ocean.'[28] A least 8 species of whales have been encountered in the waters around South Georgia, but it is estimated that only 10% of the whale population, which existed at the beginning of this century, now survive.

George Forster, who was one of the naturalists on the James Cook expedition of 1775, made some far-sighted economic predictions:

> But South Georgia, besides being uninhabitable, does not appear to contain any single article for which it might be visited occasionally by European ships. Seals and Sea Lions, of which the blubber is accounted as an article of commerce, are much more numerous on the desert coast of South America, the Falkland, and the New Year Islands, where they may likewise be obtained at a much smaller risk. If the northern ocean should ever be cleared of whales, by our annual fisheries, we might then visit the other hemisphere where those animals are known to be numerous … It should therefore seem probable, that though Southern Georgia may hereafter become important to mankind, that period is at present so far remote, and perhaps will not happen, till Patagonia and Tierra del Fuego are inhabited, and civilised like Scotland and Sweden.[29]

[28] ibid.; p225.
[29] ibid.; p29.

South Georgia is 350 km south of the Antarctic Convergence and this has a significant effect on the climate of the Island. Winds in excess of 100 knots have been recorded. The general climate of South Georgia is cold, wet, windy and cloudy, and is subject to rapid changes. Although air temperatures rarely rise above 10°C, the short summer season can occasionally produce sunny days with the temperature of 20°C. Winter temperatures of -15°C have been recorded at King Edward Point.

4. 1842 – Governor Richard Moody and Joseph Hooker

Between 1841 and 1850 two men from very different backgrounds wrote extensively about the environment of the Islands and their future potential. The reports that Richard Moody and Joseph Hooker wrote have been very influential for the subsequent development of the Islands.

§ a. Richard Moody was the first Governor of the Islands, and one of his first tasks was to make an assessment of their economic potential. In his detailed reports he provides one of the earliest accounts of the natural environment of the Islands.

On 23 August 1841 Lord Stanley's Commission document appointed Moody as Governor, and gave precise instructions as to how Moody's power was to be exercised:

> Influence, persuasion rather than direct authority … It is a growing opinion among Naval and Mercantile Men that a settlement on the Falkland Islands would be of essential service to our merchant vessels on the voyage to our more distant possessions. It may be a mere guard to occupy a post in the vicinity of the best harbour is all that can be effected with advantage. It may be a more extensive occupation by British settlers would lead to increased intercourse and improved facilities for trade. These are questions that can only be answered by experience … It is the object of the Lt.Governor to give increased protection and security to British commerce, and not to launch into large expense for the sake of mere territory contained in the Falkland Islands. Your Despatches will be framed with a view to give information, which may guide [HM Queen], in her ultimate decision. [30]

[30] CO399/2; *Colonial Office Outward Letter book; 1841-1853*; Colonial Office Records; Public Record Office; Kew; 1841.

The Lt.Governor landed at Port Louis on 16 January 1842. On 5 March 1842 [31] Moody reported that the climate was generally mild in winter, and also on the general healthiness of life on the Islands. He also reports on the discovery that Tussac Grass is of great value in feeding cattle. Bernhardson commented: 'Moody's observations on Tussac's abundance demonstrate that, despite local disturbance, before expansion of sheep grazing, even East Falkland retained significant biologically productive Tussac habitat.'[32]

On 1 October 1842 Moody gave a detailed report on the general environment of the Islands and also the potential of the Islands from an economic and future settlement perspective. His Despatch included a detailed report from Joseph Hooker - the botanist on the James Clark Ross expedition. Moody reports that the soil would not be very fertile without the addition of some form of ash, but the pasturage for sheep was excellent. Moody estimates that two acres would be required to feed one Southdown sheep. Moody recommended the 'firing [of] the old withered patches of grass' not eaten by the cattle to improve fertility. He commends the practice of burning by adding his personal experience supported 'the good effects of firing I have seen in many places.'[33]

Moody said that his friend Hooker:

> Has given very great attention to this [Tussac Grass] useful and interesting plant which is true grass and is in very much more abundance than other grasses … During several long rides into the country I have found the Tussac flourishing most vigorously in spots exposed to the sea.[34]

Moody commented that the Tussac would make good thatching for housing during the winter. He reports that 'the land in the Northern Peninsula was

[31] CO78/5; Colonial Office Records; Public Record Office; Kew; 1842.
[32] Bernhardson, W; (1989) unpublished Ph.D. dissertation - *Land and Life in the Falkland Islands*; p245.
[33] CO399/2; *Colonial Office Outward Letter book; 1841-1853*; Colonial Office Records; Public Record Office; Kew; 1842.
[34] CO78/5; Colonial Office Records; Public Record Office; Kew; 1842.

commonly called by the settlers 'The North Camp' and that there were many troops of wild horses in the area.'

It is clear from the comments and footnotes added to this Despatch of Moody, when they were later received in the Colonial Office, that the Royal Geographical Society of London was very interested in Moody's initial reports and findings.

Moody enclosed Hooker's complete report, in which Hooker stated that:

> The remarkable increase and fine condition of the Cattle recently introduced to the Islands naturally call attention to the grasses in a country devoid of trees or of any vegetable production likely to prove more important.[35]

He commented that:

> It might be advisable to treat this plant [Tussac] as hay as it is in Britain … In the winter months … were it possible to introduce grouse into the Islands it may be as well to mention that the diddle-dee belongs to the same genus as the Crowberry on which that bird feeds.[36]

Hooker's report contains detailed remarks on all the major species of plants in the Falklands, and his report concluded with the significant statement:

> Considering the scanty nature of the flora of the Islands and the rapidity with which their several good qualities have been discovered by so small a number of individuals there can remain little doubt that many of them only require a little care to become eminently useful. For the most

[35] Moody, R. (1843) *Information respecting the Falkland Island;*. London; Charles Knight & Co.
[36] CO78/5; Colonial Office Records; Public Record Office; Kew; 1842.

> important, the grasses, nature has done almost all. The others will want a little art, and a very little I presume.[37]

On 18 November Moody reported that he had planted Southern Beech Trees (*Nothofagus* spp.) which he had brought from South America.

On 11 Feb 1843 Moody was asked to send back seeds of Tussac Grass for the Highland Agricultural Society,[38] and on 1 March 1843 Moody sent Murrell Robinson to Montevideo to obtain Gauchos and trained horses for the purpose of domesticating the wild cattle.[39] On 19 October 1843 Moody wrote:

> It appears to me that the origin and continuance of this Colony are wrapped up entirely in considerations of a maritime nature whether viewed politically or with reference to shipping engaged in Commerce.[40]

Moody wrote, on 27 December 1843, to Lord Stanley following a sea trip he had taken in the *Philomel,* reporting on his visit to Darwin's Harbour and Choiseul Sound thus:

> It is the best tract of land that I have seen in the Falkland Islands. The cattle are very numerous, of a large size and in fine order … it is important that a township be reserved on the isthmus.[41]

Moody warns against speculation that large reserves of coal can be found, but he adds:

> Sheep farming for the exportation of coarse or blanket wool would meet with great success. Sheep thrive here admirably with very little attention, and the poor breed of South America fill out and improve in their flesh and weight of fleece … A small flock of South American

[37] CO78/5; Colonial Office Records; Public Record Office; Kew; 1842.
[38] CO399/1; *Colonial Office Outward Letter book; 1832-1847* Colonial Office Records; Public Record Office; Kew; 1842.
[39] CO78/7; Colonial Office Records; Public Record Office; Kew; 1843.
[40] CO78/7; Colonial Office Records; Public Record Office; Kew; 1843.

> sheep which I purchased myself are doing remarkably well and did not feel the winter although afflicted with disease caught from [another] flock infected with scab.[42]

Moody wrote later, in this Despatch that it was his intention to frame 'an enactment' which will check the progress of the sheep scab disease. He reported that there were no competent shepherds in the Colony but that this would be 'of course altered when sheep farming is adopted by persons proposing to make it their livelihood.'

With respect to the future prospects for agriculture Moody reports that:

> The oats look very healthy … and although during the past week we have had some very bad weather with hail, wheat would have answered this year particularly in a sheltered valley … Many of the trees from the Straits of Magellan are doing well but I think they require more moisture in the atmosphere. They are not fit yet to handplant to England. I am, from a cause of which I am ignorant, unsuccessful with potatoes, but the ground is of a very clayey nature, and I look for better results at Port William where there is more sand.[43]

On 30 December 1843 Moody replied to an enquiry from London concerning the reserves of peat to be found in the Falklands and the size of the peat bogs:

> Peat is in abundance and easily accessible … it could furnish all the steamers likely to pass around Cape Horn for many years … There are at least 56 square miles [of peat] varying in depth from two to ten feet … about 300 million cubic yards … When dried and stacked it would amount to, say 122 million tons.[44]

---

[41] CO78/7; Colonial Office Records; Public Record Office; Kew; 1843.
[42] CO78/7; Colonial Office Records; Public Record Office; Kew; 1843.
[43] CO78/7; Colonial Office Records; Public Record Office; Kew; 1843.
[44] CO399/1; *Colonial Office Outward Letter book; 1832-1847* Colonial Office Records; Public Record Office; Kew; 1843.

Moody calculated the calorific value of the peat available in the area around Stanley, and he carefully considered the possibility that peat might provide suitable fuel for steam ships rounding Cape Horn. This illustrates well a constant theme in the thinking behind the colonisation of the Islands, *i.e.* the potential of the Islands for maritime use (particularly by the Royal Navy) as an extension of British power and influence in the region.

There was great interest in Tussac Grass in Britain. Moody reported that he has forwarded Tussac seed at a cost of £2 and 10 shillings per pound. [45] Moody also wrote that he was forwarding a quantity of geological specimens, and that he doubted whether coal would be discovered.

Moody foreshadowed the highly profitable whaling industry of the 20th century when he reported that five whales 50 to 60 feet in length had been captured. He observed that this event illustrated what he had previously stated:

> [That] a profitable livelihood might be possible for settlers in the islands from a whale fishery … very many whales are seen in this season in the sound and other ports of the Islands - a circumstance quite worthy of attention among a few in England.[46]

The Colonial Secretary commented on a report from Moody to Lord Grey on 14 November 1846 regarding the prosperous state of the Colony following the move from Anson to Stanley as the Capital of the Colony. Moody appears to have had very mixed feelings about the move, but once it had been effected he was keen to report on the advantages for the future life and growth of the Colony.[47]

Moody signed a contract, in March 1846, with the Lafone brothers granting them sole permission to cull the wild cattle. Samuel Lafone was a British

---

[45] CO78/8; Colonial Office Records; Public Record Office; Kew; 10 January 1844 and 26 January 1844.
[46] CO78/8; Colonial Office Records; Public Record Office; Kew; 2 May 1844.
[47] CO399/2; *Colonial Office Outward Letter book; 1841-1853;* Colonial Office Records; Public Record Office; Kew; 1846.

merchant resident in Montevideo, and the Company that he and his brother Alexander owned was the forerunner of the Falkland Islands Company. Moody's Despatches reveal that he was uneasy about granting the Lafone brothers a monopolistic position in the Islands. Nevertheless, the contract gave the brothers exclusive rights to kill the wild cattle on the southern peninsula which now bears their name - Lafonia - and their arrival on the Falklands scene was a turning point in the Islands history. The future activities and ethos of the most dominant commercial company in the history of the Islands are presaged in this Colonial Office Letter book. In a letter to James Booth (a shareholder in the new Company) from Lord Grey, on 3 March 1851, reference is made to the original name of the Falkland Islands Company, when it made its request for a Charter, as being: 'The Royal Falkland Islands, Cattle, Seal, & Whale Fishery Company.' The Company has always been justly proud of its Royal Charter, and its commercial interests have never been confined to just the sheep farming industry.

§ b. Joseph Hooker was the naturalist on the expedition of Captain James Clark Ross, which arrived in the Islands in April 1842. Hooker's father, William Hooker, was the Director of the Royal Botanic Gardens at Kew. The James Clark Ross Expedition arrived in the Islands aboard HMS *Erebus* and HMS *Terror*. After a voyage of 135 days Hooker wrote, on 5 April 1842, to his father at Kew, about his less than favourable first impressions of the Falklands:

> At 5pm we anchored at Port Louis having run up the Sound in a thick mist and pouring rain which had they come before would have rendered it impossible for us to get in. The stiff westerly breeze now blowing would have kept us at sea all tomorrow so that we are not a little delighted to be fast by the nose again. Such a wretched place you never saw! Keguelen's [sic] Land is a paradise to it.[48]

Hooker overcame his first poor impressions, and soon became good friends with Governor Moody. Hooker acted as a valuable consultant to the Governor

[48] Hooker, J; (1842) *Correspondence 1839-1845 Antarctic Expedition*; Royal Botanic Gardens Kew Archive.

who was making an assessment of the resources of the fledgling colony. Three weeks after his arrival in the Islands, on 25 April 1842, Hooker wrote to his aunt (Lady Palgrave):

> The country appears too cold for wheat; but for turnips, oats, rye, barley, etc. it will do well and may in time become very important where ships can victual either in going round or returning from the Horn. Lt. Moody seems a very active and intelligent young man, most anxious to improve the colony and gain every information respecting its products. So he has engaged me on the botany and more especially on the grasses of the soil; he finds that his fodder grass will not make good hay; nor will the sedge do for thatching, or will either make a bourn. As you may suppose I am very proud in being useful to him and have found excellent triticum for thatching on the rocky coasts, and also some poa and agrotidies for sheep lawns which he will try to make useful. Besides the quantity of fresh meat that we can obtain here, wild geese abound on the hills and are easily shot; when roasted they quite equal in size and flavour an English bird. Indeed of these geese and rabbits we have more than we can eat: snipes and wild duck of two kinds are also most abundant.[49]

Joseph Hooker accompanied Governor Moody on a visit to the location of what was to become Stanley Harbour. On 26 May 1842, Hooker wrote to his sister:

> I have been with on a very pleasant excursion to Port William with the Governor, who went to look out the proposed site of a town nearer the sea than Port Louis, at the head of this long harbour … Like other parts of the Island it is quite barren of trees and the whole country covered with peat bogs or grasslands which afford excellent fodder for the herds of wild cattle and troops of horses. Near the sea coast a very fine grass grows in immense abundance called Tussac, and a very different plant from what I sent a description of to the Governor, and which is very common here, also called Tussac, but the true Tussac forms quite an

[49] ibid.

> extraordinary feature in the landscape, covering immense tracts of land especially on a sandy soil; round its roots it forms immense balls which stick up 5 and 6 feet on the ground and are often as much in diameter: on top the grass throws up its stems and long leaves which hang down all around and are often 6 or 7 feet long.[50]

It is not clear what species of 'fine grass' to which Hooker is referring. It could be Whitegrass, or possibly Mountain Blue Grass (*Poa alopecurus*). It is of note that Hooker commented that 'true' Tussac Grass covers 'immense tracts of land.'

Sixty years later the Swedish scientist Carl Skottsberg graphically described the effects of open range grazing on the environment which Hooker had observed thus:

> Several forage species had declined in abundance: Tussac was mostly confined to small unstocked islands; cinnamon grass had become very localised and was a candidate for extinction; blue mountain grass had become so rare that is was now becoming extinct.[51]

But Skottsberg was not completely correct in his assertions. Tussac Grass has declined considerably, and although Mountain Grass and Cinnamon Grass (*Hierochloë redolens*) have declined, and in the case of Cinnamon Grass become localised, they have not become extinct.

Richard Moody's successor as Governor was Governor George Rennie. In one of Rennie's first Despatches to London on 28 December 1848 he continues the pattern that is seen throughout the history of the Colony of Governors of the Islands making detailed reports on the settlement and economic capabilities of the Islands. Further comment is made later in this dissertation about the fact that despite numerous Governors making observations and recommendations about the use of the natural environment of the Islands, and the Colony's economic

[50] ibid.
[51] Bernhardson, W; (1989); op.cit.; p497.

activities, in most instances very little notice was taken of their words and little change effected.

Rennie's report elicited the following reply on 14 April 1849 from Earl Grey, the Secretary of State for the Colonies:

> I have read the Despatch with much interest, and I have to express to you my acknowledgement for the ability with which it was drawn up. The opinions, which you have formed on the leading topics of interest in regard to the settlement, appear to me to be very judicious. [52]

When Moody arrived, the population of the Islands on June 1842 was 78; by the time that Rennie left the Islands, in 1855, the population had risen to nearly 500.[53] This increase in the human population of the Islands had a major impact on its natural environment. Thus by 1850 the scene is set, and the direction of the future human and economic development of the Islands had largely been established.

[52] CO399/2; Colonial Office Records; Public Record Office; Kew; *Colonial Office Outward Letter book; 1841-1853*; 1849.
[53] CO714/55 *Alphabetical Index 1841-1870*; Colonial Office Records; Public Records Office; Kew.

5. Grasslands and sheep farming

§ a. Introduction

> The pattern of Falkland Islands agriculture has changed very little since the introduction of sheep farming in the mid-nineteenth century. The infertility of our soils coupled with the very windy and cool oceanic climate, and the great distance from the principal market in Britain, has ensured that wool remains the only agricultural export.[54]

These words, written by the Director of Agriculture in the Islands in 1998, are not an accurate assessment of agriculture in the Islands. There have been some significant changes in the pattern of Islands' agriculture in the past twenty years - principally brought about by the sub-division of large farms and the growth of small owner occupied farms. But these changes in recent agricultural methods and techniques (see Shackleton Report 1976 & 1982 below) are minor in comparison with the large changes which have taken place in the natural environment of the Islands as the result of the human involvement since their discovery and settlement.

§ b. Grasslands and pasture

The vegetation of the Islands and South Georgia evolved without the influence of large mammalian herbivores - unlike the other major heathlands/grasslands of the world, *e.g.* South America and Africa. There is no evidence to suggest that the Islands were grazed by herbivores prior to the introduction of domestic animals by Louis Antoine de Bougainville in 1764.[55] It is also clear that the early pasturage of the Islands was very good (relative to their current state) - as recalled by Herbert Felton - an early eyewitness:

[54] Reid, R (1997); *FIG Department of Agriculture Annual Report 1996/97*; p5.
[55] Bougainville landed seven heifers and two bulls, plus a few pigs, sheep, three horses and a goat.

> The Northern part of the West Falklands from Chartres and Hill Cove to White Rock was covered with grass bogs reaching to the rider's knees, interspersed with fine grass and acres of celery. In many places, because of the growth, the camp was difficult to get through. In those days white grass camps as we now know them were considered valueless for grazing. Cattle were magnificent, enormously fat and very plentiful. This wealth of good fodder was destroyed during the fine summer of 1871 when it was fired, and the camp was burnt to the soil from Chartres to Port Purvis. It took fifteen years before there was a semblance of recovery; the blue grass was pulled up by the sheep as soon as it tried to grow, making the camp look like a hay field. Before this, stock kept fat summer and winter.[56]

There have been substantial changes to the vegetation of the Islands since the early days of human settlement. The make-up of the Islands vegetation is unique; like many remote oceanic islands it has evolved without legumes or large trees. Most of the land is covered by oceanic heath which is today dominated by Whitegrass (50%) and/or Diddle-Dee (*Empetrum rubrum*) (up to 35%) - with Tussac Grass, Fachine (*Chiliotrichum diffusum*) and Marram Grass (*Ammophila arenaria*) making up the predominant remaining vegetation. Approximately 250 species of flowering plants and ferns are found in the Islands, and 164 are native plants. 14 plant species are endemic and are found nowhere else. It has been estimated that at least 176 plant species have been introduced - principally Meadow and Bent grasses, and also Yorkshire Fog (*Holcus lanatus*) (which has spread extensively).

The only major input of nutrients available for plants prior to the introduction of livestock was along the coastline - mainly through the influence of Penguins and Seals. Upland Geese may have helped to re-distribute nutrients inland, but principally at selected locations, *e.g.* ponds and valleys. After the introduction of livestock further re-distribution of nutrients took place, but this may be even more site-specific because of the tendency of sheep and cattle to congregate in

[56] Anonymous (1981) The Pioneer Farmers of Patagonia; *The Falkland Islands Journal*; p10.

valleys and along fence-lines/corners. The preference that stock show for the valleys because of better shelter has the effect of transferring fertility from the high ground to the valley bottoms.

By the beginning of the twentieth century concern grew about the deterioration of the native pasture. The most obvious indicator of the scale of the changes, which had taken place, was the steady decline in the stocking rate of sheep in the Islands. By 1898 the Colony carried 807,000 sheep, but by 1923 this had declined gradually to 647,000. The deterioration of the native pasturage, and thus the consequent decline in sheep numbers, was even more marked on some of the offshore islands. Weddell Island - the third largest island in the Falkland archipelago - grazed 23,518 sheep in 1895, but by 1920 it held only 7,500 sheep.

Some caution should be used in respect of the accuracy of the figures, often quoted, of the maximum numbers of sheep carried in the Islands in the late nineteenth century. Frank Mitchell [57] has observed that intense rivalry between farm managers, combined with a passion for gambling based on farm statistics, may have led to a distortion of the true situation about stocking levels.

Reference has already been made earlier about the observations of Skottsberg about the changes brought about to the Falkland vegetation by open range grazing since the time of Joseph Hooker's description of Falkland flora. In 1922 the Manager of Port Howard Farm, R C Pole-Evans commented that 'blue bunch grass, the old kind the people before my time talk about could not be found in quantities - but only in odd bunches.'[58]

[57] F G Mitchell (b. 1923) has had a long and distinguished career within the Falkland Islands Company. He joined the Company in 1950 and retired in 1987. During this time he held the appointments firstly of Company Secretary, then London Manager and subsequently Managing Director. Mitchell became the first Honorary Secretary of the newly formed Falkland Islands Emergency Committee in 1968 when the sovereignty crisis developed.

[58] Pole-Evans, R C letter to Matthews, E G; 14 October 1922; *Port Howard letter book* 1922-1926. It is not clear what plant is being referred to here by Pole-Evans; possibly Mountain Blue Grass (*Poa alopecurus*).

Skottsberg's account of his travels in the Islands in 1907 also provides testimony to the fact that, in common with most 19th century colonists throughout the world, there were only a few early residents in the Islands who were concerned for the natural environment. Of the then Governor (William Allardyce) he wrote:

> He is warmly interested in the material as well as the spiritual welfare of his colony, and we fully recognised his appreciation of our scientific work, which he tried to promote as far as lay in his power.[59]

Skottsberg's comments about Arthur Felton of West Point Island are a tribute to one man's pioneering attitudes and activities:

> Mr Felton approximates very nearly to my ideal of a man. Ready to enjoy life and civilisation when there is a chance, he nevertheless lives in complete harmony with the wild camp life; he is interested in his work, he tries all sorts of grasses for his sheep, but is also - an exception to the general rule - intensely fond of nature itself and gifted with such a remarkable capacity for observation that many a naturalist by profession has reason to envy him. He knows every beast or plant on his island; he loves and nurses them, quite convinced that the human race can live at its ease without depriving living things which do him no harm of any chance of existence. I have never met anybody but him who tries to save one of the Falklands' finest adornments, the giant tussock-grass (*Poa flabellata*), which is nearly extinct wherever there are sheep, much to the detriment of the coast's appearance.[60]

Arthur Felton writing to Governor Sir Arnold Hodson in 1928, commented that:

> [Fifty] years have passed since I first set foot on the West Falkland. Then hundreds of miles of land, which is now bare, bleak and silent, was

[59] Skottsberg, C; (1911) *The wilds of Patagonia: a narrative of the Swedish expedition to Patagonia, Tierra del Fuego and the Falkland Islands*; London: Edward Arnold; p15.
[60] ibid.; p15.

covered with grass, more than foot in height, and the air ringing with the sound of small birds.[61]

§ c. Grassland degradation

There are no easy answers to the question as to why the grasslands of the Islands have been degraded, and there are certainly no answers to such questions without controversy attached to them. At the end of the nineteenth century the Falklands experienced a variety of farming crises - the widespread problems of sheep scab, the shortage of skilled labour and the fluctuations in world wool prices. These crises all caused hotly debated discussion in the Colony about their effect on the productivity of the Islands. It is clear, however, that the principal agents of change in the natural environment were a combination of factors, namely - open ranch farming, the burning of grasses and Tussac Grass, the overstocking of the land by sheep and cattle, and the effects of introduced species (most notably pigs) by sealers. By the end of the nineteenth century the large-scale production of wool completed the transformation of the Islands. Given the state of knowledge in the 19th century about the results of the introduction of exotic species, and a general lack of awareness about the effects of the unintended consequences of such introductions, it is difficult to see how many of these adverse effects could have been avoided. The same pattern was repeated throughout the British colonies - and in particular wherever colonists adopted a primarily monocultural agricultural system. Tea plantations in Ceylon, Rubber plantations in Malaya, are just two examples where considerable degradation of natural habitats occurred following colonisation. In New Zealand [62] Australia [63] Patagonia [64]

[61] CS187/27; Falkland Islands Government Archive; Felton, A; letter to Governor Hodson; 25 January 1928.
[62] Fraser, C; (1986); *Beyond the Roaring Forties*; Wellington, New Zealand: Government Printing Office.
[63] Williams, J; (1990); [CSIRO Division of Soils; Canberra, Australia] *Search for sustainability: Agriculture and its place in the natural ecosystem*; Linnaean Society of London.
[64] See: McEwen, C and Borrero, L and Preito, A; (1997) *Patagonia – Natural History, Prehistory and Ethnography at the uttermost end of the earth*; The Trustees of the British Museum; p155: for an example of the effects of colonisation and sheep farming, upon the aboriginal inhabitants of Patagonia, as well as upon the flora and fauna.

and St. Helena [65] similar effects on grasslands, and native species, are seen as the result of the introduction of sheep, cattle and pigs.[66]

It is clear that during the forty years that followed the tenure of Lt. Richard Moody as Governor, the development of the Colony was rapid and only partly controlled. By 1860 Pebble, Keppel and New Island had flocks of sheep, and in November 1867 James Waldron took up his lease at Port Howard and introduced sheep to West Falkland Island. Between 1870 and 1872 the total sheep numbers rose from 64,675 to 124,690. By 1878 the numbers of sheep had risen to 312,300, and of these the Falkland Islands Company's flocks totalled 115,000. Within thirty years of Moody's first tentative steps, a large and extensive sheep ranching agricultural pattern had been established. With the benefit of hindsight it can be clearly seen that during this period, in common with other colonies, there was little regard for the environmental consequences of this rapid development.

By their very nature and history new Colonies like the Islands had the flavour of a 'boom-town' with a 'frontier-style' of entrepreneurial economics. They attracted larger-than-life men who were both powerful and ruthless, and who constantly sought greater profits through extending their monopolies.

The established farming leadership consistently resisted small farm tenure.[67] The resistance to land reform can be seen, for example, when Governor Sir Roger Goldsworthy attempted to reform the tenure of the land on West Falkland when the original 21-year leases came up for renewal in 1892. His proposals to re-allocate portions of land as 'Government Reserves', to be offered for Public Auction, caused an outcry, and the furious response of the large established farming companies, dominated most of his service in the Islands. Goldsworthy's proposals were designed to enable more people to be able to

[65]Ashmole P & M; (2000) *St. Helena and Ascension Islands*; Oswestry: Anthony Nelson; p53 (soil erosion) and p134 (degradation of native vegetation).
[66] For an example of the human effects on sub-Antarctic islands see: Selkirk. P, Seppelt, R, and Selkirk, D; (1990) *Subantarctic Macquarrie Islands – environment and biology*; Cambridge University press; chapter 12.
[67] Goldsworthy, R; Despatch No.12; Falkland Islands Government Archive; 16 February 1895.

farm the land, but established interests defeated him.[68] Like a number of Governors of the Islands, Goldsworthy had particular problems with the Falkland Islands Company. In the last Despatch that he wrote from the Islands he commented:

> This is probably the last communication which, as Governor, I shall address to any Secretary of State in connection with the Falkland Islands Company, but I can unhesitatingly affirm that a Governor can never hope to succeed in doing justice to the Colony where he finds himself handicapped on every side by the influence that the Falkland Islands Company can bring to bear - where they exercise a monopoly detrimental to the Colony's best interests and progress and where such monopoly is fostered and encouraged by facilities being afforded and advantages given to the Company which are not accorded to ordinary traders.[69]

Small farms were regarded as uneconomic by those who exercised power and influence both in Stanley and in London. The pattern of large open ranching methods of sheep farming had become the norm; this ranching style of land management was a contributory factor in the decline in the quality of nutritious pasturage.

The large scale farming companies faced other problems caused by their size; at various times there was a shortage of skilled labour and there were too few good shepherds. When this fact is combined with lack of adequate fencing during the early period, the result was a failure to supervise closely the flocks. Sheep management was more difficult with the large flocks of the big stations. The lack of adequate fencing was only resolved when sheep scab legislation was enforced at the turn of the century, but by this time much of the damage had already been done. The large companies, ever anxious to satisfy their

[68] Executive Council Minutes: 27 October 1892; Falkland Islands Government Archive. (Land reform has been a significant issue throughout the history of the Islands).
[69] Goldsworthy, R; Despatch No. 22, 27 March 1897; Outward Letters Book B24; Falkland Islands Government Archive; 1897.

shareholders, had also to face the considerable costs involved in fencing. Big profits were being made, but London based Boards of Directors were sometimes unwilling to spend profits on capital projects. F E Cobb, the Colonial Manager of the Falkland Islands Company (1867-1891) constantly struggled with what he regarded as an uncomprehending Board of Directors. An additional problem, which many farmers faced, was uncertainty about farm section boundaries. For many years there was reluctance on the part of some farmers to agree on the boundaries of their farms, and it became clear by the end of the nineteenth century that the land area was substantially mis-measured. It was not until the Hunting Air Surveys of the 1956 that this problem was finally resolved. Once the boundaries were fixed it was then possible to know how many sheep could, or could not, run on a particular camp, whereas before the survey there was always the possibility that more sheep were being carried on some farms because of over-estimated acreage. Both these two factors made close management of the flocks difficult - hence they contributed to grasslands decline. Once sheep farming had become established in the Islands, stocking regimes became based on the traditional/historical carrying capacity of each camp. The principle governing this farming methodology appears to have been 'what worked before, will work well again.'

There is some anecdotal evidence, which suggests that some of the small farms that did exist also had their pasturage difficulties. The great temptation for the early small farms was to overstock in order to maximise profits, and to keep up with their larger farming neighbours. Although the managers of the large farm companies have attracted criticism, it is generally true that they were the most able, albeit the most conservative, farmers. Whereas some of the smaller sections (*e.g.* near Stanley - the so-called 'suburban farmers') were being farmed by men who were not very able.[70] Some of the smaller offshore island farms may have been overstocked *e.g.* Ruggles, Great and Beaver [71] but others like Carcass Island and West Point Island were both economically profitable

[70] G6; Falkland Islands Government Archive; Governor Allardyce; Despatch Colonial Office; 28 August 1905.

[71] Evidence for this overstocking can be seen in the sheep stocking numbers of individual farms recorded in the Governor's Blue Books 1870-1890; also: C/11/35; *Sheep Farming statistics prepared for Governor Henniker-Heaton*; Falkland Islands Government Archive; 22 July 1935.

and managed appropriately. A better stewardship of the land, of the kind seen on Carcass and West Point, might have balanced short-term profitability with long-term sustainability, and thus have provided a more durable style of farming. Potentially the smaller islands were - before being overstocked - a stockman's paradise because sheep were more easily confined; they were safe in the winter and sheep had access to Tussac Grass and the shoreline. The large stations on the main islands had large areas of less nutritious white grass.

The late nineteenth century was a time of Victorian self-confidence and unrestrained growth, and a simple equation soon emerged in the Falklands Islands - large farms made large profits. There was also a need to make rapid profits. This was partly to finance the considerable costs of establishing the farmsteads in the first instance, and also to offset running costs. There was also a need to satisfy the requirements of absentee shareholders/landowners outside the Colony who had initially put up the venture capital. The profits made by absentee farming companies has been an issue in the Islands throughout the history of its farming industry until the sale of these farms during the 1980s.

An example of the concern felt about the profits of absentee farm companies can be seen in 1939/1940 when Governor Henniker-Heaton commissioned a confidential report by his Colonial Secretary which tabulated the profits made by individual farms from 1919-1938. [72]

The statistics for the period 1919-1938 show:

In 1938: 86% of sheep were carried by absentee owner farms.

Farming made an overall profit for all years in the period (with the exception of years 1922, 1933, 1935 and 1936.)

Total value of wool clip 1919-1938: £3,639,813

[72] C/11/35; *Sheep Farming statistics prepared for Governor Henniker-Heaton*; Falkland Islands Government Archive; 22 July 1935ff.

Total cost of production 1919-1938:	£2,296,903
Total wool profit:	£1,342,910
Total profits of farm products other than wool:	£413,541
Total profits 1919-1938:	£1,756,451
Absentee:	£1,508,202
Resident:	£245,521

Initially farms were established as leasehold farms, with 21-year leases on 6,000 acre sections. This lack of security of tenure contributed to the 'make hay while the sun shines' attitude which seems to have motivated some of the large farming companies in the late 19th and early 20th centuries, despite the fact that they had been gradually aggregating a considerable number of these sections. The strength of the reaction to Governor Goldsworthy's modest land reforms was partly a reflection of this insecurity.

Many of the early farmers were extremely hard working and well intentioned, and they cannot fairly be accused of deliberately causing environmental damage - nevertheless damage did occur. In the early days of sheep farming the Islands, there was a general lack of environmental awareness, and also a lack of scientific knowledge about native grasses. After Governor Middleton and Hugh Munro's Reports of the 1920s, and the Report of William Davies in 1939, there was no excuse of ignorance. The reasons why these Reports failed to effect change are complex, and will be discussed later in this dissertation. That certain farming practices continued after Munro and Davies (and to the present day) is a matter of regret. For example Munro challenged the practice of burning the camp in order to aid pasture improvement. Even today there are strong opinions about the deliberate burning of the grasslands in an attempt to improve the quality of the pasture. There is now general agreement that the tendency, during the early years of the farming industry's history, to burn in an unrestricted and

uncontrolled manner has caused serious and long-term damage.[73] Nevertheless the belief held by some farmers that burning is essential remains strong, and there is resentment by those farmers if 'experts' challenge that belief. The diminution of Tussac Grass through deliberate and accidental burning compounded the problems caused by the practices of the sealers in the eighteenth and nineteenth century who fired Tussac Grass to drive seals out into the open for easier killing.

There were some early examples of good sheep husbandry and land management. Governor Allardyce wrote to the Colonial Office in 1909 about Arthur Felton of West Point:

> He was one of the most successful and progressive sheep farmers of the Colony although in a comparatively small way as he has only 2,500 sheep. I found that he had extensive Tussac paddocks wherever the plant would flourish, that he had judiciously fenced off the land into small sections … and that he has clipped a heavier than average fleece than any farmer in the Falklands.[74]

The comparison of West Point with other farms is not a fair one. West Point, in company with other small island farms has certain advantages; the abundance of coastal Tussac Grass, and also that fact that the soil in some of the small islands, in West Falkland, is generally more fertile. There is also a widespread popular belief that when sheep have access to beaches they benefit from the availability of trace elements in the kelp. Farms on the smaller islands had easier access to Tussac Grass and the shoreline. There were examples of good sheep farm management on the large farms. The innovative work of R C Pole-Evans at Port Howard was commended by a number of Governors. Despite these examples of good farming practice Bernhardson's overall conclusion that 'careless

[73] The lack of awareness about the consequences of burning in the Colony can be traced back to the comments made by Governor Moody in 1842. See: CO399/2; *Colonial Office Outward Letter book; 1841-1853*; Colonial Office Records; Public Record Office; Kew; 1842.
[74] G9; Falkland Islands Government Archive; Governor Allardyce; Despatch to Colonial Office; 2 September 1909.

management and overstocking had caused serious environmental degradation'[75] is hard to dispute.

It should be noted, at this point, that a former Managing Director of the Falkland Islands Company - Frank Mitchell - has challenged Bernhardson's conclusions:

> The appointment of the New Zealander W. Wickham Bertrand, in 1868, as Camp Manager by the Falkland Islands Company was the turning point for the sheep farming industry. His appointment led to the eradication of scab - at least on Falkland Islands Company land. With the elimination of the wild cattle, despite Government protestations, and the introduction of sound breeding and stocking policies, the Company's flock rose to over 200,000. It is a slur on the Company and people like the Finlaysons and McCalls to imply that they were not energetic or resourceful … the reduction in sheep flocks from 214,000 to 170,000 was a conscious decision by the Falkland Islands Company. The pastures were deemed not to be able to carry more … the consequences of current overstocking (as the result of recent sub-division) are already becoming apparent … It will be interesting to examine the ecological effects of sub-division in ten years time.[76]

Mitchell misunderstands Bernhardson's conclusions. He is not suggesting that the early farmers were lacking in energy or resourcefulness. What Bernhardson does say is that the results of their hard work, and management methods they used, has proved, in the long-term, to have had serious detrimental effects on the grasslands of the Islands.

In its trenchant defence against some of the conclusions contained in the Shackleton Report of 1976 (the conclusions of the Report are very similar to those of Bernhardson) the Falkland Islands Company stated that it:

---

[75] Bernhardson, W; (1989); op.cit.; p 436.

[76] The Falkland Islands Company reply to the 1976 *Shackleton Report*; Falkland Islands Company Archive at Bishops Stortford; (drafted by F C Mitchell, Managing Director of FIC).

> Did not accept that mismanagement and lack of understanding were generally responsible for the fall in production potential, where it has occurred. We do not deny that it has occurred in some areas, but we have evidence showing that vigorous and enlightened efforts failed to arrest it.[77]

Some of the decline of natural pasturage and habitat can also be seen as being the direct result of the monocultural production of a highly valued international commodity - *i.e.* wool in a small island environment.[78] There are other examples of this phenomenon from other parts of the British Empire. Rubber production in Malaya, Tea in Ceylon, Sugar cane and Bananas in the Caribbean Islands and Coffee production in Kenya, all produced large profits for UK-based companies, but at considerable environmental cost.

Bernhardson [79] observed that in economic and ecological terms the prosperity and welfare of the Islands at the beginning of the 20th century was very fragile. The major challenges that the Colony faced were the fluctuations of the world price of wool, and the also the declining quality of the natural environment which threatened sheep stocking levels. By the beginning of the 20th century farmers had become aware that there was a problem which had to be faced collectively. There was general agreement that the pastures and stocking rates were declining, but there was no similar agreement as to the solution to the problem.

One of the first casualties of this lack of agreement about what do about the declining quality of the pasturage was the Upland Goose (*Chloephaga picta leucoptera*) whose grazing habits competed with the sheep for the most succulent grasses. What was caused in reality by overgrazing and poor management found a convenient scapegoat in the Upland Goose. Legislation

[77] The Falkland Islands Company reply to the 1976 *Shackleton Report*.
[78] Kerr, J; (2002) *Environmental and management factors affecting the sustainability of native pastures under sheep grazing in the Falkland Islands*; Ph.D. Thesis; Faculty of Agriculture and Food Sciences, the Queen's University of Belfast; (Kerr's researches show that a number of native species of grass (*e.g.* Mountain Bluegrass, Annual Meadow Grass, Small Fern, Christmas Bush become significantly less abundant after only five years of grazing).
[79] Bernhardson, W; (1989); op.cit.; p486ff.

was enacted to permit the Upland Goose to be culled. A bounty was paid for the beaks of the unfortunate goose, and 'despite the lack of reliable data over their impact on Falklands pasture over 500,000 Upland Geese were destroyed between 1905 and 1912.'[80]

Questions have been asked about the practice of culling Upland Geese as recently as 1976.[81] It is at least arguable that the growth in the population of Upland Geese is a symptom of the problem of the deteriorating grassland rather than the cause of it. In a pers. comm. with Bernhardson, W W Blake, a former manager of Hill Cove farm, suggested that sheep farming was the primary cause of the increase in the populations of the Upland Goose because it encouraged short green grasses to flourish where sheep graze heavily. Blake knew better than anyone about the scale of the problem of Upland Geese grazing newly sown grasslands, but the deleterious effect of Upland Geese grazing does make the farmer's antagonism towards the birds understandable.

World War I provided a brief respite from the financial consequences of the decline in the biological productivity of the Falkland's grasslands; wool prices were high and this provided substantial profits. But after the end of the War wool prices began to fall again, and there was considerable alarm in the Colony amongst both the farming community and the Government. A series of independent Reports were commissioned by the Islands Government between 1924 and 1971. An outline of these Reports and the reaction to their conclusions and recommendations now follows. Many of the sensible and practical recommendations contained within the following Reports were 'shelved' and were rarely acted upon.

[80] Bernhardson, W; (1989); op.cit.; p495.
[81] Harradine, J; (1976) Geese in the Falkland Islands; *The Falkland Islands Journal*; pp.5-16.

6. 1924 The Munro Report – an opportunity missed

> Falklands husbandry compared poorly with that in Patagonia. One observer in the mid-1920s reports almost no progress in the previous 30 years; farming methods were half a century behind the Coast.[82]

Both Governor Middleton and a number of the leading farmers in the Colony shared this gloomy assessment of the state of the main industry of the Islands in the 1920s.[83] The Governor made an historic speech to Legislative Council on 23 July 1924 on the state of the sheep farming industry. Middleton's speech revealed both his extensive knowledge and his deep concern for those working within the industry. ("I have made it my duty to collect such information as I could") The speech outlined the problems of the deteriorating quality of the grassland (and the subsequent decline in the aggregate number of sheep carried). The Governor was particularly concerned with the economic disposal of surplus sheep, and he considered that the requirement for the establishment of a refrigeration factory to be most urgent. Another major concern of the Governor was the need for the farming industry to cooperate in the marketing of its products.

As a result of the speech the Islands Government sponsored a major investigation by a Senior Stock Inspector from the Department of Agriculture in New Zealand. Hugh Munro's Report was published in 1924 and it was the first truly systematic examination of the condition of the natural resources of the Falklands, and how they might be more effectively managed and exploited.[84] In the event, the failure to implement many of the Munro Report's recommendations had considerable long-term effects on the Islands.

---

[82] Bernhardson, W; (1989); op.cit.; p498.

[83] The Falkland Islands Company had expressed its concerns about the crisis in the sheep farming industry as early as 1921. See: CS819/21 *Representation by Falkland Islands Company regarding crisis in sheep farming industry*; Falkland Islands Government Archive; 7 July 1921.

[84] Munro, H; (1924) *Investigation into the conditions and practice of sheep farming in the Falkland Islands*; London: HMSO.

In the years prior to Hugh Munro's arrival in the Islands, R C Pole-Evans, the Manager of Port Howard made a number of observations about the state of Islands sheep farming, and the general deterioration of the pastures. These comments were very similar to those that would be made by Munro. However Pole-Evans' solutions were very different; he supported regular burning of whitegrass and he believed that the land would be improved by concentrating stock in certain areas of land. He did acknowledge that after poor lambing of the stud flock the lack of 'feed may have something to do with it.'[85] In 1924 Pole-Evans applied to Governor Middleton for permission to import between 1,000 and 4,000 sheep from the South American mainland. In December 1925 Pole-Evans wrote to the Governor detailing the improvements which the imported sheep had brought to his farm. Lambing averages were considerably higher. 'This I know that they have paid us and also we would have been very much in the soup this year with the rotten lambing had we not had them.'[86]

To accompany the Munro Report, Governor Middleton wrote a long and comprehensive memorandum on the sheep farming industry of the Islands. This memorandum recalls that thirty years before Munro's investigations another much shorter Report had been written - also by a New Zealand Stock Inspector John Mowat. [87] This early Report prefigures many of Munro's conclusions. John Mowat's Report [88] is significant because of its early date, and also because it shows that within a few years of human settlement and farming, serious problems began to emerge for both sheep farming and the environment:

> Sheep farming in the Falkland Islands has not progressed with the times, possibly owing to its isolated position and the smallness of the area. The sheep farmers are not in most cases alive to their own interests - the sheep are not well bred … there seems to be an idea that the more sheep there are on the ground the more wool will be clipped, such an idea is a

[85] Bernhardson, W; (1989); op.cit.; p509.
[86] CS140/24; Falkland Islands Government Archive; Pole-Evans, R C to Middleton, J (Governor). 30 December 1925.
[87] Mowat's appointment with the Falkland Islands Government as Stock Inspector was for three years. He arrived in the Islands in September 1895.
[88] CO78/164; Colonial Office Records; Public Record Office; Kew; 1923 (Mowat, J T; *Report of Chief Inspector of Stock*; 29 December 1895).

> fallacy. Sheep farmers have suffered from general practical management that is generally speaking poor in comparison with the system in vogue in the Australian Colonies. I consider the great want here is more sub-dividing fencing, which would at once increase the sheep carrying capacity of the Islands. Much might be done in many places towards improving the feed by grass sowing especially on the islands.[89]

In correspondence to a New Zealand newspaper Mowat stated that:

> There is still some of the old Falkland Island tussock left; on the small islands, where the stock have been unable to get at it, it still flourishes. Cattle and horses fatten very quickly when they are placed on these tussock islands, but they are never allowed to remain there too long or they would soon destroy the plants, as they eat the roots as readily as the vegetation.[90]

Mowat is particularly scathing about the quality of sheep, and their husbandry:

> The class of sheep here is not what they should be on such fine country. This owing mainly to ignorance on the part of the owners, and their placing too much reliance on the Scotch shepherds, with which the island is overstocked … Everything is done in a slip-shod, slovenly manner.[91]

Not all farms in the Colony are criticised by Mowat:

> The Falkland Islands Company are the largest owners here, they have 200,000 sheep, in my idea, the best flock in the Colony … Robert Blake

[89] Middleton, J; (1924) *Memorandum on the Sheep Farming Industry in the Falkland Islands*; London: HMSO; quoting the words of John Mowat 29 December 1895; pp.19-20.
[90] Correspondence to the Marlborough Express dated 14 April and 15 April 1896, and reprinted in the *Falkland Islands Journal* 1970; p35.
[91] ibid.; p35.

> is spoken of as the model farmer of the Colony; he is no doubt a practical man, and has a very creditable flock.[92]

In company with the thinking of their time neither Mowat nor Munro challenged the assumptions which lie behind the open ranching style of monocultural sheep farming. They sought to improve farming efficiency, and the natural environment must be made to serve the aim of producing a better-managed sheep farming industry. Thus Munro deals ruthlessly with any perceived competitors to sheep, *e.g.* Upland Geese and birds of prey:

> I am of the opinion that a substantial reduction in the number of wild geese is highly desirable from its present numbers … They are a pest and they should be treated as such. I suggest that the money which the Government is at present paying for the destruction of wild geese would be more advantageously expended on experimental work, and that in place of continuing the present system, legislation should be enacted providing that farmers must destroy wild geese on their land to the satisfaction of the Chief Inspector of Stock … I recommend that experiments be carried out with a view to destroying geese with poisoned grain. [93]

For Munro, birds of prey should fare little better: 'I am of the opinion that Government could substantially increase the royalty for destroying them with great advantage.'[94]

What the Munro Report does show quite clearly are the practical difficulties of establishing agricultural reform on the Islands, and how the needs of these reforms can be balanced with the needs of the environment. Much has been written on this subject since the Munro Report, but in large measure subsequent reports are only reiteration of Munro's conclusions.

[92] ibid.; p35.
[93] Munro, H; (1924); op.cit.; p43.
[94] ibid.; p43.

The Munro Report begins by stressing the importance of indigenous plants and that:

> Not withstanding the importance of the subject and the accumulated experience of nearly 70 years, which should be available regarding it, great diversity of opinion still exists on essential points in connection with pasture management among capable men who are in charge of various stations.[95]

The Report stated that there was:

> Very great damage done by over stocking and the uncontrolled burning of grass. The process of decay has been so gradual, and spread over such a long period, that serious concern has only arisen in recent years.[96]

Munro stated that overstocking is probably the easiest error of judgement to commit and that such practice reduces the overall carrying capacity of the land. As regards Tussac Grass Munro's words are stark and to the point:

> In view of the fact that this [Tussac] can probably be classed as one of the most nutritious grasses in the world, it is quite remarkable to see it so much neglected in a country where nutritious vegetation of any kind is all too scarce.[97]

Munro asserts that it is clear that the Islands had been overstocked for least thirty years prior to his arrival in the Colony. Whil-e some areas of land had been well managed, it was unfortunate that the best land in the Islands has suffered the greatest damage from burning and overstocking. The consequence of the degradation of native grasses was their replacement with inferior vegetation such as Diddle-Dee. Munro deplores the damage caused by the retention of useless old sheep.

[95] ibid.; p7.
[96] ibid.; p8.
[97] ibid.; p8.

The Report clearly outlines the damage caused by burning and Munro concluded:

> It is not suggested that burning is wholly bad on all classes of country or that it should be prohibited entirely. There are no doubt occasions when coarse vegetation on wet camp reaches a stage when burning is justified; but it should be confined to wet camp and resorted to even there only when considered essential and under the most favourable conditions.[98]

and:

> The burning of dry camp destroys the roots of the grass, and this in turn damages the surface soil. This eventually reduces the fertility of the land to such an extent that it will no longer produce grass until fresh soil is brought to the surface by the plough. 'The evil of burning this class of land (dry camp) does not end with the damage that is directly due to the fire, for the reason that stock crowd on to burned areas and graze the succulent young grass so hard, that further extensive damage is due to this factor.[99]

Munro stated that the most effective method of improving the situation was a three-fold combination of greater sub-division of the land, the reduction of the number of stock carried and a greatly restricted grass-burning regime. Greater sub-division of paddocks would allow a better rotational system of grazing. Munro suggested that the use of lime and clovers would increase the quality of animal fodder. A letter to Governor Middleton, Robert Blake (Senior), who had already introduced similar farming practices at Hill Cove confirms Munro's analysis: 'Both paddocks are good, and according to what Mr Munro said; they should be better next year. My observations and experiments made in England agree with Mr Munro's forecast.'[100]

---

[98] ibid.; p13.
[99] ibid.; p12.
[100] CS92/26; Falkland Islands Government Archive; Blake, R; letter to Governor Middleton; 10 February 1926.

With regard to the use of cattle in land management Munro advises that:

> It would be very beneficial to pastures to carry many more cattle than is done at present, more particularly on properties which are sub-divided into areas which will enable them to be used to the best advantage as scavengers to clean up the coarse vegetation as well as for the purpose of consolidating the surface soil.[101]

The reasons for high level of mortality of young sheep is outlined; Munro contends that the main reason is the exhaustion of the pastures, and the poor nutritional value of the remaining vegetation. There are natural deficiencies in the soil, but this can be compensated for by the provision, in the sheep paddocks, of rock-salt Blocks called 'sheep licks.' Munro criticises the rough handling of the sheep by some shepherds, and the failure of some farms to reduce the mortality of sheep by the bridging of creeks and ditches. Munro is scathing in his comments about the sheep breeding he observed during his travels in the Islands, and he urges investigation in to the value of several breeds of sheep - especially the Corriedale, Merino, and Romney. Munro warns against the danger of indiscriminate inbreeding.

Munro made detailed comment on the quality of wool that the Islands produced. The quality of the farm maintenance Munro found in many settlements evinces the following comment:

> With very few exceptions, most of the things that matter in the way of permanent improvements on the stations were done by the pioneers of the sheep-farming industry during the period of 1860 and 1890, and those who have been responsible for the welfare of the industry since have not only failed to carry on the work of development at a normal

[101] Munro, H; (1924); op.cit.; p15. These words echo the observations made by J L Waldron, of Port Howard, made fifty years earlier: 'The wild cattle having fed it bare as possible, not nearly so much white grass but a fine grass sprung up in its place.' Coulthard, F., McAdam, E. and McAdam J H (2001) James Lovegrove Waldron - notebook and original diary 1866-1876. *Falkland Islands Journal* vol **7**, p89.

> rate, but they have actually failed - some woefully - to maintain that which was accomplished for them.[102]

One of Munro's most significant recommendations was that an Experimental Farm should be established, as soon as possible in the vicinity of the Green Patch settlement. In order to make it partially self-supporting, a small stud flock of sheep and a herd of stud cattle should be imported and carried on the Experimental Farm. The progeny of these stud animals should be sold and used to raise the standard of quality of the stock in the Colony. This Experimental Farm could also investigate re-grassing methods, the growing of fodder crops, good practice in the management of cattle and sheep, the draining of waterlogged land, and more modern methods of providing shelter for sheep *e.g.* the planting of Gorse (*Ulex europaeus*) hedges and stock-proof fencing. Munro urges that all farms institute a proper system of farm accounting and the keeping of stock records.

Munro's final recommendation is that farmers in the Islands organise themselves into an Association with a view to taking joint decisions about matters of mutual interest.[103]

After eight months in the Islands, Hugh Munro returned to New Zealand. On his way home he met with the Board of the Falkland Islands Company, in London, on 8 January 1925. The Board unanimously resolved to thank Hugh Munro for his work, and also to thank Sir John Middleton for the great interest he had taken in the sheep farming industry. However, the Falkland Islands Company Board of Directors made it quite clear that in their opinion, as far as the Company's farms were concerned, that they rejected Munro's assertion of overstocking being the cause of pasture and stock deterioration. [104]

[102] Munro, H; (1924); op.cit.; p32.
[103] ibid.; p45.
[104] CS638/24; *Stock Commissioner forwards report on the sheep farming industry in the Falkland Islands*; Falkland Islands Government Archive; 4 October 1924.

At a meeting of the Legislative Council on 29 July 1925 it was resolved that: 'The establishment of the Government Experimental Farm, recommended by Mr Hugh Munro in his report … was agreed on the motion of the Hon. G J Felton.'[105] In August 1925 the Experimental Farm was established at Lot 5 on the Port Louis Farm. In October 1925 Legislative Council voted £17,000 to provide funds to establish the Experimental Farm. However it soon became clear that the money allocated was insufficient to fund the project.

The Colonial Secretary wrote on 10 March 1927 to the Colonial Office to express his concerns about the future of the Experimental Farm and under-funding of the project. The original financial provision was insufficient. The Colonial Secretary wrote: 'It is apparent that certain of the objectives to be achieved by the Experimental Farm cannot be attempted unless a considerable increase in expenditure is authorised.' The Colonial Secretary described the newly arrived Farm Manager Arthur Ashworth as 'a hardworking and practical man, with enthusiasm, energy and sound common-sense.' [106]

After several illustrations of the practical problems involved in establishing the project he commented:

> It is indeed hard to exaggerate the obstacles which have to be surmounted in this connection and the magnitude of the task is very well illustrated by the fact that that every effort was made without success to let the construction of the house out to contract in accordance with the original intention. Possible contractors are but few, they have informed me personally that they have sufficient work to keep them occupied for several years, whilst in any case they are averse to undertaking work away from Stanley.[107]

[105] Miller, S [Junior] (1976); Anson - The Government Experimental Farm 1926-8; *The Falkland Islands Journal*; p11.
[106] CO78/175/15; Colonial Office Records; Public Record Office; Kew; 1927.
[107] CO78/175/15; Colonial Office Records; Public Record Office; Kew; 1927.

The state of the existing fences and further fencing costs appear to have been a major problem:

> The majority of the existing fences in the Colony are barely capable of holding sheep and much less cattle. Mr Ashworth maintains that reliable fencing is an essential foundation of all experiments in sheep breeding and improvement of pastures.[108]

The centre of the farm was established 5.6km away from the landing jetty, thus: 'transport of materials over this distance of rough country, with no road, has entailed considerable labour with consequent heavy expenditure.' With the benefit of hindsight - given the transportation difficulties, which existed, in the Islands at that stage in its development - the decision to site the farm so far from the coast was a mistake. After detailing a host of unforeseen incidental expenditures the Colonial Secretary commented:

> I am bound to share the view strongly expressed by the Farm Manager (Ashworth) in this connection that rather than starve the Farm of the means of operation it would be better not to proceed further with its establishment.[109]

A revised estimate of £24,000 was proposed, and on 4 April 1927 Legislative Council voted for the extra funds required. It is also clear from the Colonial Secretary's Despatch that under-funding was not the only problem. There was also considerable opposition to the project by some established farmers.

Following receipt of the Colonial Secretary's Despatch the order for 2 Ayrshire heifers was cancelled, and this decision undermined a key element of the Munro plan to improve the pasturage by carrying more cattle. However the stud flock sheep were imported from New Zealand.

[108] CO78/175/15; Colonial Office Records; Public Record Office; Kew; 1927.
[109] CO78/175/15; Colonial Office Records; Public Record Office; Kew; 1927.

With the arrival of a new Governor - Sir Arnold Hodson - the Experimental Farm came under critical and unfriendly scrutiny. Hodson was much less predisposed to the Experimental Farm as was his predecessor. The consequences of the change in Governor and the lack of continuity of policy had serious long-term consequences for the farming industry.

On 22 July 1927 the new Governor sent a confidential telegram to the Colonial Office which stated that:

> A grave error of judgement has been made throughout in the conception and establishment of the Experimental Farm … My predecessor therefore seems to me to have reached entirely the wrong conclusion in his estimate of the position and to have been encouraged in his error by Councillors equally ill advised … During a recent tour of East Falkland I have been much struck by the prosperity of the local sheep farm industry and I am unable to appreciate the necessity for the establishment of an experimental farm … Farmers themselves have taken measures indicated for recovery of pasture by reduction of numbers carried … There is apparently a complete reversal of feeling in this matter … it is difficult to see what benefit will accrue … there will be a heavy recurrent burden on revenue without useful purpose served. Submit therefore the farm should be closed down forthwith … Members of the Council at present in the Colony concur and I would suggest that you may think it fit to consult Bonner and Felton who are in the United Kingdom. [110]

In a later letter Sir Arnold Hodson sums up his general attitude to matters concerning agricultural advisors thus: 'practical men do not require to be taught their own business.'[111] Hodson's failure to understand the concept of the Experimental Farm is clearly seen in this remark. The whole ethos of the Experimental Farm, as envisaged by Munro, was that it would be the place where practical animal husbandry and farm management could be

[110] CO78/180/15; Colonial Office Records; Public Record Office; Kew; 1927.
[111] CO78/180/15; Colonial Office Records; Public Record Office; Kew; 28 February 1928.

demonstrated, and not that it should be a didactic, theoretical or academic institution. Hodson was mistaken because he failed to appreciate that the 'practical men' of the Islands did need help.

However despite the Governor's upbeat remarks, the condition of Islands farming had not, in fact, improved, but rather had continued to deteriorate. Lambing percentages were still falling (averages below 52%) A simple reduction of sheep numbers (as some farmers had done) was not the answer - the pastures would not be improved by this method alone.

In a private and confidential letter to Colonial Office the Colonial Secretary (Colonel A E Beattie) made his own view known about the new Governor's opinions. Beattie heavily criticised the attitudes and opinions of both the Governor and the leading local farmers. Beattie also criticises the Governor's compliance with the additional suggestion, made by some local farmers, that the post of Chief Inspector of Stock, and the Stock Department, be abolished. Beattie agreed that the current holder of the post was very unsatisfactory - but that the *position* was an 'absolute necessity.' The cause of the Governor's concern about the Stock Inspector and the Stock Department was an outbreak of dog distemper, for which the Governor held the Stock Inspector responsible.[112] The Colonial Office was astonished by the Governor's opinions and its reply to Hodson's view that a Stock Inspector was a 'useless extravagance' was swift and to the point: 'Your view … if accepted would justify the abolition of every Agricultural Department in the Empire.'[113]

A leading farmer (George Bonner) from San Carlos Farm, was consulted by the Colonial Office and Bonner stated that he thought that Sir Arnold Hodson was wrong to suggest that the Experimental Farm be closed down. He was concerned about the cost of the project, but he thought that the project should be given a fair trial. Not to be deterred by these opinions, in October 1927, the

[112] CS366/27; *Suggested closure of Stock Department*; Falkland Islands Government Archive; 1927.
[113] CO78/180/15; Colonial Office Records; Public Record Office; Kew; 1927.

Governor telegraphed the Colonial Office again requesting permission to close down the farm.

On 25 November 1927 the Manager of the Experimental Farm sent Governor Hodson an account of the results of the lambing experiments at the Experimental Farm. The Colonial Secretary wrote on 10 December 1927: 'I am to say that it is with regret that His Excellency has learnt of the very poor percentage of lambs obtained from the imported ewes.'[114] These discouraging words hastened the Manager's decision to leave the Experimental Farm.

On 23 December 1927 the Colonial Office declined to accede to another request by the Governor's to close down the Experimental Farm, but the Farm Manager left the Islands within a few months after the arrival of Sir Arnold Hodson. The Governor requested again on January 1928 that the Experimental Farm should be closed down and on 16 March 1928 the Colonial Office agreed to the Governor's request. The Experimental Farm was closed down shortly thereafter. The Farm, its livestock, buildings and implements were quickly sold by public auction. One of Hodson's successors - Sir Miles Clifford - commented later:

> At least six have spoken to me of the futility of closing it down before it had been given a chance to show its worth, and it was undoubtedly one of the more mischievous of the late Sir. A Hodson's activities.[115]

An Islands historian - Sydney Miller (Junior) - regarded the closure of the Experimental Farm as a disaster for the Islands and he pointedly observed that:

> Sir Arnold Hodson, in no way a farmer, had, at the time of writing his very outspoken views to the Colonial Office had been in the Colony less than eight months.[116]

---

[114] CS60/1927; *Livestock* (*Experimental Farm*) *Sheep imported from New Zealand*; Falkland Islands Government Archive; 8 February 1927.
[115] Hand-written comments by Governor Sir Miles Clifford on copy of the Gibbs Report in the Government Archives in Stanley.
[116] Miller, S [Junior](1976); Anson - The Government Experimental Farm 1926-8; *The Falkland Islands Journal*; p14.

and:

> Since those unhappy days, forty-one years were to pass until the British Government sent out an Agricultural Investigation Team under Mr Tom Davies … which has produced our Grasslands Trials Unit (GTU) … so Sir John Middleton's ideas and schemes of the early 1920s are coming to pass after a gap of fifty years.[117]

Within one year of the demise of the Experimental Farm Sir Arnold Hodson was asking the Colonial Office to fund work by the Rowett Research Institute - and in particular that the Institute should supply experimental officer.

Sir Arnold Hodson made a half-hearted attempt to redeem the situation by despatching Mr Faithful, the farmhand at the former Experimental Farm to visit two sheep stations to give advice to the Farm Managers about grass seeding. The scientific rigour of these experimental plots can be judged from the remark that 'Unfortunately Mr Evans (the Farm Manager) did not know what quantity of seed and fertiliser were used in the Experimental Plots, but sowing must have been extremely heavy.'[118] Faithful continued to provide rudimentary advice throughout 1928; he visited a number of farms on West Falkland Island, recommending a number of harrowing and ploughing methods.[119]

Meanwhile the numbers of sheep stocked and lambing continued to steadily decline. Initially the true financial consequences of this decline were masked because of high wool prices on the world market. But by 1932 a slump in wool prices placed the Colony's economy in difficulties, and the farmers lobbied for exemption from export tax.

The Munro Report and the story of the Experimental Farm provide a good example of the difficulties of establishing agricultural reform on the Islands. The problem of a lack of continuity of leadership in the Islands is well illustrated by the fact that after a six-year tenure of office by an experienced

[117] ibid.; p16.
[118] CO78/181/8; Colonial Office Records; Public Record Office; Kew; 1928.
[119] CS328/28; Falkland Islands Government Archive; 13 August 1928.

Governor (Middleton) - who was very knowledgeable about sheep farming - a new Governor (Hodson) arrived in the Colony with very limited knowledge and experience of sheep farming. The new Governor dismissed the work of his predecessor after a superficial tour of East Falkland during the wintertime. Hodson was also unable to withstand the pressure brought to bear on him by some conservative elements of the farming community.

The consequences of the change in personalities at Government House, in 1927, exacerbated the situation which already existed in the Colony. A number of factors combined to cause the failure of the Experimental Farm. They include:

- The innate suspicion of some residents of the Colony towards so-called 'experts' and the reports which they produce.

- The tendency in the Islands Government to underestimate the full costs of development projects.

- Local rivalries and personalities.

- The entrenched opinions of tough individualists who live in a frontier-style environment and culture.

Despite the failure to implement fully the Munro Report another opportunity for significant agrarian reform came ten years later with the initiative of a new Governor and the report of William Davies.

7. The Davies Report – a Governor Thwarted

During the period directly after the Munro Report there was a brief renaissance in the economic and farming life of the Islands. Wool prices improved towards the end of the twenties, and considerable efforts were made by some farmers to improve their husbandry and farm management *e.g.* at Port Howard grassland burning was restricted to wet camp, gorse hedges for shelter were planted, and ploughing for reseeding took place. At Hill Cove the shelter belts of Southern Beech and Scots Pine trees, which had been planted at the beginning of the century by Robert Blake (Senior), were extended. Also at Hill Cove ploughing and seeding of oats, rye grass, meadow grass and turnips was done on an experimental basis. Despite these initiatives an indicator that the fundamental problems remained can be seen during the 1933 Centenary celebrations. During the festivities an agricultural show was held. A sheep judge had been brought over from the mainland of South America to judge the stock. Tom Norris, from Buenos Aires wrote a report at the end of his brief visit [120] within which he heavily criticised the resistance to change, which he detected in the Islands. The response of the farmers to Norris' remarks was dismissive. The Colonial Manager of the Falkland Islands Company (L W H Young) wrote:

> Mr Norris has not realised the difficulties of sheep farming in a cold and erratic climate on very poor land and no comparison is possible with farming known by him in Australia, the Rio Negro and Southern Argentina.[121]

The economic effects of the Great Depression and the continuing decline of total sheep numbers and lambing averages on Falkland farms brought about another cycle - of concern, followed by research and finally report writing - in the period directly before the outbreak of World War II.

---

[120] CSO/105/33; Falkland Islands Government Archive; Norris, T; (1933) *Some Falkland Islands problems, from notes made during a visit February 12th to March 3rd 1933*; Stanley: Falkland Islands Government.

[121] CSO/105/33; Falkland Islands Government Archives; Young, L W H; letter; 2 September 1933.

On the 7 May 1935 a Conference of farmers was held at Government House who resolved that the Government should secure the services of a stock advisor from New Zealand. Governor Henniker-Heaton wrote to the Secretary of State for the Colonies on 19 June 1935 some candid words:

> The present position of the sheep-farming industry of the Falkland Islands, on the prosperity of which, as you are aware the Colony is almost entirely dependent is such as to cause serious concern. I would explain that the slow progress of the industry and the backward condition of many farms in this Colony, whose sole dependence is wool growing, is attributable largely to the failure of Government in the past to allocate funds except at brief and rare intervals for the assistance and instruction of farmers in modern methods and in research and development.[122]

On 22 April 1936 the Governor informed the farmers community that the New Zealand Government had agreed to the secondment of David Weir, from the New Zealand Department of Agriculture, for three years, to advise on matters concerning the sheep farming industry of the Islands. Weir had served 15 years as a Senior Inspector of Stock prior to coming to the Islands, and he was considered to be a highly capable officer, with a special interest in animal husbandry.[123] Weir very soon came to the conclusion that the closure of the Experimental Farm had been a major blunder, and he was asked by the Colonial Secretary to state his opinions:

> I am still of the opinion that the re-establishment of an experimental farm would be in the best interests of the Colony. Some assurance would however be necessary in the event of re-establishment that a fair trial would be given in order to prevent any future arrangements meeting the same fate as the Experimental Farm at Green Patch.[124]

---

[122] CS155/35 Falkland Islands Government Archive; Despatch No.84; 15 June 1935.
[123] CS155/35; Falkland Islands Government Archive; Despatch No.223; 29 November 1935.
[124] CS230/36; Falkland Islands Government Archive; 1936; Minute by Weir, D; dated 12 April 1937.

The Governor agreed with Weir, but concluded that no further action was possible until the research work on grasslands improvement had been completed. While Weir was in the Islands the Governor took every opportunity to promote fresh thinking and innovation. He encouraged Weir to produce, in conjunction with Tom Beaty the Stock Inspector, a series of practical *Notes for Farmers* on a variety of topics. The intention was that these *Notes* should be published monthly. One topic discussed was the production of silage, with an outline of the main causes of previous failures in the Colony.[125] The Governor convened a Farmers Conference in May 1937 at which he gave the keynote address and David Weir was the chairman.[126] Many issues concerning animal husbandry and land improvement were discussed, and at the conclusion of the conference Norman Keith Cameron commented that 'members were fortunate in having Mr Weir as head of the Agricultural Department.'[127]

On 20 November 1937 William Davies, the Senior Grassland Investigator of the Welsh Plant Breeding Station, arrived in the Falklands at the invitation of some of the farm managers and with the support of the Governor. The invitation came as a response to the worsening economic situation. Davies' report was primarily concerned with the improvement of the grassland pasturage, and although it did not contain as much animal husbandry advice as in the Munro Report, Davies reiterates many of Munro's conclusions and recommendations.

In the opening chapter of the Report Davies stated the problem succinctly; he begins at the same point as Munro - with the decline in the number of sheep carried.

> The decline in wool production is no less serious, for while the reduction in the number of sheep from 1908 to 1938 represents a fall of 14.7%, the wool export is down by 15.6% over the same period … These figures when considered as a whole clearly show that gross production of wool

[125] CS69/37; *Brief notes on economical flock improvement for circulation to farmers*; Falkland Islands Government Archive; 1937.
[126] CS83/37; *Farmer's Conferences*; Falkland Islands Government Archive; 1937.
[127] CS83/37; *Farmer's Conferences*; Falkland Islands Government Archive; 1937.

> has declined in a more or less progressive manner, and this notwithstanding that during the 1908-1938 period considerable efforts have been made to improve the stock by importation of rams from overseas.[128]

There are two key elements in the Davies Report:

> (i) The substitution of native grassland species with introduced plants which are more beneficial for livestock.

This conclusion of Davies has proved to be very influential in the subsequent history of agricultural research and development of the Falklands. Recent research carried out in the Falklands sought to find suitable legume plants for widespread introduction. Davies acknowledges the value of some native grassland species - especially Tussac, but he concluded that, on the whole, the low nutritive value of the native species indicates that they should be replaced by introduced species whenever possible.

> (ii) A significant increase in closer field sub-division.

The Davies Report challenges directly the basis on which the whole of the Islands farming industry had been based since its inception, *i.e.* open range, large scale ranching. For Davies all the potential for improvement would remain untapped until the existing paddocks are sub-divided. Unless this occurred the decline in sheep numbers would continue. Although Davies concedes that many owners and farmers took the opposite view to his own, he nevertheless contended that:

> All the evidence suggests that pasture deterioration will take place progressively the more rapidly in proportion, as the stock carried becomes less. The hope of the industry lies in increased production and in carrying an ever-increasing head of stock.[129]

[128] Davies, W; (1939); *The Grasslands of the Falkland Islands*; London: HMSO; p4.
[129] ibid.; p57.

At first sight this opinion seems to directly contradict the advice given by Mowat and Munro. But, in fact, what Davies was not arguing for was overstocking; rather he wanted large flocks on smaller - sub-divided - camps, and where the sheep were more frequently moved to new camps. For Davies, as a grasslands specialist, the only way that the increased sheep population could be achieved is by creating much smaller fields and by the introduction of better grazing management. Simply running fewer sheep on the existing large camps would improve nothing - in fact they would continue to deteriorate.

Davies shared Munro's concerns about the widespread practice of grassland burning, and although Davies acknowledges the damage done by burning in the past, his advice is framed within his general conclusion of the importance of introducing white clover. He also considered that other legumes might be successfully introduced into the Islands, *e.g.* Red Clover for hay production and Lotus Major (*Uliginosus*) for swampy areas. Davies observed that the problem of seed setting would have to be faced if white clover was to be spread as rapidly and as widely as possible. Because many perennial clovers are nearly all obligatory cross-fertile (annual clovers are mainly self-fertile), fertilisation is normally done by bees and other insects. Davies concluded that expert advice should be sought from someone qualified in apiculture. Bees are found in Southern Patagonia and Punta Arenas working white clover, and the seed sets and ripens freely.

> These observations are recorded because it is often claimed in the Falklands that bees would not stand up to the wind and weather in general. The prevalence of pollinating bees in Southern Patagonia with its high persistent winds and more rigorous winter climate would seem to imply that bees could be established in the Falklands.[130]

Davies stated that the problem of the introduction of the appropriate bee 'should be relatively simple.' Despite these reassuring comments it is questionable whether the Western Honey Bee (*Apis mellifera*) would ever prosper in the

[130] ibid.; p45.

Islands. The comparison with Southern Patagonia is not an fair one. Patagonia has more shelter and nectar sources available than the Islands. There would probably be sufficient sources of pollen available in the Islands, but it is likely that there would be insufficient nectar sources available for Honey Bee colonies to thrive. In addition Honey Bees will not usually fly in wind speeds which exceed 27km per hour. The average daily wind speed in the Islands' summer regularly exceeds this speed. The various species of Bumble Bee *e.g.* Northern White-tailed Bumble Bee (*Bombus magnus*) [131] might well thrive - particularly with their ability to fly in higher wind speeds and colder temperatures than Honey Bees. As things presently stand, the comparative lack of insect species in the Islands indicates that the pollination and seed setting of plants that require insect pollination is problematic. The introduction of other bees such as the various species of Leafcutter Bee (*Megachile* spp.) from Patagonia might prove to be more successful.

Davies recognised that his work was only a reconnaissance survey, and that more detailed research needed to be done. He proposed that grassland research be carried out under the supervision of the Director of Agriculture. Davies did not under-estimate the difficulties of implementing his proposals about the introduction of new grass species. Testimony to his caution came some years later, in 1956, when one observer noted:

> One has to go down on hands and knees to trace any clover or English grasses remaining on the plots which were sown at the time of the visit of Dr William Davies to the Islands in 1938. But in the paddocks at the settlement some excellent herbage has been established at considerable cost and this is most useful for the small pure-bred flocks where rams are bred. It has been a problem to get clover established and one manager has been enterprising enough to have appropriate bacterial

[131] See: Prŷs-Jones, O and Corbet, S; (1987) *Bumblebees*; Naturalists' Handbook 6; Cambridge University Press; 'Recently a British species, *Bombus ruderatus*, appears to have become established in South America, having been introduced from New Zealand.' p2.

culture flown out from England to treat clover seed before sowing, and the results are promising.[132]

Davies' conclusions are stark:

> The time has arrived when the Falklands must consider very seriously whether the present ranching policy is to continue, or whether a complete change of methods involving a policy of grassland improvement together with a more intensive system of pastoral agriculture is to be put into effect. Continuance of the existing ranching system cannot but lead to a still greater lowering of carrying capacity, and to the decreased wealth of the country as a whole. With a change over in methods and the gradual substitution of a more intensive type of grassland farming the decline in production would cease … sub-division of paddocks, the better management of pastures, and the replacement of the present herbage by better plants are all essentials in the developmental scheme.[133]

Davies' 'root and branch' criticisms of Islands farming methodology initially received a very mixed response - some of it distinctly hostile. Nevertheless the history of the farming industry since the Shackleton Reports of 1976 & 1982 has seen some of the key ideas contained within the Davies Report implemented.

Governor Sir Herbert Henniker-Heaton, made little secret of his support for the work of William Davies. [134] On 13 December 1938 a meeting took place in the Governor's Office between Henniker-Heaton and L W H Young (The Falkland Islands Company Colonial Manager) and Robert Blake (Manager Director of Hill Cove Farm and also a Director of The Falkland Islands Company). The Governor outlined his view that the position was grave, and that it was clear that

[132] Sheep in the Falkland Islands; anon; *The Times Agriculture Review* - Spring 1956; p15.
[133] Davies, W; (1939); op.cit.; p58.
[134] CS252/38; *Report by Mr W Davies on the grasslands of the Falkland Islands*; Falkland Islands Government Archive; 1938.

serious measures would have to be taken to deal with it. Young and Blake expressed their willingness to cooperate with any measure 'for the advancement of the Colony' but that they had 'no faith whatever in any sub-division of the farms.' [135]

With the encouragement of the Governor, the Department of Agriculture attempted to implement some of Davies recommendation in a modest way in the vicinity of Stanley. The Department of Agriculture experimented with a 6000-acre area of poor peat land near Stanley Common. Tussac plantations were weeded 'to promote the growth of this valuable indigenous fodder plant.'[136] Extensive draining of Stanley Common was attempted, and ditches and drains around Government House paddocks were repaired. Large areas of land were dug and sown with oats. All the paddocks were top-dressed with lime. Sod walls (topped with gorse hedges) were built and fences were renewed and extended. Tussac on the foreshore of Government House was cut as winter fodder, and the land around them was weeded and dressed with guano. Consignments of grass seeds were sent to nearly all the farmers for experimental purposes. Fourteen acres of foreshore at Surf Bay were planted with Tussac roots. Three acres of sand grass were planted to stabilise the ridges of the peninsula.[137] Given the straitened financial situation of the Islands directly before World War II this represents a considerable investment in agricultural improvements. Regrettably this scale of effort was restricted to the efforts of the Department of Agriculture, to an area near to Stanley, and to only a few progressive farms in Camp.

When the Davies Report finally reached the Islands in 1939 it was distributed to all sheep farmers and managers, but Governor Henniker-Heaton lamented the

[135] CO78/212/2; Colonial Office Records; Public Record Office; Kew; 1939. See also: C/18/38; Falkland Islands Government Archive; 14 December 1938.
[136] CO78/208/10; Colonial Office Records; Public Record Office; Kew; 1938. see also: Weir, D; (1938) [Agricultural Advisor, Falkland Islands Government]; *General Report*; Stanley: Falkland Islands Government; 23 September 1938.
[137] CO78/208/10; Colonial Office Records; Public Record Office; Kew; 1938.

fact that ‘it received no acknowledgement from any of the large [land] holders.’[138]

The Governor’s enthusiasm for the Davies Report was defeated by a number of factors: the conservatism of some farm managers and owners, the lack of investment capital available at the end of the period of the Great Depression, and the onset of World War II.

Following the outbreak of World War II, sheep numbers rose again, the wool price gradually improved, and directly following the declaration of War wool prices rose to unprecedented heights. After World War II sheep numbers fell again, but wool prices continued to rise - partly as a result of the demands for wool products which resulted from the Korean War. It was not until the wool prices fell sharply in the late 1950s that the next crisis arose.

During the middle of the World War II another Governor, Sir Alan Cardinall, wrote a lengthy Despatch to the Colonial Office, in which he attempted to address the long-term problems of the Islands.

[138] Bernhardson, W; (1989); op.cit.; p527. see also: CS252/38; Falkland Islands Government Archive; Despatch No.52; 15 April 1940; op.cit.

8. 1942 Governor Sir Alan Cardinall's 'Utopian dream'

On 22 February 1942 Governor Sir Alan Cardinall sent a 75 page Despatch [139] to London outlining his proposals for a post-war development programme for the Islands. Cardinall's 50-year plan was strikingly different from all other development plans - it was both radical and visionary.

Cardinall's Despatch is significant for a number of reasons:

- It revealed clearly the frustrations felt by some in the Islands as a result of the failure to respond adequately to the agricultural situation, and to the advice given in both the Munro and Davies reports.
- It also revealed some of the misunderstandings and prejudices found in the Colonial Office with regards to the proper management and development of a distant colony.
- It presages much of the thinking, which is contained within the Shackleton Reports of 1976 & 1982.
- Any major development programme of the scale proposed by Cardinall - albeit concerned with a wide range of issues - would have considerable impact on the natural environment.

Governor Sir Herbert Henniker-Heaton left the Islands in 1941 having been unable to convince the large-scale farming interests in the Islands of the importance of the central tenet of William Davies' work, *i.e.* sub-division of the land into 6,000 acre paddocks. Henniker-Heaton sought a rapid transformation of the situation - but his successor advocated a more patient and long-term approach. Despite this apparent 'gradualist' approach Cardinall's proposals were, in practice, much more radical than anything previously suggested in the Islands' history - so much so they were described in a Colonial Office Minute as 'a Scandinavian-style socialist utopian dream.' It is clear from the comments made in London about Cardinall's plan that the Colonial Office suspected that

[139] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.

the Governor had ‘gone native’. It is also quite certain that the Colonial Office were either unable or unwilling to deal with the philosophical and political basis of Cardinall’s plan. Running throughout Cardinall’s Despatch is his implied criticism of the Colonial Office’s unwillingness to stand-up to the large farming companies or to spend any large amount of development money in the Colony, and its inability to formulate any long-term plan for the Islands - other than the commissioning of yet more surveys and reports.

An insight into the central theme of Cardinall’s philosophy came at the beginning of his Despatch when he quotes a Sudani proverb: ‘To teach boys is to plough good earth, to teach men is to plough rock, and to teach old men is to plough water.’

Cardinall’s plan proposed a significant road building programme, the creation of an Agricultural Institute, and the co-operative tenancy (not ownership) of the land and farms. This aspect of Cardinall’s proposals is an echo of the original conception of land use proposed by Governor Richard Moody in the 1840s.

Cardinall writes: [140]

> Pastoral agriculture, sheep farming is the only industry. In recent years the sheep population has decreased owing to the deterioration of the land due to over-grazing and the destruction of the grass. (paragraphs 4-7).

In the Falklands’ conditions a long-term policy was the only viable one. (paragraph 10) Present farming methods have produced serious deterioration of the land. Smaller fields and better grazing management was required (paragraph 23). Wool is the staple industry. Meat and tallow have been tried without success. The Islands cannot enter the meat market as a mutton producing country (paragraphs 27-37). ‘Wool production cannot be increased as the wool market is near saturation point’ (paragraphs 38-45).

[140] All the material from Cardinall’s 1942 Report comes from CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942; source material concerning Cardinall’s specific proposals, quoted from the Report, are indicated by the paragraph numbers of the Report.

There are no roads at present except around Port Stanley. The only road communication is by horse tracks. 'What is required is a road from east to west across the East Falkland. No proper survey exists to indicate the route' (paragraphs 47-50). Complementary to the road plan is a regular inter-island (*i.e.* between the main islands of East and West Falkland) shipping service. This would run from the terminus at the new township site on Falkland Sound to West Falkland, *e.g.* Fox Bay (paragraphs 55-60). Cardinall states that an air Service had been first considered in 1938, but it was thought too costly. The Governor considers that funds should be raised for the maintenance of two aircraft (paragraph 63).

> The establishment of a road system would shift the commercial centre of the Falkland Islands to East Falkland Sound, which would result in freight savings, and which would expose the present dominant position of the Falkland Islands Company. Hence opposition is to be expected from this Company. (paragraphs 78-84).

Stanley itself would, however, remain the centre of Government and the location of the Naval base (paragraph 85). Commercially the proposed road would hardly justify its cost. Its main justification is long term and social (paragraph 88-89).

The exploitation of other natural resources must be considered: peat (paragraphs 105-105); vegetables for export (paragraphs 106-109); exporting sand for the production of glass (paragraph 110); kelp for iodine and potash (paragraphs 111-113); homespun wool (paragraph 114); guano (paragraph 115); fish (paragraph 116-117). Cardinall evaluated the prospects for a fishing industry; he commented: 'Always too is the pernickety attitude of the Argentine Government, barring that country from any solid chance of exploitation.'[141]

Cardinall considers the problem of the shortage of labour, and increased colonisation would be one solution. But it pre-supposes the disappearance of

[141] It is not clear what exploitation Cardinall had in mind - most likely the exploitation of the fish resources. CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942; op.cit.

large-scale landowners and the development of the small holding system. Labour might be imported, but the real trouble was conservatism of the farmers (paragraphs 118-125). Cardinall dealt at length with the problems of unemployment and the population drift from the camp into the town (paragraphs 129-146).

> The road system is a *sine qua non* of any development. It will encourage immigration, foster rural life by making it more attractive and provide amenities elsewhere than in Stanley (paragraph 146).

and:

> The solutions proposed are co-operative communities on the Danish plan - itself based on sound secondary agricultural education. Education directed towards the wrong objects and a too low leaving age is the cause of a large part of the present discontent with country life. Secondary education directed towards the agricultural life inside a co-operative community might create a contented rural community. (paragraphs 149 & 229-237).

The Despatch considered a possible oil industry; although a Government report in 1922 had suggested that while the prospects were not good, but the possibility of there being oil in the Islands could not be ruled out without exploratory borings (paragraph 151).

Cardinall criticised the proposal of the previous Governor to establish 6,000 acre leasehold holdings:

> 6,000 acre Blocks are too large for sheep farming, too small for sheep ranching. The estimates are too loose to be safe; with these holdings it would not be practicable to ranch or farm sheep (paragraphs 153-170).

'An Agricultural High School and Institute should be established, and should be co-located on the site of the revived Agricultural Experimental Station

abandoned in the 1920s.' The new Experimental Farm and Institute should be established at Albemarle. Boys should go to this Institute from five years until aged nineteen. From nineteen until thirty-five boys should be placed on private farms as highly trained farm labourers. From thirty-five they would set up in small-holdings on the lines of the Danish co-operative system (paragraphs 208-245).

The Governor admits: 'the idea is a vast gamble … But without trial and experiment no progress is possible' (paragraphs 256-257). 'It is unfortunately impossible to predict accurately the cost of these proposals - but a rough estimate is about £500,000' (paragraph 275).

Cardinall was fully aware of the radical nature of his proposals - and the difficulty of dealing with deeply entrenched opinions - both in Stanley and in London.

Cardinall made a number of telling remarks which reveal his attitudes towards sheep farming in the Islands, and his knowledge of the effects of sheep ranching upon the natural environment:

> Sheep farming has everywhere in the world proved to be a drain on the natural resources of the land and a steady exhaustion of agricultural wealth, when carried on by ranching rather than farming methods. Since the introduction of sheep in this Colony, the steady deterioration of the land has been noticed.[142]

The heart of Cardinall's revolutionary plan was revealed when he said: 'I put forward the solution of co-operative communities founded on the Danish plan which itself should be founded on sound secondary agricultural education.'

[142] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.

Cardinall's tackled the vexed subject of the large farming companies head on:

> I definitely do not believe in improving present conditions at Government expense whilst still maintaining the system in existence. This would be nothing more than Government support of large landowners.[143]

Governor Cardinall was well aware that he was open to the criticism that he was being utopian:

> My contention is that farming in any of its forms cannot survive at its best unless it is made so interesting and inspiring that it becomes a hobby and a love. One must keep on the land the intelligent and far-seeing, the progressive and the liberal and not be content with the slow, conservative and the almost unimaginative. If therefore, before counter attractions grow too strong and numerous, one were to teach agriculture, show its beauty, its science, its possibilities, one might so interest him that the go-ahead impatient youth, brimful of ideas and hopes, would look to the land not only as source of livelihood but as that of his life's happiness and content. This is an ideal that perhaps may seem too utopian.[144]

It would be easy to dismiss Cardinall's view of agriculture as romantic idealism, but the following quotation from his Report revealed his deep love of the Islands and its rural way of life.

> If a child is educated through all his school life to see the land as the greatest of all possible spheres of work, to know that his future thereon is assured and that his old age will be cared for, if he can be trained to love the soil as his ancestors used to do, if he can be shown that there is neither monotony or drudgery in working alongside Nature, then surely

[143] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.
[144] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.

> one will succeed in eventually raising here a truly agricultural colony of well-to-do yeomanry.[145]

Cardinall's concluding remarks showed that he also understood both the importance of implementing proposals to create a more a representative form of Government in the Islands, and also the opposition his proposals would face:

> I am fully aware my proposals are highly controversial and are certain to evoke both criticism and opposition … But there is one obvious criticism which the past history of these islands has impressed on all in the Colony, and that is - *can continuity of policy be assured?* If a plan looking fifty years ahead is adopted, continuity must somehow be most certainly guaranteed.[146]

Within the Islands the Governor had his supporters. John Gibbs, the Colony's Agricultural Advisor praised it as 'one of the most comprehensive plans for development ever envisaged for a British Colony.'[147] The Director of Public Works thought that:

> If adopted it would cut the Gordian knot of the Colony's troubles in all its threads … [but] the very boldness and simplicity of the plan will cause its non-acceptance in the UK and the resultant return to the present drift.[148]

Governor Sir Alan Cardinall's *magnum opus* did indeed receive a mixed reaction in London. Over the next three years it was shuffled around several Government departments while a succession of advisors and experts made detailed comments.

---

[145] It is of some significance that at this point in the Despatch a pencilled comment appears in the margin. It was probably added at the Colonial Office in 1945, and is stated that Cardinall's ideas are '[S]oundly conceived if a little Utopian.' CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.
[146] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.
[147] Gibbs, J.G. letter to Governor Sir Alan Cardinall; 10 March 1942; CS 8/42; Falkland Islands Government Archive.
[148] CS8/42; Falkland Islands Government Archive; Woodgate, A, letter to Governor Cardinall; 9 February 1942.

The first Minute dated 28 August 1942 [149] began with apologising for the length of time in dealing with the Despatch because its deals with 'long term matters and there have been more urgent short term questions to be dealt with'. It noted that Sir Herbert Henniker-Heaton's land settlement scheme is dismissed as impracticable, and that Cardinall proposed that:

> A road be built across East Falkland to improve communications with West Falkland; to establish an Agricultural High School combined with an experimental farm to train younger members of the community … to stop the dangerous tendency to become a discontented black-coated class for which the Colony offers no outlets.[150]

> It is noted that the Despatch draws attention to the serious deterioration of the quality of grazing resulting from the present methods of sheep ranching … suggesting a Danish style model of co-operative community to arrest this tendency … It is noted that the Governor admits his policy is a complete gamble, and it is noted that the Governor is most vague on the subject of finance…initial capital outlay of £500k to be financed by Colonial Development loans, doubled income tax and a wool export tax.[151]

The Governor's plans are described as utopian, but it is conceded that he made an adequate case for the road and the establishment of the Agricultural School. The initial response of the Colonial Office was that these proposals should be approved, and that they should be implemented after the end of the War. But the conservative nature of the Colonial Office prevailed:

> It is exceedingly difficult to deal with proposals of this wide sweep, especially as they are all aimed at the unpredictable period 'after the war'. Personally I think we should reply thanking the Governor for his

[149] By Trafford-Smith. CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.
[150] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.
[151] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.

> comprehensive picture approving the road and the school in principle, but remaining deliberately rather vague about the rest. The plain fact is that it would be rather rash to commit any Colony to a 50-year post war programme.[152]

This comment was short-sighted, and the failure to engage in any long-term planning for the Islands, at this point, was a serious mistake.

A Minute from Dr Tempany, on 10 September 1942 [153] noted that although Cardinall had put a great deal of work into the Despatch he did not find the Governor's conclusions very satisfactory. 'It seems to me that what we have got to have in mind in regard to the Falkland Islands is what can be made of the place.'[154]

Tempany noted that the knowledge that is now possessed of the Islands was considerable because of the Davis Report. He cast doubt on the Agricultural School and Experimental Farm ideas until the aims and objectives were much clearer.

The pessimistic analysis of Cardinall about the current wool industry in the Islands was also challenged, but it was conceded that:

> The development of farmsteads should be allowed to associate with the larger properties and that the farmstead owners should be allowed grazing rights on a certain number of larger properties. Alternatively some system of communal grazing rights might be possible.[155]

The Minute also questioned the similarities with Denmark because of the lack of ready-made markets for the produce of a mixed farming model, but it agreed with the plea to establish a road system but 'his ideas are too grandiose …

[152] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.
[153] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.
[154] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.
[155] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.

something simpler might suffice … To start off with a first class motor road seems to be going rather far.'[156]

> Despite Mr Cardinall's enthusiasms I can see no practical substitute for wool … and the idea of breeding bloodstock for export is to my mind doubtfully impracticable if for nothing else the distance kills it whilst it is hard to see how a reputation for such stock could be built from nothing under such circumstances.[157]

Some pencilled comments in the margin at this point are revealing: 'Pole-Evans is said to be selling pedigree stock in South America, but we have no evidence that this is a paying proposition'.

> I do not see why homespun woollens should not be practicable … and it should not be dismissed off-hand. Weaving could certainly be taught in the schools … I do not believe the future of the woollen industry is so hopeless as Mr Cardinall seems to think. If it is really so bad I can see no hope for the Falklands.[158]

The Colonial Office's response to Cardinall's Despatch does show that there is some understanding of the true nature of the problem with the pasturage:

> There are probably inherent possibilities of the establishment of smallholdings on mixed farming lines using suitable crops and suitable rotations … The basis of this would be subsistence agriculture … conjoined with some cash crop … The fundamental problem is the improvement of pastures from the grazing point of view … this can only be done by the re-establishment of an Experimental Station.[159]

In a Minute, dated 18th Sept 1942, J Smith noted:

---

[156] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.
[157] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.
[158] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.

> Although I find much to criticise in this Despatch, I have read it with the greatest interest for it is an attempt to deal with a serious situation. It is of value in giving a picture of the Falklands and its problems … There is any amount of evidence that communications must precede development. That roads are required in the Falklands is evident, but to what extent and what directions is still problematical.[160]

This is clear confirmation that Cardinall had grasped the essential elements required in any rural development, but the old, and entrenched, viewpoints concerning the deleterious effects of ranching still prevailed in the Colonial Office.[161] There was recognition that much more scientific information was required:

> The first step is to engage three first class men; a soil chemist, a general agriculturist and a veterinarian … and allow them to make a careful survey of the islands and report … Steps for re-opening the Experimental Station should at once be taken. The closing down of the station was little short of a tragedy. At the moment we are planning a building without knowing what materials are available. The survey suggested would give all concerned something definite upon which to plan.[162]

In some of the latter comments made upon Cardinall's plan there is clear indication that some of his proposals were regarded as unrealistic.[163]

---

[159] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.
[160] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.
[161] 'There can be no doubt that the deterioration of the flocks has continued over many years and that their condition today is very unsatisfactory … I do not doubt in the slightest that the pastures have deteriorated. The statement of the Governor that when sheep are carried on a ranching basis, exhaustion of land and wealth follows is rather astonishing … if this were true there would be very little mutton and wool available for the markets; these are to a great extent supplied from sheep reared under ranching conditions (*e.g.* New Zealand and Australia).' CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.
[162] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942.
[163] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942. (Minute dated 1 March 1945 by Williams, J).

For nearly four years the Despatch and file did the rounds of various Colonial Office departments and in the end only 30% of the funding requested was provided for roads and education - and the central feature of small holdings based on sheep farming was dismissed as being financially impractical. The cost of the proposals was the major objection, and in the context of the devastated post-war economy of Great Britain 'a distant backwater like the Falkland Islands' was a lower priority than the African colonies. Consequently London rejected road construction and educational reform as presented; the former would incur capital and recurrent expenditure with 'little economic justification', while the latter would only prepare students for emigration without some major improvement in farming methods. London found no grounds for supposing that 'any drastic or immediate modification is possible in the one economic basis of the Islands.'[164]

An experimental station was approved, and it was charged to investigate mixed farming methods and pasturage improvements. Funds were provided to refurbish the Hospital in Stanley and to re-build the Town Hall destroyed by fire in 1944. Stanley's electrical supply system was improved, and funds were provided to improve housing and camp education. This piece-meal response to his proposals deeply disappointed Sir Alan Cardinall because it failed to address the issue of land reform. Bernhardson noted that 'like earlier efforts, Cardinall's plan became an historical curiosity.'[165]

On 3 June 1946 Sir Frank Stockdale made the pointed comment outlining the principle objection to Cardinall's proposals, namely the difficulty of dealing with the Falkland Islands Company, and other companies which were keen to preserve their secure positions in the Colony:

> The Falkland Islands Company is the difficulty, but we must try to carry them with us in reforms. It would be quite impossible to break them except under a system of land nationalisation and that would only replace one monopoly for another, on which it would be just as difficult

[164] Bernhardson, W; 1989; op.cit.; p588.
[165] ibid.; p589.

> for us here in Whitehall to exercise sound economic progress as it is for the Falkland Islands Company to impress progressive ideas into their managers and employees. If we are going into land nationalisation let us gain some experience nearer home rather than attempt it in the Straits of Magellan.[166]

This comment is not a wholly fair assessment of the Falkland Islands Company's position, but it does reflect some of the continual tension that existed between the Colonial Office/Governors and large scale farming interests.

Since the beginning of the 1980s the agricultural scene has altered considerably. There is now a mixed pattern - with some small-holdings, some medium sized owner-occupied farms, some large owner-occupied farms, and a very large area of Government owned farmland.[167]

Shortly after the final reply from London to the Governor, the file and the original Despatch was marked SECRET and was closed until 1972. Cardinall's socialist and co-operative vision remains untried and unproven.

[166] CO78/220/8; Colonial Office Records; Public Record Office; Kew; 1946
[167] Falkland Landholdings Ltd, and consisting of four farms.

9. 1939-1946 John Gibbs – Director of the Department of Agriculture

On the completion of his tenure of office, as Director of Agriculture, John Gibbs wrote a substantial report on his activities during the six years he had worked in the Islands. The contents of the report make it quite clear that he was in support of Governor Cardinall's radical proposals. It is also clear that much of Cardinall's thinking and philosophy found practical expression in the work of the Colony's Director of Agriculture.

The Preface to Gibb's Report is revealing:

> When considering this report I should like the reader to recall that in 1940, when I arrived in the Colony, there was less than two acres of ploughed land within a reasonable distance of Stanley … Ploughing was such an innovation that numbers of the townspeople would stroll out to inspect the first areas that were ploughed, and there was a strong belief that cultivated land would disappear in a cloud of dust borne on the wind.
>
> I venture to think that considerable improvement in the prosperity of the Colony is possible if some of the leads which have appeared as the result of this work are followed up and applied. But they represent ideas and practices new to the Colony, and as such must meet with a deprecatory criticism, especially from an industry notorious for its conservative obstinacy. It is well known that human nature prefers to first throw stones at those who provide advanced ideas, even though those same ideas become eventually incorporated in everyday life, and the Department of Agriculture has not escaped such treatment.[168]

Much of Gibb's Report is concerned with outlining his efforts to respond to the Government appeal made in 1942 to supply the newly arrived Military Garrison

[168] Gibbs, J; (1946) *Report of the Director of the Activities of the Department of Agriculture from 1937-1946.* Stanley: HMSO/Falkland Islands Government.

with vegetables. The Government appealed to all gardeners, or owners of plots of land, to grow more vegetables, potatoes and rhubarb, and it agreed to purchase whatever was grown no matter how great the quantity produced. Large quantities of artificial fertiliser were purchased from Montevideo to assist with this programme.

Large areas of coastal areas (Rookery Bay to Cape Pembroke) were fenced and planted with native Tussac Grass, with mixed results. During 1940-1942 Tussac Grass was cut from better plantations for use as cattle or horse fodder, but with the increased provision of hay, the use of Tussac Grass decreased. However plantations of Tussac Grass continued to be used during the winter for grazing. Gibbs' Report details his oversight of the Government dairy herd of sixty cows.

Both Gibbs and Howell Evans [169] (Government House Head Gardener) made monthly educational broadcasts on agricultural and horticultural subjects on the radio from 1945 onwards. Both men commended the planting of trees as shelterbelts for animals.

Gibbs' commented on the quality of the sheep in the Islands which revealed that not much had changed since the time of Munro, but that the cattle and sheep of the Islands seemed healthy enough. Gibbs wrote extensively on the importance of combining pasture sub-division with rotational grazing:

> Greater benefit would accrue if sheep were grazed in larger mobs and rotated from paddock to paddock as the grazing was exhausted. Cattle should follow to eat the rank grasses left by the sheep. By this means there would be no need to burn the whitegrass, for if judiciously managed there would be no rank grass to carry a fire.[170]

[169] Evans, Howell, (2001) *The Falkland Islands I knew*; Oswestry; Anthony Nelson; p168.
[170] Gibbs, J; (1946); op.cit.; p45.

> Controlled over-grazing of this nature can only bring improvement to native pastures, chiefly through consolidation, removal of surplus growth, and the concentration of animal manure.[171]

The work of Davies on grassland improvement is re-examined and applied to the Falklands Islands situation. The farming practices of Port Howard, Holmested Blake, and the Falkland Islands Company are commended. Gibbs regarded Port Howard as one of the most progressive in the Islands where the importance of Munro's work had been recognised.

Gibbs reported that birds of prey continued to be destroyed; payment for the beaks of the Striated Caracara had been discontinued in 1931, 'on account of the reported rarity of Johnny Rooks' [172] but that since 1937, 17,120 turkey vulture beaks had been purchased by the Department at a cost of £428. Reduction of the Upland Goose continued, and Gibbs agreed that they were particularly troublesome and destructive on newly sown pastures. On the other hand:

> Their droppings must have high manurial value. Whether their depredations on native pastures are greater than the benefit they bring is a very debatable point, and one, which has not yet been demonstrated satisfactorily.[173]

Gibbs makes a number of observations about the rural economy of the Islands, which show his support for the vision of Governor Cardinall, but which also revealed his understanding of the difficulties of effecting change:

---

[171] ibid.; p46.
[172] ibid.; p11. See also: CS343/30; Falkland Islands Government Archive; Government Notice No.54; 11 August 1930. The Government Naturalist had warned as early as 1922 (CS294/22; Falkland Islands Government Archive; 1922) about the increasing rarity of the Johnny Rook. The destruction of birds of prey has continued intermittently throughout the history of the Colony. For example as late as 1966 permission was given to the Manager of Roy Cove Farm to use strychnine to poison birds preying on lambs. See: 0797/Y; Falkland Islands Government Archive; *Destruction of Birds of Prey*; Letter from Colonial Secretary to Manager, Roy Cove; 14 October 1966.
[173] ibid.; p12.

> We cannot expect rapid changes [*i.e.* improvements to wages and living quarters] when only in 1940, the owners of one station were reported to have refused to provide water sanitation in a manager's quarters on the grounds that 'peat mould had been good enough for them'[174]

The report concluded with an appendix containing the script of a broadcast talk made by Gibbs on 14 April 1946. The talk contains one phrase which is remarkably prophetic:

> I am not proposing any scheme of development. I am merely pointing out some of the potential sources of wealth which lie hidden under the self-sufficiency of the present system of sheep-ranching.[175]

The full implications of these words are only now being becoming understood and worked out.

The full version of the Gibb's Report was never published, but Governor Cardinall's successor - Sir Miles Clifford - printed a much-abridged version in 1947. Governor Clifford thought that 'there was much of value in the Report'[176] but Clifford ensured that most of Gibb's more trenchant comments were not reproduced in the abridged version.

[174] ibid.; p127.
[175] ibid.; p243.
[176] Hand-written comments by Governor Sir Miles Clifford on a copy of the Gibbs Report, and now in the Government Archives in Stanley.

10. 1961-1971 Yet more reports – ‘Old ground, new ploughs’

World War II was a testing time for the Islands. A large military garrison was established on the Islands in 1942, which placed considerable demands upon the civilian community. The period directly after the war ended saw unprecedently high wool prices, which reached a peak in the early 1950s. The pressures on the farming community and the finances of the Colony were thus considerably eased. But this proved to be a false economic dawn; from the mid-1950s onwards wool prices fell sharply. The increasingly widespread use of man-made fibres resulted in the world-wide decline of wool production industries.

The overall economic vitality of the Islands began to decline gradually, and emigration became a noticeable social factor. Once again the familiar cycle of farmer’s alarm and Government disquiet - followed by the commissioning of reports and surveys - occurred. A number of reports were commissioned during this period. A summary of these now follows:

§ a. The Wannop Report 1960-1961.

A R Wannop was the Director of the Hill Farming Research Organisation, and he spent two and a half months in the Islands. He visited many farms and his report lays particular stress on the value of fencing and sub-division.

Wannop’s overall assessment revealed a familiar pattern: the total numbers of sheep appear to be still declining, though less rapidly than formerly, from the peak of 1898. This decline has been offset, to some degree, by an increase in annual wool clip per sheep. Wannop noted that in common with all countries where wool is the dominant farm product, cattle are as a rule unpopular - despite the well-known benefits in pasture improvement which increased cattle numbers can bring. In spite of the proven ability of cattle to improve pasture there are only a few examples in the history of Islands’ agricultural history where cattle have been systematically used - *e.g.* at Port Howard by R C Pole-Evans.

The sheep husbandry system continued to be extensive grazing - although slight modifications of this have been introduced on a few farms during recent years. Wannop noted that many farms had difficulty in maintaining sheep numbers, and in too many cases some ewes were kept well beyond normal culling age to augment the total lamb crop. Wannop outlines the nutritional deficiencies of the grasses and lack of trace elements on some farmland, and he commends the use of cobalt supplements for some sheep farms.

Wannop discussed the reasons for the apparent marked fertility of the fields directly adjacent to the settlements and shepherd's houses. Consolidation of the land by sheep and cattle hooves, ploughing and reseeding, and animal manure, had resulted in considerable improvement. He noted however that only a small proportion of the sown grasses and clovers persist for a long time, the determining factor being the amount of fertiliser used. Inherently poor soil and low fertility means that although some of the settlement fields contain some wild white clover it seldom showed vigorous growth, and that even when inoculation of the seed had been carefully carried out there is only a little nodulation. Under present farming policies the incentive to improve settlement fields was not great.

Wannop compared his findings with those of William Davies made in 1939, and in so doing defined pasture degradation in terms of the Islands environment:

> The impression is that the unpalatable White Grass and Diddle-Dee are becoming even more dominant and that there is also an increase, on those parts where sheep have concentrated, of annual grasses such as *Poa annua* and *Aira praecox*. [177]

Wannop concluded that the grasslands are continuing to decline, and he suggested that this is due to a combination of uncontrolled extensive grazing and overstocking. [178] He was cautious in his conclusions because he recognised

[177] Wannop, A R; (1961) *Report on visits to Falkland Islands Sheep Stations*; Stanley: Falkland Islands Government; p4.
[178] ibid.; p4.

that he did not have personal knowledge of the character of the grasslands fifty years previously, but he concluded that the presence of Goose Grass (*Aira praecox*) amongst the White Grass was an indication that the finer grasses formerly growing between the White Grass bogs had been exhausted and the ground thus left vacant had been colonised by Goose Grass:

> Though these natural pastures are not really overstocked they are definitely overgrazed in parts … Without some change in grazing management there is likely to be a further, even though slow, decline in the quality and productivity of the camps.[179]

Wannop clearly understood that the improvement of the camp, as a whole or even part of it, was a difficult undertaking under the Islands' climatic and geographical conditions. Although everyone agreed that lime and fertilisers would be beneficial for selected areas of farmland, little was used because of the cost. Thus, without experimental evidence to the contrary, camp improvement could only be brought about by either the introduction of other grasses at existing fertility levels or by altered grazing management, or a combination of both. He pointed to the example of Roy Cove farm as model of what could be achieved. He outlined several other examples of camp improvement - all of which deserve praise - but they are unlikely to give their maximum result unless combined with some grazing control. When it becomes possible to alternate grazing and rest periods this not only prolongs the effectiveness of grazing but if well controlled can actually lead to rejuvenation. He starkly observed 'nearly every camp seen was in real need of a rest from grazing, but this will only be possible with fencing and sub-division.' Some farmers did make efforts to sub-divide; West Point Island had been sub-divided and 'this has been most beneficial to all areas, especially the hills which can now be given a rest from grazing during the dry summer months.'[180]

[179] ibid.; p 4.
[180] Napier, R B; (1970) West Point Island; *Falkland Islands Journal*; p31.

Like others before him, Wannop also tackled the controversial subject of burning. Controlled grazing and more sheep would remove most of the need for burning of White Grass. He warned:

> Normally burning is a process that leads to some fertility loss and to a greater dominance of coarse herbage, the finer grasses suffering more from the effects of fire.[181]

Wannop was sanguine about the long future of the Islands' wool industry.

> An economy based on wool production is vulnerable in conditions under which artificial fibres may in the future become highly competitive and force [wool] prices down. Methods of reducing the cost of wool production should, therefore, be continually under review, as well as the means of ensuring continued productivity under a system which is an extractive form of farming, since nothing is done at present to replace the materials removed annually in the form of wool and slaughtered sheep.[182]

He pointed out that although sub-division of the camps and controlled grazing will undoubtedly lead to more sheep and wool, the question of raising soil fertility, and thereby the productivity of the natural pastures to any significant extent, still remained unanswered. [183]

Wannop concluded by encouraging the Islands Government to appoint a suitable scientific researcher to investigate potential improvements in soil and grassland fertility. In due course C D Young [184] was appointed in this capacity and he served in the Islands from 1965 to 1968.[185] Young was appointed to

[181] Wannop, A R; (1961); op.cit.; p10. Wannop recognised that under the current extensive farming methods used in the Islands, White Grass could not be kept in check by grazing alone: 'White Grass cannot be kept in check by grazing, and after some years the accumulation of uneaten herbage is such that in a dry period it is itself a fire hazard. Controlled periodic burning every four or five years is in these circumstances necessary … but it is best not overdone.'
[182] ibid.; p11.
[183] ibid.; p11.
[184] Young was a member of staff of the West of Scotland Agricultural College.
[185] See: 2373; Falkland Islands Government Archive; *Pasture: Young Report 1968*; 1968.

carry out trials on commercial farms. Most of Young's work consisted of re-seeding trials using a wide range of legumes and grasses.

There were high hopes in the Islands following Young's appointment as Grasslands Officer. The major landowners fully supported the appointment, and the Falkland Islands Company gave £1000 per year for three years to support the work of the Grasslands Officer.[186]

> We are anxious to cooperate to the full with Mr Young, the Grasslands Officer, and we hope that some of the experiments will be made on the Company's land.[187]

However a lack of adequate resources caused Young to become rapidly disillusioned. His Report is full of his personal sense of frustration. He soon discovered that much research had already been done in the Islands before he took up his post, but that few of the recommendations that had been made by Munro *et al.* had been acted upon. For example:

> It is most depressing for an agriculturist to come out here to what is supposedly a virgin field and find that so much work has been done by his predecessors but that so little attention has been paid to it.[188]

Tom Davies commented, in 1971, that:

> In his report of October 1968 Young concluded that carrying out critical experimental work on commercial farms was so difficult as to be virtually impossible and he suggested that the next step should be the setting up of an experimental farm.[189]

---

[186] 2373; Falkland Islands Government Archive; *Pasture: Young Report 1968*; Young, W H (Colonial Manager, Falkland Islands Company); letter to the Colonial Secretary; 10 May 1965.
[187] CO2373; Falkland Islands Government Archive; 1968; Yorath, J H; a letter from the Falkland Islands Company to Sir Cosmo Haskard (Governor) 30 September 1965.
[188] Young, C D; (1968) *Report on pasture improvement experiments carried out in the Falkland Islands during 1965-1968*; Stanley: Falkland Islands Government.
[189] Davies, T H; I A Dickson; C T McCrea; H Mead; W Williams; (1971) *Sheep and Cattle Industries of the Falkland Islands*; Stanley; Foreign and Commonwealth Office/ODA; p1.

Despite his frustrations, Young clearly saw what needed to be done:

> To carry out any advanced programme of research without an experimental farm is a hopeless task, and unless immediate steps are taken to provide such an establishment there is little point in bringing out another agriculturist to a post in this Colony.[190]

Thus after a period of 44 years Munro's proposal of 1924 concerning the establishment of an experimental farm once again received scientific commendation.

Young was very clear about his conclusion that sub-division and rotation grazing were the most important methods of grassland improvement available to Islands' farmers. He also foreshadowed the direction sheep farming in the Islands was to take after the 1980s:

> In view of the number of times that it has been advocated as an improvement method it is surprising that so little sub-division has been done … In recent years many farms have worked out a system of spelling camps but there are still too many large camps. The splitting up of camps would be greatly encouraged if the farms themselves were split into smaller units. The most intensive farms in the islands are all comparatively small.[191]

Not all of Young's work was unsuccessful: One farm chosen by Young for experimentation was West Point Island. The farmer concerned commented:

> The most outstanding of these improvements was the establishment of various types of grasses on the patches of clay, which exist on some of the hills. Before Mr Young's experiment it had been impossible to get cover grass to hold on these clay patches. [192]

[190] Young, C D; (1968); op.cit.; Introduction.
[191] ibid.; p 21.
[192] Napier, R B; (1970) West Point Island; *Falkland Islands Journal*; op.cit.; p31.

§ b. The Guillebaud Report 1967.

The Governor of the Islands appointed C W Guillebaud of St. John's College, Cambridge, to conduct an economic survey of the Islands. Guillebaud visited the Islands between 4 March and 9 April 1967. His report dealt with many economic issues - especially the prospects for diversification of the Islands' economy, the National Income, Standard of Living and levels of Remuneration. Guillebaud also wrote extensively on public finances and population trends.

Guillebaud made a number of recommendations in his Report. He considered the appointment of a senior grassland expert to be the best way of conducting research into grassland improvement. He encouraged farm owners and managers to consider the possibility of increasing the number of cattle held on their farms. Guillebaud recommended that high priority should be given to exploring the feasibility of constructing an airstrip near Stanley, with a view to establishing an air-link with the South American continent. Guillebaud addressed the issue of land ownership and tenure. He urged the current landowners to explore the possibility of establishing one or more tenant farms on their land, and give their employees a financial interest in the sheep farms on which they worked.

Guillebaud understood his limitations:

> Writing as an economist with no special knowledge of the technical problems of sheep farming, I must rely mainly on the opinion of experts who have made detailed studies of the system of sheep husbandry as practised in the Falkland Islands.[193]

Thus Guillebaud accepted the findings of Munro, Davies and Wannop. Guillebaud examined the sheep and wool statistics for the period 1909 -1963. He concluded that from 1909 to 1963 there had been no expansion in the total amount of exported wool produced in the Islands. The amount of wool

[193] Guillebaud, C W; (1976) *Report on an economic survey of the Falkland Islands*; Stanley: Falkland Islands Government; paragraph 29.

produced in the period 1959-1963 was virtually the same as that produced in the period 1909-1913. He acknowledged that there has been a considerable rise in the average yield of wool per sheep - an increase of 22% in the period 1944-1963.

From these figures Guillebaud concluded that the evidence pointed not just to the absence real improvement, but also to a gradual deterioration of the pastures under the largely prevailing system of uncontrolled grazing, with a consequential decline in the carrying capacity in terms of sheep on the farms. The increase in the yield of wool per sheep was undoubtedly due to improved methods of breeding.

Guillebaud asked the familiar questions: 'what can be done to improve the fertility of the soil, and so enable a larger number of sheep to be carried successfully?' From the work of Munro, Davies and Wannop, Guillebaud draws three conclusions: first, that there is impressive unanimity of expert opinion that sub-division of the camps is an essential pre-requisite to any improvement in the condition of the grasslands. Secondly that all the writers since 1924 are agreed that the fertility and carrying capacity had been, and were continuing to deteriorate. Thirdly that with a few exceptions remarkably little progress has been made during the period 1920-1960 towards sub-division and fencing of pastures, and other practical measures for conserving or improving the fertility of the soil.

Guillebaud sought to explain why this situation had occurred; he understood fully the problems caused by low wool prices before 1939-1945, and that since the end of World War II profits have been used to build up reserves or in much needed, but expensive, improvement in the housing of the farm employees. 'But this notwithstanding they could and should have done more to sub-divide their large enclosures.'[194]

[194] ibid.; paragraph 41.

Guillebaud commended the improvement efforts of Port Howard Farm Hill Cove Farm and Roy Cove Farm. Hill Cove's improvements had been largely due to rotavating pastures and then re-seeding, whereas at Roy Cove ploughing followed by re-seeding was the method employed. On East Falkland, Douglas Station and Salvador Farm were taking active steps in pasture improvement - partly through ploughing and partly through fencing and sub-division.

Guillebaud recorded his disappointment in the overall record of the Falkland Islands Company's farms - comprising of six farms covering some 1,330,000 acres - which were still 'being ranched in the old way.'[195] The Falkland Islands Company strongly disagreed with this conclusion; Guillebaud conceded that while he was writing his report the Falkland Islands Company were re-commencing re-seeding experiments with a type of machine on some of its farms. He commented that 'this sort of experiment, which might produce instructive results … shows a very welcome, if belated, change in the policy of the Company.' It was during this time that it was becoming increasingly clear that Yorkshire Fog grass had some serious limitations as a pasture grass. Much research was taking place in an attempt to breed more suitable strains of grass. The Falkland Islands Company were aware of this research, and its own experiments with re-seeding should be seen in the light of these new developments.

Guillebaud outlined some possible prospects for the diversification of the Islands economy. Many schemes tried in the past had met with failure and disappointment. The production of soap, tallow, skins, sand extraction for glass production, harvesting of alginates, tinned meat and frozen mutton, had all been considered. Some of these ideas were tried but found commercially unsustainable.

[195] ibid.; paragraph 50.

The errors of the Ajax Bay Freezer scheme [196] were outlined:

> It cannot be said that anyone emerged with much credit from this sorry story … neither Government which was reluctant to accept advice or criticism from within the islands; nor the farmers whose co-operation left much to be desired; nor the Colonial Development Corporation which made very bad mistakes in the planning, construction and administration of the scheme.[197]

Guillebaud was quite clear in his conclusions about the economic necessity of change and diversification:

> For the time being, the sheep farming industry in the Falkland Islands would be well-advised to concentrate its efforts in improving the pastures; but that it should always keep in mind the possibility that at some stage the scales may be tipped in favour of meat rather than wool.[198]

The Report sympathised with the islanders who have had to deal with a number of disappointments. He noted the fact of the latest of these was the attempt by the Falkland Islands Company to establish a Mink Farm [199] in the hope that this might provide a new and profitable industry for the Colony.

§ c. Grasslands Improvement Conferences 1966 & 1967.

In 1966 & 1967, during the period of C D Young's tenure of office in the Islands, conferences were held in the Town Hall, in Stanley. Almost all farm managers attended and a wide variety of subjects were considered. Young reviewed his work and he expressed his frustrations and hopes for the future:

---

[196] Guillebaud was referring to the ill-fated project of the 1950s to utilise surplus sheep through the frozen meat trade.
[197] Guillebaud, C W; (1976); op.cit.; paragraph 61.
[198] ibid.; paragraph 63.
[199] Strange, I; (1972) The *Falkland Islands*; op.cit.; pp. 122-123.

> I must add that the amount of experiment work, which can be done by travelling around farms, is severely limited, and if you have any faith in the agricultural future of this colony (and I am not sure of this myself) you must insist that a fully staffed and well organised experimental farm is set up and allowed to flourish.[200]

Subjects covered at these conferences included sub-division; the production of silage; direct seed drilling, improvement of wet land by drainage, tree planting, the grazing value of native grasses, types and methods of fencing, the effects of mowing White Grass and the use of Tussac for winter feed. Young reported on the trials of legume species. It is quite clear that there was great desire on the part of the farm managers to improve and innovate. These conferences produced no lack of ideas or willingness to consider and try them. What is not clear, however, is whether or not the men on the farms had the full support of either Government or the London-based farm owners, or that there was sufficient expertise available locally to support them in their efforts.

[200] Young, C D; (1968); op.cit.; p20.

11. 1971 & 1972 A Sea Change in Government

§ a. Ministry of Overseas Development Team 1969-1971.

Concern about the continuing decline in the quality of farmland brought about a significant change in the UK Government's attitude to the Islands. The Overseas Development Administration was asked by the Ministry of Agriculture, Fisheries and Food to investigate methods of remedying the situation. A multi-disciplinary team, appointed by the Overseas Development Administration (under Tom Davies) arrived in the Islands in September 1969 and left in April 1970. The team consisted of two grassland specialists, two livestock specialists and a laboratory technician. The size of the team and their range of skills made it possible to conduct a wide range of experiments. The team's work was the beginning of the first sustained programme of scientific research in the colony's history. The team arrived in the Islands against a background of gloomy predictions about the general future of wool in world markets, and for the Islands sheep farming industry in particular. [201]

John Eadie, from the Hill Farming Research Organisation also made three visits to the Islands. Eadie was an acknowledged authority in recent developments in hill farming, and he provided the academic and scientific expertise to monitor the progress of the ODA team. Eadie suggested that a particular style of a 2-pasture system should be tried in the Islands, and although the system was ultimately proved to be inappropriate in the Islands, much important knowledge was gained.

The principal recommendation of the ODA team was that more research needed to be undertaken - both from an agricultural and also economic viewpoint and its main emphasis was on increasing the number of lambs reared. They recommended that a Grasslands Trials Unit (GTU) be established. In 1971 the Ministry of Overseas Development sent two further scientists to the Islands, and

[201] Davies, T H; Dickson, I A; McCrea, C T; Mead, H and Williams, W W; (1971) *The sheep and cattle industries of the Falkland Islands*; Overseas Development Administration; p3.

they supported the view, expressed by the Davies team, that a Grasslands Trials Unit be established. They also recommended that an agricultural economist should visit the Islands with the purpose of carrying out a detailed examination of the costs of operating sheep stations and to advise on their efficient business management.

§ b. T. W. D. Theophilus 1972.

The Ministry of Overseas Development in December 1971 appointed Theophilus as a direct result of the renewed interest in the economics of Islands farming. He was charged to establish the costs and returns of the farming industry through detailed examination of a selection of representative farms in the Islands. Theophilus was an agricultural economist and he was particularly concerned with the efficient business management of the Islands sheep farming industry.

The report began by noting the difficulty in defining what a 'representative farm' was in the Islands because of the enormous variation in farm size (varying in size from 850 to 400,000 acres) and terrain and topography. The report is critical of the methods used to record production costs. [202] The report analyses the economics of wool production, and how to increase output while at the same time reducing costs. Diversification of the farming system, the renovation and re-seeding of the grassland, sub-division of the pastures, improving breeding stack, are among the subjects considered.

Theophilus set the problems of the Islands against an international background. He notes that although it is quite possible that many companies still show a profit and pay a dividend to their shareholders, the long-term prospect was far from good. Profit levels were dependent upon the future of wool, as a commodity, in world markets. He also noted that a report by the Economic Development Committee for the Wool Textile Industry (UK) commented that total wool consumption in 1975 would be 23% below that of 1968, and cross-

[202] Theophilus, T W D; (1972) *The economics of wool production in the Falkland Islands*; Stanley: Falkland Islands Government & HMSO; p5.

bred wool consumption would probably be 26% lower. 'When the implications of the report are studied more deeply, the situation facing growers and distribution of raw wool is serious.'[203]

The report concluded that the output of wool from the Islands was static. The numbers of sheep had declined but there has been a slight increase in the average yield of wool per sheep.[204] Theophilus commented that the performance figures achieved on the smaller islands was far superior to those of the mainland:

> These better performances were mainly the consequence of a better standard of nutrition and also possibly a higher standard of husbandry due to the fact that the ewes could be kept on a smaller acreage of land thus easing the task of shepherding.[205]

Theophilus noted that over the past five decades a number of technical experts had visited the Islands, and that all had been critical of most aspects of sheep farming practices found in the Colony. He regretted that the comments and advice of Hugh Munro, about pasture improvement, had received scant attention:

> The resources of the Islands have been continually drained away by sheep farming, and little or no investment has been made by the owners to try and replace the drain of reserves from the land.[206]

This comment may well be too sweeping and a little unfair to those who had been trying to improve matters, but Theophilus was only re-stating a commonly held conclusion. He examined the reasons, with a few notable exceptions, why little progress had been made during the proceeding 50 years in introducing practical measures for conserving or improving the fertility of the soil. [207]

[203] ibid.; p7.
[204] ibid.; p11.
[205] ibid.; p12.
[206] ibid.; p14.
[207] ibid.; p15.

Theophilus stated that an extractive policy in farming did not pay in the long run and the consequences could be drastic.

A large part of Theophilus' report was concerned with unproductive and uneconomic farming practices; he commented that labour productivity was very low compared with other forms of extensive farm in other parts of the world, such as Australia. In the Islands the number of sheep per man is 1,600, whereas a figure of at least 3,000 per man employed should be the target to be aimed at.

As an economist Theophilus made an assessment of the agricultural imperative of the need to sub-divide the pasturage, and the difficulty of correcting past mistakes:

> Bearing in mind the large areas involved and the extensive system of farming followed in the Falkland Islands, the benefits of sub-division by fencing to allow a policy of rotational grazing, will take a very long time to come to fruition if ever. The years of mismanagement of pasture cannot be rectified in a short period of time. The time element involved in getting results has no doubt dampened the enthusiasm of farmers to invest their capital in the sub-division of big enclosures.[208]

The Theophilus report is full of practical recommendations, many of which have subsequently been implemented - particularly those concerned with the productivity of labour and out-dated working practices. Nevertheless there is a degree of gloom running throughout the report; 'The prospect for increased prices for wool are bleak in the long run due to falling demand. The Islands contribution to the world supply of wool is relatively insignificant.'[209] The methods the Theophilus Report recommended of combating the dual challenge of rising costs and falling returns are:

i. Increase the level of output without proportionate increases in costs.
ii. Diversification into producing other commodities.

[208] ibid. p29.
[209] ibid. p30.

iii. Reducing costs while maintaining output or a combination of two or all three methods.

The history of farming in the Islands since the Theophilus report has been the history of the struggle to implement these principles.

12. 1976 & 1982 The Falkland Islands Economic Reports The Shackleton Reports

These two reports are widely regarded in popular understanding as having provided the framework for the current prosperity and economic development of the Islands. In reality, however, the Shackleton Reports are the culmination of fifty years of reports and surveys. In one of the central subject of these reports - land reform - there are echoes, which reach right back to the earliest days of settlement in the Islands, and to the original plans of land tenure and use prefigured by Governor Moody. However the Shackleton Reports have assumed greater significance and authority than any of their predecessors for two reasons: firstly because of the events of 1982, and secondly because of the name and personality of Lord Shackleton, the son of the great explorer. Another marked difference between these Reports and any other previous report or survey is that the Shackleton Reports are much more comprehensive and wide ranging in their assessment of the development prospects for the Islands.

Despite the involvement of a significant figure such as Lord Shackleton, and the fact that some reforms were already underway before 1982, there can be little doubt that much of what is contained within the 1976 Shackleton Report would have been largely ignored had it not been for the impetus provided by the 1982 Conflict in the South Atlantic. [210]

In a pers. comm. Lord Shackleton commented that his original brief included the possibility of going out to the Islands to begin the process of handing the Islands over to Argentina. The underlying assumption in the Foreign Office, at that time, was that the Islands were an economic drain on the British exchequer. Shackleton's team soon discovered that this was untrue, and that in fact the Islands were being de-capitalised by the United Kingdom. Shackleton estimated that between the 1950s and the 1970s a £4M 'profit' had been earned by UK-based companies even when defence costs, subsidies and grants had been taken

[210] The term *South Atlantic* in this dissertation generally refers to the waters of the sub-Antarctic zone north of approximately latitude 60ºS, which are physically distinct from other oceans to the south.

into account. Shackleton's view soon became that Britain had a moral responsibility to the islanders, and that Britain 'couldn't wash its hands of the Colony'. The whole basis of the Shackleton Reports was thus: 'something must be done.'

The 1976 Report begins with the significant statement about the natural environment of the Islands:

> There was one further consideration, which we bore in mind at all times when we were studying the various possibilities for economic development. This was the need to have due regard to conserving the natural environment of the Falkland Islands and the Dependencies, with their surrounding waters.[211]

The 1976 Report also begins with the timely reminder that 'an island is a piece of land entirely surrounded by advice.'[212] This is an appropriate aphorism for the Islands, but it is also true that if the advice of Munro and Davies *et al*. had been acted upon, then much of what was contained within the Shackleton Reports would not have been necessary.

The 1976 and 1982 Reports both begin by observing that the most striking feature of the economy of the Islands is its almost total dependence on the production of wool for export:

> Almost equally striking is the fact that sheep farming has formed the economic base since the 1870s, and that the few attempts to diversify … have either failed or been short-lived.[213]

The ranching style of farming, to which Islands conditions are naturally suited, does not easily respond to improvements in output. The Report commented that

[211] Shackleton, E (1976) (The Rt.Hon. Lord Shackleton, KG, PC, OBE) Chairman; *Economic Survey of the Falkland Islands*; (two volumes); London: HMSO; volume 1; p iv.
[212] ibid.; volume 1; p ii.
[213] ibid.; volume 1; p17.

within this ‘one crop economy’ wool production levels have remained steady while world wool prices have fluctuated greatly. The Report’s consider the heart of the issue for the Islands farming industry *i.e.* the challenge of producing a sustainable farming scheme within a grassland environment which has been degraded. [214]

The 1976 Report outlines what it believed to be the significance of the dominant position held by the Falkland Islands Company. It asserts that however benevolently the monopolistic power may be exercised, any monopoly situation holds risks for a community as small as the Islands.

> Decisions, affecting the Falkland Islands economy, can therefore be taken on behalf of interests outside the Islands, and by persons with perhaps little knowledge of the effect of their decisions on a small community.[215]

The resources available to the agricultural community are described in terms of the natural environment, the farm structure and management, and the livestock available on the Islands. The 1976 Report notes that indigenous grasses of the area were generally poor in nutrition value as a consequence of the local climate and soil condition. A notable exception was, of course, Tussac grass. The report reiterates a well-worn theme:

> As a result of the activity of sealers, and uncontrolled grazing since the settlement of the Islands, the Tussac association have been very seriously diminished and in many areas totally destroyed.[216]

The Report states - rather optimistically - ‘Most farms are now taking action to restore the Tussac through planting and fencing.’[217]

[214] ibid.; volume 1; p97.
[215] ibid.; volume 1; p19.
[216] ibid.; volume 1; p87.
[217] ibid.; volume 1; p87.

The continuing decline in the use of 'outside' shepherd housing is noted, with the consequence that there were lower levels of flock supervision. The continuing slow decline in sheep numbers from its late nineteenth century highpoint is also noted. The Report is not correct here. See Figure 8 for sheep numbers carried in the Islands from 1857-1999. See also Figure 9 for sheep carried from 1910-1999. In The Falkland Islands Company's response to the Shackleton Report it doubted the authenticity of the high point of 800,000+ sheep; it pointed out that numbers had, in fact, been slowly increasing from the low point of the 1950s. [218]

The 1976 Report is unambiguous about its conclusions concerning the agriculture pattern of the Islands. It strongly advocates the breaking up of the large farming units into much smaller farms. It is fully aware that there will be problems:

> The creation of small farm units gives rise to many considerations and there is no doubt that such an agricultural development would have to be undertaken with much care, if it is to be successful. However we feel that there are strong social, and possibly economic reasons for creating small units in the Falkland Islands, and we would urge that the matter should receive early consideration.[219]

This proposal for an agrarian transformation was widely welcomed at the time, and has now largely taken place. The large farms are mainly a thing of the past; those who farm the land now own their farms, or lease their farms from local owners. Initially there was an increase in numbers of sheep carried and wool produced, but it has yet to be demonstrated that there has been a concomitant improvement in land management since the break-up of the large farms. The sale of the large farms has effected great social change in the Islands, but it is unclear at present how successful these radical changes will be in the long term - both for the natural environment, and the human inhabitants of the Islands.

[218] ibid.; volume 1; p118.
[219] ibid.; volume 1; p131.

The aquatic resources of the Islands and its Dependencies are considered. The Report is remarkably prescient when it concludes that 'a fisheries development would underwrite the future self-sustaining economic viability of the Falkland Islands.'[220] It warns against the dangers of over exploitation using the salutary example of the whaling industry. The value of Fur seals, Sea Lions and Elephant Seals is noted, but 'at present there is an embargo on exploitation pending a thorough evaluation of the status of this potential resource.'[221] The potential of seaweed (as a source of alginates), various crustacea and molluscs, offshore and coastal fishing and also fish farming, are considered.

The 1976 Report commented that no major geological survey of the Islands has been undertaken since 1920-1922. The prospects for the presence of large deposits of hydrocarbons are considered. It suggests that it is impossible to make any forecast of oil or natural gas production without first having some idea of reserves or field sizes.

> At least two years' seismic work and 2 or 3 years of exploration drilling with not less than 5 drilling rigs would be required before any rough estimates of reserves and field size could be made.[222]

The 1976 Report takes a very sanguine view about the prospects of the discovery of marketable quantities of oil, and it suggests that very large quantities would have to be found to make this a viable project. The effects of a burgeoning oil industry on the agriculturally based economy of the Islands are examined. The report concludes that the social pattern and expectations of the islanders would be changed to such an extent by an indigenous oil industry that a viable agricultural industry could not survive. The environmental impact of an oil industry is also considered, and the Report regards the enforcement of all necessary precautions and safety measures to be essential.

[220] ibid.; volume 2; p39.
[221] ibid.; volume 1; p142.
[222] ibid.; volume 1; p182.

The importance of the creation of a rural road network is stressed and although it doubts that the roads could be justified on any economic grounds, nevertheless sufficient justification can be found on social grounds alone. Every encouragement should be given to establishing a tourist industry that specialised in:

> A 'wilderness experience' despite the fact that 'the Falkland Islands have a history of wildlife depredation by way of sealing, whaling, the short-lived oil industry, and egg collection.[223]

The 1976 Report makes substantial recommendations concerning the agricultural industry. The Grasslands Trials Unit (GTU) should be expanded, and a fully staffed Agricultural Department should be established. Both these recommendations were speedily implemented because of their relationship with the sub-division process. Vegetation mapping [224] became a priority in order to ensure a balanced farm structure. This mapping warned against the danger of making the sub-divided farms too small to be economically viable. In the event this warning was not heeded. The pressures for ownership was so great that when the farms were divided after 1983 some of the new farm units, created by sub-division, have proved to be uneconomic.

At the heart of the 1976 Report is the firm conviction that the Islands have potential for economic development. But the Report adds a significant caveat:

> It is most important that any such development should proceed in a manner, which takes proper account of the natural resources of the Islands. This is necessary not only to conserve the flora and fauna of the Islands and their waters, for their natural and scientific value, but also to

[223] ibid.; volume 1; p267.
[224] Vegetative mapping is essential for good pasture management. The process was begun by the Grasslands Trials Unit but was never followed through. In the late 1970s McAdam studied the Hunting Air Surveys photographs, and from these mapped 8 of the 29 map sheets of the Islands, but this work was lost during the 1982 Conflict; currently few vegative maps exist except for the GTU research sites.

> ensure that resources are exploited in ways, which are of maximum long-term economic benefit to the Islands.[225]

In May 1982 when British troops landed on the Islands and it became clear that it was only a matter of time before the Islands were re-possessed, members of the team that produced the 1976 were reconvened. They were commissioned to update their Report in the light of the changed circumstances of the Islands arising from the Argentinean invasion and occupation, and the changed world economic environment, since 1976.

The 1982 Report begins by drawing attention to a number of key changes that had taken place during the 1976/82 period. Wool prices had fallen by 20% in real terms during this period; with the re-taking of the Islands the climate for investment was much improved; ownership of The Falkland Islands Company (which produced 44% of the wool) had changed hands again; and finally the Report's introduction noted that international maritime law had developed to such an extent that 200 n.mile limits had been widely accepted. The Report concludes that the internal economy of the Islands is in grave danger of collapsing in the next five years without continued support and/or development.[226] Wool output has dropped and farm profitability has seen a 'catastrophic' decline.[227] External communications and internal infrastructure must be improved if development is to take place. The 1982 Report states that:

> A radical solution is required to stem the flow of funds from the Islands and to encourage reinvestment of profits … Farm owner-occupiers are more likely to be prepared to plough back profits inasmuch as they see their own long-term futures being bound up in the places of work.[228]

The Report reiterates its criticisms of the large farming companies and in the same way that the 1976 Report argued strongly for the creation of small owner-

[225] Shackleton, E; (1976); op.cit.; volume 2; p85.
[226] Shackleton, E; (1982) *Falkland Islands Economic Study 1982*; London: HMSO (Cmnd. 8653); p6.
[227] ibid.; p6.
[228] ibid.; p9.

occupied farms from both an economic and social standpoint, the 1982 Report re-states the case, but with a significant caveat:

> There is as yet no sustained evidence that this will increase agricultural productivity and it could, without co-operation between small farms, have the opposite effect.[229]

Despite this warning the 1982 Report strongly recommended that the transfer of the ownership of farms owned by absentee landlords to local ownership be implemented in order to create small owner-occupied farm units. If necessary this should take place through compulsory purchase.[230] The 1982 Report covers familiar ground which reaches back to the earliest days of human settlement; the recurring themes of all previous reports are reiterated. [231]

The Report recognises that there was no absolute alternative to the extensive sheep farming method, with minimum pastoral supervision, which is practised in the Islands.[232] It states that the genetic potential of the sheep is not being realised and it expresses concern about the generally low level in grassland improvement among sheep owners. Some smaller scale owner-occupied farming had already begun by the time that the 1982 Report was written, and although the report commends the strong commitment of the new owner-occupiers, and the general appearance of the farms, nevertheless is noted, with regret, that the methods of farming remained largely unchanged. Although Falkland Islanders are justly proud of the wool produced, the Report warns that despite its fineness, whiteness, resilience and strength, it is not a unique product, and that the Islands supplies only 2% of the market for that type of wool.[233] The 1982 Report states that unless the recommendations of the 1972 Theophilus Report were implemented there would be 'grave danger of regression to a primitive form of land utilisation as practised during the early

[229] Shackleton, E; (1982); op.cit.; p11.
[230] ibid.; p17.
[231] ibid.; p10.
[232] ibid.; p52.
[233] ibid.; p59.

phase of colonisation based on wild cattle.'[234] New attitudes to farming would be essential to the survival of farming on the Islands, and to this end the inclusion of Rural Science in the school syllabus is recommended. This point precisely reflects the conclusions of the 1942 Cardinall Report.

The potential for the development of alginates,[235] hydrocarbons and off shore fishing are examined in detail, and the report concludes that while fishing might provide an income in the immediate future, oil exploration is a longer-term prospect. In order to secure the future economic benefits from these natural resources the report recommended that a 200 n.mile economic zone/fishing limit be created around the Islands. This is one of the most important statements in the entire Report. The story of the creation of these economic/fishing zones around the Islands will be outlined later in this dissertation. A similar area should be established around South Georgia, the South Sandwich Islands and Shag Rocks. A rural road network should be established, and a new airport should be constructed. The generation of electricity by wind turbines should be investigated. Small woods and shelter-belts should be planted.

A significant part of the 1982 Report is concerned with the potential for offshore fishing. This subject is dealt with greater detail later in this dissertation, but it should be noted at this point that the recommendations made by the 1982 Shackleton Report concerning fishing were to have a significant impact on the future development of the Islands. The 1982 Report notes that the costs of fishing has risen considerably since the publishing of the 1976 Report, but despite this factor increasing demand would increase profitability. The potential for coastal finfishing, shellfish fisheries and salmon ranching are outlined. Offshore fishing is considered to have the greatest economic potential. The stocks of Southern Blue Whiting have only been lightly exploited, whereas Antarctic Cod (*Notothenia macrocephala*) stocks have been seriously over-fished. Stocks of Hake and squid (*Loligo gahi & Illex argentinus*) are abundant and potentially of commercial importance. The 1982 Report recommended the

[234] ibid.; p60.
[235] ibid.; pp. 91-93.

sale of licences to foreign fleets, [236] while noting that significant exploitation of the fish stocks would also require expensive surveillance and management.

This recommendation subsequently became the cornerstone of the fisheries policy of the Islands Government and it has yielded a considerable income to the Islands since 1984. The potential of the seal stocks [237] and the stocks of krill (*Euphausia* spp.)[238] are considered in the 1982 Report.

The potential in the Malvinas basin for hydrocarbons forms a significant part of the 1982 Report, but like the 1976 Report, the 1982 Report is again very cautious about the future importance of this natural resource. [239] There is a need for geophysical surveying, but the Report concludes that the high costs of such a survey make it unlikely that justification can be found for bearing these costs in terms of a possible contribution to the Islands' economy during the following 10-15 years.

One of the important aspects of the two Shackleton Reports is the issue of conservation. There are numerous references to the importance of this issue; the 1982 Report devotes a chapter to the subject. The importance of conservation is well illustrated by the comment:

> As and when a large commercial fishery develops, it will be highly desirable to establish a system of telecommunications to allow daily reporting of position and catch.[240]

The two Shackleton Reports were the first economic and development reports in the history of the Islands to be so directly concerned with conservation matters.

[236] ibid.; p72.
[237] ibid.; p78.
[238] ibid.; pp. 78-79.
[239] ibid.; p95.
[240] ibid.; p79.

The 1976 Report states:

> Development should proceed in a manner, which takes proper account of the natural resources of the Islands. This is necessary not only to conserve the flora and fauna of the Islands and their waters for their natural and scientific value, but also to ensure that resources are exploited in ways, which are of the maximum long-term economic benefit to the Islands.[241]

To this statement the 1982 report added:

> Because of their geographical situation and their history, the Falkland Islands and their Dependencies possess a range of natural resources … if not making the Islands unique in the world, certainly mark them as places of special interest in a global context.[242]

The 1982 Report states that there is a new urgency for taking positive action on conservation of the Islands' resources. It urges that a systematic ecological inventory be carried out.[243]

The importance of restoring the Tussac Grass is noted, as well as the fragility of the ecology of the peat bog. The wildlife on South Georgia is noted as being even more spectacular - though not as diverse as the Islands.[244]

---

[241] ibid.; Volume 2 pp. 85-86.
[242] Shackleton, E; (1982); op.cit.; p111.
[243] The first of a number of conservation reports that have been written since the Shackleton Report was: Standring, K; (1982) *Conservation in the Falkland Islands - a discussion paper*; Stanley: RSPB.
[244] For further information on some modest proposals for the future environmental management of South Georgia see: McIntosh, E & Walton, D; (2000) *Environmental Management Plan for South Georgia*; Stanley: Falkland Islands Government. For a strongly worded appraisal of the environmental hazards of the former whaling stations on South Georgia see: Poles Apart; (1999) *South Georgia Whaling station survey - final report*. Stanley: South Georgia and South Sandwich Government.

Existing environmental Ordinances need strengthening,[245] and special areas of special scientific interest should be designated. A permanent Scientific Advisor should be appointed, and a Scientific Research Agency should be established to co-ordinate and advise on all natural and social scientific research. The Report concludes by stating that 'We stand by and restate these recommendations as being, if anything, of greater importance today than they were in 1976.'[246]

It is impossible to overstate the long-term significance of the two Shackleton Reports; much of its analysis was based on research work done in previous reports, and reform was already underway. Nevertheless the effect of the 1976 & 1982 Reports was to finally break the developmental log jam. Far-reaching social, economic and agricultural reforms soon followed the publishing of the 1982 Report.

The Falkland Islands Company made the only serious attempt at a critique of the Shackleton Reports. The Company contested many of the Report's findings and conclusions, and pointed out many factual errors in the Reports. The Company considered that it had been frank and open with the Shackleton Report Team, and it regretted (not without some justification) that a more positive attitude towards the Company was not adopted by the Reports. Once again the Company stated its belief that the official figure (800,000+) for the total number of sheep carried in the late 1800s to be an exaggeration. The Company states that in the early days of the Colony's history that there must have existed nutritious plants which were unable to survive for long any grazing pressure by sheep, however skilful and careful the management. The Company's response completely rejects the assertions of both Report's that mismanagement and lack of understanding was generally responsible for the fall in production potential where that has occurred. The Company did accept that the closure of the Anson Experimental Farm was a serious mistake, and it welcomed the establishment of the Grasslands Trials Unit.

[245] The legislation concerned with wildlife protection has been considerably strengthened in response to this recommendation. See: McIntosh, E & Walton, D; (2000) *Environmental Management Plan for South Georgia*; op.cit.; p8.

With regards to sub-division of the land, the Company fully appreciated the social benefits, and agreed to fully cooperate when it was satisfied that the disadvantages to the Colony and its people would not outweigh the advantages. The Company was sceptical about the value of the constant procession of experts sent out to the Islands for brief visits, and who subsequently wrote reports. They believed that the brief visits gave insufficient time to understand the peculiar local conditions.

The Falkland Islands Company rejected the cautious approach of the 1976 and 1982 Reports concerning hydrocarbon exploration. In the Company's view the real reason for the reluctance of the oil companies to engage in exploration was not the hostile weather or the conditions, nor by the limited seismic surveys which had been carried out - but rather they were deterred because of the British Government's policy of not confronting Argentina with issues affecting sovereignty. The general position taken by the Company was that it hoped that the Islanders regarded it - the Company - as a more effective instrument in safeguarding public interest than any Government.

[246] Shackleton, E; (1982); op.cit.; p113.

13. 1983 The Low Report – Tree Planting in the Islands

The 1982 Shackleton Report made the recommendation that advice should be obtained from suitably qualified forestry personnel about the possibility of initiating a tree-planting programme. A W Peers [247] visited the Islands in early 1983 and he advised that a short visit by a forestry advisor 'was necessary to assess the prospects and resources required for successful tree planting on the Islands.'[248] Dr Alan Low, a Principal Silviculturist from the Forestry Commission, visited the Islands for three weeks during September 1983.

The objectives of the visit by Dr Low were:

i. To advise the ODA and FIG on the success and failures of previous attempts to grow trees, and the reasons for the failures.
ii. The possibility of systematic tree planting, the species to be tried, and the techniques necessary for establishment.
iii. The resources necessary for trial plantings, particularly to investigate shelterbelts, amenity forestry and general agro-forestry.

Low reviewed previous attempts at tree planting, most notably the plantation at Hill Cove, where in the early 1890s Robert Blake (Senior) had planted Southern Beech (*Nothofagus betuloides*) imported from Tierra del Fuego; Corsican Pine (*Pinus nigra*) imported from Britain; Scots Pine (*Pinus silvestris*) raised from seed; Poplar (*Populus alba*) raised from cuttings taken from a tree in Government House; and a variety of forms of Sitka Spruce (*Picea sitchensis* & *P. jezoensis* & *P. smithiana*) raised in Stanley from seed sent out from Kew Gardens in 1925.[249]

[247] Agricultural Adviser, Overseas Development Administration.
[248] Low, A J; (1983) *Tree planting in the Falkland Islands; a report to FIG*; Stanley: Falkland Islands Government; p1.
[249] Blake, B.; (2002) *Bridget's Book - memories of a Falklands childhood;* The Alistair Cameron Memorial Trust: Stanley.

The work of James Reid, the Forestry Officer to the Islands Government 1920-1925, is outlined in the Report. Reid planted trees at Mount Low, Government House and at Hill Cove. After 1925, a lack of information concerning tree planting, for the next thirty years, makes it impossible to obtain a clear picture of what occurred after Reid's work. Low stated that the next serious attempt [250] at tree planting occurred in 1957-58 when the Falkland Islands Company imported several thousand plants of various coniferous species which were planted at Goose Green and Fitzroy. These plantings failed mainly because mishandling of the transplants, planting at the wrong time of the year, and failure to exclude grazing stocks from the plantations.

In 1977 Dr Jim McAdam [251] imported a variety of Southern Beech (*Nothofagus antarctica*) from Esquel in Argentina, and they were planted on the southern slopes of Mount Usborne. These trees became established and grew,[252] but they were probably destroyed during the 1982 Conflict by grazing animals. In 1977, the Sheepowners Association obtained a quantity of Lodgepole Pine (*Pinus contorta*) seed from the Forestry Commission and distributed the seed amongst its members. There are Lodgepole Pines, dating from this period, at Teal Inlet and at Port Howard.

Low noted that Monterey Cypress (*Cupressus macrocarpa*) was widespread throughout the Islands as either individual trees or as hedging. It is likely that the first introduction of this tree occurred in the 1930s at Weddell Island, and that this source provided the seed and cuttings for the rest of the Monterey Cypress in the Islands.

[250] Low is incorrect here; a tree planting programme at Government House began in July 1939.
[251] Dr. Jim McAdam (b.1952) B.Sc. B.Agr., M.Agr., PhD. (all Queens University Belfast) has made a distinguished contribution to many areas of Falkland Islands life. Initially trained in Agricultural Botany, his first job was as a pasture agronomist. He worked in the Islands (with ODA) from 1975 until 1978. From 1980 onwards McAdam worked for Dept. of Agriculture, N.I. and became lecturer at Queens in 1982 (concurrently). He was asked to return to the Islands in 1983 by United Kingdom Falkland Islands Trust, and has done so every year since. He is scientific advisor to Department of Agriculture in the Islands and editor of the *Falkland Islands Journal*. McAdam has published many papers on the Islands; he has been especially involved in Tussac grass restoration, tree planting, seaweed utilisation, wild flora mapping, invertebrate surveys and grazing management.
[252] McAdam, J H; (1982); op.cit. p10.

The Report reviewed the location of significant areas of tree planting in the Islands. It noted that very few farm settlements do not possess some trees or shrubs - although many are very windswept. The plantations at Hill Cove and Roy Cove were particularly noted. Low concluded that poor growth and low survival rates were due to attack from the Green Spruce Aphid (*Elatobium abietinium*) and to the effects of severe wind exposure.[253] In Government House, in Stanley, the Report noted the 1944/5 plantation of Monterey Cypress, planted as shelter for other trees and shrubs. On Westpoint Island and Carcass Island the trees were mainly Monterey Pine (*Pinus radiata*).

The windiness of the Islands, the low rainfall, and the nature of the soil:

> Almost certainly rules out the possibility that afforestation on any substantial scale will ever be a practical proposition in the Islands - even assuming that large areas of land could be made available for the purpose.[254]

However, Low was optimistic that there were reasonable prospects of establishing successful shelterbelt plantings provided that the trees are planted properly, the site was well prepared, and there was complete protection from grazing animals. The Report details how these shelterbelts might be established, and also the species of tree that could be used. The prospects for wood production on any economic scale were considered poor, but there was plenty of evidence in the Islands that small scale amenity planting was a practical possibility. Use of the native species of Box (*Hebe elliptica*) was commended as providing initial shelter for the young trees.

The Report recommended that a major new planting trial should be carried out to test out the validity of the assessments he had made. The primary emphasis should be on the provision of shelterbelts.[255] The use of artificial shelter netting,

---

[253] Low, A; & McAdam, J H; (1999) *Guidelines for Shelterbelt Planting the Falkland Islands*; Department of Agriculture & United Kingdom Falkland Islands Trust.
[254] Low, A J; (1983); op.cit.; p19.
[255] For the latest scientific opinion on the establishment of shelterbelts see: Low, A; & McAdam, J H; (1999); op.cit. p12.

or "Paraweb", was commended. An arboretum should be established, and this should be under the supervision of a qualified forester. Low stated that despite the potential threats from phytosanitary problems the importation of plants would be more cost effective. The forest nurseries of the southern parts of Chile and Argentina would be the best source because of 'their proximity and environmental similarity.'[256]

The significance of the Low Report lies in the fact that it clearly indicates the future possibilities for tree planting in the Islands.[257]

[256] Low, A J; (1983); op.cit.; p31 (note: Low's views have changed, and he now recommends locally grown and sown stock. See: Low, A; & McAdam J H; (1999); op.cit.

[257] Low reiterates the observations of William Dallimore made nearly sixty years earlier. See: Dallimore, W H; (1919) *Falkland Islands: Forestry and Tussock Grass;* Royal Botanic Gardens, Kew; Bulletin; pp. 209-222.

14. 1987 The Tom Davies Report – Agricultural research and development in the Islands 1969-1986

Tom Davies was the Team Leader of the 1969 Overseas Development Administration (ODA) Team, and he subsequently continued to be involved in agricultural research on the Islands for the next seventeen years. In 1986 he published a survey of the work of various research projects.

In the face of inexorably rising costs (particularly labour and freight charges) and the threat from the man-made fibre industry the 1969 team concluded that profit margins from sheep farming could only be maintained by either cutting costs or increasing output - preferably both. The team tackled the notoriously difficult subject of increasing the survival rate of lambs. They recommended that the '2-pasture system' pioneered by the Hill Farming Research Organisation be adopted. The team proposed that the better areas should be fenced off and used to provide better nutrition at critical times in the ewe's breeding cycle.

Davies noted that in the middle 1970s itinerant shearing gangs had begun to appear on the farming scene. The availability of contract shearers had a profound effect on the farms of the Islands in two major ways. First, it has enabled most farms to reduce their regular labour force drastically - and thus cut costs. This has resulted in the abandonment of remote 'outside' shepherd's house in Camp. 'Thus there has been a further opportunity to cut costs … Whether this trend is in the long-term interests of the Islands is another matter.'[258]

The second major effect of the availability of shearing gangs was to facilitate the policy of splitting large farms into smaller units. Other factors also played a part in the division of the farms; the political will and the availability of government finance were essential, but the advent of contract labour made the division a practical possibility.

[258] Davies, T; (1987) *Agricultural Research and Development in the Falkland Islands 1969-1986*; Stanley & London: HMSO; paragraph 1.11.

One of the first consequences of the sub-division was the urgency for much more fencing. Most of the camps were far too large, and some of the new smaller farms consisted of only one or two camps. This would have made it impossible to keep different ages of stock separate. Fencing has become much cheaper, and as a result there has been an enormous increase in fencing on Islands farms. Financial assistance from the Government has meant that on many farms, four miles of fencing has been erected for the same price as one mile of traditional fencing.

An agricultural research centre was set up by the ODA in 1976, and it was originally called the Grasslands Trials Unit. In 1981 this became The Falkland Islands Agricultural Research Centre; in 1985 the name was changed to Agricultural Research Centre. In 1992 the research function was subsumed within the Falkland Islands Department of Agriculture.

By 1978 it became apparent that the 2-pasture system had major difficulties when applied to the Islands. There was not enough good quality natural pasture, and what good pasture that was available, was too far spread out to be fenced economically. 'In short, good natural pastures were too few and far between.'[259] Davies concluded that despite all the efforts of pioneering farmers and scientific advisors in the past, nothing of a scientific nature was known about re-seeding under Islands conditions. This is a sad admission of failure in light of all the efforts of the preceding 130 years.

Alongside the effort to increase the numbers of young sheep, considerable research had been carried out to increase understanding of the principal natural grass species of the Islands - Whitegrass (*Cortaderia pilosa*).[260]

The Report outlined the many attempts which have been made to establish leguminous herbage plants in the Islands. 'Their ability to fix atmospheric nitrogen would clearly be of enormous benefit to agriculture.'[261] The Report

[259] ibid.; paragraph 2.7.
[260] ibid.; paragraph 2.18.
[261] ibid.; paragraph 8.1.

charted a series of experiments with leguminous plants, but it concluded that the results have been very disappointing.

In discussing the work carried out on natural grasslands Davies admitted that the ARC gave a low priority to research work on Tussac grass for two reasons. Firstly because it currently made little impact on wool production in the Islands, and secondly because the effort necessary to reinstate enough Tussac grass sufficient to make an impact, prior to sub-division, was beyond the scope of most farms. However with the creation of small family farms the prospects for Tussac had changed.[262] Thus, after nearly 200 years of human exploitation, Davies provided the first clear account concerning the difficulties of re-establishing Tussac plantations. Work by D Walton of the British Antarctic Survey and J McAdam of Queens University of Belfast had begun to investigate the problems associated with the establishment of Tussac grass. Their work, which continues, covered such aspects as the spacing of plants, the size necessary of the transplanted 'sets', nitrogen requirements and weed control. The research project included the Tussac of both the Islands and South Georgia.

Davies concluded by noting that one of the important results of the research to date was 'that the effort of reseeding is not worthwhile in terms of extra grass produced unless annual dressings of nitrogenous fertiliser are applied.'[263] Better use must be made of natural pastures; management techniques must be changed in order to utilise whitegrass. The possible use of Tussac grass in appropriate situations needed to be re-examined.

[262] ibid.; paragraph 9.31.
[263] ibid.; paragraph 11.5.

15. The present agricultural scene

"It is easy to plough with a pencil, especially when you are a thousand miles from the farmyard." [264]

§ a. The difficulties of farming in the Islands

Farming in the Islands is a difficult occupation. The weather (especially the wind), the low soil fertility and the geographical isolation of the Islands combine to produce an agricultural environment which presents many challenges. For those who have overcome these challenges which the Islands present to the farmer, the rewards, both personal and economic, can be considerable. Farming in the Islands remains today what it always has been - a lifestyle as well as an economic activity. Rural life in the Islands can easily be romanticised, and like many farming communities harsh economic realities are pressing, but nevertheless the quality of life which camp living can provide is very distinct and fulfilling. There is a strong social bond which binds people together in camp, and there are fewer ex-patriates living in camp. Any account or appraisal of farming, of the natural environment, and of how humans and nature have related in the Islands, must take account of human aspirations for personal fulfilment and achievement which can be the result of working on the land.[265]

Much has changed in the Islands since Louis Antoine de Bougainville and John Byron brought the first settlers, and Richard Moody subsequently assumed his responsibilities as Governor. Throughout the 230 years of its settled history, the Islands have provided a home and livelihood for pioneering and rugged individualists who value a 'sense of space', and who relish the challenges which their individualism confronts. The natural environment of the Islands has also changed a great deal as the human settlers have adapted and modified their

[264] Attributed to Richard Wagner, former Economic Advisor to the Islands Government (1991-2001).
[265] Strange, I; (1985) *The Falkland Islands: South Atlantic Islands*; New York: Dodd, Mead & Company; p119.

chosen domicile. The account of the farming industry outlined above provides ample evidence of some of the difficulties experienced by those who have chosen to make their living from the land. It also shows what the consequences have been for the natural environment of the Islands as farmers have struggled to make a living.

Change and adaptation have occurred throughout the history of the Islands, but there have been a number of significant changes in the agricultural industry since the 1970s. The original conception of Moody was that the Islands should be divided into a large number of smallholdings and farms, but this vision was never fulfilled because very soon after the establishment of sheep farming a pattern of large-scale sheep ranches emerged. Many of the problems which farming faces in the Islands today come as a direct result of the adoption of a ranching style of sheep farming, not least because until recently the governance of these farms has been in the hands of a few powerful (and generally conservative) non-resident landowners. Since the publishing of the Munro Report in 1924 the constant theme of any analysis of Islands farming has been the need for sub-division. The Shackleton Reports of 1976 and 1982 provided the ultimate impetus to enable this to begin. Sub-division is now a reality, but questions need to be asked about the effectiveness and the wisdom of this sub-division. Has sub-division and local ownership been a success? Have the structural changes since the late 1970s resulted in an improvement or degradation of the grasslands? How has the natural environment of the Islands fared since sub-division? Why have changes in farming practices been so difficult to implement?

§ b. Sub-division

Frank Mitchell doubts if sub-division would be successful in the long-term. This is an understandable reaction from someone closely involved with the traditional farming practices of the Islands, but sub-division of the farms was a necessity in the 1980s because of the greatly increased labour costs. The old system could not continue without radical reform. Before the 1982 Conflict 90% of the land was owned by people who did not live in the Islands; currently

(2003) 95% of the land is owned and farmed by those who live and work in the Islands. This enormous social change has had its problems, but, in purely social terms, it has been a great success. The sense of pride and self-confidence in the land-owning farming community is palpable. A land-owning meritocracy of the Islands is an appropriate agricultural structure for the 21st century. The previous structure was a dependency-based, almost feudal, system which was unable to sustain the hopes and aspirations of those who actually worked on the land. Moody's original land tenure aspirations have eventually been realised. However, in purely economic terms, it is doubtful if the division of the large farms has been an entire success. The Chief Executive of the Islands Government commented, in 2001, that 40% of farms in 2001 were operating at a loss and the true cost of government subsidy to the farming community is nearly £8M annually. This includes direct subsidies, the coastal shipping service, the costs of the Agricultural Department, a proportion of the costs of running the Government Air Service, and the rural road network. In 1999 the total value of the wool clip was £2.4M; the costs of running the Agricultural Department alone totalled £2M. Since 1989 the financial return on wool has almost halved. This decrease in farm income has occurred despite the fact that during the same period there has been an increase in total sheep numbers, an increase in the wool produced and a decrease in the average micron size of the wool (*i.e.* an increase in 'fineness'). One leading farmer has commented, in 2001, that while in 1989 he received £48,600 for his wool, in 2000 he received only £16,000. Falkland Landholdings, the last remnants of the farms of the Falkland Islands Company, which is a wholly owned subsidiary of the government, is currently (2003) operating at a large loss. It is quite clear that that a pastoral industry cannot be maintained in the Islands without government assistance. Such support requires a political decision, but it is doubtful that such political sympathies for the farming community still exist as strongly today as was previously the case.

There are a number of factors which have contributed to this position:

- Although sheep farming and wool production will be a feature of Falkland Island rural life for many years to come, the dominance of

wool is over and will probably never again be the primary industry of the Colony. There has been an understandable reluctance to face this reality because of the changes that this will require.

- Whereas sheep farming still has a powerful rôle in the culture and imagination of the Islands, in reality it has a minor part in the economic life of the community. Farming is now the 'poor relation' of the fishing industry. In broad terms farming has produced an income over the past ten years of £25M; revenue from fishing licences has contributed £250M to the Islands' economy during the same period.
- Wool prices have always fluctuated (the last substantial profit on wool production occurred during the Korean War in the 1950s), and although it currently (2003) shows signs of a slight improvement, the fact remains that wool is now only 2½% of the world fibre market, and that its share of the fibre market has been declining from the 1960s.
- There has been a lack of clarity (of thinking and policy) in maintaining a distinction between the sub-division of the large farms, and the sub-division of the large camps. This failure has resulted in a common assumption which, following sub-division of the large farms, all that was required was that the same style of farming could take place - but on a smaller scale. The work of William Davies in 1938 proved that what was essential was the significant sub-division of the pastures, irrespective of the ownership and the size of the farms. As one farmer commented, in a pers. comm. the attitude was: "Let's buy our own part of the farm, and then carry on as before. We'll be the Boss and make the profits."
- In retrospect, in some cases, the original sub-division of the large farms has proved to be too small to have a chance of being economically viable. Falling wool prices have meant that the original advice that 3,000 sheep were needed to make a sufficient living has been shown to be seriously outdated. Current (2003)

thinking suggests that the figure should be nearer to 10,000 sheep to have a chance at viability.

- Inter-farm co-operation and the sharing of resources could have ameliorated high capital costs, but this has occurred in only a few cases. Co-operation has proved to be very difficult in a culture which emphasises a 'stand alone' and self-reliant lifestyle.

There are two other major factors, (i) Management methods and (ii) The failure to implement change in the past, which must also be considered if sheep farming in the Islands is ever to have a chance of becoming viable again:

i. Management methods:

Despite large-scale sub-division of farms and pasture since the 1980s, and considerable effort on the part of some farmers, agricultural management methods have remained largely unchanged since sheep farming in the Islands was established in the 19th century. Radical solutions (similar to those adopted by farmers in New Zealand and Australia in the 1960s) are needed. This will require consolidation of existing farms and a much greater degree of co-operation between farms. Scarce and costly resources will need to be shared. Pasture improvement is vital; a much more extensive rotational grazing system must be pursued, and although, by itself, fencing sub-division is probably not economic, no pasture improvement can take place without a commensurate increase in fencing. Research must continue on both the introduction of well-adapted pasture species, and also on new management techniques. Every effort to remedy the inherent soil infertility of the Islands, by the introduction of well-adapted legume species as forage for animals must continue. Species that are under investigation include Marsh Birdsfoot Trefoil (known as Greater Lotus), Caucasian clover, Tree Lupins and a wide variety of clovers. 'Lotus has been the outstanding legume.'[266] The problems of nitrogen fixation are well understood, and because of the acidity of the soil of the Islands all legume seed must be inoculated with the Rhizobia before planting. Clover seed should be

[266] *Falkland Islands Department of Agriculture Biennial Report 1997/99*; Stanley: Falkland Islands Government; p15.

coated with lime (as a means of inoculation) and surface sowing should be avoided. Direct drilling, despite its associated mechanical difficulties in the rocky soils, appears to be the most practicable method. The infertility of the soil must be remedied by the application of naturally occurring fertilisers such as calcified seaweed.[267] Failure to improve the grasslands is not an option because by its nature extensive sheep ranching, as practised in the Islands, is nutrient extractive. Means have to be found to attempt to replace that which is lost as a result of wool production. In a recent (2001) Report James Cruickshank outlined the difficulties of soil improvement in the Islands:

> The soils are most deficient in available phosphate and lime. Soil improvement for better grass or legume productivity must concentrate on these chemical properties, and the correction of their deficiencies, if improvement is considered worthwhile in the economic conditions of the time … The cost-benefit arguments will figure very strongly but improvement of lowland soil is possible - and is happening now - encouraging the growth of better pasture grasses, oats and legumes. This is nothing short of a miracle in a place with such a hostile climate for the cultivated plant, and in a place which was dealt such a bad hand in rock and soil types. [268]

David Broughton has suggested the need to develop a joint management and conservation plan [269] based on the recognition that the condition of the heathlands of the Islands continues to deteriorate. Broughton argues for a reduction in livestock numbers, while at the same time at the same time making continuing efforts to increase per capita productivity. Broughton argues for 'controlled grazing of the range … year-long grazing has to be avoided and rest introduced either by rotation, or deferred grazing systems.'[270] With effective

[267] The proposal to use calcified seaweed was first made in: CSO0214/A; *Final Geological Report on recent limestone at Shell Point, Fitzroy area, East Falkland by Adie, R J*; Falkland Islands Government Archive; May 1950.
[268] Cruickshank, J; (2001) *Falkland Soils - origins and prospects*; Belfast: Department of Agriculture of Northern Ireland.
[269] Broughton, D; (1999) *A review of the biology of the shrub taxa and associated dwarf shrub heathlands of the Falkland Islands*; an unpublished M.Phil. Dissertation; Queens University of Belfast; p248ff.
[270] ibid.; p246.

fencing pasture yield can increase significantly. Stocking density should be determined and strictly adhered to. Broughton suggests that:

> The ingress of unwanted dwarf shrubs is mainly the result of overgrazing, therefore control should be through a reduction in overgrazing, [with] more active measures to reduce shrub cover.[271]

No new management plan can succeed without a recognition that the grasslands of the Islands have deteriorated. There must be a willingness to admit, and learn from, previous failures. Frank Mitchell has consistently doubted the validity of the claim that there has been over-stocking and that the grasslands have thus seriously deteriorated. Even if the maximum figure shown in Figure 8 is inaccurate to a degree, nevertheless the trend shown in Figures 8 & 9 show that the population of sheep carried at the end of the 19th, and at the beginning of the 20th century, were much higher than at present. Figure 9 also shows evidence that during the first half of the 20th century there was a consistent decline. The evidence for this decline in sheep numbers, and the degradation of the grasslands, has existed since the days of Mowat (1895) and Munro (1924). William Davies' analysis remains as true for today as it did for the situation in 1939. Tim Blake, [272] states that the figure of 800,000 for the total number of sheep carried is "probably accurate and not apocryphal", and that undoubtedly some "sensitive areas of grassland" have been damaged. Blake also stated that the warnings about poor camp burning practices have gone largely unheeded, and that "burning makes a rich father, but a poor son."

Any future plan will require the closer integration of cattle production and sheep farming. In the past cattle have only been tolerated as necessary for the production of milk and meat for the farmsteads; cattle have also been regarded as nuisances that destroy fences. As outlined above, Reg Pole-Evans showed in

[271] ibid.; p247.
[272] Tim Blake (b. 1935) was the last Manager of the Holmested Blake farm at Hill Cove before sub-division of the large farms; he subsequently became the owner of The Peaks Farm, West Falkland. Blake is a grandson of Robert Blake (Senior) who founded the farmstead based at Hill Cove, and he has been a member of Legislative Council. He was appointed the first Speaker of Legislative Council in 2002.

the 1930s that cattle could improve pastures. With modern electric fencing the use of cattle for pasture improvement and meat production is a practical possibility for all farms. As well as the use of cattle for pasture improvement, a decrease in the reliance on wool production and an increase in beef production should also be part of any plans to improve the rural economy. The Chief Executive of the Islands stated, in 2001, that "it is a priority to engineer a change from wool to meat."

The grasslands of the Falkland Islands show a wide geographical variation. Not all parts of the Falkland Islands are appropriate for profitable sheep farming because the underlying soil and rock are unsuitable for grassland improvement. David Broughton challenged much of the received wisdom about grassland improvement in the Islands when he stated:

> Agricultural productivity seems more likely to be a function of parent rock type than of the vegetation. Therefore, efforts to modify the vegetation are likely to be ineffective in increasing productivity, as well as being undesirable from a biodiversity conservation standpoint.[273]

Research into rotational grazing techniques on the whitegrass is also continuing. Kerr and McAdam have suggested that 'resting' whitegrass camp from grazing during late summer appears to allow sufficient increase in biomass to provide higher quality forage during winter.[274] Tim Blake has suggested that farming in the Islands must always assume that the land has limited resources. "The first priority is to improve the lambing grounds; the current average of lambing survival rates is 60% and this is not sufficient, either to maintain the flock size or improve the breeding." [275]

[273] Broughton, D; (1999); op.cit.; p247.
[274] Kerr, J A and McAdam, J H; (2000) *Rotational and continuously grazed whitegrass pastures in the Falkland Islands*; Department of Agriculture, Falkland IslandsGovernment/Department of Applied Plant Science, The Queen's University, Belfast.
[275] Tim Blake's words echo those of David Weir made 65 years earlier at a farming conference held in May 1937: 'Hoggets are deserving of special care, and should be given the best possible camp, and the question of providing them with some form of supplementary fodder during their first winter is one of paramount importance.' From a speech made by David Weir to a Farmer's Conference in May 1937. CS83/37; *Farmer's conferences*; Falkland Islands Government Archive; 13 May 1937.

ii. The failure to implement change in the past:

There can be no radical re-ordering of the farming industry without an honest assessment of why the history of farming in the Islands is largely the history of a failure to implement change. Why has change been so difficult to implement? The lessons of missed opportunities and past failures need to be learnt. As can be seen from the account detailed above there has been no lack of advice, and undoubtedly some the advice has been mistaken. However it cannot be disputed that the work of Hugh Munro and William Davies are two major examples of the failure to seize the opportunity to restore, change and adapt. Munro's work was dissipated because of the ignorant interference of Governor Hodson; the loss of the Experimental Farm was a grievous one. The public life of the Islands has often suffered from a lack of consistent leadership, particularly with changes in Governors. The increase in the authority of elected Councillors, taken with efforts to enhance the Civil Service and to strengthen the Agricultural Department will significantly attenuate this problem. The labour of William Davies was lost as the result of the combination of the intransigence of vested interests, and the exigencies of a wartime economy. Davies' Report remains the most important general statement about the grasslands of the Islands, and it is therefore appropriate that the Director of Agriculture in 2001 regarded it as seminal.

Why has it been so difficult to implement change in the Islands? There are a number of factors, which have combined to make change difficult, and sometimes impossible. These factors can be divided into two main 'areas.' There are structural factors, and there are factors attributable to human attitudes and activities:

Structural factors:

- There are limits to the physical environment, and the resources available for exploitation, in the Islands *e.g.* soil fertility, climatic problems, the distance of any commodity produced from the market.

There are only a small number of agricultural practices which will be effective in the Islands because of these limits.

- The rise and consequences of 19th century capitalism, which among other things has resulted in natural resources being viewed only as a commodity to be exploited for profit. The subject of the 'commoditisation of nature' will be returned to later in this dissertation, but at this stage it is sufficient to state that how natural resources are viewed strongly effects how they are used - or abused. Capitalism has sometimes been characterised by a materialist individualism, which can be brutal and exploitative. A desire to make a quick profit for a minimum investment does not encourage change to the established revenue producing system.

- The geo-political structure of British colonial rule. Change and adaptation has been difficult in many former British colonies, especially those which have had monocultural economic base *e.g.* Malaya and rubber, the West Indies and bananas or sugar cane. British colonies tended to have a centralised administrative system, and they were expected to be at least financially self-sufficient - preferably able to contribute to the British exchequer.

- The demands of a mercantile economy have made change and adaptation difficult. The need to make a profit for shareholders, and the fact that most income generated by the farming enterprises, before farm sub-division, found its way north made changes to the established pattern almost impossible. For some farming companies financial gain became the only motivation. This is not true for all farming companies, but the effect of an exclusively profit-centred business ethic resulted in little incentive to change and in inadequate inward investment.

- When profits were high (*e.g.* during the Korean War) there was little impetus to alter farming methods, and when profits were negligible there were not the resources to make any changes however desirable those changes might be. The production of wool was what Islands farms and farmers knew how to do; it was relatively cheap to produce, and until recently it was inexpensive to handle and ship. As one farmer commented in 2001: "We knew what we knew; it worked, it was what we were used to, so why change it? … "If it isn't broke, don't fix it!" Other agricultural products such as cattle/meat required slaughtering and refrigeration, and thus they were much more expensive to transport and market. As outlined above a variety of other agricultural products have been tried throughout the history of the Islands with only a moderate degree of success, but their associated costs usually made for their eventual demise.

- All life on the Islands both politically and economically has to reckon with the issue of sovereignty over the Islands and the claims of Argentina to that sovereignty. The behaviour of the Argentine Government since the creation of the Crown Colony, and the occasional duplicity of the British Government (particularly during the 1970s) has been a constant strain on the economic life of the Islands. The failure to resolve this issue has been had a considerable dampening effect on development. It is remarkable how much has been achieved despite the attitudes of both the British and Argentine Governments, but this issue has not encouraged or affirmed change and adaptation in the farming industry.

Human factors:

- Farmers world-wide tend to be conservative and are reluctant to change from a tried and tested system. Jane Cameron, The Falkland Islands Government Archivist commented on the difficult task of

introducing farm reforms: “I think farmers world-wide are a pretty conservative breed … I don’t suppose it would be really harder here than anywhere else, except that Falkland farmers probably have an additional streak of independent stubbornness inherited from their pioneering backgrounds.”

- Ranching methods of farming wherever they are established, are resistant to change. The problems of sheep farming in the Islands have their parallels with the sheep farming in Australia and New Zealand, which have also found change difficult.

- The philosophy of the ‘frontiersman’ is still deeply ingrained in farming culture of the Islands. Living ‘on the edge’, the thrill of the daily challenge against the elements, the excitement of hard-won achievement, the sense of personal fulfilment, can make adaptation and openness to new ideas difficult. One farmer commented, in 2001,: “It is akin to the ‘Cecil Rhodes’ attitude - men should be men; the need for men of action to make decisions; the need for men of action and not reflection; the need for fewer Reports and more hard work.”

- Attitude and opinions in the farming community can become deeply entrenched. A former Agricultural Advisor [276] to the Islands Government commented in 1937: ‘One cannot escape from the impression that there is reluctance in some quarters to make any radical alteration in farming methods.’

- The farmers of the Islands have not lacked for advice. As the above account shows there have been a large number of Reports and Conferences. The Shackleton Report of 1976 rightly commented that ‘an island is a piece of land entirely surrounded by advice.’ [277] Much

[276] CS83/37; *Farmer's conferences*; Falkland Islands Government Archive; 13 May 1937.
[277] Shackleton, E; (1976); op.cit.; volume 1; p ii.

of this advice has been perceived as being too academic and remote from the 'real' world. Many of the earlier Reports got no further than the desk of the farm manager; there was little 'trickle down' to those actually working with the flocks. This is not the situation today; the policy of the Grasslands Trials Unit since the mid-1970s and the Agricultural Department since the 1980s has been to involve all sections of the farming community with research and development. 'Farmers Weeks' and the Agricultural Department newsletter *Wool Press* are essential parts of a strategy to promote change and the adoption of best practice. But within the Islands there remains a deep suspicion of 'experts' - "They come and go; they write reports and leave us to pick up the pieces; they cost us money for little results." - and these observations are sometimes justified. However when these attitudes are combined with an antagonism towards ex-patriate contract officers working for the government the atmosphere of suspicion created can sometimes make the acceptance of change very difficult.

- The Islands have always been home to strong-minded and determined individuals. Governors such as Allardyce, Middleton, Hodson, Henniker-Heaton, Cardinall, and Clifford, have all left their mark on the Colony. Managers of the Falkland Islands Company - especially F E Cobb - have had an enormous influence on the development of the farming industry. Some Farm Managers and Owners - the Camerons, the Blakes, the Deans, the Luxtons, the Millers and the Bonners held absolute sway over their farms and employees for many years. In a small community like the Islands the domination of a small number of closely-knit families did not always encourage innovation and variation.

- The Boards of Directors of the farming companies were often inflexible and conservative. The pattern of the membership of the Boards being largely drawn from family members and/or former

> farm managers, who had returned from the Islands to Britain for retirement, did not tend to promote new thinking and adaptation. Some farm managers were frustrated in their attempts to develop the agricultural industry because of the reluctance of their Boards of Directors to give the managers authority to implement change. David Weir in 1937 summed up his hopes for the future of sheep farming with a mixture of optimism and pessimism; optimism that farm managers would grasp the opportunity for change, and pessimism that the owners would thwart any alteration to traditional practices. 'I am sure that the managers are thoroughly capable of putting into effect any improvements authorised by the owners and it is to be hoped that they will be given every opportunity in the future.'[278] Reference has already been made to the intransigence of some owners to reform with the reaction to the Reports of Hugh Munro [279] and William Davies.[280]

§ c. Future challenges

What are the challenges which farming in the Islands faces in the 21st century? The key word in any discussion about the future for rural life and the agricultural industry in the Islands is sustainability.

There are no easy or 'quick-fix' solutions to the problems facing those who wish to farm in the Islands. The problems are not unique; extensive and ranching farming methods are also to be found in Australia and New Zealand.

Recent experience in Australia warns that:

> The task to design and develop practices that are more sustainable should not be trivialised. It is going to be difficult. Much will be

[278] CS83/37; *Farmer's conferences*; Falkland Islands Government Archive; 1937; op.cit.
[279] CS638/24; *Stock Commissioner forwards report on the sheep farming industry in the Falkland Islands*; Falkland Islands Government Archive; 4 October 1924.
[280] CO78/212/2; Colonial Office Records; Public Record Office; Kew; 1939. see also: C/18/38; Falkland Islands Government Archive; 14 December 1938.

demanded of our scientific skills to overcome the numerous fundamental constraints to development of sustainable farming practice.[281]

The problems may not be unique, but the solutions will be. The challenge is to find a sustainable way of life for humans and wildlife in the Islands, and which respects and enhances the natural environment.

i. Sustainability from a human perspective:

- The sheep industry must continue to come to terms with the fact that is no longer the dominant wealth-creating source of the Islands. In view of the diminishing world demand for wool products, it is likely that sheep farming in the Islands may well continue to decline and that it can never again be in the ascendant.

- There must be the political will and financial support to enable farmers to remain on the land. Camp - like any other natural resource - must be properly managed. 'Farmers must be encouraged to see themselves as conservation and landscape managers, and make it worth their while financially to do so.'[282]

- There must be the political will and financial support to enable those who wish to leave the land to do so with dignity. This has implications for housing and employment.

- The future of farming may well be a combination of medium-sized family farms and also contract managed farms. There can be no dogmatic assertion as to the optimum size of a farmstead. The consolidation of small farming units will continue. On Lafonia there is no reason, in principle, why the four farms of Falkland Landholdings cannot be run as one unit as part of strategic farming

[281] Williams, J; (1990) [CSIRO Division of Soils; Canberra, Australia] *Search for sustainability: Agriculture and its place in the natural ecosystem*; Linnaean Society of London.

plan. All farming in the Islands is likely to require government support for the foreseeable future.

- Governor Cardinall's proposal (1942) of co-operative tenancy deserves detailed examination, as a possible model for some current farming enterprises, [283] and as an alternative to freehold ownership.

- The issue of a declining manpower willing/able to work in agriculture must be resolved. In a pers. comm. Tim Blake commented: "There are no young people coming through the system." The community needs to re-affirm its esteem of farming and encourage its young people to make a career of farming. Governor Cardinall's proposal of a 'Farming Institute,' [284] to prepare students for a career in agriculture, should be re-examined.

ii. Sustainability from an environmental perspective:

- The issue of the depletion of soil nutrients caused by farming must be resolved. The long term aim of a sustainable farming system in the Islands must be to balance inputs and outputs as far as possible. There must be a recognition that the current system of farming is far from sustainable:

> A nitrogen balance for a cropping enterprise will show if inputs of fertiliser, nitrogen fixation and atmospheric accession are balanced against outputs of nitrogen … in animal products, soil erosion … The search for sustainable agricultural practice will require the Agricultural Scientist to radically change his focus

[282] O'Toole, C. (2000) *The Red Mason Bee: Taking the sting out of beekeeping*; Cambridge: Osmia Books; p20.
[283] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942; paragraphs 208-245.
[284] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942; paragraphs 208-245.

from short term productivity to the integrated functioning of the agro-system.[285]

- David Broughton has emphasised the importance of maintaining the biodiversity of the Islands,[286] and that the greatest threat to that biodiversity comes from introduced mammalian herbivores:

> The challenge is to sustainably manage and conserve this important biodiversity within the current agricultural framework, and if necessary to develop more appropriate (*i.e.* more sustainable) management practices that fit in with a comprehensive biodiversity conservation strategy … Although the flora and fauna of the Islands is still largely intact there are causes for concern.[287]

- Not all the degraded land is worth restoring; some land can only be rehabilitated in the very long-term - but this is not likely to be economic. Choices have to be made and priorities agreed upon. Hodgkinson has suggested that a good analogy for doing this is the triage system used in hospital casualty units.[288]

iii. Sustainability from a developmental perspective:

- The research and development work of the Agriculture Department should be enhanced. Rural development cannot take place in a sustainable way without scientific research. The high costs of such work need to be regarded by the community as a whole as an

[285] Williams, J; (1990) *Search for sustainability: Agriculture and its place in the natural ecosystem*; CISRO Division of Soil; Canberra; op.cit.; pp. 21-33.
[286] Broughton, D; (1999) *A review of the biology of the shrub taxa and associated dwarf shrub heathlands of the Falkland Islands*; an unpublished M.Phil. dissertation; Queens University of Belfast; op.cit.
[287] ibid; p238.
[288] Hodgkinson, K; (1992) Elements of grazing strategies for perennial grass management in rangelands; *Desertified Grasslands: The biology and Management*; The Linnaean Society; p78.

investment in the future. The story of the failed Experimental Farm in the 1920s should stand as a warning of the consequences of short-term cost savings.

- Tim Blake's maxim "Assume you have limited resources" means those resources must be concentrated in key areas of camp. This should be done in light of the fact that the problems of West Falkland, East Falkland and the small islands are distinctively different. East Falkland Island's farms have much easier access to Stanley; the running costs of West Falkland farms are higher than that of East Falkland; the small island farms may not be able to sustain an economically viable sheep farming industry in the future.

- Rural development must be seen as more than just agricultural development. The agriculture industry must see itself as part of the rural scene, and not dominating it. Camp and rural property can be used for other purposes; *e.g.* for retirement homes and as a base for non-farming rural industries.

- Farming must stop seeing itself as the sole industry in a 'rural preserve'. The aim should be to create a rural infrastructure with people engaged in other activities to produce income in addition to farming, *e.g.* the Scottish crofters.

- Diversification should continue: the potential for goats, pigs, reindeer, local sea fish products and cattle must be fully explored. Tourism can play a part in providing supplementary income for some farms.

- A former Islands Chief Executive, Dr Michael Blanch, suggested that greater emphasis should be placed upon 'niche marketing' of Islands products. The relative 'cleanness' of Islands' wool should be

marketed. Organic accreditation should be sought for the products of Falkland Islands' agriculture,[289] especially meat products.

The understanding of appropriate farming practice in the Islands has come a long way since the first sheep were landed in 1840. Sustainable sheep farming must co-exist with the natural environment of the Islands and not seek to dominate it.[290] The management of livestock must work with the soil and the natural pastures, and also with the prevailing climatic conditions. For farming to have a future in the Islands the agricultural industry has to work with nature, and not against it. Respect for the land, and its inherent characteristics, is the only durable option for Islands farming.

[289] *The Islands Plan 2001-2003*; The Falkland Islands Government; 6 December 2000. Organic farming is the preferred option by the Falkland Islands Development Corporation and the Department of Agriculture. Currently (2003) a number of farms are certified as being fully organic. See: *Branding the Falkland Islands*; (2000) Stanley: Falkland Islands Government.

16. Sealing in the Islands and South Georgia

§ a. Introduction:

The history of sealing in the Islands and one of its former Dependencies can fairly be described as the history of the human and commercial over-exploitation of an abundant natural resource. A number of the issues raised in the chapter concerned with the history of the farming industry and the use of the land, reappear in the history of Southern Ocean [291] sealing.

The response of Governmental and political authority to this Southern Ocean version of the gold rush was control through Ordinance.[292] The weakness of concentrating purely upon regulation is clearly revealed in this story. Despite the good intentions of pioneer conservationists such as Governor William Allardyce, the greed of the sealers and the activities of poachers constantly undermined the regulatory system. The practical difficulties of enforcement in such a vast and remote area, which was being exploited by sealers from many nations, can also be clearly seen. The issues surrounding the practical difficulties of enforcing of regulatory regimes will also be seen later in this dissertation in chapter 18, which outlines the history of the development of the fishing industry.

The classic 'boom and bust' story of human exploitation of a natural resource is seen in this account of Southern Ocean sealing. There is a distinctly pioneering/frontiersman colour to the attitudes and behaviour of many of those involved in the sealing industry. The rapid decline in the seal stocks was also

---

[290] Kerr, J; (2002) *Environmental and management factors affecting the sustainability of native pastures under sheep grazing in the Falkland Islands*; Ph.D. Thesis; Faculty of Agriculture and Food Sciences, the Queen's University of Belfast.

[291] The term *Southern Ocean* in this dissertation generally refers to waters south of approximately latitude 60º S, which are physically distinct from other oceans to the north. On the biology of the polar seas particularly the Southern Ocean see: Hempel, G; (1985) in Gray, J S and Christiansen, M H; (1985) *Marine biology of the Polar Regions and effects of stress on marine organisms*; Chichester: John Wiley & Sons; p6.

[292] One of the earliest recorded proposals for the controlling the catching of seals was made by John Leard of the *Intrepid*; letter to Lord Hawkesbury, President of the Council for Trade and Foreign Plantations, 1788; BT/95; Colonial Office Records; Public Record Office; Kew. also: King, H; (1964) An early proposal for conserving the southern seal fishery; *Polar Record*; Vol. 12; No.78; pp 313-316.

hastened by the naïve assumption that the bounty of nature was limitless. When it became obvious that there were limits to this natural resource, the problems of conservation were compounded by optimistic over-estimation of the remaining seal stocks by regulatory authorities and their scientific advisors.

For simplicity this account has been divided geographically and chronologically into four sections. The sealing history of the Islands is divided into two parts: the period from discovery of the seal stocks until the beginning of Government regulation; and secondly the period from the first Fisheries Ordinance of 1881, until the end of the Islands sealing industry in 1967. The sealing history of the Dependencies is also divided into two sections: from the discovery of the seal stocks by James Cook in 1775, until the first sealing licence granted to Compañia Argentina de Pesca in 1910 and secondly the period of licensed exploitation until the end of hunting for Elephant Seals (*Mirounga Leonina*) - which came when whaling also ceased on South Georgia in the 1960s.

At various times, in the Islands, and its Dependencies, a total of seven species of seal was hunted. The first recorded sealing commenced in the Islands and their Dependencies in 1766 and licensed sealing continued until 1968. There is evidence that both United States and British sealing ships were exploring in the Islands waters from 1774 onwards. Edmund Fanning visited the Islands in 1792 and he wrote in his journal:

> On our arrival we learned the seals were up in great numbers on some of the outer islands. At Beauchêne Island, for instance, the top of the rock forming the north-eastern head of the island was literally covered with South American Fur Seal (*Arctocephalus australis*). [293]

Original stock sizes cannot be accurately assessed. Catch records are notoriously inaccurate; anecdotal comments have suggested that as many as eight million Fur Seals and five million Elephant Seals were taken from the Southern Ocean islands in the period up to c1900. Alan Moorhead may well be

exaggerating about size of the Southern Ocean seal stocks in his book *The Fatal Impact*, but nevertheless his point is well made about what happened to them once they had been discovered:

> 'No one will ever know how many whales and seals were killed in the Southern Ocean in the ensuing fifty years [after Cook's discoveries]. Was it ten million or fifty million? Figures become meaningless; the killing went on and on until there was virtually nothing left to kill, nothing at any rate that could be easily and profitably killed.'[294]

A former Senior Marine Biologist of the British Antarctic Survey has warned about the difficulty in assessing the accuracy of these figures.[295] Sea Lion and Elephant Seal stocks partially recovered during the late nineteenth century in the Islands, and sporadic controlled exploitation occurred until 1968. Sea Lion populations in the Islands continued to decline from an estimated 380,000 in 1937 to 30,000 in 1969. A breeding stock of 3,500 Elephant Seals on the Islands has recently been estimated. The numbers of Fur Seals found in the Islands (which are different sub-species from the Antarctic Fur Seal (*Arctocephalus gazella*) found in South Georgia) have not recovered to the same extent as Fur Seals have on South Georgia. The numbers of Fur Seals in the Islands are currently (2003) estimated to be fewer than 16,000. The Antarctic Fur Seal population has recovered in South Georgia since 1900 and annual population growth rates of between 10% and 17% have been estimated. The stock is now estimated to be in excess of three million. The Elephant Seal stock has been estimated to be approx. 750,000 and this sustained a controlled industry from 1909-1965. This seal oil industry was possible because of the parallel development of a nearby land based whaling industry.

All Seal species in the Islands were protected from exploitation by Government Ordinance of 1964; this has recently been superseded by the Conservation of Wildlife and Nature Ordinance 1999. The 1964 and 1999 Ordinance only

---

[293] Quoted in: Strange, I; (1969) Marine Mammals of the Falkland Islands; *Pacific Discovery*; Volume 22, No.5 p17.
[294] Moorhead, A; (1968) op.cit.; p195.

extend to land, internal waters and the Islands' territorial sea. The Marine Mammals Ordinance of 1992 (which remains in full force and effect) replaced repealed Ordinances, which allowed licences to be given to take seals and whales, and which defined "Falkland Islands waters" to include fisheries waters as well as internal waters and territorial sea.

§ b. Sealing in the Islands up to 1881.

The first cargo of sealskins and oil directly exported from the Islands was by Bougainville and other French settlers in 1766. Thus began an industry which continued intermittently for two centuries. Concerted commercial exploitation commenced in the Islands in 1774 when United States whalers based their activities in the Islands. British vessels arrived soon afterwards, in 1775, from Greenland waters. Mixed whaling and sealing voyages were made. Some sealing was done by Islands settlers in the eighteenth and nineteenth centuries; however most sealing was done by visiting crews. Little financial investment was necessary, and large profits were possible. Over-exploitation caused stocks, and thus profits, to decline.

Sealing was interrupted by the United States War of Independence. (1775-83) The British Government blockaded New England ports, preventing many whaling and sealing vessels from leaving. British vessels returned to the Islands in 1786 for whale and seal oil for the London market. New England vessels returned to the Islands in 1789 and their ships dominated the trade in skins. The seal rookeries were depleted by the end of the eighteenth century. At this point as many as fourteen sealing ships were operating regularly around the Islands.[296] Elephant Seal hunting became more common from about 1815 and it supplied oil for an increasingly industrialised United States. The oil was required for lubrication, soap, and for lighting. [297] In the absence of government

[295] Boyd. Dr. I; currently (2003) Professor of Marine Biology at St. Andrews University.
[296] Strange, I; (1972) Sealing Industries of the Falkland Islands; *Falkland Islands Journal*; Volume 6; pp. 13-21.
[297] Strange, I; (1972) *The Falkland Islands*; op.cit.; p196.

on the Islands, conservation measures could not be introduced or enforced. Many Fur Seal rookeries during this period were eradicated and have never subsequently recovered.

Daniel Jewitt claimed the Islands for the Provincias Unidas de la Rio de la Plata in 1820. His attempts to stop foreign sealers and whalers were ignored. The Provincias Unidas reasserted a claim in 1826 and they licensed Louis Vernet, who had settled at Port Louis, with exclusive sealing rights. Vernet was keen to conserve seal stocks to develop a sustainable domestic sealing industry. Masters of foreign vessels were told to stop sealing but the ban was difficult to enforce, and sealing continued by British and United States crews. Vernet attempted to enforce his demands by seizing the United States sealing ship - the *Harriet*. Vernet took the *Harriet* to Buenos Aires in order that the Master (John Davidson) could stand trial. The United States denounced Vernet as a pirate and a United States Navy corvette - the *Lexington* - destroyed Port Louis in retaliation. United States sealing ships continued to reduce the already seriously depleted stock. Further attempts were made to ban United States vessels in 1833, but such measures were difficult to enforce. With the decline in stocks the profitability of the trade also declined. [298]

In 1840 the first licence for sealing was issued by the British Naval Officer then in charge of the Islands (Lieutenant John Tyssen). This was for the rookery off Volunteer Point. The rookery had to be rested on alternate years. This was the first significant attempt to conserve seal stocks after 75 years of exploitation.

With the establishment of British civilian government, control became easier. In his long Despatch of 14 April 1842 Governor Moody reported that the stocks of seals were depleted. His words reveal clearly the scale of early hunting on the Fur Seal populations:

> The Hair and Fur Seals, which were formerly so abundant in these islands, have decreased considerably in number, in consequence of the

[298] Jones, A; (1992) Fur sealing in the Falkland Islands in the 1820s and 1830s; *Falkland Islands Journal*; Volume 6 (part 1); pp. 39-47.

> wanton destruction at all times of the year when they can be met with; neither old seals nor pups are spared by the sealers. [299]

Moody requested a warship to patrol the western islands to intimidate United States ships who waited for local sealing ships to leave. The foreign ships would then send men ashore to work unhindered and unreported. Moody reported in 1843 that there were 28 foreign ships in the Islands, but only three local ships were described as being involved with sealing.

By 1860 most sealing was taking place on the coast of South America, but after these stocks became depleted (by 1871) United States sealers returned to the Islands and South Georgia. The stock, which had been relatively undisturbed for 25 years, once more became the target of exploitation. Strange commented that 'another rush south took place'[300] but once again stocks were soon depleted to the point of near extinction.

Despite the optimism of Governors Moody and Rennie that the establishment of a sustainable domestic sealing industry would be possible, the project failed because it was unable to provide substantial revenue for the Colony as a result of low stocks and catches, and also because of the increased involvement of the settlers in other employment - particularly sheep farming.

§ c. Sealing in the Islands 1881-1967.

The Islands Government introduced the Seal Fisheries Ordinance in 1881 to encourage the recovery of seal colonies in order to enable the development of a domestic sealing industry. This introduced a closed season and the requirement for royalties and licences. Hunting was prohibited during the breeding season and fines (up to £300) were established for breaking regulations. A Naval vessel (initially HMS *Dwarf*) was stationed in the Colony to enforce the Ordinance.

[299] Moody, R; (1843) *Information respecting the Falkland Islands*; Charles Knight & Co.; p13.

[300] Strange, I; (1972); op.cit.; p14.

Sealing Licences became a requirement from 1889. Governor Goldsworthy wrote to the Senior Naval Officer (Captain Lacy) thus:

> During the stay of the *Magpie* here an American vessel the *Sarah Hunt* came in with 600 seal skins which the master stated he had procured off the Horn. It is far more probable that they were obtained from one of our outlying islands.[301]

It should be noted, however, that these measures failed to have controlling effect on pelagic sealing.

The Falkland Islands Gazette of 1891 requested tenders for hunting in five areas or sealing districts and Charles Hansen [302] successfully applied for a licence. He was drowned in 1891, but his widow, Sarah, continued to use the licence. Sealing appears only to have occurred on Carcass, Beauchêne, and the Jason Islands. Sarah Hansen used the licence until 1914. The stocks did not recover as expected and little sealing took place thereafter. Thereafter the sealing industry became of minor importance to the Colony's economy.

Canadian and Chilean rookery poaching and pelagic hunting from 1901-1911 also delayed Fur Seal recovery. During this period the Canadians took at least 70,000 Fur Seals from the whole of the South Atlantic region. The seal skins were transhipped through Stanley, and the Stanley Shipping Registers show that the season 1903/4 was the peak of the activity, with 22,360 skins shipped.[303] Thereafter there was rapid decline, with only 6,870 skins shipped in 1911. During the same period Islands based licensed sealing accounted for between 152 and 310 seals annually. Accurate records do not exist concerning the activities of Chilean sealers; the number of seals taken by them is unknown.

---

[301] Goldsworthy, R; Letter to Senior Naval Officer; 21 November 1891; Outward Letter Book 1881-1908; Falkland Islands Government Archive.

[302] For an account of the life of Charles Hansen see: Miller, S; (1990) *A life of our choice*; privately published; pp. 1-17.

[303] Dickinson, A B; (1987) *The history of Sealing in the Falkland Islands and Dependencies 1754-1972*; unpublished Ph.D. thesis; Cambridge; p140.

Canadian and United States sealing ships continued to take Fur Seals, on a casual basis, as they rounded Cape Horn en route to the Pacific. In 1895 the sealing vessel *Director* took 610 skins, from the Islands, although the coast of Japan was her intended destination. When the Bering Sea was closed to pelagic sealing at the end of the nineteenth century a serious effort was then directed towards the Southern Oceans. The desire for commercial secrecy was another factor in the continuing decline of Fur Seal stocks. [304]

In 1904 a new Sealing Ordinance was enacted, and this required that a charge of ten shillings, for each sealskin, be levied. This however did not have the desired controlling effect. No sealing ships called at Stanley for over a year; sealskins were transhipped though Punta Arenas where the taxes were considerable lower. Financial interests in the Falklands complained about the loss of revenue to the Governor and the Ordinance was revoked in 1906.

Governor William Allardyce entered negotiations with the Canadian Sealing Company in 1908 'for exclusive rights of Fur sealing upon and about all the rookeries around the said Falkland Islands.'[305] In a confidential Despatch, to the Secretary of State for the Colonies, Allardyce revealed his deep concern for the conservation of the remaining Fur Seals, and of the parlous state of the rookeries:

> Considering how small they are and the limited number of seals on them at the moment … if things are permitted to remain in the unsatisfactory condition in which they have been in for many years past, the result is almost certain to be the absolute depletion, if not the entire extermination, of the Fur Seal in and around the Falklands, and the loss to Government of what, if properly managed, would prove in a few years to be a valuable source of revenue … I have merely to refer you to my Confidential Despatch of 29 December 1908, containing particulars of a raid on the Fur Seal rookery at Volunteer Rocks, almost within sight

[304] Busch, B; (1985) *The War against the Seals*; Kingston: McGill-Queens University Press; 1985; p211.

> of the seat of Government. On that occasion the rookery was depleted and the seal pups left to die … When the rookeries are properly protected it is probable that the number of seals will increase rapidly. [306]

In the event the quota that was set was only for 900 seals. The uneconomic nature of the agreement meant that the Canadian licence application was withdrawn. Allardyce was well aware that poaching by the Canadians was continuing:

> When I first came to the Falklands I was prepared to doubt whether Canadian sealers raided the Fur Seal rookeries in the Colony, but subsequent occurrences have unwillingly forced me to the conclusion that they are by no means above suspicion. [307]

In a general comment about the use of the Colony's natural resources - including seals - Allardyce also revealed his concern that some people in the Colony would not face up to their responsibilities:

> The Colonists are non-progressive, and not unnaturally perhaps are perfectly satisfied with a sheep farming investment which has given a return of late years of over 30%, and permits them after a few years spent in this Colony to retire and live in a substantial competence in the Old Country, and join the band of absentee owners … Needless to say such action does not make for the development of the country or its progress, but permits them in great measure to evade their responsibilities to the Colony in which they have made their fortunes.[308]

The Islands Government subsequently offered sealing licences to Ch.Salvesen & Co. (at that time based on New Island) in the hope that the presence of the whaling crews might deter the poachers. The Company did not take up the

---

[305] Allardyce, W; Despatches to the Secretary of State 1908 - 1915; 9 February 1908; MSS SPRI 240/1 & MSS SPRI 240/2.
[306] Allardyce, W; MSS SPRI 240/1 & MSS SPRI 240/2.
[307] Allardyce, W; 1 November 1908; MSS SPRI 240/1.
[308] Allardyce, W; 13 July 1908; MSS SPRI 240/1.

offer. A possible explanation for Salvesen's reluctance was that the fee fixed by Allardyce was £50; 'this may appear at first sight to be a little high, but on the other hand the Government is not particularly anxious to issue any such licences.' [309]

Ernest Shackleton wrote to Governor Allardyce, in March 1914, with a proposal to form the Falkland Islands Fur Seal Company.[310] He applied for a lease of 21 years. An agreement was drawn up, on 20 March, which required the Company to have £25,000 capital. The lease permitted sealing on 4560 acres on a number of islands; notably The Jasons, Beauchêne Islands, Bird Island and Volunteer Rocks. Shackleton ratified the agreement but the Company was not established because Shackleton left England in the *Endurance* on his polar expedition. The lease option lapsed in 1915;[311] the failure of this venture meant that further stock depletion was thus avoided.

A controlled and viable industry was impossible because of the depleted stocks and uncontrolled foreign poaching: Nevertheless the conservation legislation introduced provided the basis for the development of further regulations to control the conduct of sealing in the Colony and Dependencies.[312] Poaching decreased during World War I because of the presence of Royal Naval vessels, but by 1919 the Colonial Office was once again making representations to both the Chilean and Argentine governments about the activities of South American seal poachers. Local interest in sealing increased again at the end of the war; there were eight applications for licences,[313] but none appear to have been issued.

The first attempt to assess the numbers of Fur Seals in the Islands took place in 1919 by Dr. J Hamilton, the Government Naturalist.[314] The report gives a highly graphic account of Hamilton's activities, but it is remarkably imprecise about

[309] Allardyce, W; 9 June 1909; MSS SPRI 240/1.
[310] CO78/132; Colonial Office Records; Public Record Office; Kew; 6 March 1914.
[311] Fisher, M and J; (1957) *Shackleton*; James Barrie Books; London; p333.
[312] Dickinson, A B; (1987); op. cit.; p134.
[313] CO78/154; Report by the Government Naturalist (J E Hamilton) Colonial Office Records; Public Record Office; Kew; Jan 1920.
[314] CO78/154; Colonial Office Records; Public Record Office; Kew; 1920.

seal populations. The lack of accuracy of Hamilton's seal counts was to have serious consequences in later years, when successive Government administrations fixed the level of sealing quotas for Sea Lions and Elephant Seals too high. Fur Seal numbers were estimated to be 5,500 in total and insufficient to support an industry - particularly as substantial poaching by Chilean ships of Fur Seals was still occurring.[315] The Government Naturalist recommended that a 3-inch naval gun be placed on Elephant Jason Island to deter poachers.[316] Hamilton urged strong protection measures for the Fur Seal, but that the numbers of Sea Lions were such that they 'are a field for industrial development.'[317] The Seal Fishery (Consolidation) Ordinance 1921 was introduced. Seal Fishery Officers were appointed in 1922 and armed officers were placed at major rookeries during the breeding season. Fur sealing was prohibited. HMCS *Afterglow* was purchased to assist with protection of the rookeries.[318] There were worries in the Colony that the cost of this protection could not be met from the revenues of the sealing industry.

In April 1923 Governor Middleton wrote to the Secretary of State expressing concern about the diminishing numbers of Fur Seals in the Islands.[319] The Government Naturalist had visited Elephant Jason Island, Bird Island and Volunteer Rocks from October 1922 to March 1923, and his report showed that although the exact number of Fur Seals could not be stated with complete accuracy, nevertheless the numbers were very much less than had been indicated in earlier reports.[320]

---

[315] C/5/44; *Poaching of seal rookeries in the Falkland Islands*; Falkland Islands Government Archive; 9 August 1944.
[316] CS250/22; *Reports establishment of Armed Guard on Elephant Jason Island*; Falkland Islands Government Archive; 21 March 1922. The permanent guard was withdrawn from Elephant Jason Island in September 1924, but the hut and its supplies were left on the Island for use by seasonal guards. See: CS578/24; *Withdrawal of Jason Guard*; Falkland Islands Government Archive; April 1924.
[317] CO78/154; Colonial Office Records; Public Record Office; Kew; 1920; op. cit.
[318] CS990/21; *Purchase of Drifter 'Afterglow';* Falkland Islands Government Archive; 1921. For reports on the voyages of *Afterglow* see: CS68/22; *Report of voyages of HMCS Afterglow*; Falkland Islands Government Archive; January 1922. For subsequent sale details see: CS560/27; *Approval of sale of HMCS Afterglow*; Falkland Islands Government Archive; 1927.
[319] CS692/24 *The re-stocking of Fur Seal Rookeries by obtaining specimens from Lobos Islands*; Falkland Islands Government Archive; 26 September 1924. Also: D/16/59; Falkland Islands Government Archive; 1958.
[320] CO78/164; Colonial Office Records; Public Record Office; Kew; 1923.

Hamilton was of the opinion that the presence of large numbers of Sea Lions:

> On or near the hauling or breeding places of the Fur Seal is most undesirable and that steps should be taken to remove them. There should be no difficulty in doing this if the Sea Lions are driven to the edge of the rocks and shot there or in the water.[321]

Hamilton concluded that Fur Seal numbers were now so low that the Islands would be unable to support the costs of a protection scheme within a reasonable time. 'At £3 per skin an annual yield of 1,496 skins would be necessary and this implies a herd of over 30,000 Fur Seals, and highly polygamous at that.'[322]

Strange commented, in 1969, that although the last recorded visit by a sealer to Beauchêne Island was in 1919:

> Just two years before these animals were given complete protection. What actually happened to this colony we shall probably never know, but it is quite likely that the last sealer to go there took the remaining few animals. Why after all these years of protection Beauchêne Island has not again become an important breeding ground for Fur Seals is puzzling, unless, as we suspect, the surviving herds of seals in the islands have remained static and are not forced onto new grounds.[323]

A G Bennett visited Elephant Jason, Volunteer Rocks, Beauchêne Island and Bird Island between 19 December 1924 and 12 February 1925 and he estimated that the total number of Fur Seal pups was 8,100.[324]

[321] CO78/164; Colonial Office Records; Public Record Office; Kew; 1923.
[322] CO78/164; Colonial Office Records; Public Record Office; Kew; 1923.
[323] Strange, I; (1969); op.cit.; p17.
[324] CS174/25; Falkland Islands Government Archive; Bennett, A G; to Colonial Secretary; 10 March 1925.

The Trustees of the British Museum (Natural History) [325] and its Director Dr Sidney Harmer [326] advised the Colonial Office on sealing and whaling matters. The Colonial Office was optimistic that the costs of protection measures could be recovered and that seal numbers would recover if proper protection were given. The Islands Government thought that the Colonial Office did not understand the problems caused by the large numbers of Sea Lions and that Dr Harmer was 'an extreme protectionist.'[327] However, Sidney Harmer's alleged 'extreme protectionism' did not appear to extend to the Leopard Seal (*Hydrunga leptonyx*).

> It is a ferocious pest; it preys on penguins as well as fish, and any diminution in its numbers may, perhaps, be viewed with equanimity. Whether it is merely a pest depends on whether the skin and oil have any economic value:[328]

Sea Lion stocks were estimated to be large (thought to be 380,000 in 1937) and these numbers were considered to be 'excessive.' Sea Lions were reputed to damage farmed land, and to compete with Fur Seals for breeding space. In support of an application for a sealing licence made by Jack Davis, Governor Hodson wrote to the Secretary of State thus:

---

[325] Until recently the official title of the museum in South Kensington was 'The British Museum (Natural History)' but for the purposes of this dissertation it will hereafter be referred to as the 'Natural History Museum'.

[326] Sir Sidney Harmer (1862-1950) As a consequence of Harmer's initiative the Natural History Museum became the centre of whale and seal research. In 1911 he began to warn about the immense slaughter of whales in the Southern Ocean. His Linnaean Society Presidential addresses of 1928 and 1930 charted the history of the whaling industry, and also how the alarming whaling statistics demonstrated the high level of killing. These Presidential addresses are discussed in greater detail in the chapter on Whaling.

[327] CO78/166; Colonial Office Records; Public Record Office; Kew; 1923.

[328] CO78/154; Colonial Office Records; Public Record Office; Kew; 1920. Also: CS3/31; *Sea Leopards – danger in regard to at West Point Island*; Falkland Islands Government Archive; Letter from Felton, A; to Colonial Secretary; 30 November 1930. Governor Sir Miles Clifford commented in 1949: 'It appears to be a singularly vicious and useless beast and I don't know why it is protected.' CSO0958/B; Falkland Islands Government Archive; 31 December 1949. Dr J E Hamilton, the Government Naturalist, wrote the Discovery Report on the Leopard Seal: Hamilton, J E; (1939) The Leopard Seal *Hydrunga leptonyx*; Discovery Reports. Vol.XVIII, pp.239-264; Cambridge University Press.

> Sea Lions are to be found in almost countless numbers round the coasts of the Falkland Islands … the taking of 20,000 Sea Lions would have no untoward effect and would involve absolutely no danger of the extermination of the species. In fact the killing off of a proportion of these animals, which do incalculable damage to tussock grass, would be of material benefit to sheep farmers, many of whom of made representations to me on the matter.[329]

Licensed Sea Lion hunting was thus to be encouraged. The first licence was issued in 1925 and annual quotas of 10,000 Sea Lions and 1,000 Elephant Seals were established.

Commander Frank Worsley, a member of Ernest Shackleton's expeditions, applied for a sealing licence in 1928, in conjunction with the Hudson Bay Company. Worsley also attempted to charter RRS *Discovery I,* for a nominal sum. The *Discovery I* would engage in sealing in order that the expedition could be self-supporting. The Discovery Committee refused to allow the charter of their ship, [330] and Worsley was forced to look elsewhere for a suitable alternative. Worsley formed a company called British Sealing Industries Ltd. - to be based in Stanley - and the Colonial Office agreed to a £10,000 loan from the Colonial Development Fund (chargeable to the Dependencies Fund), using the Company's sealing vessel as security. In the event Worsley was unable to obtain a ship that satisfied the requirements of the Crown Agents, and the scheme failed.[331]

The Falkland Islands and Dependencies Sealing Company operated sporadically, usually at a loss, at Albemarle from 1927 until 1940. [332] On one occasion this Company drove Sea Lions overland from Cape Meredith Lagoon to the sealing station at Albemarle - a distance of nearly 11km. The seals were

[329] CO78/176/10; Colonial Office Records; Public Record Office; Kew; 1927.
[330] SPRI MSS1284/4/10 (folio 887).
[331] C/9/31; Falkland Islands Government Archive; 1 June 1931.
[332] For example in 1930 the Company's accounts show a loss of £9,146. See: CSO589/27; Falkland Islands Government Archive; 1927-1936 and CS73/35; Falkland Islands Government Archive; 1935-1937.

driven with bullwhips, and arrived at Albemarle badly gashed and bleeding. Anecdotal evidence suggests that 800 seals began the drive, but only 100 arrived. In the event most of the seals that arrived promptly escaped before their planned slaughter. Jim Robertson, the manager of the nearby farm at Port Stephens, ensured that there were no more seal drives to Albemarle. This event has become a byword for cruelty in the Islands.

Governor Hodson wrote about the unsatisfactory state of The Falkland Islands and Dependencies Sealing Company thus:

> The Company is in debt to the tune of over £15,000 of which no less than £12,000 is owing to the Falkland Islands Company. Under-capitalised at the outset the Company was rushed into extravagant expenditure on the vessel *Belleville* and the shore station at Albemarle through the advice of its Norwegian experts, as to the integrity (of the Company) at least grave doubts are admissible. [333]

Failure was also partly the consequence of the low price of oil prices on the world market, and also because the Company's main quarry - the Sea Lion - yielded less oil and a less valuable pelt in comparision with the Elephant Seal. Between 1928 and 1938 a total of 39,696 animals were taken.[334]

The South Atlantic Sealing Company was formed in 1949, sponsored by the Colonial Development Corporation, and the exploitation of Sea Lions and Elephant Seals recommenced in 1950 at Albemarle. The Company was licensed to take 9,000 Sea Lions and 2,000 Sea Elephants. The ships *Golden Chance* and *Protector III* were obtained to assist with sealing operations. Full utilisation of the carcasses was required, and the ship *Protector III* was employed to enforce this requirement. Sealing operations stopped in 1951. With high oil prices the scheme was expected to make a good financial return, but in the event only 3,045 Sea Lions were taken and the Company had lost an estimated £50,000. This failure was mainly due to the scarcity of seals, although the Governor and

[333] CO78/188/5; Colonial Office Records; Public Record Office; Kew; 1931.
[334] Strange, I; (1972); op.cit.; pp. 13-21.

the Government Sealing Officer also blamed the failure of the oil extraction machinery.[335] An additional problem was that the source of potentially exploitable seals was restricted because of a protracted dispute between the Colonial Development Corporation and the Falkland Islands Company about sealing rights in Lafonia on East Falkland Island.[336]

Licences were then offered to Salvesen [337] and also to Albion Star (South Georgia) and the Companies initially appeared keen to take up the licences because of the high price of oil on the world market. Although they were allowed to take seals [338] from large areas of the Islands, they did not do so because from the mid-1950s the oil price fell yet again.

In 1951 Dr Richard Laws of the Falkland Islands Dependencies Survey estimated that the Fur Seal population was approximately 20,000.[339] As a result of this survey complete protection was afforded to the remaining stock of Islands Fur Seals.

Ian Strange became increasingly concerned about the stocks of Sea Lions, and in 1963 he opposed the Government granting a sealing licence.[340] In January 1965 Ian Strange and William Vaughan undertook an intensive aerial survey of many seal rookeries. The Report's conclusions [341] proved to be uncomfortable for the Islands Government, and it was never published. Strange reported that he had no difficulty counting the seals because there were so few. The highest figure that the Report gave for the total seal population was 30,000. Vaughan strongly urged the Islands Government to carry out a further census to confirm

[335] CO78/258/16; Colonial Office Records; Public Record Office; Kew; March 1951.
[336] CO1024/71; Colonial Office Records; Public Records Office; Kew; 1951.
[337] CSO0157; *Sealing in the Falkland Islands*; Falkland Islands Government Archive; 15 December 1954.
[338] CSO0157; *Sealing in the Falkland Islands*; Falkland Islands Government Archive; 7 November 1947.
[339] Laws, R M; (1951) The Seals of the Falkland Islands and Dependencies; *Falkland Islands Dependencies Survey ~ Scientific Reports*; Vol. 2. No.2.
[340] Strange, I; (1976) *The Bird Man*; London: Gordon & Cremonesi; p46.
[341] Vaughan, W and Strange, I; (1965) *An aerial survey of the Sea Lion* (*Otaria byronia*) *stocks in the Falkland Islands*; 0497/IV; Falkland Islands Government Archive..

the results.[342] The Director of the British Antarctic Survey commented about the conclusions of the Report: 'it seems a sad story, and if it became common knowledge could cause something of a furore in Wildlife and Conservation circles.'[343]

Despite the Vaughan/Strange Report, Sea Lion licences continued to be issued to some private individuals; in 1965 (for 1,500 Sea Lion pelts) and 1967 - but these were small operations and few seals were taken. The decision to issue licences was based again on Hamilton's estimate of 380,000 Sea Lions.

Ian Strange commented:

> To base sealing activities on a census over 30 years old was not a far-sighted policy, especially as there was evidence to suggest that a drastic decline had occurred in the seal herds since that census.[344]

In hindsight it is also probable that the quotas set in the 1920s were based on inadequate information and were set too high, but nevertheless Hamilton's estimated population figures continued to be used for many years to the detriment of the remaining breeding stock. The Vaughan/Strange Report did much to cast serious doubts on the accuracy of Hamilton's figures, and also to change the Government's view on sealing - as did the fact that there were now so few seals present in the Islands that any sealing venture was uneconomic.

Thus despite the laudable attempts to establish a sustainable sealing industry for islanders, the plan a was failure, because by 1969 the Sea Lion population was less than 30,000 and the Elephant Seal population was less than 3,300. These populations were insufficient to sustain profitable sealing. Dickinson commented:

---

[342] 0497/IV; Falkland Islands Government Archive; Letter from Vaughan, R W to Governor 20 October 1965.

[343] 0497/IV; Falkland Islands Government Archive; Letter from Fuchs, V E to Governor 17 November 1965.

> The sealing companies could not fulfil their high quotas from these low stocks and over-exploitation may have occurred … It is therefore fortuitous [sic] that a sealing industry could not become re-established; attainment of such quotas would have seriously depleted the stocks.[345]

Throughout its history, sealing has made only a minor contribution to the Islands economy. There was modest revenue from licence fees, and some local employment was provided by the industry. A considerable injection of money and employment occurred in connection with the various ill-fated ventures of the Colonial Development Corporation in the 1950s, but taken overall, most of the profits from the Islands' sealing industry went abroad. The Shackleton Economic Report of 1976 considered the possible re-commencement of sealing. However it noted that:

> Before an exploitation of seals is allowed in the Islands, a full evaluation of the populations and their growth rates should be undertaken. Tourism interest should also be taken into consideration.[346]

Ian Strange, a modern pioneer of the conservation movement in the Islands, warned in 1969 that the seal herds now faced an even greater problem than that posed by the sealers, namely the problems caused by the human population explosion. The competition between the seals and humans for the food resources found in the waters around the Islands had started:

> Trawlers and research ships are arriving to open up this otherwise untouched larder and sample its contents. Will they go too far, as those before us have, or will man stop and think and make plans not only for his own survival but for that of his wild companions?[347]

This statement of Strange highlights the continuing need for accurate biological surveys of the seal herd populations. In 1999 the Sea Mammal Research Unit

---

[344] Strange, I; (1972); op.cit.; pp. 13-21.
[345] Dickinson, A B; (1987); op.cit; p185.
[346] Shackleton, E; (1976); op.cit.; volume 2; p55.

began to study the movements and foraging behaviour of Fur Seals in the Islands. This research is jointly funded by the Islands Government and the United Kingdom's Natural Environment Research Council.

§ d. Sealing in South Georgia and other Dependencies up to 1904.

Sealing probably began shortly after James Cook made known his discovery of the Fur Seal rookeries on South Georgia in 1775. The significance for the seal populations of the Southern Oceans of this momentous discovery is well summed up by Nigel Bonner:

> The cycle of discovery, near-extermination, and subsequent recovery can be illustrated by the history of the exploitation of the Antarctic Fur Seal (*Arctocephalus gazella*), at South Georgia and the islands farther south.[348]

After the American War of Independence, British vessels [349] began to arrive in 1786/7 to exploit Fur Seal stocks. New England ships first began to arrive in South Georgia in 1792. The seal pelts were sold to the Cantonese market. By 1801 the fur sealing fleet at South Georgia numbered at least 31 ships.[350] By 1822 Weddell calculated that 'not less than 1,200,00 fur seal skins had been shipped from South Georgia and the species was practically extinct there.'[351] It is clear, however, that Elephant Sealing also occurred during this early period. When Fanning visited South Georgia in 1801 he found the captain of one ship that had disposed of her skins to 'an English elephant oil ship.' Bellingshausen[352] met Elephant Sealers on South Georgia in late 1819.

---

[347] Strange, I; (1969); op.cit.; p23.
[348] Bonner, W N; (1982) *Seals and Man - a study of interactions*; Washington; p61.
[349] Sealing probably began when the British sealer *Lord Hawkesbury* visited the Island in 1786.
[350] Fanning, E; (1924) *Voyages and discoveries in the South Seas 1782-1832*; Salem Marine Research Society.
[351] Bonner, N; (1958) Exploitation and Conservation of Seals in South Georgia; *Oryx* (Journal of the Fauna Preservation Society) Vol. IV; No.6; p373.
[352] Fabian Gottlieb Benjamin von Bellingshausen (1778-1852) was the Commander of a Russian Naval Expedition (aboard *Vostok* and *Mirnyy*). The Expedition departed Kronstad on 5 July 1819 and circumnavigated the Antarctic continent in high southern latitudes, This was the first Expedition to cross the Antarctic Circle since James Cook had done so in 1773. Russia claims

'The lure of high profits and the absence of government and conservation made controlled exploitation impossible.'[353] The stocks on South Georgia rapidly declined and South Shetlands became the next location for the sealers. Fur Seals and Elephant Seals had been discovered on South Shetlands in 1819. The first sealing ship to arrive in the South Shetland Islands was the *Espirito Santo* from Buenos Aires. This ship took 14,000 sealskins in five weeks, returning to Buenos Aires on 22 February 1820. The *Hersilia*, from New England, arrived at the South Shetland Islands shortly after *Espirito Santo*, and harvested a cargo of 9,000 sealskins in three weeks. Only a shortage of salt, used for curing the skins, prevented them obtaining three times that number.[354] By 1830 the stocks of Fur Seals on the South Shetland Islands had been almost exterminated.

Sealers had thus destroyed most of the Fur Seal stocks in the Dependencies by the first quarter of the nineteenth century. Very few visits to the South Shetlands occurred again until 1871 when United States sealers began supplying furs to the London market. This continued until 1892, but the numbers of Fur Seals killed was only a tiny fraction of previous levels. [355]

Concern about the activities of the sealers and whalers continued to be felt by the Colonial Office. On 30 April 1918 the Interdepartmental Committee on Research and Development in the Falkland Islands Dependencies was established, and the Committee produced an influential report in 1920. The report led directly to establishment of the Discovery Committee in 1923; Antarctic research work - the Discovery Expeditions - began in 1925. These expeditions were to have a significant effect on the scientific understanding of the Southern Oceans, and upon the management of their resources.

The Scottish Antarctic explorer and scientist, Dr W S Bruce, in his submission in the Interdepartmental Report of 1920 suggested that we:

---

that Bellingshausen was the first to sight the Antarctic mainland. The expedition lasted 751 days and the ships crossed the Antarctic Circle six times. Bellingshausen arrived at South Georgia 27 December 1819 and on 3 January 1820 he discovered three new South Sandwich Islands.

[353] Dickinson, A B; (1987); op.cit.; p103.

[354] Stackpole, E A; (1955) *The Voyage of the Huron and the Huntress; American sealers and the discovery of the continent of Antarctica*; Hartford, Connecticut; p11.

> Take heed of the lesson, which the Fur Seal hunters of 1820-22 taught us, and protect the Dependencies' whales … And why not resuscitate the Fur Seal fisheries … Don't kill a single Fur Seal for, say, twenty years. Attempt to breed young on suitable places at the South Shetlands, and possibly South Georgia, as I advocated with Sir Roger Tuckfield Goldsworthy [then Governor of the Falkland Islands] twenty-five years ago … let us attempt at least to stow them in bulk again. Probably the Falkland Islands Fur Seal fisheries might also be increased.[356]

The Interdepartmental Report of 1920 contains the following stark comment about this period of exploitation:

> It is impossible not to condemn in too severe terms the indiscriminate slaughter to which these animals [Fur Seals] were subjected. The result was, as Dr Bruce described it to us, a most important economic disaster, and it should never be forgotten as a warning against the uncontrolled exploitation of animal life for commercial purposes.[357]

Sealing in the South Shetland Islands did not occur thereafter, and numbers of seals have greatly recovered, but not to a size that could support catches of the magnitude of the 1820s.

§ e. Sealing in South Georgia and other Dependencies 1904 - 1969.

Compañia Argentina de Pesca started whaling in South Georgia in 1904.[358] The Company had been granted a 21 year 500 acre lease, to establish a land station,

---

[355] Laws, R M; (1953) The Elephant Seal industry at South Georgia*; Polar Record*; Volume 6, No. 46; p746.
[356] Interdepartmental Committee (1920); *Research and Development in the Dependencies of the Falkland Islands*; Cmd.657; London: HMSO; p36.
[357] ibid.; p16.
[358] During its sealing operations in South Georgia Compañia Argentina de Pesca caught a total of 260,950 seals which produced 498,870 barrels of oil or 83,146 tonnes of high-grade oil. This represents 1.91 barrels or 0.32 tonnes per seal. See: Hart, I; (2001) op. cit.; p415.

from 1 January 1906 for £250 p.a.[359] Whaling crews began to take Elephant Seals in 1905, thus continuing the eighteenth and nineteenth century tradition of supplementing whale oil production with elephant oil production.

Following a survey by C A Larsen (aboard the *Undine*) the Islands Government granted an experimental sealing licence to Compañia Argentina de Pesca in 1909 in order to determine the feasibility of operating an Elephant Seal industry. In ten days of December 595 Elephant and Leopard Seals were taken. Fur Seals were included in the licence, but none were found. Larsen's survey also revealed the fact that there was a 'wholesale slaughter of sea-elephants at South Georgia by the masters and crews of North American vessels.'[360] After this experiment Compañia Argentina de Pesca was granted a licence in 1910 to take up to 2,000 male Elephant Seals and 500 Fur Seals from three of the four divisions of the Island (The fourth division was rested on a rotational basis). Up to 2,000 tonnes [361] of Elephant Seal oil was produced annually at Grytviken. This was often recorded as whale oil and the two oils were occasionally mixed. The sealing licence was renewed annually 'to prevent the company becoming complacent about the need to preserve stocks. They subsequently enjoyed a virtual monopoly over the industry.'[362] Sealing was prohibited on parts of the island leased to other whaling companies.

Governor Allardyce sent John Innes Wilson as the Stipendiary Magistrate to administer South Georgia, including the developing Elephant Sealing industry. Wilson's records reveal a careful and methodical man - well suited to the administration of a burgeoning industry far from the centre of government. His description of the South Georgian coastline and the locations of Fur and Elephant Seal rookeries are precise and informative.[363] It was Wilson who devised the pattern of four divisions; these divisions were to be used by the

[359] Allardyce, W; MSS SPRI 1228/5/13.
[360] Allardyce, W; MSS SPRI 240/1 12 May 1909.
[361] Conversion factors for tonnes and barrels of seal and whale oil are reckoned thus: a barrel varied between 160 and 172 litres, and six barrels make a tonne - approximately 1000 litres.
[362] Dickinson, A B; (1987); op.cit.; p192. See also: Bonner, W N; (1960) Unpublished account of fifty years of sealing by Pesca at South Georgia; D/9/59; Falkland Islands Government Archive.
[363] Wilson, J I; (1912) The coast of South Georgia; *The Geographical Journal*; volume 39(1) pp. 77-78.

sealers in strict rotation to conserve the stocks. The sealing quotas proved remarkably accurate; the 6,000 annual quota remained unchanged until whaling ceased in 1964, except between 1947-52 when it was unwisely increased. At that stage Fur Seal stocks had not recovered, but Elephant Seal stock had recovered sufficiently to enable controlled exploitation.

Allardyce and Wilson held the view that 'a viable long term operation could only occur if stock conservation legislation existed and was enforced.'[364] Allardyce sent a confidential Despatch to Wilson asking him to send any information, which could be discovered, about the whaling and sealing operations of foreign vessels along the coast of South Georgia. But he warned Wilson that any action he might take under the Seal Fisheries (Dependencies) Ordinance 1909, 'would require the greatest circumspection.' [365] Governor Allardyce realised C A Larsen was a man with whom he could deal with integrity: 'Larsen is a decent fellow and he promised me solemnly not to kill too many Sea Elephants as long as there was no competition' (*i.e.* from other whaling companies).[366]

The Table below details the licences issued for Elephant Sealing in South Georgia and it clearly shows the domination of that industry by Compañia Argentina de Pesca:

[364] Dickinson, A B; (1987); op.cit.; p202.
[365] C1; Falkland Islands Government Archive; 26 February 1910.
[366] CO78/151; Colonial Office Records; Public Record Office; Kew; 1919.

Table 1: Commercial licences awarded in South Georgia for Elephant Sealing 1909-1969

Seasons	Company	Licenced for:
1909 – 1960 (see exceptions) 1948 1949 & 1950 1951	Compañia Argentina de Pesca	6,000 7,500 9,000 8,000
1913	Captain Cleveland	2,000
1958	Ch.Salvesen & Co.	100 - for whole carcass utilisation experiments
1960 – 1962	Albion Star (South Georgia) Ltd.	6,000 annually
1962-1963	No sealing	No sealing
1963 – 1964 1964 – 1965	International Fishing Co. Ltd.	6,000 annually
1963 – 1964	Nippon Suisan Kaisha Ltd.	100 for experimental purposes
1965 – 1966 1966 – 1967	Albion Star (South Georgia) Ltd.	6,000 annually Licence not used No whaling
1968 – 1969	Run Company	6,000 only five seals taken

Source: Dickinson, A.B. (1987); *A history of sealing in the Falkland Islands and Dependencies 1764-1972*.

In 1920 The Interdepartmental Committee on Research and Development in the Dependencies of the Falkland made a number of significant recommendations. It recommended that Elephant Seal stock at South Georgia be assessed to determine its size and the feasibility of continued exploitation.

> In view of the instances which have occurred in the past of irreparable harm to animal life, due to the indiscriminate and reckless slaughter, a not unnatural anxiety has been expressed to us as to the condition of the Sea Elephants at South Georgia, where numbers of these animals are taken for commercial purposes. Whatever danger may have threatened in the past it is gratifying to be able to record that, as shewn in the summary of annual reports of the Magistrate, the sea elephant has since rehabilitated itself and is now found in large numbers. In these

> circumstances the Government is fairly entitled to claim that the policy pursued since the passing of the Seal Fishery Ordinance in 1909 has successfully protected these animals.[367]

The Report further recommended that experiments should be made to re-establish the Fur Seal in the Dependencies by the introduction of specimens from elsewhere in the South Atlantic, and that pelagic sealing should be prohibited because of the tendency of sealers to kill indiscriminately pregnant female seals. [368]

In 1920 the South Georgia Magistrate, E B Binnie, informed the Governor that sealers were taking the Weddell Seal (*Leptonychotes weddellii*), which was scarce on South Georgia. The Governor instructed the Magistrate to insert a clause in the licence requirements strictly prohibiting the killing of Weddell Seals.[369]

The report of the Islands Government Naturalist in 1921 supported the view that the stock of Elephant Seals was not declining. This was probably due to a combination of the effects of the quota system and also to the low sealing efforts by Compañia Argentina de Pesca. At that time the Company was only taking half its quota because whaling catches were high and the station was very busy.

In 1928 the Government Magistrate at South Georgia reported that 'there appears to be no doubt that the present system of sealing is extraordinarily wasteful.'[370] Governor Hodson resolved to deny Compañia Argentina de Pesca their annual renewal of a sealing licence. Hodson intended for the licence to be granted to Salvesen of Leith Harbour, but the Colonial Office overruled the Governor, and Compañia Argentina de Pesca's licence was renewed. Governor Hodson was of the view that the best long term course of action was that a new

[367] Interdepartmental Committee (1920); op.cit.; p18.
[368] ibid.; p19.
[369] CS556; Falkland Islands Government Archive; 10 May 1920.
[370] CO78/180/13; Colonial Office Records; Public Record Office; Kew; Jan 1928.

sealing company - independent of any whaling interests - should be granted sole licence rights for sealing in South Georgia. [371] Hodson also asserted that 'the seals are now so plentiful that there is no object in keeping one of the divisions in reserve each year.'[372] It is fortunate for the future numbers of the Elephant Seal populations that this suggestion was not acted upon. As with farming issues,[373] the Colonial Office was very sceptical about the advice it received from Governor Hodson; 'Governor Hodson is even more elusive in conversation than in writing'[374] Matters were further complicated when the Governor contrived to be at variance with the Discovery Committee's Chief Scientist. Hodson regarded the Committee with suspicion because it was largely outside his jurisdiction.

There was some resentment (and not a little jealousy) in the Islands that Compañia Argentina de Pesca continued to have the sole rights of sealing in South Georgia. In 1930 a group of influential farmers applied for a sealing licence in South Georgia:

> It would appear inequitable that a foreign company should continue to hold a monopoly to the total exclusion of a company formed within the Colony. There is ample scope for two companies each operating two divisions … We humbly beg to suggest that it does not seem that the Colony is receiving considerate treatment in this matter. The Compañia Argentina de Pesca has held sole sealing rights for many years and it is now time that the Colony had its opportunity.[375]

The Colonial Office instructed the Governor not to accede to this request. It is clear from the Colonial Office Minutes that this refusal was for both conservation and diplomatic reasons. The Colonial Office was concerned about

[371] CO78/180/13; Colonial Office Records; Public Record Office; Kew; 1928.
[372] CO78/180/13; Colonial Office Records; Public Record Office; Kew; 1928.
[373] CO78/180/15; Colonial Office Records; Public Record Office; Kew; 1929.
[374] CO78/180/13; Colonial Office Records; Public Record Office; Kew; 1929; Minute 4 October 1929.
[375] CO78/187/3; Colonial Office Records; Public Record Office; Kew; 1930.

giving offence to Argentina by refusing to continue a long-standing licensing arrangement with an Argentine company.

After World War II Compañia Argentina de Pesca asked for an increase in its quota - which was unwisely granted. The Company was allowed to take 7,500 seals in 1948; 9,000 seals in 1949 and 8,000 seals in 1951. These changes were regrettably made without a careful stock census. However in 1951 Dr R M Laws made a detailed survey of stocks.[376] This was the first detailed study on Elephant Seal biology, and the study showed that over-exploitation was occurring:

> These studies suggested that deterioration in the condition of the stock had taken place which, if not halted, might be expected to continue and cause serious depletion of this resource. On my recommendation the sealing regulations were altered in the way best calculated to restore the herd to a sound position.[377]

Quotas were reduced to 6,000 Elephant Seals.[378] Laws concluded that while a total figure of 6,000 of Elephant Seals killed would not threaten the stock, the figure of 2,000 per division was arbitrary.

> The most important result of these recent studies was therefore the revision of the divisional quotas so that the contribution of each division was proportional to the estimated size of the available surplus in that division.[379]

Stricter licensing conditions were imposed and continuous monitoring took place; sealing inspectors were appointed from 1956. The first sealing inspector

[376] Laws, R M; MSS SPRI 1228/7/42; see also: Laws, RM; (1960) *Norwegian Whaling Gazette*; October 1960; pp. 466-476 & November 1960; pp. 520-542.
[377] ibid.; p524.
[378] CO1024/69; Colonial Office Records; Public Record Office; Kew; February 1952.
[379] Laws, R M; (1960); op.cit.; p531.

was Nigel Bonner, and he reported that from 1910 to 1958 the total number of seals taken was 240,442, which yielded 458,793 barrels of oil.[380]

In 1950 the Falkland Islands Dependencies Scientific Committee considered the possibility of utilising the skins of Elephant Seals. The Committee commended the conservation policy of the Colonial Office during the past 40 years at South Georgia.[381] With the recovery of Elephant Seal stocks on South Georgia the Committee urged consideration of the substitution of Walrus skins, used in the upholstery trade and the metal polishing industry, with those of Elephant Seals skins. Tanning trials were carried out by a British Company, but the practical problems associated with processing and shipping seal hides to the UK from both the rookeries on the Islands, and in South Georgia, proved insurmountable, and the project was dropped.

Governor Sir Edward Arrowsmith wrote to the Colonial Office on 11 March 1958 expressing his concern about the methods of sealing of Compañia Argentina de Pesca. He considered that they showed no sign of improving carcass utilisation. Despite all the efforts of previous Governors, even at this late stage, the sealing inspector in 1958 wrote:

> At present no use is made of the rest of the carcasses of the seals killed, which are left to rot on the beaches after flensing. The wastage of oil and protein is considerable and it is greatly to be hoped that improved methods of operation will permit their use in future.[382]

The Governor was anxious to increase the Colony's revenue potential from sealing, and he proposed that Compañia Argentina de Pesca be excluded from South Georgia. In January 1959 Captain Virik Nilsen, the master of *Petrel* - the sealer of Compañia Argentina de Pesca - appeared before the Magistrate of South Georgia charged with having taken 89 Elephant Seals from Gold Harbour

[380] Bonner, N; (1959) MSS SPRI 1228/7/54.
[381] CO78/262/5; Colonial Office Records; Public Record Office; Kew; Jan 1950.
[382] Bonner, N; (1958) Exploitation and Conservation of Seals in South Georgia; *Oryx* (Journal of the Fauna Preservation Society) Vol. IV; No.6; p378.

during October and November 1958 when no licence had been issued for that area. Nilsen pleaded guilty and was fined £100. This offence against the Sealing and Fishery Ordinance of the Islands provided Governor Arrowsmith with an excuse to pursue his policy of denying Compañia Argentina de Pesca any future licences.[383] The Governor proposed that a Sealing and Fishing Company be established in the Islands, and that this Company should be jointly licensed to exploit the seals of both the Islands and South Georgia. The British Embassy in Buenos Aires opposed this proposal on the grounds that 'the eviction of Pesca would be considered a political move and would be likely to cause an outburst of extreme nationalist indignation.'[384] The Embassy suggested that in the first instance the Colonial Office should renew its previously ineffectual prodding of the company into adopting more efficient sealing methods. Alfredo Ryan (the owner of Compañia Argentina de Pesca) 'should be cajoled into improving his methods under threat of losing his licence.' [385]

In the event no such pressure was brought to bear upon Compañia Argentina de Pesca because of the company's proposal to transfer their assets to The Albion Star Company.[386]

In March 1960 the Administrative Officer at South Georgia advised the Colonial Secretary that Compañia Argentina de Pesca's whaling manager Fritz Ringdal had applied, on behalf of the Company, for a licence to establish a Fur Company at Grytviken.[387] The letter of application stated that 'It would be more convenient to build the breeding farm outside the whaling station', and this phrase elicited mixed reactions. The Governor thought that this was 'a development that should be encouraged'; whereas the Colonial Secretary thought that it would be advisable to enquire what animals the company had in mind for the "breeding farm". The Colonial Secretary thought that the application for a possible mink farm was camouflage to disguise the real

[383] Proceedings of Case 4/1958 in the Court of the Magistrate of South Georgia; D/9/59; Falkland Islands Government Archive.
[384] FO 371/131892; Colonial Office Records; Public Record Office; Kew; 18 November 1958.
[385] FO 371/131892; Colonial Office Records; Public Record Office; Kew; 18 November 1958.
[386] D/3/60/B; Falkland Island Government Archive; 3 January 1961.
[387] D/28/47B; Falkland Islands Government Archive; Letter from Administrative Officer, South Georgia, to Colonial Secretary; 1 March 1960.

interest - which was the resumption of fur sealing. The Colonial Secretary commented: 'The time is drawing near when the Fur Seal will be exploitable, and we shall probably have to call for tenders before giving a licence.' But mink farming on South Georgia was not an industry to be encouraged: 'South Georgia is pretty much of a wild-life sanctuary and escaping mink would be a menace to the penguins.'[388] Compañia Argentina De Pesca did not pursue the application.

When Japanese companies arrived at South Georgia, for the last three operational seasons, they asked Salvesen and Albion Star to apply to the Islands Government on their behalf for the sealing licences that were available. 'They recognised that seal oil would make an important contribution to their own oil production.'[389] Albion Star was successful in their application for a licence for the International Fishery Company Ltd. to operate from Grytviken for the 1963/4 season. The Japanese provided the catcher crews and flensers, and they used the ships used by the previous licencees - *Dias, Petrel* and the *Albatross* - with their Norwegian Masters. The Islands Government awarded the licence again to Albion Star/International Fishing Company Ltd. for the 1964/65 season. This annoyed Salvesen considerably, who complained that the decision was unfair and that the Colonial Office was 'biased against us.'[390]

Both Japanese consortia soon found that whaling was uneconomic from South Georgia and their operations ceased. Thus whaling, and also sealing, ceased in South Georgia after the1964/65 season. Sealing licences continued to be available, and applications for licences were advertised in the Falkland Islands Gazette, until 1972. In the event, only one company - the Run Fishing Company - applied for a licence after 1966, but although the licence permitted 6,000 seals, only five seals were taken. The Administrative Officer of South Georgia commented about this Company thus: 'It was very obvious during the

[388] D/28/47B; Falkland Islands Government Archive; Minute by Colonial Secretary dated 12 March 1960.
[389] Dickinson, A B; (1993) *Some aspects of Japanese whaling and sealing in South Georgia* in *Whaling & History*; *perspectives on the evolution of the industry* ed. Basberg, Bjørn; Ringstad, Jan Erik; Einar Wexelsen; Sandefjordmuseene, Sandefjord.
[390] Elliot, G H; (1964) *Memorandum, South Georgia seal licence*; Scott Polar Research Institute; MSS 1228/6/51.

operations in which the Run [Fishing Company] endeavoured to kill five Elephant Seals that they had no knowledge of sealing.'[391]

Nigel Bonner commented that the Elephant Seal industry in South Georgia went through various stages of exploitation. The initial uncontrolled exploitation and subsequent depletion was followed by spontaneous recovery once the sealing pressure was lifted. The next phase was a successful period of controlled sealing, which was:

> Damaged by first failing to set quotas in proportion to the stocks, and then by increasing quotas to beyond the combined maximum sustainable yield. This situation was saved by adopting appropriate management policies with which it was possible to maintain the original quotas whilst bringing the stock back to stability with substantially higher production for the sealing company.[392]

Bonner commented, somewhat wryly, about the end of the commercial exploitation of Elephant Seals:

> This valuable industry could have been preserved had it existed independently rather than as an adjunct of a whaling company. When the whaling collapsed from gross over-exploitation, the rationally managed sealing industry was dragged down with it.[393]

Dickinson's conclusions are noteworthy:

> Elephant Sealing at South Georgia in the 20th century provided an excellent example of controlled wildlife exploitation. The industry was successful because of the presence of a large and easily hunted stock,

[391] D/2/64/11; Falkland Islands Government Archive; 5 February 1968.
[392] Bonner, W N; (1982) *Seals and Man - a study of interactions*; Washington: University of Washington Press.
[393] ibid. p7.

> whaling personnel and oil production plant, and the existence of conservation legislation from the beginning of the industry.[394]

also:

> Elephant Sealing in South Georgia in the 20th century was a well-regulated industry. Its demise occurred because the whaling industry could not be similarly well regulated.[395]

It is of note that in recent years the Fur Seal population, particularly on South Georgia, has increased dramatically.[396] This increase is causing an adverse effect on the local ecosystem of South Georgia. Tramping is destroying areas of Tussac Grass, and stocks of krill and other pelagic species, such as icefish, are being reduced.[397] Why has this increase occurred? The most likely explanation is the availability of food. The Antarctic Fur Seal feeds on the planktonic crustacean krill *Euphausia superba*, and the commercial depletion of the krill-eating whales, to less than 16% of the numbers at the beginning of Antarctic whaling, will have substantially reduced the competition for krill. Bonner commented:

> We thus see how over-exploitation of natural resources by man first of all brought the Antarctic Fur Seal to the point of extinction and then, the exploitation being directed to another group of predators competing for the same food resource, created the conditions by which the surviving Fur Seals could recover at a rate scarcely attainable had the trophic environment remained unchanged. The interaction of species at the

---

[394] Dickinson, A B; (1987); op.cit.; p260. Dickinson has calculated that the seal oil produced at Grytviken amounted to 16% of the total production of oil during the entire period of operation of Compañia Argentina de Pesca. See: Basberg, Bjørn; (1993) *Survival against all the odds; Shore station whaling at South Georgia in the Pelagic Era 1925-1960* in *Whaling & History*; *perspectives on the evolution of the industry*; ed. Basberg, Bjørn; Ringstad, Jan Erik; Einar Wexelsen; Sandefjordmuseene, Sandefjord; p161.

[395] Dickinson, A B; (1987); op.cit.; p230.

[396] CS91; Falkland Island Government Archive; 6 December 1919. Also: C/19/27; Falkland Islands Government Archive. Also: C/2/33; Falkland Island Government Archive; 19 February 1933.

[397] *Environmental management plan for South Georgia - a public consultation paper*; Cambridge: British Antarctic Survey; February 1999; p36ff.

higher trophic levels is a matter of main concern to ecologists and biologists alike'[398]

Exploitation of any pinniped is currently prohibited under the 1975 Falkland Islands Dependencies Conservation Ordinance. It is important to note that this extends only to the seaward limit of the territorial sea. The South Georgia and South Sandwich Islands Government has also now acted to protect seals beyond its territorial sea, and within the South Georgia maritime zone. Sealing is now prohibited under the terms of the Fisheries (Conservation and Management) Ordinance 2000 of SGSSI. This Ordinance provides legislation based on the new conservation policy.[399]

§ f. Concluding remarks.

Both the story of sealing in the Islands and the story of sealing in South Georgia end on a slightly wistful note. For Ian Strange the conservation debate about seals and sealing moves beyond the simple utilitarian framework of the exploitation of a natural resource. His plea - that the needs and concerns of 'our wild companions' should be balanced against human needs and concerns - moves the debate into consideration of the moral rights of non-human species. In contrast Nigel Bonner's scientific conclusions about the cessation of the controlled exploitation of Elephant Seals of South Georgia are still firmly locked into the utilitarian viewpoint. For Bonner, seals are a sustainable resource available for harvesting, [400] and that sealing only failed because of human failure.

At the heart of the story of sealing there is also a moral question about what has been called the 'commodification of nature'; is the natural world to be seen simply as a resource for human purposes? The story of sealing shows the consequences of sole reliance upon a utilitarian approach to nature:

[398] Bonner, W N; (1982); op.cit.
[399] South Georgia Government: *Environmental management plan for South Georgia - a public consultation paper*; February 1999; op.cit.; p7.
[400] D/9/59; mss; Falkland Islands Government Archive. (Bonner, N; an unpublished account of fifty years of sealing by Compañia Argentina de Pesca at South Georgia).

> The traditional relationship between humanity and nature was therefore broken and so the natural resource demands of the growing urban culture were no longer balanced by an awareness of the limitations of soil, rivers and climate or respect for farm animals or creatures of the wild. The consequent disembedding of human social structures from the limits and needs of the land, and the loss of a widespread awareness of the relationality between nature and human life, is a key feature in the modern abuse of the natural world.[401]

In any consideration of the history of sealing one fact needs to be borne in mind. Interwoven with the story of the commercial exploitation of seals is the story of the communities of New England and Newfoundland that were supported by the sealing industry. [402] For many frontier communities seal hunting became a way of life, and thus for some in these communities those who wish to protect the seals 'fail to recognise the need to balance the interests of mankind and seal.'[403] But times and attitudes have changed, and for many 'the highest use of a wild animal is to let it be.' [404] Briton Cooper Busch's conclusion is noteworthy:

> It is in no man's interest to jeopardise, let alone exterminate, any seal population … as for the future, it is unlikely that any such species will be deliberately attacked, if only because of the considerable public attention which the seals have received since the late 1960s.[405]

[401] Northcott, M; (1996); Northcott, M. (1996) *The Environment and Christian Ethics*, Cambridge: Cambridge University Press; p50.
[402] Stackpole, E A; (1955); op.cit.; p5.
[403] Busch, B; (1985), op.cit.; p257.
[404] Scheffer, V; (1980) *Adventures of a Zoologist*; New York, Scribner's; p177.

17. Whaling

> The Antarctic adventure, set on foot by whaling, is one of the most remarkable in the history of mankind. So unknown was this continent that it was not until 1895 that man first set foot upon it. Only fifteen years later, however, the islands and oceans around the South Pole were annually invaded by a few thousand men, who gorged themselves on the indescribable wealth of the ocean. [406]
>
> Few creatures felt the rough hand of the rogue primate quite like the whales.[407]

This account of Southern Ocean whaling is divided into four sections: (a) Introduction (b) The early history and a brief outline of the cessation of Southern Ocean whaling; (c) The period from the beginning of shore based whaling until the commencement of pelagic whaling; (d) The period when shore based and pelagic whaling operated in parallel, until the end of whaling in the Islands and its Dependencies.

§ a. Introduction.

This section describes the origins and development of the modern era of Southern Ocean whaling, and it will chart the story with particular reference to whaling in the waters around the Islands and South Georgia. The history of modern whaling is vast and complex, and much of the story is beyond the scope of this dissertation. However reference will be made to key elements of the wider story when they have an effect on events in the Islands and South Georgia. Two important examples of these 'outside' events which have a considerable influence on the part of the story of Southern Ocean whaling

---

[405] Busch, B; (1985); op.cit.; p258.
[406] Tønnessen, J N & Johnson, A O; (1982) *The history of modern whaling*; Hurst/ANUP; p147.
[407] McNeil, J; (2000) *Something new under the sun*; Allen Lane/Penguin Press; p238.

covered by this dissertation are: the emergence of Norwegian nationalism, and also the highly influential Puritan capitalism of Svend Foyn - the father of modern whaling. No comprehensive account of Southern Ocean whaling can be made in isolation from these factors.

The total number of whales caught by whaling companies operating from land stations during the sixty years of the Islands and South Georgia whaling industry has been estimated at 175,250.[408]

> This figure may be compared with 1,432,862 recorded from Antarctica generally between 1904 and 1978 the duration of the region's major whaling epoch. The vast majority of the latter were taken by whale catchers working on the high seas from factory ships.[409]

The figures for the Islands and South Georgia are probably fairly accurate, but the estimated figures for both shore based and pelagic whaling in the other Dependencies should be treated with some caution. They are probably underestimated. The statistics published by the International Whaling Commission, in 1996, included the statement that: 'The data submitted from the Soviet Union whaling fleets were falsified - sometimes being a tenth of the catch only.'[410]

Throughout the history of Southern Ocean whaling, various themes and issues constantly reappear:

- The continual debate about the state of the stock of whales, and their possible extinction in the Antarctic regions. The regulators argued that the stocks were dangerously low; the whaling companies insisted that the stocks of whales could sustain their ever more efficient operations.

[408] Headland, R K; (1994); op.cit.; p260.
[409] ibid.; p120.
[410] Headland, R K; (1996) *Antarctic Chronology*; Cambridge University Press; p31. also: the *Forty-Fifth Report of the International Whaling Commission*; (1995); p120: also: *Forty-Sixth Report of the International Whaling Commission*; (1996); p121.

- The issue of the sovereignty of the Islands Dependencies and the other parts of Antarctica.

- The issue of unrestricted free trade upon the high seas.

- The difficulty in regulating pelagic whaling; the constant question being asked in the early days was - could or should pelagic whaling be controlled?

When the industry began to become predominately pelagic, an early Colonial Office memo revealed the following general difficulties in regulating whaling:

- The leaders of the industry would not be in a position to control pelagic whaling even if they wanted to.

- The whale catcher gunners (the most influential group of workers within the industry) were a very independent class of men, who would not tolerate the slightest interference with their activities.

- Norwegian public opinion would not countenance any interference with the industry of which they were acknowledged leaders.

- Any political intervention by Norway and Britain (who dominated the industry for the first forty years) would provoke demands for participation by other nations.

Despite the difficulties of controlling whaling, the pragmatic realism of the Colonial Office is seen in the concluding comments of the same memo: 'If pelagic whaling continues to increase we may be forced to consider the lesser of two evils and endeavour to secure international action.'[411]

[411] CO78/175/4; Colonial Office Records; Public Record Office; Kew 14 March 1927; Memo by Darnley, E R.

An early letter from Lever Bros. to the Colonial Office clearly shows that the whaling companies knew, notwithstanding their public pronouncements, that there was a possibility of the extinction of whales in the Antarctic.[412] The Governor of the Islands - Sir John Middleton - wrote on 11 September 1926 that 'the control and suppression of pelagic whaling was impossible.' He faced enormous practical difficulties of supervising the Southern Ocean: 'the absence of a patrol boat meant that the Governor has no means of controlling the floating factories.'[413]

A further complication to the problems of regulation is caused by the fact that while early pelagic whaling was within Islands Dependencies waters, and thus under government control, the later stages of pelagic whaling were well outside Governor's bailiwick, and therefore outside government control.

There was also conflicting opinion between various British government departments. Some (*i.e.* the Colonial Office) favoured more controls, but some wanted no controls whatsoever. The Board of Trade stated that 'there should be as little interference as possible with what goes on upon the high seas.'[414] An Admiralty memo dated 8 March 1928 stated 'that no British legislation should purport to exercise control on the high seas.'[415] As will be seen below an Interdepartmental Conference was called in an attempt to resolve these difficulties.

Any evaluation of the Southern Ocean whaling industry cannot ignore the fact that immense profits were made by some whaling companies, and also that the products derived from whales had many important commercial uses. Whale oil was originally used for lighting, lubrication, soap making, fibre dressing and processing leather. During World War I, whale oil was in great demand for the manufacture of glycerine for munitions. In later years the process of the

[412] CO78/174/3; Colonial Office Records; Public Record Office; Kew; 14 May 1926.
[413] CO78/174/3; Colonial Office Records; Public Record Office; Kew; 11 September 1926.
[414] CO78/175/4; Colonial Office Records; Public Record Office; Kew; 15 March 1927; Memo by Grimshaw, C.
[415] CO78/175/4; Colonial Office Records; Public Record Office; Kew; 8 March 1928.

hydrogenation [416] of oil was perfected, and edible oil for margarine was produced from whale oil. Spermaceti was obtained from the head of the Sperm Whale (*Physeter macrocephalus*). Sperm oil was used as a fine lubricant for small machines such as watches and sewing machines. Baleen was used as 'whalebone' by the corset industry. Guano and meal was obtained from dried whale meat and bones, and was used as animal feed and nitrogenous/phosphate fertiliser. Some countries, most notably Japan regarded pure whale meat as a high quality food fit for human consumption. These, and some other products, variously became more or less important during different periods of the whaling industry.

The attitudes and methodology of the whaling companies had an immense influence on the history and development of the Southern Ocean whaling industry. These are well summarised in the following 18th century poem reproduced in a recent history of the whaling company Salvesen:

Business

I'm sent the genius of the British Isle,
Your long bewild'red Thoughts to unbeguile,
Enrich yourselves, may Britain smile in Peace,
Your proper Business is your Trades increase;
The Sea's your native strength, Fish is your wealth,
In other Projects you amuse yourself.
Imploy your Poor in fishing up that Oar,
To fill your Checquer, and secure your shoar.
Herrings and Whales, the Mine is given you,
Search them they are your happier Peru.
In wooden Walls reign Monarch of the Seas,
And stretch Commerce and Conquest as you please.[417]

[416] Hart, I; (2001); *Pesca: the history of Compañia Argentina de Pesca – and account of the pioneer modern whaling and sealing company in the Antarctic*; Salcombe: Aidan Ellis Publishing; pp.110ff and 248ff.
[417] Quoted in: Elliot, G; (1998) *A whaling enterprise: Salvesen in the Antarctic*; Norwich.

Enthusiasm for Southern Ocean whaling in the 20th century was not confined to Norway or Great Britain. The Antarctic explorer Sir Douglas Mawson made this stirring appeal to Australian patriotism in the 1930s:

> Almost at the doors of Australia lie mighty stretches of sea teeming with wealth. It is for Australians to develop this heritage for Australians yet to be. Too long has Australia neglected the wealth that lies in whaling![418]

§ b. The early history of the Southern Ocean whaling industry.

'There are records of the hunting of cetaceans almost from the beginning of history.' [419] Although the methods used were primitive and only a few species of whale could be hunted, a familiar pattern soon became established, namely that the depletion of stocks soon occurred and the whalers were forced to look further abroad for new hunting grounds:

> The general tendency in the various whale fisheries has been success at first, followed by reduction or exhaustion of the local stocks and a move to some other locality or another species.[420]

This pattern occurred increasingly through the 17th and 18th centuries. It was the decline of the Finnmark whaling industry, in Northern Norway, at the end of the 19th century, which stimulated the beginning of the Southern Ocean whaling industry.

No account of modern whaling would be complete without recognition of the work and achievements of Svend Foyn. Foyn was born in Tønsberg in 1809. Family hardship while Foyn was a child taught him the value and importance of

[418] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p384. See also: SPRI MSS1284/4/13 (folio 1346).
[419] Macintosh, N A; (1965) *The stocks of whales*; London; 1965; p141.
[420] ibid.; p144.

money.'[421] Sealing provided Foyn with the practical and financial means to make the transition to whaling, and he soon realised that the value of one Blue Whale (*Balaenoptera musculus*) was equivalent to that of 300 to 400 seals. In 1863 he built the first purpose built steam whale catcher, which he named *Spes et Fides.* Initially Foyn's efforts met with little success, but by 1871 he had perfected the grenade harpoon gun. 'In every respect he revealed an unflagging energy in testing every stage of whaling: should one miscarry, he would immediately start another one.'[422] Through Foyn's efforts Norway was launched on a new and highly profitable industry:

> Posterity has linked the name of Foyn so closely with the ingenious grenade harpoon that it has been apt to forget that he decisively shaped the development of other aspects of whaling.[423]

As well as constructing the harpoon gun and building the first whale catcher, Foyn also developed an effective means of winching dead whales alongside the catching vessel. Although not invented by Foyn, the 'compensator' was developed by Foyn to cope with the tremendous jerking and pulling forces exerted by harpooned whales. In 1893, when northern whaling had become unprofitable because of over-exploitation, Foyn sent a former sealing vessel to the Ross Sea in the Antarctic to search for Southern Right Whales (*Eubalaena australis*). In a religious tract Foyn wrote:

> God has let the whale inhabit (those waters) for the benefit and blessing of mankind, and consequently I considered it my vocation to promote these fisheries.[424]

James Cook first reported the occurrence of whales off South Georgia in 1775.

[421] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p260.
[422] ibid.; p30.
[423] ibid.; p37.
[424] ibid.; p26.

> Here in this icy wilderness there was nothing man could usefully do … He could come to the Antarctic in one way only, and that was as invader, as conqueror come to pillage, then go away again.'[425]

Captain Bellingshausen visited South Georgia in 1819 and met some British sealers who were not averse to taking a few weakened Southern Right Whales. Some personal correspondence is extant which shows that New England whalers were operating in Islands waters from the 1830s onwards.[426] The 336 tonne ship *Arab* sailed from Fairhaven, Massachusetts, on 14 June 1835, returning to her home port on 5 August 1836 with 225 barrels of sperm oil and 2,252 barrels of whale oil aboard. It is clear from the correspondence between the Captain (Arthur Cox) of *Arab* and his wife, that the whalers caught Southern Right Whales wherever they could find them, and not just in Islands coastal waters. However the ship made use of New Island in West Falkland as a base and some whales were caught within close proximity of the Islands.[427]

On 25 March 1849 Captain Hiram Clift of the New England whaling ship, the *Hudson*, wrote from New Island that he had:

> Moored the ship at Eagle Island, East Falklands. I have always heard that there was plenty of whale [sic] there. And I know of no one that has ever whaled there … I have a good chart, the last English survey. And I find it very correct. I have taken one whale, on the 10 March at Arch Island.[428]

The *Hudson* returned to its home port in February 1852 with a cargo of 2,382 barrels of whale oil and 18,000 lb. (8,082 kgs) of whale bone (baleen).[429] Once again while the whalers caught Southern Right Whales wherever they could

[425] Moorhead, A; (1968) op.cit.; p195.
[426] Gurney, A; (2000) *The race to the White Continent - voyages to the Antarctic*; Norton and Company; New York; p14.
[427] Heijtz, S; (1999) The Arthur Cox correspondence; *Upland Goose*; Vol. XV No.2; December 1999 & *Upland Goose*; Vol. XIII No.8; June 1997.
[428] Clift, Hiram; letter to his brother William, at Mystic Bridge, Stonington, 25 March 1849
[429] Starbuck, A; (1964) *A History of American Whale Fishery*; New York: Argosy-Antiquarian; Volume Two; 1964; p496.

find them in the South Atlantic, it is probable that they caught some in Islands waters.

In 1855 a Memorandum was prepared by the Acting Colonial Secretary in Stanley (J. Longdon) detailing warnings issued to foreign vessels in Islands waters that were either whaling or sealing (or both). From 1790 until 1793 there were at least five warnings issued to English, French or United States vessels. When Jewitt arrived in the Islands 'he found more than 50 vessels round the Falklands … whom he prohibited to fish'[430] Between 1836 and 1841 there are twelve recorded accounts of warnings issued to whalers and sealers by Royal Naval Officers and ships.

The first two expeditions, whose primary aims were whaling, took place in 1892. Four whaling vessels from Dundee sailed to the South Shetland Islands and the northern Weddell Sea, with Dr W S Bruce as a member of the expedition. The expedition was a failure because the expedition ships were equipped for Right Whales; they did not have the modern vessels, guns and the heavy gear required for rorquals. The second expedition was Norwegian and was using (also in search of Right Whales) the ship *Jason*. Both expeditions were in the South Shetlands at the same time, and they met at Joinville Island on 24 December 1892. The Master of the Norwegian vessel was Captain Carl Anton Larsen, who made further whaling reconnaissance voyages in *Jason* in 1893/94.

Dr Otto Nordenskjöld subsequently chose Larsen to be the Master of *Antarctic* on the Swedish South Polar Expedition (1901-1903). *Antarctic* was crushed in the ice near Paulet Island in 1903. Following his rescue from the island Larsen went to Argentina and raised the capital for a whaling expedition. The Compañia Argentina de Pesca was formed in February 1904 with a capital of £40,000. Larsen fitted out a whaling fleet at Sandefjord in Norway. The ships

[430] Miscellaneous Letter (Inward) Book Vol. H8; *Memorandum of the foreign vessels warned off the Falkland Islands, since British re-occupation in 1833, while engaged in whaling, sealing, etc.; compiled from documents in the Government Office, Stanley, Falkland Islands.*; Falkland Islands Government Archives; 12 March 1855.

arrived at Cumberland Bay, in South Georgia, on 16 November 1904, and this date is generally regarded as the date that the modern South Ocean whaling industry began.[431] Larsen built his whaling station at Grytviken, and his expedition consisted of two transport ships, *Louise* and *Rolf* and one modern steam catcher - *Fortuna*. Initially Larsen's operations were unlicensed, and thus illegal [432] - but they were an instant success.

One of the key personalities during the early period of the development of Southern Ocean whaling was Governor William Allardyce. He described South Georgia as 'the Whaler's El Dorado' [433] and James Innes Wilson (appointed by Allardyce as Stipendiary Magistrate on South Georgia) wrote on 30 November 1910 'This is in truth the whaler's El Dorado, and like most such places, the hunter's expectations are far from moderate.'[434] This section of this dissertation is essentially an account of the consequences of the 'hunter's expectations' and the attempts to control and restrain them.

The Islands and its Dependencies were fortunate to have a Governor of the calibre of William Allardyce at a crucial period in its history when the whaling industry was expanding at its fastest rate. During his eleven year tenure of office (1904-1915) Allardyce was responsible for allocation of the first whaling licences (especially the restriction on the number of whale catchers) and the location/leasing of whaling stations on South Georgia. Allardyce was largely responsible for the 1908 Whaling Ordinance, and also for the appointment of the first Magistrate to oversee the regulations. Some commentators however, mainly Norwegian, are not so complimentary about Allardyce. Tønnessen's comment is typical of a less than favourable opinion of Allardyce:

[431] On 27 November 1904 Carl Anton Hansen (1882-1991) harpooned the first whale - a Fin Whale. In the period 1904-1962 Compañia Argentina de Pesca produced 2,720,123 barrels or 453,354 tonnes of oil and 192,315 tonnes of whale meal and guano, representing an average of 50.59 barrels or 8.43 tonnes per whale. See: Hart, I; (2001); op. cit.; p 3.
[432] This has been strongly contested in a recent history of Compañia Argentina de Pesca. See: Hart, I; (2001); op.cit.; pp. 64-100. Hart argues that Larsen was well aware that South Georgia was a British possession as early as 1896, 'He may well have been given assurances by the British that they would approve of such a venture.' p64.
[433] Allardyce, W; MSS SPRI 240/1; 3 October 1908.
[434] Allardyce, W; MSS SPRI 240/1; 30 November 1908.

> He had shouldered the main responsibility for the administration of this development, which had imposed a tremendous burden of work to which he had not been entirely equal. According to his successor, W. Douglas Young, Allardyce left his office in a state of near chaos: a large number of decisions had been made orally, without reference to the Colonial Office or without being duly recorded. He had gradually adopted an attitude of opposition to the Colonial Office, and felt that he had not been given due credit for his services … He failed to understand that whaling also had political consequences, and that regulation of it, and the question of sovereignty in the Antarctic, were bound to become international problems.[435]

This assessment is not entirely fair or accurate. [436] The antipathy of some Norwegian historians stems from Allardyce being perceived to be constantly restricting the operations of the whaling companies, and because he appeared to favour British interests. Other Norwegian historians have recognised Allardyce's positive contribution: 'He was in many respects a man ahead of his time when it came to the management of the whale resources.'[437] Sometimes Allardyce found scant support for his policies from the Colonial Office. Heyburn commented, for example, that his attempts to restrict the number of whale catchers were not well received in London: 'unfortunately, the Colonial Office refused to go along with such strong medicine.'[438] The account which follows contains further examples of the tension between the Governor of the Islands and his political masters in the Colonial Office. It also contains examples of the tension between the Colonial Office and the whaling companies - most notably Salvesen. Henry Heyburn rightly described Allardyce as a pioneer Antarctic conservationist; a man of 'broad intellectual interests, tough

[435] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p340.
[436] For a more balanced Norwegian view on Allardyce's efforts see Interdepartmental Committee (1920) *Research and Development in the Dependencies of the Falkland Islands*; H.M.S.O.; Cmd.657; op.cit.; p90. Captain C A Larsen and Captain Thoralf Sörlle both thought that the regulations were generally satisfactory to the Norwegian whaling companies.
[437] Basberg, B, (1993) *Survival against all odds? Shore stations whaling at South Georgia in the Pelagic era, 1925-1960*. in: Basberg, B., Ringstad, J.E. and Einar Wexelsen, (Eds.) *Whaling & History; perspectives on the evolution of the industry*, Sandefjord: Sandefjordmuseene, Sandefjord; p159.
[438] Heyburn, H; (1980) William Lamond Allardyce 1861-1930 – a profile; *Polar Record*, Vol. 20, No 124; p41.

minded resolution and ready wit.'[439] This dissertation shows how Allardyce's contribution was significant during the first phase of the development of Southern Ocean whaling.

In 1904 Governor Allardyce leased the whole of South Georgia to a pastoralist enterprise called The South Georgia Exploration Company Limited. [440] The principal shareholder in this Company was Ernest Swinhoe, and the lease was for 21 years. Swinhoe was a resident of Punta Arenas, and the enterprise was described by Charley Milward, the British Vice-Consul in Punta Arenas, as 'some shepherds here with small capital'. The Company chartered the schooner *Consort* in Punta Arenas for their initial surveying expedition and Swinhoe and Henry Kelway (formerly an Islands resident) arrived in Stanley on 20 July 1905. Governor Allardyce interviewed them, and the terms of the lease were discussed. They sailed for South Georgia on 28 July 1905. Governor Allardyce supported the initial survey because he realised that the Islands Government knew almost nothing about South Georgia, and that no Government official had visited it in the past. Allardyce made it a condition of the lease that the results of the survey were to be communicated to the Islands Government. Swinhoe's pastoral settlement was eventually unsuccessful in its attempt to introduce horses and sheep.

Swinhoe was distressed to discover Carl Larsen was already on the Island, and the Argentine flag flying over the whaling station; but Governor Allardyce and the Colonial Office were unwilling to cause an 'incident' with an Argentine company, with its potential for diplomatic complications, and a compromise was reached.[441]

[439] ibid.; p39.
[440] Interest in the pastoral possibilities of South Georgia had begun some years earlier. See: Goldsworthy, R; Letter; 11 January 1893; *Outward Letter Book 1881-1908*; Falkland Islands Government Archive. A 'Mining and General Lease' of South Georgia was offered to the general public by the Islands Government in the *Falkland Islands Gazette* on 22 October 1900.
[441] CSO898/21 *Dependencies share cost in cost of administration*; Falkland Islands Government Archive; Despatch 75 to Secretary of State for the Colonies (Enclosure I) 22 May 1912.

Larsen's company was granted a twenty-one year lease on a 500 acres of land, (and permission to whale) for an annual rent of £250, on 1 January 1906.[442]

The Colonial Office's caution in dealing with Argentina, and its unwillingness to cause a diplomatic incident, has been a factor of note throughout the history of Southern Ocean whaling.[443]

Carl Larsen's success encouraged many others to begin whaling in the Southern Oceans.[444] Tønnessen commented that South Georgia is 'a good example of the way in which man has altered the natural fauna'[445] Larsen introduced reindeer in 1911 at Ocean Harbour, and they thrived on the Tussac Grass.[446] Salvesen also released reindeer near to their land station at Leith in 1912, but the animals were all swept into the sea by an avalanche.

Steam whaling around the Islands (and subsequently around South Shetlands) started during the season of 1905/6. The floating factory *Admiralen*, with the whale catchers *Hauken* and *Ørnen* commenced whaling off New Island, in West Falklands, on 24 December 1905. This whaling expedition came from Sandefjord, in Norway, and was managed by Alexander Lange. On 27 February 1906 the expedition was granted its first whaling licence.

The first Whaling Ordinance for the Islands, and its Dependencies, was enacted in 1906; it required that whaling companies operate with a Government licence. This Ordinance was superseded by the Ordinance of 1908. The new Ordinance sought to limit the extent to which whaling could be carried on, and to reduce the amount of wastage.

---

[442] Jones, A G; (1992) Three British Naval Antarctic Voyages, 1906-43; *Polar Portraits: Collected papers*; Caedmon of Whitby; and: Hart, I; (2001); op.cit.; pp. 76-81; also: Governor William Allardyce's confidential Despatch to the Colonial Office on 28 March 1906; Falkland Islands Government Archive; Confidential Despatch Book B30; 28 March 1906; Enclosure 1.
[443] Hart, I; (2001); op. cit.; p71.
[444] Vamplew, W; (1978) *Salvesen of Leith*; London & Edinburgh; p150.
[445] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p168.
[446] CS309; Falkland Islands Government Archive; 18 January 1919. For the long-term effects of this introduction see: McIntosh, E and Walton, D; (2000) *Environmental management plan for South Georgia*; The Government of South Georgia and the South Sandwich Islands; p61.

Christian Salvesen & Company, from Leith, went south in 1907. Salvesen initially tried to obtain a whaling licence for South Georgia, but the Colonial Office declined to issue a licence on the basis that two had already been issued that year. The Colonial Office encouraged Salvesen to apply for a licence to whale from New Island. Permission to whale was granted in 1907, and Salvesen dismantled a disused Icelandic whaling station, which they had recently purchased, and re-assembled it at Ship Harbour on New Island. The whaling company was registered as The New Island Whaling Company. On 16 December 1909 the whale catcher *Swona* began catching from New Island, and on that date the first whale was caught. In the first season Salvesen caught 227 whales, and in the following season a total of 475 whales. At the end of the 1910 season there was a major fire, which almost completely destroyed the New Island whaling station. It was rebuilt in time for the new season, but the catches were poor (in comparison with South Georgia) and the total number of whales caught continued to decline.

The New Island station was finally closed in 1915. The whaling station equipment was dismantled and moved to South Georgia. Salvesen commented on their experience at New Island thus: 'Our whaling venture at New Island has been most unsuccessful from a financial point of view, and we have lost a considerable sum of money'[447]

Salvesen had obtained a lease for a South Georgia site before the New Island station had begun to work, and in November 1909 construction began on the new station in Stromness Bay, which was named Leith Harbour. The transport ship was *Starlight* and the whaler catchers were *Swona* and *Semla.* The terms of the licence limited Salvesen to two whale catchers. Salvesen were anxious to obtain a second lease, and initially the Colonial Office refused. The granting of the second lease (and thus licence for two more whale catchers) was eventually achieved by the expedient of forming a separate company in which Salvesen were the principal shareholders. The Colonial Office granted a lease to the South Georgia Company for Allardyce Harbour, but no station was ever built

[447] 298/16; Falkland Islands Government Archive; Letter from Salvesen & Co to Under Secretary of State for the Colonies; 16 May 1916.

there. Salvesen operated the two companies as one venture - both based at Leith Harbour.[448]

By the 1909-1910 season seventeen whaler catchers were working in South Georgia waters, and all the companies except one continued whaling operations throughout the winter. There were six shore stations and seven floating factories. On 20 November 1909 James Innes Wilson was appointed as the first Stipendiary Magistrate, and on 4 December 1909 a Post Office was opened on South Georgia. Wilson's appointment was a significant element in Governor Allardyce's attempts to control and restrict whaling.[449]

By the 1911-1912 season there were a total of nine leases on South Georgia. During this season it was noted there was a continual decline in Humpback Whales (*Megaptera novaeangliae*) Blue and Fin Whales (*Balaenoptera physalus*) became the chief quarry of the hunters when the catchers became faster and more powerful and the gear became stronger. The whaling industry continued to expand at a dramatic pace; numerous licences were also issued for whaling in the South Shetlands and South Orkneys. Shore stations and floating factories continued to exploit the whales stocks, but their significance declined with the introduction of pelagic whaling in 1925.[450]

Some of the shore stations closed in the 1930s. Husvik last operated during the 1959/60 season. Leith Harbour stopped whaling under the management of Salvesen in 1961, and it was leased to the Japanese whaling company Nippon Suisan Kaisha Ltd for the 1963/1964 season. The station closed permanently in 1965. A consortium of three Japanese whaling companies operated Grytviken during the 1963/1964 season, and for the first part of the 1964/1965 season. All whaling ceased in December 1964, but a caretaker remained at the station until it finally closed in 1971.

[448] Vamplew, W; (1978); op.cit.; p155.
[449] 328/16; Falkland Islands Government Archive; Letter from Downing Street to the Governor of the Islands; 27 June 1916.
[450] Headland, R K; (1999); op.cit.; p31.

§ c. The period from the beginning of shore based whaling until the commencement of pelagic whaling 1905-1925.

Whaling began in the Falkland Island and South Georgia with land based factories. Floating factories were also used, but these were always associated with shore stations. From the very beginning the Colonial Office introduced regulation and control. [451]

An early illustration of Governor Allardyce's personal philosophy and approach to the emerging whaling industry is to be found in his Despatch 6, dated 11 January 1908. The Newfoundland Steam Whaling Co. applied for a whaling licence for South Orkneys and South Shetlands, and in granting the application Allardyce commented:

> Captain Davidson did not demur to taking a Customs Officer with him, and at once recognised the advantage, which thereby accrued to the Government in being able to protect the revenue, and also to the whaler in restricting the operations of unlicenced expeditions.[452]

Allardyce also committed the Islands Government to the general principle that unused licence fees would be returned. He commented that The Newfoundland Steam Whaling Co. was the 'only Company flying the British flag … I was anxious to afford a purely British industry all possible facilities.' This pro-British bias and the importance of government regulation was not a viewpoint shared by Salvesen in the years which followed. Salvesen regarded such controls as unnecessary and irksome, and something to be circumvented at the earliest opportunity. From the very beginning there was considerable strain between Salvesen and the Governor/Colonial Office because of the attempts to be even-handed between the various whaling companies:

> Our company's relations with the Governor were not always cordial. Theodore [Salvesen] wanted as many licences as he could get, feeling

[451] Elliot, G; (1998); op.cit.; p15.
[452] Allardyce, W; MSS SPRI 240/1; 11 January 1908.

> that as a British company of high reputation should as a matter of course be treated more favourably than its Norwegian competitors.[453]

Although the Colonial Office dictated the general policy on whaling, it was Allardyce who was responsible for allocation of whaling licences (especially the restriction on the number of whale catchers) and the number of leases and the location of whaling stations on South Georgia. Allardyce was also largely responsible for the drafting of the 1908 Whaling Ordinance.[454] In a Despatch written on 21 January 1908 he revealed his preference for working with C A Larsen:

> It seems to me that as Compañia Argentina de Pesca is the pioneer Company of South Georgia, and have large interest there, their application [for extension of land lease] must take precedence …
>
> … My Executive Council agreed that the number of Whaling Companies operating in South Georgia should be restricted to four.[455]

In the same Despatch an early example of the propensity of some whaling companies to be deceitful and also Allardyce's continual struggle to maintain a credible licensing system is revealed:

> I am forced to the conclusion, in which I supported by my Executive Council, that he (Captain Lystad of Christensen & Co.) purposely determined not to come here (to Stanley - as required by rules of licence) in order to avoid embarking a Customs Officer and thus free himself from Government supervision … and on coming here he may supply an entirely erroneous tally of the number and class of whales caught.[456]

---

[453] Elliot, G; (1998); op.cit.; p15. See also: SPRI MSS1284/4/1 (folio No.39).
[454] The first Ordinance was enacted on 5 October 1906 and was entitled: 'Ordinance to regulate the Whale Fishery of the Colony of the Falkland Islands.'
[455] Allardyce, W; SPRI MS240/1; 21 January 1908. See also: CS711; Falkland Islands Government Archive; Minute by Colonial Secretary to Governor; 2 October 1919.
[456] Allardyce, W; SPRI MS240/1; 21 January 1908.

Despite considerable pressure from the whaling companies Allardyce struck to his general view that the number of licences should be restricted. [457]

Before the advent of whaling almost nothing was known in the Colonial Office about South Georgia; in the early days there even appears to have been some confusion as to rightful ownership and sovereignty of South Georgia. Whaling removed any doubts as to the value of keeping South Georgia. Allardyce soon realised the value and worth of South Georgia as a location/base for whaling activity, and its potential for raising revenue for the Islands economy, which was in a parlous state. [458] Despite the excellent financial prospects, and his determination to regulate the whaling industry, Allardyce is well aware of the future possibility for the whale stocks: 'that in a few years at the present rate of catch there are likely to be very few whales left in that region.' [459] However the scale of the economic rewards of Southern Ocean whaling in the early days cannot be overstated. Tønnessen commented that:

> The number of whales per catcher in one season was almost four times greater and the number of barrels of whale oil three times greater than the north. This is an important explanation of the explosive development that took place in the south.[460]

Despite the laziness of some of the whaling companies Allardyce sought to ensure that the whole of the whale carcass was utilised:

> After the cream of the local whale stocks had been taken … they should not let half the available oil go … But the old habits of strip and dump persisted at times of high catch.[461]

Although C A Larsen enjoyed Allardyce's support, the Governor is also highly critical of Compañia Argentina de Pesca's whaling methods:

---

[457] Allardyce, W; SPRI MS240/1; 10 March 1908.
[458] Allardyce, W; SPRI MS240/1; 11 July 1908.
[459] Allardyce, W; SPRI MS240/1; 11 July 1908.
[460] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p176.
[461] Elliot, G; (1998); op.cit.; p16.

> Their present method of dealing with whales is undoubtedly a most wasteful one, all the bones (vertebrae) and a large portion of the carcass are not utilised in any way, and I venture to predict that the future will show that with the disappearance of the whale from South Georgian waters, the Argentine Company [de Pesca] and all the other Companies, whose sole object in proceeding to South Georgia is to whale, will disappear also.[462]

One of the earliest casualties of the new whaling industry was the Humpback Whale.[463]

Allardyce was under continual pressure from the whaling companies to allow an increase on the crucial subject of the number of whale catchers. At first he resisted this pressure because he realised that such a restriction would increase carcass utilisation, and thus moderate catching rates:

> It is not so much the number or tonnage of the vessels comprising any one expedition, or employed by one whaling company, which ought to be the determining factor, but the number and efficiency of the small steamers used for killing and capturing whales … I venture to submit that no Company should be permitted to employ more than two vessels of this type.[464]

The companies circumvented this restriction by applying for licences for completely bogus whaling stations - which were never built (ironically one at a place named Allardyce Harbour) - and having obtained the licence they proceeded to use them to support their existing operations. The catch reports continued to show an increase and thus on 20 July 1908 Allardyce wrote:

> In view of additional information lately obtained with regard to the whaling conditions around South Georgia, and the fact that the waters

[462] Allardyce, W; SPRI MS240/1; 11 July 1908.
[463] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p164.
[464] Allardyce, W; SPRI MS240/1; 1 July 1908.

> are teeming with whales, the number of Companies allowed to operate there be increased from four to six.[465]

Thus by 22 December 1908 the number of whaling companies operating in South Georgia was allowed to increase from four to seven. One of the new companies was Salvesen & Co. who had initially been restricted to New Island in the Islands. Allardyce required the Companies to utilise the whole of the whale.[466] From the very beginning of his company's operations Theodore Salvesen also insisted on the complete exploitation of the whale carcass. 'An outcome, no doubt of the innate Scottish sense of thrift and dislike of waste.'[467] Allardyce obvious felt that at this stage he was making some progress on the subject of full utilisation:

> This question [*i.e.* full utilisation of carcasses] has already been dealt with, and in the matter of Colony itself I fail to see that any difficulty need be experienced. The example being set by Messrs. Salvesen & Co. at New Island, West Falkland, by the establishment of a factory on shore for this purpose, is one, which is perfectly feasible for all licensed Companies to adopt … The solution of the difficulties at the South Shetlands in connection with the utilisation of the whole of the carcass would appear to be the floating factory.[468]

From the outset Leith Harbour (to where Salvesen moved after the closure of the New Island shore station) was equipped with equipment to make it possible to reduce the entire whale carcass to marketable products. Theodore's son, Harold made the economic and effective utilisation of the whole of the whale carcass one of the main preoccupations of his working life.

Allardyce continued to try to implement tighter control on the whaling companies. In 1909 he stationed a Stipendiary Magistrate on South Georgia. In

[465] Allardyce, W; SPRI MS240/1; 20 July 1908.
[466] Allardyce, W; SPRI MS240/1; 22 December 1908.
[467] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p187.
[468] Allardyce, W; SPRI MS240/1; 18 March 1909.

a Despatch to the Colonial Office outlining his proposal for a Magistrate, he makes a revealing comment about the financial affairs of the Islands, and the importance of whaling oil tax revenue and ground rents, to the Islands government:

> Had it not been for the development of the whaling industry since 1905, and the rents accrued from South Georgia, but little of the progress made during the last two or three years in this Colony would have been possible, apart from financial embarrassment.[469]

On 25 August 1909 Allardyce left Stanley on the steam whaler *Swona* (belonging to Salvesen) to inspect the newly erected whaling factory at New Island. He arrived at New Island some 27 hours later. The factory had not been completed. Seventy people were employed at the whaling station - including the crews of whale catchers and two large steamers.[470]

At some point towards the end of 1910 Allardyce became alarmed at a discussion which was taking place in the Colonial Office about appeasing Argentine claims to sovereignty. On 24 December 1910, in reply to a secret Despatch from London dated 11 November 1910, concerning the suggestion of the Colonial Office about the possible cession of the South Orkneys to the Argentine Republic, Allardyce strongly opposed the proposal on the grounds of the financial consequences for the Islands, as well as being:

> Almost certain to be misunderstood in South America, and might hereafter form an unfortunate precedent for other demands, and be used to materially weaken our claim to possessing any territory in these seas.[471]

As part of his strategy to avoid wastage Allardyce promulgated new whaling regulations on the 6 February 1911. Separate licences were to be issued for

[469] Allardyce, W; SPRI MS240/1; 10 June 1909.
[470] Allardyce, W; SPRI MSS240/1; 9 September 1909.
[471] Allardyce, W; SPRI MS240/1; 11 November 1910.

South Shetlands, South Orkneys and the Islands. This allowed one floating factory and two whale catchers per licence. Allardyce hoped that the use of floating factories would end 'strip and dump' attitude.[472] The regulations permitted no greater number than ten licences to be issued for South Shetlands. South Georgia licensing continued to be arranged separately. Constant vigilance was required on the part of the regulators. On 10 May 1911 the Customs Officer who accompanied the *Sobraon* expedition drew attention to the excessive waste of carcasses after the blubber had been flensed off and the oil removed. [473] This report prompted Allardyce to permit licences to build a shore processing factory on Deception Island - despite the shortness of the season (four months) - to enable the utilisation of the whole carcass of the whale. Government whaling inspectors and Magistrates were soon appointed to monitor the whaling companies' activities.[474]

Although he granted them licences Allardyce clearly preferred land stations to floating factories. With technology then available floating factories were unable to utilise the whole of the carcass, and:

> The floating factory affords the unscrupulous to flense the blubber … and get rid of the rest by simply cutting it adrift … Land stations improve utilisation and make supervision more practicable.[475]

Allardyce's solution to this problem was to have the floating factories working in conjunction with shore stations. In practice, however, the Magistrate at South Georgia constantly complained how poorly the land based whaling companies also carried out the utilisation requirement in their leases on South Georgia. At one stage [476] Allardyce considered re-possessing the leased land if the companies did not improve the utilisation. He felt that there was clear evidence

[472] CS/427/23; *Report by Mr A G Bennett on whaling operations South Shetlands season 1922/3*; Falkland Islands Government Archive; Whaling Report 1922/3.
[473] Allardyce, W; SPRI MS240/1; 10 May 1911.
[474] Palmer, S; (1995) A G Bennett - Naturalist, Whaling Officer, Customs Officer and Postmaster; *Falkland Islands Journal*; 1995; Vol.6; part 4; pp. 91-104.
[475] Allardyce, W; SPRI MS240/1; 2 August 1911.
[476] Allardyce, W; SPRI MS240/1; 25 August 1911.

that companies were catching more whales than they could dispose of, [477] and also that whole whale carcasses were being handed over by licensed companies to unlicensed 'processing companies.' 'When not under the eye of the Magistrate … who is to know whether flensed carcasses only or whole carcasses are used?'[478] The real problem of enforcement was that there was only one Government official for the seven whaling stations on South Georgia, which were widely scattered on the northern coast of South Georgia. The Magistrate's problems were compounded by the fact that his only means of transport was provided by the offending whaling companies.

The whaling industry was booming, and large sums of money were being made. In May 1911 the Stipendiary Magistrate reported that during the 1910/11 season 5,521 whales were caught at South Georgia, which yielded 150,457 barrels of oil valued at £394,898. [479] Thus on 13 May 1911, because of the abundance of whales, Allardyce recommended to the Colonial Office that South Georgia licences be increased to nine. On 9 June 1911 Allardyce bemoans the fact that despite the value of the whale catch at South Georgia exceeded £250,000, the revenue to the Islands Government is less than 1% of this amount. Thus on 6 July 1911 he recommended that an export duty of 3d per barrel on all whale oil exported from the Dependencies be imposed. This export duty was deeply resented by the whaling companies - most notably by Salvesen. The 1910-1911 season was a highly profitable one. The scale of the profits that were being realised can be gauged from the shareholders of one whaling company - A/S Ocean of Larvik - during the eleven years it existed received 450% 'of the face value of their shares, but even so it was not one of the companies to declare the highest dividends.'[480]

On 9 July 1911, in response to yet another application for a whaling licence on South Georgia, from no less a figure than C A Larsen himself, Allardyce wrote:

[477] Allardyce, W; SPRI MS240/1; 26 September 1911.
[478] Allardyce, W; SPRI MS240/1; 26 September 1911.
[479] Allardyce, W; SPRI MS240/1; 18 May 1911; Wilson, J L to Allardyce, W.
[480] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p193.

> It is the extremely remunerative nature of the whaling industry at South Georgia which is forcing individuals and companies to leave no stone unturned to try and get a footing there *i.e.* South Georgia.[481]

In July 1911 the first note of serious complaint about Salvesen appears in the Governor's Despatches: 'Salvesen & Co. appears determined to check development at South Georgia except on lines remunerative to themselves.'[482] Thus begins a recurring theme: mutual suspicion/hostility between Salvesen and the Falkland Island Government/Governor, [483] which continued until the end of Salvesen's involvement in Southern Ocean whaling in the 1960s:

Salvesen soon realised that New Island whaling was not going to be viable in the long-term, and the Company wrote to Allardyce on the 7 April 1911:

> We regret that our experience at New Island has been worse so far this season than last and it is demonstrated now without any doubt whatsoever that the whaling industry round about the Falkland Islands cannot maintain the employment of whalers and crews and station hands all the year round.[484]

Allardyce acceded to their request, but he appeared to be of the opinion that Salvesen were overstating their case. Despite their protests he clearly believed that the Company was making handsome profits. An early example of Salvesen's arrogance towards the Colonial Government and their financial assertiveness is seen in its use of more ships than their licences allowed. The following note is found in the South Georgia Custom Officer's diary on 11 December 1911:

> Mr Lange … was acting in accordance to the written instructions of his owner, Mr Salvesen, and that the gentleman in a letter had requested

[481] Allardyce, W; SPRI MS240/1; 9 July 1911.
[482] Allardyce, W; SPRI MS240/1; 7 July 1911.
[483] Elliot, G; (1998); op.cit.; p65 and p76.
[484] Allardyce, W; SPRI MS240/1; 7 April 1911 (Salvesen to Allardyce).

> him, in the event of the Customs Officer objecting to the *Herma* being used as intended (as an extra whaling towing vessel - in contravention of the Whaling Ordinance 1908) - to lodge a letter of protest with the Customs Officer, and to use the *Herma* as instructed throughout the whaling season, and to call at Port Stanley at the close of the whaling season for the purpose of having the matter settled.[485]

In the event Lange did comply with the Customs Officer's demand; Allardyce commended the Customs Officer, but Salvesen protested vigorously about 'this illegal action.'[486] Salvesen got their way eventually, on the condition of offering to carrying mail between the islands and Stanley when the extra vessels were not engaged in whaling activities.

It was the hope of Allardyce that the development of the whaling industry, and the revenue it brought to the Colonial Government, would bring great benefits to the Islands, and in particular to Stanley. [487] He hoped for the construction of a repair slipway, and for assistance from the whaling companies in the financing of the construction of the Government settlement at King Edward Point in Cumberland Bay. Allardyce's viewpoint on the potential benefits of the whaling industry for the development of the Islands is remarkably similar to statements made by later Governors concerning the revenues raised through fishing licences in the 1980s and also the prospect of oil revenues in the 1990s.

There was much concern in the Islands for the need for major improvements in radio communications - both for the Islands and for South Georgia. On 18 February 1912 Allardyce wrote to the Secretary of State for the Colonies concerning the installation of radio sets in all ships and at South Georgia and on Deception Island. His plan was for both safety reasons *and* also to make control and restraint of the whaling companies easier.

[485] Allardyce, W; SPRI MS240/2; 11 December 1911.
[486] Allardyce, W; SPRI MS240/2; 12 January 1912 (Salvesen telegram to Allardyce).
[487] Allardyce, W; SPRI MS240/2; 17 February 1912.

During the latter part of 1911 the industrious Allardyce began to show signs of understanding the limits of his power and authority: 'Until such time as there is an international agreement on the subject little practical protection can be afforded to the whale.'[488] By September 1911 he is clearly aware of the fate which awaited the whales of the Southern Ocean and the potential consequences of their demise for the Colony:

> I am not unmindful of the probable transient nature of the whaling industry around the Dependency, and the need to secure for this Colony, whilst whales are plentiful, a substantial balance to compensate for the lean years which are sure to follow later … of the stagnation of the Colony prior to the advent of the whaling boom you are aware … the Government was under continuous obligation to the Falkland Islands Company … I cannot too strongly urge that provision be made for still further strengthening the accumulated assets of the Colony against a possible collapse of the whaling industry during the next decade.[489]

In April 1912 Allardyce again returns to the constant problem of waste. He had been prompted to do so by the reports from the Customs Office on South Georgia.[490] This situation continued to concern the Governor despite the fact that a shore station on Deception Island was licensed specifically to deal with all the carcass of the whale. On South Georgia the waste was generally much less. Salvesen company policy was that the whales should be fully utilised, as much as practicable, and Theodore Salvesen encouraged the managers at Leith Harbour to buy flensed carcasses from other companies which did not fully utilise the carcasses of whales they caught. At this stage there was an unlimited supply of whales and factories could achieve a much higher oil output by concentrating on working the blubber only - without having to bother with the long, and tedious, task of using the whole carcass. Although the wastage on South Georgia was:

[488] Allardyce, W; SPRI MS240/2; 8 July 1911.
[489] Allardyce, W; SPRI MS240/2; 29 September 1911.
[490] Allardyce, W; SPRI MS240/2; 7 April 1912.

> Much reduced from 1910/11 onwards, it was still considerable; a point which brought a polite reminder from the Colonial Office about the terms of the Leith Harbour lease. [491]

New Whaling Regulations were published in May 1912 - and they were another attempt by Allardyce (with remarkable foresight) at conservation, as well as regulation. The new regulations were the result of:

> Initiating a general policy of protection for seals and whales … in the case of the whale a policy of limitation is undoubtedly advisable … the only question being as to the best and most efficient method to adopt with regard to existing interests.[492]

Allardyce had already been warned by the Natural History Museum that there was a possibility of the extermination of the whale, but, despite some personal doubts, he deferred to the advice of other authorities that 'maintain that there is no risk at present either of exterminating the whale or reducing its numbers':[493]

> The whales show no sign of becoming unduly diminished, and that they are quite as numerous round the shores of South Georgia as in the territorial waters of the South Shetlands.[494]

Thus Allardyce issued another new licence for the next season, despite the fact he seems well aware that the whalers were underestimating the recorded whales caught. He was also aware about the difficulty of enforcing the whaling regulation prohibiting the killing of female whales with accompanying calf, and of the general cruelty of the whalers.[495]

Allardyce continued to attempt to moderate the worse excesses of the whaling industry though a mixture of legislation and pragmatism. In September 1912 an

[491] Vamplew, W; (1978); op.cit., p159.
[492] Allardyce, W; SPRI MS240/2; 11 April 1912.
[493] Allardyce, W; SPRI MS240/2; 11 April 1912.
[494] Allardyce, W; SPRI MS240/2; 16 April 1912.
[495] Allardyce, W; SPRI MS240/2; 8 April 1912.

Ordinance *To provide for the preservation of certain wild animals and bird*s in South Georgia was enacted. He continued to use the device of restricting the numbers of catchers and floating factories as means to control the ever-increasing demands of the whaling companies. His policies reveal the tensions that existed in his mind between the conflicting interests, which he was attempting to hold in balance. [496]

What the rapidly changing situation clearly demanded was more scientific research and analysis. The involvement of the staff from the Natural History Museum, with the Islands and its Dependencies, dates from this period. This active interest of the Museum, and in particular its Director, Sidney Harmer, was to have far reaching consequences.

Allardyce fully supported the work of the scientific establishment. He greatly admired the work of scientists, and he supported them whenever he could. [497]

The Colonial Office sought the advice of the Natural History Museum in its requirement to provide directions for Governor Allardyce. Sidney Harmer realised that the advent of Southern Ocean whaling provided a golden opportunity for research on large marine mammals. In November 1913 Major G E H Barrett-Hamilton; 'a naturalist of great distinction'[498] visited the whaling station at Leith Harbour in South Georgia at the invitation of the Islands Government and on behalf of the Colonial Office and the Trustees of the Natural History Museum. Barrett-Hamilton died suddenly on 17 January 1914, but not before he had accomplished a considerable amount of research and whale measurement. Sir Sidney Harmer paid tribute to Barrett-Hamilton's work[499], which was subsequently edited by Martin Hinton and published in 1925. The significance of Barrett-Hamilton's work is two-fold: it was the first scientific attempt to investigate the quarry of the whale hunters and their

[496] Allardyce, W; SPRI MS240/2; 24 September 1912.
[497] Allardyce, W; SPRI MS240/2; 19 January 1912.
[498] Hinton, M; (1925) *Reports on papers left by the late Major G E H Barrett-Hamilton relating to the whales of South Georgia*; Crown Agents; p69.
[499] Interdepartmental Committee; (1920); op.cit; p83.

manner of processing the dead whales, and secondly it provided scientific impetus and a sense of urgency during the formation the Discovery Committee.

Barrett-Hamilton was particularly concerned to study the breeding habits of whales, about which almost nothing was known:

> A matter of which accurate knowledge is of vital importance if the whaling industry is continue on modern lines without resulting in what appears at present to be the inevitable and speedy extinction of all the larger *Cetacea*.[500]

Between 14 November 1913 and 16 January 1914 Barrett-Hamilton examined 294 whales. At this stage in the development of the industry Humpback Whales were the preferred quarry - despite the fact that it was already known that their numbers were already in serious decline. [501] Barrett-Hamilton concluded that the demise of the Humpback Whale is wholly due to the operations of the whalers:

> They were thus subject to a relentless persecution at the precise moment when repose was essential to their welfare; this persecution must have seriously hindered the pairing and by the time the survivors of the herds left South Georgia the sexual season had probably passed and proportionally large numbers of the females were in all likelihood barren instead of pregnant.[502]

Hinton's comment on Barrett-Hamilton's analysis of the situation regarding the Humpback Whale is stark:

> The Humpback Whale thus seems to stand in urgent need of protection if its early extinction is to be avoided. Personally I am inclined to think that the depletion of the entire stock of the South Atlantic has been so

[500] Hinton, M; (1925); op.cit; p57.
[501] ibid.; p64.
[502] ibid.; p65.

> great, that we are now nothing short of an absolute prohibition to kill whales of this species anywhere, during a term of years, will suffice to prevent the threatened calamity.[503]

The Report is realistic about the demands of whaling industry and the needs of the Exchequer. It suggests that if there were an absolute prohibition the Humpback Whale might recover sufficiently to make it possible that carefully controlled Humpback whaling might be 'lucrative to both the whaler and the revenue.'[504]

Hinton/Barrett-Hamilton then posed the key question that was to dominate the whaling industry for the next forty years, *i.e.* whether the Fin and Blue Whales will be able to withstand the assault now beginning if 'the attack be allowed to develop along the lines of that which has proved so disastrous to the Humpback.'[505]

Barrett-Hamilton concluded that the longer sexual season of the Fin and Blue Whales favours 'the chance of survival possessed by these whales in the event of a future severe and indiscriminate persecution.'[506] But on the other hand the larger size of the Fin and Blue Whales suggests that there are far fewer numbers of these whales to hunt. [507]

Barrett-Hamilton found evidence that in the absence of Humpback Whales the whalers were killing young and immature Fin and Blue Whales. The main reasons for this were that at that time their equipment was less able to deal with the larger whales, and also that Blue Whales were much more easily startled. The Blue Whales were regarded as the wildest and rushed away from the whale catcher at full speed, and that they could easily outrun the catching vessel. [508]

---

[503] ibid.; p160.
[504] ibid.; p161.
[505] ibid.; p161.
[506] ibid.; p161.
[507] ibid.; p161.
[508] ibid.; p171.

Barrett-Hamilton's Journal [509] provides graphic confirmation of the Stipendiary Magistrate's constant concern about the poor utilisation of the whale carcasses. On 29 December 1913 he wrote:

> More and more whales have been brought in each day until now there are forty-two large whales waiting to be flensed and the hands are managing about ten each day.

On 30 December 1913 he wrote:

> Very few whales are handled right through; the bulk are just flensed and then moored to buoys until there is time to handle them. This is very wasteful, but cannot be avoided.

On the 2 January 1914 he wrote: 'Some of the carcasses are absolutely rotten, the stench, especially on New Year's Day, was disgusting.'

Not all the companies were equally to blame for the waste. Barrett-Hamilton noted that during the 1911-12 season the only companies which obtained more oil than one could reasonably estimate as being available from their catches were the two companies (one of which was Salvesen) which killed the fewest whales. In other words these two companies had utilised most of the carcass. The wastage was far less on South Georgia in comparison with South Shetlands and South Orkneys mainly because Government supervision was much greater.

The Barrett-Hamilton/Hinton Report made a number of practical management recommendations: 'It seems to me that if the threatened extinction of these whales is to be avoided then certain steps need to be taken.'[510] The number of adolescent and immature whales slaughtered should be curtailed. The killing of more whales than can be adequately treated by the factories should be avoided. The Whaling Regulation (South Georgia) No.1 of 28 July 1913 should be rigorously enforced; in particular the killing of Fin Whales below sixty feet in

[509] ibid.; p12.
[510] ibid.; p173.

length and Blue Whales of less than eighty feet in length. All companies should be compelled to provide themselves with equipment capable of handling mature Blue Whales, and the companies should be forbidden to moor carcasses for longer than three days.

The most radical proposal of the Report is the suggestion that whaling should be banned on all other locations other than South Georgia. This was, in effect, the first time that serious consideration was given to a possible whale sanctuary. Despite the radical nature of this proposal there is still regard to the need for a commercial framework.[511] The whaling companies would be unlikely to have agreed with this proposal, and the Colonial Government would have viewed the decrease in revenue as unacceptable, but the practical sense of this suggestion was subsequently rendered obsolete with the advent of the next development in the industry - pelagic whaling.[512] At the heart of the Barrett-Hamilton's analysis is the notion of restraint, but the history of whaling suggests that commercial whaling has always found this concept difficult - even when it has been in its own financial interest.

Any protection, which might have been afforded to the whales, was severely diminished as a result of the effects of the First World War, and the demands of maintaining a wartime economy:

> At the outbreak of war in the summer of 1914 about two-thirds of global whaling was carried out in territory belonging to the Allied powers, whereas the Central powers and neutral Holland (which sold a large proportion of its production to Germany) were large buyers of whale oil. A constellation which provides the political background for the struggle for whale oil.[513]

[511] ibid.; p173.
[512] See: Note by J E Hamilton to the Discovery Committee; October 1924. see: SPRI MSS1284/4/3 (folio No.198).
[513] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p294.

In December 1916 Britain declared that whale oil would be regarded as contraband of war; ships of any nation could be seized as prize. In January 1917 the Governor of the Islands imposed a ban on the export of whale to all other countries apart from Great Britain. All licence arrangements were to be reviewed. Some Norwegian historians have observed that Norway thus forfeited her dominant position in the whaling industry, and that she never subsequently regained it. [514]

> The war made whale oil doubly important, not only because [other] supplies of vegetable oils and fats [had] failed, but also because the glycerine in whale oil at this time was a prime necessity for the manufacture of the explosive nitro-glycerine in the armaments industry.[515]

The exigencies of a wartime economy now overrode all the previous careful management of the Colonial Office and the cautious conservationist approach of Governor Allardyce:

> Encouraged by Government, catching effort [by Salvesen] and production were greatly expanded at Leith Harbour. In 1917-1918 there were eleven boats catching from the station and a production of 94,000 barrels, compared with the 1913-1914 figure of 37,000 barrels … To ensure that maximum oil was produced for the national need, the British Government suspended the requirement of full utilisation. Bones piled up on the shores around the station.[516]

Tønnessen's grim comment about the consequences of this policy is worthy of being quoted at some length:

---

[514] ibid.; p294.
[515] ibid.; p295. See also: CS56/16: *Relaxation of regulations to increase output of whale oil during current season*; Falkland Islands Government Archive; 1916. Also: CS62/16; *Increased production whale oil*; Falkland Islands Government Archive; 1916.
[516] Elliot, G; (1998); op.cit.; p19. See: 296/15; *Messrs. Salvesen and Company - whaling facilities in South Georgia*; Falkland Islands Government Archive; Despatch 179 from Governor to Secretary of State for the Colonies; 28 December 1915. Also see: 330/16; Falkland Islands Government Archive; Despatch No.72 from Downing Street to Governor; 4 July 1916.

> Gunners who had been active from the very start relate that, thanks to the abolition of all restrictions and the order to produce as much of oil No. 0/1 (the finest grade) as possible quickly, the result was waste on a scale never yet witnessed in the Antarctic. Despite the fact that 70% of the catch consisted of large Blue Whales, only 47.5 barrels per whale were produced. As gunners received a bonus for every whale, they blazed away at every whale they came across, without considering whether the floating factory would be in a position to reduce the catch or not. It is said that whales would be left beside the floating factory without being moored, while the whale catcher set off in pursuit of a fresh prey. In order to impose some sort of restraint, the expedition manager issued only one or two harpoons to each whale catcher. The harpoon, however, was merely cut out of the whale and if it was slightly bent it would be straightened out and used once again.[517]

At the end of the war the Colonial Office's régime requiring the whaling companies to utilise the whole of the whale carcass fully was re-imposed. Once again the total number of licences was restricted. Despite these measures it is clear that irreparable harm had been done to the whale stocks during the war years. The Norwegian companies regarded these renewed restrictions as favouring British commercial interests, whereas Salvesen once again considered that insufficient regard was paid to the prior claims of British companies. In general, however, the whaling companies regarded the licence restrictions and regulations as reasonable. What the companies did object to most strongly was the imposition of a considerable increase in the duty to be paid on the export of whale oil. In 1912 the duty had been 3*d*. per barrel, but by 1920 this had risen to 5*s*. (the equivalent of £1 10*s.* per tonne). The increase in export duty was one of the first proposals of the newly formed Interdepartmental Committee on Research and Development in the Dependencies of the Islands.[518] The formation of the Interdepartmental Committee was one of the most significant events in

[517] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p299.
[518] ibid.; p301.

both the history Southern Ocean whaling, and of scientific research in the Southern Oceans. The process began in 1917 when E R Darnley,[519] of the Colonial Office, sent several memoranda to the Secretary of State for the Colonies, expressing concern about the development of the Islands Dependencies. In response to Darnley's memoranda an Interdepartmental Committee consisting of both scientists and civil servants was formed. It replaced an earlier committee, which had been suspended during the War, and the new committee's terms of reference were:

> To consider what can now be done to facilitate prompt action at the conclusion of the War in regard to the preservation of the whaling industry and to the development of other industries in the Dependencies of the Falkland Islands; and to consider not only the economic questions above referred to, and the scheme for the employment of a research vessel, but also what purely scientific investigations are most required in connection with these regions, and whether any preliminary inquiries by experts in this country should be instituted.[520]

It seems likely that Darnley's concern was the direct outcome of the pioneering work of Governor Allardyce. The Colonial Office proposed that a research vessel be sent to study whales and whaling. The overriding issue for Darnley appears to have been the importance of learning the lessons of history - *i.e.* that excessive hunting had resulted in the collapse of the whaling industry in Greenland and Spitzbergen waters. [521]

The Committee first met on 30 April 1918, and it took evidence and submissions from a large number of people and organisations. It published its highly influential Report in 1920. From this Government initiative The Discovery Committee was appointed in 1923. The first Discovery Expedition took place in 1925 using the RRS *Discovery* as the research vessel. In 1926 the RRS *William Scoresby* also began being used in whale research. The Discovery

[519] Darnley was head of the Antarctic section of the Colonial Office for nearly thirty years.
[520] Interdepartmental Committee; (1920); op.cit.; p1 ~ introduction.
[521] ibid.; p1.

Committee was finally dissolved in 1949 because the National Institute of Oceanography and the Falkland Islands Dependencies Survey had superseded its functions. The Discovery Reports were published from 1929 until 1980, and they greatly added to the scientific understanding of the Southern Oceans. The financing of the cost entailed in running the Discovery Expeditions proved to be a constant source of irritation in the Islands. Some of the senior farm managers in the Islands complained vociferously about what they regarded as the drain on the revenue of the Government. A more serious threat to the whole Discovery project came from the owners of the farms, who were based in London. From 1928 onwards (initially with the tacit support of Governor Hodson) The Falkland Islands Sheepowners Association (formed in 1928) wrote regularly to the Colonial Office complaining about the costs of running the Dependencies government, and of how little of the whaling revenues were paid to the Falkland Islands government.[522]

The Sheepowners Association had some grounds for their complaint. Between 1921 and 1933 the total revenue accrued from whaling, and paid to the Dependencies Government, was £1,619,300. During the same period the expenditure (mainly the financing the running costs of the Discovery Expeditions and Committee) was £668,068. This left a balance of £951,232, and the Sheep Owners Association repeatedly asked the Colonial Office what this money was being spent on.

> During those years the total contribution contributed towards the cost of central administration was £109,734, or 16% of the total expenditure and only 7% of the revenue.[523]

There was some justification for the unhappiness in the Colony, about the level of the annual contribution of £9000 from the whaling industry, to the Islands government. But the Colonial Office's unwillingness to levy a higher charge on

[522] *Falkland Islands Sheepowners Association 1928-1938*; a privately published account of correspondence between the Sheepowners and the Colonial Office/Governor. Falkland Island Government Archive.
[523] ibid.; p44.

the whaling companies should be seen against the background of the change which was taking place from land-based whaling (over which they had some measure of control) to pelagic whaling (over which there was very little control). The Colonial Office was concerned that if it pushed too hard it might lose all revenues, and thus put the Discovery Expeditions under threat.

The whaling companies disliked the Interdepartmental Committee, and the Discovery Committee, which succeeded it. The Norwegian companies particularly disliked the Discovery Committee because they felt that there might a hidden agenda designed to increase British hegemony at the expense of other nations. Harold Salvesen, although a supporter of scientific research, was extremely critical of the Discovery Committee. He 'blasted the government for lack of control. The whole business has been conducted most inefficiently and at criminal cost.'[524]

Salvesen:

> Believed that the foolish extravagance of the committee demanded the raising of extra funds, which in turn led to the granting of excessive licences.[525]

It is certainly true, in Tønnessen's words, that:

> Seldom has a scientific committee had such abundant funds at its disposal … in 1929 £583,105 … [no less than] £70,000 - then a very large sum - was earmarked in 1924 to purchase the famous polar exploration ship *Discovery*.'[526]

Despite the protests about 'the wanton waste of money', the fact remains that the Discovery Expeditions, and the Reports that were produced, transformed the

[524] Elliot, G; (1998); op.cit.; p23. In 1930 the Minutes of the 87th Meeting of the Committee record their concern about the future financing of *Discovery II*. 'Future revenues from which the work is financed has become somewhat precarious.' SPRI MSS1284/4/12 (folio 1228).
[525] Vamplew, W; (1978); op.cit., p194.
[526] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p303.

scientific knowledge of the Southern Oceans.[527] Mention should also be made, at this point, of the contribution of the *Norvegia* expeditions 1927-1929 to the scientific understanding of the Southern Oceans and Antarctica. Although not as extensive as the Discovery expeditions, the *Norvegia* expeditions – sponsored by Consul Lars Christensen, of Sandefjord, - worked in co-operation with the Discovery Expeditions.

The Interdepartmental Committee report noted that:

> In the Dependencies of the Falkland Islands the Empire possesses a whaling field which has been in recent years more productive than all those in the world combined.[528]

The Committee acknowledges that: 'In consequence of the War it has, unfortunately, been necessary to relax the regulations.'[529] This is *de facto* an acknowledgement that all the careful controls put in place by Allardyce had been set aside:

> During the War whale oil became of great importance as a source of glycerine, Government restrictions were relaxed, and the number of whale catchers allowed at South Georgia was temporarily increased to thirty-two.[530]

The Committee recognised the immense profits generated by the whaling industry, and that Allardyce had engaged in a constant struggle with the profligate and wasteful whaling:

> The efforts of the Colonial Government to minimise waste have been hampered by the terms of the four earlier South Georgia leases, which contain no covenant to utilise the whole carcass … We are informed, subject to the forgoing limitations, the control of the industry by the

[527] D/6/37; *Recovery of whale marking darts*; Falkland Islands Government Archive; 1937.
[528] Interdepartmental Committee; (1920); op. cit.; p5.
[529] ibid.; p50.

> Colonial Government has been fully effectual. It is stated that the regulations are carefully observed by the companies, and that no serious case of infringement has occurred.[531]

From the perspective of London, eight thousand miles north of the whaling grounds, this viewpoint is, in the main, fairly accurate as far as South Georgia and the Islands are concerned. Sadly it is woefully optimistic, particularly in respect of the whaling grounds around South Shetlands and South Orkneys, where the regulations were regularly flouted.[532]

The Committee knew that urgent research was required to:

> Supplement existing knowledge … It has been pointed out by Lord Rothschild that the first evidence of approaching extermination of a species is generally given by a diminution in size of the adult individuals recorded.[533]

One of the immediate results of this comment was the establishment of a long-term research programme to tag individual whales and to offer a bounty to the whalers for the return of the marker tag. The prevention of the extermination of the species of whales hunted in the Dependencies is undoubtedly one of the most important objects that the Committee had in mind. [534]

On the future control of the whaling industry, pending the researches being considered by the Committee:

---

[530] ibid.; p50.
[531] ibid.; p7. See: CS4/24 and C11/25; Falkland Islands Government Archive; 1923 and 1925 respectively.
[532] CS317/23; *Complaint against Messrs. Salvesen's factories South Shetlands for furnishing false returns of whales caught*; Falkland Islands Government Archive; 1923. See also: CS315/23; *Taking of Humpbacks - Complaint against Captain of Neko for taking humpbacks without a permit*; Falkland Islands Government Archive; Letter from Colonial Secretary to Salvesen; 20 August 1923.
[533] Interdepartmental Committee; (1920); op.cit.; p10.
[534] ibid.; p12.

> Our view is that to grant whaling rights for a long term of years is inadvisable … as the existing leases expire, careful consideration should be given to the question of limiting any renewals to the shortest possible period … the prevention of unnecessary waste is eminently desirable, since an uneconomical use of the material may involve the slaughter of three whales where two would have sufficed to obtain the same results.[535]

These restrictions on the operation of the whalers were deeply resented and opposed by the whaling companies - most notably by Salvesen. When in later years Salvesen began to champion conservation measures, it is hard to escape the conclusion that they did so as the result of their own commercial self-interest - albeit enlightened self-interest.

The strongest warnings about the consequences of the Southern Ocean whaling industry came from Sidney Harmer of the Natural History Museum:

> I feel it my duty to express my very strong opinion that in one way or another the slaughter of whales which is at present taking place must be checked, before many years have elapsed, if permanent injury is not be done to the whales themselves and to the interests of the whaling companies.[536]

With the benefit of hindsight it might be fairly stated that these wise and prophetic words were not heeded for a variety of reasons, and that 'permanent injury' to the Southern Ocean whale stocks was done.

Captain C A Larsen gave evidence to the Committee and his submission reflected the ever-optimistic whalers 'the boundless ocean plenty' viewpoint,

---

[535] ibid.; p13.

[536] ibid.; p83. See: *Anglo-Norwegian Trade Journal*; Vol. 9; No.98; February 1923. Also: *Nature*; Vo.110; No.2772; 16 December 1922. See also: CS749/23; *British Museum Report on various aspects of the Whaling Question;* Falkland Islands Government Archive; 1923. Also: CS749/23; *British Museum Report on various aspects of the Whaling Question;* Falkland Islands Government Archive; 1923.

which had once been expounded by Thomas Huxley, in the 19th century, in regard to the stocks of fish in the Northern Oceans. Larsen submitted that: 'I do not believe it is so possible to deplete the stock of the so-called Fin Whales so that posterity may be without them.'[537] Theodore Salvesen's submission to the Committee is much more realistic and politically adept:

> The rate at which the whales are being taken in South Georgia … has been in excess of production, with the result that the stock has been depleted. There is no doubt that the whales are far fewer, and that excessive killing is taking place if it is desired to retain the industry permanently … As regards the Humpback … speaking from a commercial, and not from a scientific point of view, this animal has for all practical purposes been exterminated, since it is no longer a paying proposition to hunt for the Humpback Whale alone.[538]

This pragmatic assessment, based almost entirely on his company's financial advantage, and not on grounds of altruism or conservation, became the driving force behind Theodore's successor, Harold Salvesen, who was to become the most dominant figure in the whaling industry. The control measures which Theodore Salvesen did support were all those which were to the advantage of existing whaling companies. It will be seen in the next section of this dissertation that even this self-interest would prove to be an ineffective control mechanism following the emergence of pelagic whaling.

Concern about the situation was also being felt on the Islands. The original draft for the Blue Book [539] of 1917 contains a long description of the whaling industry by C. Condell, the Colonial Secretary. Much of his report does not appear in the final printed form of the Blue Book, but the original draft revealed an early concern on the Islands for the protection of the whales and the desire for a sustainable industry. It also revealed considerable understanding of the

[537] Interdepartmental Committee; (1920); op.cit.; p95.
[538] ibid.; p85.
[539] In common with all other British Colonies, the 'Blue Book' was the annual report of the Governor to the Colonial Office.

complex ecosystem of the Southern Oceans and the interaction of the large number of factors that determine whale stocks:

> There is always a danger of resting theories on insufficient data … The catch for the year shows a falling off on previous seasons but this in no [way] necessarily indicates a decrease in the number of the species … Owing to the War there are fewer whaling factories able to come down south, and those that did reach the whaling grounds arrived two months later than usual … Another factor is the supply and distribution of whale food … There is a more general consideration connected with the killing of a large number of whales which seems often left out of account. There must be for whales, as for else in nature, what I may call a "saturation" point, a point beyond which they cannot increase, a point at which the universal struggle for life must cause, without the interference of man, the non-survival of the less fortunate … To take a more particular case, in which the decrease is undeniable, that of the Humpback Whale … The whaling captains are willing to admit that the Humpback Whale has become much rarer on the whaling grounds … We are present ignorant of most things concerning the whale, both general and particular … it is evident that scientific research is extremely desirable. [540]

§ d. The period from the commencement of pelagic whaling until the cessation of whaling based at South Georgia 1925 -1964.

The entire whaling scene, and the debate about its management, changed radically with the introduction of pelagic whaling. Although Grytviken continued to be used by Compañia Argentina de Pesca for land-based whaling, and Salvesen continued to use Leith Harbour and Stromness, the greater part of the whaling effort moved on to the high seas with the introduction of stern slips and ever larger factory ships. This change made control and licensing

[540] CO78/147 Colonial Office Records; Public Record Office; Kew; May 1918; Despatch 61.

increasingly difficult, and the hegemony of Norway and Great Britain was gradually eroded.

The arrival in the Southern Ocean of the first pelagic factory ship *SS Lancing* [541] and her attendant whale catchers, caused the existing land-based companies a great deal of concern. Lever Brothers wrote to the Colonial Office of 3 May 1926. Their comments are typical of the concerns of all the existing licensed companies:

> The commercial results of this pioneer expedition in its first season have been such to hold out a serious menace in the near future to expeditions which operate from fixed stations, whether "land" or "floating" of the type existing hitherto … and there are rumours of other similar expeditions.[542]

Existing companies regarded the newcomers as providing unfair competition, and they saw them a clear threat to their profits. Pelagic expeditions were free to roam the seas unhindered by Government controls. They paid neither licences nor royalties - unlike the land stations. Lever Brothers used the 'conservation' issue to support their economic argument:

> The fact that the new type of factory is free to roam at large may have serious consequences on the fisheries as a whole. The Government have from time to time in the past expressed their fear that the licensed areas where operations are conducted will eventually be fished out, and the fact that the new type of high seas factory can seek out the whales wherever they may be must have serious consequences on the numbers congregating in the licensed areas. As a consequence of their not coming under Government control they are under no obligations as to the number of whale catchers they employ, or as to the disposal of

[541] C/28/1926; *Developments in pelagic whaling*; Falkland Islands Government Archive; 1926-1927. Also: Hart, I, (2001); op.cit.; p273. Also: SPRI MSS1284/4/5 (folio 461) Note from Buenos Aires to Foreign Secretary; 21 May 1926.
[542] CO178/174/3; Colonial Office Records; Public Record Office; Kew; 3 May 1926.

> carcasses, such as are attached to leases and licences held from the Government in respect of land factories and the old type of floating factory.[543]

Lever Brothers regarded the threat as so serious that they informed the Colonial Office that they would have to face the possibility of closing down their fixed stations. They would then be forced to embark on high seas expeditions themselves. Lever Brothers pointedly observed that the Colonial Government had received a total of £89,390 in rents, licences and royalties during the previous seven years (1919-1926).

E R Darnley met the Norwegian Foreign Minister on 2 March 1927 to discuss the question of the growth of unlicensed pelagic whaling. [544] Darnley understood clearly that the pelagic whaling would sweep away all the careful work of Governor Allardyce. The Norwegian government also shared Darnley's concerns. The Norwegian Foreign Minister was 'disposed to explore every possible means of bringing pelagic whaling under control.'[545] Both Darnley and the Foreign Minister doubted their government's capacity to stand up to the leaders of the industry, and if international action would be possible or desirable. The reason for the reluctance to initiate international action to control whaling was well understood. It would threaten the monopoly and control of the two dominant whaling nations - Norway and Great Britain:

> As regards international action, our attitude has been for a long time that Britain and Norway are in the position of *beati possidentes* since they own nearly all the industry, and the probable result of calling an international conference would be to provoke demands for participation from other powers. This belief is shared by the Norwegian Government, and up till the present neither they nor we have seen any sufficient reason to change it. But if pelagic whaling continues to increase either or

[543] CO178/174/3; Colonial Office Records; Public Record Office; Kew; 3 May 1926.
[544] CO78/175/9; Colonial Office Records; Public Record Office; Kew; 14 March 1927.
[545] CO78/175/9; Colonial Office Records; Public Record Office; Kew; 14 March 1927.

> both may be forced by circumstances to consider that the lesser of two evils is to secure international action.[546]

In a marginal comment to Darnley's report, the Secretary of State for the Colonies commented:

> We may be driven to international action, but I trust not. One of the greatest British interests is that there should be as little interference as possible with what goes on the high seas.[547]

In correspondence to the Governor the Colonial Office the sensitivity of the issue is seen when the Colonial Office orders the Governor to return all relevant papers to London, or else to destroy them. 'The subject matter is too confidential to fall into unauthorised hands.'[548] The Colonial Office regarded pelagic whaling as 'a serious menace to British interests.'[549] As well as the comments of the whaling companies, and scientific advice from Sir Sidney Harmer, the Colonial Office also received confidential advice from other Government departments. This advice indicates the complexity of the situation and also reasoning, and advice, that lies behind some of the decisions that were eventually taken.

From the Ministry of Agriculture, Fisheries and Food:

> International legislation and agreement would not work … Restrictions also conflict with the principle, which this country has always maintained … fishing outside territorial waters is free to all nations.[550]

From the Admiralty:

[546] CO78/175/9; Colonial Office Records; Public Record Office; Kew;14 March 1927.
[547] CO78/175/9; Colonial Office Records; Public Record Office; Kew;14 March 1927.
[548] CO178/174/8; Colonial Office Records; Public Record Office; Kew; June 1926.
[549] CO78/174/8; Colonial Office Records; Public Record Office; Kew; June 1926.
[550] CO78/174/8; MAFF memo; Colonial Office Records; Public Record Office; Kew; 26 April 1926.

> Attempts at control would bring undesirable repercussions elsewhere … The present system of licences might easily result in the rapid extermination of the whales … It is probable that the revenues of the Colony would rapidly diminish to nothing. [551]

The Board of Trade thought that 'limits would encourage other nations in active reprisals.'[552]

Governor Hodson made a clumsy intervention to the debate at this point when he proposed that because the *Afterglow* had become unseaworthy, the *William Scoresby* should be removed from research work and be used to police the whaling grounds. Hodson made no secret that he was very critical of the Discovery Committee expenditure. Within three weeks of his arrival in the Islands he sent a long Despatch to the Secretary of State for the Colonies criticising the work of the Discovery Committee. At a meeting of Executive Council on 7 July 1927 H R Gresham [553] complained about the expenditure incurred by the Discovery Committee. Governor Hodson agreed readily with Mr Gresham's remarks. To the Secretary of State he wrote:

> The interests of the Colony are not served by the Discovery Committee … nothing is being done to profit the public purse … [there is] no practical advantage to the Colony … [there is] no voice in the Colony in the disposal of moneys derived from its Dependencies … I consider moreover that the claims of the Colony in the way of education, housing, roads and medical and sanitary services come before those of scientific knowledge of an interest which is almost entirely academic.[554]

The Colonial Office made a detailed reply to the Governor's comments, and advised him to give more time to become better informed. In response to the

[551] CO78/174/8; Admiralty memo; Colonial Office Records; Public Record Office; Kew; 20 April 1926.
[552] CO78/174/8; Board of Trade memo; Colonial Office Records; Public Record Office; Kew; 10 June 1926.
[553] The Colonial Manager of the Falkland Islands Company.
[554] SPRI MSS1284/4/9 (folio 735) Governor Hodson to Secretary of State for the Colonies; 9 July 1927.

Governor's proposal about the use of the *William Scoresby* Darnley observed that:

> We warned the new Governor that the research and other whaling matters were extremely complex and that he should refrain from making proposals for changes until he had had time to acquaint himself with them fully. In these circumstances I can only regard the present proposal as an instance of definitely bad judgement.[555]

The Colonial Office pointed out to the Governor Hodson the problems that would occur if arrests were made outside territorial waters. Undaunted Hodson then proposed that the SS *Fleurus* be used in patrol work. On 9 May 1928 he again returned to the attack upon the Discovery Committee. In a 29 page Despatch the Governor complained about every aspect of the venture. This Despatch could fairly be described as a diatribe; Hodson regarded the income from the whaling industry as the Falkland Islanders 'birth right' from which they were being deprived by the Discovery Committee. He stated:

> [There is the danger of] a grave public scandal … [it is] irresponsible not to turn to good use the excellent material available which is otherwise in sore danger of going almost entirely to waste … the Discovery expedition should cease … during the winter months [the crew of the *William Scoresby* and the Marine Station at South Georgia] will hibernate in luxury far from the uncomfortable stress of the outside world and from the disturbing eye of supervision … my contention [is that the Discovery Committee] is composed of men lacking in practical experience and free from direct responsibility [and they] have proved themselves absolutely incompetent on an enterprise such as the Discovery expedition … the Discovery expedition is the common laughing stock of the whaling fleet … my unaltered and unalterable

[555] CO78/177/13; Colonial Office Records; Public Record Office; Kew; 8 August 1927.

> opinion [is] that the Discovery expedition and all its works should forthwith and forever cease. [556]

Following the receipt of Governor Hodson's Despatch, the Secretary of State wrote to the Discovery Committee stating that he disassociated himself from the intemperate language of the Despatch. Sidney Harmer commented on 9 August 1928: 'As long as he [Hodson] is in office at the Falklands we shall be working against the dead weight of the hostility of the principal executive officer.'[557]

The Colonial Office was well aware of what was really happening on the whaling grounds, and the importance of scientific research. 'The wholesale slaughter of the whale which is now proceeding; … Can the means be found to restrict the slaughter?'[558] The Colonial Office was well informed because Sir Sidney Harmer had submitted a 68 page report outlining the state of the whale stocks in great detail. Harmer is unequivocal about his anxieties:

> It is not possible to feel satisfied with the present situation. Whaling has continued to increase. New Companies have come into existence and previously untouched regions have been hunted. The introduction of a new method of pelagic whaling increases the anxiety which every Naturalist who knows the facts must feel with regard to the future of the whales … the rate of killing is too great and it must inevitably involve a serious diminution of the number of whales and perhaps a lesser evil, the extinction of the industry. The only hopeful fact is the Discovery Expedition, which may lead to the introduction of rational measures of protection.
>
> The [whaling] operations are unfortunately conducted, in many cases, with reckless extravagance and without regard to the future.[559]

---

[556] SPRI MSS1284/4/10 (folio 923); Despatch from Governor to Secretary of State for the Colonies; 8 May 1928.
[557] SPRI MSS1284/4/10 (folio 932); Letter from Sir Sidney Harmer to Dr Stanley Kemp; 9 August 1928. Also: SPRI MSS1284/4/10 (folio 928).
[558] CO78/175/9; Colonial Office Records; Public Record Office; Kew; 2 March 1927.
[559] CO78/175/5; Colonial Office Records; Public Record Office; Kew; 22 February 1927.

Harmer's report was influential, and he continued to express his concerns for many years. The subject formed the subject of two Presidential Lectures to the Linnaean Society of London in 1928 and 1930. The immediate result of Harmer's report was the calling of a confidential Interdepartmental Conference, held at Colonial Office 12 October 1927 to consider the question of the international control of whaling.[560] The Conference decided that the opposition to international agreement should be dropped, but that great care should be taken with the framing of international regulation because of a number of factors. Norway and Great Britain owned most of the whaling enterprises and international regulation might invite other nations to secure participation in this lucrative trade. The situation was further complicated by the Argentine claims to the Islands: 'It is probable that Power [Argentina] would not only refuse to participate but would take every possible advantage of treaty engagements into which Great Britain might enter.'[561] The Committee discussed the appropriate response to the League of Nations report by the Committee of Experts for the Codification of International Law, and also to meeting of the Whaling Committee of the International Council for the Exploration of the Sea, that had been held in Paris in April 1927.

The Interdepartmental Conference concluded that:

> It is desirable that the attitude of His Majesty's Government should be reviewed and it appeared that both the Foreign Office and the Admiralty were of the opinion that it would eventually be in the interest of His Majesty's Government to participate in some form of international agreement.[562]

In practice, however, the British Government was slow to accede to international agreements. One of the principle reasons for this reluctance is revealed in the following comment: 'The Board of Trade was anxious that any steps which might be possible in the interest of the British firms engaged in the

[560] CO78/175/9; Colonial Office Records; Public Record Office; Kew; 12 October 1927.
[561] CO78/175/9; Colonial Office Records; Public Record Office; Kew; 12 October 1927.
[562] CO78/175/9; Colonial Office Records; Public Record Office; Kew; 12 October 1927.

industry should be taken.' [563] This attitude infuriated the Norwegian Government who regarded Britain as a nation which took every opportunity to gain commercial advantage.

Harmer's anxieties were queried by members of the Interdepartmental Conference; Dr Sidney Kemp, the Director of the Discovery Expeditions thought:

> The numbers of the Blue and Fin Whales in the Southern Antarctic were as great as ever, but there was a scarcity of Humpback Whales. There was, however, no proof even in the last case which the numbers of were materially reduced; it might be the Humpback Whale was now following a fresh route in its migration.[564]

In hindsight Kemp's reluctance to support Harmer's gloomy predictions was a mistake. The conflicting scientific opinion was to have serious consequences for subsequent attempts to control the worst excesses of whaling. Kemp's viewpoint might now be considered naïve, but it reflected the dominant attitude of his day towards the exploitation of an apparently abundant natural resource.[565]

The Interdepartmental Committee recognised that any regulation would require the British Government to offer Norway some *quid pro quo*, which would probably have to take the form of a guarantee that there would be no discrimination against Norwegian companies as compared with British companies in the granting of licences.

In April 1928 E R Darnley met Professor Johan Hjort to discuss the possibility of agreeing a common whaling policy between Norway and Britain. In addition to problems posed by unrestricted pelagic whaling, a further sense of urgency was given to this meeting because the existing twenty one year leases, so

[563] CO78/175/9; Colonial Office Records; Public Record Office; Kew; 12 October 1927.
[564] CO78/175/9; Colonial Office Records; Public Record Office; Kew; 12 October 1927.
[565] CO78/175/9; Colonial Office Records; Public Record Office; Kew; 12 October 1927.

carefully negotiated by Governor Allardyce, were due to expire between January 1929 and October 1933. At this meeting Darnley and Hjort attempted to formulate a general policy in the Dependencies concerning whaling. The problem concerning the expiry of the licences was loaded with political overtones: 'The existing 21 year leases (seven for Norwegian companies; two British; one Argentine) for whaling stations in Falkland Island Dependencies are due to expire on various dates between 1929 and 1933.' [566] The Norwegian and British governments had hoped that the situation might be temporarily stabilised by the use of temporary yearly extensions to the existing licences while:

i. Pelagic whaling was controlled.
ii. Time was given for the accumulation of further data from the Discovery Expeditions.
iii. A definite commercial appraisal of the success of pelagic whaling was obtained.

But the position was radically changed by the exceptionally successful 1927/28 season achieved by both pelagic and land based whaling. The whaling companies had plenty of capital at their disposal, which could be used for transferring their activities entirely to a pelagic operation. Professor Hjort thought that the time was critical. The Companies were considering breaking away from the friendly twenty-year arrangement with the British/Falkland Islands government. Pelagic whaling would relieve them of the burden of government control and taxation.

To meet this danger of the break-up of the regulatory arrangements, Hjort asserted that the licensed companies needed the assurance that their existing concessions would be secure for at least a further ten years. In return for this they would guarantee the entire licensing fee for ten years. However the Colonial Office negotiators thought that this ten-year period would tie British government's hand for too long a period. The Colonial Office was also

[566] CO78/181/5; Colonial Office Records; Public Record Office; Kew; 23 April 1928.

concerned that such an arrangement would shut out British enterprise for too long. Thus the Colonial Office proposed a compromise of five years, and the whaling companies accepted this. Despite the formulation of an Agreement, by 1929 serious questions doubts were being expressed about the value of such licensing arrangements. Even Governor Hodson knew that some of the whaling companies were up to their old tricks. [567]

Darnley, the chief negotiator of the agreement, commented despairingly:

> Our licences are now of little value to the recipients and the wonder is that they are still willing to pay our taxes, although these taxes have been much reduced … our former control has now almost entirely disappeared. [568]

The final outcome of the Darnley/Hjort discussions was that a five-year agreement was made between the British government, the government of the Islands and the whaling companies. This agreement asked the whaling companies to abide by territorial rules. This was, in effect, a zoning system. It was, however, more of a gentleman's agreement rather than a legal contract because of the difficulties raised by international law relating to operations on the high seas. The weakness of such an arrangement was soon revealed in the next annual report of the Governor to the Colonial Office. The Governor reported that thirteen licensed whaling companies were operating in the Dependency area, but that four unlicensed whalers (and their catchers) were also operating. The Governor commented: 'This list may not be complete.'[569]

The relationship between Salvesen, who were beginning to dominate the industry, and the Colonial Office/Governor, became increasingly tense. A confidential file questioned the methods and motives of Salvesen, who thought that they had not been given fair treatment. In a letter to the Permanent Under Secretary of State for the Colonies, Noel Salvesen stated: 'We have not received

[567] CO78/182/14; Colonial Office Records; Public Record Office; Kew; 29 March 1929.
[568] CO78/182/14 Colonial Office Records; Public Record Office; Kew; 7 May 1929.
[569] CO78/182/14 Colonial Office Records; Public Record Office; Kew; 12 December 1928.

fair treatment for the last twenty years.'[570] In a minute dated 30 January 1929 Darnley noted:

> There have been many allegations of rendering incorrect returns made against Messrs. Salvesen and their representatives from 1922 to 1926 … No doubt most of these allegations were well founded.

On 1 February 1929 Darnley added: 'We shall watch their proceedings rather more closely than other Companies … their catch records have been constantly faked'[571] When Salvesen asked for increases in their quota of catchers, Darnley commented that: 'granting such a request would 'render it [the current 5-year agreement] open to assault from other companies.' [572]

When Salvesen began to operate a new unlicensed floating factory (*S.S. Salvestria*) in the Islands Dependencies sector the following response at Colonial Office was elicited:

> We have long regarded Messrs. Salvesen as the most troublesome of the whaling firms, and they are maintaining this reputation. Their present action is clearly a breach of the 1928 agreement … We have ample hold over the company, who posses leases [on land stations] expiring on 30 September next … if Messrs. Salvesen do not observe the agreement, we are under no obligation to renew the leases. They have a large and valuable shore station on the leased land … We should not allow ourselves to be defied by a British firm.
>
> I am bound to say that this firm has been known to us for years as greedy and grasping, and impossible to satisfy … Messrs. Salvesen have exploited to the utmost the 'only British firm' plea … but it has become

[570] CO78/183/3 Colonial Office Records; Public Record Office; Kew; 24 December 1929.
[571] CO78/183/3 Colonial Office Records; Public Record Office; Kew; 1 February 1929.
[572] CO78/183/3 Colonial Office Records; Public Record Office; Kew; 1 October 1929.

> a matter of difficulty to differentiate between British and Norwegian Companies.[573]

Despite the continual protests of Salvesen about unfair treatment, the Colonial Office did not wish to be at variance with the largest British company in the industry for a very important reason. It considered that resolution of the disagreement was 'very important as regards the revenue to maintain the Discovery researches.' [574] A continuing source of annoyance to Salvesen was the restriction on the number of catching vessels. The Colonial Office regarded the limit on the number of catchers as one of the most potent weapons in the hands of the government in order to conserve stocks and to prevent the indiscriminate slaughter of the whales.[575]

During the next two whaling seasons government records indicate that the disagreement with Salvesen continued.[576]

Salvesen sent several whaling expeditions south in the 1931/1932 season, but it is evident that Salvesen had scant regard for any regulations. An exasperated Governor wrote:

> The Governor states that beyond doubt they operated three unlicensed floating factories within the Falklands sector. I propose no manner of dealing immediately with Messrs. Salvesen except the cancellation of their leases in South Georgia, but I hesitate naturally to recommend so drastic a step and I am doubtful whether in the present circumstances of the whaling industry it would be politic or is likely to be effective, save, may be, as a demonstration of authority.[577]

---

[573] CO78/183/3 Colonial Office Records; Public Record Office; Kew; 1 October 1929.
[574] CO78/183/3 Colonial Office Records; Public Record Office; Kew; 1 October 1929.
[575] For an example of the Governor ignoring the policy of the Colonial Office see: CO78/183/3 Colonial Office Records; Public Record Office; Kew; 1929.
[576] Salvesen felt that Norwegian companies were being favoured. See: CO78/186/14 Colonial Office Records; Public Record Office; Kew; 1930.
[577] CO78/188/7 Colonial Office Records; Public Record Office; Kew; 1931 (Letter dated 8 May 1931).

In response to this Salvesen contended that the three ships were leased to a South African company. But in reality the ships were actually supplying Salvesen's stockpile of whale oil, because three of the partners in Salvesen were also shareholders in the South African company.

The alleged behaviour of Salvesen should be considered against the background that of the fact that the 1931/1932 season was a poor season. The shore station at Deception Island was closed, oil sales were low, and a number of whaling companies did not send expeditions south. 'The lay-up season of 1931/1932 proved a watershed for Antarctic whaling, bringing a new era of consolidation and control.'[578] During the previous season of 1930/1931 six summer shore stations had operated. In addition there were 41 factory ships with 232 whale catchers and transport vessels accompanying them. A total of 40,201 whales were caught. This gross over-production, combined with a scarcity of whales and the world economic crash, made whaling uneconomic and thus life was very difficult for the whaling companies:

> This was the last season for shore bound floating factories and associated skrott processors; factory ships equipped with slipways to take whales aboard, operating on the high seas, replaced them.[579]

Between April and September 1931 a panel of experts met in Berlin and Geneva under the aegis of the League of Nations, and the Convention for the Regulation of Whaling [580] was signed by twenty six delegate nations. 'This so called Geneva Convention provided the basis for all subsequent agreements.'[581] The Chairman of the Discovery Committee described, in public, the conference as a 'successful and harmonious conference.'[582] The Convention [583] agreed a number of Articles, and the most important of these were: Article Four - which

[578] Elliot, G; (1998); op.cit.; p33.
[579] Headland, R K; (2000); op.cit.; p215. (Skrott processors were floating factories, moored offshore which dismembered the carcasses and rendered them down).
[580] League of Nation Treaty Series CLV, 349.
[581] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p399.
[582] DO35148/1 Colonial Office Records; Public Record Office; Kew; February-November 1930.
[583] For details of the Convention and the Treaty see: CO323/1260/9 Colonial Office Records; Public Record Office; Kew; 1934.

banned the catching of Right Whales; Article Five - which banned the catching of calves, sexually immature whales and lactating mothers; Article Six - which required full utilisation of the carcass; Article Seven - which fixed the whaler's bonus according to species and oil yield, and not according to numbers of whales caught. The effect of Article Seven was disastrous; the gunners now concentrated on the largest whales, and those, which would yield the maximum number of barrels. Thus the pregnant female Blue Whales became the preferred target since they produced the highest amount of oil in proportion to their size.

The Convention required that no catching take place without a licence, or at the very least without informing national governments of the intention to whale in a particular area. An accurate catching log was to be maintained. The Convention required that at least eight signatory countries should ratify the Convention (which must include both Norway and Britain) and that the Convention was to run for a period of three years.

The Convention was essentially an agreement between government officials, but the lengthy period it took to be ratified by the major whaling nations indicates that national legislation proved more difficult to enact, and the whaling companies were very reluctant to comply with the restrictions. In commenting about the Convention, Colonial Office officials noted, in a Minute dated 8 January 1932, that although only a few nations were directly concerned with whaling (*e.g.* Britain and Norway):

> The Convention has been thrown open for signature by all countries whether they are concerned with whaling or not, and that the hope has been expressed that it will be signed as widely as possible, partly from the point of view of obtaining an expression of "world conscience" in this matter, and partly to minimise the risk of the evasion of the Convention by the transfer of vessels to the flag of a country which is not party to the Convention.[584]

[584] CO323/1138/10 Colonial Office Records; Public Record Office; Kew; 1931.

Gambell has commented:

> These measures had rather little effect on the Antarctic operations because not all the countries whaling in the area adhered to the convention, particularly Germany and Japan, which were new entrants to the Antarctic fishery. However the convention did establish the principle of international regulation of common property resource on the high seas. In particular, it gave a legal framework for the voluntary production agreements entered into by the whaling companies after the gross over-production of oil in the 1930-31 Antarctic season. [585]

E R Darnley later admitted privately that initially he had serious doubts about what had actually happened at the Berlin conference. His comments reveal the gap which existed between the public pronouncements of government officials and the reality of the situation on the whaling grounds:

> The delegates at the Berlin Conference were not then prepared to consider any measures for the limitation of whaling … I did my best to press for the universal adoption of the licensing system, but we could obtain no support from either the Norwegian representative or from the delegates from any other country … Public opinion in Norway could not admit of its adoption … Impinging on this question was the attitude of the Argentine Government to the Falkland Islands and the South Orkneys … the great bulk of the whaling community was sceptical of the necessity of restrictive measures.[586]

Sir Sidney Harmer regarded the Berlin Convention as: 'entirely useless from the point of view of protecting the whales.'[587]

Norway ratified the Convention in June 1932, but not before it repeatedly accused the British government of hypocrisy.[588] The Norwegians felt

[585] Gambell, R; (1993) International Management of Whales and Whaling: An historical review of the regulation of commercial and aboriginal subsistence whaling; *Arctic*; Vol. 46, No 2; p98.
[586] DO35148/1 Colonial Office Records; Public Record Office; Kew; February-November 1930.

particularly aggrieved at the behaviour of Unilever. Britain ratified the Convention in October 1934, and Tønnessen reflects a marked Norwegian bias when he commented about this delay thus:

> It meant that the Convention could not come into force until four and a half years after it had been adopted. Eighteen nations had ratified before Britain. In Norwegian quarters it was stated that Norway might be forced to abolish all restrictions, because unrestrained British catching had created so much bitterness among Norwegian whalers that the situation was untenable.[589]

Throughout this period Sidney Harmer continued to warn of the dangers of over-exploitation of the whale stocks.[590] Harmer understood the economic reasoning, which undergirded the whaling companies' actions, but he also regarded the whaling companies as being too optimistic about the whale stocks, and that their general attitude was too *laissez-faire.*

> To the naturalist the extermination of a species must appear a crime, unless it is definitely warranted by the necessity of removing it in the interests of humanity. There is no such motive in the case of the large whales … The whaling industry has the most practical reasons for wishing to avoid an undue reduction in the stocks of whales, but it is inclined to take what appears to me too optimistic view of the future. It is maintained, on its behalf, that the expenses involved in an expedition to the Antarctic, for instance, are so great that whaling will cease to be profitable long before the whales are put in danger of extermination. I admit the force of this argument, but, on the other hand, a species which has been reduced in numbers beyond a certain point has sometimes failed to recover, and the continued reduction has been followed by extinction, perhaps aided by disease or some other unfavourable

[587] DO35148/1 Colonial Office Records; Public Record Office; Kew; February-November 1930.
[588] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p400.
[589] ibid.; p401.
[590] Harmer, S F; (1928) Presidential Address to the Linnaean Society London 24 May 1928; *The Proceedings of the Linnaean Society of London 1927-1928;* p51.

> condition of the environment. History shows in the clearest way that whaling operations have repeatedly been responsible for a serious reduction in the number of whales.[591]

Harmer was not alone in his concerns about the whale stocks. At the 30th meeting of the Polar Committee held in October 1930 it was noted that the Discovery Committee had warned that there was no doubt that there was a grave danger of the depletion of the stocks of whales.

Concerns of a different nature were being expressed on the Islands. The Governor (James O'Grady) wrote, in February 1932, to the Colonial Office suggesting that when the whaling licences and land leases next came up for renewal (in 1933) consideration should be given to the possibility of attaching a condition to the licences that a specified number of Islands' labourers (between 25-50 unskilled workmen) should be employed in the whaling land stations. The Governor was attempting to ease the unemployment situation on the Islands. The Governor sent several drafts of the new licensing agreement, with this proposal incorporated, to the Colonial Office.

There was a great deal of sympathy for the Governor's proposals in the Colonial Office, but there was also a great reluctance to impose yet more restrictions on the whaling companies. The Colonial Office was concerned lest the companies might not be willing to return for another season to South Georgia. Should this eventuality occur it would adversely effect the revenue accrued to the Islands. Only Compañia Argentina de Pesca had been continuously present on South Georgia - and there was a marked disinclination to restrict this Argentine company further because of the potential political consequences.

Colonial Office records indicate that there was real fear that all the companies would pull out of South Georgia and rely entirely on pelagic whaling. This

[591] ibid.; p89. Also: Harmer, S F; Presidential Address to the Linnaean Society of London 24 May 1930; *The Proceedings of the Linnaean Society of London 1929-1930;* p 95. For whale catch statistics see: C/20/27; *Analysis of the movements of whales by Mr A G Bennett*; Falkland Islands Government Archive; Letter from Secretary of State to Governor; 13 July 1927. Also: SPRI MSS1284/4/7 (folio 639). See also: CO78/175/5 Colonial Office Records; Public Record Office; Kew; February 1927.

would mean that almost no control over whaling activity in the Islands Dependencies zone could be exercised. Such an eventuality would also mean a loss of revenue to the Colony, and thus no further conditions were imposed. The loss of licensing income would threaten the research work of the Discovery Expeditions. The Colonial Office also felt that there would be further complicated because of the problems associated with enforcing regulations *i.e.* national controls outside the recognised range of the territorial limits.

In 1935 both the Colonial Office and some of the whaling companies expressed their alarm at the apparent continuing decline in whale stocks - especially that of the Blue Whale. J O Borley [592] wrote a long memorandum on the current position of Antarctic whaling.[593] Borley's intention was to greatly restrict whaling in the Southern Ocean.

> The enormous destruction of whales in the Antarctic renders it necessary to watch whaling closely, in order to avoid injury or collapse of the industry by over-fishing. The ideal position from the point of view of capture is that in which as many whales are utilised as can be annually replaced. As soon as more are taken decline sets in, and once it has started it is extremely rapid. It is accordingly of the utmost importance to recognise decline immediately it occurs, as if allowed to continue it may very quickly result in absolute collapse.[594]

This memorandum provided the basis for a meeting between the Colonial Office, representatives of the whaling companies and of the Norwegian government. The meeting agreed that the Blue Whale stocks were now in a parlous state. There was discussion about the prohibiting the whaling season opening until 1 December. Salvesen thought 15 December was a better starting date and now they argued for strong regulation. The minutes of the meeting show the fact that Salvesen were alarmed at the increase in the number of new and unlicensed companies. They made it quite plain that the current situation

[592] J O Borley, OBE, was Chief Fisheries Advisor to the Board of Agriculture and Fisheries.
[593] CO78/199/12 Colonial Office Records; Public Record Office; Kew; 1935.
[594] CO78/199/12 Colonial Office Records; Public Record Office; Kew; 1935.

threatened their company's profits. An Association of Whaling Companies was formed in an attempt to regulate the industry.[595] It promoted a Production Agreement, with a reduction in the number of catchers. The Production Agreement was a bold attempt (albeit from self-interest) at self-regulation within the industry. Harold Salvesen took a major rôle at this meeting, [596] and Gerald Elliot sums up the Salvesen's viewpoint well when he wrote:

> To those who later blamed the greed and short-sightedness of the whaling companies for the collapse of the Antarctic whale population, it was a fair response, which I often used, that the only time in the history of the industry when there was effective control of catching was the period of the 1930s, when it was in the hands of Norwegian and British whaling companies, without direct intervention by governments … The Salvesen *credo,* eloquently preached by Harold [Salvesen], was that the last people to entrust with conservation of natural stocks were governments. Their interests were essentially short-term, to raise more taxes, preserve the county's balance of payments, or defend national honour.[597]

At this time consideration was also being given to establishing a 'whale refuge/sanctuary' in which whaling would be banned. A conference to discuss this issue was held in Oslo in October 1935. The conference concluded that it was of the opinion that there was 'not yet sufficient information to justify a recommendation that certain areas or areas should be protected and catch therein prohibited.' [598]

Efforts at control and conservation became considerably more difficult with the arrival of German and Japanese whaling expeditions. Neither of these nations would accept any international restrictions on their catch. The Japanese, in particular, declined to be involved in any scheme of international regulation

[595] C/15/32; *Restriction of whaling operations in the Antarctic during the season 1932-33*; Falkland Islands Government Archive; 1932-1936.
[596] C/15/32; *Restriction of whaling operations in the Antarctic during the season 1932-33*; Falkland Islands Government Archive; 1932-1936.
[597] Elliot, G; (1998); op.cit.; p33.

until their fleets had built up to comparable size with the Norwegian and British fleets.[599]

In December 1935 Japanese whaling companies arrived in Britain in an attempt to buy the plans for a modern whale factory ship.[600] Harold Salvesen lobbied the British government in an attempt to prevent British shipyards supplying the ship's plans. Salvesen argued that the Japanese carried out unrestricted whaling. Despite his pleas the Furness Shipbuilding Company sold the plans for *Sir James Clark Ross* for £7,000. In January 1936 the British Consul in Kobe wrote to the Colonial Office:

> The arrangements between England and Norway for regulating the fishery yield will be endangered as soon as Japan is in a position to kill extensively in the Antarctic. Norway appears to place little reliance on Japan's observance of whaling agreements.[601]

Japan subsequently built the whale factory ship *Nishin Maru* in 157 days. In her first season she caught 1,116 whales, which produced 91,368 barrels. The oil was sold at Rotterdam to Unilever, who were acting for the German government. The following year two larger Japanese factory ships were built. One of these exceeded 20,000 and was named *Tonan Maru II*; the ship was built according to the plans of the *Svend Foyn* which had also been sold by the Furness Shipbuilding Company. The subsequent history of the whaling industry shows that the sale of the ship's plans to the Japanese was remarkably short-sighted.

During 1936 there was a protracted dispute between British and Norwegian governments on the subject of pelagic whaling. In the end the British government's standpoint prevailed. The negotiations were interrupted by industrial action by Norwegian Trades Unions; the Unions declared a boycott

---

[598] CO78/199/12 Colonial Office Records; Public Record Office; Kew; 1935.
[599] CO78/201/1 Colonial Office Records; Public Record Office; Kew; 1936. (Japan did not join the International Whaling Commission until 1951).
[600] CO78/201/1 Colonial Office Records; Public Record Office; Kew; 1936.
[601] CO78/201/1 Colonial Office Records; Public Record Office; Kew; 1936.

against Unilever and Salvesen. The eventual agreement, which was drawn up, had the effect of reducing excessive diminution of whale stocks through restriction by mean of the introduction of a close season. The open season for whaling was from 8 December 1936 to 7 March 1937. The agreement also limited the number of whale catchers. This was, in effect, a quota system.[602] One of the effects of the Union's action was introduction of the policy, by both Salvesen and Unilever, to replace numbers of Norwegians serving in their fleets with British personnel. Salvesen recruited British whalers from the Shetland Islands, the Orkney Islands and from Anglesey.

The 1931 Convention failed to operate satisfactorily, and a new International Agreement for the Regulation of Whaling was signed in 1937.[603] This agreement gave complete protection to Grey and Right Whales, and set minimum sizes for the remaining species. The killing of females accompanied by calves was forbidden. The whaling season was restricted from December to March, and whaling north of 40˚ S was forbidden. A significant element of this agreement was the requirement that a government inspector was to be appointed to every factory ship.

In 1938 another International Conference was held in London, which added further restrictions and regulations to the 1937 agreement.[604] At this Conference it was proposed that:

i. There should be a further reduction of the open season.
ii. There should be a limitation on the number of catchers per expedition.
iii. That whaling should cease after a fixed limit in the number of whales taken or, alternatively, a fixed number of barrels of oil produced had been reached.
iv. A maximum limit of oil production per expedition should be fixed.

[602] CO78/201/1 Colonial Office Records; Public Record Office; Kew; September 1936.
[603] League of Nation Treaty Series XCX, 79.
[604] League of Nation Treaty Series CXCVI, 131.

The Conference agreed that previous measures had not halted the decline in whale stocks. [605] This Conference was not a great success. Japan declined to accept limits on the open season, and the Conference was unable to agree on any limit on the numbers of catchers. Furthermore the Conference was unable to agree on limits on whale and/or oil production. Although the Conference agreed that the Humpback Whale was in very serious danger, it proved impossible to reach agreement about special measures to protect this species completely. Catching Humpback Whales in Antarctica was banned, but not in other waters. An increased size in the existing sanctuary was agreed, particularly for Humpbacks and Blue Whales, between 70˚W and 160˚W in the Pacific sector.

Dr Mackintosh (a member of the Discovery Committee) was clearly mindful of British whaling interests, but also fairly sanguine about the outcome of this Conference when he wrote:

> In all the circumstances I think the outcome of the Conference is very satisfactory. The existing agreement has been prolonged. And the adherence of additional Governments appears to be secured ... The new measures are expected to save a large number of Humpback Whales - a species much in need of protection … There has been an important extension of the principle of sanctuaries. Neither is expected to be seriously detrimental to whaling interests … I think that for the proper maintenance of the stock of whales some more drastic restriction will, in time, be desirable … In the meantime it is of the utmost importance that Japan has undertaken to accede to the Agreement next year … In my opinion the Agreement is an important advance towards the rational control of whaling. I might add that the articles of the Protocol are not expected to affect Colonial whaling interests.[606]

[605] CO852/138/10 Colonial Office Records; Public Record Office; Kew; 1938.
[606] CO852/138/10 Colonial Office Records; Public Record Office; Kew; 1938.

The 1938 Protocol gave ineffectual relief to the whales. There was little reduction in Antarctic catches. [607]

The Islands government had long become used to good revenues from the whaling industry, and thereby had been lulled into a false sense of security. Just after the beginning of World War II Governor Henniker-Heaton wrote optimistically:

> It will be observed that whales throughout the season were plentiful and in exceptionally good condition. The average production of oil per "standard whale" has never before been approached and constitutes a record for the Dependency.[608]

After the 1940/1941 season, whaling largely ceased for the duration of the war. Many ships of Salvesen and Unilever were requisitioned to assist with the war effort. During the war all of the factory ships of Salvesen and Unilever were sunk, as was *Svend Foyn*. Many of the whale catchers became coastal protection vessels or convoy escorts. Only Compañia Argentina de Pesca continued to catch whales throughout the war from their land station on South Georgia. The effect of this reduction in whaling effort was to give some relief to the whale stocks.

Despite the reduction in the whaling effort, the Ministry of Agriculture and Fisheries and Food continued to be concerned about the whale stocks: 'The number of short (under sized) whales taken is still too high … 6% of total catch below legal minimum … the number of Blue Whales shows a very considerable decline'.[609]

The Islands Government Naturalist warned on 30 September 1942 that:

[607] Elliot, G; (1998); op.cit.; p42.
[608] CO852/198/4 Colonial Office Records; Public Record Office; Kew; 14 November 1939.
[609] MAF 209/19 Colonial Office Records; Public Record Office; Kew; 26 February 1942.

> The Fin Whale is the important (commercially) species – 1,189 were taken, 585 males and 604 females, but only 471 of the combined sexes were adults, that is 39.6%. 61 or 27.3% of the adult females were pregnant. The decrease in the percentage of adults has been in progress for some years … the continuing reduction is a strong indication of similar decreases in stocks … the herd is becoming thinned out to such an extent that adult females have less chance in becoming pregnant and therefore replenishing the stock. On the whole one cannot take an optimistic view of the future of this species.[610]

The Colonial Office was alarmed at Hamilton's Despatch and it commented: 'The Government Naturalist's report shows a very significant and disturbing position as to the stocks of Fin Whales' [611] Some British government officials did not take Hamilton's warning seriously. A conference held at the Ministry of Agriculture Fisheries and Food in 1 December 1942 considered the matter of the post war whaling industry. Despite Hamilton's warnings, and his considerable local knowledge, the conference concluded: 'It was considered desirable that the whaling industry should be got to work as soon as possible on the conclusion of the war.'[612]

A memorandum prepared by Colonial Office in November 1942 on the condition of the Southern Ocean stocks of whales, and the whaling industry's prospects after the war, showed that some people had understood the true nature of the situation:

> It is clear that the populations of Blue and Humpback Whales have been seriously depleted in recent years, and the stocks of these species reached a critical condition when the war brought an end to large scale whaling … if hunting were to continue on the pre-war scale depletion of the Fin Whales must follow sooner or later … The reduction in whaling during the present war must be beneficial; but it cannot be hoped that it

[610] MAF 209/19 Colonial Office Records; Public Record Office; Kew; 30 September 1942.
[611] MAFF 209/19 Colonial Office Records; Public Record Office; Kew; 28 January 1943.
[612] FO371/32810 Colonial Office Records; Public Record Office; Kew; 1 December 1942.

> will result in the recovery of the stock of whales comparable with fish recovery in the Northern seas … Only over many generations could any recovery could be expected to take place … Regulation [of pelagic whaling] is almost impossible … but it may be suggested however, that national and vested interests, which formerly handicapped efforts to conserve the stock of whales, may not be such serious obstacles as they were in pre-war days.[613]

Harold Salvesen was forcibly championing national and vested interests in his capacity as Whaling Advisor to the Ministry of Agriculture Fisheries and Food. A clear difference of opinion is now seen between the Ministry of Agriculture Fisheries and Food, and the Colonial Office. [614] The Discovery Committee urged the Colonial Office that it should take the initiative, and not the Ministry of Agriculture Fisheries and Food, in any post-war international regulation of whaling. The Discovery Committee was of the opinion that the war was not a sufficient respite for the whale stocks to recover.[615] Dr Macintosh wrote on 9 December 1943 (commenting on Dr. J Hamilton's gloomy reports on the continuing decline):

> The important question, it seems to me that arises from this report, is whether the stock of Blue Whales is gaining ground as a result of the reduction of pelagic whaling in wartime. Whales breed slowly, and it is not safe to assume that four or five years freedom from large scale hunting will result in any significant recovery of the stocks. The effect might only be to stop the rot for the time being. A continued increase in the percentage of Blue Whale in the catches at South Georgia however might be some evidence of recovery, even though the South Georgia catches are not representative of the Antarctic stocks in general.[616]

[613] FO371/32810 Colonial Office Records; Public Record Office; Kew; November 1942.
[614] FO371/32810 Colonial Office Records; Public Record Office; Kew; 2 November 1942.
[615] FO371/32810 Colonial Office Records; Public Record Office; Kew; 1942.
[616] CO852/526/14 Colonial Office Records; Public Record Office; Kew; 9 December 1943.

The Ministry of Agriculture Fisheries and Food exerted considerable pressure to recommence whaling as soon as possible after the cessation of World War II. In April 1943 H L Hill of the Ministry of Food wrote:

> From our casualty list it looks as though we shall have to start from scratch as far as factory ships are concerned, and Heaven knows what's happened to all the catchers: but, in view of the clear indications of the oils and fats position after the War, it will be important to get moving as quickly as we can.[617]

The failure of groundnut oil production in West Africa and the fear of large oil shortages after the war gave weight to position of the Ministry of Agriculture Fisheries and Food. The presence of many documents, in the Public Records Office, on the subject of the potential lack of fats and oils is evidence that this issue was to be a major concern of the Ministry for many years.[618] In 1943 serious consideration was given to mounting a pelagic whaling expedition during the war - albeit a limited one - under Naval protection, using *Sir James Clark Ross* and *Thorshammer* to meet the growing oil shortage.

The Islands Government Naturalist continued throughout the war to send annual reports of the activities of the whalers on South Georgia.[619] As the result of Hamilton's reports the Colonial Office commissioned C F Hickling to prepare a brief summary of the situation as a starting point for the debate about the future of Southern Ocean whaling. The following quote from his memorandum shows the intense frustration felt within the Colonial Office, and its sense of impotence in the face of powerful business interests:

> It will indeed be a world tragedy if the whale stocks of the south have suffered the same fate as those of the north; and those of us who have been warning of the danger of over-fishing during the inter-war years

[617] MAF83/569 Colonial Office Records; Public Record Office; Kew; April 1943.
[618] For an example of this anxiety in the United States of America see: Brandt, K; (1948) *Whaling and whale oil during and after World War II*; Standford University: Food Research Institute.
[619] CO852/637/10 Colonial Office Records; Public Record Office; Kew; 1 March 1945.

> will get no satisfaction at all from the fulfilment of our warnings … We can only hope that this coming season will give results which will belie those of last season … Why won't the business people heed the warnings of the scientist until it is too late? [620]

Scientific opinion continued to be cautious. On 1 August 1945 Mackintosh, of the Discovery Committee wrote:

> The scarcity of whales … does not bear out the theory that stocks have greatly increased during the war. Their absence towards the end of the season is also marked and raises considerable doubts as to the value of the extension for which the industry is pressing.[621]

Meanwhile with money from war reparations, two new factory ships were laid down before the end of the war. The new ships were based on the drawings of the *Svend Foyn*. Salvesen's ship was called *Southern Venturer* and the Norwegian ship was called *Norhval*.

> In 1945-50 it looked as if the whole world wanted to go whaling - Americans, Argentineans, Australians, Brazilians, Canadians, Chileans, Danes, Dutch, Finns, Germans, Italians, Japanese, Russians, Swedes, all had whaling plans, and practically everyone was thinking in terms of pelagic catching in the Antarctic … On this occasion the expansion ran into three obstacles that had not been encountered before: the Norwegian crew law, the International Whaling Commission's [limit of] 16,000 units, and the fact that the losers of the Second World War depended on the good grace of the victors.[622]

An indication that after the war the overwhelming requirement for food and oil took precedence over conservation for the whale stocks can be seen in the fact

[620] CO852/637/10 Colonial Office Records; Public Record Office; Kew; 1 March 1945. See also: CO852/637/10 Colonial Office Records; Public Record Office; Kew; 3 February 1947. See also: CO852/637/11 Colonial Office Records; Public Record Office; Kew; 14 November 1946.
[621] CO852/526/14 Colonial Office Records; Public Record Office; Kew; 1 August 1945.
[622] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p521.

during the first season after the end of the war (1945/1946) a total of three shore stations (Grytviken, Leith Harbour and Husvik) and nine factory ships - with ninety three whale catchers and associated supply vessels - operated in the Southern Ocean. A total of 13,387 whales were taken.

Another significant change after Word War II occurred when shore stations were allowed much longer catching seasons than the pelagic factories. The season for the shore stations on South Georgia was more than twice as long as that permitted to the pelagic fleets. Basberg has commented that this was one of the main reasons for the survival of these shore stations, and also why they were able to compete against the much more efficient pelagic fleets.[623]

The Japanese, encouraged by General MacArthur, also sent two whaling expeditions to the Southern Oceans. The British and Norwegian whaling companies protested about the activities of the Japanese, but to no avail. From this point onwards the Japanese steadily worked to regain their pre-war position in whaling. Over the next few years it became increasingly obvious that the Japanese would be the long-term winners, and they became increasingly willing to 'flex their muscles.' Their whaling fleets became formidably efficient, and their gunners were a match for the best Norwegian gunners.

Thus once again a Southern Ocean 'scramble'[624] took place to harvest the remaining whales before the stocks either became extinct or became uneconomic to catch. Although fewer ships were used in this final phase of Southern Ocean whaling, those that were on the whaling grounds were larger, faster and more efficient.[625] Prospects for the stocks of whales looked precarious:

---

[623] Basberg, Bjørn; (1993) *Survival against all the odds; Shore station whaling at South Georgia in the Pelagic Era 1925-1960* in *Whaling & History; perspectives on the evolution of the industry; ed.* Basberg, Bjørn; Ringstad, Jan Erik; Einar Wexelsen; Sandefjordmuseene, Sandefjord; p163.

[624] Gambell. R; (1993) *International Management of Whales and Whaling: An historical review of the regulation of commercial and aboriginal subsistence whaling*; op.cit. p99.

[625] A significant post-war development in whaling was the use of ASDIC to improve the catching of whales. See: D/10/58; *Use of ASDIC by Whale Catchers*; Falkland Islands Government Archive; 1958-1960.

> The roll call of floating factory expeditions in the 1948/1949 after the completion of the post-war building programme was eighteen, made up of ten Norwegian, three British, one South African, one Dutch, one Russian and two Japanese, with a total of 212 catchers. This compares with 34 factory ships and 281 catchers in 1938/1939, the last pre-war year. Much of the pre-war catcher fleets had by then been replaced by larger and more powerful boats, the companies all being determinedly optimistic about the future.[626]

The culmination of the pre-war efforts to protect the whale stocks resulted in the United States of America [627] exerting considerable political pressure to bring delegates from eighteen nations together in Washington to consider the future of whaling. Dr Remington Kellogg chaired the Convention, and on 2 December 1946 the International Convention for the Regulation of Whaling was signed. As a result of the Convention the International Whaling Commission was created, in order to formulate regulatory measures and to be responsible for their implementation. The USA became the champion of whale conservation, but in the words of Gerald Elliot 'the American belief in free enterprise had unfortunate effects.'[628]

The overall effects of the 1946 agreement can be summarised thus:

i. The life of the whaling industry was extended by a further twenty years. (This was not thought to be possible in the 1930s)
ii. Whaling now took place within a framework of international regulation and co-operation.
iii. The rate of decline in the whale stocks was decreased.
iv. There was a considerable increase in the scientific research into the Cetacea species.

[626] Elliot, G; (1998); op.cit.; p50.
[627] Hart, I; (2001); op. cit.; p283.
[628] Elliot, G; (1998); op.cit.; p52.

The Colonial Office was quite clear about its objectives for the 1946 Convention: 'The Convention aims to ensure the proper and effective conservation and development of whale stocks.'[629]

Extracts from the Preamble of the Convention are worthy of quoting at length:

> Recognising the interest of the nations of the world in safeguarding for future generations the great natural resources represented by the whale stocks.
>
> Considering that the history of whaling has seen over-fishing in one area after another and of one species of whale after another that it is essential to protect all species of whale from further over-fishing.
>
> Recognising that it is in the common interest to achieve the optimum level of whale stocks as rapidly as possible without causing widespread economic and nutritional distress.
>
> Desiring to establish a system of international regulation for the whale fisheries to ensure proper and effective conservation and development of the whale stocks.
>
> [It was] … decided to conclude a convention to provide the proper conservation of whale stocks and thus make possible the orderly development of the whaling industry.[630]

When the new Convention was signed a total catch limit of 16,000 Blue Whale Units [631] was written into the agreement. This catch limit compared with 30,000, 25,000 and 21,000 BWU for the last three pre-war years. The three

[629] CO1024/169 Colonial Office Records; Public Record Office; Kew; 1954-1955.
[630] International Whaling Commission 1950:9-10. Also: Gambell, R; (1993); op.cit; p99.
[631] Blue Whale Units (BWU) are defined as: the oil produced by one Blue Whale, which was the equivalent of two Fin Whales, or two and a half Humpback Whales or six Sei Whales. BWU was an attempt to give a standard measurement amongst different whale species. A mature Blue Whale produced approximately 52 tonnes of oil.

scientists who recommended this limit: 'hoped that this was a level that could be sustained for the future, though each of them, looking back at the records of the past, had his doubts.'[632] In practice, however, the post-war development of the whaling industry was not 'orderly'; the system of quotas agreed at the Convention precipitated a race by the whaling companies. [633]

Salvesen expressed interest in re-commencing whaling, and sealing from a shore station based in the Islands.[634] The station would be located at Albemarle, and not at their old station on New Island. At Albemarle the sealing and whaling operations could be combined. In return for exclusive rights Salvesen would provide some transport facilities between South Georgia and the Islands, and also the carriage of mails. Harold Salvesen met the Governor to discuss these proposals, on 7 November 1947, in Government House, and at the meeting Salvesen took the opportunity to once again object to the Export Duties on oil and other whale products. Salvesen particularly objected to oil stored at Stromness being subject to a levy.

Relationships between Salvesen and the Governor of the Falkland Island continued to be uneasy. In 1950 a dispute about leases of its two land stations in South Georgia arose. Governor Sir Miles Clifford argued that Stromness was not being used for what the terms of the leases stipulated, and that Leith Harbour was mainly being used as a 'forward' base and for oil storage. The Governor argued that if neither were being used for actual whaling then the Colony was deprived of considerable royalty revenue. Clifford suggested a substantial increase in rent. Throughout this period Clifford was concerned to maximise the Colony's revenues from all sources because of falling income from sheep farming. It is clear from the Colonial Office records that Harold Salvesen and Clifford did not trust each other. The Colonial Office were very reluctant to have another protracted argument with the largest British whaling company - if for no other reason that there was always the implicit threat that

[632] Elliot, G; (1998); op.cit.; p89.
[633] Gambell, R; (1993); op.cit.; p99.
[634] CSO0157; *Sealing in the Falkland Islands*; Falkland Islands Government Archive; Telegram from Governor to Secretary of State; 8 November 1947.

Salvesen might cease all land based operations, and rely solely on pelagic whaling. This would deny the Colony the majority of its licence revenue. In warning the Governor of the dangers inherent in a clash with Salvesen the Colonial Office wrote to him stating:

> It appears however that Messrs. Salvesen are capable of being indefinitely unreasonable about any matter … they may succeed in having questions asked in the House of Commons.'[635]

From the end of World War II the growing need for international control of whaling, and the difficulty in enforcing any agreed regulations, came to dominate the whaling scene. The presence of Government whaling inspectors on the factory ships was designed to ensure that no bonus was given on under-sized whales. The *Olympic Challenger* [636] affair showed that without the inspectors there was no adequate protection against unregulated whaling. The South Georgia Magistrate was responsible for the administration of the conditions of the International Whaling Convention ashore. This was not an easy task because, in practice, he could not monitor all three land stations simultaneously.

The numbers of Fin Whales that were caught rose steadily; Salvesen factory ships, for example, could process forty Fin Whales per day when operating at full efficiency. Elliot commented that the 1955/1956 turned out to be an *annus mirabilis* for Salvesen. Both *Southern Venturer* and *Southern Harvester* operated in the Bellingshausen Sea, west of the Antarctic Peninsula, and they produced 154,000 barrels of whale oil in 58 days.[637]

Between 1954 and 1956 the UK Government was ambivalent towards international control, and always seemed willing to bow to commercial

[635] CO78/261/8 Colonial Office Records; Public Record Office; Kew; 1950.
[636] *Olympic Challenger* first operated in the Antarctic during the 1950/51 season. In November 1954, while catching Sperm Whales off the coast of Peru, the ship was arrested and fined $3 M by the Peruvian courts. Onassis had taken the precaution of insuring against such risks with Lloyds of London. The fine was quickly paid, and the expedition completed the rest of the 1955/56 whaling season in Antarctica.
[637] Elliot, G; (1998); op.cit.; p114.

pressure. Even the Norwegian Government was surprised at the UK Government's behaviour. The International Whaling Commission voted to reduce the overall catches of Blue Whale units from 15,500 to 15,000 for the 1955-56 season. The UK (plus Panama and Holland) voted against the reduction, but the necessary three-quarters majority to pass the amendment was secured. The UK Government felt that the whaling companies should be given at least one year's notice in order to enable them to plan on a long-term basis:

> On the other hand the UK delegation agreed that the biological evidence produced supported the conclusion that the Antarctic quota should be reduced for the next season in the interests of the long-term future of the whale stocks, and it is on this ground that we recommend that opposition to the amendment should be dropped.[638]

For a few years during the mid-1950s the control of whaling by international agreement through the mechanism of the 1946 Convention became even more difficult with the arrival on the whaling scene of Aristotle Onassis. His ship *Olympic Challenger* became a by-word for flouting all rules and conventions. Tønnessen & Johnson describe Onassis as a 'pirate' [639] whose prime aim was to make as much money out of whaling as fast as possible without any regard for the whale stocks. The owners of the expedition were American, the expedition ships were registered in Panama and Honduras, the floating factory was captained by a German and the expedition manager was Norwegian.Whaling had now become the object of financial speculation. During its operational life *Olympic Challenger* cheated in every respect; it began whaling before the open season started, it finished whaling after the season had closed; under-sized [640] and pregnant whales were caught. Onassis refused to have anything to do with the International Whaling Commission. The Japanese finally bought him out in 1956. His ships were sold for $8.5 M (the whale oil having been sold separately for a high price) and the *Olympic Challenger* renamed *Kyokuyo Maru II*

[638] CO 1024/170; (file marked *Secret*); Colonial Office Records; Public Record Office; Kew.
[639] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p552.
[640] Elliot has suggested that as much as 95% of the catch of Sperm Whales by the *Olympic Challenger* expedition was below IWC limits. See: Elliot, G; (1998); op.cit.; p123.

continued in service in both the Antarctic and the North Pacific until 1970. After the Japanese whaling fleet growth came the period of the development of the Russian whaling fleet. During the early 1950s a whaling 'arms race' began. More and more catchers per expedition became the norm, and the catchers became increasingly powerful. The Russians led the way with a massive State-funded programme.[641] The *Sovetskaya Ukraina* was completed in 1959 and the *Sovetskaya Rossiya* was completed in 1961. Both ships were 33,000 gross weight and were the biggest floating factory ships ever built. Two smaller factory ships were also built - the *Yuri Dolgorukij* and the *Dalnij Vostok* which were completed in 1960 and 1963 respectively. In addition the Russian whaling fleets had a total of 67 catchers - some with engines as powerful as 3,600 h.p. - the most powerful ever built. Soviet economic planners had decreed that there would be a five-fold increase in the USSR catch.[642] This huge expansion greatly increased the competition between the whaling nations and precipitated the final scramble for the remaining whales.[643]

The President of Compañia Argentina De Pesca, Alfredo R Ryan, [644] wrote to Governor C R Arthur on 4 July 1955 about his proposals to transfer the company's assets to another company called the Albion Star Company.[645] Ryan complained about Argentine exchange regulations and how they hindered the modernisation and improvement of Grytviken.[646] The Argentine Government had in recent years strongly discouraged the payment of duties and taxes, by the company, to the Islands Government on the grounds of their Antarctic claims:

> But we have of course always ignored this and paid such dues levied by the Falkland Islands Government. The position, however, is now becoming intolerable, as we may be forced by the Argentine

[641] For comments on the deliberate fabrication of the numbers of whales caught by the Soviet Union whaling fleets see: *Forty-Sixth Report of the International Whaling Commission*; 1996; p121 and McNeil, J; (2000); op.cit.; p242.
[642] See: Elliot, G. (1998); op.cit.; p128.
[643] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p567.
[644] Alfredo Ryan first showed commercial interest in Compañia Argentina de Pesca during World War II, and he acquired controlling interest of the company in November 1945. He fell from favour with the Peronist Government in Argentina after the debacle of the floating factory ship *Juan Peron*. See: Tønnessen, J N & Johnson, A O; (1982); op.cit.; p540.
[645] Hart, I; (2001); op. cit.; p399.
[646] FO371/114054; Colonial Office Records; Public Record Office; Kew; July 1955.

> Government to withhold payment of these dues to the Falkland Islands Government.[647]

The Colonial Office and the Islands Government agreed to the proposal to transfer the assets although both governments were aware that the Argentine Government would try to prevent this happening. In the event the Argentine Government froze Ryan's assets in December 1955. The Colonial Office suspected that Ryan had largely invented the threats of the Argentine Government 'with the purpose of coercing us into co-operation with him at any price'[648]

The British Embassy in Buenos Aires repeatedly voiced its opposition to the transfer. On 28 November 1958 the Embassy advised:

> We need to be particularly careful to avoid any action that which is going to prejudice the Tri-Partite Agreement … Argentine reaction would be bad. They would be bound to see the new arrangement as the result of a conspiracy hatched without their knowledge between the Government of the Falkland Islands and the British subject who manages an Argentine Company of some importance to them. In fact in our view the risk of "poisoning the atmosphere" would be even greater than under the Governor's earlier scheme for changing the licensing procedure.[649]

The Colonial Office decided not to become involved in an issue which it considered to be purely a commercial matter, and the Islands Government formally acceded to the transfer in June 1960, on condition that Albion Star took over Compañia Argentina de Pesca's taxation liabilities. In July 1960 the new company also acquired all the assets of Tønsberg Hvalfangeriet at Husvik,

[647] FO371/131892; Colonial Office Records; Public Record Office; Kew; 22 September 1958.
[648] FO371/131892; Colonial Office Records; Public Record Office; Kew; 22 September 1958.
[649] FO371/131892; Colonial Office Records; Public Record Office; Kew; 17 October 1958. For a more positive viewpoint see: Hart, I; (2001); op. cit.; p344.

with the intention of whaling from both land stations. The newly installed meat freezer plant at Husvik was moved to Grytviken.[650]

As whaling declined the various land stations employed a number of strategies to increase their profitability. Grytviken continued to supplement its whale oil production with the oil from Elephant Seals; Leith and Stromness undertook major ship repairs; Husvik produced frozen whale meat (the freezing plant was subsequently moved to Grytviken) and also investigated the possibility of commercial fishing. Steinar Olsen, an ichthyologist from Norway brought two fishing vessels to Husvik during the summer of 1952/1953, but the catches were poor and the operation was not a commercial success. During this period of decline in the whaling industry [651] there was yet another example of ineffectual control and management. The Administrative Officer of South Georgia reported in 1956 that the inspection arrangements, as required by the International Whaling Convention 1946, were inadequate, and a full time Inspector ought to be appointed:

> I am to report that there are few occasions when any of my Government officers or myself are free from other duties to supervise the measuring of whales on the plan, especially as the three stations are a considerable distance apart, therefore, I am of the opinion that the only effective way to ensure that these Regulations are being carried out correctly, is by a Government Officer being established on the various Stations during the whaling season.[652]

The Ministry of Agriculture Fisheries and Food (MAFF) officials commented that: 'as the annual gross value of the Whaling industry in South Georgia was well over £3 M … it ought to be possible to finance suitable inspections.[653]

---

[650] Hart, I; (2001); op. cit.; p361.

[651] For details on Olsen's activities see: Headland, R. (1990) *A historical review of Antarctic ichthyology*. in: Gon, O. and Heemstra, P., (Eds.) *Fishes of the Southern Ocean*; Grahamstown: J L B Smith Institute of Ichthology; pp. 1-5.

[652] MAFF 209/20; Colonial Office Records; Public Record Office; Kew.

[653] MAFF 209/20; Colonial Office Records; Public Record Office; Kew; 31 August 1956.

The Administrative Officer wrote on 16 May 1958:

> Inspection arrangements at the whaling stations in South Georgia were, to all intents and purposes, non-existent. One of the members of the administration occasionally went to a whaling station and had a look at a couple of whales, but that was about all that the control over the stations amounted to. We have been plugging away at the Colonial Office to persuade them that is this is most unsatisfactory and I have been particularly anxious about the effect in the International Whaling Commission of this slackness on their part becoming public knowledge.[654]

The matter remained unresolved for over two years, and it was not until late 1958 the Inspectors arrived at South Georgia. Of the four inspectors appointed (*i.e.* one per Station) one was elderly, and unable to keep his feet on the Flensing Plan;[655] one was unable to speak Norwegian; one was almost immediately repatriated, and one had a serious drink problem.[656] Thus arrangements were still unsatisfactory, and some whaling managers continued to be able ignore the regulations.

In April 1959 Salvesen gave notice to the Secretary of State that, owing to the loss made during the 1958/59, they were considering cessation of whaling operations at South Georgia. This caused considerable disquiet at the Colonial Office: 'This might well result in the closing down of all the installations there.'[657] The Administrative Office at South Georgia informally consulted Compañia Argentina De Pesca, and he reported to the Colonial Secretary on 22 April 1959: 'Pesca are philosophical. One must take the bad with the good, they say.'[658]

---

[654] MAFF 209/20; Colonial Office Records; Public Record Office; Kew; 16 May 1958.
[655] *Flensing Plan* - a large flat area where whales were initially processed.
[656] Life for the Whaling Inspectors located at shore stations could be interminable, and the effectiveness of their work was questionable. See: D/10/47/III; Memorandum by Commander R Marks, RN (Retd) Whaling Inspector at South Georgia; 30 March 1959; Falkland Islands Government Archive.
[657] D/6/58/11; Falkland Islands Government Archive; Telegram from Secretary of State to Governor; 15 April 1959.
[658] D/13/58; Falkland Islands Government Archive; 22 April 1959.

Following a visit by Gerald Elliot (the Managing Director of Salvesen) to South Georgia, the company telegraphed the Colonial Secretary on 18 February 1960 to say that Husvik [659] would probably not be operating next year. This would enable the number of licences to be shared between the two remaining companies and the total number to be reduced:

> Believe licences for more than maximum sixteen catchers detrimental to South Georgia Whaling Industry, and hope that a slight reduction in annual catch would be compensated by catch continuing for longer period of years.[660]

The Governor placed an exclamation mark in the margin of this telegram, and noted that he could not see anything in the conservation argument of Salvesen. The Governor considered that even at the end of the industry Salvesen were asking for preferential treatment. A series of angry telegrams ensued between Salvesen and the Governor following the take-over of Husvik by Ryan, and the Governor commented to the Secretary of State: 'A typical Salvesen gambit. It would have been a very different story if he and not Ryan had taken over Husvik.'[661] Salvesen complained to the Scottish Office and to the Secretary of State for the Colonies that Ryan was applying for licences for Husvik and Grytviken as two separate stations, but was, in reality, operating them as one entity. Salvesen stated that they would not continue to operate with only one third of the available licences. Both the Colonial Office and the Governor suspected that what Salvesen really wanted was for Ryan to go out of business and for them to be the sole business operating at South Georgia.

On 2 December 1960 Salvesen again wrote to the Secretary of State for the Colonies saying that they were considering ending their whaling operations at

[659] The whaling company Tønsberg Hvalfangeriet Norway used Husvik as their shore station, before being taken over by Albion Star.
[660] D/6/58; Falkland Islands Government Archive; Telegram from Salvesen to Colonial Secretary; 18 February 1960.
[661] D/6/58; Falkland Islands Government Archive; telegram from Governor to Secretary of State; 16 November 1960.

South Georgia.[662] The company had already warned in 1959 that in the light of serious financial losses unless there was further rationalisation of the industry, and unless they were granted extra licences, they might have to cease whaling. The Governor continued to want three companies to operate from South Georgia because he did not want a monopolistic situation.

On 18 January 1961 Salvesen wrote and asked for a reduction in export duties. No remission in duty was given because it was a major source of income for the Islands. At this stage duties and taxes from the whaling industry amounted to approximately one third of ordinary income of the Islands Government.

The Colonial Office continued to have doubts about the figures provided by the whaling companies: 'it is doubted that any such information provided by the companies would be valuable or trustworthy.'[663] But further investigation did reveal that Salvesen had made an operating loss of over one million pounds. On 23 March 1961 Salvesen advised the Secretary of State that they intended to operate Leith on a "minimum maintenance only" basis.[664] The Governor suspected that Salvesen's threat of closure would induce a remission of duties.[665]

In December 1961 J Rackowt (the personal assistant to the Managing Director of Salvesen) met the Administrative Officer of South Georgia and, in confidence, advised him the company were pursuing a definite offer of selling their whaling interests to a foreign buyer. He also advised the Administrative Officer that only thirty men would over-winter at Leith Harbour, and the bulk of the duty goods would be shipped back to the UK on the *Southern Harvester*. The ship would also take away from the land station most of the station's equipment. *Southern Venturer* would not call at Leith at the end of the season, but would proceed directly to Britain. All spare seaworthy catchers would be

[662] MAFF 209/1626; Colonial Office Records; Public Record Office; Kew.
[663] MAFF 209/1626; Colonial Office Records; Public Record Office; Kew; 12 May 1961.
[664] D/6/58; Falkland Islands Government Archive; telegram from Secretary of State to Governor; 23 March 1961.

sent to Britain. Salvesen were now considering selling *Southern Venturer* and only operating from their land station - Leith - during the next whaling season. Rackowt also said that, in his personal opinion, the company was:

> Devoting its interests to shipping, cold storage and fish factory trawlers and withdrawing from whaling, but he hoped that the company would operate *Southern Harvester* for another few years.[666]

In March 1963 Elliot advised the Secretary of State that Salvesen were uncertain about operating their whaling station during the 1963/64 season.[667] The company was considering sub-leasing Leith to Nippon Suisan Kaisha Ltd Salvesen would continue to use Leith as an oil depot while they continued with pelagic whaling. This proved to be the last whaling season for Salvesen. In the event Japanese companies leased both Leith and Grytviken during the 1963/64 season. In 1964 Salvesen again applied for a licence for a reefer vessel and nine catchers, on behalf of Nippon Suisan Kaisha Ltd, to operate from Leith.[668] Japanese expansion since the end of World War II had been almost entirely carried out by means of purchasing floating factories of other countries, or by sub-leasing land stations. The Japanese were not interested in the ships or bases - but in their quotas - which were transferred with the purchase or lease. 'What other nations relinquished, the Japanese took over.'[669]

On 9 October 1963 - just as the industry was closing down - the International Whaling Commission finally banned the hunting of Blue Whales [670] and the hunting of Fin Whales in 1965.

---

[665] D/6/58/II; Falkland Islands Government Archive; Telegram from Governor to Secretary of State; 1 April 1961.
[666] D/6/58/11; Falkland Islands Government Archive; Telegram from Administrative Officer to Governor; 17 November 1961.
[667] D/6/58/II; Falkland Islands Government Archive; a copy of a letter from Gerald Elliot to Under Secretary of State; 27 March, 1963.
[668] D/4/64; Falkland Island Government Archive; copy of letter from Salvesen to Colonial Office; 24 July 1964.
[669] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p574.
[670] Warnings about the decline of Blue Whales were first made in the early 1920s by Sir Sidney Harmer. See: CS637/21; Falkland Islands Government Archive; Report by Sir Sidney Harmer to the Under Secretary of State; 3 June 1921.

Three Japanese companies jointly leased Grytviken for the 1964/65 season operating ten catchers.[671] The companies operated from Grytviken for only two months, despite the urging of the Islands Government to remain for the full six months. Leith operated for the full six months, but with a reduced number of catchers for the second half of the season.

Having operated in the Antarctic since 1909, and having dominated the industry for so long, Salvesen did not want to believe that the enterprise had come to an end. Gerald Elliot wrote a memorandum to the Fisheries Secretary at MAFF on the 9th of June 1965.

> Salvesen left Leith with every intention of returning; we regard our withdrawal from the industry as a temporary one, and have every hope and intention of re-entering it when stocks have been stabilised and allowed to recover. [672]

In August 1965 Sir Cosmo Haskard, Governor of the Islands, received a letter from the Colonial Office, which despite nearly sixty years of Colonial Government involvement with the whaling industry, contained the following astonishing statements:

> The recent flurry of telegrams about the proposed quota of whaling from land stations in South Georgia has revealed, among other things, how inadequate is the Colonial Office's background knowledge about the whaling industry there. The territory is remote and subject recondite. It has been assumed locally that the C.O. knows a good deal more of the background than, with recent changes in personnel, is at present the case. I wonder whether, to lighten our darkness, you would be kind enough to get someone to prepare and send us *a brief child's guide*.[673]

[671] D/4/64; Falkland Island Government Archive; Copy of Licence issued by Administrative Office, South Georgia; 26 August 1964.
[672] D/4/64; Falkland Island Government Archive; Copy of letter from Gerald Elliot to MAFF; 9 June 1965.

All whaling ceased at South Georgia at the end of 1965, but the whaling companies continued to pay rent on the stations for some years. The responsibility for administration of South Georgia was passed to the British Antarctic Survey in 1969.[674] Pelagic whaling continued, in a much-reduced form, for another fifteen years.

Sir Edwin Arrowsmith, Governor of the Islands (1957-1964) summed up the uncertain future of South Georgia after the cessation of whaling:

> I have no doubt that we must continue to maintain an administration at South Georgia. Were we to close down, it is likely that the Argentines would step in. An unoccupied South Georgia would probably be visited regularly by the Russian pelagic whaling fleet and this would give the Argentines an additional pretext for taking over.[675]

In 1970 Albion Star applied to the Islands Government to transfer the leases of Grytviken and Husvik to the Ministry of Fisheries of the USSR. The Foreign and Commonwealth Office in London strongly opposed the proposal. The British Embassy in Buenos Aires commented: 'To let the Russians into the Dependencies would force Argentina to take note, and sour the favourable developments with regard to Argentina/Falkland Islands relations. It would be more explosive than the oil question.' [676] In the event the Executive Council of the Islands rejected the proposal. Despite the refusal of the Executive Council, the Russian pelagic fishing fleets fished extensively around South Georgia during the 1970s, using its many harbours and fresh water supplies without the formal permission of the Islands Government, but with the informal assent of the South Georgia Magistrate.

---

[673] D/4/64; Falkland Islands Government Archive; Letter from Colonial Office to Governor; 12 August 1965.
[674] D/2/65 Vol.2; Falkland Islands Government Archive; 1965.
[675] D/2/65; Falkland Islands Government Archive; Letter from Governor to Colonial Office; 5 March 1963.
[676] CSO (Secret) S/306; Falkland Islands Government Archive; Telegram from Secretary of State to Governor; 26 March 1970.

In the story of whaling from 1946 to 1966 one thing stands out clearly; namely the impotence of the International Whaling Commission to regulate the industry in a sustainable way. Why was this so? Part of the answer is that the Convention of 1946 could only be made to work if the participating nations wanted to make it work. The Convention did have major flaws, and these were fully revealed and exploited, by the unscrupulous and the greedy, through the means of the growing whaling fleet after World War II. More and more nations were pursuing fewer and fewer whales. The industry reached gross over-capacity, and the Convention was unable to prevent the effects that this would inevitably have on whale stocks. Another major problem was that the Conventions' Rules of Procedure required a three quarters majority, and this enabled an individual whaling nation to thwart major reductions in quota. The two largest whaling nations still operational at the end of commercial whaling, Japan and the Soviet Union, opposed reductions in quota for as long as possible. In hindsight it also is now clear that the total quota was set too high, in order to sustain a maximum sustainable (and thus renewable) yield, as far back as the London Agreement of 1937. A summary of this sad situation (albeit from a Norwegian point of view) rightly stated:

> The tug of war between science and whaling, which became increasingly acute after 1955, culminated in the victory of the latter, though it proved to be a Pyrrhic victory that sealed its own fate. Instead of lowering the quota, the only weapon in the armoury of science, the quota was increased by 500 in 1958-9, and in 1959-62 suspended. It benefited the companies' nation-wide competition that there were national quotas during these seasons, but it had the opposite effect on whale stocks. In the 1959-60 season the sum of the national quotas amounted to 17,800 units, while the catch was greater than at anytime since 1951-52. The season of 1960-61 recorded the largest catch of baleen whales since the war, whilst the catch of 1961-62 was unmatched since the 1954-56 season. In actual fact the three seasons when whalers had things practically their own way constituted a complete breakdown of the Convention, and struck a serious blow at stocks of Fin Whales and the small number of Blue Whales still surviving … The drastic

reduction that had to be imposed for the five ensuing seasons came too late.[677]

Falling catches between 1959 and 1961 brought the whaling nations back to serious negotiations, but during the period when the catch ceiling was removed irreparable harm was done to the whale stocks, and failure to meet quotas was the inevitable result. [678]

§ e. Concluding remarks.

Why won't the business people heed the warnings of the scientist until it is too late? [679]

As with the account of the effects of the agricultural industry upon the environment of the Islands, so with whaling, and the effects of whaling upon the Oceans around the Islands and South Georgia, no one factor or simple explanation can adequately chart the history. What occurred on the whaling grounds of the Southern Ocean was the result of a combination of factors. The story is one of a gradual acceleration from the small beginnings by a few entrepreneurial men to a giant industry employing thousands; from a plentiful resource towards a complete failure of an industry caused by over-exploitation. Southern Ocean whaling in the Twentieth century was a mixture of adventure and romance, rapid technological innovation, ruthless greed, national pride, political manoeuvring, corporate failure and some science and exploration. By the time that the whaling industry came to an end the whale stocks in the Southern Oceans had been largely destroyed. It appears likely that Southern Ocean whaling was on such a scale that it has succeeded in making a permanent alteration to the biological balance of the oceans. For example in a pers. comm. Dr R Laws [680] has commented that it is possible that the Blue Whale may never

[677] Tønnessen, J N & Johnson, A O; (1982); op.cit.; pp. 565-566.
[678] Elliot, G; (1998); op.cit.; p158.
[679] CO852/637/10 Colonial Office Records; Public Record Office; Kew; 1 March 1945.
[680] December 2000.

recover to its former populations. The numbers of potential reproductive adults may have fallen below that required to maintain and increase stocks, and also other marine mammal species *e.g.* Sei Whales (*Balaenoptera borealis*) and Minke Whales (*Balaenoptera acutorostratus*) and Fur Seals have now occupied the Blue Whale's former feeding niche.

In similar fashion, as also occurred with the fishing industry, whaling was initially driven by the belief that the resources of the oceans were boundless, and that there was a limitless supply of whales. Moreover the whales that did exist in the Southern Ocean, did so for the sole benefit of human beings. T H Huxley's famous speech to the International Fisheries Exhibition of 1883 when he said that 'probably all the great sea fisheries are inexhaustible … and any attempt to regulate these fisheries seem consequently … to be useless'[681] provided the 'mind set' for the century which followed. The exploitation of natural resources by mankind was seen as a God-given right. The father of modern whaling, Sven Foyn, typifies this attitude: 'God has let the whale inhabit (those waters) for the benefit and blessing of mankind, and consequently I considered it my vocation to promote these fisheries.'[682] When the Falkland Islanders protested that most of the whale oil tax revenue was being spent on the Discovery Expeditions and not on the Islands, they complained that they had lost their 'birthright.' To use the resource for anything other than the inhabitants of the Islands was thus of 'no practical advantage to the Colony.'[683]

Southern Ocean whaling rapidly became a maritime extension of the Industrial Revolution, but it was an industry, which did not learn from history. The Scottish Antarctic explorer and scientist, Dr W S Bruce, in his submission in the Interdepartmental Report of 1920 suggested that we 'take heed of the lesson, which the Fur Seal hunters of 1820-22 taught us, and protect the Dependencies' whales.'

[681] Cited in: Wigan, M; (1998) *The last of the hunter-gatherers – Fisheries crises at sea*; Shewsbury: Swan Hill Press; p105.
[682] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p26.
[683] SPRI MSS1284/4/9 (folio 735) Governor Hodson to Secretary of State for the Colonies; 9 July 1927.

> It is impossible not to condemn in too severe terms the indiscriminate slaughter to which these animals [Fur Seals] were subjected. The result was, as Dr Bruce described it to us, a most important economic disaster, and it should never be forgotten as a warning against the uncontrolled exploitation of animal life [whaling] for commercial purposes.[684]

Despite this - and the lessons taught by the failure in the 19th Century of the northern Finnmark whaling industry - the Southern Ocean whaling industry was unable, or unwilling, to prevent the collapse of whale stocks.

Why did this failure occur? It was not for lack of warning and for a variety of attempts at regulation, and control. At the very beginnings of the industry in the 19th century:

> Nobody … dreamed of putting limits on the catch, of trying to prevent the killing of pregnant or nursing mothers, or of adopting any of the laws which would have allowed the trade to survive. Such restrictions could never have been enforced … and so the Southern Ocean was pillaged throughout these years without a protest, or indeed without the outside world really knowing anything about it, since the captains were naturally secretive about their whaling grounds.[685]

By the beginning of the 20th century control and regulation of the whaling industry was seen as essential by some, and the efforts of William Allardyce and Sidney Harmer are admirable. Allardyce's long tenure of office was dominated by his attempts to control and regulate whaling. Harmer ('an extreme protectionist.'[686]) risked the ire of whaler and Islander alike when he warned of the collapse to come: 'It has been long known by biologists that operations on an even a less extensive scale are likely to have most serious results.'[687] It was not just the scientists who were concerned about what was happening. From

[684] Interdepartmental Committee (1920); op.cit.; p16.
[685] Moorhead, A; (1968) op.cit.; p204
[686] CO78/166; Colonial Office Records; Public Record Office; Kew; 1923.
[687] SPRI MSS1284/4/13 (folio 1346) Harmer's draft Memorandum to the Discovery Committee 20 August 1930.

within the industry itself there were warning voices that the industry failed to heed:

> The great extension of whaling in the Antarctic will undoubtedly, in spite of the vast tracks of ocean and the apparently enormous number of whales, produce in the course of some years, the same results as in all other waters, namely a decreasing stock of whales from year to year.[688]

An early response by the British government to the deleterious effects of the whaling industry was the creation of the Discovery Expeditions, and there can be no doubt that this was a remarkable scientific venture. Over many years it became the single largest and sustained maritime research project in the world. The work of the Discovery Expeditions transformed the scientific understanding of the Southern Oceans, but it was unsuccessful in fulfilling one its original and primary aims. It failed to convey effectively, to those who needed to understand, the absolute imperative of learning the lessons of history - *i.e.* that excessive hunting had already resulted in the collapse of the whaling industry in Greenland and Spitzbergen waters, and that the whale stocks of Southern Oceans were rapidly facing the same fate. Despite this failure it is undeniable that the Discovery Expeditions did succeed in laying the foundations of the present day understanding of the bio-dynamics of the Southern Ocean.

Notwithstanding the positive step of establishing the Discovery Expeditions, the British government acted, at the same time, in a manner which failed to prevent the demise of the whale stocks. Once large-scale pelagic whaling had begun, the opportunity to press for international agreement was not taken by the British government for fear of 'undesirable repercussions elsewhere'[689], and because of an unwillingness to challenge, in the light of a new situation, the long held principle that 'fishing outside territorial waters is free to all nations.'[690] No one

[688] Ingebrigtsen, A; (1929) Conseil. Perm. Internat. Exploration de la Mer; Vol LVI; Rapports et Procès-Verb; pp. 25-26. Cited in SPRI MSS1284/4/13 (folio 1346).
[689] CO78/174/8; Admiralty memo; Colonial Office Records; Public Record Office; Kew; 20 April 1926.
[690] CO78/174/8; MAFF memo; Colonial Office Records; Public Record Office; Kew; 26 April 1926.

could have foreseen the full effects of pelagic whaling, but the apparent *laissez-faire* approach of the British government to international regulation, in the early days of the industry, contributed to the disaster. The failure of the Colonial Office, over many years, was considerable. At the most basic level there was a lack of consistency of policy - particularly with the regular changing of the Governors of the Islands. The changes of policy which occurred in the Islands when Governor Middleton was replaced by Governor Hodson is only an extreme example of a general problem which the Colony has suffered from in many aspects of its life - a lack of consistency in policy and direction.

A more serious criticism of the Colonial Office is that it often failed to withstand the prolonged and considerable pressure exerted by commercial interests, particularly by Salvesen. Despite a catalogue of complaints made against Salvesen over many years [691] the Colonial Office never effectively controlled the most dominant force in Southern Ocean whaling. In addition to this failure, the attitude of the Colonial Office to 'Argentine sensitivities' [692] about the Islands, throughout the whole period of Southern Ocean whaling, can only be described as weak and craven. For example - nothing was done to challenge the behaviour of Compañia Argentina de Pesca for fear of offending Argentina. When a Governor like Miles Clifford wanted to penalise Compañia Argentina de Pesca for breaches in leasing/licensing regulations, they were instructed not to do so by the Colonial Office. Towards the end of the industry the Colonial Office showed astonishing ignorance and ineptitude. By its own admission:

> The territory is remote and subject recondite. It has been assumed locally that the C.O. knows a good deal more of the background than, with recent changes in personnel, is at present the case.[693]

[691] CO78/183/3 Colonial Office Records; Public Record Office; Kew; 1 October 1929.
[692] CO78/175/9; Colonial Office Records; Public Record Office; Kew; 12 October 1927.
[693] D/4/64; Falkland Islands Government Archive; Letter from Colonial Office to Governor; 12 August 1965.

When government control could have been effective to a degree, very often other practical and political requirements overrode the need for conservation of whale stocks. This is particularly true during both world wars, and after World War II. All of Governor Allardyce's careful regulatory work was swept aside in 1914 because of the need for a whale oil derivative - glycerine - for use in the production of explosives: 'As gunners received a bonus for every whale, they blazed away at every whale they came across.'[694] During World War II [695] and thereafter well into the 1950s, the overwhelming economic requirement was for edible food oils: 'In view of the clear indications of the oils and fats position after the War [World War II], it will be important to get moving as quickly as we can.'[696] The dependence of the economy of the Islands upon the revenues received from the whale oil levy throughout the period of the history of Southern Ocean whaling was substantial - 'the advent of whaling brought a welcome boost to the Colony's economy.' [697] It is to be regretted that this reliance, particularly when farming revenue was low, meant that another potential restraint on the speed and development of the industry failed to occur.[698]

All the whaling companies must also bear some of the responsibility for what occurred. As this dissertation has shown, some companies had a long history of flouting regulations; Onassis and *Olympic Challenger* were only an extreme example of a well-established pattern of behaviour. The falsification of catch records was common. The behaviour of the U.S.S.R whaling fleets was nothing less than a disgrace, and it may well have contributed to the failure of the stocks of Blue and Fin Whales to recover: 'Original catch records from past Soviet Antarctic pelagic whaling after World War II revealed major falsifications of the records submitted by the Soviet authorities.'[699] The scramble for the remaining stocks of whales during the late 1950s and early 1960s, by the

[694] Tønnessen, J N & Johnson, A O; (1982); op.cit.; p299.
[695] Compañia Argentina de Pesca operated their whaling station at Grytviken throughout World War II, and they sold the whole of their total production of oil and meat production to the British Ministry of Food, some 10,000-12,000 tonnes of whale/seal oil, and 5,000 tonnes of meat and bone meal, per season.
[696] MAF83/569 Colonial Office Records; Public Record Office; Kew; April 1943.
[697] Heyburn, H; (1980) op.cit.; p41.
[698] Allardyce, W; SPRI MS240/2; 6 January 1913.
[699] *Forty-Sixth Report of the International Whaling Commission*; (1996); p 121.

surviving whaling companies, exposed the companies' greed and economic selfishness.

As long as whaling involved only a few nations, and also while it required shore bases, or floating factories associated with shore facilities, control and regulation was practicable to a degree. The flouting of regulations could be kept minimal. Once whaling became a largely pelagic industry undertaken by many nations, regulation became difficult, if not impossible. 'Once these ocean-going butcher's shops appeared on the scene, as there was no adequate legislative control of pelagic whaling outside Colonial waters, conservation became impossible.'[700] The establishment of the International Whaling Commission in 1946, was a brave attempt to regulate the industry internationally. In hindsight it is clear that the IWC set the catching levels too high right from its inception. A former Secretary of the IWC, Dr Ray Gambell, has commented:

> The history of the early years of the IWC was not a good one from the point of view of the conservation of the whale stocks, particularly those in the Antarctic.[701]

The IWC found itself in an unenviable position, because its regulations were voluntary, and it relied on the honesty and co-operation of the whaling nations. These voluntary restraints laid the situation open to exploitation by the unscrupulous. However, Elliot has suggested that the International Whaling Commission should not be dismissed as a total failure:

> It failed to conserve the whale stocks, but without it [the IWC] the depletion would have been much more drastic, and some stocks might have been wiped out completely. The rules it introduced … all helped to reduce the impact of intensive catching … The weakness of the Convention, common to all international treaties between nation states,

[700] Heyburn, H; (1980) op.cit.; p42.
[701] Gambell, R; (1993) International management of whales and whaling: An historic review of the regulation of commercial and aboriginal subsistence whaling; *Arctic*; Vol. 46; No. 2; June 1993; pp. 97-107.

> was that it could only work if there was universal and honest determination behind it. Those qualities were notoriously absent.[702]

Thus it can be seen that for a wide variety of reasons Southern Ocean whaling was conducted for most of its history without adequate restraint. It was this lack of restraint, which resulted in the over-exploitation of a vast natural resource. The absence of restraint ensured that there was a failure to secure rational and sustainable exploitation.

Major Barrett-Hamilton's report of 1914 contained the radical proposal that whaling should be banned on all other locations other than South Georgia - effectively the creation of a whale sanctuary. This proposal, based on restraint, was made on sound scientific and commercial grounds:

> If whaling were stopped or considerably diminished at the Antarctic stations the industry would benefit, since the probable effect would be the protection of large numbers of immature whales which, in due course, would make their appearance at South Georgia as a school of mature animals. The present system, which permits the destruction of valuable animals before they have obtained maturity and whilst they are still of relatively little value, in localities where not even the full produce of these immature animals can be collected, savours strongly of unsound business.[703]

The history of Southern Ocean whaling is the history of those who while they were engaged in the industry found the concept of restraint an impractical ideal - even when it would have been in their own financial interest to implement that ideal as a practical reality.

Much has changed since the end of large-scale commercial whaling. Subsistence and aboriginal whaling will undoubtedly continue; Japan and Norway have signalled their intention to resume pelagic whaling, but currently

[702] Elliot, G; (1998); op.cit.; p170.
[703] Hinton, M; (1925); op.cit.; p173.

(2003) confine their catch to one of the abundant species of whales. The requirement for large quantities of animal oils has gone with the advent of the widespread production of vegetable oils (*e.g.* Oil seed rape) and synthetic substitutes. Public opinion has also changed, partly as the result of the powerful promotion of conservation ethics:

> There is much greater public awareness of the whole question of environmental conservation, in which the whale has come to assume a symbolic as well as an actual leading role.[704]

The strong emotions which whaling provokes are understandable; although they may be contrary to the findings of scientific research, they do signal an understanding of the past excesses of the industry. Although it may be too soon since the cessation of whaling to sanction a modest re-commencement of the exploitation of some whale species, nevertheless any future management of the oceans will require that whales are part of the arrangements which must be internationally agreed.[705] There is no question that the nations that wish to recommence whaling are justified when they state that there are some species of whale sufficiently abundant to sustain a reasonable harvest.[706] The IWC has now adopted the policy of the "precautionary principle" of management in its Revised Management Scheme. [707]

> Under this approach, the burden of proof has been moved to those who wish to utilise the resource to demonstrate that any resumption of whaling will not be harmful.[708]

What the history of Southern Ocean whaling provides most clearly is an example of how badly mankind has cared for the natural world and its potential resources. The lack of care, for whatever reason, has resulted in gross over-

---

[704] Gambell, R; (1993) *International management of whales and whaling: A historic review of the regulation of commercial and aboriginal subsistence whaling*; op.cit.; p106. See also: Aron, W., Burke, W. and Freeman, M.; (2000) The whaling issue. *Marine Policy* 2000; No.24, p191.
[705] Wigan, M; (1998) *The last of the hunter gatherers*; op.cit.; p48.
[706] Holt, S.; (2002) The whaling controversy. *Fisheries Research*; 2002; vol 54; p148.
[707] Hey, E; (2000) The Precautionary Principle; *Marine Pollution Bulletin;* vol 26; pp. 54-55.
[708] Gambell, R; *International management of whales and whaling: An historic review of the regulation of commercial and aboriginal subsistence whaling*; 1993; op.cit.; p106.

exploitation of the whales. This lack of care comes as a direct result of regarding the natural world only in terms of a resource to be exploited for maximum economic profit.

The current attitudes to whales, [709] and their future management, must take into account the notion that the natural world has value independent of any economic value to mankind. 'It is important … to see that the world's wealth is not wasted, or used in trivial ways, but is made available for all mankind including future generations.' [710]

[709] 'Whales and dolphins have become for many people a symbol of much of what we have done wrong in our management and conservation of all the earth's resources'. Gambell, R; (2002) *Conservation of Whales and Dolphins*; John Ray Initiative Briefing Paper.

[710] Gambell, R; (1990) *To Whale or not Whale; that is the question*; Eastbourne: Monarch; p181. For an example of those who would support the resumption of whaling because of the greater dangers that would result from a breakdown of the functioning of the IWC see: Aron, W., Burke, W. and Freeman, M.; The whaling issue.(2000) ; *Maine Policy*; 2000; vol 24; p190.

18. Fishing - 'Dear God, let the sea be filled with fish' [711]

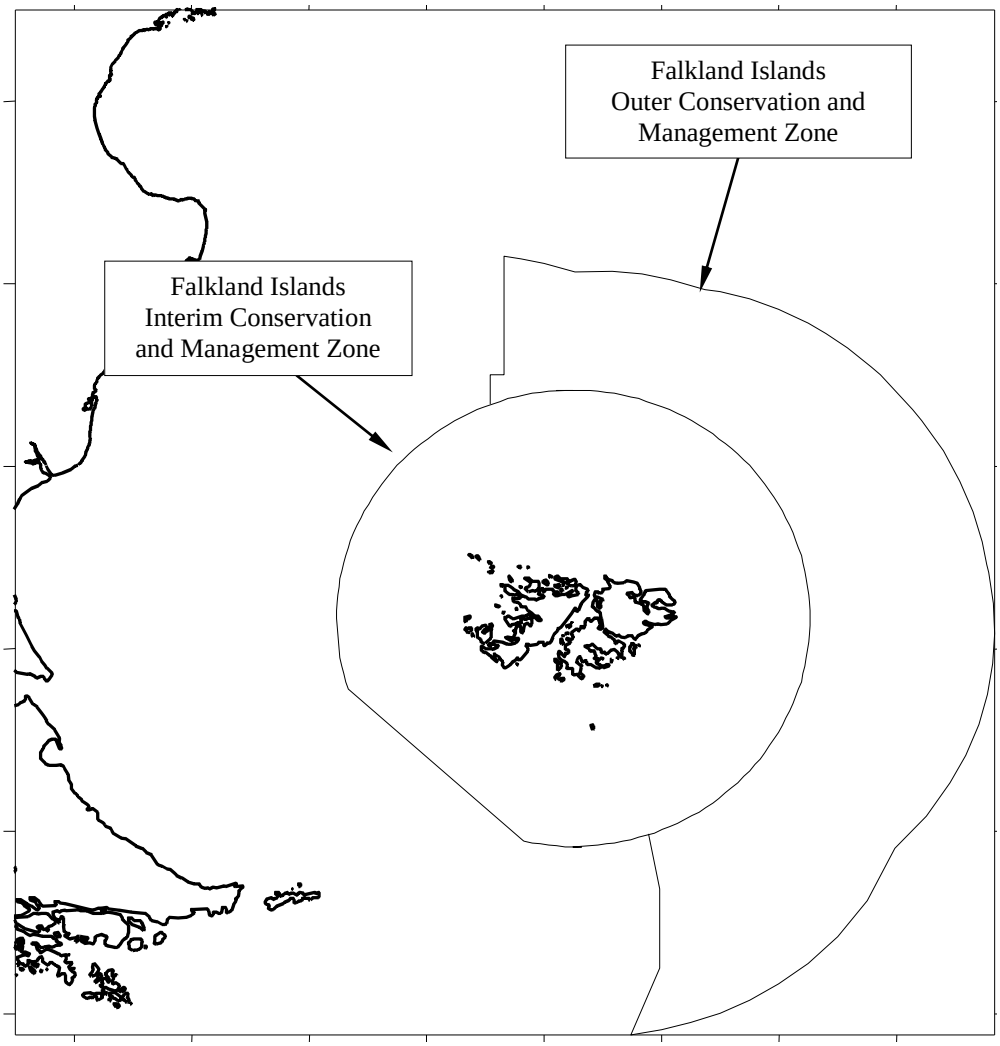
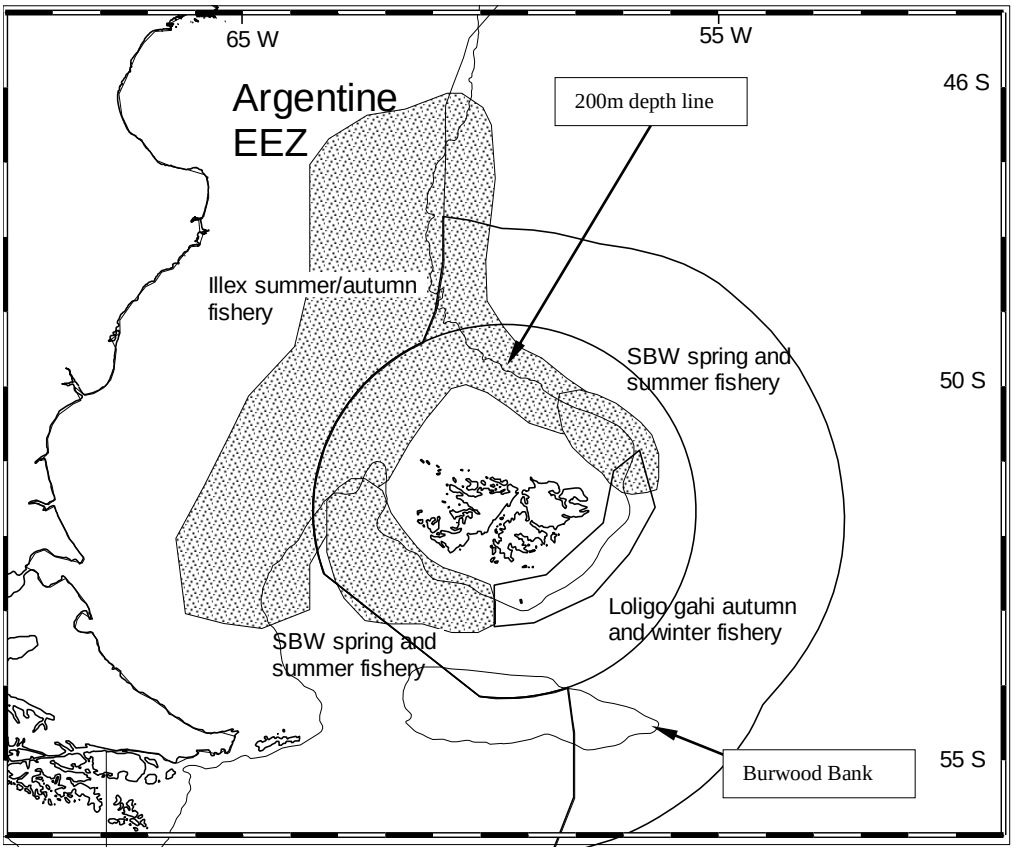


Figure 4 Falkland Islands Interim and Management Conservation Zones (in 1990) [712]

[711] 'Such were the words that sounded from churches in the coastal waters of Northern Norway during the troubled times for the fisheries in the late 1980s and early 1990s … In several churches along the coast, the second Sunday of January 1990 was devoted to prayer: We pray to God that the sea must be filled with fish, and that we may be able to take care of nature so that it does not become polluted, and that the fishermen may catch enough to survive. We pray to God that people may find mutual support and friendship among themselves so no home will be disrupted. Our hope is that no one will lose their livelihood.' cf. Nielsen, Svenn A.; (1990) Kjære Gud, la havet fylles med fisk!, in *Vår kirke i nord* (Yearbook for Hålogaland; Bodø: the Episcopacy of North and South Hålogaland, 1990; pp. 5-7; 5) quoted in Kristiansen, Roald E; (2000) Arctic Ecotheology; *Ecotheology* 9; 2000; pp. 10-11.

[712] The FOCZ was amended in 1994.



(SBW = Southern Blue Whiting)

Figure 5 Falkland Islands Fishing Grounds ~ showing location of fishing grounds [713]

[713] Agnew, D; (2002) Critical aspects of the Falkland Islands pelagic ecosystem: distribution, spawning and migration of pelagic animals in relation to oil exploration; *Aquatic Conservation: Mar. Fresw. Ecosyst.*No.12: pp. 39-50;

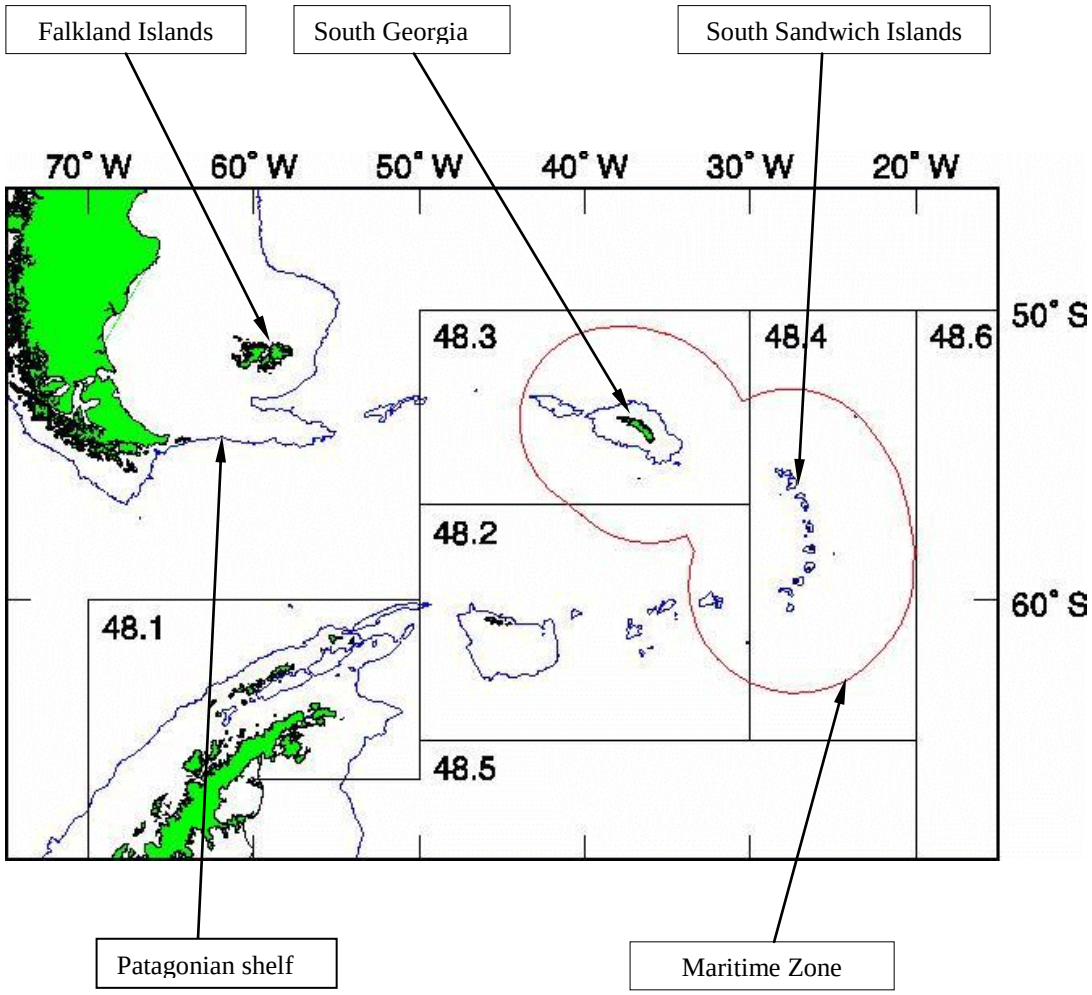


Figure 6 South Georgia and South Sandwich Islands Maritime Zone [714]

This account of fish and fishing in the Islands and South Georgia is divided into four sections: a. Introduction; b. Inshore and Freshwater fish and fishing; c. Offshore fish and fishing in Islands waters; d. Offshore fish and fishing in South Georgia waters.

[714] I am grateful to Dr. Mark Belchier, British Antarctic Survey, for permission to reproduce this illustration.

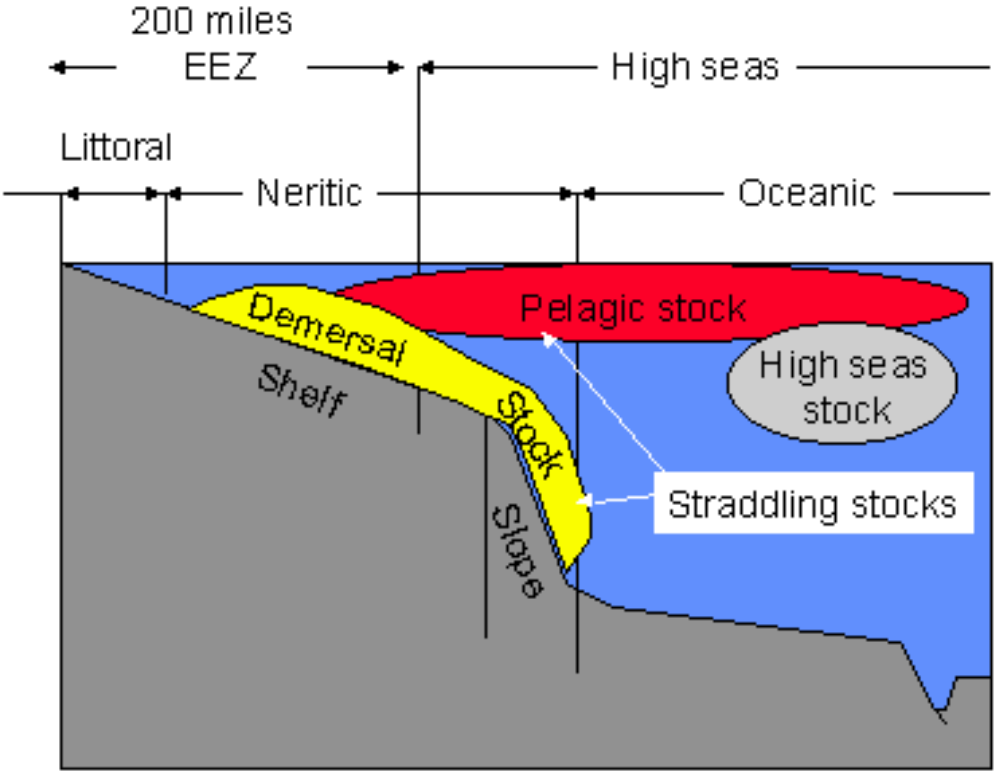


Figure 7 F.A.O. Fishing definitions.

§ a. Introduction

Offshore and demersal [715] fishing is currently (2003) the most significant economic activity in the waters around the Islands and South Georgia. The revenue earned in the Islands from fishing licences 1989-1999 was approximately £259M; this compares with £34M in income earned from the sheep and wool pastoral industry during the same period.

Twenty years [1969/70 - 1989/90] of fishing in the South Atlantic sector of the Southern Ocean have resulted in a total catch of approximately

[715] *Demersal* - living at or near the bottom of the sea.

> 2M tonnes of finfish. The dominant species were *Notothenia rossii* and *Champsocephalus gunnari*. Twelve out of the 270 species known from the Southern Ocean, separated into 30 stocks, are or have been subject to regular commercial exploitation. Sufficient information for assessment to be made of their status exists for only thirteen of these stocks. Almost all of them have to be classified as 'depleted.'[716]

Since 1986 a marine resources management scheme has been implemented within Islands waters. The large income that this scheme has produced has brought major improvements to the social conditions of the population of the Islands. For example during the 2001 fishing season 264,747 tonnes (at the average level for the decade) of fish was caught by licensed vessels in Islands waters; 77.1% of this catch consisted of two species of squid - Illex (*Illex argentinus*) (150,523 tonnes) [717] and Loligo (*Loligo gahi*) (53,519 tonnes). The Islands Government total operating revenue during the same year was approximately £51M, £27.68M of which came from the sale of fishing licences. The precarious nature of the Squid fishing industry is seen in the fact that the total Illex catch in Islands waters during the 2002 season was only 10,000 tonnes. This significant reduction was not the result of overfishing, but because of poor hatching conditions during 2001 caused by an increase in the water temperature of only 1.5°C in the nursery area in July 2001.

The South Georgia and South Sandwich Islands Government implemented a Fisheries Conservation and Management Regime around South Georgia and the South Sandwich Islands following the declaration of a 200 n.mile Maritime Zone in July 1993. The management of the fisheries around South Georgia and the South Sandwich Islands is conducted in accordance with conservation measures of the Commission for the Conservation of Antarctic Marine Living

[716] Rőpke, Andreas;(1993) Rosentiel School for Marine and Atmospheric Science, Miami; *Bulletin of Marine Science*; vol 52(3); p1022. The statistics cited by Rőpke are derived from Csirke, Jorge; (1987) The Patagonian fishery resources and the offshore fisheries in the South-West Atlantic; *FAO Technical Paper 286.* Great care should be exercised when using these statistics. It is likely that the total figures are a considerable underestimate; however, they do give a reasonable guide to the level of fishing activity.

[717] During the same season Argentinean registered vessels caught 225,286 tonnes of *Illex.*

Resources, (CCAMLR)[718] which do not preclude the South Georgia and Sandwich Islands Government from imposing its own conservation measures. In the year 2002 the revenue produced by the sale of fishing licences, for vessels operating within the Maritime Zone of South Georgia and South Sandwich Islands, was £3.3M.

§ b. Inshore and Freshwater fish and fishing

i. Falkland Islands

In 1772 Bernard Penrose, the Surgeon's Mate aboard *Endeavour* recorded one of the earliest accounts of fish stocks in the Islands:

> Mullets we could take in very great abundance … Smelts are common, though not in equal plenty with the former … both these kind of fish bite freely at the hook … but our principle dependence was upon the seine [net] … we often caught a small fish about six inches long, transparent and without any circulating fluid of the colour of blood; these made an exquisite dish. But of shellfish we had only Clams, Limpets, Muscles [sic] and a few but very small Scallops.[719]

Edmund Fanning noted the abundance of fish species in waters of the Islands during his visit in 1797: [720] 'The waters abound with several kinds of fish.'[721]

Charles Darwin recorded two indigenous fish during his visits to the Islands in 1833/1834. These were the Zebra Trout (*Aplochiton zebra*) and the Minnow

[718] CCAMLR is a component part of the Antarctic Treaty system that oversees the management and conservation of living resources within the Southern Ocean. See: The Government of South Georgia and South Sandwich Islands; *Maritime Zone ~ Fisheries conservation and management regime; an overview of the fisheries of South Georgia and South Sandwich Islands;* Stanley; February 1996.
[719] Penrose, B; (1775) *An account of the last expedition to Port Egmont in the Falkland Islands, in the year 1772;* London: J. Johnson; p39.
[720] Fanning, E; (1833) *Voyages and Discoveries in the South Seas 1792-1832; New York:* Collins & Hannet. Reprinted by Marine Research Society; Salem; MA. in 1924.
[721] ibid.; p61.

(*Galaxius maculatus*). Two other species have been recorded - although their current status is uncertain. These are another species of Minnow (*Galaxias platei*) and the Pouched Lamprey (*Geotria australis*).

Mullet (*Eleginops maclovinus*) inhabits the coastal waters, and is commonly found in creeks and estuaries. In one place in East Falkland a population has adapted to fresh water.[722] Prior to the Islands being finally settled by the British as much as 80 tonnes of salted fish (Mullet?) was exported from the Colony, by Louis Vernet, in 1829, to the Brazilian market, where it was sold for £1,600.

> Governor Moody reported in 1842 that Mullet was being salted in Port Louis and exported to Rio Janeiro but it did not find much favour there, being insufficiently firm to stand the salting necessary to keep it for warm climates without loss of flavour.[723]

Mullet fishing on a small scale continues, but currently (2003) a more significant commercial exploitation of Mullet is being investigated.

The numbers of the indigenous Zebra Trout have diminished greatly; decline has been thought to be a consequence of the introduction of the Brown Trout. A recent survey (1999) by McDowall concluded:

> Although we have not been able to demonstrate any causal connection between the distribution and abundance of Zebra Trout and the presence of the introduced Brown Trout, our data is certainly consistent with the quite widely expressed view that brown trout are causing the decline in zebra trout.[724]

---

[722] Strange, I; (1992); op. cit.; p144.

[723] Henniker-Heaton, H; (1939) *Memorandum on potential for minor industries within the Falkland Islands*; Falkland islands Government; Stanley; p23. also: Moody, R. (1843) *Information respecting the Falkland Island;* London; Charles Knight & Co; op.cit.

[724] McDowall, R M; (2000) The Falkland Islands Zebra Trout (*Aplochiton zebra*); *Warrah*; 2000; No.18; pp. 6-7. See also: McDowall, R M; (2001) Conserving and managing the Falkland Islands' freshwater fishes; *The Falkland Islands Journal*; Vol 7 (part 5) 2001; pp. 68-78. See also: McDowell, R M; Allibone, R M; Chadderton, W L; (1999) *Issues for the conservation and management of Falkland Islands freshwater fishes*; Report to Falklands Conservation.

In 1939 the Government [725] investigated the possibility that trout from Tierra del Fuego could be successfully introduced to the Islands. The Government Naturalist encouraged the introduction of trout citing the example of what had been done in Tierra del Fuego, in 1935, where a successful introduction of trout had been made.

In 1940 small quantities of the fertilised ova of Brown Trout (*Salmo trutta*), American Brook Trout (*Salvelinus fontinalis*) and Rainbow Trout (*Oncorhynchus mykiss*) were imported from Chile and incubated in a small hatchery at Moody Brook. The Brook and Rainbow Trout ova died, but the Brown Trout survived and were introduced into the Moody Brook, and possibly to the Murrell River.[726]

The consequences of this introduction upon indigenous species do not seem to have been considered. [727]

In 1947 the Chilean Government provided the Stanley hatchery with 30,000 Brown Trout fertilised ova. Brown Trout fertilised ova were also imported from the Lancashire Water Authority in Britain; 10,000 in January 1948; 15,000 in January 1949; and 10,000 in 1950 and the two following years.

There were several attempts during the early 1960s to introduce salmon to the Islands. Most of the fertilised ova and fry died in transit, but a few hatchlings are thought to have been released successfully. In 1965 concerns about disease meant that the Lancashire Water Authority were unwilling to send any more salmon ova to the Islands.

---

[725] CS83/37; *Farmers Conference February 1939*; Falkland Islands Government Archive; Government Circular March 1939.

[726] For an account of the history of the introduction of trout and salmon to the Islands see: Stewart, L; (1973) *The Fisheries of the Falkland Islands*; Foreign and Commonwealth Office - Overseas Development Administration.

[727] 'As is typical of exotic fish introductions in most parts of the world, there were no reviews of [the] likely impacts to the Falklands [of the] introduction of Brown Trout - no 'before/after' or 'presence/absence' data for Zebra/Brown Trout sites.' McDowall, R M; (2001) Conserving and managing the Falkland Islands' freshwater fishes; *The Falkland Islands Journal*; Vol 7 (part 5) p72.

The Shackleton Report of 1976 concluded that angling for game fish would only be 'a minor attraction within the wider context of a tourist industry.'[728] The Report outlined the difficulties of the introduction of salmon, but recommended that:

> Introducing salmon not only would improve the tourist potential of the Islands but may be an elegant method of harvesting the apparently abundant stocks of small pelagic fishes, small crustaceans, squid and other species in the sea areas around the Falklands, where the growing salmon would feed, and thus converting these otherwise unprofitable organisms into a highly marketable product.[729]

In 1978 the Overseas Development Administration sent a fisheries team to the Islands to examine the potential for commercial fishing. The Shackleton Report of 1982 reviewed their work, and also the whole range of fishing prospects for the Islands.

The Report recommended that the potential for the exploitation of shellfish resources (such as Squid, Crab and Prawns), and for Salmon ranching, should be assessed. [730] In the event a small salmon farming enterprise was begun in the late 1980s, but the venture proved to be financially unprofitable.

Aquaculture (the farming of fish and shellfish) in the Islands is still being supported by the Falkland Islands Development Corporation, and a local company - Falklands Fresh Ltd - currently (2003) has half a million Pacific Oysters (*Crassostrea gigas*) growing in four locations around the Islands. The company is also investigating the potential for salmon farming.[731]

[728] Shackleton, E; (1976); op. cit.; p149.
[729] ibid.; p149.
[730] Shackleton, E; (1982) *Falkland Islands Economic Study 1982*; HMSO (Cmnd. 8653); p69.
[731] *Penguin News*; 27 April 2001.

ii. South Georgia

There are no indigenous freshwater fish on South Georgia. On 10 December 1964 the Japanese whaling company (The International Fishing Co. Ltd.) which had leased the whaling station from Compañia Argentina De Pesca introduced ten Rainbow Trout (*Oncorhyncus mykiss*) into Gull Lake, at Grytviken. The fish did not survive, probably as the result of insufficient food.

§ c. Offshore fish and fishing in the Islands waters [732]

At least 80 species of fish have been recorded in Islands waters, and many have been commercially exploited.

Governor Henniker-Heaton wrote a memorandum on the potential of minor industries in the Islands in 1939, and it included a small section on the prospect for commercial fishing. Henniker-Heaton was particularly interested in the production of fish meal: 'The possibility of turning the vast fish resource to commercial use as manure or for cattle food should not be overlooked.'[733]

Three surveys had been carried out by RRS *William Scoresby* in March/April 1927; June/July 1928 and October 1931 - April 1932. The RRS *Discovery* [734] and RRS *Discovery II* also made occasional trawls using a mega-plankton net. An account of the investigations carried out by the Discovery Committee was published in the Discovery Reports in 1946.[735] An abridged form of the Report (with a foreword by Dr. N Mackintosh) was sent to the Governor (Sir Miles Clifford) who made numerous annotations on it.[736] The 1946 Report was the first major scientific report on the demersal fish of the Islands and their

[732] Until 1982 the territorial waters of the Islands extended to 3 n.miles around the coastline. The limit has now been extended to 200 n.miles.
[733] Henniker-Heaton, H; (1939) *Memorandum on potential for minor industries within the Falkland Islands*; op.cit.
[734] For an account of this research see: Gunther, E R; (1928) *Notes and sketches made during two years on the Discovery expedition, 1925-1927*; Oxford: Holywell Press.
[735] Hart, T J; (1946) Report on trawling surveys on the Patagonian continental shelf; *Discovery Reports;* vol 23; pp. 223-408.
[736] FISO/122; Discovery Committee; *Dr. Hart's report on trawling surveys on the Patagonian continental shelf;* Falkland Islands Government Archive; 1946.

potential for commercial exploitation. There is only limited reference in the Report to offshore fish and fishing. The concluding comments of the Report are worthy of note:

> In the exploration of natural resources the primary function of the naturalist is to provide fundamental information on the nature, quantity and accessibility of the raw material. Thereafter, the administrator and technologist are in a better position to assess the prospects of commercial development … The primary object of these investigations was to provide information, upon which the prospects of carrying on any commercial fishery from the Islands could be assessed. It must be plainly stated that the results are not very encouraging; but this is due to economic and geographical factors, rather than lack of suitable fish.[737]

The 1946 Discovery Report concluded that the economic problems rendered large-scale commercial fishing impossible, but that there would be an opportunity for small-scale exploitation of Mullet and Falklands Herring (*Sprattus fuegensis*)[738] both caught by purse-seining, and for canned Centollón Crab (*Paralomis granulosa*).

Governor Clifford was disappointed with the Report's conclusions; he recognised that there would be considerable political difficulties with the Report's proposal that any fish caught could be sold or exported to Argentina. He was sceptical about the future prospects of involving the populace of the Islands in a future fishing industry: 'The local population are not "fish minded" on the whole. Fish are a nuisance to clean and prepare and "not food" anyway!' Clifford fully supported the efforts (which had begun in 1944) of the Government Naturalist to investigate the prospects for fishing. Clifford commented:

[737] Hart, T J; (1946); op. cit.; p 391.
[738] Agnew, D; (2002) Critical aspects of the Falkland Islands pelagic ecosystem: distribution, spawning and migration of pelagic animals in relation to oil exploration; *Aquatic Conservation: Mar. Fresw. Ecosyst.* No.12: 39-50.

> I tried to get this [fishing research] done with Dr. H [James Erik Hamilton, Government Naturalist] in charge of a three-year experiment. Boats were obtained, and the services of a professional fisherman secured. But the Discovery Committee turned down the scheme. It was great mistake for which the Colony will pay.[739]

In 1944 Dr. Hamilton wrote a long memorandum about the prospects for a future fishing industry.[740] It was the first local attempt to consider the economic potential of fishing - albeit coastal rather than offshore fishing. Hamilton acknowledged that very little was known about in-shore fisheries outside the work of the Discovery Investigations. He proposed a five-year research project to be funded by a grant (possibly from the Discovery Committee). The objects of the research were to be to increase the supply of fish locally, and to examine export potential. Hamilton wished to 'develop a fish eating habit' amongst the Islands population. He proposed, initially, to use the *Penguin* (a 15.8m former Government steam launch) and he stated that 'the real reason for the shortage [of fish] is the lack of capital to purchase adequate equipment and the absence of any fishing tradition.'[741]

Hamilton recommended the investigation of the potential of Mullet, 'Sprat Herring', Rock Cod, Mussels and Krill; Mullet could be taken with seine nets. Hamilton recalled that Vernet exported 80 tonnes of salted fish from Port Louis in the 18th century and that since then fishing had been a spasmodic affair - or a pastime amusement. Capital costs were calculated to be £4,900, and the recurrent costs would be £6,300 annually:

> There are no fishermen in the Falkland Islands, and an essential part of the proposed scheme will be the training of apprentices in the care and construction of gear and the art of fishing. It is hoped that in this way a skilled nucleus may be created capable not only of carrying on an

[739] FISO/122; Discovery Committee; *Dr. Hart's report on trawling surveys on the Patagonian continental shelf;* Falkland Islands Government Archive; 1946.
[740] CS135/43; *Memo on a future fishing industry*; Falkland Islands Government Archive; 1943-46.
[741] CS135/43; *Memo on a future fishing industry*; Falkland Islands Government Archive; 1943-46.

> industry which may be established by the research but also of founding that tradition upon which all permanent fisheries depend.[742]

The proposal was forwarded to the Colonial Office in 1946. The project was opposed by some people in the Islands on grounds of 'non-essentiality'; On 17 June 1948 Governor Clifford telegraphed the Secretary of State that 'fishing … would never take the place of mutton.'[743]

The Colonial Office approved a revised scheme costing £9,100 and funding was made available from the Colonial Development and Welfare Fund. A suitable 9.2m fishing vessel was found in Littlehampton but, after protracted negotiations, Governor Clifford had second thoughts, and the purchase was not completed. The Scheme was abandoned in 1946. The abandonment of this scheme illustrates well the difficulties of development in the Colony, post-World War II, due to the lack of finance within the Islands and the unwillingness of the British Government to undertake substantial investment in the Colony.

In 1962 the USSR scientific research vessel *Muksun* undertook a fishing survey around the Islands, and during 1962-1965 three Soviet deep-sea trawlers fished in the waters off the Islands. No permission was sought from the Islands Government for these expeditions. Three Japanese trawlers also engaged in experimental fishing in the waters off the Islands in July 1963.[744] The Soviet research vessel *Academik Knipovitch*, funded by the All-Union Institute of Fisheries and Oceanography of Moscow, operated in waters around the Islands in the late 1960s and the early 1970s. The result of these efforts was the large-scale exploitation of fish stocks, and also those around South Georgia, by Eastern European (especially the Soviet Union) fishing fleets. Other nations were also interested in the potential of the waters around the Islands: 'A Japanese trawler made three research/fishing voyages on the continental shelf of

[742] CS135/43; Memo *on a future fishing industry*; Falkland Islands Government Archive; 1943-46.
[743] CS135/43; Memo *on a future fishing industry*; Falkland Islands Government Archive; 1943-46.
[744] D/3/60/D; Falkland Islands Government Archive; July 1963.

the Falkland Islands during the Antarctic summer of 1973/1974.'[745] The Spanish vessel *Mar del Vigo*, the British vessel *Boston Lincoln* and the German (BDR) research vessels *Walther Herwig* and *Weser* also made fishing voyages in the mid 1970s. It is of note that most of these vessels were engaged in joint ventures with Argentina. Large-scale exploitation of fish stocks, particularly of Hake, by Argentina also began during this period.[746]

The Shackleton Report of 1976 reviewed the prospects for commercial exploitation of fish stocks in the waters of the Islands and South Georgia. The Report noted that the possibility to exploit fish stocks was great - especially 'the enormous potential of the virtually unexploited resource' [747] of Antarctic Krill. In addition it stated that:

> The fish species thought likely to be of the greatest importance in the Islands are the [Common] Hake (*Merluccius hubbsi*), including the Long-tailed Hake (*Macruronus magellicanus*) Croaker (*Micropagon opercularis*), Southern Blue Whiting [*Micromesistius australis australis*] and Falklands Herring [*Sprattus fuegensis*] … Expert opinion is that the sustainable yield of Blue Whiting may be in the order of one million tonnes per year. [748]

The Report outlined the scale of the fishing operations undertaken by Soviet and Japanese fleets:

> … reports indicate that Soviet fleets took about 350,000 tonnes of fish and krill in the western South Atlantic and Southern Ocean in six months in 1973 and [that] Japanese ships [are] not far short of that amount. FAO statistics show that in recent years Russian catches off

[745] White Fish Authority; *Fisheries opportunities in the South-west Atlantic - a report to the Foreign and Commonwealth Office on the fish stocks and prospects for exploitation*; December 1979; p 7.
[746] The predicted potential level of exploitation has never been achieved. A peak of 258,138 tonnes of Blue Whiting is reported by Csirke, J; (1987); op.cit.; p7, in 1983. (Note previous comments about the accuracy of FAO/Csirke's statistics.
[747] Shackleton, E; (1976); op.cit.; volume 1; p148.
[748] ibid.; volume 1; p147.

> South Georgia have varied between 50,000 and 450,000 tonnes annually.[749]

Consideration of co-operation with Argentina is expressly omitted in the Report, but Shackleton recognised that it would be beneficial to the Islands.[750] The Report is ambivalent about the economic prospects - despite the size of the fish stocks - for an Islands-based fishing industry. Six constraints to future development are outlined:

- lack of basic information
- lack of adequate harbours and other infrastructure
- lack of a management organisation
- lack of money required to finance an economic fishing operation
- lack of skilled local labour
- lack of developed markets for some species

The Report is unequivocal about the need for control and management:

> If the risks of over-investment, over-fishing, detrimental practices … affecting the fish stocks and the commercial viability of the fisheries are to be minimised, an effective system of management must be established. Currently, no such system exists in the Falkland Islands or Dependencies. [751]

The Report concluded its section on fishing by advising that a pilot development scheme be implemented for an Islands fishery and it calculated that £6M would be required to demonstrate the commercial feasibility of an offshore industry based on the Islands. 'The question is, rather, whether [the]

[749] ibid.; volume 1; p154. These figures are far higher than those that the USSR Government had declared to the FAO. The disparity is probably the result of the falsification of catch results, as has also occurred with Soviet whaling statistics.
[750] ibid.; volume 1; p164.
[751] ibid.; volume 1; p160.

British Government or Industry will set aside the funds necessary, or leave it to somebody else.'[752]

The Shackleton Report also reviewed the work of Leslie Stewart in 1975, and the Report recommended that the possibilities of a fish farming industry be re-examined.

It is of note that neither the 1976 nor the 1982 Shackleton Reports contain an appraisal of the potential of a squid fishery - which has become the dominant feature of Islands fishing. With the benefit of hindsight this omission is a serious one.

In response to the recommendations of the 1976 Shackleton Report, The White Fish Authority was commissioned by the Foreign and Commonwealth Office to evaluate the prospects of the fish stocks, and their commercial exploitation, in the South West Atlantic, in 1979.[753] The terms of reference were:

- To bring together all the information about exploitable resources
- To assess the likelihood of economic exploitation
- To estimate what revenue might accrue from a licensing regime
- To assess if a single exploratory voyage could resolve any uncertainties.

The Report begins by noting the significant fact that:

> The almost total loss to Britain of the traditional fishing grounds in the Northern Hemisphere has created renewed interest in the Southern Ocean as a source of supply and a means of gainfully employing parts of the distant water fleet which is still relatively modern.[754]

[752] ibid.; volume 1; p168.
[753] Hall, D; Cole, R; Thorpe, J; (1979) *Report on a visit by a fisheries team to the Falkland Islands in November 1978*; FCO Overseas Development Administration. See also: Hall, D; (1983) *A Report on the fisheries resources of the Falkland Islands*; FCO Overseas Development Administration; 1983. See also: White Fish Authority; (1979); op.cit.; p6.
[754] ibid.; p4.

The difficult political issues are also well understood by the Report:

> The waters around the Falkland [Islands] and their Dependencies are claimed by Argentina and are subject to dispute. HMG regards the waters as High Seas but will keep under review the question of extending fishery zones around both the Falkland [Islands] and their Dependencies to 200n.miles.[755]

A feature of Colonial Office and Foreign and Commonwealth Office policy for many years was a reluctance to impose territorial limits (*e.g.* early history of 20th century Southern Ocean whaling). The fear of reprisal by other maritime nations was a significant factor in determining British Government policy concerning territorial limits.

The Report concluded that there was some evidence to suggest that the Patagonian Hake had been seriously over-fished, and that production levels were close to, or had exceeded, the maximum sustainable yield.[756] In contrast, however, the stocks of Southern Blue Whiting had been under-exploited, and could provide the basis for the development of a fishery. South of the Antarctic Convergence fish stocks had been severely over-fished by Eastern European countries and were probably depleted.

Joint ventures would be the most commercially viable plan (the current British trawler fleet being unsuitable), and also that a 200 n.mile fisheries zone would be desirable - with foreign flagged vessels paying a licence fee to fish within the zone. The Report concluded that £2M annually (*i.e.* 2% of the estimated catch value) might be the amount of potential income for the Islands. However:

---

[755] ibid.; p4.

[756] Maximum Sustainable Yield (MSY) may be defined as: 'The greatest yield or catch that can be removed from a resource each year without impairing the ability of that resource to produce at that level and renew itself.' For purposes of this dissertation maritime definitions have been taken from: Harden-Jones, F R; (1994) *Fisheries Ecologically Sustainable Development: Terms and Concepts*: Hobart; Tasmania: Institute of Antarctic and Southern Ocean Studies.

> The available data on the fishing prospect within the 200 n.miles zone of the Falkland Islands are still insufficient to decide if a commercial operation is viable. A fishery in this area will heavily depend on the exploitation of the Southern Blue Whiting. [757]

Once again any discussion concerning the abundant stocks of squid - which have become the dominant species fished in the waters of the Islands - is omitted from this Report.

While all these Reports were being commissioned and written, during the 1970s and early 1980s, there was a general 'free for all' over the fishing grounds of the Islands and South Georgia. Hopes were high in the Islands that after the conflict of 1982, and the publishing of the second Shackleton Report, the situation might be better managed from a conservation point of view, and also to the financial advantage of the people of the Islands.

Immediately after the landing of British troops in May 1982, Lord Shackleton was commissioned to update the Report of 1976. The Report recommended the establishment of a 200 n.mile fishing zone around the Islands and South Georgia, and at long last the importance of the stocks of squid is noted.[758] The Report's recommendations are well summarised thus:

> We are aware that there is great potential wealth in the krill and the squid around South Georgia and elsewhere in this area; it is for this reason that in particular we have recommended the establishment [of maritime zones] around the Dependencies as well as the Falkland Islands … South Georgia may in the long run be of greater importance to the future development of the potential wealth of the South West Atlantic and the Antarctic than the Falkland Islands. We also emphasise the importance of the right conservation policies. [759]

[757] White Fish Authority; (1979); op.cit.; p63.
[758] Falkland Islands Interim Conservation and Management Zone; *Fisheries Report 87/88*; Fisheries Department of the Falkland Islands Government; 1989; p8.
[759] Shackleton; E; (1982); op.cit.; p3.

The 1982 Shackleton Report recommended that the proposal of the 1978 ODA team, concerning an inshore survey of the shellfish resource, should be implemented and that substantial investment (between £7M and £14M) be considered to provide the necessary onshore infrastructure. A preliminary study should be carried out to establish the commercial feasibility of salmon ranching in the Islands. Support for this project might come from the European Investment Bank as well as the ODA. The Report was clear that there was great economic potential, but it was uncertain as to which fishing method should be used in order to exploit it. [760]

The phenomena of endless report writing and scientific analysis but little effective action, so clearly seen in the history of farming in the Islands, is also seen in the history of the development of the fishing industry. While Britain analysed and considered, other nations were reaping a rich harvest. As will be seen later in this dissertation the fishing industry that eventually evolved in the Islands was one that was based, until very recently,[761] on offshore fishing and processing by foreign flagged, long-distance and autonomous fishing fleets. The Government of the Islands was content to receive the licence fees while allowing others to do the work and run the risks.

Despite an acknowledgement of the possibilities of a squid industry, once again the Shackleton team regarded Antarctic Krill as having the greatest potential. Hake and Southern Blue Whiting were the finfish considered having the best prospects.

Dr D. Hall, leader of the ODA team that visited the Falkland Islands in November 1978, re-worked his 1978 Report with a desk-study in 1983. The Report is fairly cautious about the prospects of problems the product, and the Report illustrates the fixed 'mind-set' of a number of consultants that have

[760] ibid.; p77.

[761] A locally based fishing industry is gradually developing; currently (2003) 23 ocean going fishing vessels are registered in the Islands. A socio-economic study of the Falkland Islands by Cooper & Lybrand in 1997 recommended that the Islands become more involved in "value-added downstream fish processing and marketing activities" see: Coopers & Lybrand; (1997) *Socio-Economic Study of the Falkland Islands - final report.* London & Stanley.

sought to advise both the British and the Islands governments. In the light of the current (2003) situation the following comment concerning fishing is noteworthy:

> … Grenadier, Red Cod, Whiptail Hake and Kingclip are likely to constitute 90% of the commercial catch off the Falkland Islands. Squid are unlikely to form more that about 1% of the trawl catch.[762]

Hall's Report carefully indicates where different species of fish may be caught, and the cost that might be incurred if they were to be exploited. But nowhere in the Report does Hall make any clear recommendation that the Islands Government ought to become involved in the industry. The Report also mentions one species of fish that has subsequently been caught with a large financial return, namely the Patagonian Toothfish (*Dissostichus eleginoides*):

> One of the British observers with the Taiyo survey of 1974/1975, Mr Roberts, himself an experienced fishing skipper, referred to this species as "the best eating of all Falkland fish, but hard to find." … this species gives high yields in manual filleting.[763]

In 1983 the increased fishing activity in the waters of the Patagonian Shelf and the Islands encouraged the Food and Agriculture Organisation of the United Nations (FAO) to commission a Report, which was updated in 1987.[764]

These FAO Reports, with the analysis of data collected by the Islands Government on activities around the Islands, highlighted the concentration of the squid fishery within 150 n.miles of the Islands. By 1985, the annual catch of *Illex* alone in the South West Atlantic was greater than 230,000 tonnes. In addition over 50,000 tonnes of *Loligo* was caught. *Illex* had emerged as the

---

[762] Hall, D; (1983) *A Report on the fisheries resources of the Falkland Islands*; FCO Overseas Development Administration.
[763] ibid.; p14.
[764] FAO; *Report of the Ad Hoc Working Group on fishery resources of the Patagonian Shelf*; FAO Fish Report 297; 1983. and: Csirke, J; (1987) FAO Fisheries Department; *The Patagonian fishery resources and the offshore fisheries in the South-West Atlantic*; FAO Technical Paper 286.

most important resource and, given the rapid increase to high levels of catch, gave the greatest cause for concern.[765]

In 1984 a joint agreement was signed by a Japanese fishing company (Taiyo), and the Coalite Group (the owners of the Falkland Islands Company). The agreement was known as the CTC Agreement (1984).[766] The CTC Agreement made provision for Government observers aboard the fishing vessels, and the vessels used were required to spend some time in specific areas. The venture was not intended to be purely a commercial operation. In return for these restrictions, CTC would be given some concessions in the event that a Fisheries Conservation Zone was declared. The Agreement made provision for up to nine vessels to have preferential licence fees and licence types *i.e.* for different fish species.

At one point in the history of the CTC Agreement the Islands Government challenged the validity of the Agreement on the basis that the fishing had been too much like commercial fishing, and there had not been enough exploration, but it was eventually conceded that no fundamental breach of the Agreement had occurred. The ODA employed three people locally (one scientist and two observers) and the Agreement was managed by the Falkland Islands Development Corporation. The observers were at sea during the period 1984-1986, and much information was collected.

In May 1986 an incident occurred in Islands waters which may well have given the British Government the final impetus to declare a 150 n.mile interim[767] Fishing Conservation Zone around the Islands. With the establishment of a Fisheries Zone, and a Fisheries Department in the Islands, the circumstances were suitable for managed commercial exploitation of the fish stocks around the Islands, with considerable financial benefit to the people of the Islands.

---

[765] Falkland Islands Interim Conservation and Management Zone; *Fisheries Report 87/88*; Fisheries Department of the Falkland Islands Government; 1989; p8.
[766] Coalite-Taiyo Company.
[767] FCO Briefing Paper; *Fishing around the Falklands*; November 1986.

At 0500 on 28 May 1986 an Argentine Coast Guard patrol vessel *Prefecto Derbes* chased and fired on the Chinese fishing vessel *Chii Fu 6* after their meeting at 49° 16´S 61° 02´W. The vessel was damaged but escaped safely. At 1430 another Chinese fishing vessel, the *Chain Der 3* was fired on while at 49° 01'S 60° 28'W. This vessel was 228 n.miles east of the nearest Argentine mainland and 175 n.miles from the centre of the Islands. The *Chain Der 3* caught fire and sank, and two of the crew were killed. The remaining 22 men were taken by the Argentine vessel to Puerto Deseado on the Argentine mainland. The Argentine action was based on its claim over the sovereignty of the Islands and thus, from the Argentine perspective, the Chinese vessel was within Argentine Exclusive Economic Zone. 'This incident centres on the controversial Argentine claims of national sovereignty and jurisdiction over the natural resources off the Islands.'[768] Foreign fishermen had commonly regarded the area as high seas, and it is clear that the Foreign and Commonwealth Office view was that:

> The shooting took place in international waters in which the freedom of fishing is enshrined in the United Nations Convention on Law of the Sea and other rules of international law.[769]

The British Government lodged a diplomatic protest in order to demonstrate its sovereignty over the Islands.

Concern had been growing about uncontrolled fishing in the South Atlantic and Southern Oceans throughout the 1980s.

> In the three years to 1986, fishing around the Islands tripled from 200 vessels to over 600. The area is one of the last unregulated fisheries in the world, where foreign fishing vessels are operating at levels which the fishery cannot bear. [770]

[768] Nien-Tsu, Alfred Hu; (1987) The Sino-Argentine 'Squid War' of 1986 ~ its implications for fisheries policy making; *Marine Policy*.
[769] ibid.; p135.
[770] FCO Briefing Paper; *Fishing around the Falklands*; November 1986.

Fishing for squid in the waters around the Islands had increased enormously; seven vessels in 1984 had caught 300 tonnes of squid, whereas in 1986 a catch of 60,000 tonnes of squid was obtained by 63 vessels. The incident with the *Chain Der 3* illustrated the difficulties of securing a multilateral agreement (principally with Argentina) on conservation of the fish stocks. Thus in 1986 the British Government finally acceded to request of the Islands Government to declare a 150 n.mile Interim Fisheries Conservation and Management Zone. The combination of a potential financial advantage (through the sale of licences), the desire to conserve the stocks, and the need to demonstrate British sovereignty, brought about a unilateral declaration that had been sought, by some, for many years.[771]

The late 1980s were productive years for squid fishing; licence revenue in 1987 was £12M and £19.6M in 1988. These large sums of money funded much development within the Islands, as well as the capacity to spend £6.5M in 1997/1998 on fishery research and the policing of the conservation zones by fishery protection ships and aircraft.

From the beginning of offshore fisheries management in the waters of the Islands, and the introduction of the Falkland Islands Interim Conservation and Management Zone, the primary objectives of the Islands Government have been (a) the conservation of resources and (b) long-term sustainable exploitation.[772] Since the introduction of the Interim Conservation Fishing Zone in 1986 (and the Outer Conservation Zone of 200 n.miles in 1990) until the present (2003) these objectives have been pursued with scientific, legal and political rigour. A clear illustration of the policy that provides the basis for the management of the fish stocks in the waters around the Islands can be seen in the following extract from an affidavit submitted to the Supreme Court of the Islands in 1990:

> The purpose of the [Falkland Islands Interim Conservation and Management Zone] FICZ is to conserve the resource, and thus ensure its

[771] FCO Briefing Paper; *Fishing around the Falklands*; November 1986.
[772] Barton, J; (2000) *Commercial Fishing: opportunities and conservation ~ striking a balance*; Stanley: Falkland Islands Government.

> continued productivity … to maintain the economic viability of the fisheries as a whole … to enable the Falklands to enjoy greater benefits from the resource … The restriction of the fishing to licensed vessels … is not a *purpose* of the FICZ but a *result* of the legislation … The main purpose of the licensing system existing under the 1986 Ordinance is to limit the number of vessels fishing within the FICZ. The raising of revenue by way of fees is very much subordinate to that purpose. The number of licences applied for to fish for Shortfin Squid *Illex* [*argentinus*] in the FICZ, since the FICZ was instituted have, in each relevant season, been several times greater than the number of licences granted. [773]

David Taylor, a former Chief Executive of the Islands Government has commented:

> To suggest that the raising of licence fees as being subordinate to the purpose of conservation is sheer hypocrisy, although this may have been an appropriate posture to adopt in court. The Islands have always been greedy to maximise revenue from the fishery, though in practice, the revenue and conservation aspects have been skilfully and responsibly balanced. Enlightened self-interest has been the rule.[774]

This conservative approach has resulted in these objectives being, on the whole, successfully achieved, and the fish stocks of the Islands are widely regarded as some of the best managed in the world. This caution has brought considerable rewards.[775]

Future licence revenue faces a number of threats:

---

[773] Affidavit by the Director of Fisheries of the Falkland Islands Government (Barton, J) in the matter of an application for Judicial Review by HM Queen in the matter of the Director of Fisheries of the Falkland Islands Government *ex parte* Fu Chun Fishing Company Limited; Sworn 10 January 1991; Matter No: SC/CTV/10/1990.
[774] David Taylor; pers. comm. May 2002.
[775] Barton, J; (2000) op.cit.

- a number of environmental implications in the area *e.g.* those caused by the exploration for hydrocarbons.
- fish stocks may be radically diminished by the overfishing of straddling stocks [776] or by changes in environmental factors *e.g.* changes in water temperature.[777]
- political pressures caused by the continuing claim by Argentina to the sovereignty of the Falkland Islands.

Despite these threats the Director of Fisheries has commented that for the present, in the medium-term, revenue levels were fairly secure.

The squid fisheries of the Islands were managed, until the late 1990s, to enable a proportional escapement of 40% or better.[778] This technique has now been replaced by a method known as the 'absolute escapement target.'[779] The target for *Illex argentinus* is to ensure that at least 40,000 tonnes of spawning stock biomass survives the fishing in one season. The equivalent figure for *Loligo gahi* is 10,000 tonnes. Daily monitoring takes place throughout the season. When it appears that insufficient squid are going to be left at the end of a season, the fishing season is closed. There is an agreement with Argentina that if there is consensus that there might be a stock conservation problem with *Illex argentinus,* then both Argentine and the Islands fisheries will close early.

Fishery protection is a key element in any fishery management, and the Islands Government has invested large sums of money in purchasing or leasing aircraft and protection vessels, and staffing these assets, to enforce its conservation

[776] Straddling stocks may be defined as those that range across jurisdictional boundaries.
[777] Rodhouse, P; (2002) [British Antarctic Survey marine biologist] No more surprises from evanescent squid; *Science*; Vol 296; 10 May 2002.
[778] Proportional escapement has been defined as the numbers of spawners alive at the end of the fishing season as a proportion of those that would have been alive had there been no fishing. See: Beddington, J., Rosenberg, A., Crombie, J., Kirkwood, G., (1990) *Stock assessment and the provision of management advice for Short Fin Squid fishery in Falkland Islands waters*; Falkland Islands Government.
[779] The change to 'Absolute Escapement Target' (AET) was made in 1995 in the case of *Illex,* and as a result of an agreement with Argentina. Following a review of the previous fishing season by RRAG in 1996/97 the management of *Loligo* was also changed to 'Absolute Escapement Target' in 1997. Because of the seasonal fluctuations in the stock biomass percentage methods were found to be too imprecise.

policies. During some seasons, when large catch rates are achieved, poaching can be a significant problem. Finding such vessels is generally easy, arresting and prosecuting poachers is much more difficult. When prosecutions have been successful very large fines and confiscation of catch and fishing gear has resulted. Poaching will continue to be a problem, but it is generally agreed that within the waters of the Islands it can be reduced to a tolerable amount - particularly now that the fisheries patrol vessels are armed.

There are conservation issues, other than simply the husbandry of the fish stocks, which must be resolved in response to commercial fishing on this scale in the Southern Atlantic and Southern Ocean *i.e.* the interaction between fisheries and wildlife. This issue is currently (2003) being examined by both the Fisheries Department of the Islands and also by Falklands Conservation. [780]

It is largely agreed that commercial fishing in the Islands probably does have effects on the ecosystem of the South West Atlantic, but that fishing is only one component of a very complex system. The current Islands Government policy (2003) seeks to manage the fishing industry within that system, and not apart from that system. It has proved to be difficult to measure the effects of commercial fishing, but there is general recognition that fishermen and conservationists must collaborate to understand these complex interactions.

At the time when the Falkland Islands Conservation and Management Zones were being established in 1986 and 1990, the FAO & Csirke could write:

> With respect to the possible effects of the fisheries on the ecosystem and other marine populations, the information is too scarce to allow adequate assessment. However, it is pointed out that under present circumstances there is little likelihood that the offshore pressure in the South West Atlantic will have a greater impact on the ecosystem of this area than

[780] Barton, J; (2000) *Fisheries and fisheries management in Falkland Islands conservation zones*; Stanley: Falkland Islands Government.

> that produced by some other fisheries with similar characteristics in other parts of the world. [781]

But many would not regard this view to be valid today. The trend for some wildlife species does show a long-term decline in numbers, and it has been suggested that the fisheries are a possible cause. But:

> … at least in some documented cases the onset of decline in seabird or marine mammal numbers, pre-dates the advent of commercial fishing activity … some wildlife populations have been static or increasing. Competition for resources between the fishing fleet and seabirds is considered low at present, but is an area where further work needs to be done.[782]

Specific conservation issues are being studied *e.g.* seabird mortality [783] as the result of the effects of long-lining methods of fishing for Patagonian Toothfish. The impact of a demersal long-line fishery upon seabirds (mainly albatross) can be considerable. Long-lining is a specialist fishery, which uses thousands of baited hooks on a wire many kilometres in length. When the line is discharged from the stern of the vessel many albatrosses can be caught in their attempts to retrieve the bait. Albatross mortality can be greatly reduced by the use of bird scaring devices and heavy weights on the lines so that the lines sink faster. With licensed long-line vessels the problem of seabird mortality can be largely overcome, but with unregulated and illegal long-line fishing the level of mortality remains high.

---

[781] Csirke; J; (1987) op.cit.
[782] Barton, J; (2000) op.cit.
[783] Huin, N; (2001) *Seabird by-catch in Patagonian shelf waters*; Falklands Conservation; February 2001. and: Huin, N; (2001) *Census of the Black-browed albatross population of the Falkland Islands*; Falklands Conservation; April 2001. See also: Department of Conservation; *Report on the International Fishers' Forum on solving the incidental capture of seabirds in long-line fisheries*; Auckland, New Zealand; 6-9 November 2000. See also: Brothers, N., Cooper, J., & Løkkeberg, S.; (1999) The incidental catch of seabirds by long-line fisheries: world-wide review and technical guidelines for mitigation; *FAO Fisheries Circular No. 937*.

It is of note that during the same period when long-line fishing has become widespread in the Southern Oceans there has been a major decrease in the numbers of Black-Browed Albatross (*Thalassarche melanophys*).[784]

The Islands Government now require all long-line fishing vessels to have an observer aboard to monitor seabird by-catch at all times, and use all means possible to minimise any such by-catch. [785]

Recent research estimates that an average of 16,500 seabirds (this includes 10,400 Black-browed Albatross) are killed annually by long-line fishing vessels operating on the Patagonian Shelf. The most recent (2001) survey of breeding pairs of Black-browed Albatross, in the Islands, shows a decrease of 86,000 pairs in the past five years, *i.e.* 17,000 pairs per annum. [786] Much more research on the effects of offshore fishing, in Islands waters, upon wildlife remains to be done.

§ d. Offshore fish and fishing in South Georgia waters.

At least 40 species of fish have been recorded in South Georgia waters; eighteen species have appeared in the catch statistics of the Southern Ocean; eight species have been target species and four species are commonly found as by-catch.[787] Approximately 60% of all finfish catches reported to CCAMLR between 1969 and 1997 took place around South Georgia.

The fisheries of South Georgia lie approximately 800 n.miles south-east of the Islands at 53° 56´S and 34° 45´W. When combined with the waters of the South Sandwich Islands they are the most important fishing grounds in the Atlantic sector of the Southern Ocean. Approximately 80% of all Southern Ocean catches reported are taken in the waters adjacent to these islands. Between 1981

[784] Tickell, W L; (2000) *Albatrosses*; Sussex: Pica Press; p370.
[785] ibid; p370.
[786] Huin, N; (2001) op.cit. p18.
[787] By-catch may be defined as 'the catch of non-target species and undersized fish of the target species. By-catch of commercial species may be retained or discarded along with non-commercial by-catch.' See: Lockwood, S (Editor); (2001) *A glossary of Marine Nature Conservation and Fisheries*; Countryside Council for Wales; p27.

and 1993 the total reported catch was 2,289,302 tonnes; 94% of this total was taken by ships of the USSR.

> The British Government has implemented a Fisheries Conservation and Management Regime around South Georgia and the South Sandwich Islands following the declaration by the Commissioner of South Georgia and the South Sandwich Islands (SGSSI)) of a Maritime Zone on 7 May 1993 … all vessels wishing to fish within the 200 n.mile Maritime Zone … must be licensed … Management of the fisheries around South Georgia and the South Sandwich Islands is conducted under the procedures and regulations laid down by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) … Licence fees to fish within the SGSSI Maritime Zone reflect the costs of monitoring, surveillance, administration and analysis of data from the fishery.[788]

The earliest account of the abundance of fish in the waters of South Georgia is in Edmund Fanning's accounts of his journeys. While at anchor in the Bay of Isles a member of the crew of the *Aspasia*:

> … [took] a fine cod, some eighteen inches in length … this was followed by his frequently catching them in pairs … These fish were found to be largest in deep water … some weighing between thirty and forty pounds.[789]

Headland notes that this may be regarded as the discovery of the Antarctic fishery.[790]

---

[788] The Government of South Georgia and the South Sandwich Islands; *An overview of the Fisheries of South Georgia and South Sandwich Islands*; Fisheries and Conservation and Management Regime; February 1996.

[789] Fanning, E; (1833) *Voyages and Discoveries in the South Seas 1792-1832;* Collins & Hannet; New York; Reprinted by Marine Research Society; Salem; MA; 1924. For a historical review of Antarctic ichthyology see: Headland, R K; (1990) *A historical review of Antarctic ichthyology*; in Gon, O and Heemstra, P. *Fisheries of the Southern Ocean*; Grahamstown; South Africa: J L B Smith Institute of Ichthyology.

[790] Headland, R K; (1990) *A historical review of Antarctic ichthyology*; in Gon, O and Heemstra, P. *Fisheries of the Southern Ocean*; Grahamstown, South Africa: J L B Smith Institute of Ichthyology, op.cit.

The early Southern Ocean and Antarctic expeditions made significant discoveries concerning fish. During the James Ross Clark Expedition (aboard HMS *Erebus* and HMS *Terror*) Joseph Hooker noted nine different *Notothenia* species, and he made the first description of an Icefish *Channichthyidae*. A major component of the 1872-1876 HMS *Challenger* expedition was ichthyology. The German Polar Year Expedition (1882-1883) aboard the *Moltke*, based at South Georgia, 'made a comprehensive collection of fish which was described in considerable detail - four of these were new species.'[791] The Swedish South Polar Expedition (1901-1903) reported that *Notothenia rossii* was the most common fish found at South Georgia, and that very large specimens could be caught offshore, and also that Mackerel Icefish *Champsocephalus gunnari* was so common that they might be of commercial value.[792]

The earliest attempt at commercial fishing at South Georgia was made by Captain C A Larsen:

> The fleet at King Edward Cove is to be increased shortly on the arrival of a schooner now on her way; with which Captain Larsen intends to start fishing for cod, to be cured and sold in the Argentine. I am not able to judge whether this new industry is likely to be successful, but Captain Larsen is himself hopeful, and if he finds that they cannot catch enough here he may send her over to the Patagonian Coast to try there.[793]

The success of these first fishing attempts is not known. After Larsen's departure from South Georgia, Compañia Argentina de Pesca did not try fishing again until 1937 when it requested a licence to fish with purse-seine nets; it is not known if any fishing took place.[794]

---

[791] ibid.; p67.
[792] Lönnberg, E; (1906) The Fishes of the South Polar Expedition; *Wiss.Ergebn. schwed. Südpolar-Exped*; vol 5(6); pp. 1-69.
[793] Report of Commander M Hodges, RN (HMS *Sappho*) to Governor Allardyce; 11th February 1906; Enclosure 1 to Confidential Despatch 28 March 1906; Governor Allardyce to Secretary of State for the Colonies; Confidential Despatch Book Vol.B30; Falkland Islands Government Archive; 1906.
[794] Clausen, G; to William Brandt & Sons and Company; 3 August 1937; MSS SPRI 1228/10.

In March 1917 Captain Pederson, at Husvik Harbour, applied for a one-year licence to fish for cod. The Stipendiary Magistrate enthusiastically supported the proposal. The Governor sought guidance from the Secretary of State for the Colonies, and advice was received from the Natural History Museum. The Museum's report was encouraging; although it suggested '… the future of the fisheries of the Patagonia-Falklands area may prove more important than those of South Georgia.'[795] For reasons which are unclear, Pederson's application was rejected.

In 1919 the Interdepartmental Committee on Research and Development in the Falkland Islands Dependencies considered the possibility of a commercial fishery based on the resources in the waters around the Islands and South Georgia. The Committee's report was cautious about the prospects, but it recommended that a careful survey be made of 'all the probable sites for accumulations of fish'[796] and although the prospects for fisheries at South Georgia appeared to be inferior to those of the Islands, 'there seems to be quite a possibility of an industry of some value.'[797]

As a result of the Report's recommendations the Islands Government promulgated a revised *Ordinance to regulate the Sea Fisheries*. Between 1925 and 1951 *Discovery, Discovery II* and *William Scoresby* took part in a total of 14 expeditions and much research was accomplished. Accounts of this research are found in the many volumes of the Discovery Reports.

During the early part of the 1950s it became apparent that the future of the whaling industry was uncertain, and a number of the whaling companies began to look for other means of increasing their revenue. At the Husvik whaling station, Tønsberg Hvalfangeriet employed a Norwegian ichthyologist - Steinar

[795] Natural History Museum to Under Secretary of State for Colonies; 7 March 1917; MSS SPRI 1228/10.
[796] Interdepartmental Committee (1920); *Research and Development in the Dependencies of the Falkland Islands*; Cmd.657; HMSO London; pp. 122-126; Memorandum on the possibility of developing fisheries in the Dependencies of the Falkland Islands, by J O Borley.
[797] ibid.; p126.

Olsen - to assess the potential for fish oil and fishmeal.[798] Results were disappointing, and because the world prices for fishmeal and oil were low, the project was abandoned. Headland commented:

> … Olsen's works on *Notothenia rossii* [Antarctic Cod], *Chaencephalus aceratus* [Scotia Sea Icefish], *Champsocephalus gunnari* [Mackerel Icefish], and *Pseudochaenichtys georgianus* [South Georgia Icefish] were the beginning of studies of the biology of Antarctic fishes, which had potential for commercial exploitation.[799]

In 1951 a Panamanian registered fishing company requested permission to fish in the waters around South Georgia.[800] The Tønsberg Whaling Company applied in 1959 for a licence to fish in order to be able to supply Petfoods Ltd. of Melton Mowbray with fish and fish livers. [801] In 1961 the Whaling Company - Albion Star (South Georgia) Ltd. - applied for a licence to use their seal catchers for fishing.[802] None of these ventures appears to have resulted in any fishing. In 1963 Salvesen applied for fishing licences on behalf of the last whaling companies operating in South Georgia - Nippon Suisan Kaisha Ltd and the International Fishery Company. The application was for licences to fish by a variety of methods, including gillnets, trawling and longlining, and licences were issued. [803] Despite the large quantities of fish that had been found in the waters around South Georgia for fifty years, shore-based fishing, at South Georgia, was a failure.[804]

---

[798] Olsen, S; (1954) South Georgian cod, *Notothenia rossii; Norsk Hvalfangst-tid;* 1954; vol 43(7); pp. 373-382. See also: Hureau, J-C and Slosarczyk, W; (1990) *Exploitation of Antarctic fishes and recent ichthyological research in the Southern Ocean* in: Gon, O. and Heemstra, P., (Eds.) Fishes *of the Southern Ocean*; op.cit.; pp. 52-63.
[799] Headland, R K; (1990); op.cit.; p4.
[800] Bartha, G (President, South Atlantic Fish Factory Inc.) to Government Magistrate, South Georgia; 20 November 1951; MSS SPRI 1228/10.
[801] Administrator, South Georgia; telegram to Colonial Secretary; 10 April 1959; MSS SPRI 1228/10
[802] Albion Star (South Georgia) Ltd. to Administrative Officer, South Georgia; 4 December 1961; MSS SPRI 1228/10.
[803] MSS SPRI 1228/10.
[804] Dickinson, A.(1985); South Georgia fisheries: some early records; *Polar Record*; Vol. 22; No.139; January 1985; p436.

The Japanese research vessel *Umitaka Maru* conducted bottom trawl research in 1962: 'It is likely that these activities, as well as their abandonment, were closely linked to those of the Japanese whaling companies.'[805]

Soviet fisheries exploration began in 1955, during the International Geophysical Year aboard a number of research vessels - principally the *Ob.* In 1962 the *Muksun,* of the Research Institute of Kaliningrad, conducted research on krill stocks in the Scotia Sea. Some bottom trawling trials were also conducted in South Georgia waters. This research was continued by the voyages of *Akademik Knipovich,* which began in 1964. Commercial quantities of Krill (*Euphausia superba*) were caught during the first expedition. 'During the same season four Soviet trawlers were operating off the South Orkney Islands.'[806] This research programme heralded a massive expansion in the fishing effort of Eastern Bloc countries in the Southern Ocean in 1969/1970. '… the exploratory fishing by the Soviet Union during the mid-'60s quickly developed into large-scale commercial fishing in the vicinity of South Georgia.'[807]

Polish research expeditions began in 1975 with the research vessel *Professor Siedlecki,* and the German (BDR) research vessel *Walther Herwig* [808] surveyed the Drake Passage in during the 1975-1976 season.

> The beginnings were very promising: nearly 400,000 of *Notothenia rossii* were caught off South Georgia in the 1969-1970 season. What followed was a decline, but catches for the next two years remained at a high level of 210-220,000 tonnes … The following season brought a drop in the catch down to 35,000 tonnes.[809]

The Shackleton Report of 1976 commented briefly on the prospects for commercial fishing in the waters around South Georgia. The Report was

[805] Kock, Karl-Herman; (1992) *Antarctic fish and fisheries*; op.cit.; p176.
[806] Headland, R K; (1990); op. cit.; p4.
[807] Hureau, J-C and Slosarczyk, W; (1990); op. cit.; p52.
[808] Everson, I; (1978) Antarctic Fisheries; *Polar Record*; Vol. 19; No.12; September 1978; pp. 233-251.
[809] Hureau, J-C and Slosarczyk, W; (1990); op. cit.; p56.

principally concerned with the exploitation of the stocks of krill. The Report warns of the danger of over-exploitation. [810] The Report acknowledged that the UK fishing industry did not have an immediate interest in the fish resources in the Southern Ocean, but that it was important to see that the resource was not overexploited 'by the time they wish to enter it.'[811]

> The past history of British research in this area carried out by [the] Discovery Investigations, and the possession of South Georgia, would give the UK a seat at an international conference called to negotiate such regulations but the lack of specific research programmes on krill would leave the British delegates with a voice of relatively minor importance.'[812]

From 1976 onwards there was a large increase in fishing by the Soviet Union, Poland, Bulgaria and the German Democratic Republic, and with the extension of the fishing grounds to include the South Orkney Islands, annual catches of 355,000 tonnes were reported. [813] Catches of *Notothenia rossii* were declining and thus the main target species was *Champsocephalus gunnari*. Substantial catches of *Pseudochaenichtys georgianus* were also made off South Georgia. When one fishing ground became exhausted, others were found in different parts of the Southern Ocean, but by 1988 the total reported catch from all fishing grounds of the Southern Ocean (including South Georgia) was only 88,000 tonnes. As the catches of finfish declined, other species were taken - most notably krill. In the 1981-1982 season the Soviet Union's fleet took 490,000 tonnes of krill.

Krill is currently (2003) fished by Russian vessels; other major target species are the Patagonian Rock Cod (Yellow-finned Notothenii) *Patagonotothen guntheri,* and the Lanternfishes (Myctophidae).

---

[810] Shackleton, E; (1976); op. cit.; volume 1; p169.
[811] ibid.; volume 1; p170.
[812] ibid.; volume 1; p170.
[813] Caffin, J; (1979) Trawlers off South Georgia; *Antarctic*; Vol. 8; No.11. September 1979; p391.

The first two phases of Southern Ocean fishing, carried out primarily by vessels from the Soviet Union fished several species near to extinction. Mark Belchier has commented: 'This activity needs to seen in the context of the massive expansion of the deep sea Soviet fleet around the world.'[814]

With the decline in the traditional fishing grounds in the Northern hemisphere, and the greatly increased activity in the Southern Ocean, the FAO established the Southern Ocean fisheries survey programme in the mid 1970s.[815] In 1977 the Antarctic Treaty Consultative Group met in London to 'discuss for the first time the possibility of establishing a convention for the conservation of marine living resources in the Antarctic.'[816] The result of this meeting was that on 20 May 1980 representatives from 15 countries met in Canberra and signed the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR). The CCAMLR Secretariat [817] was established in Hobart, Tasmania.

In 1979 The White Fish Authority was commissioned by the Foreign and Commonwealth Office to report on the fish stocks in the waters of both the Islands and South Georgia, and to outline the prospects for exploitation.[818] This Report is very limited in its terms of reference and cautious in its conclusions, and is, once again, dominated by the consideration of the commercial prospects for a krill industry. It acknowledged that stocks of Hake had been severely overexploited in Islands waters, and Antarctic Cod and Icefish have suffered the same fate in South Georgia's waters. As far as the fish found in South Georgia is concerned: 'Both groups of species would have considerable potential for the UK market if sufficient concentrations could be found.'[819] The Report commented that the UK would face a major technical difficulty if it were

[814] pers. comm. January 2002.
[815] Everson, I; (1977) *The Southern Ocean; the living resource of the Southern Ocean;* FAO.
[816] Hureau, J-C and Slosarczyk, W; (1990); op. cit.; p61.
[817] Constable, A; de la Mare, W; Agnew, D; Everson, I and Miller, D; (2000) Managing fisheries to conserve the Antarctic marine ecosystem: practical implementation of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) *ICES Journal of Marine Science*; 2000; vol 57: pp. 778-79.
[818] The White Fish Authority; (1979) *Fisheries opportunities in the South West Atlantic: Report to the Foreign and Commonwealth Office on the fish stocks and prospects for exploitation*; December 1979.
[819] ibid.; p2.

decided to fish in the Southern Ocean, *i.e.* the main unit of the British fishing fleet - the whole fish freezer - was unsuitable. It concluded that whereas there was good reason to send one exploratory fishing vessel to Islands waters, 'a commercial fishing operation by British vessels off South Georgia looks, therefore, not feasible at the moment.'[820] In hindsight the Report's conclusions about a potential licence revenue scheme operating within a 200 n.mile zone was a considerable underestimate. It concluded that revenue for both the Islands and South Georgia would be unlikely to exceed £2M.[821]

> A catch-related licensing system would be difficult to administer; a flat licence per trawler might be preferable. But surveillance of fishing effort is likely to be difficult and expensive and may not be justified, in relation to the anticipated income.[822]

A number of conservation measures have been introduced in the waters around South Georgia. In 1984 fishing was prohibited within 12 nautical miles, and a minimum mesh size was imposed; in 1985 fishing for *Notothenia rossii* was prohibited; in 1987 the total catch of *Champsocephalus gunnari* was restricted initially by CCAMLR to 35,000 tonnes. Other restrictive measures were introduced by CCAMLR from 1990 onwards - principally the requirement for fishing nations to adopt a five-day catch reporting system.

Chilean fishing vessels first investigated Patagonian Toothfish (*Dissostichus eleginoides*) in Chilean waters as early as 1955 [823] and by the early 1980s longline gear capable of working to a depth of 1,000m had been developed. This enabled a commercial fishery for Patagonian Toothfish to be established in Chile. Since this date Chilean vessels have taken between 5,000 and 10,000 tonnes of Patagonian Toothfish annually. Soviet vessels began experimental longline fishing, in the waters around South Georgia, for Patagonian Toothfish

[820] The White Fish Authority; (1979); op.cit.; p64.
[821] But note that revenue from licences in South Georgia alone has risen from £109,000 in 1993 to £2.6M in 2001.
[822] The White Fish Authority; December (1979); op.cit.; p67.
[823] Moreno, C; (1991) Hook selectivity in the longline fishery of *Dissostichus eleginoides* (Nototheniidae) off the Chilean coast; *Selected Scientific Papers*; 1991; CCAMLR (SC-CAMLR-SSP/8); p108.

in 1985-1986, and this developed rapidly into commercial exploitation from 1988 onwards.[824]

Since 1990 other measures have been introduced by CCAMLR which include severe restrictions on the catching of Patagonian Toothfish [825] and the Antarctic Toothfish (*Dissostichus mawsoni*). In 1991 fishing for *Champsocephalus gunnari* was prohibited. The fishery for *Champsocephalus gunnari* was re-opened in 1995 and the total allowable catch (TAC)[826] was set at 1,000 tonnes. Currently (2003) catches of all species of Toothfish in SGSSI waters is limited to 5,800 tonnes. [827] CCAMLR advocates a policy of very conservative fish stock management, and TAC are reviewed and assessed annually.

Since the late 1990s Japanese research vessels have explored the possibility of exploiting stocks of Centolla crabs; this research has been tightly regulated under the auspices of CCAMLR.

Despite these measures and the introduction of the Maritime Zone in 1993, it has proved to be difficult and expensive to police the South Georgia fishery because the island is so remote.

In common with the commercial exploitation of fishing grounds throughout the world (as was also the case with the exploitation of whales in the Southern Ocean) commercial fishing was well underway before studies to assess the impact of fishing on the fish population had begun.

> The history of the Antarctic finfish fishery in its commercial phase followed in the footsteps of many other regional fisheries, showing how

[824] Kock, Karl-Herman; (1992) *Antarctic fish and fisheries*; Cambridge: Cambridge University Press.
[825] 'This species [*Dissostichus eleginoides*] is now the most important in monetary terms in the SGSSI Maritime Zone'. South Georgia and South Sandwich Islands Government; *South Georgia and South Sandwich Islands Maritime Zone - fisheries conservation and management regime*; February 1996; p4.
[826] Total Allowable Catch is defined as: 'The catch allowed to be taken from a managed fishery in accordance with a management plan.' See: Harden Jones, F; (1994) *Fisheries Ecologically Sustainable Development: Terms and Concepts*; Institute of Antarctic and South Ocean Studies; Tasmania; p152.
[827] The current (2003) TAC of Toothfish in all CCAMLR controlled areas is 10,500 tonnes.

> rapidly a newly-developed fishery can reach the level of over-exploitation … The future of the finfish fishery in the Southern Ocean depends at present on recovery of those already overexploited stocks and the only way to restore them is through further restrictions and rigorous fishery management.'[828]

The operation of commercial fisheries has had serious effects on the marine ecosystem of the Southern Ocean. Kock outlines the three main ways that marine mammals and birds interact with fishing operations thus:

- by benefiting from consumption of discards and offal
- by competition for the same resource
- by suffering detrimental effects directly from fishing gear (hooks, nets and the ingestion of plastic materials. [829]

Current evidence suggests that benefits are small, and that constant monitoring is needed to minimise the adverse effects. Previous comments made in this dissertation concerning the decline in some species of seabird suggest that fishery activity may have to be restricted to enable bird and fish populations to recover. Kock commented about competition for Icefish thus:

> Since these predators [*i.e.* seals and birds] exploit the same size groups that form the bulk of the catch in the fishery at South Georgia … there is clearly a likelihood of extensive competition between the two.[830]

[828] Hureau, J-C and Slosarczyk, W; (1990); op.cit; p63. See also: Constable, A; de la Mare, W; Agnew, D; Everson, I and Miller, D; (2000) Managing fisheries to conserve the Antarctic marine ecosystem: practical implementation of the Convention of the Conservation of Antarctic Marine Living Resources (CCAMLR); *ICES Journal of Marine Science*; 2000; Vol 57; No 3; pp 778-791.
[829] Kock, Karl-Herman; (1992) Cambridge: Cambridge Univesity Press; *Antarctic fish and fisheries*; p247.
[830] ibid.; p24

Incidental mortality caused by fishing remains a problem. Fur seals entangled in discarded fishing gear are now regularly observed at South Georgia.[831] Longline fishing for Toothfish is of particular concern because of the potential for accidental entrapment of seabirds. The Government of South Georgia and the South Sandwich Islands has instituted management methods to minimise seabird mortality. CCAMLR has resolved that there shall be no pelagic driftnet fishing in the waters around South Georgia.

Bottom trawling is known to have considerable destructive effects on benthic life and habitat. Benthic organisms are the principal food source for Nototheniids, and the ban of bottom trawling around South Georgia since 1990 provides an important safeguard.

In the past catch amounts have been misreported, and fishing fleets have failed to reduce their efforts early enough when catches have diminished. With the collapse of the Soviet Union (which had been the most important fishing nation in the Southern Ocean) the activities of their distant water fleets have been drastically reduced. This may prove to be a blessing because:

> Even after a restoration of the depleted stocks and with a proper fisheries management under the auspices of CCAMLR, the shelf waters of the Southern Ocean are unlikely to yield more than 100 kt. of finfish per year.[832]

The Toothfish fishing industry is closely monitored. A recent (2001) assessment of the South Georgia Toothfish fishery was undertaken on behalf of the Government of South Georgia and South Sandwich Islands to determine the degree of compliance with the Marine Stewardship Council (MSC) Principles and Criteria for Sustainable Fishing. The Report recommended that the South

---

[831] Croxall, J; (1996) Reproductive performance, recruitment of and survival of Wandering Albatrosses (*Diomedea exulans*) at Bird Island, South Georgia; *Journal of Animal Ecology*; 1996; 59 pp. 775-796.

[832] Kock, Karl-Herman; (1992) *Antarctic fish and fisheries*; op.cit.; p266. See also: George, A; (2001) A fishy future for South Georgia; *Natural Environment Research Council News (NERC); Annual Report 2000-2001*; p6.

Georgia Patagonian Toothfish longline fishery should be certified as complying according the MSC principles and criteria. [833]

The Australian Government has recently (2001) proposed that Toothfish be listed as a CITES 2 species.[834] In a pers. comm. Mark Belchier [835] has stated that this is currently being debated within CCAMLR, and such a listing could have far-reaching consequences for the management of the fishery.[836]

The major challenge now facing the Government of South Georgia and the South Sandwich Islands is containing the threat posed to fish stocks by illegal fishing, and not from the activities of regulated and licensed fishing companies. Illegal vessels that do not adhere to international or national regulations, or take precautions against seabird mortality, have been estimated, by some environmental pressure groups to catch as much as 80% of the total catch of Patagonian Toothfish.[837] In an attempt to control the situation CCAMLR has implemented a Catch Documentation Scheme; it requires that all Toothfish imported into the territory of a CCAMLR signatory country has full catch documents irrespective of where it is caught.

> The CCAMLR Catch Documentation Scheme is unique in that it is a scheme developed and adopted by an international inter-governmental organisation with the aim of conserving stocks of fish occurring within its jurisdiction, but which has implications for harvesting of the species outside its jurisdiction … with the goal of making trade in toothfish caught in the Convention area in an Illegal, Unregulated or Unreported [IUU] fashion extremely difficult and uneconomic, and ultimately to eliminate all IUU fishing.[838]

---

[833] Holt, T; Medley, P; Rice, J; Cooper, J; Hough, A; (2001) *Certification Report for South Georgia Toothfish Longline Fishery*; Moody Marine.; p38.
[834] *CITES* - Convention on International trade in endangered species of wild fauna and flora (1973).
[835] January 2002.
[836] Pers.comm. January 2002.
[837] Holt, T; Medley, P; Rice, J; Cooper, J; Hough, A; (2001); op.cit.
[838] Agnew, D; (2000) The illegal and unregulated fishery for Toothfish in the Southern Ocean, and the CCAMLR catch documentation scheme; *Marine Policy*; 24; 2000; p370.

It is difficult to assess the scale of IUU fishing and it remains a significant problem,[839] but the cost of maintaining adequate fishery patrolling over such a large area is seen by some to be economically prohibitive. Remote sensing by satellite might prove to be of great assistance, but the difficulties of policing such a large and remote area are considerable.[840] Conservation can only be achieved by implementing strict management measures. Currently (2003) IUU in the waters of South Georgia is at a very low level when compared to other sub-Antarctic areas, *e.g.* Prince Edward Island. Should the stocks of fish, from these other areas, collapse, there is a major concern that IUU vessels might move into South Georgia waters.

[839] Holt, T; Medley, P; Rice, J; Cooper, J; Hough, A; (2001) *Certification Report for South Georgia Toothfish Longline Fishery*; Moody Marine.; op.cit. p4.

[840] In a pers. comm. January 2002, Dr. Mark Belchier comments that banning fishing for toothfish would reduce the finance available for the funding of fishery patrols. 'A moratorium would make matters worse … The requirement for licence revenue is a good example of fiscal limitations on Government policy.'

19. The degradation of the natural environment of the Islands and the failure to conserve

'At the bottom of it all lies the profit motive, and to hell with the rest' [841]

This concluding chapter is divided into three sections: a. Introduction. b. Factors that have contributed to the degradation of the natural environment of the Islands and the failure to conserve. c. Concluding remarks.

In this section of the dissertation it should be remembered that past generations held several different values and beliefs about nature, and human responsibility towards it, from those generally prevailing today. Some actions deemed appropriate in the past, may rightly be judged to be at fault according to current values.

§ a. Introduction.

In the light this account of human involvement in the Islands and South Georgia the blunt words of a former Manager of the Falkland Islands Company farms are difficult to disagree with: 'At the bottom of it all lies the profit motive, and to hell with the rest'. Despite the proud claim that the Islands are 'The Land where Nature is still in charge' the evidence of the four case studies described above suggests that humans have substantially altered the natural environment of the Islands and South Georgia and that the overall effect of this manipulation has been deleterious. With a few notable exceptions, the account outlined above demonstrates a general inability to conserve or preserve the natural environment.

Put at its simplest the facts are stark:

- The effects of a ranching-style farming industry during the past 140 years upon native grasses

[841] pers. comm. Brook Hardcastle February 2001.

- The reduction of Tussac Grass area of the Islands from approximately 22,181 ha to approximately 4,159 ha.
- The effects of burning of Whitegrass and Tussac Grass
- The effects of the introduction of exotic species *e.g.* cattle, sheep, pigs, reindeer, rats, cats and many plants [842]
- The plundering of at least 20 million seals since the 1780s
- The plundering of at least 1.7 million penguins since 1820
- The plundering of at least 1.7 million whales during the modern era of Southern Ocean whaling
- The annual catching of 350,000 tonnes of biomass from the waters of the Islands and South Georgia, by the fishing industry
- The persecution of so-called 'pests' *e.g.* The Warrah, the Upland Goose and the Striated Caracara

To these major effects should be added the legacy of the 1982 Conflict (*e.g.* minefields), increasing environmental pressures caused by a growing tourist industry, a rural roads network and the potential effects of a nascent oil industry.

From the very beginning of human settlement and exploitation there have been those who warned of the dangers of unrestricted and unlimited human activity. John Leard of the *Intrepid* made the earliest recorded proposal for conserving the southern seal fishery. [843] Leard visited the Islands and Tierra del Fuego, and he wrote on 16 July 1788 to Lord Hawkesbury, President of the Board of Trade

[842] Broughton reports that 173 native species and 175 non-native species of flora have been recorded in the Islands. Many of the plant introductions have been accidental. See: Broughton D; (2002) *An annotated checklist of the Vascular Flora of the Falkland Islands*; Falklands Conservation; Stanley. See also: Broughton, D and McAdam, J H; (2002) The non-native Vascular Flora of the Falkland Islands; *Bot.J.Scot.*vol 54(2), pp. 153-190.

[843] *Polar Record*; September 1964; No12; Vol. 78 pp 313-316. Also see: BT6/95; Colonial Office Records; Public Record Office; Kew.

and Foreign Plantations, concerning conservation of the stocks of seals in Patagonia, Tierra del Fuego, Isla de los Estados, South Georgia and the Islands. Governor Mackenzie (Governor 1862-1866) wrote to an early colonist thus:

> Information has reached me that a scheme has lately been organised for the purpose of destroying the Penguin Rookeries in the neighbourhood of Volunteer Lagoon, and likewise that several small boats are at this moment engaged in indiscriminate slaughter of these animals.
>
> It is well known that the oil procured from the Penguin is of considerable value in the London Markets, and from this fact I have reason to fear that the destruction of these animals will become more general as a commercial speculation, which catastrophe I am anxious to prohibit as far as possible, both on account of the cruelty exercised in killing them, and because their eggs during the proper season form a wholesome and nutritious article of consumption in the settlement, and one much prized by the inhabitants.
>
> For these reasons it is my intention to propose a Bill to the Legislature of the Colony [to protect the penguins] from further molestation.[844]

Governor D'Arcy (Governor 1870-1876) was also concerned about the wholesale slaughter of penguins, and he wrote to a colonist:

> I find that the 3rd clause of the Penguin Ordinance gives me the power of giving you a licence to kill Penguins on your leased lands - behold it, but take my advice. We are entitled, I conceive, to a share of the productions of the earth, the birds of the air, and the fish of the ocean, but it is our duty at the same time and our interest, to take that share in wisdom, not wantonness, and we can so manage matters that the quantity we take may benefit that which is left, and thus while we use we ameliorate and

[844] Letter Book; 1864; Falkland Islands Government Archive; Stanley. For the history of the penguin oil industry see: Strange, I; (1987) *The Falkland Islands and their natural history*; David & Charles; p75ff.

> improve all that grows and lives around us becoming the Harvester of Creation and not the Destroyer - let this sentiment govern you as Proprietor over these fish birds and do not allow them to be exterminated and you will set the example of an enlightened mind which you neighbours will be sure to follow. [845]

Until relatively recently this wise advice has largely been ignored. A typical example of this can be seen in a letter, written in 1938, from Alexander Pitaluga, of Salvador Farm, to the Colonial Secretary. Pitaluga asks for permission to destroy penguins on the mainland of his farm. Pitaluga writes:

> Each year the birds are increasing and coming inland, at present they are a mile from the beach. Therefore as long as the penguins are there the whole coastline is a wasteland.[846]

The Governor gave Pitaluga permission.

Much that has happened has been the product of ignorance and effect of unintended consequences.[847] The conservation struggles of Governor Allardyce and the example of Arthur Felton are, until relatively recently, the exception and not the rule. The next section will ask the question why this has been so.

§ b. Factors that have contributed to the failure to conserve.

It is clear from this dissertation that there is no simple answer to the question why human beings have, in large part, so singularly failed to protect, preserve and conserve the natural environment of the Islands and South Georgia. The repetitive nature of some parts of this dissertation illustrates the scale of the

[845] Letter Book; 1874; Falkland Islands Government Archive; Stanley.
[846] CS220/38; *Requests permission to destroy Jackass Penguins on mainland of Salvador*; Falkland Islands Government Archive; Letter from Alexander Pitaluga to Colonial Secretary; 12 October 1938.
[847] A good example of unintended consequences in the Islands can be seen in the use of Gamatox sheep dip: CS1099/II; Falkland Islands Government Archive; letter from the Cecil and Kitty Bertram (Carcass Island) to Colonial Secretary; 8 March 1964.

failure, the recurring nature of that failure, and the difficulties human society has had in effecting beneficial change to the environment.

When evaluating the reasons for the degradation of the Islands natural environment it is common for commentators to single out one particular aspect, whereas there are generally a number of factors involved; most of the circumstances that have been described above are generally the products of a combination of one or more of these factors:

i. A pattern of resource exploitation, once firmly established, becomes difficult to change and adapt. Governor Moody's vision for the future development of the Islands was for small-scale 2500ha. (Approx. 6,000 acres) farms, but the system that quickly emerged was large-scale ranching. Governor Goldsworthy's defeat by the farmers of West Falkland in his attempts at land reform show how difficult change can be when opposed by vested interests. Governor Henniker-Heaton's reformist suggestions were defeated by thinly veiled threats of withdrawal from farming by the Falkland Islands Company. Governor Cardinall's post-World War II 'socialist cooperative' remains a 'Utopian dream' because of the unwillingness of the Colonial Office to invest in the long-term future of the Islands.

ii. The costs of any radical change were generally so prohibitive that all but a few were deterred from making the necessary adjustments. Changes in farming practices (*i.e.* to move from ranching-style farming to an intensive form of farming) required a huge investment in infrastructure (*e.g.* fencing) and the training and resourcing of a skilled labour force. Commodity production is subject to market pressures, and wool prices have fluctuated greatly, but when large profits were made, comparatively little of the benefit was felt in the Islands. Absentee landowners and shareholders were unwilling to forgo any of their dividends. With a few exceptions (*e.g.* The Falkland Islands Company moving its Lafonia operations from Darwin Harbour to Goose Green in the 1920s and the refurbishing of farm manager's houses and the

building of Darwin School in the 1960s) there was very little investment in Colony after the initial pioneering phase. In addition, for reasons outlined below, Government expenditure was also restricted. For most of its existence the Islands' Government has not had the resources to make the necessary investment to produce a more sustainable economy. For much of the history of the Colony, and its Dependencies, there has been a 'boom and bust' economy, with periods of high profits followed by financial stagnation. Concern about the parlous state of the Colony's finances encouraged the leading farmers to continually complain about the expense of the Discovery Investigations; pure science and research was perceived to be wasteful when times were hard. The recent difficulties of the sheep industry have caused many to question the value of much of the work done by the Agriculture Department of the Islands Government.

The whaling company Salvesen continually pointed out to Government officials (when they were questioned about their practice and methods they used when whaling) that whaling was enormously expensive and that entire communities were involved in providing the manpower for the industry. Any diminution in resource exploitation would have serious social consequences. To make any significant changes in the methods of exploitation of natural resources requires changes in attitudes and life-style; change is perceived as a threat to 'hearth and home' as well as to profits - thus many were unwilling to alter accepted practices.

iii. Ignorance was also a contributory factor. The damage caused by unrestricted grazing by herbivores, the large scale burning of grasslands to 'improve' the quality of pasture, the overstocking of the land with sheep, the introduction of exotic species (*e.g.* rabbits and cats, the use of Yorkshire Fog grass in the Islands and reindeer on South Georgia), the destruction of so-called 'pests' (*e.g.* the Warrah, Upland Goose and the Caracara) and the unlimited and uncontrolled sealing and whaling, all led to the degradation of the natural environment. With hindsight it can

be seen that much human activity in the past has been disastrous and has had serious unintended consequences.

iv. Humans have great difficulty in learning the lessons of history. Those who exploit the natural resources of the Islands and South Georgia have no lack of authoritative advice; report after report has been written (*e.g.* Munro and Davies concerning the use of the land; Barrett-Hamilton, Sidney Harmer and A G Bennett's warnings regarding whale stocks) but most people chose to ignore the advice. This was because of laziness ("Why bother with changing? It worked okay last year; it will work okay next year"), or because of a *laissez-faire* attitude ("as long as the profits keep coming all will be well" or "as long as I get my wages paid and home provided why should I bother?"), or because of greed ("profits before everything"), or because of the natural conservatism of farmers and fishermen ("If it was good enough for my father, then it is good enough for me"), or because of community mistrust of so-called 'experts' and the reports they produce ("What do they know?"). 'Outside'expert knowledge is sometimes neglected by farmers and fishermen because they tend to value more highly practical knowledge and direct observation rather than theoretical knowledge. Another reason why some of the reports failed to have the influence that they should have had, was that in the main the 'experts' who wrote them came, and then left very quickly; there was little sense of local 'ownership' of their investigations and advice.

v. As has already been suggested above the London-based Boards of Directors of the farms, their owners and UK managers, must bear some of the responsibility for the degradation of the natural environment of the Islands. This tightly knit and small group of people (often related by birth or marriage) were highly resistant to change or adaptation. A number of the Boards consisted of people who had once worked on the farms in the Islands, and who joined the Boards of several farming companies on their retirement in the UK. For some dividends were their prime concern; for others it was more a matter of 'what worked in my

day is still okay today.' Company Secretaries based in London, and Island-based local managers were often frustrated in their efforts at reform by their Board of Directors being intransigent and inflexible.

vi. The attitude and behaviour of the Colonial Office (and latterly the Foreign and Commonwealth Office) is one significant contributory factor in the failure to conserve and preserve. Colonies had to be, at the very least, self-sufficient; if at all possible they had to be net contributors to the U.K. exchequer. Colony profits had to be maximised; grants and subsidies were to be kept to an absolute minimum. Every Colony must play its part in providing useful commodities (*e.g.* whale products which produced glycerine for explosives during World War I, edible oils derived from whale oil after World War II, and wool products during the Korean War). Powerful financial vested interests like the whaling company Salvesen or the Falkland Islands Company, were often resented in the Colonial Office, but although there was a great deal of private censure, they were rarely challenged about their working practices in public.

There was a marked unwillingness on the part of the UK Government to make long-term investment in the Islands. The area was primarily regarded as a base for greater political hegemony and influence, and also a source of commodities and income. Conservation, in so far as this was pursued as a policy at all, was always subservient to the greater needs of Empire. Post-World War II restrictions meant that investment fell far short of what was required (as outlined in Governor Cardinall's 1942 Report); Governor Clifford did succeed in attracting greater support from the UK Government, but the Islands were increasingly regarded as small and insignificant. In the Colonial Office/Foreign Office the Islands were often seen as a distant backwater; the need for enlightened and far-reaching conservation policies was appreciated by only a few.

Matters were not improved by the lack of continuity in leadership in the Islands. The changes in Governor sometimes caused significant failures

in long-term and beneficial planning. Governor Allardyce was a pioneer conservationist, but he was succeeded by a Governor who did not share his enthusiasms; Governor Middleton's vision of a more sustainable agricultural system was rapidly dissipated by the ignorance of Governor Hodson. Only in the 1980s was the problem of the lack of continuity in leadership effectively dealt with by the appointment of a Chief Executive in addition to the political appointee, namely - the Governor, and more recently (in 2002) with the election of a Speaker of the Legislative Council - replacing the Governor as Chairman of the Council. (The greater involvement of elected Councillors in the management of the Islands has also improved the situation). Some civil servants have served the Islands, and their Dependencies, for considerable lengths of time in the Colonial Office (*e.g.* C R Darnley), but overall the Islands have suffered for the want of stability in policy-making - both in the Islands and in London. A good example of this has already been cited above; In 1965 Governor Haskard is asked for a 'child's guide' to the history of the Islands because:

> The recent flurry of telegrams about the proposed quota of whaling from land stations in South Georgia has revealed, among other things, how inadequate the Colonial Office's background knowledge about the whaling industry there is. The territory is remote and subject recondite. It has been assumed locally that the C.O. [Colonial Office] knows a good deal more of the background than, with recent changes in personnel, is at present the case. I wonder whether, [if you would] lighten our darkness.[848]

Governor Cardinall expressed clearly the frustration felt by many when he wrote: 'But there is one obvious criticism which the past history of

[848] D/4/64; Falkland Islands Government Archive; Letter from Colonial Office to Governor; 12 August 1965; op.cit.

these islands has impressed on all in the Colony, and that is - can continuity of policy be assured?' [849]

The continuing ambivalence in the Colonial Office concerning the relationship between Argentina and the Islands has created problems. The fact that one of the principal whaling companies - Compañia Argentina de Pesca - was an Argentine company meant that the Colonial Office was often very reluctant to restrict or restrain their activities. There was marked disinclination to cause offence for both diplomatic and fiscal reasons. The Islands were useful in wartime (*e.g.* a coaling depot for warships and a powerful radio station during World War I; a strategic base to restrict Japanese expansion around Cape Horn and to deprive German surface raiders of deep water harbours during World War II), but after the wars ended the Islands were easily forgotten.

By the time that the Shackleton Report of 1976 was written the Foreign Office had come to regard the Islands as a political embarrassment. In a personal conversation Lord Shackleton told the author that he had been told to come to the Islands to find a way of 'humanely handing-over the Islands to Argentina.' In recently released Foreign Office briefing papers (written in 1972 for Lord Chalfont, the Foreign Office Minister) the viewpoint found in London is clearly expressed:

> At present the Islands are something of a liability to Britain; they no longer have a strategic value and they are difficult and expensive to defend, while remaining a constant source of friction in relations with Argentina and with Latin America as a whole.[850]

vii. Another contributory factor is the fact that in a small and remote community the impact of strong-minded individuals is accentuated.

[849] CO78/216/8; Colonial Office Records; Public Record Office; Kew; 1942; p 99; op.cit.
[850] FCO 7/2115 Office Records; Public Record Office; Kew; 1972.

Throughout the history of the human settlement on the Islands there have been a number of powerful and single-minded characters. The first settlers were dynamic and resourceful. Colonial expansion in the 19th century encouraged men like Frederick Cobb, William Markham Dean and Robert Blake to be callous in their attitude towards the natural environment. These attitudes have been passed on to succeeding generations of islanders - with disastrous consequences.

Some Governors have been equally self-assured and strongly opinionated; sometimes this worked to the benefit of the environment *e.g.* Allardyce, and sometimes to the detriment of the environment *e.g.* Hodson. Pioneers and frontiersmen do not take kindly to restrictions and what they regard as Government 'interference'; the thrill of achievement in a hostile environment or the excitement of the hunt and chase during whaling is everything. The effect of their actions on the long-term welfare of the environment is rarely considered.

viii. For most of the history of the Islands and their Dependencies there has been an unwillingness to exercise restraint in the exploitation of natural resources. The whaling, sealing and farming Companies have been ruthless in the pursuit of profit, and until recently this has also been true of fishing companies. This inability to be restrained in the exploitation of natural resources is one of the most significant factors in the failure to preserve the natural environment. The destruction, and eventual extinction, of the Warrah by the early farming community is emblematic of the attitude towards any competitor to the supremacy of farming interests. Sealers moved from one island to another in quick succession - with the result that the stocks of seals were rapidly depleted. After World War II, when it was clearly known that the stocks of whales were in a parlous state, the whaling companies indulged in a frenzied 'drive for the line' during the 1950s before the end of whaling came as a result of the remaining stocks becoming uneconomic to hunt.

ix. Until very recently, with a few notable exceptions, a deep-seated arrogance towards the natural world has been the underlying attitude of those who have settled on the Islands and who have exploited their natural resources of land and sea. This outlook is not unique to the Islands; the first settlers and fishermen shared the commonly held views of their day. But the desire to subdue and subjugate 'savage nature' is a theme that runs through many of the attitudes and activities of the early pioneers, and this fact greatly contributed to the harmful effects that were the result of human activity on the Islands. The apparently unlimited natural resources were seen as being solely available for humanity's pleasure and profit.[851] These attitudes have shaped the way in which many still think and act today.

x. Despite the fact that Government Ordinances protecting certain species were enacted from the 1880s onwards, *in practice* environmental and conservation considerations have had a low priority. Allardyce laboured hard to protect seals and whales through legislation but the behaviour of seal poachers and some whaling companies rendered the Ordinances largely ineffective. In the same manner the regulatory system provided by the International Whaling Commission was constantly flouted - to the long-term detriment of the whale stocks. Until very recently the best that can be said for the rôle of Government Ordinance and regulation in protecting the environment, is that they only succeeded in slowing the rate of degradation.

§ c. Concluding remarks.

There is much to be learnt about what has occurred in the Islands and their Dependencies since human settlement and exploitation began in the 1770s. There must be a renewed determination to learn from this history, and not to

[851] 'God has let the whale inhabit (those waters) for the benefit and blessing of mankind, and consequently I considered it my vocation to promote these fisheries.' The words of Sven Foyn quoted in: Tønnessen, J N & Johnson, A O; (1982); op.cit.; p26.

repeat the mistakes of the past. There are no excuses now for ignorance; there is no lack of information.

The work of Falklands Conservation [852] is vital in maintaining and expanding the environmental knowledge base.

The research work of the Islands Agricultural Department must be enhanced and adequately funded. The educational task of these organisations is vital. A former Director of Agriculture [853] once quoted an appropriate Chinese proverb: "If you plan for a year, plant rice; if you plan for ten years, plant trees; if you plan for a century, educate the people.'

The Islands community has to recognise the difficulties in effecting change, but not to give in to despair or pessimism. Damage has been done, but there is much more public concern today about what has happened to the natural environment. The Islands have been spoilt, but it is not too late to protect what remains. 'The land will balance itself out in the end.'[854] Nature has a remarkable capacity to regenerate; given time and opportunity much can be restored *e.g.* the recovery of Fur Seal stocks in South Georgia.

The greatly increased Government income from the sale of fishing licences makes it possible for the first time in the Islands history for major improvements to be made in environmental protection and renewal. The

[852] Falklands Conservation is an organisation funded jointly by the Islands Government and by a charitable Trust established by Sir Peter Scott in 1979. Under the general auspices of Falklands Conservation much research on vascular flora has been carried out in the past five years; *e.g.* Broughton, D. and McAdam, J.H. (1999); *A preliminary atlas of the vascular flora of the Falkland Islands*; Queens University of Belfast (in association with Falklands Conservation). And: Broughton, D.A. and McAdam, J.H.; (2002) The non-native Vascular Flora of the Falkland Islands; *Botanical Journal of Scotland* vol 54(2), pp. 153-190. And: Broughton D.A. (2002); *Vascular Flora of the Falkland Islands*; Stanley; Falklands Conservation. And: Broughton, D.A. (2000); *A new broad habitat classification for the Falkland Islands*; Stanley; Falklands Conservation. And: Broughton, D.A. (2002); *An action plan for the threatened vascular flora of the Falkland Islands*; Stanley; Falklands Conservation. Also of note is the work done, in collaboration with Falklands Conservation, by Dr. J.H. McAdam on the Darwin Initiative; see: McAdam, J.H. (2003) *Status and distribution of the flora of the Falkland Islands*. A National Herbarium has been established in the Islands.

[853] pers. comm. Bob Reid January 2001.

[854] pers. comm. Richard Wagner, February 2001. Wagner was Economic Advisor to the Islands Government 1991-2001.

conservation opportunities provided by the revenue from the fishing industry should not be missed.

The example of the management of the fish stocks since 1985 serves well as a model for the future. The recent history of fishing in the waters of the Islands and South Georgia is the exception in this dissertation; it has been well managed and regulated, and conservation of fish stocks has been a central concern. The use of catch limitation schemes and closed seasons - and also the early closure of the fishing season if stocks fall below a sustainable level - give cause for encouragement. Fishery protection measures - although expensive - have attempted to translate legislation into practical enforcement.

Continuity of leadership and policy can now be maintained. The appointment of a Government Chief Executive makes governance of the Islands less dependent on the ability of the Governor, and also less vulnerable to the problems that can occur as a result of the regular changes of the two principal office holders. The best environmental decision-making is that which is taken locally, but which also acts within an international framework *e.g.* that provided by the RAMSAR Convention and the CCAMLR Convention.[855] Strong local elected leadership, that is able to take a long-term view and which is proactive in conservation issues, is imperative.

The importation of further exotic species to the Islands should be banned. [856] The importation of goats from the UK, and also reindeer from South Georgia to the Islands, is regrettable.

---

[855] Other international agreements that have begun to be implemented in the Islands are: The Overseas Territories Environmental Charter, which is concerned with providing basic environmental protection within the remaining UK overseas territories. And: The Bonn Convention, which is concerned with the protection of migratory species (This Convention came into effect in June 1979, and forms part of the European Union's legislative framework). And: The Agreement on the Conservation of Albatrosses and Petrels (This Agreement was signed in Canberra in 2001, and although the initial motive behind the Agreement was concern about seabird mortality caused by longline fishing, it has now extended protection to all species of albatrosses and petrels) which was ratified by the UK government in 2001 and is now being used in the Islands.

[856] For an early example of a warning about the dangers of the importation of exotic species (Upland Goose) into South Georgia see: Bonner, N. (1959) *Memorandum concerning the introduction of Upland Geese into South Georgia*; Falkland Islands Government Archive; 13 March 1959.

Conservation must be given precedence in Government legislation and planning. The recently published Government Plan 2002/05 does not place the environmental issues high enough on its list of priorities, but the example of the current Mining Bill 2002, which requires environmental impact assessments (EIA) to be made before any planning application is given, is cause for hope. It requires of the Governor:

> To balance the need … of effective and co-ordinated development … with the possible economic benefits … [and] to minimise any adverse effect upon the environment and to refuse to permit an activity that in his opinion would have an unacceptable degree of environmental impact.[857]

Current legislation should be extended/amended to oblige all future planning applications to have a full EIA carried out before permission is granted. All future developments in agriculture and fisheries (currently not subject to the requirement for EIAs) must have a full impact assessment made before the development proceeds. The Islands legal framework must preserve the environment for future generations. A former Islands Planning Officer [858] complained that 'the pragmatic approach dominates' in all planning matters, and that the majority of islanders 'simply paid lip service to environmental planning.' Pragmatism or enlightened self-interest is not sufficient to protect the environment, or to conserve the natural environment.

[857] Mining Bill 2002; Clauses 14 & 15.
[858] pers. comm. Tom Eggeling. March February 2001.

20. Tables

Table 2: Trends of sheep and wool production 1909 to1938

Period	Average number of sheep shorn per annum	Average annual export of wool (lbs.)	Average annual wool clip per sheep (lbs.)
1909 – 1913	712,000	4,762,500	6.69
1914 – 1918	683,000	4,655,300	6.81
1919 – 1923	659,000	4,598,500	6.98
1924 – 1928	621,000	4,144,500	6.67
1929 – 1933	611,000	3,933,600	6.44
1934 – 1938	607,000	4,018,400	6.61

Source: Governor Sir Herbert Henniker-Heaton.

Quoted by William Davies in: *The Grasslands of the Falkland Islands*; 1939.
William Davies makes a number of significant points about these statistics:

- From the peak year of 1898 - when 807,000[859] sheep were carried, the sheep population had been reduced by 95,000 by the beginning of the 1909 season. During the period of Davies survey there was a further reduction of 105,000.
- The fall in wool production was also serious, and matters would have been worse if it were not for the exceptional year of 1937. If 1937 were omitted from the figures the averages for the last five-year period would have been 3,872,000 lbs. of wool, with an average wool clip of 6.38 lbs. per sheep.
- The figures show a decline in gross production of wool - despite the considerable efforts made by the farmers to improve the stock by importation of rams from overseas.

[859] But note the comment in The Falkland Islands Company reply to *The Shackleton Report; 1976*; stored at the Falkland Islands Company's archive at Bishops Stortford: 'We have reason to believe that the official figures of sheep population in the late 1800s are exaggerated.'

Table 3: Averages of sheep shorn, export of wool and clip 1909-1963

	Average number of sheep shorn	Average annual export of wool	Average annual wool clip per sheep shorn
		lbs.	lbs.
1909-13	712,000	4,762,000	6.69
1914-18	683,000	4,655,000	6.81
1919-23	659,000	4,598,000	6.98
1924-28	621,000	4,144,000	6.67
1929-33	611,000	3,934,000	6.44
1934-38	607,000	4,018,000	6.61
1939-43	620,000	4,147,000	6.69
1944-48	616,000	4,555,000	7.39
1949-53	598,000	4,134,000	7.00
1954-58	536,000	4,466,000	8.07
1959-63	553,000	4,740,000	8.57

Source: C W Guillebaud*; Report on Economic Survey of the Falkland Islands*; 1967; paragraph 13.

This table shows that considerable improvements (after the work of William Davies) were made in sheep breeding that resulted in greater wool clip per sheep. This improvement was not sustained.

Table 4: Averages of sheep shorn, export of wool; and clip 1959-1971

	Average number of sheep shorn	Average annual export of wool	Average annual wool clip per sheep shorn
		lbs.	lbs.
1959 – 1963	553,000	4,682,000	8.47
1964 – 1968	566,000	4,792,000	8.46
1969 – 1971	569,000	4,632,000	8.13

Source: T W D Theophilus; *The economics of wool production in the Falkland Islands*; 1972.

This table shows that despite the considerable efforts made in sheep breeding, the average annual wool clip increased only marginally from mid-1950s onwards.

Table 5: The population of the Islands 1980-1991

	1980		1986			1991			Population % change 1980 - 1991
	number	% houses	number	% houses		number	% houses		
Stanley	1050	58	1232	65	460	1557	76	610	+ 48.3%
Camp	763	42	653	35	218	493	24	192	-35.4%
Totals	1813		1885			2050			+13.1%

Source: Falkland Islands censuses 1986 & 1991.

Note: 33% of 1991 population of 10 years or older had been living outside the Islands in 1981.

This table shows clearly the shift in the population from Camp to Stanley in the years immediately after the sale and break-up of the larger farm units. This trend continues until today; the rural areas are significantly de-populated in comparison with former years.

The table also shows an increase in population in the immediate years after the 1982 Conflict.

Table 6: The Islands Government Finances 1983-1993

	1983-4	1988-9	1992-3
Revenue	£5.3 million	£35.76 million	£41.31 million
Expenditure	£3.87 million	£28.65 million	£39.65 million

This table shows the dramatic increase in Government income and expenditure following the declaration of the EEZ and FICZ in 1984/5, and the size of the Colony's dependency on fishing licence revenue.

21. Figures

Figure 8.

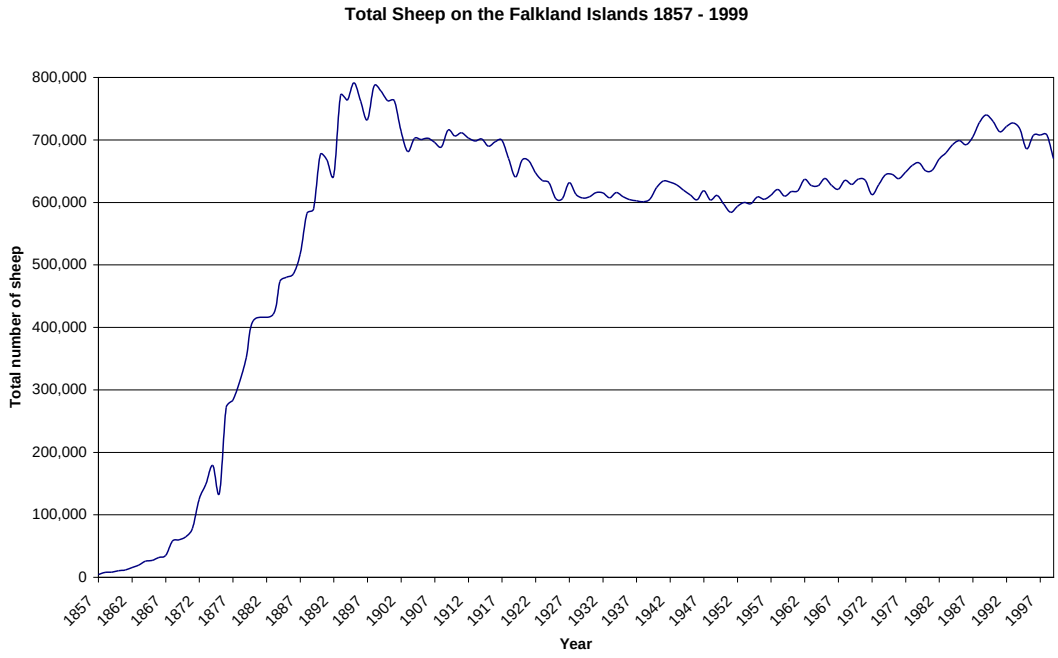


Figure 9.

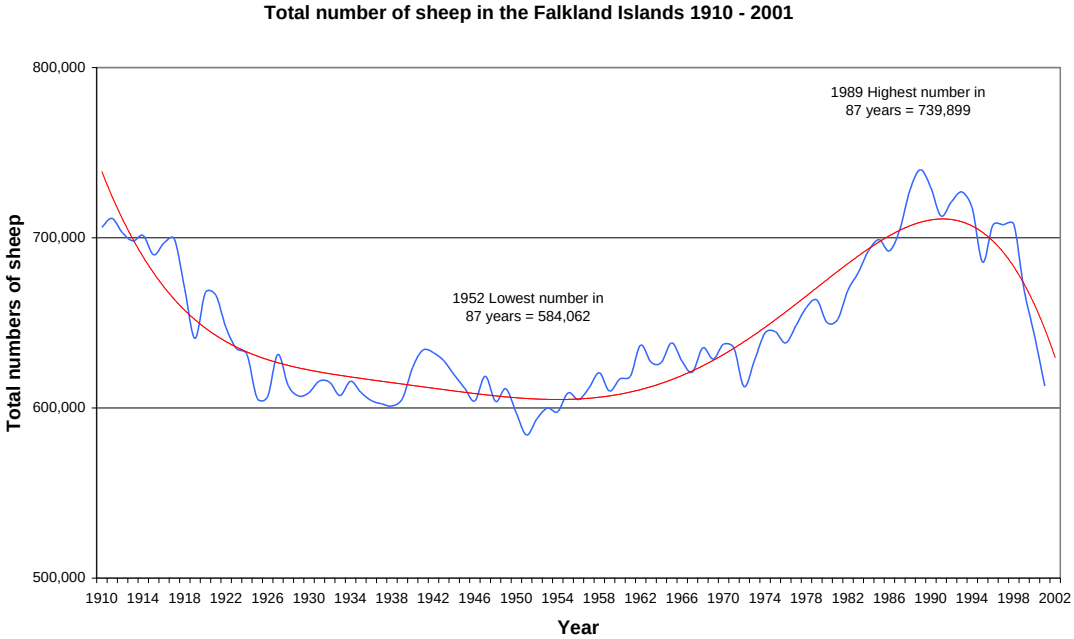


Figure 10.

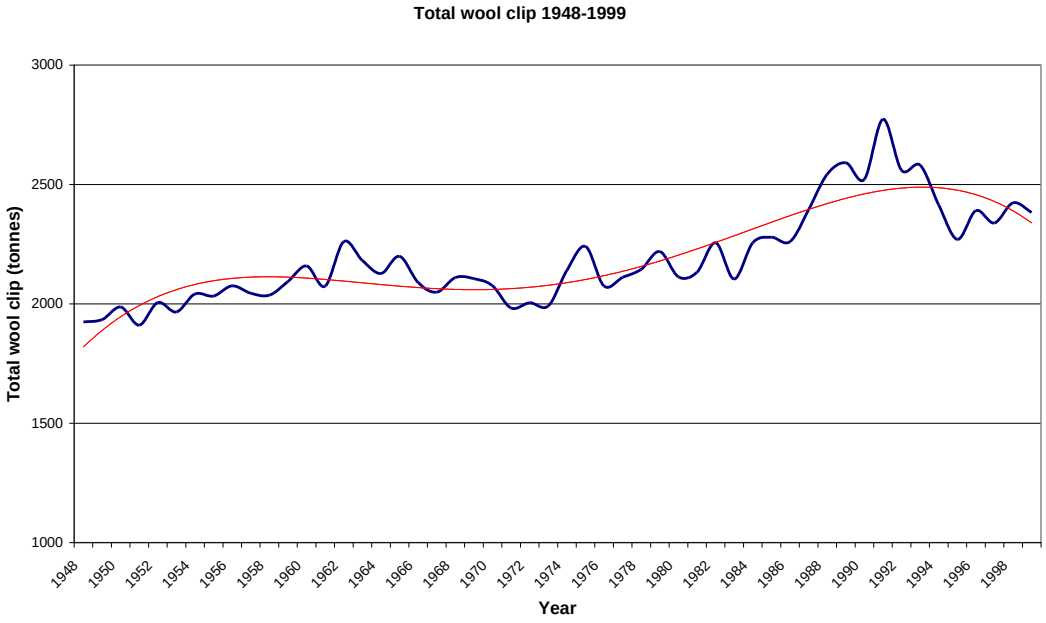


Figure 11.

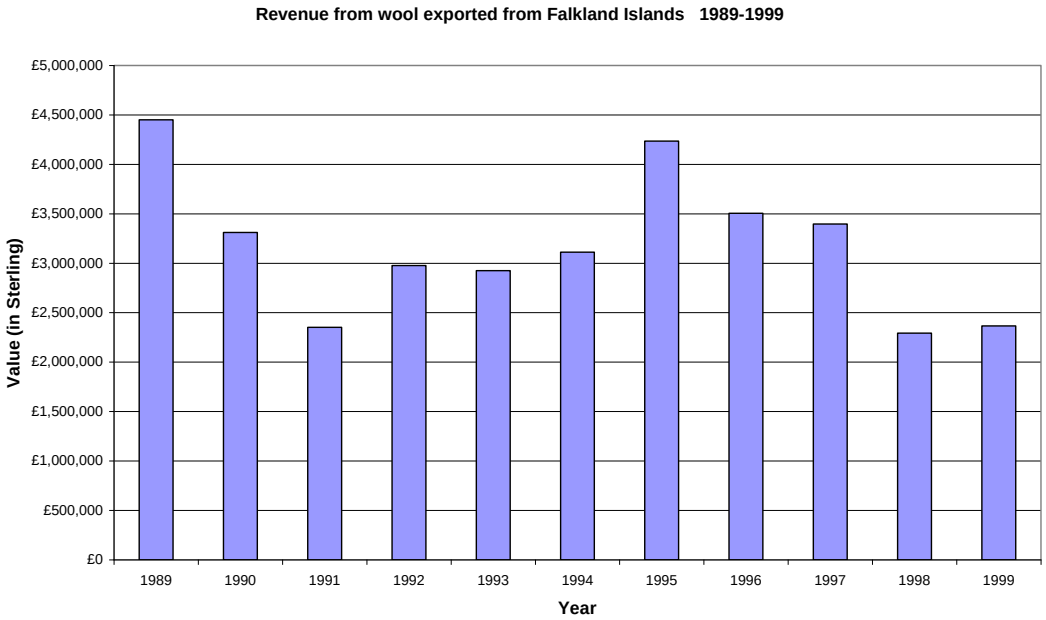


Figure 12.

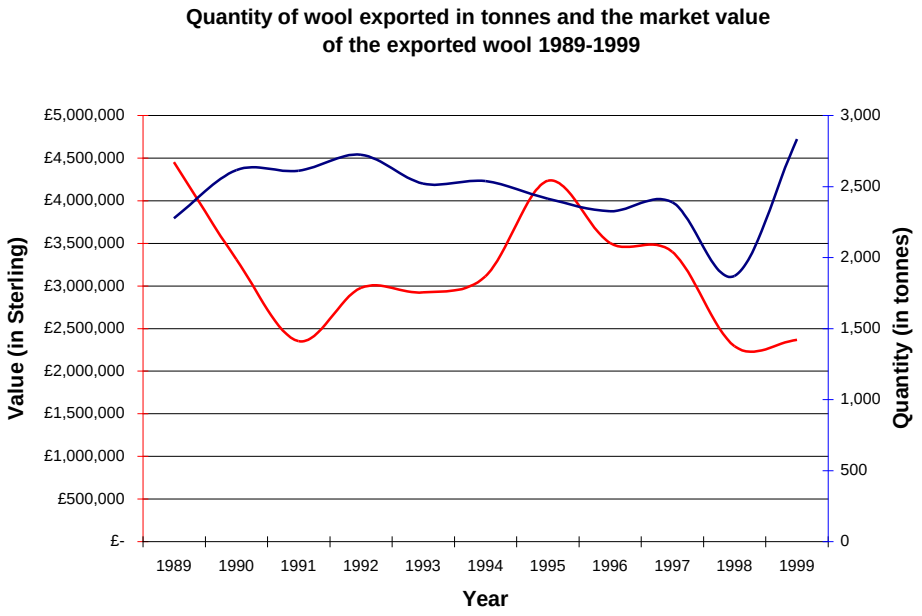


Figure 13.

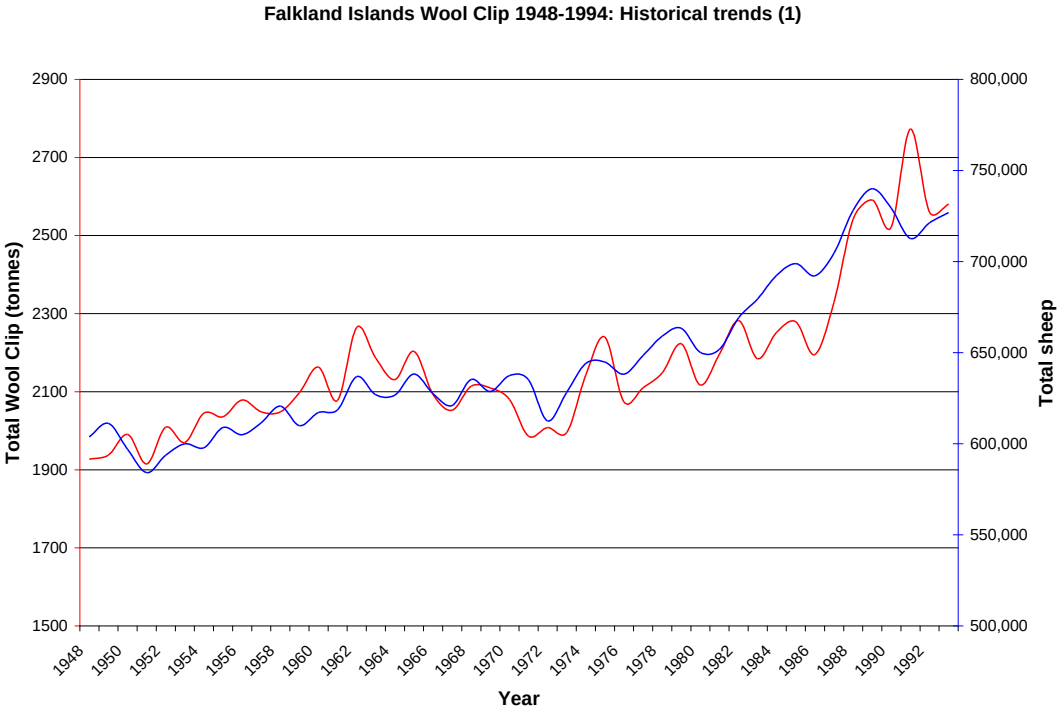


Figure 14.

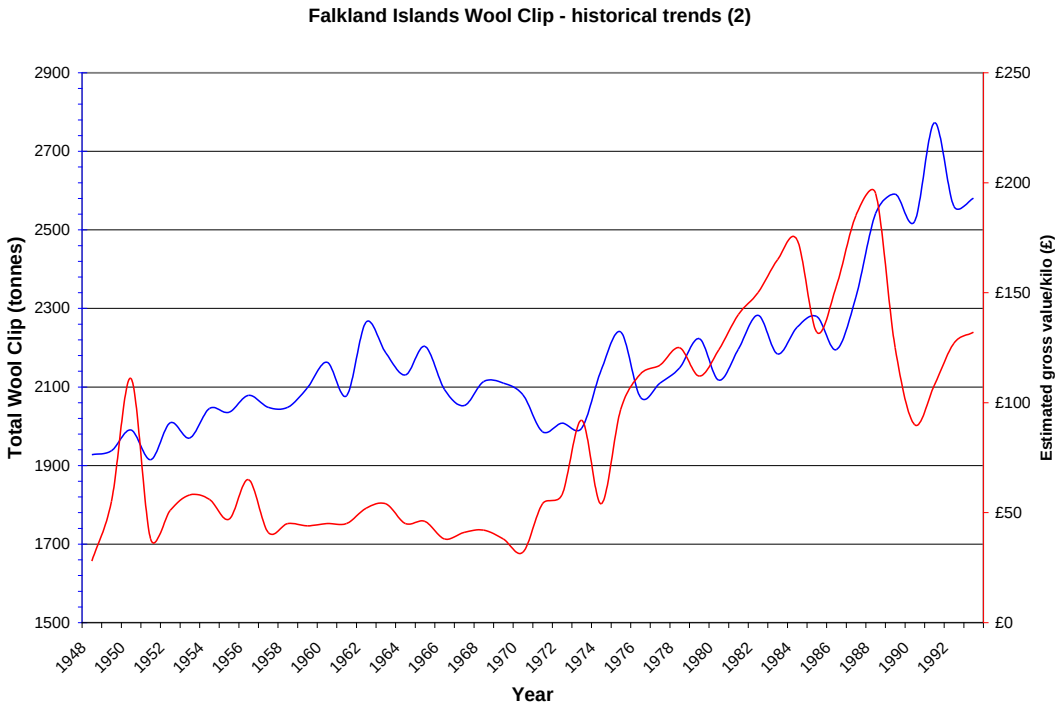


Figure 15.

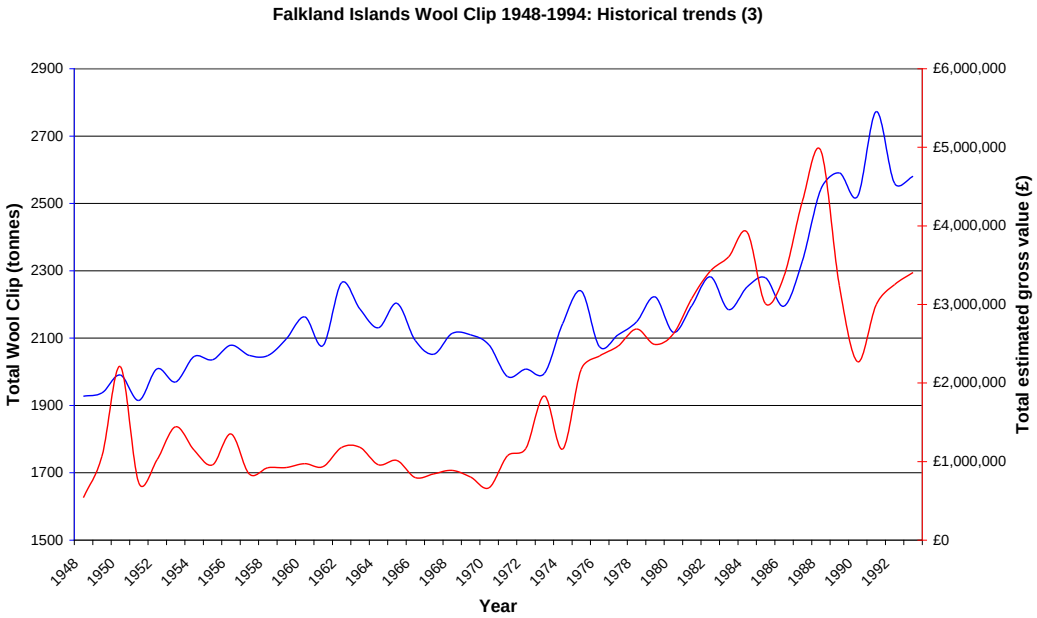


Figure 16.

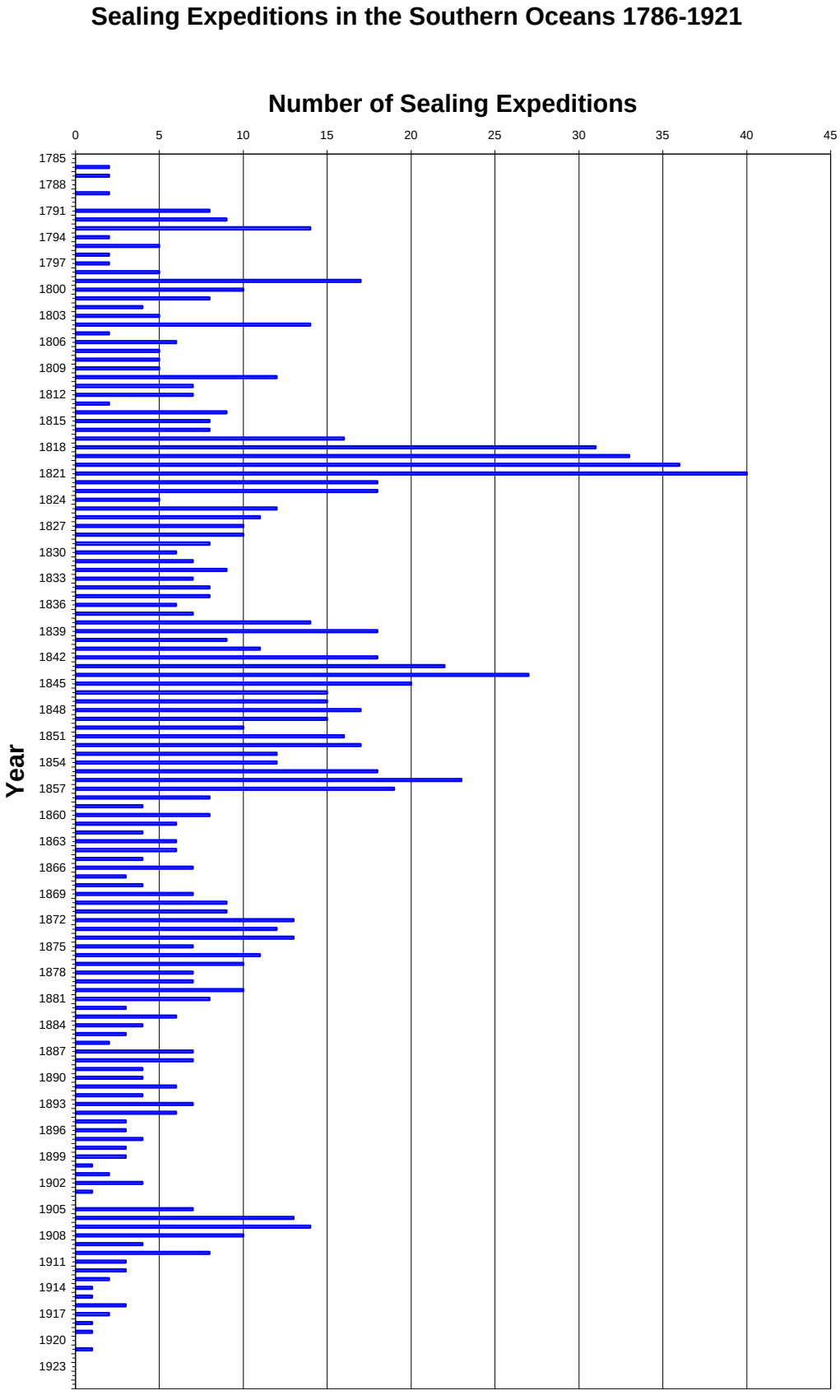

Sealing Expeditions in the Southern Oceans 1786-1921
Number of Sealing Expeditions
0
5
10
15
20
25
30
35
40
45
Year
1785
1788
1791
1794
1797
1800
1803
1806
1809
1812
1815
1818
1821
1824
1827
1830
1833
1836
1839
1842
1845
1848
1851
1854
1857
1860
1863
1866
1869
1872
1875
1878
1881
1884
1887
1890
1893
1896
1899
1902
1905
1908
1911
1914
1917
1920
1923

Figure 17.

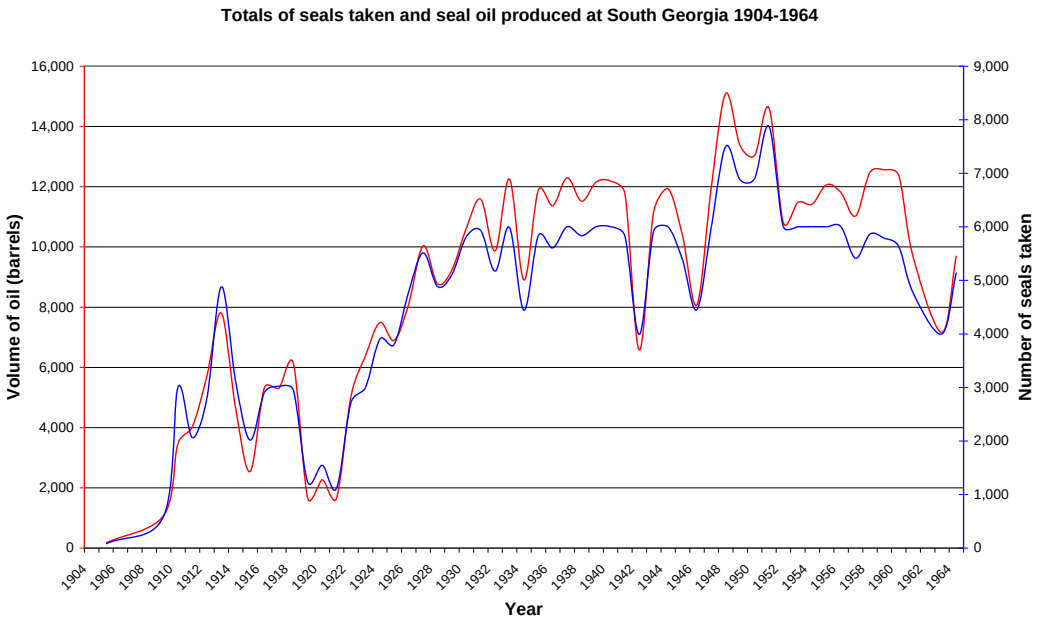


Figure 18.

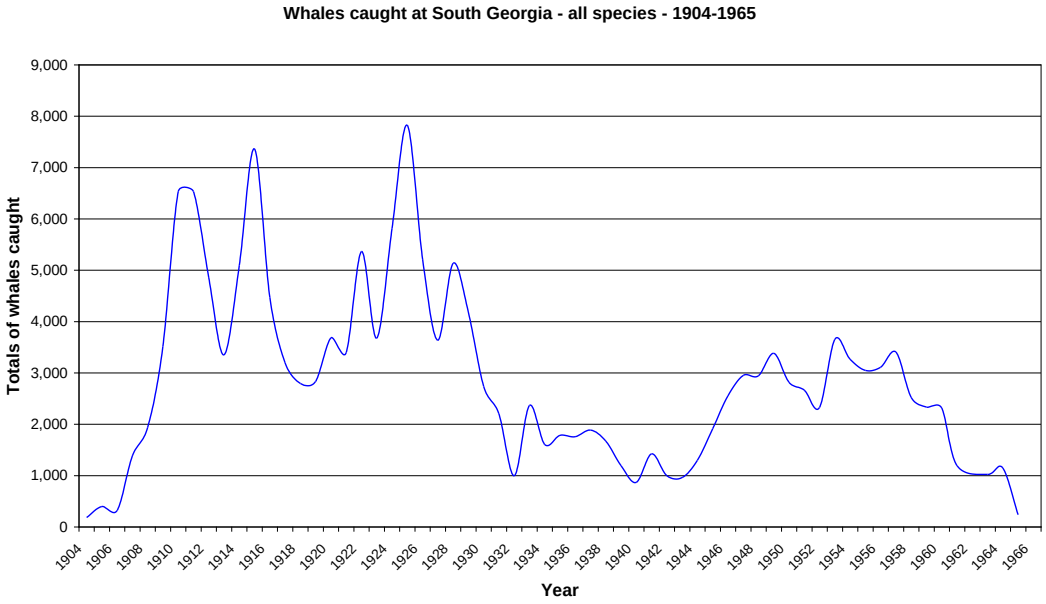


Figure 19.

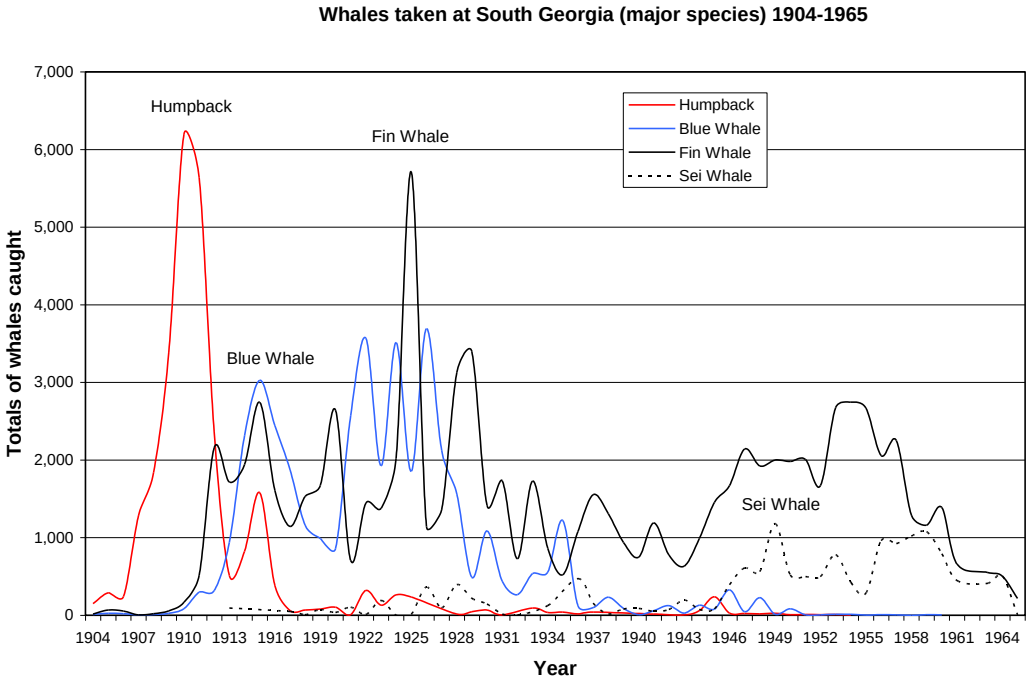


Figure 20.

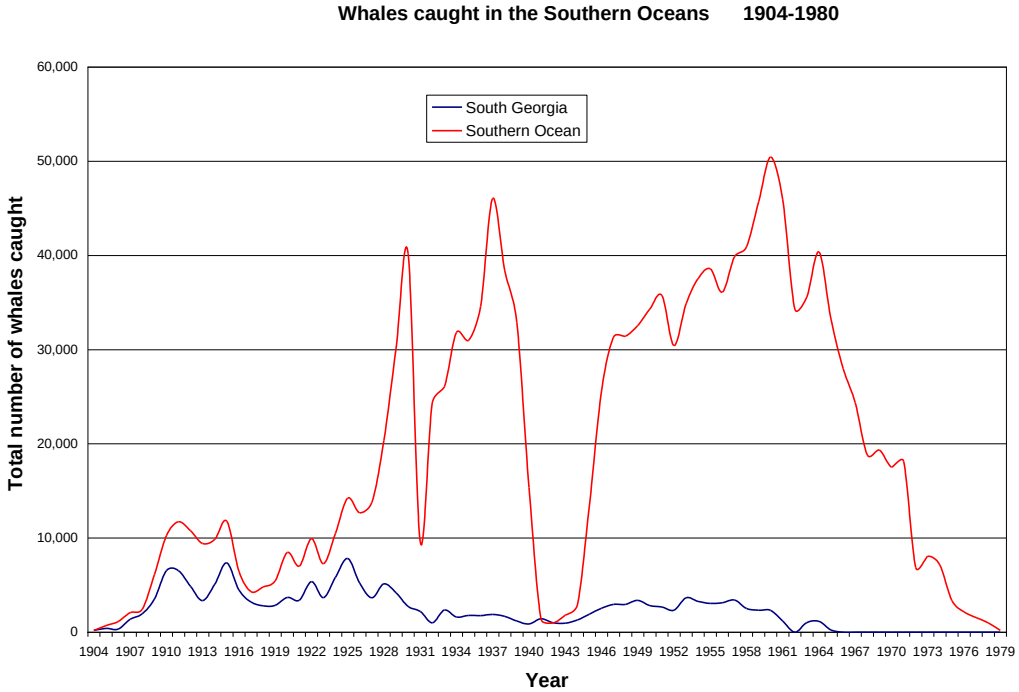


Figure 21.

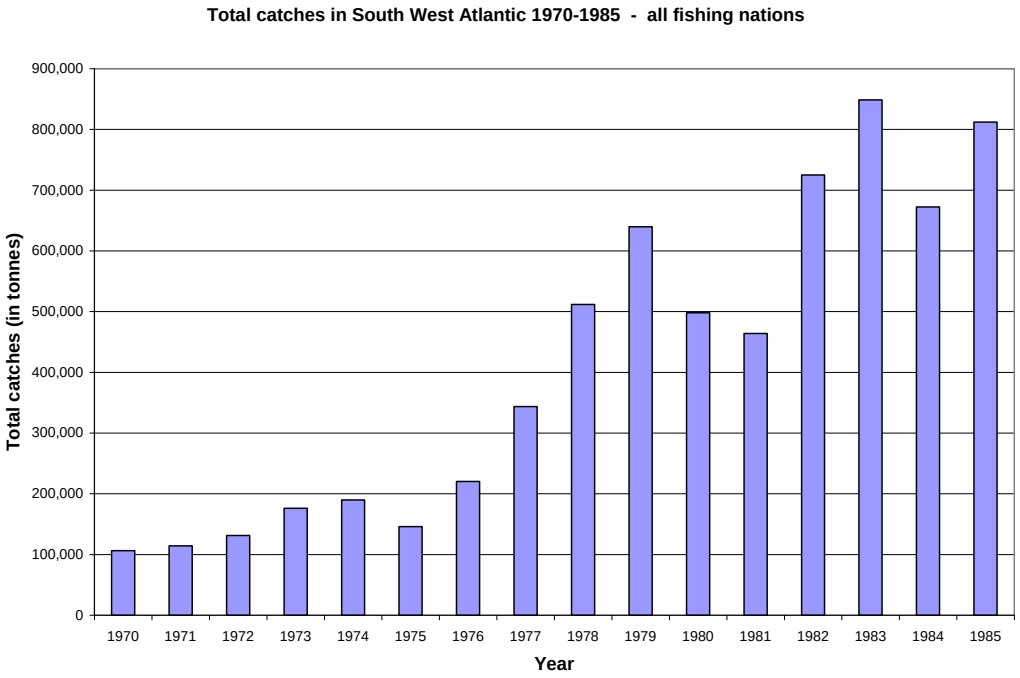


Figure 22.

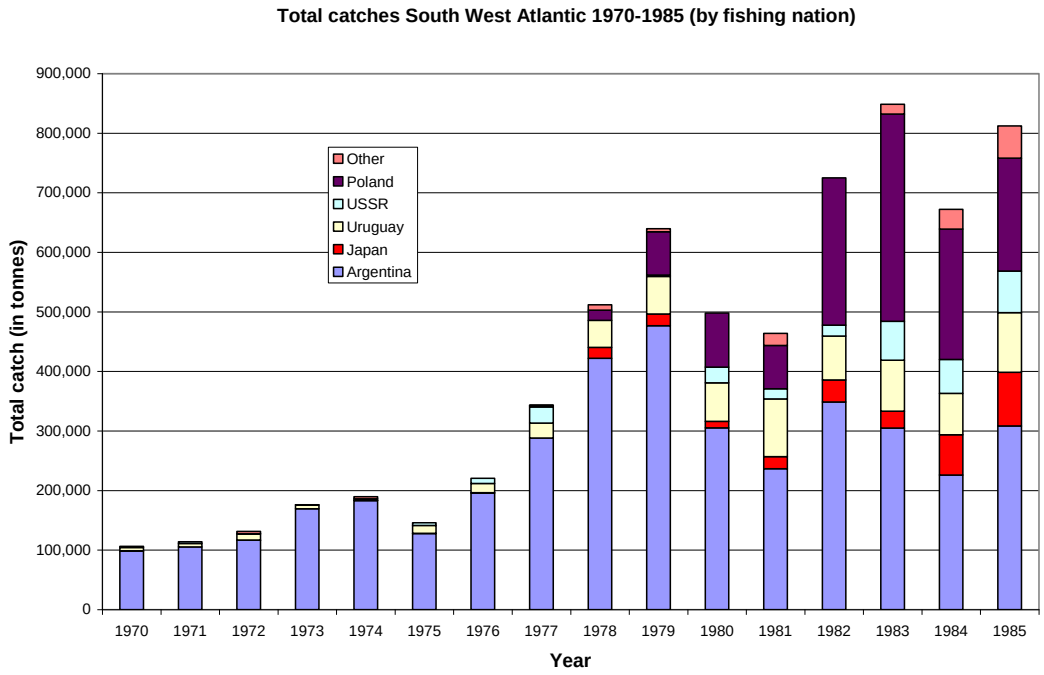


Figure 23.

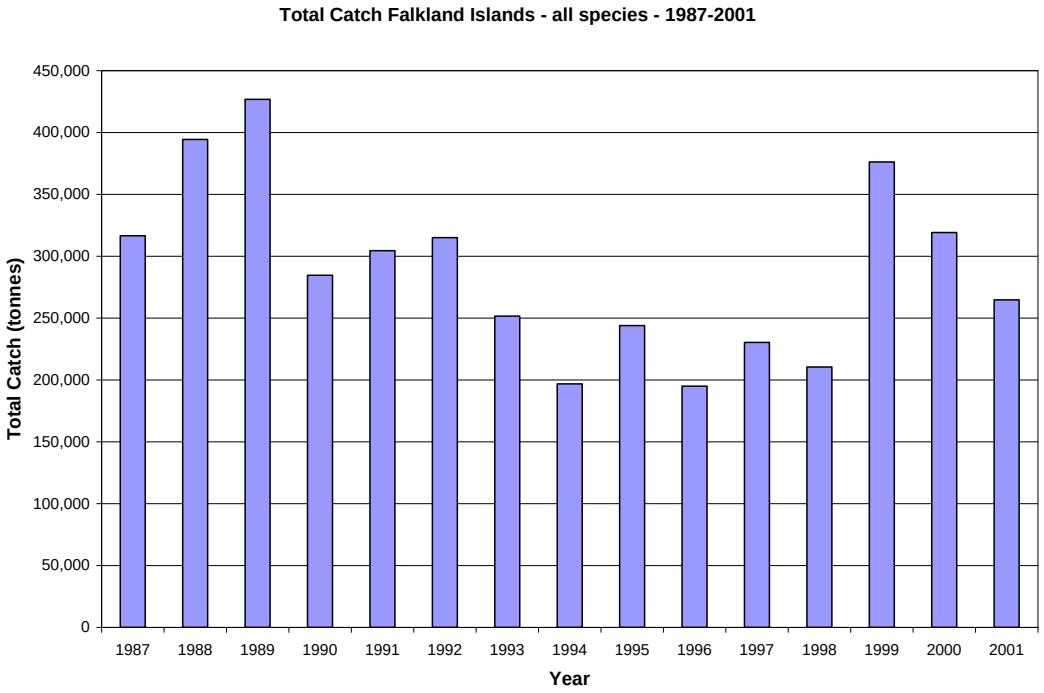
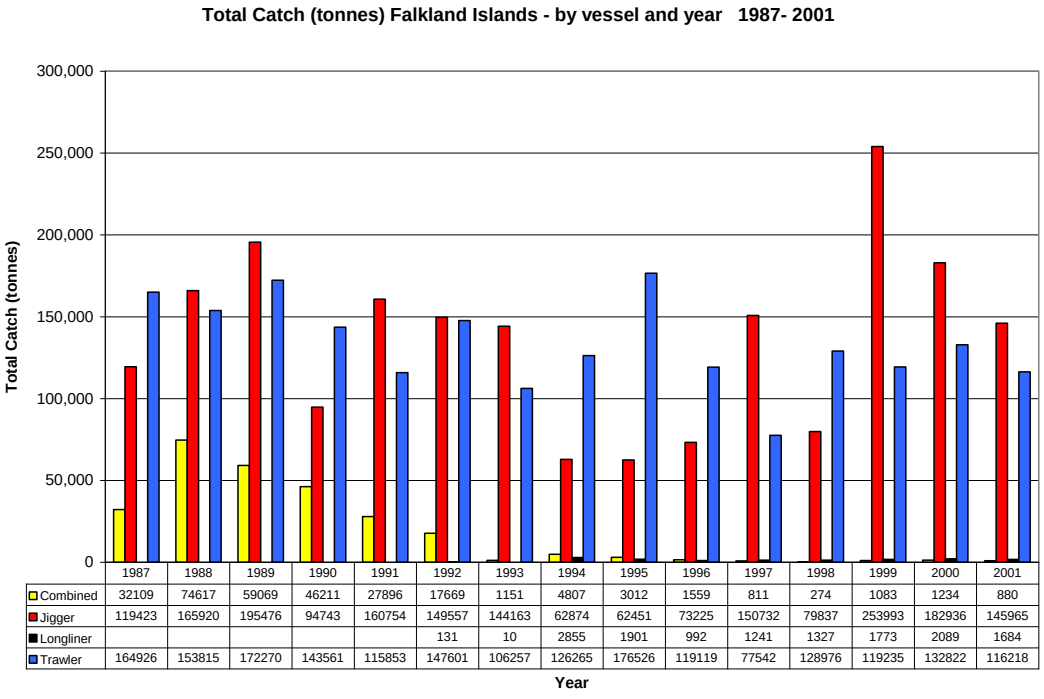
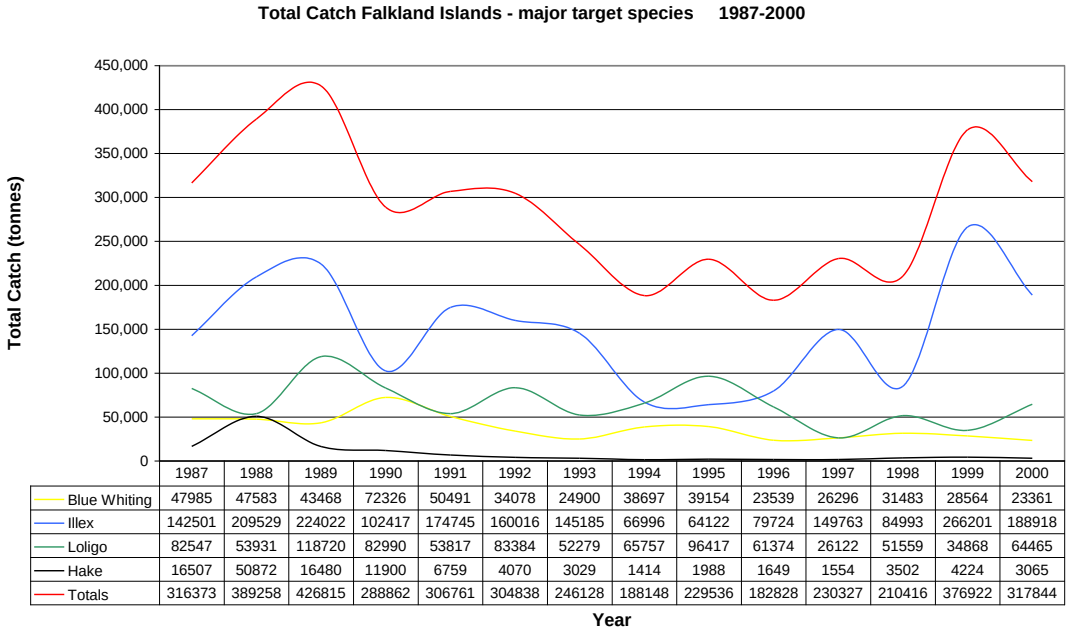


Figure 24.



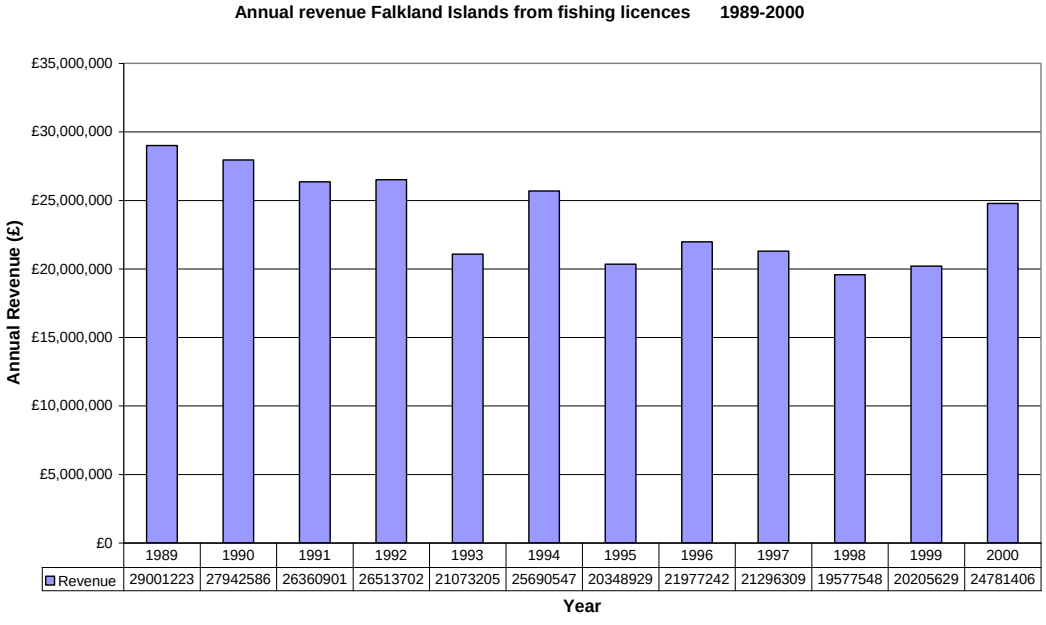
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Combined	32109	74617	59069	46211	27896	17669	1151	4807	3012	1559	811	274	1083	1234	880
Jigger	119423	165920	195476	94743	160754	149557	144163	62874	62451	73225	150732	79837	253993	182936	145965
Longliner						131	10	2855	1901	992	1241	1327	1773	2089	1684
Trawler	164926	153815	172270	143561	115853	147601	106257	126265	176526	119119	77542	128976	119235	132822	116218

Figure 25.



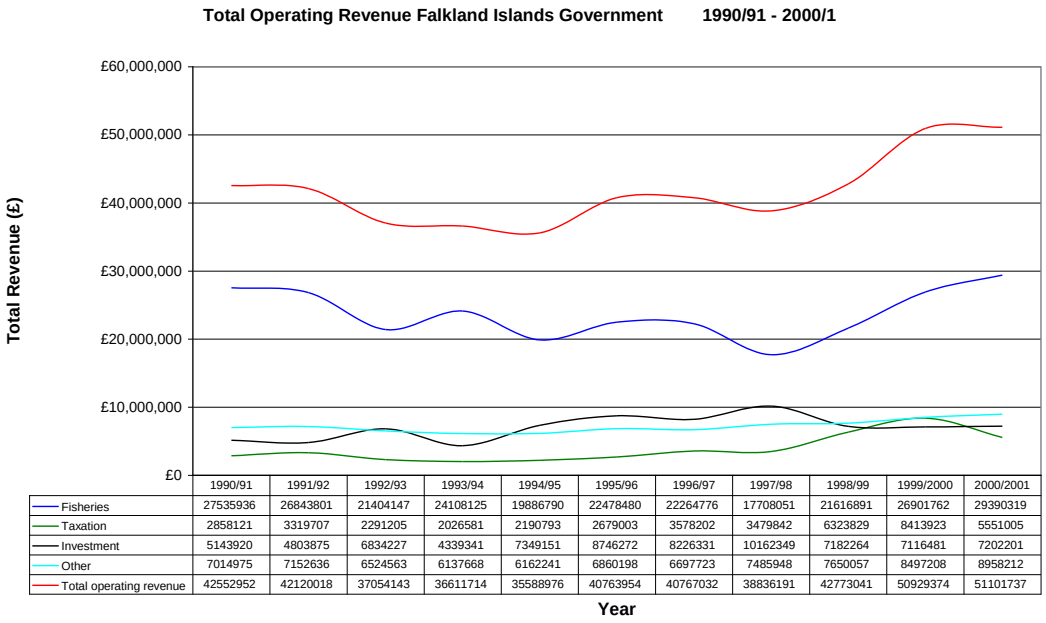
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Blue Whiting	47985	47583	43468	72326	50491	34078	24900	38697	39154	23539	26296	31483	28564	23361
Illex	142501	209529	224022	102417	174745	160016	145185	66996	64122	79724	149763	84993	266201	188918
Loligo	82547	53931	118720	82990	53817	83384	52279	65757	96417	61374	26122	51559	34868	64465
Hake	16507	50872	16480	11900	6759	4070	3029	1414	1988	1649	1554	3502	4224	3065
Totals	316373	389258	426815	288862	306761	304838	246128	188148	229536	182828	230327	210416	376922	317844

Figure 26.



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Revenue	29001223	27942586	26360901	26513702	21073205	25690547	20348929	21977242	21296309	19577548	20205629	24781406

Figure 27.



	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/2001
Fisheries	27535936	26843801	21404147	24108125	19886790	22478480	22264776	17708051	21616891	26901762	29390319
Taxation	2858121	3319707	2291205	2026581	2190793	2679003	3578202	3479842	6323829	8413923	5551005
Investment	5143920	4803875	6834227	4339341	7349151	8746272	8226331	10162349	7182264	7116481	7202201
Other	7014975	7152636	6524563	6137668	6162241	6860198	6697723	7485948	7650057	8497208	8958212
Total operating revenue	42552952	42120018	37054143	36611714	35588976	40763954	40767032	38836191	42773041	50929374	51101737

Figure 28.

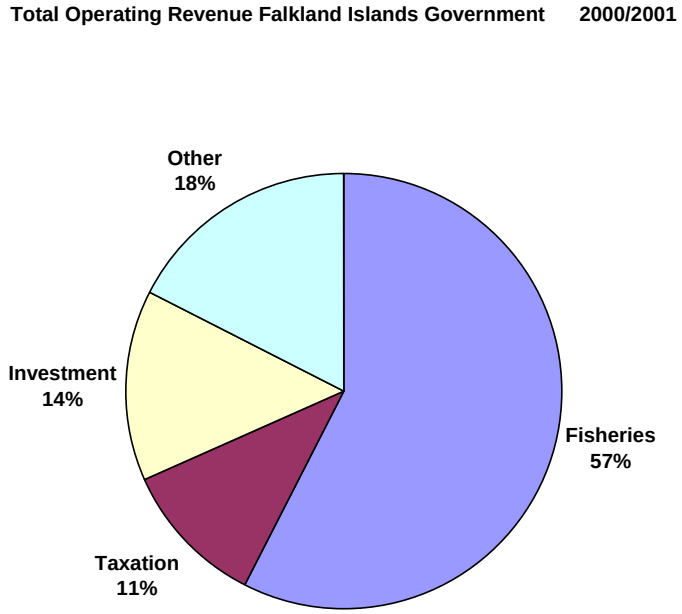
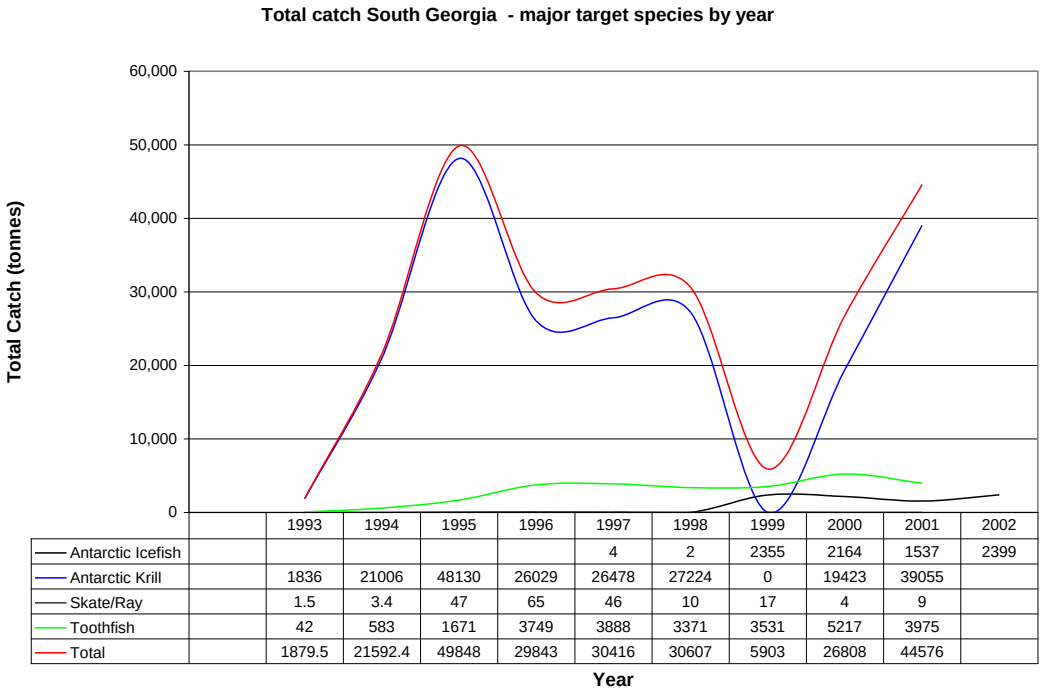
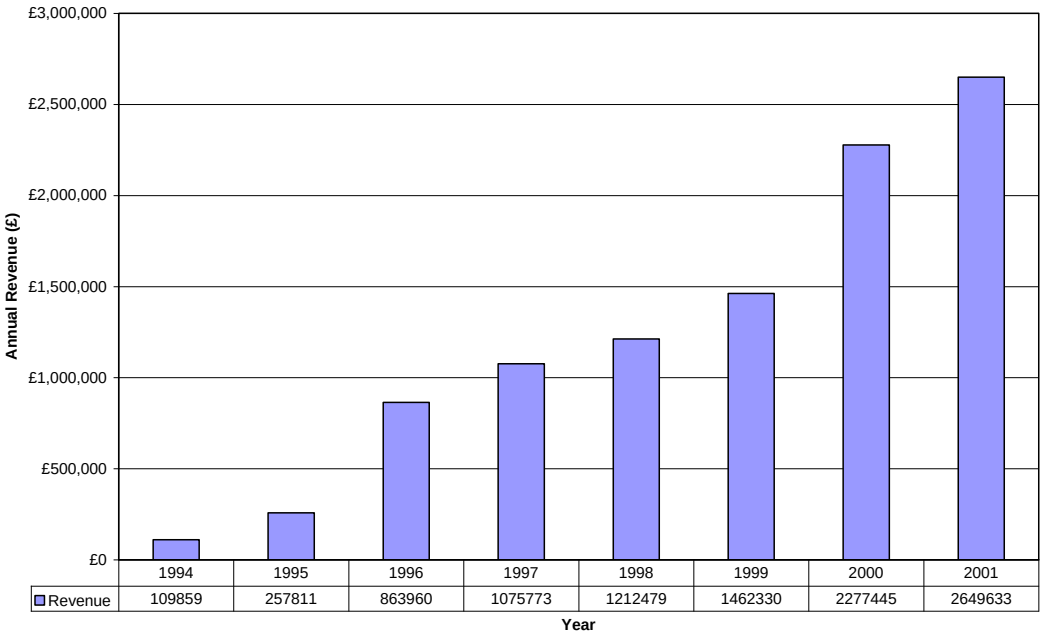


Figure 29.



	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Antarctic Icefish					4	2	2355	2164	1537	2399
Antarctic Krill	1836	21006	48130	26029	26478	27224	0	19423	39055	
Skate/Ray	1.5	3.4	47	65	46	10	17	4	9	
Toothfish	42	583	1671	3749	3888	3371	3531	5217	3975	
Total	1879.5	21592.4	49848	29843	30416	30607	5903	26808	44576	

Figure 30:



	1994	1995	1996	1997	1998	1999	2000	2001
Revenue	109859	257811	863960	1075773	1212479	1462330	2277445	2649633

Explanatory notes for Figures 1-30

Figure 1:

Note that the Islands are north of the Antarctic Convergence and that South Georgia is south of the Convergence. The Convergence has a considerable effect on the climate of the region. South Georgia is classified as a peri-Antarctic island and has permanent ice above 200m, whereas the Islands are cool and temperate.

Figure 2:

Note that Beauchêne Island is not indicated on this map; it is located 110km. South of the southern-most point of East Falkland Island. It is a National Nature Reserve; it is now one of only a few islands in the Falklands group that are in a relatively pristine condition.

Figure 3:

Note that all the whaling stations are located on the northern side of South Georgia (*i.e.* on the lee side from the prevailing winds). Suitable land for shore stations is very limited; West and East Cumberland Bay contain some of the most suitable sites. Salvesen located their operations at Leith Harbour partly because Compañia Argentina de Pesca had already begun operations (in 1904) at Grytviken, and partly because they wished to keep their operation distinctively different from an Argentine company. Leith Harbour eventually became the world centre of whaling, and the headquarters of Salvesen's pelagic whaling fleet. Possession Bay is where Captain James Cook landed on 17 January 1775 and took possession of the island in the name of King George III.

Figure 4:

The EEZ and FICZ/FIOCZ zones are for the most part a continuation of the Exclusion Zones imposed during the 1982 Conflict.

Figure 5:

Illex squid is a straddling stock; *i.e.* it is shared between the Islands FICZ and the Exclusive Economic Zone of Argentina. Illex squid spawns in Argentine waters; it migrates south into Islands waters - to feed - as maturing squid.

Southern Blue Whiting stocks are straddling stocks, and were heavily over-fished by the Argentine fishing fleet in the 1980s.

Loligo squid are found exclusively in Islands waters; current (2003) evidence suggests that the squid spawns inshore in the coves and bays of East Falkland Island; after hatching the young squid migrate eastwards into deeper waters to feed and mature.

Figure 6:

Although the Maritime Zone includes both South Georgia and the South Sandwich Islands, fishery patrols are only conducted around South Georgia because of the location of the fish and fishing fleets.

Figure 7:

This figure show the various descriptive terms used in this dissertation.

Figure 8:

Note the very rapid build-up of sheep stocks between 1877 and 1897; the gradual decline in sheep numbers after 1900, the gradual increase after World War II and the decline again since 1990.

Figure 9:

At the point that sheep numbers were at their lowest level for many years (in 1952) this also coincided with the period of the Korean War when wool prices rose to unprecedented heights.

After the large farms were broken up (from the late 1970s onwards) sheep numbers initially increased. This was the result of retaining older sheep that would otherwise have been culled. Total wool production also increased during the same period, but the quality of wool, *i.e.* fineness, declined overall.

Since mid-1990s sheep farming has again been in decline.

Figure 10:

The total wool clip steadily increased after World War II because of the increase in sheep numbers, and because of some improvements in sheep farming methods.

The wool produced by the Islands is less than 0.4% of the world total wool clip.

Figure 11:

Income from the sheep industry has been in decline since the 1960s; the income derived from the fishing industry during the period 1989-1999 is approximately ten times that derived from the sheep industry.

Figure 12:

During 1989-1999 total wool clip increased considerably, but that during the same period the income for the wool fell from £4.5M to £2.4M.

Figures 13, 14 and 15:

Note that after the dramatic rise in income derived from wool during the Korean War period, income has not increased relative to inflation, and that there has been an overall marked decrease in farm income after 1988.

Figure 16:

Note that within five years of Captain James Cook reporting the sighting of vast numbers of seals on the islands of the Southern Ocean, sealing operations began in earnest. The Islands and South Georgia were exploited first; expeditions returned to South Georgia every ten years until by 1900 the Fur Seal was regarded as extinct on the island.

South Shetland was exploited in the years following 1816; stocks were rapidly exhausted. The pattern became quickly established that the sealers cleared out one group of islands and then moved on to another group of islands until all the stocks were significantly depleted.

Note that 'Expeditions' could consist of a number of ships *i.e.* as many as ten ships per Expedition.

Figure 17:

The elephant seal oil industry on South Georgia was undertaken by Compañia Argentina De Pesca as an additional activity to whaling. The island was divided into four divisions by John Innes Wilson in 1910,

which enabled it to be carried out in a sustainable manner. Dr Richard Laws encouraged the government to rescind the decision to increase (made in 1948) the total number of Elephant Seals taken from 6,000 p.a. to 9,000 p.a. The limit of 6,000 was reinstated and this was maintained until whaling ceased on South Georgia. The end of the Elephant Seal oil industry coincided with the end of whaling at Grytviken.

Figure 18:

Land-based whaling on South Georgia was begun by Compañia Argentina De Pesca in 1904; the total number of whales taken during the next sixty years was only 10% of the total number caught in the Southern Ocean. Pelagic whaling began in the late 1920s, and it soon became the principal part of the industry.

Figure 19:

Land-based whaling began with hunting Humpback Whales, followed by Blue Whales; the Fin Whales became the mainstay of the industry from 1930s onwards. (Humpback Whales almost completely disappeared and Blue Whales became very scarce). Sei Whales - which hitherto had been ignored as being too small - were hunted in the period at the end of the industry.

Pelagic whaling followed a similar pattern of species exploitation.

Figure 20:

The massive increase followed by a dramatic decline in whales caught in the period directly after the introduction of pelagic whaling in 1928. There was substantial overproduction; the world price of oil crashed, and many ships were laid up. A number of land-based whaling stations (including those on Deception Island) closed. Fewer, but much more efficient, companies subsequently increased their operations following

the recovery in the price paid for high grade whale oil.

Pelagic whaling ceased during World War II.

After World War II many more countries began whaling operations and that there was a huge increase in the numbers of whales taken. This 'dash for the line' was undertaken in full knowledge that such activity was unsustainable and that this occurred despite the gradual restrictions imposed by the International Whaling Commission. It was during this period that significant and long-term damage was done to whale stocks.

Not all the whales caught by USSR whaling ships after 1970 are included in these figures. Large numbers of whales (including the protected Blue Whale) were caught, and the account rendered to the International Whaling Commission was considerably falsified.

Figure 21:

These figures originate from F.A.O. and are the reported catch levels only. They only give an indication of the scale of the fishing effort in the South West Atlantic; it is likely that the actual tonnage of fish caught was considerably higher.

Figure 22:

The reported figures of Argentine fishing companies are probably approximately accurate. The Polish and Soviet Union reported catch levels are considerably lower than the actual catch.

Note the emergence of Japan as a major Southern Ocean deep-water fishing nation from 1980 onwards.

Figure 23:

These figures relate to ships licensed to fish in FICZ by the Falkland Islands Government.

Following the declaration of the FICZ and FIOCZ in 1984-85 it has become possible, for the first time, to control the total volume of catch. Note however that the Argentine fishing fleets have caught more than twice the tonnage in their own EEZ during the same period.

Figure 24:

The jigging and trawling methods of fishing dominate in the FICZ. Jigging is the method used in the Illex squid fishery; its use has declined since 1999 as catches of Illex squid have declined.

Long-lining is used exclusively for the highly lucrative, but heavily controlled, Patagonian Tooth Fish fishery.

Figure 25:

The fishery for both species of squid constitutes approximately 70% of the fishing operations conducted in the FICZ.

Figures 26 and 27:

Although the yearly revenue from licence fees has declined from the heights reached during the initial years of the fishing industry, it nevertheless is a significant of amount of money which has radically improved the Islands financial position.

Figure 28:

Note the high fiscal dependency of the Islands Government on the fishing industry. Most of the taxation income comes from the taxation of fishing companies; investment income is mainly derived from funds invested as the result of budget surpluses caused by high level of fishing licence revenue.

Figure 29:

Although the income of the Government of SGSSI is small in comparison with that of the Islands, it is at its highest level since the demise of the whaling industry.

Antarctic Cod and the various species of Ice Fish were heavily overfished before the current regulatory system was introduced.

Krill is currently (2003) the major target species; the Tooth Fish fishery is small in total tonnage caught, but the value of the catch is very high.

Figure 30:

The Government of South Georgia and the South Sandwich Islands has income from tourist landing fees, the sale of stamps, entrance fees to Whaling Museum, but the majority of this income comes from the fishing industry.

The current (2003) income produced by the sale of fishing licences by the Government of SGSSI is approximately £2.2M.

22. References cited or referred to.

a. Books, reports, letters and Journals:

Anonymous (1993) Argentine licences cut Falklands cash. *Fishing News International* vol 32, p32.

Anonymous (1979) Brian Birley Roberts CMG. *Polar Record* vol 19(121), pp.399-404.

Anonymous (1989) *Fisheries Report 87/88*, Stanley: Fisheries Department, Falkland Islands Government.

Anonymous (1990) Falklands licences for East Germany. *Fishing News International* vol 29, p12.

Anonymous (2000) Falklands looks to expand. *World Fishing* vol 49, p5

Anonymous (1991) Falklands offers long term deals. *Fishing News International* 30, 7.

Anonymous (1990) Falklands squid fishery under threat. *Agra Europe – Eurofish Report* FS/4.

Anonymous (1992) The Falklands - Squids in. *Economist (UK)* 25 January 1992, p71.

Anonymous (1991) Fewer licences for Falklands. *World Fishing* vol 40, p44.

Anonymous (February 1923) Is the whale being exterminated? *Anglo-Norwegian Trade Journal* vol 9 (No.98), p21.

Anonymous (1991) More licences for Falkland fisheries. *World Fishing* vol 40, p6.

Anonymous (1978) The murder of John Rudd in 1864. *The Falkland Islands Journal* pp.16-19.

Anonymous (1990) New Zealand's squid fishery collapses … Falkland Islands closes early. *World Fishing* vol 39, p45.

Anonymous (1981) The pioneer farmers of Patagonia. *The Falkland Islands Journal* p.10.

Anonymous (1990) Southwest Atlantic IIIex squid - fishing effort cannot be sustained. *Fishing News International* vol 29, pp. 14-15.

Agnew, D.J. (2000) The illegal and unregulated fishery for toothfish in the Southern Ocean and the CCAMLR catch documentation scheme. *Marine Policy* vol 24, pp. 361-374.

Agnew, D.J., Baranowski, R., Beddington, J.R., des Clers, S. and Nolan, C.P. (1998) Approaches to assessing stocks of *Loligo gahi* around the Falkland Islands. *Fisheries Research* vol 35, pp. 155-169.

Agnew, D.J., Nolan, C.P., Beddington, J.R. and Baranowski, R. (2000) Approaches to the assessment and management of multispecies skate and ray fisheries using the Falkland Islands fishery as an example. *Canadian Journal of Fisheries and Aquatic Sciences* vol 57, pp. 429-440.

Agnew, D.J (2002) Critical aspects of the Falkland Islands pelagic ecosystem: distribution, spawning and migration of pelagic animals in relation to oil exploration. *Aquatic Conservation* vol 12, pp. 39-50.

Allardyce, W.L., Letter; Colonial Office, Aug 28, 1905.
Reference: FIGA G/6

Allardyce, W.L., Letter; Colonial Office, Sep 2, 1909.
Reference: FIGA G/9

Allardyce, W L., *Falkland Islands Dependencies: Despatches to the Secretary of State 1908-1915*. Cambridge: Scott Polar Research Institute.
Reference: SPRI MS 240/1 & MS240/2

Amos, L., McAdam, J.H. and Kerr, A. (2000) Studies in heathland ecology and soil erosion in the Falkland Islands. In: McAdam, J.H., McCracken, A.R., Mac tSaoir, S. and Govier, (Eds.) *Abstracts from The Irish Botanists' Meeting 29th-31st March 1999*. Belfast: The Royal Irish Academy. vol 100B (No.1) pp. 41-67.

Armstrong, P. (1993) The behaviour and origin of the Warrah. *Falkland Islands Journal* vol 6 (part two) pp. 99-107.

Armstrong, P. (1992) *Darwin's desolate islands - a naturalist in the Falkland Islands 1833/1834*. Picton Publishing.

Armstrong, P. (1994) Human impact on the Falkland Islands. *The Environmentalist* vol 14. pp. 215-231.

Aron, W., Burke, W. and Freeman, M. (2000) The whaling issue. *Marine Policy* vol 24. pp. 179-191.

Ashmole, P. and Ashmole, M. (2000) *St Helena and Ascension Island: a natural history*, Oswestry: Anthony Nelson.

Baird, S.(2001) *Report on the International Fishers' Forum on solving the incidental capture of seabirds in longline fisheries, Auckland, New Zealand, 6-9 November 2000*. Auckland, New Zealand: Department of Conservation.

Baker, H. (1924) *Final Report of D. H Baker, Government Geologist of the Falkland Islands 1920-1922*. London: HMSO.

Baker, H. (1921) *Geological Reports made in 1921*. Stanley: Falkland Islands Government.

Barham, J. (1994) Diplomats in Buenos Aires must learn the mating and migratory habits of squid. *The Financial Times* (August 30) London.

Barthelmess, K., Kock, K.-H. and Reupke, E. (1997) Validation of catch data of the Olympic Challenger's whaling operations from 1950/1 to 1955/56. Cambridge: International Whaling Commission.

Barton, J (2000). *Commercial Fishing: opportunities and conservation - striking a balance*. Stanley: Falkland Islands Government.

Barton, J (Director of Fisheries, Falkland Islands Government) (1990) *Affidavit: in the matter of an application for Judicial Review in the matter of Fu Chun Fishery Limited*, Reference: SC/CTV/10/199o; Legal proceedings in the Supreme Court of the Falkland Islands.

Barton, J (2000). *Fisheries and fisheries management in Falkland Islands Conservation Zones*. Stanley: Falkland Islands Government.

Basberg, B. (1993) Survival against all odds? Shore stations whaling at South Georgia in the Pelagic era, 1925-1960. In: Basberg, B., Ringstad, J.E. and Einar Wexelsen, (Eds.) *Whaling & History; perspectives on the evolution of the industry*, Sandefjord: Sandefjordmuseene, Sandefjord. pp. 157-167.

Basson, M. and Beddington, J.R. (1993) Risks and uncertainties in the management of a single-cohort squid fishery: the Falkland Islands *Illex* fishery as an example. In: Smith, S.J., Hunt, J.J. and Rivard, D., (Eds.) *Risk evaluation and biological reference points for fisheries management*, pp. 253-259. Ottawa, Canada: National Research Council and Department of Fisheries and Oceans.

Bernhardson, W. (1989) *Land and life in Falkland Islands (Islas Malvinas).* Unpublished PhD thesis: University of California at Berkeley.

Bisbal, G.A. (1993) Fisheries management on the Patagonian shelf: a decade after the 1982 Falklands/Malvinas conflict. *Marine Policy* vol 17, pp. 213-229.

Blake, B. (2002) *Bridget's Book*. Stanley: Alistair Cameron Memorial Trust.

Bogen, H. (1957) *Main events in the history of Antarctic exploration*. Sandefjord: Norwegian Whaling Gazette.

Bonner, W.N. (1980) British biological research in the Antarctic. *The Linnaean Society of London* vol 14, pp. 1-10.

Bonner, W.N. (1984) *Conservation in the Antarctic.* London & New York: Academic Press.

Bonner, W.N. (1958) Exploitation and Conservation of Seals in South Georgia. *Oryx* vol IV, No.6, pp. 373-380.

Bonner, W.N. (1960) *Fifty years of sealing by Pesca at South Georgia*. Stanley: Falkland Islands Government.
Reference: D/9/59; Falkland Islands Government Archive

Bonner, W N. Population increase in the fur seal *Arctocephalus Tropicalis Gazella* at South Georgia. The First S.C.A.R. Symposium on Antarctic Biology. 1964.
Reference: SPRI Pam 599.745.1

Bonner, W.N. (1961) *Report on the sealing industry at South Georgia; season 1960-61*. Stanley: Falkland Islands Government.
Reference: SPRI MS1228/7/56

Bonner, W.N. (1982) *Seals and man - a study of interactions*, Washington: University of Washington Press.

Bonner, W.N. (1989) *Whales of the world*, London: Blandford.

Bougainville Louis de (1782) *A voyage around the world 1766-1769*, London: Nourse.

Boyson, V.F. (1924) *The Falkland Islands*. Oxford: Clarendon Press.

Brandt, K. (1948) *Whaling and Whale Oil during and after World War II*, Stanford, California: Food Research Institute Stanford University.

Bridges, T. (1870) The Fuegian or Southern Mission. *South American Missionary Society Magazine* vol 4, pp. 39-43.

Briske, D., Heitschmidt, R. and Stuth, J. (1991) *An ecological perspective in grazing management*. Portland, USA: Timber Press.

Brothers, N., Cooper, J. and Løkkeberg, S. The incidental catch of seabirds by longline fisheries: worldwide review and technical guide for mitigation. Fisheries Circular No.937, FAO.

Broughton, D. and Kerr, A. (1999) Novel uses for native plants. *Wool Press* (September 1999) vol 124. Stanley: Falkland Islands Government.

Broughton, D. and McAdam, J.H. (2000) The flora of Saunders Island, Falkland Islands. In: Broughton, D. and Mc Adam, J.H., (Eds.) *Abstracts from The Irish Botanists' Meeting 29th-31st March 1999*, Belfast: The Royal Irish Academy. vol 100B(No.1), pp. 41-67.

Broughton, D. and McAdam, J.H. (1999) *A preliminary atlas of the vascular flora of the Falkland Islands*. Queens University of Belfast: Falklands Conservation.

Broughton, D.A. (1999) *A review of the biology of the shrub taxa and associated dwarf heathlands of the Falkland Islands*. Unpublished MPhil. thesis: The Queens University of Belfast.

Broughton, D.A. and McAdam, J.H. (2002) A Red Data List for Falkland Islands vascular flora. *Oryx* vol 36(3), pp. 279-287.

Brown & Root Environmental, (Ed.) (1997) *Falkland Islands Environmental Baseline Survey - Desk Study Report.* Stanley: Falkland Islands Government.

Bruce, W.S. (1992) *The Log of the Scotia Expedition 1902-1904*, Edinburgh: Edinburgh University Press.

Bruce, W.S. (1911) *Polar Exploration*, London: Home University Library.

Burn Murdoch, W.G. (1894) *From Edinburgh to the Antarctic*, London: Longmans.

Busch, B.C. (1985) *The war against the seals*, Montreal: McGill-Queen's University Press.

Caffin, J. (1979) Trawlers off South Georgia. *Antarctic* vol 8(11), p391.

Cardinall, A. (1942) *Post-war Development Plan.*
Reference: CO78/216/8 Colonial Office Archive, Public Records Office, Kew

Carson, R. (1999) *Silent Spring*, 6th edn. London: Penguin Books.

Cawkell, M. (1960) *The Falkland Islands*, London: Macmillian & Co.

Chater, T. (1993) *The Falkland Islands*, London: Press.

Christensen, L. (1935) *Such is the Antarctic*, London: Hodder and Stoughton.

Christian Salvesen Ltd (1982) The story of the New Island whaling venture. *The Falkland Islands Journal* pp. 6-11.

Churchill, R.R. (1988) The Falklands Fishing Zone - Legal-Aspects. *Marine Policy* vol 12, pp. 343-360.

Clark Ross, J. (1847) *A voyage of discovery and research in the Southern Antarctic regions during the years 1839-1843*. London: John Murray.

Cobb, A.F. (1933) *Birds of the Falkland Islands*, London: Whitherby.

Codling, R. (1998) *Wilderness and aesthetic values in the Antarctic*. Unpublished PhD Thesis: Cambridge.

Coleman-Cooke, J. (1963) *Discovery II in the Antarctic: the story of British Research in the Southern Seas*. London: Odhams Press.

Constable, A., de la Mare, W., Agnew, D., Everson, I. and Miller, D. (2000) Managing fisheries to conserve the Antarctic marine ecosystem: practical implementation of the Convention of the Conservation of Antarctic Marine Living Resources (CCAMLR). *ICES Journal of Marine Science* vol 57, pp. 778-791.

Coulthard, F., McAdam, E. and McAdam J (2001) James Lovegrove Waldron - notebook and original diary 1866-1876. *Falkland Islands Journal* vol 7, pp. 79-93.

Cronon, W. (1992) A Place for Stories: Nature, History and Narrative. *The Journal of American History* March, pp.1347-1376.

Croxall, J. (1996) Reproductive performance, recruitment of and survival of Wandering Albatrosses (*Diomedea exulans*) at Bird Island, South Georgia. *Journal of Animal Ecology* vol 59, pp.775-796.

Cruickshank, J (2001) *Falkland Soils - origins and prospects*. Belfast: Department of Agriculture of Northern Ireland.

Csirke, J. (1987) *The Patagonian fishery resources and off-shore fisheries in the South-West Atlantic*. Rome: FAO. (FAO Fish.Tech.Pap.,vol 286. pp. 1-75).

Cumpston, J.S. (1968) *Macquarie Island*. Australia: Antarctic Division of the Department of External Affairs.

D'Arcy, G., Waldron, H., Letter Jun 30, 1874. Government Letters Out Book; Falkland Islands Government Archive

d'Urville, J.S.C. (1826) *Flore de Iles Malounies*, Paris: Linnaean Society of Paris.

Dallimore, W.H. (1927) The Falkland Islands. *Royal Botanic Gardens Kew Bulletin* vol 1, pp.1-3.

Dallimore, W.H. (1919) The Falkland Islands; Forestry and Tussock Grass. *Royal Botanic Gardens Kew Bulletin* 5, pp.209-222.

Dallimore, W.H. (1920) Trees for the Falkland Islands. *Royal Botanic Gardens Kew Bulletin* 10, pp.377-378.

Darwin, C. (1930) *A Naturalist's voyage round the world in HMS Beagle*, Oxford University Press.

Davies, T.H. (1987) *Agricultural Research and Development in the Falkland Islands 1969-1986*. Stanley: Falkland Islands Government.

Davies, T.H., Dickson, I.A., McCrea C T, Mead, H. and Williams, W.W. (1971) *The Sheep and Cattle Industries of the Falkland Islands*. Stanley: Foreign and Commonwealth Office, Overseas Development Administration.

Davies, W. (1939) *The Grasslands of the Falkland Islands*, London: HMSO.

de Clers, S. (1998) Structural adjustments of the distant water fleet of European factory trawlers fishing for *Loligo* squid in Falkland Islands waters. Symes, D. In: *Property rights and regulatory systems in fisheries*. Oxford: Fishing News Books. pp. 143-152.

Despard, G. (1859) Journal of Rev. G P Despard. *Voice of Pity* vol 6, pp.101-143.

Dickinson, A.B. (1965) *Report on the sealing industry at South Georgia; 1965 season. King Edward Point, South Georgia*. Stanley: Falkland Islands Government. Reference: SPRI MS 1228/7/62

Dickinson, A.B. (1984*) The development and administration of the elephant sealing industry in South Georgia.* Unpublished MPhil. thesis: Cambridge.

Dickinson, A.B. (1987) *A history of sealing in the Falkland Islands and Dependencies 1764-1972*. Unpublished PhD thesis: Cambridge.

Dickinson, A.B. (1993) Some aspects of Japanese whaling and sealing in South Georgia. In: Basberg, B., Ringstad, J.E. and Einar Wexelsen, (Eds.) *Whaling & History; perspectives on the evolution of the industry*, pp. 169-176. Sandefjord: Sandefjordmuseene, Sandefjord.

Dickinson, A.B. (1985) South Georgia Fisheries. *Polar Record* vol 139, pp. 434-437.

Discovery Committee. Whaling Research Expedition; Discovery Expedition. Reference: SPRI MSS1284/4/1 (folio number 39) (Minutes and related papers of the Discovery Committee April 1923 - February 1924)

Discovery Committee. Whaling Research Expedition; Discovery Expedition. Reference: SPRI MSS1284/4/3 (folio number 198) (Minutes and related papers of the Discovery Committee August 1924 - April 1925)

Discovery Committee. Whaling Research Expedition; Discovery Expedition. Reference: SPRI MSS1284/5/4 (folio number 461) (Minutes and related papers of the Discovery Committee January 1926 - August 1926)

Discovery Committee. Whaling Research Expedition; Discovery Expedition. Reference: SPRI MSS1284/4/7 (folio number 639) (Minutes and related papers of the Discovery Committee May 1927 - October 1927)

Discovery Committee. Whaling Research Expedition; Discovery Expedition. Reference: SPRI MSS1284/4/9 (folio number 735) (Minutes and related papers of the Discovery Committee May 1928 - September 1928)

Discovery Committee. Whaling Research Expedition; Discovery Expedition. Reference: SPRI MSS1284/4/10 (folio numbers 923 and 932) (Minutes and related papers of the Discovery Committee October 1928 - April 1929)

Dodds, K. (2002) *Pink Ice*, London: I B Tauris.

Dodson, A. (1991) *The Green Reader*, London: Andre Deutsch.

Eggeling T and Kerr, A. (2000) Camp burning - draft Code of Practice. *Wool Press* vol 124, p8.

Elliot, G. (1998) *A whaling enterprise; Salvesen in the Antarctic*, Norwich: Michael Russell Publishing.

Evans, H.R. (2001) *The Falkland Islands I knew*. Oswestry: Anthony Nelson.

Evans, H.R. (1944) *Plants which have flowered successfully in gardens of the Falkland Islands*, Stanley: Falkland Islands Government.

Everson, I. (1978) Antarctic Fisheries. *Polar Record* vol 19(120), pp. 233-251.

Everson, I. (1977) *The Southern Ocean - the living resources of the Southern Ocean*. New York: FAO.

Falkland Islands Dependencies (1975) *Falkland Islands Dependencies Conservation Ordinance*.

Falkland Islands Dependencies (1975) *Wild mammals and Birds (Export) Regulations 1975*.

Falkland Islands Development Corporation (1989) *Annual report*: Stanley: Falkland Islands Government.

Falkland Islands Government (1999) *Conservation of Wildlife and Nature Ordinance*.

Falkland Islands Government (1999) *Conservation of Wildlife and Nature Ordinance (Correction) Order*.

Falkland Islands Government (1998) *Falklands Operators Sharing Agreement - Waste Disposal*.

Falkland Islands Government (1998) *Fisheries (Conservation and Management) Ordinance*.

Falkland Islands Government (1992) *The Marine Mammals Ordinance 1992*.

Falkland Islands Government (11 July 1918) *Mining - an ordinance to authorise and regulate mining*.

Falkland Islands Government (2002) *Mining Bill 2002*.

Falkland Islands Government (1964) *The Mining Ordinance (Mineral Oil) – regulations*.

Falkland Islands Government (1996) *A new look at nature conservation law in the Falkland Islands - a Draft Green paper*. Stanley: Falkland Islands Government.

Falkland Islands Government (1994) The *Offshore Minerals Ordinance*.

Falkland Islands Government (1991) The *Planning Ordinance*.

Falkland Islands Government (Fisheries Department) (1997) *Fishery statistics Volume 1 (1989-1996)*. Stanley: Government Printing Office.

Falkland Islands Government (Fisheries Department) (1998) *Fishery statistics Volume 2 (1989-1997)*. Stanley: Government Printing Office.

Falkland Islands Government(Fisheries Department) (2000) *Fishery statistics Volume 4 (1990-1999)*. Stanley: Government Printing Office.

Falkland Islands Government (Fisheries Department) (1989) *Interim Conservation and Management Zone - Fisheries report 87/88*. Stanley: Government Printing Office.

Falkland Sheep Owners' Association (1938) *Falkland Islands Sheepowners' Association 1928-1938*. London: Packe Brothers & Company Ltd.

Fanning, E. (1924) *Voyages and discoveries in the South Seas 1782-1832*. Massachusetts: Salem Marine Research Society.

Felton, A., Hodson, A., Letter, Jan 25, 1928.
Reference: FIGA, CSO187/27

Ferguson, D. (1915) Geological observations in South Georgia. *Transactions of the Royal Society of Edinburgh* Vol L (Part IV) No.23,

Fisher, M. and James (1957) *Shackleton*, London: James Barrie Books.

Fleming, F. (1999) *Barrow's Boys*, London: Granta Books.

Fraser, C. (1986) *Beyond the Roaring Forties*, Wellington, New Zealand: Government Printing Office.

Fuller, J. (1995) *Studies on the invertebrate fauna of Tussac Grass communities in the Falkland Islands*. Belfast: The Department of Applied Plant Science, The Queen's University of Belfast.

Gage. A T and Stearn W T (1988) *A bicentenary history of the Linnaean Society of London*, London: Academic Press.

Gambell, R. (2002) *Conservation of whales and dolphins*. London: John Ray Initiative.

Gambell, R. (1993) International management of whales and whaling: An historical review of the regulation of commercial and aboriginal subsistence whaling. *Arctic* vol 46 (2), pp. 97-107.

Gambell, R. (2000) *Managing creation - or at least the whales*. Unpublished lecture notes to American Scientists Association.

Gambell, R. (1990) *To whale or not to whale, that is the question*. In: Berry, R.J., (Ed.) *Real Science, Real Faith*, Eastbourne: Monarch.

Gambell, R. (1990) Whaling - a christian position. *Science and Christian Belief* vol 2 (1), pp. 15-24.

Gibbs, J.G. (1946) *Report of the Director of Department of Agriculture on the activities of the Department of Agriculture from 1937-1946.* Stanley: Falkland Islands Government.

Gibbs, J.G., Cardinall, A., Letter. Mar 10, 1942.
Reference: FIGA CSO 8/42

Gnanakan, K. (1999) *God's world*, London: SPCK.

Gon, O. and Heemstra, P. (Editors) (1990) *Fishes of the Southern Ocean*, Grahamstown: J L B Smith Institute of Ichthyology.

Goudie, A. (1993) *The human impact on the natural environment*, Oxford: Blackwell.

Grant, J. (1803) *The narrative of a voyage performed in His Majesty's vessel the Lady Nelson, of sixty tons burthen, with sliding keels, in the years 1800, 1801 and 1802 to New South Wales*. London: T. Egerton.

Greenway, M. (1972) *The Geology of the Falkland Islands*. Cambridge: Scientific Report No.76, British Antarctic Survey and the National Environment Research Council.

Grove, R. (1985) Charles Darwin and the Falkland Islands. *Polar Record* vol 22, pp. 413-420.

Grove, R.H. (1995) *Green Imperialism*, Cambridge: Cambridge University Press.

Grzebielec, R. and Trela, K. (1994) Polish investigations of the state of southern poutassu stocks on the Falkland fishing grounds. *Bulletin of the Sea Fisheries Institute* vol 1, pp.11-21.

Guillebaud, C.W. (1967) *Economic Survey of the Falkland Islands*. Stanley: The Falkland Islands Government.

Gulland, J.A. (1987) Falklands Fishing. *Marine Policy* vol 11, pp. 240-240.

Gunther, E.R. (1928) *Notes and sketches made during two years on the Discovery Expedition*. Oxford: Holywell Press.

Gurney, A. (1997) *Below the Convergence - voyages towards Antarctica 1699-1839*, New York: Norton & Co.

Gurney, A. (2000) *The race to the White Continent - voyages to the Antarctic*, New York: Norton & Co.

Halcrow (Sir William Halcrow and Partners Ltd) (1998) *Falkland Islands Waste Disposal*. Stanley & London: Falkland Islands Government and Halcrow.

Hall, D., Cole, R. and Thorpe, J. (1979) *Report on a visit by a fisheries team to the Falkland Islands November 1978*, London: FCO Overseas Development Administration.

Hall, D.N.F. (1983) *A Report on the Fisheries Resources of the Falkland Islands*. London: FCO Overseas Development Administration.

Hamilton, J.E. The Leopard Seal *Hydrunga leptonyx*. *Discovery Reports* Vol.XVIII, pp. 239-264.

Harden Jones, F.R.(1994) *Fisheries Ecologically Sustainable Development: Terms and Concepts*, Hobart, Tasmania: Institute of Antarctic and Southern Ocean Studies.

Hardy, A. (1967) *Great Waters - a Voyage of Natural History to study whales, plankton and the waters of the Southern Ocean in the old Royal Research ship Discovery with results brought up to date by the findings of the R.R.S. Discovery II.*, London: Collins.

Harmer, S. (December 16th 1922) The present position on whaling. *Nature* vol 110 (No.2772), p827.

Harmer, S.F. (1928) *The history of whaling*. London: Linnaean Society.

Harmer, S.F. (1917) *Instructions for collectors - mammals (Skeletons, with special notes on the collection of specimens of Cetacea)*, London: British Museum (Natural History).

Harmer, S.F. (1931) *Southern Whaling*. London: Linnaean Society.

Harradine, J. (1976) Geese in the Falkland Islands. *The Falkland Islands Journal* pp.5-16.

Hart, T.J. (1946) *Report on trawling surveys on the Patagonian continental shelf*. Discovery Reports 1946; vol 23; pp. 223-408.

Headland, R.K. (2000) *Chronological List of Antarctic Expeditions and related historical events*. Cambridge: Cambridge University Press.

Headland, R.K. (1990) A historical review of Antarctic ichthyology. In: Gon, O. and Heemstra, P., (Eds.) *Fishes of the Southern Ocean*, Grahamstown: J L B Smith Institute of Ichthyology. pp. 1-5.

Headland, R.K. (1984) *The Island of South Georgia*, Cambridge: Cambridge University Press.

Headland, R.K. (1993) The last Antarctic whaling bases. *Antarctic* vol 13, pp. 81-82.

Heijtz, S. (1999) Another 1830s letter from the Arthur Cox correspondence. *The Upland Goose* vol XV, pp. 38-39.

Heijtz, S. (1996) Early correspondence from and to the Falkland Islands. *The Upland Goose* vol XIII, pp. 221-227.

Henniker Heaton, H. (1939) *The Falkland Islands - Memorandum on potential minor industries*. Stanley: Government Printing Press.

Hernandez, E. (1989) *Maria Saez de Vernet: Cronista de Nuestra Soberania en Malvinas*, Ediciones Puerto Luis.

Heyburn, H. (1980) William Lamond Allardyce, 1861-1930: Pioneer Antarctic Conservationist. *Polar Record* Vol 20, pp. 39-42.

Hince, B. (2000) *The Antarctic Dictionary*, Australia: CSIRO Publishing.

Hinton, M. (1925) *Reports on papers left by the late Major G E H Barrett-Hamilton relating to the whales of South Georgia.* London: Crown Agents.

Hodgkinson, K. (1992) *Elements of grazing strategies for perennial grass management in rangelands*. London: Linnaean Society.

Hodson, A. ,Colonial Office., Letter; 22 Jul 1927.
Reference: Colonial Office archive CO78/180/15 Public Record Office Kew

Hodson, A., Wilson, S., Letter; 12 Apr 1928. (A report of the visit of Hodson to Brigadier-General Sir Samuel Wilson, describing his tour of the South Shetland, South Sandwich Islands and South Georgia in SS *Fleurus* in 1928).

Holt, S. (2002) The whaling controversy. *Fisheries Research* vol 54, pp. 145-151.

Holt, T., Medley, P., Rice, J., Cooper, J. and Hough, A. (2001) *Certification Report for South Georgia Patagonian Toothfish Longline Fishery.* Stanley: South Georgia and South Sandwich Government.

Holtedahl , O. (1935) *Scientific results of the Norwegian Antarctic expeditions 1927-1928*, Oslo: I Kommisjon Hos Jacob Dybwad.

Hooker, J. *Correspondence 1839-1845 Antarctic Expedition*. Kew. Royal Botanic Gardens Kew Archive

Hopkins, L. (February 1997) *Environmental assessment for the proposed exploration drilling operations offshore the Falkland Islands*. Stromness, Orkney.

Hopkins, L. (October 1997) *Environmental assessment for the proposed exploration drilling operations offshore the Falkland Islands.* Stromness, Orkney.

Hoppé, G. and McAdam J (1993) *Management of a Tussac Grass community for wildlife, tourism and agriculture*, Belfast: Queens University, Belfast.

Hu, N.-T. (1987) The Sino-Argentine 'Squid War' of 1986. *Marine Policy*; April 1987, pp. 133-142.

Huin, N. (2001) *Census of the Black-browed Albatross population of the Falkland Islands*, Stanley: Falklands Conservation.

Huin, N. (2001) *Seabird bycatch in Patagonian shelf waters*, Stanley: Falklands Conservation.

Hureau, J.-C. and Slosarczyk, W. (1990) *Exploitation and conservation of Antarctic fishes and recent ichthyological research in the Southern Ocean; in: Fishes of the Southern Ocean*. In Gon, O. and Heemstra, P. (Ed) (1990) *Fishes of the Southern Ocean*, Grahamstown: J L B Smith Institute of Ichthyology. pp. 52-63.

Huxley, L. (1918) *Life and letters of Sir J D Hooker*, London: John Murray.

Ingham, R. and Evans, M. (2000) Tussac restoration progress at Port Harriet. *Warrah* vol 18, pp. 8-9.

Ingham, R J. (2000) *Environmental Impact Assessment in the Falkland Islands.* Stanley: Falklands Conservation.

Ingham, R J and Summer, D.(2000) *Falkland Islands Cruise Ship Tourism: an overview of the 1999-2000 season and the way forward*. Stanley: Falklands Conservation.

Interdepartmental Committee (1920) *Research and Development in the Dependencies of the Falkland Islands.* Cmd.657, London: H.M.S.O.

International Whaling Commission (1995) *Forty-Fifth Report of the International Whaling Commission*. Cambridge: International Whaling Commission.

International Whaling Commission; Donovan, G.P., (Ed.) (1996) *Forty-Sixth Report of the International Whaling Commission*. Cambridge: International Whaling Commission.

Jenkins, J.T. (1948) Bibliography of whaling. *Journal of the Society for the Bibliography of Natural History* vol 2 Part 4, pp. 71-166.

Jenkins, J.T. (1921) *A history of the whale fisheries from the Basque fisheries of the tenth century to the hunting of the finner whales at the present date,* London: H F & G Witherby.

Jenkins. J T (1932) *Whales and modern whaling,* London: H F & G Witherby.

Jones A G (1992) Fur sealing in the Falkland Islands in the 1820's and 1830's. *The Falkland Islands Journal* vol 6, pp. 39-47.

Jones, A.G. (1992) *Polar Portraits: Collected papers,* Whitby: Caedmon.

Kellog, R. (1940) Whales, giants of the sea. *The National Geographic Magazine* vol 77, pp. 35-90.

Kerr, A. (2002) *Environmental and management factors affecting the sustainability of native pastures under sheep grazing in the Falkland Islands*. Belfast: The Queen's University of Belfast.

Kerr, A., (Ed.) (1994) *Introduction - Farmer's Forum on Tussac grass and Sand grass planting in the Falkland Islands*. Stanley: Falkland Islands Government.

Kerr, A and McAdam, J. (2000) *Rotational and continuously grazed whitegrass pasture in the Falkland Islands*. Stanley: Falkland Islands Government

Keynes, R. (2002) *Fossils, Finches and Fuegians*, London: Harper Collins.

Kightley, S. and Lewis Smith, R. (1976) The influence of reindeer on the vegetation of South Georgia: Long-term effects of unrestricted grazing and the establishment of enclosure experiments in various plant communities. *British Antarctic Bulletin* vol 44, pp. 57-76.

Killingbeck, J.B. (1977) *The role of Deception Island in the development of Antarctic affairs*. Cambridge: Cambridge University Press.

King, H. (September 1964) An early proposal for conserving the Southern seal fishery. *Polar Record* vol 12; No.78, pp. 313-316.

King R B, Lang, D.M. and Blair Rains, A. (1969) *Land system analysis of the Falkland Islands, with notes on the soils and the grasslands. Miscellaneous Report 72*. Surrey: Land Resources Development Centre.

Knight, F.P. (1984) Reminiscences of forestry and horticulture in the Falkland Islands. *Scottish Forestry* Vol 38 (4), pp. 185-188.

Knight, N. (1994) *Farmer's Forum on Tussac grass and Sand grass planting in the Falkland Islands*. Stanley: Falkland Islands Government.

Knox, G. (1994) *The biology of the Southern Ocean*, Cambridge: Cambridge University Press.

Kock, K.-H. (1992) *Antarctic fish and fisheries*. Cambridge: Cambridge University Press.

Kock, K.-H. (1994) Fishing and conservation in Southern waters. *Polar Record* vol 30(172), pp. 3-22.

Kock, K.-H. (1990) The state of exploited fish stocks in the Antarctic sector of the Southern Ocean. In: Kerry, K.R., Hempel and Gothilf, (Eds.) *Antarctic ecosystems: ecological change and conservation*. pp. 308-322. Berlin: Springer-Verlag.

Kock, K.-H. (2000) *Understanding CCAMLRS's approach to management*. Hobart: CCAMLR.

Kock, K.-H. (1996) *Validation of catch data from German whaling in the Southern Ocean before World War II*. Cambridge: International Whaling Commission.

Langmead, R. (1988-1999) Ecojustice Principles: Challenges for the Evangelical Perspective. *Ecotheology* vols 5 & 6, pp. 162-172.

Lapsley, P. (2000) *Fishing for sea trout in the Falkland Islands*, Stanley: Falkland Island Tourist Board.

Laws, R.M. (1952) *Report on the sealing industry of South Georgia*. SPRI 1228/7/42.

Laws, R.M. (1960) The Southern Elephant Seal (*Mirounga leonina*) at South Georgia. *Norsk Hvalfangst-Tidende (The Norwegian Whaling Gazette)*, vol 10. pp. 466-479.

Laws, R.M. (1960) The Southern Elephant Seal (*Mirounga leonina*) at South Georgia. *Norsk Hvalfangst-Tidende (The Norwegian Whaling Gazette)*, vol 10. pp. 520-543.

Laws, R.M. (1991) Unacceptable threats to Antarctic Science. *New Scientist* vol 129(1762), p4.

Lee, R. (1994) *Farmer's Forum on Tussac grass and Sand grass planting in the Falkland Islands*. Stanley: Department of Agriculture, Falkland Islands Government.

Leopold, A. (1989) *A Sand County Almanac*, Oxford: Oxford University Press.

Lockwood, S.(Editor) (2001) *A glossary of Marine Nature Conservation and Fisheries*, Countryside Council for Wales.

Longden, J., Governor, Letter 12 Mar 1855. Misc. letters Inward Book; Falkland Islands Government Archive.

Low, A.J. (1983) *Tree planting in the Falkland Islands*. Stanley: Falkland Islands Government.

Low, A.J. and McAdam, J.H. (1999) *Guidelines for shelterbelt planting in the Falkland Islands*. Stanley: Falkland Islands Department of Agriculture & United Kingdom Falkland Islands Trust.

Mabey, R. (1999) *Gilbert White*, London: Pimlico.

Mackenzie, J., Griffiths, E.R, Letter 27 July 1864. Letters (Legal) Book; Falkland Islands Government Archive.

Mackintosh, N.A. (1972) Biology of the populations of large whales. *Science Programme* vol 60, pp. 449-464.

Mackintosh, N.A. (1942) The natural history of whales. *Polar Record* vol 3 (24), pp. 553-563.

Mackintosh, N.A. (1948) The stock of whales. *Nature* vol 162(4108), p. 148. (Comments on: Hamilton, J E., (1948) Effect of present-day whaling on the stock of whales. *Nature*, Vol. 161, No. 4102, pp. 913-914).

Mackintosh, N.A. (1965) *The Stocks of Whales*, London: Fishing News (Books) Ltd.

Mackintosh, N.A. (1970) Whales and krill in the twentieth century. *Antarctic ecology* vol 1, pp. 195-212.

Maitland, T. (1988) *Whitegrass grazing trial*. Stanley: Falkland Islands Government.

Marine Resources Assessment Group (1996) *An overview of the Fisheries of South Georgia and South Sandwich Islands.* London: MRAG Imperial College.

Martinic, M. (2002) The "S.Anton or Sanson" Islands; first cartographic mention of the Falkland Islands in the 16th Century. *Falkland Islands Journal* vol 8(1), pp. 24-31.

Matthews, H.L. (1958) The biology of whales. *New Scientist* vol 4, pp. 1426-1427.

Matthews, H.L. (1948) *Whales*. Glasgow: Royal Philosophical Society of Glasgow.

Matthews, L.H. (1957) Dr. J E Hamilton I.S.O. *Nature* vol 180 (4576), p68.

Matthews, L.H. (1931) *South Georgia: The British Empire's Subantarctic outpost*, Bristol: John Wright & Sons.

McAdam, J.H. (1980) *Ecological and agronomic studies carried out in the Falkland Islands 1976-1978*. London: Overseas Development Administration.

McAdam, J.H., Dawson and Reid, R. (2000) The suitability of Willows (*Salix* spp) for energy, shelter, browse, bioremediation and amenity use in the Falkland Islands. In: McAdam, J.H., Dawson and Reid, R., (Eds.) *Abstracts from The Irish Botanists' Meeting 29th-31st March 1999*, Belfast: The Royal Irish Academy. vol 100B(No.1) pp. 41-67.

McAdam, J.H. (1989) The Great Fire on Keppel Island, 1855. *The Falkland Islands Journal*. pp. 23-28

McAdam, J.H. (1996) *The potential role for trees and forestry in the Falkland Islands*, Northern Island: The United Kingdom Falkland Islands Trust.

McAdam, J.H. (1982) Recent tree planting trials and the status of forestry in the Falkland Islands. *Commonwealth Forestry Review* vol 61, pp. 259-267.

McAdam, J.H. (1998) *Tussac Grass Research*. Stanley: Department of Agriculture, Falkland Islands Government.

McDowall, R.M. (2001) Conserving and managing the Falkland Islands' freshwater fishes. *The Falkland Islands Journal* vol 7(part 5), pp. 68-78.

McDowall, R.M. (2000) The Falkland Islands Zebra Trout *Aplochiton zebra*. *Warrah* vol 18, pp. 6-7.

McDowall, R M, Allibone, R M, and Chadderton, W L.(2000*) Issues for the conservation and management of Falkland Islands freshwater fishes*. Stanley: Falkland Islands Government.

McElroy, J.K. (1983) A workable policy for Falkland Island fisheries. *Marine Policy* vol 8, pp. 215-218.

McEwan, C., Borrero, L. and Prieto, A. (1997) *Patagonia -natural history, prehistory and ethnography at the uttermost end of the earth*, London: The Trustees of the British Museum.

McGrath, A. (1999) *Science and Religion*, Oxford: Blackwells.

McIntosh, E. and Walton, D. (2000) *Environmental management plan for South Georgia*, Cambridge: British Antarctic Survey.

McNeil, J. (2000) *Something new under the sun - An environmental history of the twentieth century*. London & New York: Allen Lane Penguin Press.

Middleton, J.(1924) *Memorandum on the sheep farming industry in the Falkland Islands*. London: HMSO.

Miller, S. (1980) *A life of our choice*, Stanley: Privately published.

Miller, S. (1976) Anson - The Government Experimental Farm 1926-8. *The Falkland Islands Journal* pp. 11-14.

Mitchell, F.G., Palmer, S.C., Letter 16 Aug 1999.

Montefiore, H. (1997) *Time to change*, Oxford: The Bible Reading Fellowship.

Moody, R. , Hooker, J., Letter 23 Apr 1845. Hooker Correspondence & Notes Volume 15. Royal Botanic Gardens Kew Archive.

Moody, R. (1843) *Information respecting the Falkland Islands*. London: Charles Knight & Co.

Moorehead, A. (1966) *The fatal impact*, London: Penguin.

Moreno, C. (1991) Hook selectivity in the longline fishery of *Dissostichus eleginoides* (Notothiidae) off the Chilean coast. *Selected scientific papers; Scientific committee for the conservation of Antarctic marine living resources (CCAMLR)* SC-CCAMLR-SSP/8, pp. 107-119.

Mowat, J.T. (1895) *Report on Sheep and Pasture*. Stanley, Falkland Islands: Reference: CO78/164 Colonial Office archive, Public Records Office, Kew

Munro, H. (1924) *Investigation into the conditions and practice of sheep farming in the Falkland Islands*. London: HMSO.

Murphy, E. (1998) Falklands fishery. *World Fishing* vol 47, pp. 16-17.

Napier, R.B. (1970) West Point Island. *The Falkland Islands Journal* pp. 30-32.

Nien-Tsu, A.H. (1987) The Sino-Argentine 'Squid War' of 1986 - its implications for fisheries policy making. *Marine Policy* pp. 133-142.

Norris, T. (1933) *Some Falkland Islands problems, from notes made during visit February 12th to March 3rd 1933.* Stanley: Falkland Islands Government. Reference: FIGA CSO/105/33

Northcott, M. (1996) *The Environment and Christian Ethics*, Cambridge: Cambridge University Press.

Nutter, A. (2002) Keppel Island. *Falklands Conservation Newsletter*. vol 3.

O'Toole, C. (2000) *The Red Mason Bee: Taking the sting out of beekeeping*, Cambridge: Osmia Books.

Osberg, S. and Palmer, S. (1994) *Hvalfangerne og Antarktis - De synlige spor* [Whalers and the Antarctic - The visible remains] (Norwegian). South Georgia: South Georgia Whaling Museum.

Osborn, L. (1993) *Guardians of Creation*, London: Apollos (IVP).

Palmer, S. (2001) Forestry in the Falkland Islands. *The Falkland Islands Journal* vol 7(5), pp. 49-67.

Palmer, S. (1995) A G Bennett - Naturalist, Whaling Officer, Customs Officer and Postmaster. *Falkland Islands Journal* vol 6, pp. 91-104.

Palsson, G. and Helgason, A. (1996*) Property rights and practical knowledge: The Icelandic Quota System.* Oxford:

Payne, R. (1995) *Among Whales*, New York: Scribner.

Penrose, B.(1775) *An account of the last expedition to Port Egmont in the Falkland Islands in the year 1772*, London: J. Johnson.

Pernety, Dom (1771) *The history of a voyage to the Malouine (or Falkland) Islands made in 1763-764*. London: Jefferys.

Pettingill, E.R. (1962) *Penguin Summer*, London: Cassell.

Pilling, D. (1994) Falkland fishing rights talks stall. *The Financial Times* (Dec 9) London.

Pole-Evans, R.C., Matthews, E.G., Letter 14 Oct, 1922.

Poles Apart (1998) *South Georgia whaling station survey (Desk study and field strategy).* Bourn, Cambridge: Poles Apart.

Poles Apart (1999) *Southern Georgia whaling station survey*. Bourn, Cambridge: Poles Apart.

Poncet, S. (1994) *Farmer's Forum on Tussac grass and Sand grass planting in the Falkland Islands*. Stanley: Department of Agriculture, Falkland Islands Government.

Prys-Jones, O. and Corbet, S. (1987) *Bumblebees*, Cambridge: Cambridge University Press.

Putz, K. (1999) *Population trends, breeding success and diet composition of Gentoo Penguins Pygoscelis papua, Magellanic Penguins Spheniscus magelanicus, and Rockhopper Penguins Eudyptes chrysocome breeding in the Falkland Islands*. Stanley: Falklands Conservation.

Putz, K. (1998) *Satellite tracking of the winter migration of Falkland Islands' Penguins*. Stanley: Falklands Conservation.

Rasmussen, L. (1997) *Earth community, Earth ethics*, New York: Orbis Books.

Reid, B. (1997) *Department of Agriculture Annual Report 1996/97*. Stanley: Falkland Islands Government.

Rice, T. (1986) *British Oceanographic Vessels 1800-1950*, London: The Ray Society.

Riddick, J. and Harris, M. (2000) The measurement of the earth's magnetic field in the Falkland Islands 1683-2000. *The Falkland Islands Journal* vol 7, pp. 8-17.

Roberts, B. (1975) *Falkland Islands Gazette - extracts, 1891-1955*. Cambridge, Scott Polar Research Institute.

Rodhouse, P. (2002) No more surprises from evanescent squid. *Science* vol 296, pp. 1000-1001.

Rõpke, A. (1993) Antarctic Fish and Fisheries. *Bulletin of Marine Science* vol 52(3), pp. 1022-1023.

Rosenbaum, M. (July 1996) Stone runs in the Falkland Islands. *Geology Today* vol 12:4, pp. 151-154.

Royal Botanic Gardens Kew *Falkland Islands - Miscellaneous 1841-1928*. Royal Botanic Gardens Kew Archive.

Rudd, I. (1986) *From shirt sleeves to shirt sleeves*, London: Private publication.

Selkirk, P., Seppelt, R. and Selkirk, D. (1990) *Subantarctic Macquarrie Island*, Cambridge: Cambridge University Press.

Shackleton, E. (The Rt.Hon.The Lord Shackleton KG PC OBE) (1976) *Economic Survey of the Falkland Islands*. London: H.M.S.O.

Shackleton, E. (The Rt.Hon. The Lord Shackleton KG PC OBE) (1982) *Falkland Islands Economic Study*. London: H.M.S.O.

Slijper, E.J. (1979) *Whales*. New York: Cornell University Press.

Smith, J.G. (1998) *Proposals for the application of the RAMSAR Convention in the Falkland Islands*. Stanley: Falklands Conservation.

Smith, N. (1994) *A history of sheep farming in the Falkland Islands*. Stanley: Falkland Islands Development Corporation.

Speak, P. (1992) William Spiers Bruce: Scottish nationalist and polar explorer. *Polar Record* vol 28, pp. 285-292.

Stackpole, E. (1953) *The sea-hunters (The New England Whalemen during two centuries 1635-1835)*. New York: J B Lippincott Company.

Stackpole, E. (1955) *The voyage of the Huron and the Huntress; the American sealers and the discovery of the continent of Antarctica*, Hartford, Connecticut: Connecticut Printers Incorporated.

Standring, K.T. (1983) *Conservation in the Falkland Islands*. Stanley: RSPB.

Standring, K.T. (1996) *Nature and wildlife conservation in the Falkland Islands*, Stanley. RSPB.

Standring, K.T. (1995) *A new look at Nature Conservation Law in the Falkland Islands*. Stanley: Falklands Conservation & Foreign and Commonwealth Office

Starbuck, A. (1964) *History of the American Whale Fishery*, New York: Argosy-Antiquarian.

Stewart, L. (1973) *The fisheries of the Falkland Islands*. London: Foreign and Commonwealth Office & Overseas Development Administration.

Stewart, P.J. (1982) Trees for the Falkland Islands. *Commonwealth Forestry Review* vol 61, pp. 219-225.

Stonehouse, B.(Ed) (2002) *Encyclopaedia of Antarctica and the Southern Oceans*, Chichester: John Wiley & Sons, Ltd.

Strange, I. (1976) *The Bird Man*, London: Gordon & Cremonesi.

Strange, I. (1974) Extracts from "The narrative of a voyage of discovery" performed in His Majesty's Vessel THE LADY NELSON, of sixty tons burthen, with sliding keels, in the years 1800, 1801, 1802 to New South Wales. *The Falkland Islands Journal* pp. 36-39.

Strange, I. (1972) *The Falkland Islands*, Newton Abbot: David & Charles.

Strange, I. (1987) *The Falkland Islands and their natural history*, Newton Abbot: David & Charles.

Strange, I. (1985) *The Falkland Islands: South Atlantic Islands*, New York: Dodd, Mead & Company.

Strange, I. (1986) The Falklands' Johnny Rook. *Natural History* vol 95, pp. 54-61.

Strange, I. (1992) *A Field guide to the Falkland Islands*, London: Harper Collins.

Strange, I. (1990) *The impact of tourism on the Falklands environment and wildlife*. Stanley: Falkland Islands Development Corporation

Strange, I. (1969) Marine mammals of the Falkland Islands. *Pacific Discovery* vol 22, pp. 16-23.

Strange, I. (1976) Ravaged Falkland Islands. *Geographical Magazine* vol 48, pp. 297-304.

Strange, I. (1972) Sealing industries of the Falkland Islands. *The Falkland Islands Journal* vol 6, pp. 13-21.

Strange, I. (1996) *The Striated Caracara in the Falkland Islands*, Stanley: Privately published.

Strange, I. (1988) Tussac Grass. Strange, I., Parry, C. and Woods, R., (Eds.) Stanley: Falkland Islands Foundation & Falkland Islands Government.

Strange, I. (1969) The wise men of West Point. *Animal* vol 11, pp. 458-462.

Summers, D. (2000) Expedition cruise ship passenger management techniques in the Falkland Islands 1999-2000. Stanley & London: Falklands Conservation.

Summers, R.W. and McAdam, J.H. (1993) *The Upland Goose*, Huntingdon, Cambridgeshire: Bluntisham Books.

Tapper, J. (1994) *Management of Argentina's fisheries - a profile. Maximum Sustainable Yield from Fish Stocks: a challenge to fishermen and managers.* Sherkin Island, Co. Cork, Ireland, Sherkin Island Marine Station. pp. 71-76.

Tatham, D. (1996) *The Moody Papers - A Governor's term 1841 - 1848*, Stanley: Falkland Islands Government.

The Government of South Georgia and the South Sandwich Islands (1993) *The Fisheries (Conservation and Management) Ordinance 1993*.

The Government of South Georgia and the South Sandwich Islands (1996) *An overview of the fisheries of South Georgia and the South Sandwich Islands.* Stanley: The Government of South Georgia and the South Sandwich Islands.

The Government of South Georgia and the South Sandwich Islands (1993) *Proclamation (Maritime Zone) 1993*.

The Zoological Society of London (1868) Proceedings - November 12th, 1868. *Proceedings of the Zoological Society of London* pp. 526-529.

Theophilus, T.W.D. (1972) *The economics of wool production in the Falkland Islands*. London: Overseas Development Administration, Foreign and Commonwealth Office.

Thomas, H.H. (1921) On the Innes Wilson collection of rocks and minerals from the South Shetland islands and Trinity Island. *Transactions of the Royal Society of Edinburgh* Vol. LIII; Part I (No.5).

Thompson, K. (1989) *An assessment of the potential for competition between seabirds and fisheries in the Falkland Islands*, Brighton: Falkland Islands Foundation.

Thomson, W. (1885) *Report of the scientific results of the voyage of HMS Challenger during the years 1873 - 1876*, London, Edinburgh and Dublin: Longman & Co; John Murray; Macmillan; Adam & Charles Black.

Tickell, W.L.N. (2000) *Albatrosses*, Sussex: Pica Press.

Tonnessen. J.N. and Johnsen, A.O. (1982) *The history of modern whaling*, London: C.Hurst & Company.

Urch, M. (1993) Development of a fishery. *Seafood International* August, pp. 31-33.

Vallentin, E.F. (1921) *Illustrations of the flowering plants and ferns of the Falkland Islands*, London: Reeve.

Vamplew, W. (1978) *Salvesen of Leith*, Edinburgh and London: Scottish Academic Press.

Vaughan, W.R. (1965) *Report on the sealing industry at South Georgia; season 1964-65*. Reference: SPRI MS 1228/7/58

Vaughen, W.R. and Strange, I. (1965*) An aerial survey of the Sea Lion Otaria byronia stocks in the Falkland Islands 1965.* Stanley: Falkland Islands Government.

Villers, A. (1932) *Sea-dogs of today*, London: George G. Harrap & Company Ltd.

Walton, D., McAdam, J. and Kerr, A. (1993) Tussac grass *Parodiochloa flabellata* a potentially valuable forage for winter grazing in the Falkland Islands. *Proceedings of the New Zealand Grasslands Conference.* pp. 12-30.

Walton D.W.H (1982) The first South Georgia leases: Compañia Argentina de Pesca and the South Georgia Exploring Company Limited. *Polar Record* vol 21, pp. 231-240.

Wannop, A.R. (1961) *Report on Falkland Islands Sheep Stations*. Edinburgh. HMSO.

Weir, D.S.A. (1938) *General Report*. Stanley: Falkland Islands Government.

Weir, D.S.A. (1938) *Report on pasture improvement*. Stanley. Falkland Islands Government. Reference: CO78/208/10 Colonial Office Archive, Public Record Office, Kew

White Fish Authority (1979*) Fisheries opportunities in the South West Atlantic*. London: Foreign and Commonwealth Office.

Wigan, M. (1998) *The last of the hunter gatherers - fisheries crises at sea*, Shrewsbury: Swan Hill Press.

Williams, J. (1990) *Search for sustainability: agriculture and its place in the natural ecosystem*. Canberra, Australia: CISRO.

Wilson, J.I. (1912) The coast of South Georgia. *The Geographical Journal* vol 39, pp. 77-78.

Wilson, P., Clark.R, Birnie, J. and Moore, D. (2002) Late Pleistocene and Holocene landscape evolution and environmental change in the Lake Sulivan area, Falkland Islands, South Atlantic. *Quaternary Science Reviews* vol 21, pp. 1821-1840.

Wilson, P., Clark, R., McAdam, J.H. and Cooper, E.A. (1993) Soil erosion in the Falkland Islands: an assessment. *Applied Geography* vol 13, pp. 329-352.

Woodgate, A. Cardinall, A., Letter 9 Feb 1942.
Reference: FIGA CSO 8/42

Woods, A. and Woods, R. (1997) *Atlas of breeding birds of the Falkland Islands*, England: Anthony Nelson.

Woods, R. (2000) *Flowering plants of the Falkland Islands*, London: Falklands Conservation.

Woods R (2001) A survey of the number, size and distribution of the islands in the Falklands archipelago. *The Falkland Islands Journal* Vol 7 (part 5), pp. 1-25.

Woods, R. and Smith, G. (March 1999) *The Distribution of the Striated Caracara Phalcoboenus australis in the Falklands, 1997-1998*, Stanley: Falklands Conservation.

Wyville Thomson, C. (1877) *The Voyage of the Challenger*, 1887: London: Macmillan & Co.

Young, C.D., (1967) *Grasslands improvement*. Stanley: Falkland Islands Agricultural Department.

Young, C.D. (1968) *Report on pasture improvement experiments carried out in the Falkland Islands during 1965-1968*. Stanley: Falkland Islands Agricultural Department.

Young, J. (1990) *Post-environmentalism*, London: Belhaven Press.

Young, L.W.H. Heaton, H.H., Letter 2 Sep, 1938.
Reference: FIGA CSO/105/33

b. Public Records Office Kew:

Colonial Office Archive (Public Record Office, Kew) (1842) *Dispatches 1842*.
PRO reference number: CO78/5[1842]

Colonial Office Archive (Public Record Office, Kew) (1843) *Dispatches 1843*.
PRO reference number: CO78/7[1843]

Colonial Office Archive (Public Record Office, Kew) (1844) *Dispatches 1844*.
PRO reference number: CO78/9[1844]

Colonial Office Archive (Public Record Office, Kew) (1918) *Dispatches January - September 1918*.
PRO reference number: CO78/147[1918]

Colonial Office Archive (Public Record Office, Kew) (1920) *Report on sealing in Falkland Islands by J E Hamilton*.
PRO reference number: CO78/154[Jan 1920]

Colonial Office Archive (Public Record Office, Kew) (1923) *Report on sealing in Falkland Islands by J E Hamilton*.
PRO reference number: CO78/164[April 1923]

Colonial Office Archive (Public Record Office, Kew) (1927) *Revision of Fur Seal Convention 1911*.
PRO reference number: CO78/175/11[Feb 1927]

Colonial Office Archive (Public Record Office, Kew) (1927) *Closure of Experimental Farm*.
PRO reference number: CO78/175/15[1927]

Colonial Office Archive (Public Record Office, Kew) (1927) *Concern about sealing*.
PRO reference number: CO78/175/16 [March 1927]

Colonial Office Archive (Public Record Office, Kew) (1927) *Renewal of sealing licence to J Davis*.
PRO reference number: CO78/176/10[April 1927]

Colonial Office Archive (Public Record Office, Kew) (1928) *Sealing operations 1927*.
PRO reference number: CO78/180/13[Jan 1928]

Colonial Office Archive (Public Record Office, Kew) (1929) *Sealing operations in South Georgia*.
PRO reference number: CO78/183/4[Jan 1929]

Colonial Office Archive (Public Record Office, Kew) (1929) *Falkland Islands Sealing Company - licence to take fur seals*.
PRO reference number: CO78/185/11[Aug 1929]

Colonial Office Archive (Public Record Office, Kew) (1930) *Concern about exploitation of Fur Seals*.
PRO reference number: CO78/186/12[Feb1930]

Colonial Office Archive (Public Record Office, Kew) (1930) *Compañia Argentina de Pesca sealing operations 1929*.
PRO reference number: CO78/186/5[Jan 1930]

Colonial Office Archive (Public Record Office, Kew) (1930) *Falkland Islands and Dependencies Sealing Company Ltd.*.
PRO reference number: CO78/187/15[Aug 1930]

Colonial Office Archive (Public Record Office, Kew) (1930) *Application for sealing licences for South Georgia; policy of limiting numbers*.
PRO reference number: CO78/187/3[April 1930]

Colonial Office Archive (Public Record Office, Kew) (1931) *Falkland Islands and Dependencies Sealing Company Ltd; report on operations 1929/30 season, and future requirements.*
PRO reference number: CO78/188/5[March 1931]

Colonial Office Archive (Public Record Office, Kew) (1932) *Report on sealing operations 1932, and coastal divisions of South Georgia*.
PRO reference number: CO78/193/1[Jan 1932]

Colonial Office Archive (Public Record Office, Kew) (1934) *Report on sealing operations South Georgia 1934*.
PRO reference number: CO78/195/8[Dec 1934]

Colonial Office Archive (Public Record Office, Kew) (1934) *Falkland Islands and Dependencies Sealing Company; sealing licence*.
PRO reference number: CO78/196/10[March 1934]

Colonial Office Archive (Public Record Office, Kew) (1935) *Sealing operations 1934/5*.
PRO reference number: CO78/197/7[Jan 1935]

Colonial Office Archive (Public Record Office, Kew) (1935) *Regulation of whaling*.
PRO reference number: CO78/199/12[1935]

Colonial Office Archive (Public Record Office, Kew) (1935) *Sea Lion skin trading*.
PRO reference number: CO78/199/14[March 1935]

Colonial Office Archive (Public Record Office, Kew) (1936) *Japanese whaling activities in Antarctica*.
PRO reference number: CO78/201/1[1936]

Colonial Office Archive (Public Record Office, Kew) (1936) *Whaling. Ch. Salvesen & Co*.
PRO reference number: CO78/201/9[1936]

Colonial Office Archive (Public Record Office, Kew) (1936) *Magistrate's reports from South Georgia on whaling seasons 1931-1936*.
PRO reference number: CO78/202/1[1936]

Colonial Office Archive (Public Record Office, Kew) (1936) *Whaling policy - dispute with Norway*.
PRO reference number: CO78/202/6[1936]

Colonial Office Archive (Public Record Office, Kew) (1936) *Whaling negotiations; Norwegian whaling dispute, prospect of International Conference*.
PRO reference number: CO78/202/7[1936]

Colonial Office Archive (Public Record Office, Kew) (1936) *Southern Whaling and Sealing Co - permission granted to collect penguins*.
PRO reference number: CO78/203/7[1936]

Colonial Office Archive (Public Record Office, Kew) (1937) *'Discovery' Committee; replacement of Mr. Laurie - his concern for the work of whaling research*.
PRO reference number: CO78/205/1[1937]

Colonial Office Archive (Public Record Office, Kew) Cardinall, A. (Governor Falkland Islands 1940-1946) (1942) Post-war Development Plan.
PRO reference number: CO78/216/8 Colonial Office Archive, Public Records Office, Kew

Colonial Office Archive (Public Record Office, Kew) (1951) *Colonial Development Corporation: sealing licences and leases*.
PRO reference number: CO78/258/16[March 1951]

Colonial Office Archive (Public Record Office, Kew) (1950) *Whaling Factory ship Olympic Challenger*.
PRO reference number: CO78/261/5[1950]

Colonial Office Archive (Public Record Office, Kew) (1951) *International Whaling Convention*.
PRO reference number: CO78/261/6[1951]

Colonial Office Archive (Public Record Office, Kew) (1950) *Messr. Ch. Salvesen & Co; whaling lease dispute*.
PRO reference number: CO78/261/8[1950]

Colonial Office Archive (Public Record Office, Kew) (1950) *Commercial possibilities of seal skins*.
PRO reference number: CO78/262/5[Jan 1950]

Colonial Office Archive (Public Record Office, Kew) (1951) *Commercial possibilities of seal skins*.
PRO reference number: CO78/262/6[April 1951]

Colonial Office Archive (Public Record Office, Kew) (1926-1930) *High seas application for licensed floating factories, Lever Bros.*
PRO reference number: CO174/3[1926-1930]

Colonial Office Archive (Public Record Office, Kew) (1926) *Possibility of hampering the development of pelagic whaling*.
PRO reference number: CO174/8[1926]

Colonial Office Archive (Public Record Office, Kew) (1927-1928) *Control of pelagic whaling*.
PRO reference number: CO175/9[1927-1928]

Colonial Office Archive (Public Record Office, Kew) (1927) *Concern about whaling*.
PRO reference number: CO175/13[1927]

Colonial Office Archive (Public Record Office, Kew) (1927) *Possible employment of police vessel to check illicit whaling*.
PRO reference number: CO176/13[1927]

Colonial Office Archive (Public Record Office, Kew) (1926-1927) *Reports on whaling operations*.
PRO reference number: CO177/4[1926-1927]

Colonial Office Archive (Public Record Office, Kew) (1926-1927) *Whaling season*.
PRO reference number: CO177/12[1926-1927]

Colonial Office Archive (Public Record Office, Kew) (1927-1928) *Whaling reports*.
PRO reference number: CO178/2[1928]

Colonial Office Archive (Public Record Office, Kew) (1928) *Applications for whaling licenses.*
PRO reference number: CO178/4[1928]

Colonial Office Archive (Public Record Office, Kew) (1928) *Messrs. Salvesen & Co; whaling operations*.
PRO reference number: CO179/7[1928]

Colonial Office Archive (Public Record Office, Kew) (1929) *Closing down of Stock Department*.
PRO reference number: CO180/15[1929]

Colonial Office Archive (Public Record Office, Kew) (1928) *General policy on whaling*.
PRO reference number: CO181/5[1928]

Colonial Office Archive (Public Record Office, Kew) (1928) *Sowing of grasses*.
PRO reference number: CO181/8[1928]

Colonial Office Archive (Public Record Office, Kew) (1928) *Whaling report; 1928/29 season*.
PRO reference number: CO182/11[1928]

Colonial Office Archive (Public Record Office, Kew) (1928) *Whaling companies in Antarctica*.
PRO reference number: CO182/14[1928]

Colonial Office Archive (Public Record Office, Kew) (1929) *Whaling reports for period ending 31st December 1929*.
PRO reference number: CO183/1[1929]

Colonial Office Archive (Public Record Office, Kew) (1929) *Whaling operations of Messrs. Salvesen & Co.*
PRO reference number: CO183/3[1929]

Colonial Office Archive (Public Record Office, Kew) (1929) *Whaling report 1929/30 season*.
PRO reference number: CO183/15[1929]

Colonial Office Archive (Public Record Office, Kew) (1929) *Concern about pelagic whaling operations*.
PRO reference number: CO184/1[1929]

Colonial Office Archive (Public Record Office, Kew) (1930) *Whaling; general policy.*
PRO reference number: CO186/1[1931]

Colonial Office Archive (Public Record Office, Kew) (1930) *Return of whaling catch and production*.
PRO reference number: CO186/2[1930]

Colonial Office Archive (Public Record Office, Kew) (1930) *Chr. Salvesen & Co. whaling operations*.
PRO reference number: CO186/4[1930]

Colonial Office Archive (Public Record Office, Kew) (1931) *Whaling companies laid up for 1931/32 season while oil sales are low*.
PRO reference number: CO188/1[1931]

Colonial Office Archive (Public Record Office, Kew) (1931) *Messers. Ch. Salvesen & Co; future policy for concessions to whaling firms*.
PRO reference number: CO188/7[1931]

Colonial Office Archive (Public Record Office, Kew) (1931) *Whale and whale oil statistics*.
PRO reference number: CO189/7[1931]

Colonial Office Archive (Public Record Office, Kew) (1933) *Reports on sealing investigations by J E Hamilton June 1933*.
PRO reference number: CO189/12[June 1933]

Colonial Office Archive (Public Record Office, Kew) (1932) *Whaling season 1931/32*.
PRO reference number: CO190/1[1932]

Colonial Office Archive (Public Record Office, Kew) (1932) *Whaling policy with special reference to the new International Convention and the growth of pelagic whaling*.
PRO reference number: CO191/2[1932]

Colonial Office Archive (Public Record Office, Kew) (1933) *Whaling regulations*.
PRO reference number: CO192/12[1933]

Colonial Office Archive (Public Record Office, Kew) (1933) *Compañia Argentina de Pesca factory; report on whaling 1931-32*.
PRO reference number: CO193/2[1933]

Colonial Office Archive (Public Record Office, Kew) (1934) *Protective restrictions of Norwegian whaling industry*.
PRO reference number: CO197/1[1934]

Colonial Office Archive (Public Record Office, Kew) (1935) *Whaling season 1934/35, reports of operations at South Georgia*.
PRO reference number: CO199/6

Colonial Office Archive (Public Record Office, Kew) (1938) *CDF Scheme - improvement of Pastures in Falkland Islands*.
PRO reference number: CO208/10[1938]

Colonial Office Archive (Public Record Office, Kew) (1939) *Davies Report on grasslands of the Falkland Islands*.
PRO reference number: CO212/2[1939]

Colonial Office Archive (Public Record Office, Kew) (1942) *Scheme for development of Colony*.
PRO reference number: CO216/8[1942]

Colonial Office Archive (Public Record Office, Kew) (1945-1946) *Development Plan*.
PRO reference number: CO220/8[1945-1946]

Colonial Office Archive (Public Record Office, Kew) (1931) *Internal regulation of whaling*.
PRO reference number: CO323/1138/10[1931]

Colonial Office Archive (Public Record Office, Kew) (1933) *International Convention for the regulation of whaling*.
PRO reference number: CO323/1260/9[1933]

Colonial Office Archive (Public Record Office, Kew) (1832-1847) *Outward Letter Book 1832-1847*.
PRO reference number: CO399/1

Colonial Office Archive (Public Record Office, Kew) (1841-1853) *Outward Letter Book 1841-1853*.
PRO reference number: CO399/2

Colonial Office Archive (Public Record Office, Kew) (1841-1853) *Outward Letter Book 1841-1853*.
PRO reference number: CO399/2

Colonial Office Archive (Public Record Office, Kew) (1847-1853) *Outward Letter Book 1847-1853*.
PRO reference number: CO399/3

Colonial Office Archive (Public Record Office, Kew) (1841-1870) *Alphabetical Index 1841-1870*.
PRO reference number: CO714/55

Colonial Office Archive (Public Record Office, Kew) (1938) *Whaling, regulation of - International Conference, London 1938*.
PRO reference number: CO852/138/10[1938]

Colonial Office Archive (Public Record Office, Kew) (1938) *Whaling; Falkland Islands, licenses and leases - Compañia Argentina de Pesca*.
PRO reference number: CO852/138/11[1938]

Colonial Office Archive (Public Record Office, Kew) (1938) *Whaling; Falkland Islands, licenses and leases – Chr. Salvesen & Co*.
PRO reference number: CO852/138/12[1938]

Colonial Office Archive (Public Record Office, Kew) (1939) *Whaling reports; Falkland Islands*.
PRO reference number: CO852/198/4[1939]

Colonial Office Archive (Public Record Office, Kew) (1940) *Effect of Sea Fish Industry Act on International Whaling Convention*.
PRO reference number: CO852/274/14[1940]

Colonial Office Archive (Public Record Office, Kew) (1942) *Whaling; Falkland Islands*.
PRO reference number: CO852/526/14[1942]

Colonial Office Archive (Public Record Office, Kew) (1945) *Whaling; Falkland Islands*.
PRO reference number: CO852/637/10[1945]

Colonial Office Archive (Public Record Office, Kew) (1946) *Whaling; Falkland Islands*.
PRO reference number: CO852/637/11[1946]

Colonial Office Archive (Public Record Office, Kew) (1949) *Whaling; Falkland Islands*.
PRO reference number: CO852/973/1[1949]

Colonial Office Archive (Public Record Office, Kew) (1952) *Falkland Islands and Dependencies; commercial possibilities of seal skins*.
PRO reference number: CO1024/68[1952]

Colonial Office Archive (Public Record Office, Kew) (1952) *Falkland Islands and Dependencies; sealing activities by Compañia Argentina de Pesca*.
PRO reference number: CO1024/69[1952]

Colonial Office Archive (Public Record Office, Kew) (1950) *Falkland Islands Dependencies; sealing licences and leases*.
PRO reference number: CO1024/70[1950]

Colonial Office Archive (Public Record Office, Kew) (1951) *South Atlantic Sealing Company, Ltd.*
PRO reference number: CO1024/71[1951]

Colonial Office Archive (Public Record Office, Kew) (1951) *Exploitation of Fur Seals in the Falkland Islands*.
PRO reference number: CO1024/72[1951]

Colonial Office Archive (Public Record Office, Kew) (1954) *Effective of International Whaling Convention on whaling in FID*.
PRO reference number: CO1024/169[1954]

Colonial Office Archive (Public Record Office, Kew) (1955) *Effect of International Whaling Convention on whaling in FID*.
PRO reference number: CO1024/170[1955]

Colonial Office Archive (Public Record Office, Kew) (1957-1960) *FID; whaling activities, Albion Star Company* [formerly Compañia Argentina de Pesca].
PRO reference number: CO1024/247[1957-1960]

Colonial Office Archive (Public Record Office, Kew) (1960-1963) *Whaling inspectors*.
PRO reference number: CO1024/311[1060-1963]

Colonial Office Archive (Public Record Office, Kew) (1983) *Historical whaling records*.
PRO reference number: DG2/21[1983]

Colonial Office Archive (Public Record Office, Kew) (1963) *Agreement for Antarctic whaling season 1963/4 – correspondence*.
PRO reference number: DG4/2

Dominions Office Archive (Public Record Office, Kew) (1930-1936) *Control of whaling*.
PRO reference number: DO35/148/1[1930-1936]

Dominions Office Archive (Public Record Office, Kew) (1930-1936) *Control of whaling*.
PRO reference number: DO35/148/2[1930-1936]

Dominions Office Archive (Public Record Office, Kew) (1930-1936) *Control of whaling*.
PRO reference number: DO35/149/1[1930-1936]

Dominions Office Archive (Public Record Office, Kew) (1930-1936) *Control of whaling*.
PRO reference number: DO35/149/2[1930-1936]

Dominions Office Archive (Public Record Office, Kew) (1930-1936) *Control of whaling*.
PRO reference number: DO35/149/3[1930-1936]

Foreign Office Archive (Public Record Office, Kew) (1946) *Whaling - correspondence with Norwegian Embassy*.
PRO reference number: FO337/111[1946]

Foreign Office Archive (Public Record Office, Kew) (1955) *Whaling expeditions for the Antarctic*.
PRO reference number: FO371/113958[1955]

Foreign Office Archive (Public Record Office, Kew) (1955) *Proposal to transfer whaling assets of Compañia Argentina de Pesca to a British registered company*.
PRO reference number: FO371/114054[1955]

Foreign Office Archive (Public Record Office, Kew) (1958) *Sealing and whaling industry in Falkland Islands and Dependencies*.
PRO reference number: FO371/131892[1958]

Foreign Office Archive (Public Record Office, Kew) (1960) *Whaling in Antarctica*.
PRO reference number: FO371/147730[1950]

Foreign Office Archive (Public Record Office, Kew) (1942) *Post War whaling operations - general correspondence from 1906*.
PRO reference number: FO371/32810[1942]

Foreign Office Archive (Public Record Office, Kew) (1950) *Soviet whaling activities*.
PRO reference number: FO371/86802[1950]

Colonial Office Archive (Public Record Office, Kew) (1936-1953) *Falkland Islands whaling products*.
PRO reference number: PRO30/76/114[1936-1953]

MAFF Archive (Public Record Office, Kew) (1943) *Whaling; present and future position*.
PRO reference number: MAFF83/589[1943]

MAFF Archive (Public Record Office, Kew) (1940-1952) *Whaling; Falkland Islands reports*.
PRO reference number: MAFF209/19[1940-1952]

MAFF Archive (Public Record Office, Kew) (1952-1958) *Whaling; Falkland Islands reports*.
PRO reference number: MAFF209/20[1952-1958]

MAFF Archive (Public Record Office, Kew) (1958-1964) *Whaling; Falkland Islands reports*.
PRO reference number: MAFF209/1636 [1958-1964]

c. Falkland Islands Government Archive, Stanley:

Falkland Islands Government Archive *Executive Council Minute Book 1889-1904*.

Falkland Islands Government Archive *Legislative Council Minute Book 1889-1897*.

Falkland Islands Government Archive *Outward Letter Book 1881-1908*.

Falkland Islands Government Archive (1898) *Governor Sir Roger Goldsworthy; Despatch No.12; 16th February 1898*.
Falkland Islands Government file number: B24 (Outward Letters Book B24).

Falkland Islands Government Archive (1897) *Governor Sir Roger Goldsworthy; Despatch No.22; 27th March 1897*.
Falkland Islands Government file number: B24 (Outward Letters Book B24).

Falkland Islands Government Archive (1906) *Report on visit to South Georgia Island by HMS Sappho.*
Falkland Islands Government file number: B30 (A report by the Captain of HMS *Sappho* (Commander M Hodges) dated 11 February 1906, and found in Confidential Despatch Book B30 (Confidential Despatch 28 March 1906; Enclosure 1)

Falkland Islands Government Archive (1910) *Requesting Magistrate South Georgia to transmit information as to Foreign vessels sealing around that Dependency*.
Falkland Islands Government file number: C1

Falkland Islands Government Archive (1933) *Expedition to Willis and Bird Islands to ascertain the presence of Fur Seals*.
Falkland Islands Government file number: C2/33

Falkland Islands Government Archive (1930) *Sea Leopards - danger in regard to at West Point Island*.
Falkland Islands Government file number: C3/31

Falkland Islands Government Archive (1926) *Pelagic whaling - developments in*.
Falkland Islands Government file number: C28/1926

Falkland Islands Government Archive (1934) *Dr. T P Binns asks for assistance in order to assist him to cultivate trees. etc. at Fox Bay.*
Falkland Islands Government file number: C120/34

Falkland Islands Government Archive (1947-1958) *Oil and coal deposits*.
Falkland Islands Government file number: C0319

Falkland Islands Government Archive (1944) *Poaching on seal rookeries in the Falkland Islands*.
Falkland Islands Government file number: C/5/44

Falkland Islands Government Archive (1931) *Commander Worsley D.S.O.; application for sealing licence for Colony and Dependencies*.
Falkland Islands Government file number: C/9/31

Falkland Islands Government Archive (1935) *Sheep farming industry - statistics shewing amount of money retained by absentee owners during each of the last fifteen years.*
Falkland Islands Government file number: C/11/35

Falkland Islands Government Archive (1933) *Restriction of whaling operations in the Antarctic during the season 1932-33*.
Falkland Islands Government file number: C/15/32

Falkland Islands Government Archive (1938) *Questions of general policy in relation to the sheep farming industry*.
Falkland Islands Government file number: C/18/38

Falkland Islands Government Archive (1927) *Southern Seals and Sealing - Extract from report of Sir Sidney Harmer.*
Falkland Islands Government file number: C/19/27

Falkland Islands Government Archive (1927) *Analysis of the movements of whales by Mr. A G Bennett.*
Falkland Islands Government file number: C/20/27

Falkland Islands Government Archive (1923) *Unreliability of statistical returns forwarded by Messrs. Salvesen*.
Falkland Islands Government file number: CS4/24

Falkland Islands Government Archive (1941) *Purchase of bee hives in South America*.
Falkland Islands Government file number: CS5/41

Falkland Islands Government Archive (1925) *Unreliability of returns furnished by Messrs. Salvesen*.
Falkland Islands Government file number: CS11/25

Falkland Islands Government Archive (1920) *Towards report on inspection of Fur Seal Rookery, Jason Islands, and a note on Sea Lions*.
Falkland Islands Government file number: CS19/20

Falkland Islands Government Archive (1924) *Application to import alfalfa from South America*.
Falkland Islands Government file number: CS31/24

Falkland Islands Government Archive. (1927) *Livestock (Experimental Farm) Sheep imported from New Zealand*.
Falkland Islands Government file number: CS60/1927

Falkland Islands Government Archive (1925) *Engagement of Manager and Farm Hand from New Zealand*.
Falkland Islands Government file number: CS62/65

Falkland Islands Government Archive (1922) *Report on the voyages of HMCS Afterglow*.
Falkland Islands Government file number: CS68/22

Falkland Islands Government Archive (1937) *Brief notes on economic flock improvement for circulation to farmers*.
Falkland Islands Government file number: CS69/37

Falkland Islands Government Archive (1935-1937) *Falkland Islands and Dependencies Sealing Company - requests Government assistance to enable the Company to operate*.
Falkland Islands Government file number: CS75/35

Falkland Islands Government Archive (1937) *Farmer's conferences*.
Falkland Islands Government file number: CS83/37

Falkland Islands Government Archive (1919) *Fur Seal reported on Bird Island, South Georgia*.
Falkland Islands Government file number: CS91

Falkland Islands Government Archive. (1926) *Pasture, improvement of; Experiments at Hill Cove*.
Falkland Islands Government file number: CS92/26

Falkland Islands Government Archive (1923) *Report by British Museum (Natural History) on sealing in Southern Waters*.
Falkland Islands Government file number: CS95/24

Falkland Islands Government Archive (1927) *Experimental Farm - The closing down of.*
Falkland Islands Government file number: CS102/27

Falkland Islands Government Archive (1938-1970) *Tree planting in the Falkland Islands.*
Falkland Islands Government file number: CS132/38

Falkland Islands Government Archive (1943) *Colonial Development and Welfare Act 1940; Fisheries Research*.
Falkland Islands Government file number: CS135/43

Falkland Islands Government Archive. (1924) *Application by Mr R C Pole-Evans to import sheep from Patagonia*.
Falkland Islands Government file number: CS140/24

Falkland Islands Government Archive (1922) *Armed Guard for Elephant Jason Island*.
Falkland Islands Government file number: CS150/22

Falkland Islands Government Archive. (1935) *Proposed appointment of a Stock Advisor from the South Island of New Zealand*.
Falkland Islands Government file number: CS155/35

Falkland Islands Government Archive (1921) *Applies to be permitted to employ labour in connection with the planting of trees. Submits Special Warrant to cover expenditure*.
Falkland Islands Government file number: CS158/21

Falkland Islands Government Archive (1934) *Possibility of planting trees in the Falkland Islands.*
Falkland Islands Government file number: CS175/34

Falkland Islands Government Archive (1927) *Control of Wild Geese*.
Falkland Islands Government file number: CS187/27

Falkland Islands Government Archive (1929) *Arboriculture - notes on*.
Falkland Islands Government file number: CS190/89

Falkland Islands Government Archive (1927) *Scientific afforestation*.
Falkland Islands Government file number: CS196/26

Falkland Islands Government Archive (1926) *Programme of work for Forestry Department*.
Falkland Islands Government file number: CS214/26

Falkland Islands Government Archive (1938) *Requests permission to destroy Jackass Penguins on mainland of Salvador*.
Falkland Islands Government file number: CS220/38

Falkland Islands Government Archive (1933) *General application to import foxes*.
Falkland Islands Government file number: CS229/33

Falkland Islands Government Archive (1936) *Experimental Farm - proposed re-establishment of.*
Falkland Islands Government file number: CS230/36

Falkland Islands Government Archive (1923) *Report on progress of Forest Trees in the Falkland Islands 1923*.
Falkland Islands Government file number: CS236/23

Falkland Islands Government Archive (1923) *Visit of the Forestry Officer to West Falkland 1923*.
Falkland Islands Government file number: CS237/23

Falkland Islands Government Archive (1924) *Visit of the Forest Officer to tree plantations on West Falkland*.
Falkland Islands Government file number: CS241/24

Falkland Islands Government Archive (1922) *Reports establishment of Armed Guard on Elephant Jason Island*.
Falkland Islands Government file number: CS250/22

Falkland Islands Government Archive (1924) *Indent for Tree seeds for Forestry Dept.*
Falkland Islands Government file number: CS251/24

Falkland Islands Government Archive (1926) *Experimental Farm - Selection of stock in New Zealand for Anson (Experimental Farm)*.
Falkland Islands Government file number: CS252/26

Falkland Islands Government Archive (1938) *Report by Mr. W Davies on the grasslands of the Falkland Islands*.
Falkland Islands Government file number: CS252/38

Falkland Islands Government Archive (1935) *Gift of tree seeds*.
Falkland Islands Government file number: CS287/35

Falkland Islands Government Archive (1927) *Tree planting at the Experimental Farm*.
Falkland Islands Government file number: CS307/27

Falkland Islands Government Archive (1919) *Reindeer - British Museum*.
Falkland Islands Government file number: CS309

Falkland Islands Government Archive (1923) *Taking of Humpbacks - Complaint against the Captain of Neko for taking humpbacks without a permit*.
Falkland Islands Government file number: CS315/23

Falkland Islands Government Archive (1921) *Preparation of ground at Sparrow Cove for plantation of trees*.
Falkland Islands Government file number: CS317/21

Falkland Islands Government Archive (1923) *Complaint against Messers. Salvesen's factories South Shetlands for furnishing false returns of whales caught*.
Falkland Islands Government file number: CS317/23

Falkland Islands Government Archive (1924) *Report on progress of Forest Trees in the Falkland Islands*.
Falkland Islands Government file number: CS326/24

Falkland Islands Government Archive. (1928) *Agricultural experiments on sheep farms, Falkland Islands*.
Falkland Islands Government file number: CS328/28

Falkland Islands Government Archive (1921) *Fur Seal - protection of.*
Falkland Islands Government file number: CS363/21

Falkland Islands Government Archive (1927) *Suggested closure of Stock Department*.
Falkland Islands Government file number: CS366/27

Falkland Islands Government Archive (1922) *Report on the Innes Wilson collection of rocks and minerals from the South Shetlands*.
Falkland Islands Government file number: CS377/22

Falkland Islands Government Archive (1940) *Imported Fish.*
Falkland Islands Government file number: CS0392 (Three files dating from 1940 to 1965).

Falkland Islands Government Archive (1923) *Report of Mr. A G Bennett on whaling operations at South Shetlands 1922/23*.
Falkland Islands Government file number: CS427/33

Falkland Islands Government Archive (1925) *Report on possibility of obtaining lime from local stone*.
Falkland Islands Government file number: CS443/25

Falkland Islands Government Archive (1921) *West Falkland Island: Visit of Forestry Officer to West Falkland Island*.
Falkland Islands Government file number: CS453/21

Falkland Islands Government Archive (1920) *Forwards report on possibility of local preparations of lime*.
Falkland Islands Government file number: CS494/20

Falkland Islands Government Archive (1922) *Planting of trees at Hill Cove*.
Falkland Islands Government file number: CS496/22

Falkland Islands Government Archive (1924) *Dr.Baker's report on the possibility of the occurrence of liquid Petroleum in the Falkland Islands*.
Falkland Islands Government file number: CS511/21

Falkland Islands Government Archive (1922) *Report on the Fur Seal of the Falkland Islands*.
Falkland Islands Government file number: CS525/22

Falkland Islands Government Archive (1926) *Seed samples forwarded to Forest Officer, Falkland Islands*.
Falkland Islands Government file number: CS525/26

Falkland Islands Government Archive (1922) *Supply of trees from Punta Arenas*.
Falkland Islands Government file number: CS541/22

Falkland Islands Government Archive (1925) *Report on afforestation experiments for the year 1924/25*.
Falkland Islands Government file number: CS549/25

Falkland Islands Government Archive (1925) *Name of Experimental Farm*.
Falkland Islands Government file number: CS552/25

Falkland Islands Government Archive (1920) *Suggests prohibiting Weddell Seals from being taken from the rookeries of South Georgia*.
Falkland Islands Government file number: CS556

Falkland Islands Government Archive (1927) *Approval of sale of HMCS Afterglow*.
Falkland Islands Government file number: CS560/27

Falkland Islands Government Archive (1921) *Sparrow Cove; Tenders for drainage at:*
Falkland Islands Government file number: CS566/21

Falkland Islands Government Archive (1920) *Suggested appointment of a Forestry Officer in the Falkland Islands*.
Falkland Islands Government file number: CS568

Falkland Islands Government Archive (1924) *Withdrawal of Jason Guard*.
Falkland Islands Government file number: CS578/24

Falkland Islands Government Archive (1921) *British Museum - Report on Whaling operations in Dependencies*.
Falkland Islands Government file number: CS637/21

Falkland Islands Government Archive (1924) *Stock Commissioner forwards report on the sheep farming industry in the Falkland Islands*.
Falkland Islands Government file number: CS638/24 (This file contains the original (handwritten) copy of the Munro Report).

Falkland Islands Government Archive (1922) *Reports on trees imported 1922*.
Falkland Islands Government file number: CS698/22

Falkland Islands Government Archive (1919) *Renewal of Leases, South Georgia, of the Compañia Argentina de Pesca.*
Falkland Islands Government file number: CS711

Falkland Islands Government Archive (1923) *British Museum Report on various aspects of the Whaling Question*.
Falkland Islands Government file number: CS749/23

Falkland Islands Government Archive (1919) *Tree planting in the Falkland Islands*.
Falkland Islands Government file number: CS832

Falkland Islands Government Archive (1921) *Trees at Sullivan House*.
Falkland Islands Government file number: CS870/21

Falkland Islands Government Archive (1921) *Hair Seal - applies for permission to kill*.
Falkland Islands Government file number: CS902/21

Falkland Islands Government Archive (1920) *Advises placing order for Tree and Tree seeds with Messrs. Dickson. Ltd.*
Falkland Islands Government file number: CS915

Falkland Islands Government Archive (1920) *Selection of Dr. H A Baker as Government Geologist*.
Falkland Islands Government file number: CS931/20

Falkland Islands Government Archive (1961) *Wild Animal and Bird Protection*.
Falkland Islands Government file number: CS1099/II

Falkland Islands Government Archive (1966) *Memorandum on the Conservation of Wild Life in the Falkland Islands*.
Falkland Islands Government file number: CS1099/III (Memorandum written by Strange, I).

Falkland Islands Government Archive (1969) *South Georgia - future of administration*.
Falkland Islands Government file number: D/2/65

Falkland Islands Government Archive (1963-1969) *South Georgia - future of administration*.
Falkland Islands Government file number: D/2/65

Falkland Islands Government Archive (1963) *Experimental fishing*.
Falkland Islands Government file number: D/3/60/D

Falkland Islands Government Archive (1964-1965) *Whaling policy*.
Falkland Islands Government file number: D/4/64

Falkland Islands Government Archive (1937) *Recovery of whale marking darts*.
Falkland Islands Government file number: D/6/37

Falkland Islands Government Archive (1957-1961) *Christian Salvesen & Company*.
Falkland Islands Government file number: D/6/58

Falkland Islands Government Archive (1961-1964) *Christian Salvesen & Company*.
Falkland Islands Government file number: D/6/58/II

Falkland Islands Government Archive (1959) *Pesca Sealing*.
Falkland Islands Government file number: D/9/59

Falkland Islands Government Archive (1959-1965) *Control of whaling International Agreement*.
Falkland Islands Government file number: D/10/47/III

Falkland Islands Government Archive (1958) *Use of ASDIC by whale catchers*.
Falkland Islands Government file number: D/10/58

Falkland Islands Government Archive (1959) *The introduction of Upland Geese into South Georgia*.
Falkland Islands Government file number: D/11/59

Falkland Islands Government Archive (1959) *Sealing Industry in Uruguay*.
Falkland Islands Government file number: D/16/59

Falkland Islands Government Archive (1958) *South Georgia - Development proposals*.
Falkland Islands Government file number: D/19/58

Falkland Islands Government Archive (1960) *CIA Argentina de Pesca - Fur Company*.
Falkland Islands Government file number: D/28/47/B

Falkland Islands Government Archive (1916) *Salvesen's slip at New Island; the proposal to sell*.
Falkland Islands Government file number: GO298/16

Falkland Islands Government Archive (1878) *Blue Book of the Colony of the Falkland Islands 1878*.
Falkland Islands Government file number: S33

Falkland Islands Government Archive (1969) *Atlantic and Oceanic Resources (Grynberg) Ltd.*
Falkland Islands Government file number: S305/1/A

Falkland Islands Government Archive (1961-1970) *Albion Star – leases.*
Falkland Islands Government file number: CSO (Secret) S/306

Falkland Islands Government Archive (1976) *Ranger Oil (UK) Limited*.
Falkland Islands Government file number: S/305/1/T

Falkland Islands Government Archive (1920) *Report on Fur Seal Rookery at Jason Island*.
Falkland Islands Government file number: CS813A/20

Falkland Islands Government Archive (1923) *Draft lease to Messrs Salvesen & Co. of the Fur Seal Rookeries of the Colony*.
Falkland Islands Government file number: 176

Falkland Islands Government Archive (1938) *Pedigree seed for Agricultural Department*.
Falkland Islands Government file number: CSO213/38

Falkland Islands Government Archive (1927-1936) *Grant of licences to Falkland Islands and Dependency Sealing Company*.
Falkland Islands Government file number: CSO589/27

Falkland Islands Government Archive (1921) *Dependencies share in cost of administration*.
Falkland Islands Government file number: CSO898/21

Falkland Islands Government Archive (1956-1966) *Sealing.*
Falkland Islands Government file number: 0497/IV

Falkland Islands Government Archive (1955-1964) *Falkland Islands Freezer*.
Falkland Islands Government file number: 0588/V

Falkland Islands Government Archive (1966) *Destruction of birds of prey*.
Falkland Islands Government file number: 0797/Y

Falkland Islands Government Archive (1916) *Confidential despatches – unanswered*.
Falkland Islands Government file number: 155/16

Falkland Islands Government Archive (1916) *Geological Survey. As to desirability for, in respect of bitumen and other minerals. Forwards specimen Black Shale slate*.
Falkland Islands Government file number: 196/16

Falkland Islands Government Archive (1915) *Messers. Salvesen and Company. Whaling facilities at South Georgia*.
Falkland Islands Government file number: 296/15

Falkland Islands Government Archive (1916) *Whaling report, South Shetlands and Grahamland; Appreciation of Mr. Wilson's*.
Falkland Islands Government file number: 328/16

Falkland Islands Government Archive (1916) *Unoccupied harbours, South Georgia. Use of, by British Whaling firms during 1916-17.*
Falkland Islands Government file number: 330/16

Falkland Islands Government Archive (1916) *Mineral specimens from Falkland Islands sent home in 1844*.
Falkland Islands Government file number: 511/16

Falkland Islands Government Archive (1916) *Relaxation of regulations to increase output of whale oil during current season*.
Falkland Islands Government file number: 56/16

Falkland Islands Government Archive (1916) *Increased production whale oil*.
Falkland Islands Government file number: 62/16

Falkland Islands Government Archive (1968) *Pasture: Young Report*.
Falkland Islands Government file number: AGR/7/2373

Falkland Islands Government Archive (1946-1957) *Sealing in the Falkland Islands*.
Falkland Islands Government file number: CSO0157

Falkland Islands Government Archive (1950) *Lime deposits - Final geological report of a recent limestone deposit at Shell Point, Fitzroy area, East Falkland*.
Falkland Islands Government file number: CSO0214/A

Falkland Islands Government Archive (1949) *Leopard Seals*.
Falkland Islands Government file number: CSO0958/B