

Report of the
Grasslands Trials Unit
1975 - 79

FALKLAND ISLANDS

APPENDIX 1 & 2

PROGRAMME OF WORK: G.T.U.

TITLE	STAFF	CODE
1. SYSTEMS		
2 MAIN 2 P. EXPERIMENTS	CDK TPM	1.1, 1.2
2 DRY SHEEP EXPERIMENTS	CDK TPM	1.3, 1.4
EXTENSION SCHEME EWES	CDK TPM	1.5
EXTENSION SCHEME WETHERS ETC.	CDK MRB	1.6
SYSTEMS DESIGN	CDK MRB RSW	1.7
INVESTMENT APPRAISAL ETC	CDK	1.8
DATA HANDLING	TPM	1.9
2. AGRONOMY		
RE-SEEDING ST. 1	MRB ASG CDK	2.1
RE-SEEDING ST. 2	MRB ASG CDK	2.2
WHITEGRASS STUDIES	MRB ASG CDK	2.3
SOILS STUDIES	MRB ASG	2.4
VEGETATION MONITORING	MRB	2.5
GROSS WEATHER EFFECTS	MRB TPM	2.6
VEG MAPPING (SUPERVISORY)	MRB	2.7
3. ANIMAL PRODUCTION		
WOOL GROWTH	TPM RSW CDK	3.1
PERFORMANCE ASSOC. WITH NUTRITION	RSW MRB CDK	3.2
PHYSIOLOGY - DESCRIPTIVE	RSW TPM ASG	3.3
INTERPRETATION OF LOSS RATES	RSW TPM	3.4
REPRODUCTION	RSW CDK	3.5
BREED IMPROVEMENT	RSW CDK	3.6
GROSS WEATHER EFFECTS	TPM RSW	3.7
BIOCHEMICAL PARAMETERS	ASG RSW	3.8
4. ANIMAL HEALTH		
DISEASE CONTROL (ALL ANIMALS)	RSW ASG	4.1
DEFICIENCY DISEASE	RSW ASG MJV	4.2
BIOCHEMICAL PARAMETERS	ASG RSW	4.3
ENDOPARASITISM	RSW ASG	4.4
EFFECT ON PRODUCTION	RSW	4.5
5. LABORATORY STUDIES		
DISEASE CONTROL	ASG RSW	5.1
FEED EVALUATION	ASG	5.2
MICROBIOLOGY	ASG MRB	5.3
SOILS STUDIES	ASG MRB	5.4
6. GOOSE STUDY		
GROUND TRANSECTS	RWS	6.1
AERIAL TRANSECTS	RWS MRB TPM	6.2
BREEDING BIOLOGY	RWS	6.3
SOCIAL ORGANISATION	RWS	6.4
INTAKE STUDIES	RWS CDK MRB ASG	6.5
COMPETITIVE FACTORS	RWS CDK MRB	6.6

1.1 Two-Pasture System Experiment - Salvador (Ronda)

C1 sheep (200 ewes) are set-stocked on 700ac. T sheep (200 ewes) are alternated between H 500ac and P 200ac. They occupy P (the better section) during the pre-partum and lactation periods and again during mating. The remainder of the original Camp (7,400ac) is stocked with 1900 ewes (C2).

Object: To measure the production increase obtainable by implementing a two-pasture system with ewes in the Falkland Islands.

Treatments: Two areas of approximately 700 acres each were fenced off in a ewe camp of 9000 acres occupied by 2300 ewes. One of the 700 acre sections was further subdivided in 200 and 500 acre blocks, the former considered the better land. The mating of the experimental flocks was delayed by 5-6 weeks from normal during 76/77, 77/78 but brought to 3 weeks from normal for seasons 78/79, 79/80, the main criterion being the maintenance of the high birth weights obtained during the first two seasons. The alteration of lambing dates has introduced a second variable so that C and T results must also be compared with those obtained from the Remainder flock C2 (approximately 1900 ewes on 7400 acres). All SR calculations are based on a C2 flock of 2300 due to a) there is no control over the number put on the remainder camp b) the location of the Experimental Areas which are considered more favourable geographically and to cause "inconvenience" to the C2 flock (see outline map).

Method: Design, site details, technique, diary of events etc. contained in this section.

Results: As detailed results as possible at this stage are included below.

DISCUSSION

Detailed and revised vegetation maps of the area are lodged at HQ and ODA. Calculations based on the maps with a subjective score for the vegetation types enabled revised stocking rates and fence-lines to be set in 79 (Eadie Report Mar 78, Davies Report 79).

Greater fleece weights can be expected from those ewes lambing later than those lambing earlier (76/77 C1 and T comparison and subsequently C1 & T v C2). It is supposed the persistent difference between T and C1 is due to extra wool being produced by the T sheep in early summer as a result of their return to the Production Paddock (P) although this needs confirmation.

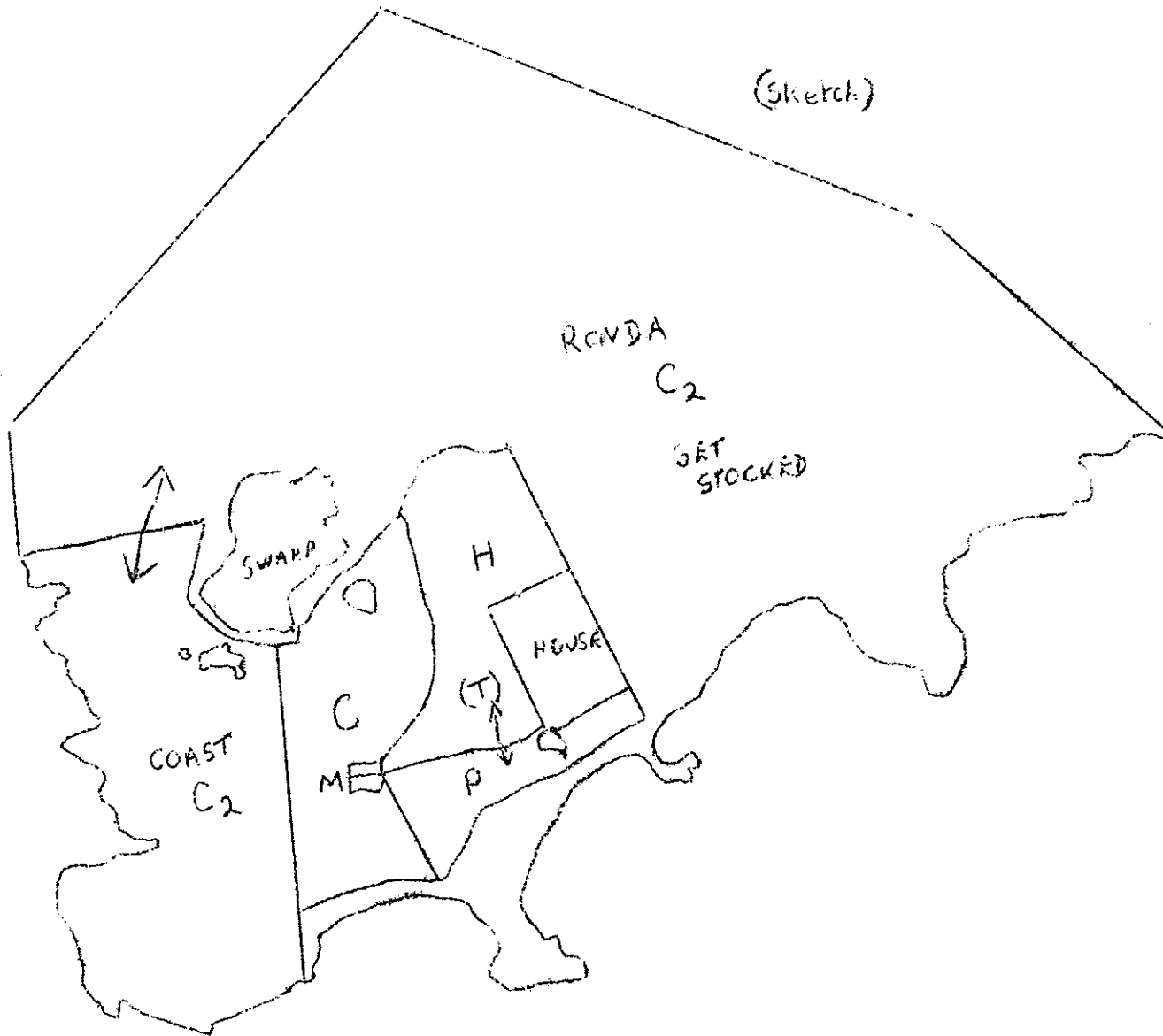
Of some considerable concern is the persistently poor performance of the Maiden ewes (2 shear, $2\frac{1}{2}$ y.o. at mating). More care is now taken in allocating the same weights of maidens to C1 and T in February or March rather than random selection, but this does not fully account for the results (20% difference in lambing percentage and subsequent 12% difference in weaning percentage). If this difficulty seriously affecting overall production, can neither be explained nor resolved (e.g. by introducing the Maidens to the two-pasture system earlier) then the use of Maidens in similar commercial systems should not be recommended. Only three of the systems of the Ewe Extension Scheme (1.5) incorporate maiden ewes (i.e. it is common practice to run maiden ewes separately).

By calculating relative performance of each age group in terms of lamb weaned per ewe mated, a different pattern emerges between C1 and T ewes; the production peak occurs in C1 ewes having their third lamb crop and in T ewes their fourth. Overall, the T ewes have performed to date only 9% better than C1 ewes (kg lamb weaned/ewe mated) although the correction of boundaries (1979) could be expected to increase the difference.

RONDA 1:50000 1.1

(Sketch)

C ₂	ha	ac
COAST		
o RONDA	2948	(7409)
C	301	743
T	295	730



TWO PASTURE SYSTEM EXPERIMENT - RONDA, SALVADORSCHEDULE OF WORK 1979/80

WT	PROVISIONAL DATE	DAY NO.	ACTIVITIES	FLOCK	GRAZING
1	5/6/79	36	Weigh, condition score and dye band all C & T ewes Commence mating (6 rams per flock required) Fit ram harnesses COLOUR - YELLOW	C T	C P
	15/6/79 22/6/79		Change all ram harness COLOURS to RED (10th day of mating) Change all ram harness COLOURS to BLUE (17th day of mating)		
2	19/7/79	80	Weigh, condition score and dye band all C & T ewes Remove all rams and harnesses	C T	C H
3	27/9/79	150	Weigh, condition score and dye band all C & T ewes	C T	C P
4	1/11/79	185	Weigh, condition score and dye band all C & T ewes Lambing commences with detailed recording Lambed ewes to C and P respectively Eild ewes to C and M respectively Remainder ewes BLUE red ies gathered	C yellow + red T yellow + red C blue T blue	CM M CM M
	18/11/79				
5	7/1/80	252	Weigh, condition score and dye band all C & T ewes Weigh all lambs Mark all lambs	C T	C P
6	23/2/80	298	Weigh, condition score all C & T ewes Shear all C & T ewes, recording wool weights Recover dye banding samples Cull and cast ewes removed Select, tag, weigh and condition score replacement maiden ewes Dye band all shorn ewes and maidens Weigh all lambs Wean all lambs tagging 50 ewe lambs and 50 wether lambs from each flock	C C T	C C H

WT	PROVISIONAL DATE	DAY NO.	ACTIVITIES	FLOCK	GRAZING
7	13/5/80	13	Weigh, condition score and dye band all C & T ewes	C T	CM P

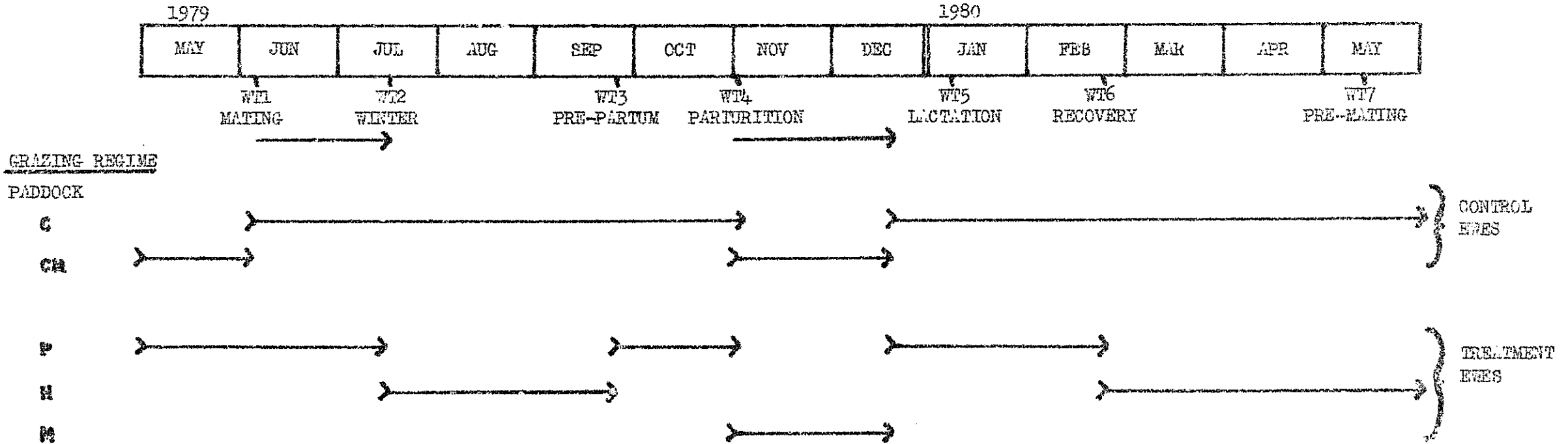
All dates are provisional to take account of holidays, travel delays etc.

Control ewes are referred to as C
Treatment ewes are referred to as T

Paddocks:
(Refer to map layout)

C control
CM control management paddock
H treatment
P treatment production area
M treatment management paddock

CALENDAR AND GRAZING REGIME 1979/80



MEAN WTS (kg) CONDITION SCORES, LOSS RATES AND STOCK RECONCILIATION RONDA SALVADOR 76/77 1.1

BIRTH YEAR	PREFIX	GROUP	PAT NO. MATED	WT1 7/7/76	2 11/8/76	3 18/29/10/76	4 21/11/76	5 19/1/77	6 7/3/77	PRESENT END YEAR RECOVERY	7 3/6/77	ENTER NEW SHEEP YEAR	LOSS RATE (%)
CONTROL (SET STOCKED)													
68	H	5	25	45.5 2.7	46.7			40.2 2.3	44.6 2.4	21			16.0%
69	K	4	31	45.0 2.6	45.3			42.1 2.3	44.0 2.5	26	46.2 2.4	26	16.1
70	Z	3	19	45.9 2.6	46.8			46.0 2.4	48.2 2.6	13	49.0 2.4	13	31.6
71	A	2	34	44.9 2.5	46.4			41.7 2.4	46.0 2.8	28	47.1 2.6	28	17.6
72	B	1	38	42.2 2.4	43.8			39.8 2.3	42.9 2.4	36	44.3 2.5	36	5.3
ADULT AGE-GROUPS M				44.5	45.6			41.5	44.7		46.3		4.3
73	C	0	<u>47</u> 194	39.1 2.6	40.0			40.4 2.7	43.5 2.6	<u>45</u> 169	74age 37.5 2.4	<u>57</u> 205	<u>-</u> 12.9%

TREATMENT

68	8	5	24	43.0 2.3	44.2	† 45.8	* 53.6	43.8 2.3	45.4 2.4	21			12.5%
69	9	4	31	41.8 2.3	44.2	46.3	* 54.4	42.6 2.3	44.3 2.3	25	45.3 2.8	25	19.4
70	0	3	19	41.4 2.3	44.5	47.7	* 55.1	42.2 2.1	43.3 2.2	18	45.4 2.5	18	5.3
71	1	2	34	42.5 2.4	45.4	48.3	* 54.7	43.9 2.3	45.0 2.4	33	46.7 2.8	33	2.9
72	2	1	40	41.0 2.4	43.0	46.2	* 53.4	42.8 2.3	44.5 2.4	38	45.0 2.8	38	5.0
ADULT AGE-GROUPS M				42.0	44.0	46.9	* 54.1	43.1	44.6		45.6		4.0
73	3	0	<u>48</u> 196	37.4 2.3	39.0	42.6	* 50.1	42.8 2.5	43.6 2.6	<u>40</u> 175	74age 39.1 2.6	<u>46</u> 200	<u>-</u> 10.7%

† mean of both wt. dates
* sample (30%) wts only

MEAN WTS. (kg), CONDITION SCORES, LOSS RATES AND STOCK RECONCILIATION RONDA SALVADOR 77/78 I.I

NETH YEAR	PREFIX	CROP AT MATING	AT NO. MATED	WT1 21/6/77	2 10/8/77	3 14/10/77	4 15/11/77	5 9/1/78	6 1/3/78	PRESENT END YEAR RECOVERY	7 31/5/78	ENTER NEW SHEEP YEAR	LOSS RATE %
CONTROL (SET STOCKED)				MATING	WINTER	PRE-LAMB	LAMB	LACTATION					
69	K	5	26	44.3 2.6	43.8 2.6	47.8 2.4	49.5 2.5	40.7 1.7	42.5 2.3	25			3.8%
70	Z	4	13	47.0 2.8	45.6 2.7	49.9 2.5	52.1 2.7	47.5 1.8	46.7 2.3	9	49.7 2.8	9	30.8
71	A	3	28	46.0 2.8	45.1 2.9	49.3 2.5	52.0 2.8	43.3 2.4	45.6 2.7	25	50.5 2.8	25	10.7
72	B	2	36	44.5 2.7	42.7 2.7	46.9 2.5	49.5 2.8	39.6 1.9	43.0 2.4	34	48.0 2.8	34	5.6
73	C	1	45	43.8 2.8	43.6 2.9	47.2 2.6	49.4 2.9	41.8 2.4	44.9 2.5	42	48.8 2.9	42	6.7
ADULT AGE-GROUPS				M	45.1	44.2	48.2	50.5	42.6	44.5	46.5 2.9	53	7.0
74	D	0	57	38.1 2.9	37.7 2.8	41.2 2.5	43.9 2.7	38.2 2.3	41.4 2.5	53	49.3	30	-
				205						188	75age 39.8 2.4	202	8.3%

TREATMENT

69	0	5	25	46.4 2.3	45.0 2.6	48.1 2.4	51.3 2.5	40.8 2.0	45.5 2.1	23			8.0
70	0	4	18	46.5 2.5	44.4 2.4	47.6 2.4	51.2 2.4	41.1 1.9	41.4 1.9	14	45.8 2.1	14	22.2
71	1	3	33	47.8 2.7	46.4 2.7	50.0 2.6	53.6 2.8	43.0 2.3	44.8 2.2	30	46.8 2.4	30	9.1
72	2	2	38	46.7 2.6	45.2 2.7	49.1 2.6	53.0 2.7	42.6 2.4	45.5 2.3	34	47.9 2.5	34	10.5
73	3	1	40	47.1 2.7	45.1 2.8	48.3 2.6	51.3 2.7	41.9 2.4	43.6 2.3	38	47.7 2.6	38	5.0
ADULT AGE-GROUPS				M	46.9	45.2	48.6	52.1	41.9	44.2	45.3 2.9	42	8.7
74	4	0	46	40.5 2.6	38.6 2.8	42.7 2.6	47.1 2.8	38.9 2.7	42.9 2.5	42	47.1	47	-
				200						181	75age 36.9 2.2	205	9.5%

MEAN WTS (kg) CONDITION SCORES, LOSS RATES AND STOCK RECONCILIATION RONDA SALVADOR 78/79

BIRTH YEAR	PREFIX	CROP AT MATING	NO. MATED	WT 1* 31/5/78 MATING	2 15/8/78 WINTER	3 PRE-LAMB	4 5/11/78 LAMB	5 12/1/79	6 26/2/79 LACTATION	PRESENT END YEAR RECOVERY	7 15/5/79 ENTER NEW SHEEP YEAR	LOSS RATE %
CONTROL (SET STOCKED)												
70	Z	5	9	49.7 2.8	47.1 2.5		48.7 1.8	46.4 1.8	42.1	6		33.3 %
71	A	4	25	50.4 2.8	48.5 2.7		54.9 2.2	48.0 2.1	44.8	22	49.5 2.7	22 12.0
72	B	3	34	47.9 2.8	46.0 2.6		50.0 2.2	45.3 2.3	42.7	32	47.6 2.7	32 6.3
73	C	2	42	48.8 2.9	47.0 2.7		51.1 2.4	46.1 2.3	43.3	40	47.2 2.7	40 4.8
74	D	1	53	46.5 2.9	44.8 2.8		49.2 2.3	44.2 2.3	42.2	50	48.5 2.8	50 5.7
ADULT AGE-GROUPS	M			49.2	46.7		50.8	46.0	43.0		48.2	
75	E	0	<u>39</u> 202	39.8 2.4	37.7 2.2		43.1 1.9	41.1 2.3	40.0	<u>33</u> 183	76 age 39.8 2.8	<u>20</u> 197 9.4 %
TREATMENT												
70	0	5	14	45.8 2.1	46.1 2.2		49.5 2.0	46.9 1.7	44.3	14		0.0 %
71	1	4	30	46.8 2.4	48.0 2.5		50.9 2.1	48.7 1.9	46.0	24	44.2 2.2	24 20.0
72	2	3	34	47.9 2.5	48.6 2.5		52.5 2.4	50.5 1.9	49.4	30	49.4 2.5	30 11.8
73	3	2	38	47.7 2.6	48.9 2.5		50.9 2.4	49.8 2.2	48.4	33	49.6 2.6	33 13.2
74	4	1	42	45.8 2.9	46.2 2.7		49.1 2.6	47.2 2.1	46.0	40	47.8 2.8	40 4.8
ADULT AGE-GROUPS	M			47.0	47.6		50.6	48.6	46.8		47.8	
75	5	0	<u>47</u> 205	36.9 2.2	38.4 2.0		41.8 2.0	42.3 2.2	42.6	<u>41</u> 182	76 age 39.3 2.5	<u>29</u> 197 11.2 %

* MATING DATE ALTERATION: This weighing same as wt 7 1977/78 Sheep year

APPENDIXPRODUCTION SALVADOR

	WEAN %			BIRTH WEIGHT (kg)			WEAN WEIGHT (kg)			FLEECE WEIGHTS (kg) GREASY				
	C	T	C ₂	C	T	C ₂	C	T	C ₂	FIRST SHEAR		SECOND SHEAR		
	C	T	C ₂	C	T	C ₂	C	T	C ₂	C	T	C	T	C ₂
76/77	73.0	75.4	55.3	-	4.2	3.8	24.3*	22.4	24.3	3.49	4.26	3.99	4.67	3.39
77/78	60.5	73.5	60.5	4.1	4.0	3.7	21.0	20.9	23.0	3.50	4.24	4.46	5.03	3.40
78/79	73.8	65.5	60.6	4.1	4.0	3.7	24.8	25.8	19.0	-	-	4.02	4.75	3.40

* lambing commenced 5 weeks before T

APPENDIXLAMBING, MARKING AND WEANING PERCENTAGES PER EWE MATED PER AGE GROUPCONTROL: TWO-YEAR MEANS 77/78, 78/79

CROP AT MATING	LAMBING PERCENTAGE	MARKING PERCENTAGE	WEANING PERCENTAGE
5	73.5	53.8	53.8
4	88.4	75.0	67.3
3	92.0	65.3	57.0
2	92.2	84.3	77.5
1	92.7	80.0	71.6
0	87.8	66.6	60.5

APPENDIXLAMBING, MARKING AND WEANING PERCENTAGES PER EWE MATED PER AGE GROUPTREATMENT: THREE-YEAR MEANS 76/77, 77/78 AND 78/79

<u>CROP AT</u> <u>MATING</u>	<u>LAMBING</u> <u>PERCENTAGE</u>	<u>MARKING</u> <u>PERCENTAGE</u>	<u>WEANING</u> <u>PERCENTAGE</u>
5	86.2	77.1	75.8
4	87.2	81.0	76.2
3	93.3	88.2	86.5
2	81.2	75.5	70.8
1	84.0	70.3	69.5
0	65.7	49.9	48.4

APPENDIXBIRTH, MARKING AND WEANING WEIGHTS PER FWE MATED PER AGE GROUPCONTROL: TWO-YEAR MEAN 77/78 AND 78/79

CROP AT MATING	BIRTH WT (kg)	MARK WT (kg)	WEAN WT (kg)
5	3.0	8.1	12.0
4	3.9	12.7	16.3
3	4.0	10.8	13.8
2	3.9	13.9	18.8
1	3.8	12.8	16.8
0	3.3	9.4	12.5

TREATMENT: THREE-YEAR MEAN 76/77, 77/78 AND 78/79

5	3.6	10.7	17.0
4	3.6	13.4	18.0
3	3.9	14.7	20.4
2	3.4	12.7	16.8
1	3.5	11.6	16.2
0	2.4	7.3	10.1

APPENDIX

BIRTH, MARKING AND WEANING WEIGHTS LAMBS (kg)/AGE GROUP OF DAM : CONTROL

LAMB CROP
AT MATING

	1976/77			1977/78			1978/79			MEAN OF TWO YEARS		
	B	M	W	B	M	W	B	M	W	B	M	W
5				4.21	13.80	20.93	3.90	16.37	23.75	4.05	15.08	22.34
4				4.41	15.28	22.37	4.34	18.31	25.74	4.37	16.79	24.05
3				4.30	14.62	22.15	4.37	17.98	25.59	4.33	16.30	23.87
2				4.06	14.40	22.02	4.49	18.35	26.11	4.27	16.37	24.06
1				4.15	14.04	21.95	4.14	17.65	24.50	4.14	15.84	23.22
0				3.61	12.58	18.32	3.85	16.06	22.33	3.73	14.32	20.57

APPENDIXBIRTH, MARKING AND WEANING WEIGHTS LAMBS (kg)/AGE GROUP OF DAM : TREATMENT

LAMB CROP AT MATING	1976/77			1977/78			1978/79			MEAN OF THREE YEARS		
	B	M	W	B	M	W	B	M	W	B	M	W
5	4.24	17.20	22.36	4.16	13.21	20.02	3.95	16.85	25.35	4.12	15.75	22.58
4	3.76	17.11	23.13	4.26	14.19	21.68	4.33	18.71	26.06	4.12	16.67	23.62
3	4.21	17.96	23.00	4.29	14.05	20.68	4.07	18.88	27.74	4.19	16.96	23.81
2	4.32	17.64	22.37	4.07	14.22	21.85	4.28	18.70	27.08	4.22	16.85	23.77
1	4.14	17.42	23.20	3.87	13.98	21.59	4.18	18.02	25.52	4.06	16.47	23.44
0	4.01	15.67	20.57	3.53	12.55	19.16	3.40	15.36	22.43	3.65	14.53	20.72

APPENDIX

1.1

MEAN GREASY FLEECE WEIGHTS (kg) X AGE GROUP : EWES 78/79 SALVADOR

YEAR OF BIRTH		75	74	73	72	71	70	
LAMB CROP AT MATING		0	1	2	3	4	5	
CONTROL	SAMPLE	32	51	39	33	21	7	
TREATMENT	SIZE	41	41	36	32	25	12	
CONTROL	WEIGHT	4.03	4.05	3.95	3.90	4.41	3.58	WHOLE MEAN
TREATMENT	kg							4.02 (183)
TREATMENT	GREASY	4.58	4.81	5.09	5.16	4.22	4.15	4.75 (187)
FLEECE NUMBER		3	4	5	6	7	8	

LAMB GROWTH RATES (g/day) per age-group of Dam. SALVADOR 1977/78

1.1.

EWE LAMB CROP AT MATING	<u>CONTROL</u>			+	<u>TREATMENT</u>			
	LAMB SAMPLE	BIRTH- MARKING	MARKING- WEANING		LAMB SAMPLE	BIRTH- MARKING	MARKING- WEANING	BIRTH- WEANING
5	15	208	141		20	201	131	164
4	8	223	150		14	223	146	175
3	13	229	154		29	213	131	169
2	25	224	143		22	232	150	188
1	27	225	149		34	216	149	181
0	33	196	122		19	196	130	160

+Mean birth-date employed to calculate B-W growth rates.

Mean birth wt: C4.1 kg. T4.0 kg. M Intervals B-M = 45. M-W = 51. B-W = 96 days.

LAMB GROWTH RATES (g/day) per age-group of Dam. SALVADOR 1978/79

1.1

EWE LAMB CROP AT MATING	<u>CONTROL</u>				<u>TREATMENT</u>			
	LAMB SAMPLE	BIRTH- MARKING	MARKING- WEANING	BIRTH- WEANING ⁺	LAMB SAMPLE	BIRTH- MARKING	MARKING- WEANING	BIRTH- WEANING ⁺
5	4	209	147	182	8	231	179	206
4	15	229	173	205	18	240	165	207
3	19	215	167	195	20	248	193	224
2	32	231	172	206	18	252	183	221
1	35	221	150	191	21	242	166	208
0	18	211	150	184	14	212	151	185

+Mean birth-date employed to calculate B-W growth rates.

Mean birth wt: C4.1 kg. T4.0 kg. M intervals B-M = 59. M-W = 45. B-W = 104 days.

APPENDIX

RONDA, SALVADOR: TABLE OF LOSS RATES*

Lamb crop at Mating		76/77	77/78	78/79	Mean of 3 years				
	Sample Size	LR %	Sample Size	LR %	Sample Size	LR %	Mean Sample Size	Mean LR %	
C	5	25	16.0	26	3.8	9	33.3	20	17.7
O	4	31	16.1	13	30.8	25	12.0	23	19.6
N	3	19	31.6	28	10.7	34	6.3	27	16.2
T	2	34	17.6	36	5.6	42	4.8	37	9.3
R	1	38	5.3	45	6.7	53	5.7	45	5.9
O	0	47	4.3	57	7.0	39	15.4	48	8.9
MEAN LR % OF TOTAL SAMPLES/YEAR		194	12.9	205	8.3	202	9.4	200	10.2
T	5	24	12.5	25	8.0	14	0.0	21	6.8
R	4	31	19.4	18	22.2	30	20.0	26	20.5
E	3	19	5.3	33	9.1	34	11.8	29	8.7
A	2	34	2.9	38	10.5	38	13.2	37	8.9
T	1	40	5.0	40	5.0	42	4.8	41	4.9
M	0	48	16.7	46	8.7	47	12.8	47	12.7
MEAN LR % OF TOTAL SAMPLES/YEAR		196	10.7	200	9.5	205	11.2	201	10.4

* LOSS RATE = Death + Cull + Pluck Loss

CONTROL : Lamb Survival : SALVADOR 1978/79

1.1

EWES LAMB CROP AT MATING	AGE	EWES MATED	LAMBS BORN ALIVE	DEAD	LAMBS SURVIVE > 48 hrs	LAMBS MARK	LAMBS WEAN	B - W % LOSS
5	7½yo	8	4	1	4	4	4	20.0%
4	6½	26	24	0	23	21	19	20.8
3	5½	34	31	0	29	25	23	25.8
2	4½	42	39	0	39	37	36	7.7
1	3½	53	50	0	48	46	43	14.0
0	2½	39	34	1	32	26	24	31.4
			-----				-----	-----
			184				149	19.0%

TREATMENT : Lamb Survival : SALVADOR 1978/79

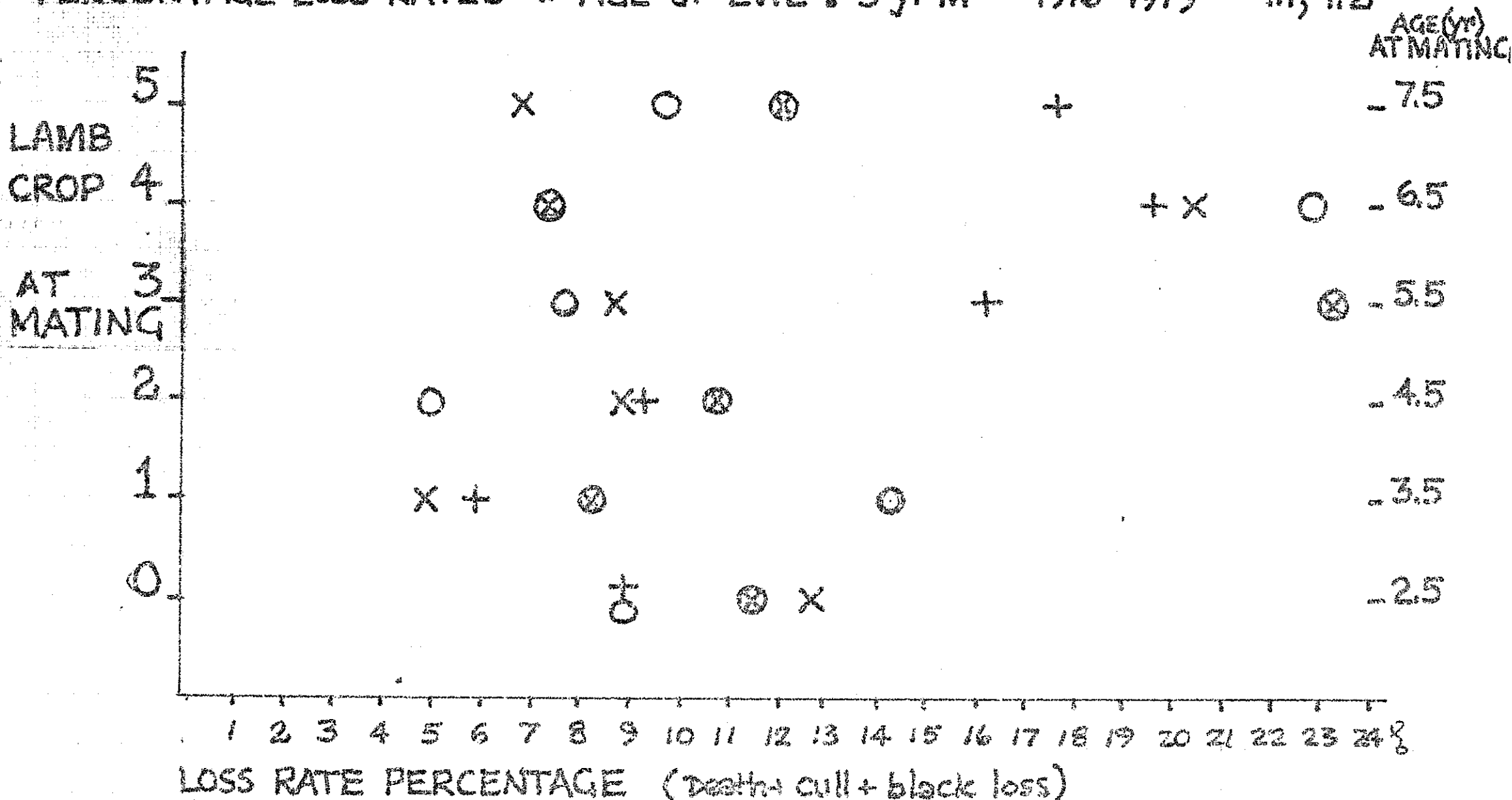
1.1

EWES LAMB CROP AT MATING	AGE	EWES MATED	LAMBS BORN ALIVE	DEAD	LAMBS SURVIVE > 48 hrs	LAMBS MARK	LAMBS WEAN	B - W % LOSS
5	7½yo	14	11	0	10	10	10	9.1%
4	6½	30	26	0	26	24	23	11.5
3	5½	33	26	1	25	25	25	7.4
2	4½	37	26	0	25	25	25	3.8
1	3½	43	32	0	30	29	28	12.5
0	2½	46	28	0	23	22	22	21.4
			150				133	11.3%

PERCENTAGE LOSS RATES v. AGE OF EWE : 3-yr M

1976-1979

1.1, 1.2



1.1 Salvador + Control X Treatment
 1.2 B. Loch O Control ⊗ Treatment

1.2 Two-Pasture Experiment - Brenton Loch (Darwin)

C1 sheep (200 ewes) are set stocked on 686 acres, T sheep (200 ewes) are alternated between H 397ac and P 255ac. They occupy P (the better section) during the pre-partum and lactation periods and again during mating.

Object: To measure the production increase obtainable by implementing a two-pasture system with ewes in the Falkland Islands.

Treatments: Two areas of 686 and 652 acres each were fenced off in a ewe camp of 3248 acres occupied by 1000 ewes. The 652ac section was further subdivided in 255 and 397 acre sections, the former considered the better land. The mating of the experimental flocks was delayed by 5-6 weeks from normal during 76/77, 77/78 but brought to 3 weeks from normal for seasons 78/79, 79/80, the main criterion being the maintenance of the birth weights obtained in 77.

The alteration of lambing dates has introduced a second variable so that C and T results must also be compared with those obtained from the Remainder flock C2 (approximately 600 ewes on 1910 acres). All SR calculations are based on a C2 flock of 500 ewes i.e. there is no bias toward the C2 flock due to the design of the experimental area (unlike 1.1 Salvador).

Method: Design, site details, technique, diary of events etc. is contained in this section.

Results: As detailed results as possible at this stage are included below.

Discussion: Detailed and revised vegetation maps are lodged at HQ and ODA. Calculations based on the maps with a subjective score for the vegetation types enabled stocking rates to be checked (Eadie Report 78, Davies Report 79). It was found that the C1 area was "better" than T and C2 and when reseeded is introduced the area in C1 should be modified by 28%. Little difference in value was noted between the T paddocks H and P so there is little contrast. The overall (C2 + C1 + T) value of the vegetation is generally high.

The poor performance common to both T and C1 sheep despite the difficulties experienced with marauding rams gives cause for concern.

The fleece weights (C2, C1 and T) are generally low.

The Maiden ewes in T although lambing at the same rate as C1 resulted in a much reduced weaning percentage in 78/79 (37% T as opposed to 60% C1).

On one year's results firm conclusions cannot be drawn, but the comments concerning 1.1 may also be common to 1.2 regarding Maiden ewes in a two-pasture system.

It is not possible to draw conclusions on one year's results (78/79) concerning the relative performance of the ages of ewes, in terms of lamb weaned per ewe mated.

It appears that the lamb birth weights in T have been reduced by bringing the lambing date 3 weeks earlier, although there are only two years in which the comparison can be made:-

Gross Means 77 : 3.9kg
78 : 3.6kg

This was not the case at Salvador (1.1). Lamb growth rates (g/day) averaged:-

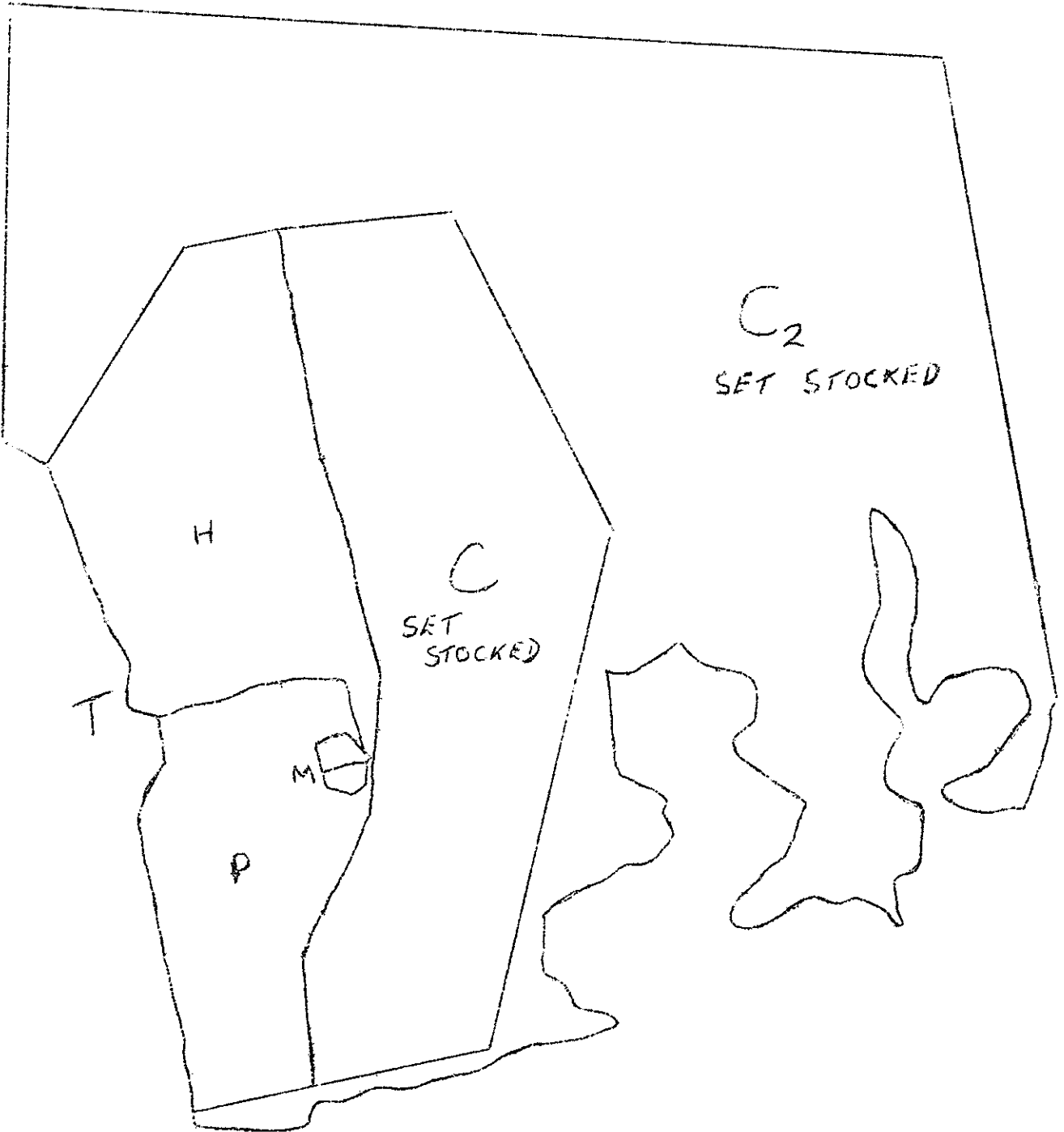
	B-M		M-W		B-W	
78/79	C	T	C	T	C	T
	172	194	79	74	139	150

which are considered very low.

1.2

BRENTON LOCH 1:25000

1.2



	ha	ac
C	278	686
C ₂	773	1910
H	161	397
P	103	255
	264	652

TWO PASTURE SYSTEM EXPERIMENT - BRENTON LOCH, GOOSE GREENSCHEDULE OF WORK 1979/80

WT	PROVISIONAL DATE	DAY NO.	ACTIVITIES	FLOCK	GRAZING
1	31/5/79	31	Weigh, condition score and dye band all C & T ewes Commence mating (6 rams per flock required)	C	C
	9/6/79		Fit ram harnesses COLOUR - <u>RED</u> Change all ram harness COLOURS to <u>BLUE</u> (10th day of mating)	T	P
2	16/7/79	77	Weigh, condition score and dye band all C & T ewes Remove all rams and harnesses	C T	C H
3	22/9/79	151	Weigh, condition score and dye band all C & T ewes	C T	C P
4	27/10/79	180	Weigh, condition score and dye band all C & T ewes Lambing commences with detailed recording Lambd ewes to C and P respectively Eild ewes to C and M respectively Remainder ewes blue raddles gathered	C red T red	CM M
	6/11/79			C blue T blue	CM M
5	4/1/80	249	Weigh, condition score and dye band all C & T ewes Weigh all lambs Mark all lambs	C T	C P
6	13/2/80	294	Weigh, condition score all C & T ewes Shear all C & T ewes, recording wool weights Recover dye banding samples Cull and cast ewes removed Select, tag, weigh and condition score replacement maiden ewes Dye band all shorn ewes and maidens Weigh all lambs Wean all lambs, tagging 50 ewe lambs and 50 wether lambs from each flock	C T	C H

WF	PROVISIONAL DATE	DAY NO.	ACTIVITIES	FLOCK	GRAZING
7	8/5/80	8	Weigh, condition score and dyeband all C & T ewes	C T	C P

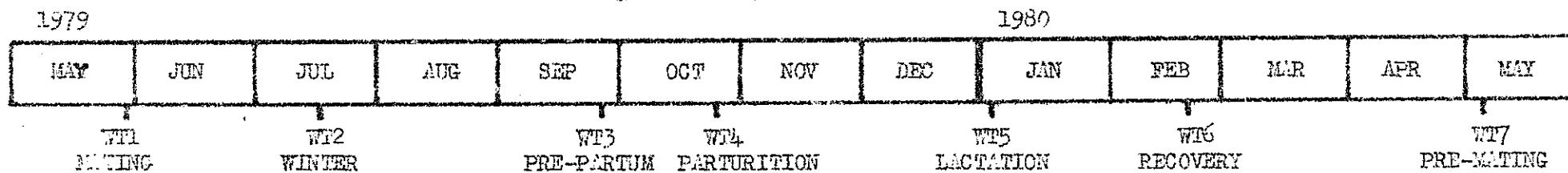
All dates are provisional to take account of holidays, travel delays etc.

Control ewes are referred to as C
Treatment ewes are referred to as T

Paddocks:
(Refer to map layout)

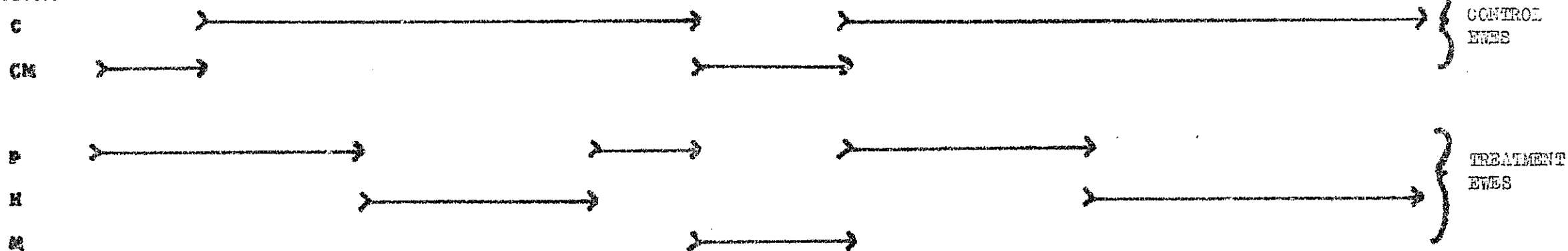
C control
CM control management paddock
H treatment
P treatment production area
M treatment management paddock

CALENDAR AND GRAZING REGIME 1979/80



GRAZING REGIME

PADDOCK



MEAN WTS (kg) CONDITION SCORES, LOSS RATES AND STOCK RECONCILIATION

BRENTON LOCH 76/77

1.2

BIRTH YEAR	PREFIX	CROP AT MATING	NO. MATED	WT 1 13/1/76	2 12/8/76	3 10/20/11/76	4	5	6	7	PRESENT END YEAR	ENTER NEW SHEEP YEAR	LOSS RATE %
CONTROL (SET STOCKED)				MATING	WINTER	PRE-LAMB	LAMB	LACTATION	RECOVERY				
68	H	5	84	40.8 2.0	40.8 1.5	42.5 A		37.7 2.0	41.8 2.0	66			21.4%
69	K	4	21	40.9 1.9	40.2 1.5	40.5 A		37.0 1.9	40.2 2.2	13	38.7 1.8	13	38.1
70	Z	3	17	41.3 2.2	41.2 1.8	45.0 A		34.1 1.7	38.7 2.2	14	39.6 2.1	14	17.6
71	A	2	20	39.4 2.2	40.0 1.8	40.0 A		35.5 2.1	39.1 2.4	18	38.3 2.0	18	10.0
72	B	1	6	39.6 2.2	39.3 1.8	44.6 A		37.8 2.3	42.5 2.5	4	40.2 2.5	41*	33.3
ADULT AGE-GROUPS M				40.4	40.3	42.5		36.4	40.5		38.8 2.3	44	2.2
73	C	0	<u>45</u> 193	39.6 2.3	40.3 2.1	42.6 A		34.0 2.0	38.1 2.3	44	39.1 74 age 36.8 2.4	63 193	17.6%
TREATMENT													
68	8	5	84	41.9 2.0	39.5 1.6	44.0 A		42.1 2.0	41.0 2.1	60			28.6
69	9	4	20	43.9 2.2	41.4 1.7	47.0 A		42.8 2.2	41.0 2.4	17	39.6 1.9	17	15.0
70	0	3	18	41.9 2.1	40.2 1.6	46.0 A		40.2 2.0	39.8 2.0	14	38.9 1.7	14	22.2
71	1	2	21	40.1 2.2	39.8 1.8	47.0 A		37.6 2.1	36.9 2.1	18	37.8 1.7	18	14.3
72	2	1	6	37.4 2.3	38.3 1.6	44.0 A		38.4 2.1	39.2 2.4	5	39.5 2.4	45*	16.7
ADULT AGE-GROUPS M				41.0	39.8	45.6		40.2	39.6		38.2 2.3	45	6.3
73	3	0	<u>48</u> 197	40.7 2.4	39.1 2.2	45.0 A		39.1 2.4	37.3 2.3	45	38.8 74 age 36.0 2.4	61 200	19.3%

* STOCK NUMBER INCREASED JNE77
A: SAMPLE WTS. ONLY

MEAN WTS (kg) CONDITION SCORES, LOSS RATES AND STOCK RECONCILIATION

BRENTON LOCH 77/78

1.2

BIRTH YEAR	PREFIX	CROP PAT MATING	NO. MATED	WT 1 28/6/77	2 15/8/77	3 18/10/77	4 21/11/77	5 12/1/78	6 9/3/78	PRESENT END YEAR RECOVERY	7 18/5/78	ENTER NEW SHEEP YEAR	LOSS RATE %
				MATING	WINTER	PRE-LAMB	LAMB	LACTATION					
CONTROL (SET STOCKED)													
69	K	5	13	36.5 1.8	32.9 2.2	37.8 1.4	36.9 1.4	41.6 1.9	45.7 2.2	13			0.0%
70	Z	4	14	37.2 2.1	34.1 2.5	39.1 1.7	38.4 1.8	44.1 2.4	48.0 2.5	13	50.5 2.8	13	7.1
71	A	3	18	36.4 2.1	34.1 2.2	37.5 1.8	36.5 1.7	42.2 2.6	45.8 2.9	17	47.8 2.6	17	5.6
72	B	2	41	37.9 2.3	35.1 2.8	39.1 1.9	38.5 1.9	44.9 2.9	48.2 3.2	39	50.4 3.0	39	4.9
73	C	1	44	37.1 2.3	33.9 2.8	38.9 1.9	38.3 1.9	43.4 2.7	46.1 3.0	42	51.0 2.8	42	4.5
ADULT AGE-GROUPS M				37.0	34.0	38.5	37.7	43.2	46.8		47.6 3.0	58	7.9
74	D	0	63	35.4 2.3	32.8 2.8	35.8 2.0	35.7 1.9	41.5 3.0	45.4 3.2	58	49.5	30	
				193						182	75age 39.3 2.2	199	5.7%
TREATMENT													
69	9	5	17	36.4 1.9	33.7 2.6	37.8 1.5	42.6 1.7	42.9 2.1	47.2 2.7	17			0.0%
70	0	4	14	36.1 1.8	33.8 2.5	37.4 1.6	41.5 1.7	42.2 1.9	47.1 2.7	13	49.6 2.6	13	7.1
71	1	3	18	36.1 2.1	33.1 2.8	38.1 1.8	43.0 1.9	41.5 2.6	45.4 2.8	14	48.0 2.9	14	22.2
72	2	2	45	38.0 2.3	34.5 3.0	38.4 1.7	43.7 1.9	41.4 2.4	45.6 2.7	39	49.0 2.9	39	13.3
73	3	1	45	37.2 2.4	34.0 3.0	37.9 1.9	43.5 1.9	41.4 2.5	45.0 2.8	43	48.8 2.9	43	4.4
ADULT AGE-GROUPS M				36.8	33.8	37.9	42.9	41.9	46.1		47.5 3.1	56	8.2
74	4	0	61	34.5 2.3	31.7 2.8	34.8 1.9	39.5 1.9	37.7 2.8	44.5 3.0	56	48.6	35	
				200						182	75age 39.7 2.4	200	9.0%

MEAN WTS (kg), CONDITION SCORES, LOSS RATES AND STOCK RECONCILIATION BRENTON LOCH 78/79 1.2

BIRTH YEAR PREFIX CROP AT NO. WT1* 2 3 4 5 6 PRESENT 7 ENTER LOSS RATE %
 MATING MATED 18/5/78 7/8/78 4/10/78 30/10/78 11/1/79 14/2/79 END YEAR 8/5/79 NEW SHEEP YEAR

CONTROL (SET STOCKED)

WT	Prefix	Crop At	No.	WT1*	2	3	4	5	6	PRESENT	7	ENTER	LOSS RATE %
				18/5/78	7/8/78	4/10/78	30/10/78	11/1/79	14/2/79	END YEAR	8/5/79	NEW SHEEP	
70	Z	5	13	50.5 2.8	47.0 2.5	48.2 2.5		40.7 2.2	41.2 1.8	12			7.7%
71	A	4	17	47.8 2.6	41.6 2.3	44.6 2.1		38.1 2.0	38.2 1.5	13	40.1 1.9	13	23.5
72	B	3	39	50.4 3.0	47.0 2.7	48.1 2.6		39.4 2.1	40.9 2.1	39	40.9 2.5	39	0.0
73	C	2	42	51.0 2.8	46.3 2.5	47.8 2.5		39.0 2.1	39.7 1.9	42	40.8 2.4	42	0.0
74	D	1	58	47.6 3.0	44.2 2.7	45.7 2.6		38.6 2.2	39.4 2.2	55	40.3 2.6	55	5.2
ADULT AGE-GROUPS	M			49.5	45.3	47.0		39.0	39.8		37.9 2.7	25	16.7
75	E	0	<u>30</u> 199	39.3 2.2	36.8 2.1	36.6 2.0		35.7 2.3	36.9 2.2	<u>25</u> 186	^{76.2%} 35.5 2.6	<u>23</u> 197	<u>6.5%</u>

TREATMENT

70	0	5	13	49.6 2.6	47.4 2.1	45.9 1.8	47.6 1.8	44.2 2.0	40.7 1.6	12			7.7%
71	1	4	14	48.0 2.9	45.6 2.2	44.5 2.5	47.2 2.2	44.0 2.4	39.9 2.4	14	43.5 2.7	14	0.0
72	2	3	39	49.0 2.9	46.4 2.4	45.5 2.3	47.7 2.1	43.1 2.0	39.6 1.9	29	43.1 2.2	29	25.6
73	3	2	43	48.8 2.9	46.5 2.6	44.9 2.4	47.7 2.2	42.6 2.1	39.1 2.0	41	42.6 2.3	41	4.7
74	4	1	56	47.5 3.1	45.4 2.7	44.2 2.5	43.0 2.1	42.6 2.3	38.9 2.3	54	41.6 2.7	54	3.6
ADULT AGE-GROUPS	M			48.6	46.1	45.0	46.6	42.9	39.1		42.6 3.0	28	20.0
75	5	0	<u>35</u> 200	39.7 2.4	38.9 2.2	38.8 2.0	41.9 2.1	42.0 2.6	39.3 2.6	<u>28</u> 178	^{76.2%} 36.8 2.5	<u>31</u> 197	<u>11.0%</u>

* Revised mating date: same as wt. 7 previous year.

APPENDIXPRODUCTION BRENTON LOCH

	WEAN %			BIRTH WEIGHT (kg)			WEAN WEIGHT (kg)			FLEECE WEIGHTS (kg) GREASY				
	C	T	C ₂	C	T	C ₂	C	T	C ₂	FIRST SHEAR		SECOND SHEAR		
	C	T	C ₂	C	T	C ₂	C	T	C ₂	C	T	C	T	C ₂
76/77	59.0	59.4	58.6				19.3	20.4	21.5	2.6	2.6	3.1	3.2	3.0
77/78	15.6	34.2	87.0	4.0	3.9	3.7	21.8	21.8	22.5			4.3	4.2	3.8
78/79	73.2	65.0	76.9	4.1	3.6	-	18.4	18.6	-			3.1	3.4	3.7

APPENDIX1.2 BRENTON LOCH 77/78

The low recorded lambing percentages at Brenton Loch (15% Control and 30% Treatment) were apparently the result of three major factors:-

- a) Stress caused by removing all ewes from resources for the five weeks prior to mating
- b) The resultant low live weights of the ewes at mating
- c) The continued loss of body weight during the mating period.

To examine the last factor (c) the 72 age ewes (2-crop at mating) of both Control and Treatment were examined separately for:-

- i) having had a lamb
- ii) weight loss during mating.

		28/6/77	- 48 days -	15/8/77	Sample
72 age CONTROL	M	37.95kg	(2.82)	35.13kg	40
72 age TREATMENT	M	37.96kg	(3.47)	34.49kg	45
			(wt.loss)		

			kg	SD	SE
CONTROL:	weight loss	31 NOT LAMBING	3.145	1.593	± 0.286
	weight loss	9 LAMBING	1.833	1.500	± 0.500
TREATMENT:	weight loss	23 NOT LAMBING	3.804	1.801	± 0.375
	weight loss	22 LAMBING	3.136	1.473	± 0.314

The weight loss in Control of those not lambing was 72% greater than those that did.

The weight loss in Treatment of those not lambing was 21% greater than those that did.

APPENDIXBRENTON LOCH: BIRTH MARKING AND WEANING WEIGHTS LAMBS (kg)/AGE GROUP OF DAM: CONTROL

LAMB CROP AT MATING	76/77			77/78			78/79		
	B	M	W	B	M	W	B	M	W
5				4.5	9.0	-	4.8	17.1	20.4
4				4.3	11.0	21.5	4.1	13.8	16.5
3				4.2	14.0	22.7	4.4	15.6	18.8
2				3.8	12.8	20.7	4.3	15.3	18.3
1				4.2	13.5	22.5	4.1	14.8	17.7
0				3.8	11.6	21.7	3.5	13.5	15.8

APPENDIXBRENTON LOCH: BIRTH, MARKING AND WEANING WEIGHTS LAMBS (kg)/AGE GROUP OF DAM: TREATMENT

LAMB CROP AT MATING	76/77			77/78			78/79		
	B	M	W	E	M	W	B	M	W
5				4.0	13.8	23.5	3.6	16.3	18.5
4				4.4	14.7	23.3	3.7	17.8	20.7
3				3.9	13.3	22.1	3.8	15.1	18.0
2				3.9	12.6	20.2	3.9	16.5	19.1
1				4.0	14.6	22.4	3.7	16.1	18.8
0				3.6	14.6	22.9	3.3	13.5	15.7

APPENDIXLAMBING, MARKING AND WEANING PERCENTAGES PER EWE MATED PER AGE GROUPCONTROL 1977/78

<u>CROP AT MATING</u>	<u>LAMBING PERCENTAGE</u>	<u>MARKING PERCENTAGE</u>	<u>WEANING PERCENTAGE</u>	<u>EWE LIVEWT (kg) AT MATING 28/6/77</u>
5	15.0	15.0	0.0	36.5
4	21.4	14.3	14.3	37.2
3	11.1	11.1	11.1	36.4
2	24.4	14.6	14.6	37.9
1	34.1	31.8	29.5	37.1
0	7.9	7.9	7.9	35.4

CONTROL 78/79

18/5/78

5	84.6	76.9	76.9	50.5
4	82.3	70.6	64.7	47.8
3	92.3	82.0	76.9	50.4
2	90.5	83.3	78.6	51.0
1	87.9	79.3	70.7	47.6
0	70.0	60.0	60.0	39.3

APPENDIXLAMBING, MARKING AND WEANING PERCENTAGES PER EWE MATED PER AGE GROUPTREATMENT 1977/78

CROP AT MATING	LAMBING PERCENTAGE	MARKING PERCENTAGE	WEANING PERCENTAGE	EWE LIVEWT (kg) AT MATING 28/6/77
5	23.5	17.6	11.8	36.4
4	28.6	21.4	21.4	36.1
3	27.8	27.8	27.8	36.1
2	48.9	46.7	46.7	38.0
1	57.8	51.1	51.1	37.2
0	23.0	18.0	18.0	34.5

TREATMENT 1978/79

				18/5/78
5	92.3	69.2	69.2	49.6
4	85.7	64.3	64.3	48.0
3	87.2	61.5	58.9	49.0
2	97.7	76.7	74.4	48.8
1	87.5	75.0	75.0	41.5
0	71.4	37.1	37.1	39.7

APPENDIXBIRTH, MARKING AND WEANING WEIGHTS (kg) PER EWE MATED PER AGE GROUPCONTROL, 1977/78

CROP AT MATING	BIRTH WT (kg)	MARK WT (kg)	WEAN WT (kg)
5	0.7	0.7	-
4	0.9	1.6	3.1
3	0.5	1.6	2.5
2	0.9	1.9	3.0
1	1.4	4.3	6.6
0	0.3	0.9	1.7

CONTROL* 1978/79

5	4.1	13.2	15.7
4	3.4	9.8	10.7
3	4.0	12.8	14.5
2	3.9	12.7	14.3
1	3.6	11.7	16.7
0	2.5	8.1	9.5

* WT of lamb corrected to later birth dates by sizing up sample wts of lambs born at correct time (approx $\frac{1}{2}$ ewes mated prior to 5/6/78).

APPENDIXBIRTH, MARKING AND WEANING WEIGHTS (kg) PER EWE MATED PER AGE GROUPTREATMENT 1977/78

GROP AT MATING	BIRTH WT (kg)	MARK WT (kg)	WEAN WT (kg)
5	0.9	2.4	2.8
4	1.3	2.1	5.0
3	1.1	3.7	6.1
2	1.9	5.9	9.4
1	2.3	7.5	11.4
0	0.8	2.6	4.1

TREATMENT 1978/79

5	3.3	11.3	12.8
4	3.2	11.4	13.3
3	3.3	9.3	10.6
2	3.8	12.7	14.2
1	3.3	11.8	14.1
0	2.4	5.0	5.8

LAMB GROWTH RATES (g/day) per age group of Dam. BRENTON LOCH 1978/79

1.2

EWE LAMB CROP AT MATING	<u>CONTROL</u>				<u>TREATMENT</u>			
	LAMB SAMPLE	BIRTH- MARKING	MARKING- WEANING	BIRTH- WEANING	LAMB SAMPLE	BIRTH- MARKING	MARKING- WEANING	BIRTH- WEANING
5	4	190	97	156	9	196	63	148
4	10	163	68	129	9	223	82	171
3	19	189	82	151	23	184	73	148
2	12	169	83	138	31	201	72	153
1	28	172	81	141	40	198	93	154
0	10	149	65	120	13	164	60	127

M. birth wt. 4.1 kg.

M. birth wt. 3.6 kg.

B - M : 63 days. M - W : 36 days. Total 99 days.

APPENDIXBRENTON LOCH: TABLE OF LOSS RATES*

Lamb crop at Mating		76/77		77/78		78/79	Mean of 3 years	
	Sample Size	LR %	Sample Size	LR %	Sample Size	LR %	Mean Sample Size	Mean LR %
C	5	84	21.4	13	0.0	13	37	9.7
O	4	21	38.1	14	7.1	17	17	22.9
N	3	17	17.6	18	5.6	39	25	7.7
T	2	20	10.0	41	4.9	42	34	5.0
R	1	6	33.3	44	4.5	58	36	14.3
O								
L	0	45	2.2	63	7.9	30	46	8.9
MEAN LR % OF TOTAL SAMPLES/YEAR		193	17.6	193	5.7	199	195	9.9
T								
R	5	84	28.6	17	0.0	13	38	12.1
E	4	20	15.0	14	7.1	14	16	7.4
A	3	18	22.2	18	22.2	39	25	23.3
T	2	21	14.3	45	13.3	43	36	10.8
M	1	6	16.7	45	4.4	56	36	8.2
E								
N	0	48	6.3	61	8.2	35	48	11.5
MEAN LR % OF TOTAL SAMPLES/YEAR		197	19.3	200	9.0	200	199	13.1

* LOSS RATE = Death + Cull + Black Loss

1.3 DRY SHEEP EXPERIMENT: NORTH ARM

Summary: In 1977 all classes of stock (h, 50e & 50w; s, 50e & 50w; adult ewes 50, adult wethers 50) were stocked in a paddock at 3.5 aps (corrected). In 1979 the adult wethers were confined to a less favoured area.

Object: (a) to describe the seasonal pattern of wool growth, body condition, and live weight of dry sheep of all types and ages.

(b) to alter the pattern of wool growth by altering nutrition of group(s) of dry sheep.

Treatments: This Study is largely observational and treatments will only occur when comparing groups on better/poorer nutrition.

Method: Design, site details, technique, diary of events etc. contained in this section.

Results: As detailed results as possible at this stage are included.

Patterns of wool growth are discussed fully under 3.1 (Wool Growth).

Discussion: Fleece weights: dry ewes: These results, better in 78/79 than 77/78 do not compare favourably with those C1 and T ewes from Salvador 1.1 that have reared a lamb except for the maiden ewe age (third fleece). A comparison made at 1.2 (Brenton Loch) between those ewes rearing/not rearing a lamb would also lead one to suppose that the lamb makes little difference to the greasy fleece weight produced, viz.

Brenton Loch 77/78 1.2

Treatment

2 crop ewes at mating (72 age)

	Non- Lactating		Lactating	
	Sample Size	Fleece weight (kg)	Sample size	Fleece weight (kg)
	19	4.025	19	3.863
SD		0.521		0.820
SE _±		0.119		0.188

The difference expressed as a percentage of the lower fleece weight is 4.2%.

Difference = 0.162kg
SE of Difference = 0.730kg

wethers: They seem on average to produce about 11.5% more weight of wool than the dry ewes set stocked together.

Live weights: Results from ewes 77/78 are moderate with a fall of 5-6kg between shearing and the end of March, part of which is explicable by the weight of fleece. The weights were higher during 78/79 but again a fall of 3-6kg was experienced during this period.

Wether live weights 77/78 improved through the year with a slight fall during winter. The mean weights rose sharply in the spring and maintained a high level.

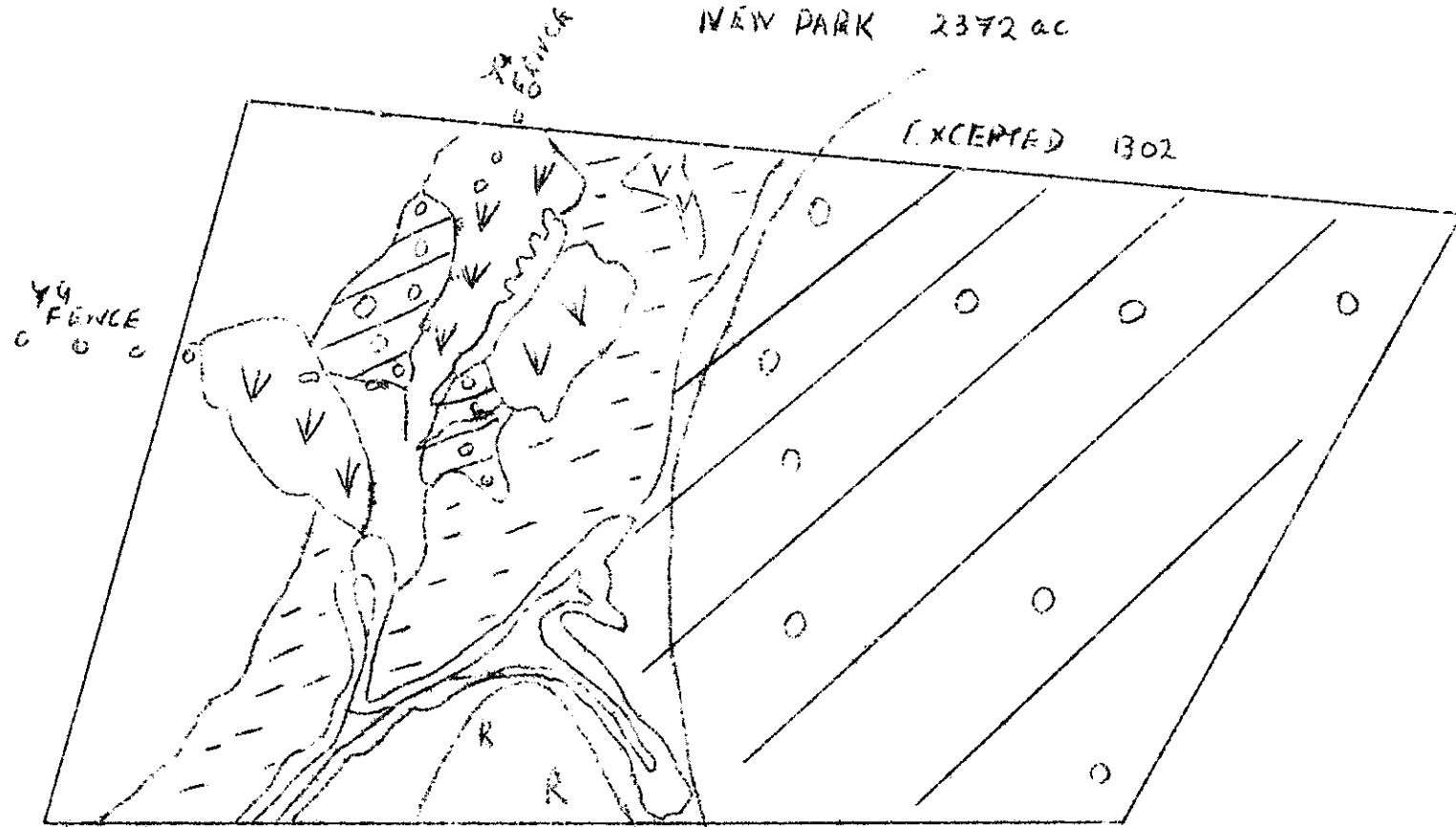
Hogg, shearling and 2 shear sheep rose in live weight throughout both years. From other observations this does not necessarily happen in the commercial situation.

Loss rates: The rather high loss rates are largely due to sheep wandering.

In order to extrapolate the results obtained in this Study, further subdivision should be carried out and paddocks allocated to the different stock type as more is known about the value of the different plant communities.

D S NORTH ARM
 1:25000
 NEW PARK 2372 ac

1.3



	ac	
10%	1302	
Cp	4+5	
111	310	
11	205	
V	72	
V+K	372	2372
K		

Corrected apb

$$\frac{1070}{300} = 3.56$$

DRY SHEEP EXPERIMENT - NORTH ARMSCHEDULE OF WORK 1979/80

WT	PROVISIONAL DATE	DAY NO.	ACTIVITIES
1	3/5/79	3	Weigh, condition score and dye band all sheep
2	26/7/79	87	Weigh, condition score and dye band all sheep
3	18/10/79	171	Weigh, condition score and dye band all sheep
4	4/12/79	218	Weigh and condition score all sheep Dye band adult ewes Shear all adult wethers, shearlings and hoggs of both sexes, recording wool weights Recover dye banding samples from shorn sheep Dye band all shorn sheep
5	17/1/80	262	Weigh, condition score and dye band all sheep
6	15/2/80	291	Weigh and condition score all sheep Dye band adult wethers, shearlings and hoggs Shear all adult ewes recording wool weights Recover dye banding samples from shorn sheep Dye band all shorn sheep
7	4/4/80	339	Weigh, condition score and dye band all sheep

All dates are provisional to take account of holidays, travel delays etc.

CALENDAR 1979/80

1979					1980							
MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
WT1		WT2			WT3		WT4		WT5	WT6		WT7
(MATING)		WINTER			(PARTURITION)		SHEARING		(WEANING)	SHEARING		(RECOVERY/PRE-MATING)

DRY SHEEP EXPERIMENT: NORTH ARM: MEAN WTS(kg), COND. SCORES, FLEECE WTS, LOSSES, STOCK RECONCILIATION 77/78 1.3

FEMALES		WT 1	2	2x	3	4	FLEECE	5	6	FLEECE	7	END	START	LOSS RATE		
YEAR OF BIRTH	AGE	1/6/77	25/7/77	20/9/77	19/10/77	13/12/77	WT. 13/12	16/1/78	15/2/78	WT 15/2	31/3/78	NO.	NEW SHEEP YEAR	PERCENTAGE		
70	6.5	6se	5	41.9 1.8	48.0	41.3 0.7	38.6 1.2	41.0 2.5		45.7 1.6	51.6 2.2	3.2	3	40.01		
71	5.5	5se	10	40.4 1.6	45.1	40.3 0.9	39.8 1.5	40.2 0.8		43.4 1.7	49.1 2.0	3.3	9	10.0		
72	4.5	4se	9	39.7 1.7	43.7	40.1 1.1	38.2 1.5	38.1 0.8		43.2 1.7	48.8 2.3	3.7	9	0.0		
73	3.5	3se	10	40.7 2.1	45.3	43.1 1.4	39.6 1.8	38.5 1.0		42.5 1.9	48.0 2.3	3.8	9	10.0		
ADULT AGE-GPS.		M		40.7	45.5	41.2	39.1	39.5		43.7	49.4					
74	2.5	2se	13	42.3 2.2	43.8	42.4 1.8	41.6 2.0	41.0 1.1		46.0 2.0	50.7 2.5	4.0	12	7.7		
75	1.5	se	48	29.8 1.4	32.0	29.8 1.1	31.8 1.8	33.1 1.1	2.8	35.0 2.0	40.8 2.3		42	12.5		
76	0.5	eh	49	22.0 1.3	23.6	23.1 1.2	25.9 1.9	30.0 1.4	2.7	31.6 2.1	36.6 2.3		41	16.3		
												**				
												144				
												50	INTAKE 77age	22.4 2.1 (50)	45	→ (10.0)
														125 134		13.2%

WETHERS		WT 1	2	2x	3	4	FLEECE	5	6	FLEECE	7	END	START	LOSS RATE		
YEAR OF BIRTH	AGE	1/6/77	25/7/77	20/9/77	19/10/77	13/12/77	WT. 13/12	16/1/78	15/2/78	WT 15/2	31/3/78	NO.	NEW SHEEP YEAR	PERCENTAGE		
71	5.5	5SW	10	47.7 1.8	46.4	43.3 1.9	45.3 2.2	51.2 2.2		3.8	50.8 2.6	57.9 3.1	8	20.0		
72	4.5	4SW	10	52.0 2.3	53.5	48.9 2.3	48.6 2.3	53.9 2.3		3.8	55.0 2.8	61.4 3.4	10	0.0		
73	3.5	3SW	11	49.4 2.6	49.0	46.5 2.6	47.5 2.5	52.4 2.3		3.8	53.4 2.9	60.3 3.6	10	9.1		
ADULT AGE-GPS.		M		49.7	49.6	46.2	47.1	52.5		53.1	59.9					
74	2.5	2SW	14	40.5 1.8	40.4	37.8 1.8	41.3 2.3	45.9 1.9		3.7	46.8 2.8	53.9 3.2	13	7.1		
75	1.5	SW	48	32.7 1.5	32.9	30.7 1.6	33.5 2.1	37.3 1.5		3.2	39.7 2.2	46.1 2.6	43	10.4		
76	0.5	Wh	47	24.1 1.3	26.8	25.1 1.4	28.2 2.0	32.2 1.5		2.8	33.9 2.1	40.2 2.3	41	12.8		
												140				
												50	INTAKE 77age	23.1 2.0 (50)	42	→ (16.0)
														125 136		10.7%
														270		

* whole age-gp mean prior to selection for next sheep year
 ** some ewes had lambs.

DRY SHEEP EXPERIMENT: NORTH ARM: MEAN WTS. (kg), COND. SCORES, FLEECE WTS., LOSSES & STOCK RECONCILIATION 78/79 1.3

FEMALES				WT 1	2	3	4	FLEECE	5	6	FLEECE	7	END NO.	START NEW SHEEP YEAR	PERCENTAGE LOSS RATE
YEAR OF BIRTH	AGE	TYPE	START NO	13/5/78	26/7/78	13/10/78	18/12/78	WT 18/12	28/1/79	13/2/79	WT. 13/2	11/4/79			
71	6.5	6se	8	47.3 2.6	42.9 2.2	44.1 2.3	50.2 2.8		55.8 2.9	56.1 2.9	4.2		6		25.0 ↓
72	5.5	5se	9	47.4 2.6	41.9 1.8	41.6 2.3	49.6 2.6		54.6 2.6	56.8 2.6	4.0	50.5 2.7	9	9	0.0
73	4.5	4se	9	47.5 3.1	43.4 2.5	44.1 2.6	51.4 3.3		56.7 3.1	58.4 3.1	4.5	53.7 3.3	9	9	0.0
74	3.5	3se	12	48.7 3.2	44.3 2.4	44.8 2.8	52.2 3.3		58.7 3.2	59.7 3.3	4.3	56.3 3.5	11	11	8.3
ADULT AGE-GPS.				M	47.7	43.1	43.7	50.9	56.5	57.8		53.0			
75	2.5	2se	10	48.0 3.5	43.4 2.8	43.3 2.6	49.6 3.0		56.3 2.9	57.2 3.0	5.3	51.5 3.0	9	9	10.0
76	1.5	se	41	38.9 2.9	35.2 2.4	34.8 2.2	42.7 2.7	3.6	45.4 2.6	46.7 2.9		46.0 3.2	22	10	46.3
77	0.5	eh	45	26.0 2.0	24.2 1.6	26.5 1.8	31.7 2.2	2.8	36.7 2.1	36.9 2.3		38.2 2.7	44	44	2.2
				134											

WETHERS				50 INTAKE 78 Age 19.0											
YEAR OF BIRTH	AGE	TYPE		WT 1	2	3	4	FLEECE	5	6	FLEECE	7	END NO.	START NEW SHEEP YEAR	PERCENTAGE LOSS RATE
71	6.5	6SW	8	56.3 3.5	48.6 2.5	48.9 2.6	58.0 2.5	4.6	57.9 2.7	59.3 2.9			8		0.0
72	5.5	5SW	10	59.9 3.5	53.2 2.8	53.7 2.9	61.4 2.8	4.3	62.1 3.0	63.0 3.1			9		10.0
73	4.5	4SW	10	60.3 3.7	53.9 3.0	54.6 2.9	63.3 3.3	5.0	63.9 3.4	65.5 3.5			9	9	10.0
74	3.5	3SW	13	53.2 3.5	48.2 2.8	48.9 2.7	58.4 2.9	5.1	59.3 3.1	62.0 3.2		64.0 3.7	13	13	0.0
ADULT AGE-GPS.				M	57.4	51.0	51.5	60.3	60.8	62.5		61.6			
75	2.5	2SW	12	53.1 3.4	47.4 2.7	48.3 2.4	57.3 2.8	4.5	59.9 3.1	63.1 3.2		61.6 3.3	10	10	16.6
76	1.5	SW	41	42.4 3.0	37.2 2.3	38.9 2.1	47.8 2.4	4.0	49.3 2.5	51.1 2.7		49.1 2.9	31	12	24.4
77	0.5	Wh	42	27.7 2.1	25.7 1.6	27.8 1.8	32.8 2.3	2.8	37.6 2.0	38.8 2.2		39.6 2.7	38	38	9.5
				136											

* whole age-gp M prior to selection

270

50 INTAKE 78 Age 19.7

24.9 1.7 (50) 118 20.8 → (14.0) 125 25.9 13.22

APPENDIXMEAN GREASY FLEECE WEIGHTS (kg) X AGE GROUP : FEMALES 78/79 NORTH ARM

YEAR OF BIRTH	77	76	75	74	73	72	71
AGE	1 y.o.	2 y.o.	3 y.o.	4 y.o.	5 y.o.	6 y.o.	7 y.o.
SAMPLE	43	40	9	10	9	8	7
WEIGHT kg GREASY	2.83	3.56	5.34*	4.31	4.51	4.01	4.17
FLEECE NUMBER	1	2	3	4	5	6	7
NAME AT COMMENCEMENT OF SHEEP YEAR	e hogg	shearling e	2-shear e (maiden ewe)	3-shear e	4-shear e	5-shear 3	6-shear e

* Shorn 2m later than shearlings

APPENDIXMEAN GREASY FLEECE WEIGHTS (kg) X AGE GROUP, WETHERS 78/79 NORTH ARM

YEAR OF BIRTH	77	76	75	74	73	72	71
AGE	1 y.o.	2 y.o.	3 y.o.	4 y.o.	5 y.o.	6 y.o.	7 y.o.
SAMPLE	41	37	12	13	10	9	7
WEIGHT kg GREASY	2.78	4.02	4.53	5.05	4.96	4.28	4.61
FLEECE NUMBER	1	2	3	4	5	6	7
NAME AND COMMENT OF SHEEP YEAR	w hogg	shearling w	2-shear w	3-shear w	4-shear w	5-shear w	6-shear w

APPENDIX

1.3 MEAN GREASY FLEECE WEIGHTS (kg) X AGE GROUP: FEMALES V WETHERS
NORTH ARM 78/79

Age (yrs)	1	2	3	4	5	6	7
Name at commencement of sheep year	hogg	shearling	2-shear	3-shear	4-shear	5-shear	6-shear
Fleece number	1	2	3	4	5	6	7
FEMALES	2.83	3.56	3.54*	4.31	4.51	4.01	4.17
Sample	43	40	9	10	9	8	7
Wethers	2.78	4.02	4.53*	5.05	4.96	4.28	4.61
Sample	41	37	12	13	10	9	7
Difference	-0.05	0.46	-0.81*	0.74	0.45	0.27	0.44
Difference expressed as percentage of lower weight	-1.80	12.92	-17.88*	17.17	9.98	6.73	10.55

* not comparable due to shearing date of 2-shear ewes

MEAN LIVE WEIGHT OF HOGGS ON 31 JAN (1.4) AND 1 APRIL (1.3) AND
RESULTANT MEAN GREASY FLEECE WEIGHTS. 19 DEC 1.3, 7 DEC 1.4.

		<u>< 20.5kg</u>	<u>20.5-24.0kg</u>	<u>> 24.0kg</u>
		<u>WETHER HOGGS</u>		
	Sample Size	5	7	26
FIFEBOY (1.4)	Body Weight	18.7 ± 0.54	22.36 ± 0.45	27.23 ± 0.45
	Fleece Weight	3.0 ± 0.234	3.2 ± 0.279	3.33 ± 0.094
	% age increase	100	107	111
	Sample Size	6	23	12
NORTH ARM (1.3)	Body Weight	18.25 ± 0.574	22.217 ± 0.241	27.0 ± 1.208
	Fleece Weight	2.25 ± 0.106	2.839 ± 0.095	2.942 ± 0.146
	% age increase	100	126	131
		<u>EWE HOGGS</u>		
	Sample Size	11	14	17
FIFEBOY (1.4)	Body Weight	17.136 ± 0.596	22.25 ± 0.33	27.706 ± 0.608
	Fleece Weight	2.573 ± 0.137	3.143 ± 0.099	3.394 ± 0.158
	% age increase	100	122	132
	Sample Size	12	20	11
NORTH ARM (1.3)	Body Weight	19.125 ± 0.296	22.00 ± 0.226	26.682 ± 0.573
	Fleece Weight	2.658 ± 0.101	2.79 ± 0.060	3.091 ± 0.132
	% age increase	100	105	116

All weights accompanied by Standard Error of Mean

1.4 DRY SHEEP EXPERIMENT: FITZROY

In 1978 all classes of stock (h, 50e & 50w; s, 50e & 50w; adult ewes 50; wethers 50) were stocked in a paddock at 8 a/s. In 1979 the adult wethers were confined to a less favoured area.

Object: (a) to describe the seasonal pattern of wool growth, body condition, and live weight of dry sheep of all types and ages

(b) to alter the pattern of wool growth by altering nutrition of group(s) of dry sheep.

Treatments: This Study is largely observational and Treatments only occur when groups are compared on better/poorer nutrition.

Method: Design, site details, technique, diary of events contained in this section.

Results: As detailed results as possible at this stage are included.

Patterns of wool growth are discussed fully under 3.1 (Wool Growth).

Discussion: Fleece weights: dry ewes: Results are confined to 78/79 and the weights are very high.

wethers: Again high, and the fleece weight comparison with dry ewes is only slightly to wether advantage (less than 4%).

It appears therefore that under these conditions, considered very good, dry ewes can produce about as much wool as wethers.

Note: the wethers have since been confined to a less favoured area.

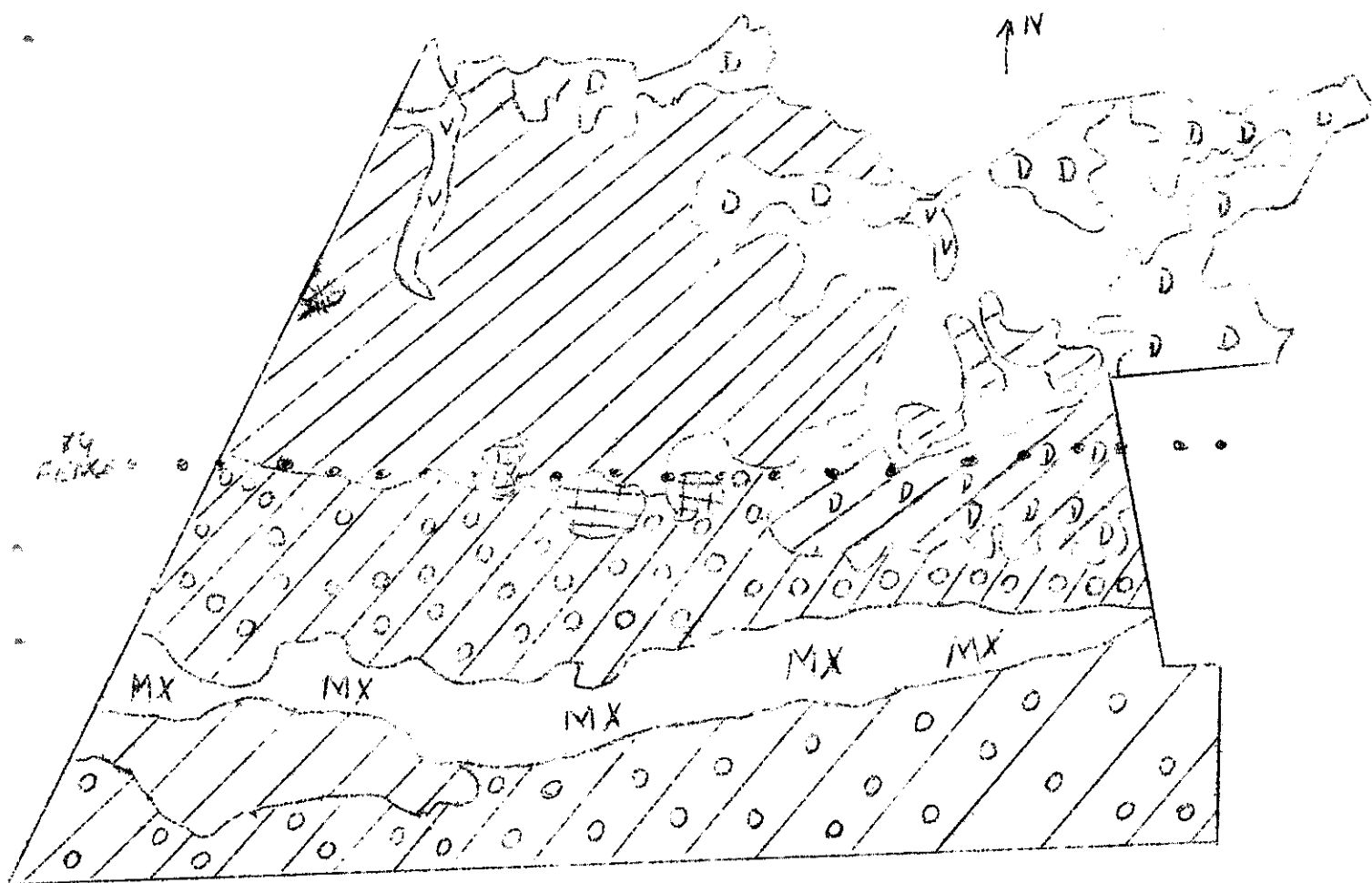
Live weights: The plane of nutrition being high, the live weights are also high for all classes, the ewes reaching a peak of 52.9kg in January, and the wethers over 60kg in April. One and two shear sheep are also considered satisfactory. The hogg weights did not fall in winter and gained throughout the summer. From other observations this does not necessarily happen in the commercial situation.

Loss rates: The rather high loss rates in some ages was largely due to a sea fence failure after a storm and resultant sheep wandering.

In order to extrapolate the results obtained in this Study further subdivision should be carried out and paddocks allocated to the different stock types as more is known about the different plant communities.

HATIRSON'S PT. 1:25000

1.4



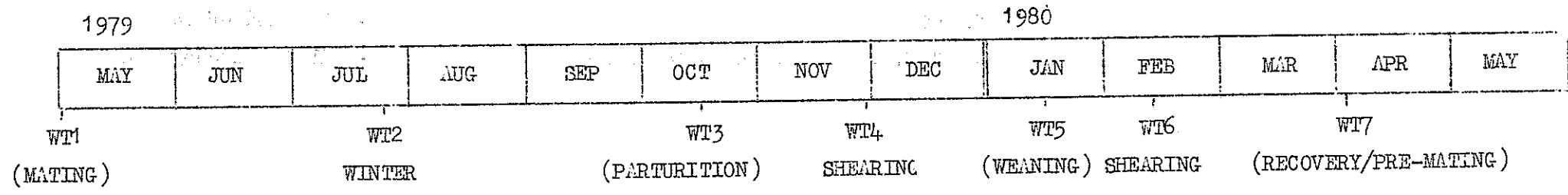
		KA	AC
TOTAL AREA	2012	1011	2403
///	294		720
/O/	399		955
DD	76.5		189
/D/	53.5		130
∇	10.5		25.9
⊗	5.5		16.1
MX	70		222
□	80.5		149
	<u>1009</u>		<u>2493</u>

DRY SHEEP EXPERIMENT - FITZROY
SCHEDULE OF WORK 1979/80

WT	PROVISIONAL DATE	DAY NO.	ACTIVITIES
1	1/5/79	1	Weigh, condition score and dye band all sheep
2	24/7/79	85	Weigh, condition score and dye band all sheep
3	16/10/79	169	Weigh, condition score and dye band all sheep
4	30/11/79	214	Weigh and condition score all sheep Dye band adult ewes Shear all adult wethers, shearlings and hoggs of both sexes, recording wool weights Recover dye banding samples from shorn sheep Dye band all shorn sheep
5	15/1/80	260	Weigh, condition score and dye band all sheep
6	13/2/80	289	Weigh and condition score all sheep Dye band adult wethers, shearlings and hoggs Shear all adult ewes recording wool weights Recover dye banding samples from shorn sheep Dye band all shorn sheep
7	2/4/80	337	Weigh, condition score and dye band all sheep

All dates are provisional to take account of holidays, travel delays etc.

CALENDAR 1979/80



FLOCK STRUCTURE 1979/80

CLASS	AGE	SHEAR	NO	TAG NOS.	PADDOCK	
e	'72	6	10	200-209	P.P.	PADDOCKS: P.P. - Paterson's Point R - Ridge
e	'73	5	10	300-309	P.P.	
e	'74	4	10	400-409	P.P.	
e	'75	3	10	500-509	P.P.	
e	'76	2	10	600-609(a)	P.P.	
se	'77	1	50	700-749(c)	P.P.	
eh	'78	0	50	800-849	P.P.	
w	'73	5	12	350-361	R	
w	'74	4	12	450-461	R	
w	'75	3	12	550-561	R	(a) blue right ear
w	'76	2	12	650-699(b)*	R	(b) blue left ear
sw	'77	1	50	750-799(c)	P.P.	(c) nos made up with replacements (red spot head)
wh	'78	0	<u>50</u>	850-899	P.P.	* actual tag nos are from within this group
			298			

As from WI/ 1979: approx 250 e, se, eh, sw & wh to Paterson's Point (P.P.) - White Ritchey tag
 approx 320 sheep to Ridge (R) composed of:
 66 '76 age G.T.U. shearling casts (e & w) - Red Leader & White Ritchey tags
 204 mixed age ewes - Red Leader tag
 50 G.T.U. adult wethers (4 ages) - White Ritchey tag

DRY SHEEP EXPERIMENT: FITZROY: MEAN WTS(kg), COND. SCORES, FLEECE WTS., LOSSES & STOCK RECONCILIATION 78/79²⁴

FEMALES				WT 1	2	3	4	FLEECE	5	6	FLEECE	7	END	START	PERCENTAGE
YEAR OF BIRTH	AGE	TYPE	START NO.	7/6/78	19/7/78	16/10/78	6/12/78	WT 6/12	25/1/79	16/2/79	WT 16/2	9/4/79	NO	NEW SHEEP YEAR	LOSS RATE
71	6.5	6se	10	50.8 2.7	48.6 2.4	47.6 2.6	50.2 2.7		56.0 2.8	47.4 3.0	4.6		9		10.0%
72	5.5	5se	9	43.4 2.5	45.2 2.3	43.4 2.2	45.7 2.6		48.5 3.0	44.0 2.9	4.5	49.9 3.0	9	9	0.0
73	4.5	4se	10	49.2 2.6	48.9 2.5	45.0 2.5	49.4 2.7		54.2 3.0	47.4 3.1	4.6	54.3 3.0	10	10	0.0
74	3.5	3se	10	47.9 2.8	46.5 2.5	43.2 2.5	46.7 2.9		53.0 2.9	45.6 3.0	5.0	52.1 3.3	10	10	0.0
ADULT AGE GPS. M				47.8	47.3	44.8	48.0		52.9	46.1		51.8			
75	2.5	2se	9	45.4 2.8	45.2 2.5	42.7 2.4	45.7 2.6		50.9 2.7	43.6 2.9	5.2	50.8 2.9	8	8	11.1
76	1.5	se	49	40.0 2.7	39.1 2.3	37.4 2.2	41.0 2.4	3.9	44.0 2.6	42.9 3.7		*46.3 3.0	44	10	10.2
77	0.5	eh	50	27.3 2.4	27.9 1.7	28.4 2.0	33.1 2.3	3.1	34.9 2.0	33.7 2.3		38.1 2.4	43	50**	14.0
(50) INTAKE 78 age: 20.7												(50)	47 →	(6.0)	
												140	144	4.8%	

WETHERS				WT 1	2	3	4	FLEECE	5	6	FLEECE	7	END	START	PERCENTAGE
YEAR OF BIRTH	AGE	TYPE	START NO.	7/6/78	19/7/78	16/10/78	6/12/78	WT 6/12	25/1/79	16/2/79	WT 16/2	9/4/79	NO	NEW SHEEP YEAR	LOSS RATE
72	5.5	5SW	12	53.1 2.8	52.5 2.6	50.6 2.3	51.2 2.5	4.4	53.0 2.9	50.2 2.8			12		0.0%
73	4.5	4SW	12	59.8 3.3	57.5 2.9	54.0 3.0	55.2 2.6	4.8	60.4 3.0	56.5 3.0		63.1 3.3	10	10	16.7
74	3.5	3SW	12	53.9 2.9	52.3 2.6	49.4 2.4	53.6 2.4	4.6	56.7 3.0	53.9 3.1		59.9 3.3	8	8	33.3
ADULT AGE GPS. M				55.6	54.1	51.3	53.3		56.7	53.5		59.9			
75	2.5	2SW	12	50.3 3.0	49.0 2.7	46.8 2.4	49.5 2.7	4.2	53.3 2.8	50.1 2.9		56.6 3.0	8	8	33.3
76	1.5	SW	48	39.1 2.4	38.4 2.0	38.3 2.2	42.2 2.3	4.1	46.3 2.6	42.6 2.7		*47.1 2.9	40	12	16.7
77	0.5	wh	49	29.5 2.2	29.5 1.7	30.1 2.0	34.7 2.2	3.3	36.7 2.1	34.6 2.0		39.5 2.3	42	49**	14.3
(50) INTAKE 78 age: 20.2												(50)	45 →	(10.0)	
												127	132	12.4%	

145
292

* whole age-gp. M prior to selection ** Age-gp. losses replaced

276

APPENDIXMEAN GREASY FLEECE WEIGHTS (kg) X AGE GROUP: FEMALES 78/79 FITZROY

YEAR OF BIRTH	77	76	75	74	73	72	71
AGE	1 y.o.	2 y.o.	3 y.o.	4 y.o.	5 y.o.	6 y.o.	7 y.o.
SAMPLE	42	46	9	10	8	9	8
WEIGHT kg GREASY	3.10	3.94	5.20*	4.95	4.63	4.52	4.55
FLEECE NUMBER	1	2	3	4	5	6	7
NAME AT COMMENCEMENT OF SHEEP YEAR	e hogg	shearling e	2-shear e (maiden ewe)	3-shear e	4-shear e	5-shear e	6-shear e

* shorn 2m later than shearlings

APPENDIXMEAN GREASY FLEECE WEIGHTS (kg) X AGE GROUP: WETHERS 78/79 FITZROY

YEAR OF BIRTH	77	76	75	74	73	72	71
AGE	1 y.o.	2 y.o.	3 y.o.	4 y.o.	5 y.o.	6 y.o.	7 y.o.
SAMPLE	40	43	12	12	12	12	-
WEIGHT kg GREASY	3.25	4.11	4.16	4.62	4.83	4.36	-
FLEECE NUMBER	1	2	3	4	5	6	7
NAME AT COMMENCEMENT OF SHEEP YEAR	w hogg	shearling w	2-shear w	3-shear w	4-shear w	5-shear w	6-shear w

APPENDIXMEAN GREASY FLEECE WEIGHTS (kg) X AGE GROUP: FEMALES V WETHERS

Age (years)	1	2	3	4	5	6	7
Name at commencement of sheep year	hogg	shearling	2-shear	3-shear	4-shear	5-shear	6-shear
Fleece number	1	2	3	4	5	6	7
FEMALES	3.10	3.94	5.20*	4.95	4.63	4.52	4.55
SAMPLE	42	46	9	10	8	9	8
WETHERS	3.25	4.11	4.16*	4.62	4.83	4.36	-
SAMPLE	40	43	12	12	12	12	-
DIFFERENCE	0.15	0.17	-1.04*	-0.33	0.20	-0.16	-
DIFFERENCE EXPRESSED AS PERCENTAGE OF LOWER WEIGHT	4.8	4.3	-25.0*	-7.1	4.3	-3.7	-

* Not comparable due to shearing date of 2-shear ewes

TEAL INLET
PUNTA
FRIA

1.5(a) 1

RS 30ha
(7500)

RODEO
1457 ha
(4902)

RS

RS 330ha
(9150)

RS

RS

TRACKSIDE
1512 ha
(3716)

LUNG
POINT
1347 ha
(3321)

RS

BALL MIN FARM
1627 ha
(4013)

1.5(a)1 Teal Inlet : Punta Fria

A large area (11,959 acres) was run with 2,800 to 2,900 ewes.

The average marking percentage (1955-64 was 64.3%.

In 1965 the camp was sub-divided to provide an area (Trackside, 3,736 acres) the remainder being 8223 acres. Further subdivision in 1969 made three sections out of the original 11,959 acres.

Trackside	3,736 acres
Rodeo Point	4,902 acres
Long Point	3,321 acres

In the first two years after Trackside was fenced off, there was a dramatic increase in the marking percentage, both years the marking was 79%.

Between 1967 and 1968, 815 acres in Long Point were rotavated and reseeded with Yorkshire Fog, and in 1968/69 198 acres were done in Rodeo Point. As a result of subdivision and reseeded, the marking percentage for a six-year period, 1965-70 improved to 73.5%. This improvement was not maintained during the next five years, and fell back to 59.8%.

		Mark %	Farm Average Mark %
Punta Fria	1955-64	64.3%	62.31%
	1965-70	73.5%	68.87%
	1971-75	59.8%	60.34%

	Punta Fria Ewe loss	No. ewes	Farm Ewe loss	Ewe ages
1955-64	6.65%			0, 1, 2, 3, 4, 5, 6 crop
1965-70	6.72%		7.73%	0, 1, 2, 3, 4, 5, 6 crop
1971-75	14.41%		8.71%	0, 1, 2, 3, 4, 5, 6 crop
1976/77	8.45%	2412	7.43%	0, 1, 2, 3, 4, 5, 6 crop
1977/78	8.5%	2220	7.93%	0, 1, 2, 3, 4, 5, 6 crop
1978/79	4.58%	2226	4.14%	0, 1, 2, 3, 4, 5, 6 crop

The drop in the lambing percentages for the years 1971-75 can be partly blamed on the high incidence of brucella ovis.

The Extension scheme commenced season 76/77 using Long Point as the production paddock, and Rodeo the lambing ground, and Trackside wintering.

Mating 8th June 76/77 Weaning 72.8% Ewe loss 8.45%

Weaned lambs were retained after weaning in Long Point until April, and were then moved to Lower Malo. The lambs were disappointing, and it was then decided to allocate Trackside to weaned lambs and substitute Ball Mountain Flat (4013 acres) as the ewe wintering area, previously this camp had been used to winter hogs or shearlings.

77/78 Weaning 71.98% Ewe loss 8.5%

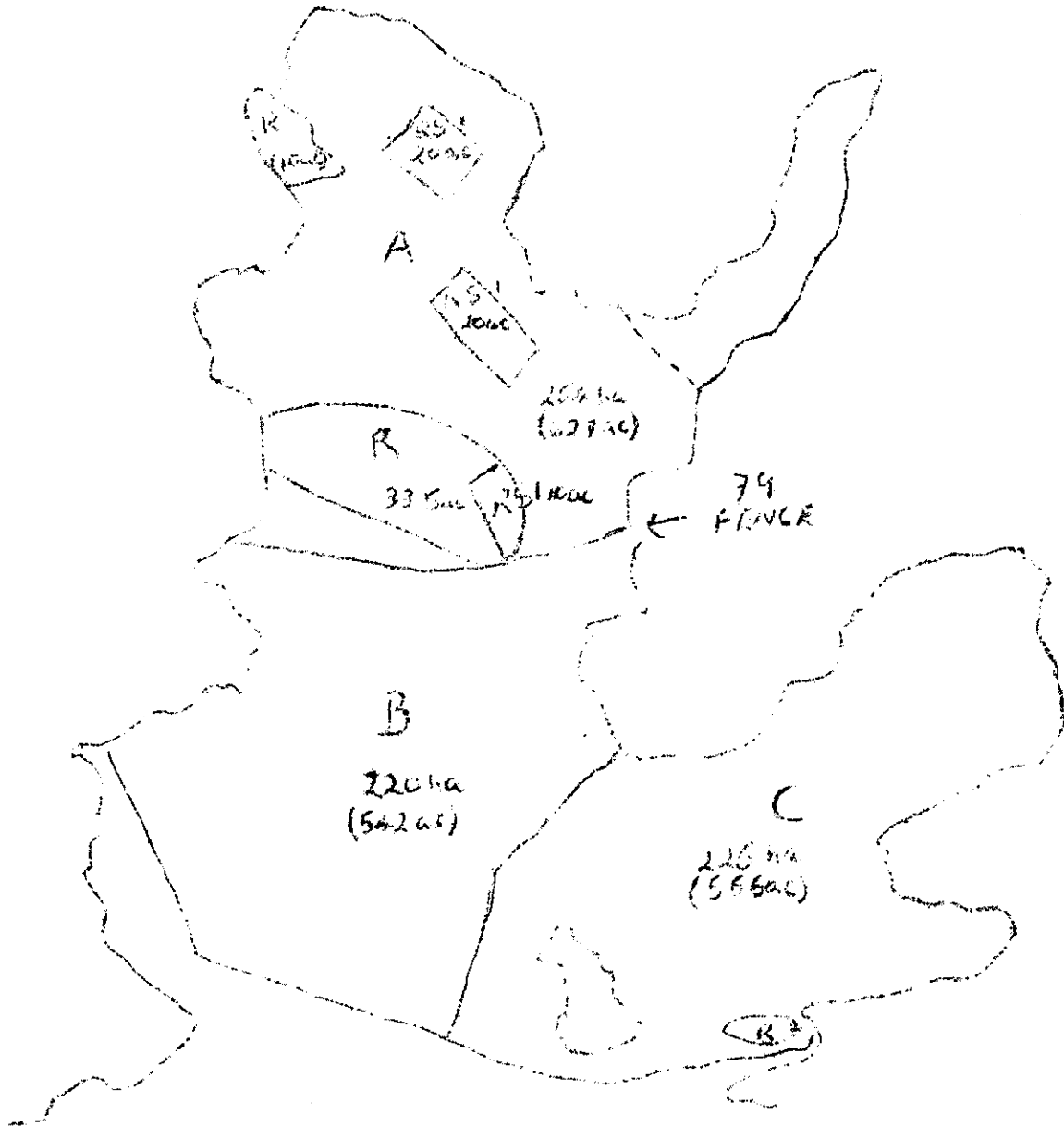
The hogg losses were 3.9% Trackside
compared with 14.8% in another hogg camp Malo Hills
and 18.3% in the previous year in Ball Mountain Flat

78/79 Weaning 70.35% Ewe loss 4.58%
Hogg loss Trackside 4.94%

1.5(a) 2

TRAIL INLET

PICASC 1:25000



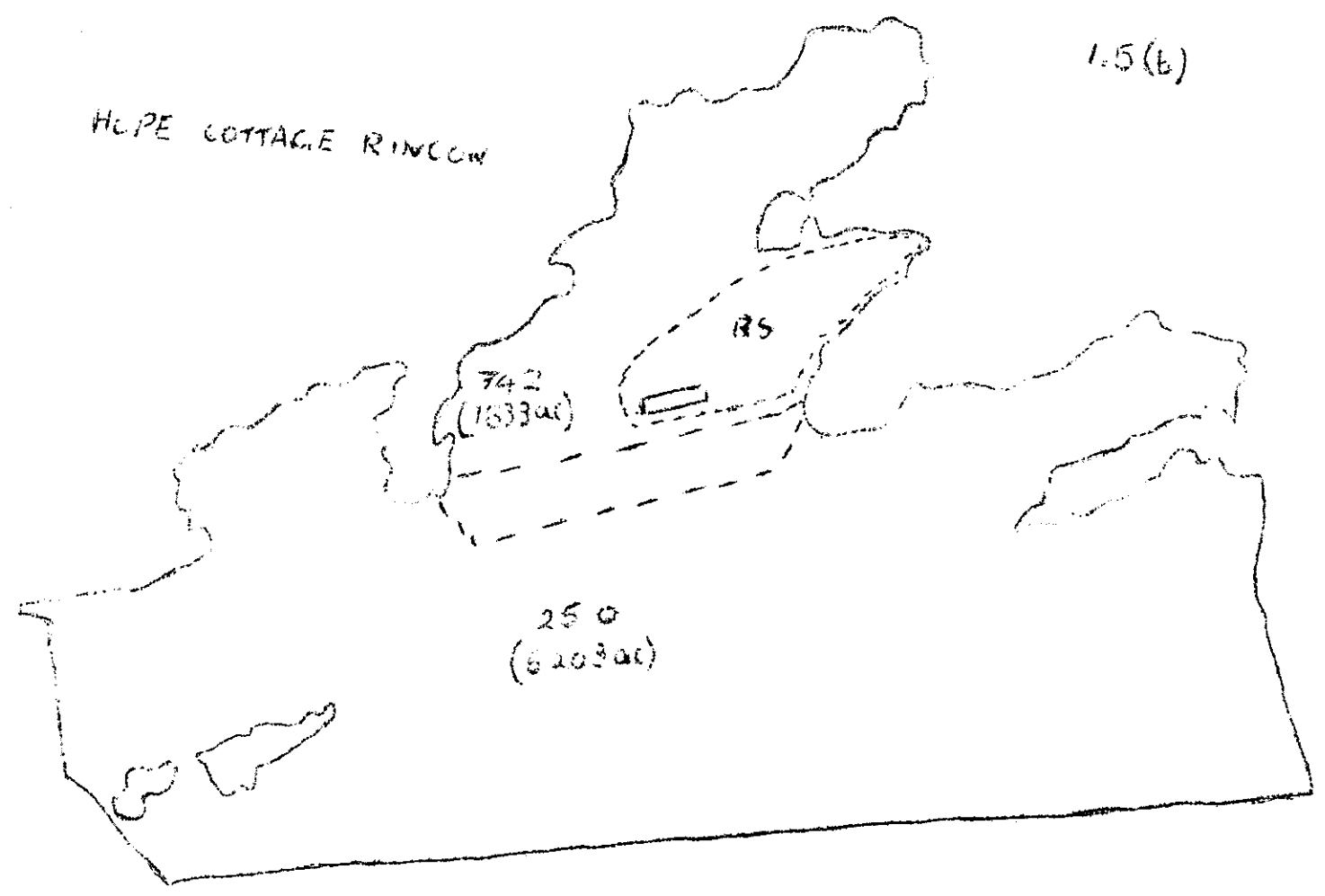
1.5(a)2 Teal Inlet : Picaso

This small promontory (1725 acres) to the East of the Settlement has, in conjunction with a Horse Paddock near the Settlement been used by 500 ewes, a ram replacement flock. Picaso is divided into two paddocks of 1169 acres (subsequently A & B) and 556 acres. The Land Classifications of Punta Fria and Picaso are similar. The larger paddock was divided in April 1979 into A = 627 acres and B = 542 acres (C = 556 acres) Total 1725 acres.

Two Yorkshire Fog reseeds were completed in A during 1965 and 1966, one of 33.5 ac and the other 10 ac. The larger of the two has reverted somewhat to Bm (Xmas bush) and Gm (Pigvine). Ten acres of the larger reseed was rotavated (October 78) and sown in March 79 with the Stage 1 R Seed mixture (25lbs/ac + 2 cwt 12:24:0) and rolled. Prior to sowing there appeared a considerable re-growth of Pigvine.

Two 20 acre blocks were rotavated to the North of this reseed, subsequently burned, and disced prior to sowing to break a mat of fibrous peat apparent (2"-3") below the burned surface, seeded, fertilized and rolled in strips until the total acreage (40ac) was completed. It is estimated a further 50 acres was burned in the area and attempts will be made to reseed this area in the Spring to prevent erosion.

Picaso	Ewes	Mean Marking %	Ages
68/69-77/78	500	68.2%	0, 1, 2, 3, 4, 5 crop
78/79	510	77.35	0, 1, 2, 3, 4, 5 crop



HOPE COTTAGE RINCOW

1.5 (E)

742
(1833ac)

RS

250
(8103ac)

CHARTRES

GORING & N. CENTRE

1:50 000

1.5 (C)



1.5(c) Chartres: Goring/N. Centre

(c) A large area (now Goring, N. Centre and McAskills) was used in conjunction with Smithfield Ridge. This area was divided from two to four areas and the rotation Goring/N. Centre 4234/2799 ac established in 1975. This 2-pasture system contains in Goring 531 ac of Yorkshire Fog/Cocksfoot reseed completed between 1970 and 72 without fertilizer. Until the commencement of 1.5 the areas were used either for ewes in regular ages or maiden (2-shear) ewes. The corrected mean marking percentage that could reasonably be expected was 64% from 3, 4, 5, 6 shear ewes.

	Mating Date	Mark %	No. Ewes	Loss Rate	Ages	Farm Mark %
Mean 65-76	beg. May	64.0	1700	6-10%	3,4,5,6 shear	
76/77	7th June	56.5	1750	8.7%	3,4,5,6 shear	65.7
77/78	7th June	76.4	1750	3.6%	3,4,5,6 shear	70.6
78/79	7th June	72.8	1750	5.0	3,4,5,6 shear	65.2
79/80	7th June		1750		3,4,5,6 shear	

In 1978 100 weaned lambs from Goring were identified and at shearing (79) there was no apparent difference in weight, size or fleece weight from early lambed hoggs of the same year.

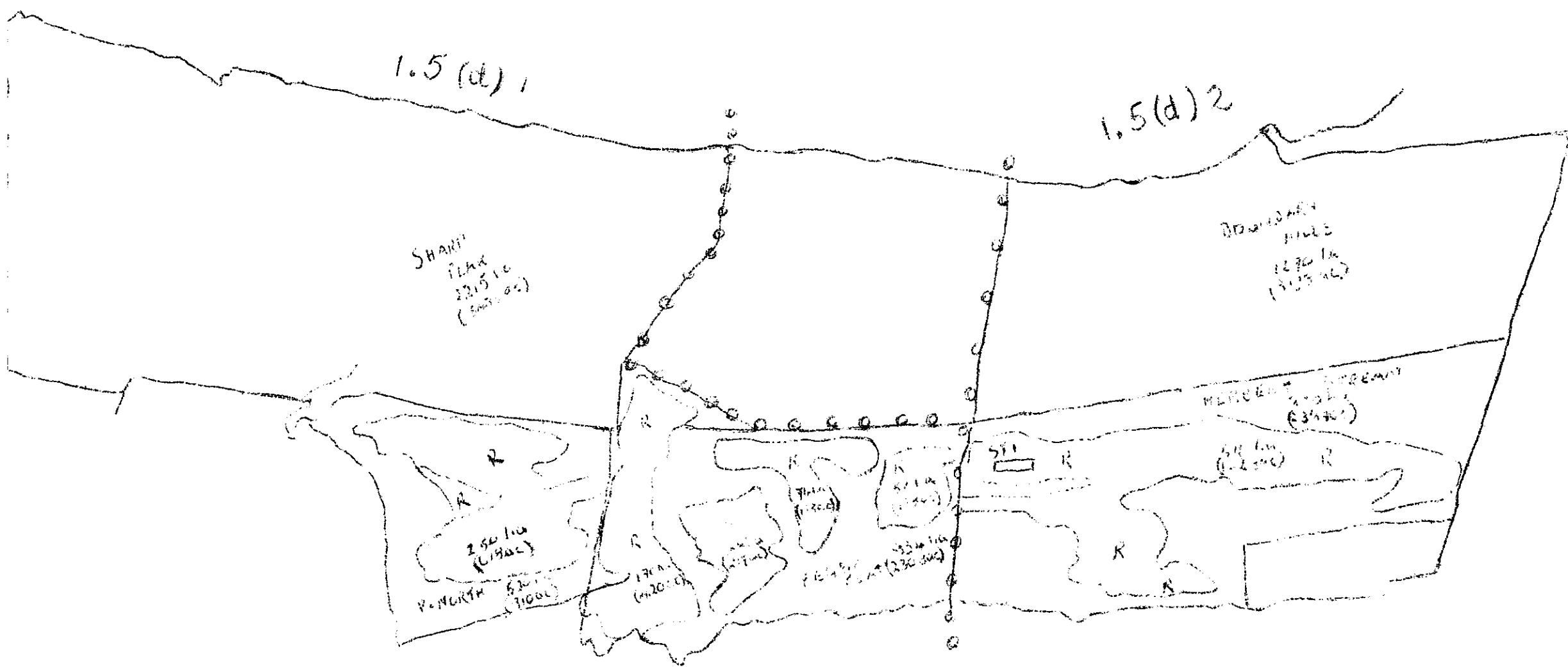
45 acres were rotavated in October 78 in Goring on Cp/Er land and a further 5 acres on "failed" Yorkshire Fog/Dg reseed. This land was reseeded on 16 March 1979 with 24lbs Stage 1 mixture, fertilized (2cwt/ac 12.24.0) and rolled. One cwt of Nitro-chalk/ac will be applied in the Spring.

It will not be possible to complete the peri-natal mortality trial at this site due to shortage of labour, but it is planned 79/80 to establish the ewe fleece weights x breeding success x age and lamb weaning weights that this and previous information can be compared with results obtained after the Stage 1 reseeding is completed during season 80/81.

Further GTU contribution : 150 acres
Farm contribution : 380 acres

No decision has yet been made by GTU to contribute toward the division of Goring creating a 3-pasture system.

ROY COVE



1.5(d)1 Sharp Peak/Port North/Fogon Flats Roy Cove

During the season 78/79 it was decided to run 2300 ewes of 1, 2, 3, 4 crop on this area, 5473, 1310, 2308 acres respectively, total 9091 of which 618 ac Port North and 948 ac Fogon Flats were Yorkshire Fog reseeds completed between 1960 and 1968. Since ewes have not been run on this group of camps regularly in the past a Valid Background cannot be prepared.

Year	Mating	Ewes to Ram	Ewes Shorn	(%)	Lambs Marked	Lambs Weaned
78/79	8th June	2300	2077	90.3%	66.2%	66.2%

The grazing regime followed that published with the map of the area.

1.5(d)2 Boundary Hills/Herbert Stream: Roy Cove

- For 78/79 it was decided to run 1600 ewes of 2, 3 and 4 crop on this area of 3138 and 2397 acres respectively of which 1028 ac of Yorkshire Fog reseed was completed in Herbert Stream between 1961 and 1962. Ewes were not run regularly on this area preventing the preparation of a Valid Background.

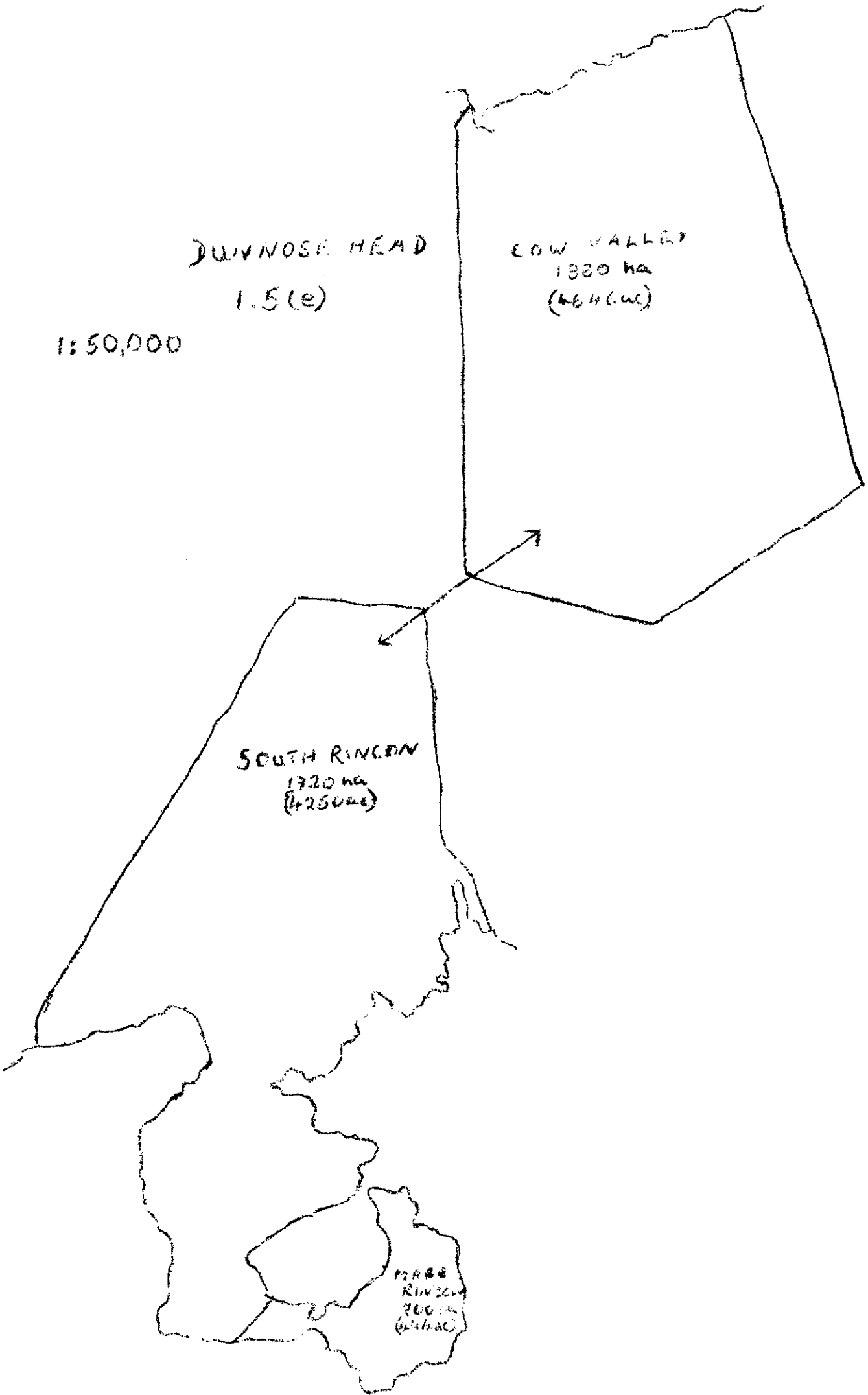
Year	Mating	Ewes to Ram	Ewes Shorn	(%)	Lambs Marked	Lambs Weaned
78/79	8 June	1600	1389	(86.8)	69.6%	69.6%

Both these results are encouraging since they are well above the recent overall lambing percentages for the farm. This Season the move to the Production Paddocks was delayed until a few days before mating.

A sample of 50 ewe and 50 wether lambs (from the late lambed flocks) were weighed on 10th April 1979 and were found to be 23.9kg and 25.9kg respectively. These weights are considered satisfactory.

Reseeding Stage 1: Thirty-two acres were rotavated in December in Herbert Stream and at time of sowing (20th March) there was virtually no re-growth of Yorkshire Fog. The seed rate was 24lbs/ac and 2cwt (12.24.0) applied. The seed-bed was then rolled.

It is planned to reseed a further 150 acres (GTU) and the further Farm contribution is 300 acres. It is proposed to rotavate in December and sow in February 1980. The initial 50 acres will receive 1cwt/ac of Nitro-chalk in October 1979.



1:50,000

Duynose Head
1.5 (e)

Edw. Valley
1320 ha
(4646 ac)

South Rincón
1720 ha
(4250 ac)

2000
ha
(4940
ac)

1.5(c) Fox Bay East: Dunnose Head

It was decided by the General and Section Managers in 75/76 to divide Centre Camp (7919 ac) and run all the ewes on 2-pasture systems, the ewes still being mated on 10th May. Centre Camp was divided into Shallow Harbour (3257 ac) and Cow Valley (4662 ac). Previously Centre Camp ran 1300 ewes marking about 42% set stocked and South Rincon (4200 ac) had 1200 ewes marking 55% set stocked.

Cow Valley and South Rincon are now used as a 2-pasture system and the ewes are put to South Rincon for mating and again during lambing and lactation returning to Cow Valley after shearing (mid February) and after mating.

<u>Cow Valley/South Rincon</u>			Farm marking mean 58.6% (72 - 75 incl.)				
Year	Ewes To Ram	Crop At Mating	Ewes Shorn	Ewe Loss	Mark %	Farm Mark %	Farm Ewe Loss
76/77	1500	1,2,3,4	1469	2.0%	86.4%	72.5%	7.7%
77/78	1500	1,2,3,4	1427	4.9%	85.8%	70.6%	7.5%
78/79	1600	1,2,3,4	1525	4.7%	87.3%	79.2%	6.5%
79/80	1600	1,2					

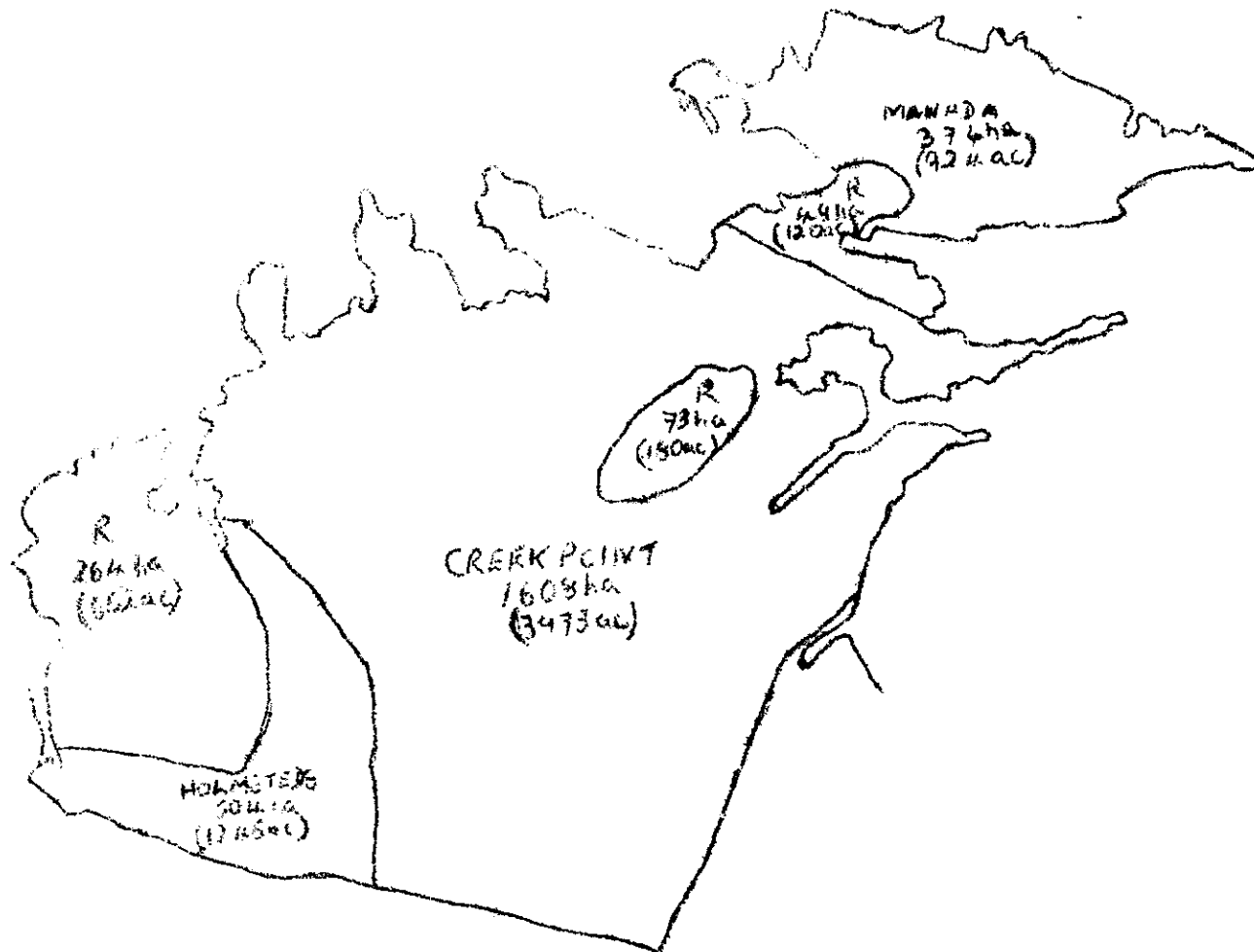
The ewes Cow Valley/S. Rincon are in regular ages, 2, 3, 4, 5 crop.

Over the whole Section the individual wool production of 3.8kg has been maintained despite the considerable increase in lambing percentages.

HILL COVE

1.5 (F)1

1:50,000



1.5(f)1 Hill Cove: Creek Point & Holmsteds

The total area (5218 acres) between 56/57 and 65/66 was used for ewes, the ages of which varied each year. Excepting 0 crop ewes, the usual number was 100 and the marking percentage 56. During the season 65/66 612 acres in Holmsteds was burned prior to rotavation and sown with 10lbs Yorkshire Fog/ac by Brillion and 1245 acres which included the reseed was fenced in 1968 to make Holmsteds (1245 ac) and Creek Point (3973 ac). 66/67 - 72/73 saw a steady rise in numbers from 1120 to 1415 with a mean marking percentage of 66.4%. During the next three years the ewe number was increased to 1500 and the mean marking 65% from 1 and 2 crop ewes, except for 1975 when rams got in early reducing the marking percentage that year to 51%. Late lambing commenced season 76/77.

CREEK POINT/HOLMSTEDS

Year	Mating Date	Ewes Mated	Ewe Loss	Ewe Class	Mark %	Ewe Loss Total Farm
56-66	early May	1100	13%	1-mixed ages	56%	12.6
66-73	early May	1120-1415	6.9%	1-3 crop	66.4%	8.4
74/75	early May	1500	8.8%	1 crop	65.2%	7.9
75/76	early May	1500	9.9%	1 crop	50.7%	8.6
76/77	18th June	1500	8.7%	2 crop	64.5%	8.8
77/78	8th June	1500	5.8%	mainly 3 crop	79.3	8.3
78/79	4th June	1500	8.1	mainly 4 crop	73%	7.5
79/80	4th June	1500		mainly 5 crop		

Mean fleece weight: Camp ewes: 4.02kg Farm ewes: 3.36kg

Birth weights: The average birth weight of 11 male lambs was 3.9kg
 The average birth weight of 13 female lambs was 3.8kg

(See Section 3.5) in November 78.

Weaning weights: A total of 101 weaned lambs were weighed on 13/2/79 at
 an average 19.4kg

which means that the higher birth weights obtained in this flock resulted in a near farm average weaning weight.

1.5(f)2 Hill Cove: W. Lagoons & S. of E. Lagoons

The original W. Lagoons (3897 ac) was stocked with 1000 ewes and the last marking percentage (58/59) was 63.2% and the ewe loss 16.5%. Thereafter the area was stocked with hoggs which alternated with S. of E. Lagoons (3385 ac). Reseeding in W. Lagoons re-commenced in 71/72 after an earlier failure (63/64) and by 1974 a total of 1039 acres were completed.

3000 ewes were re-allocated the area and the division fence re-aligned.
W. Lagoons 2736 ac (1039 Y.F. reseed) S. of E. Lagoons 4546 ac.

Year	Mating Date	Ewes	Ewe Class (Crop)	Loss Rate	Mark %	Whole Farm Loss Rate	Farm Mark %
75/76	end April	3000	3, 4, 5	10.1%	72.4%	8.6%	
76/77	end April	3000	0, 2, 4, 5	8.6%	62.2%	8.8%	
77/78	7th May	3000	0, 1, 2, 5	10.6%	73.9%	8.3%	
78/79	25th May	3000	0,2,3,4, 5	7.4%	61.6%	7.5%	63.9%
79/80	25th May	3000	1700-3, 1300 mixed				

The average fleece weight of the ewes was 3.21kg
and of the farm ewes 3.36kg

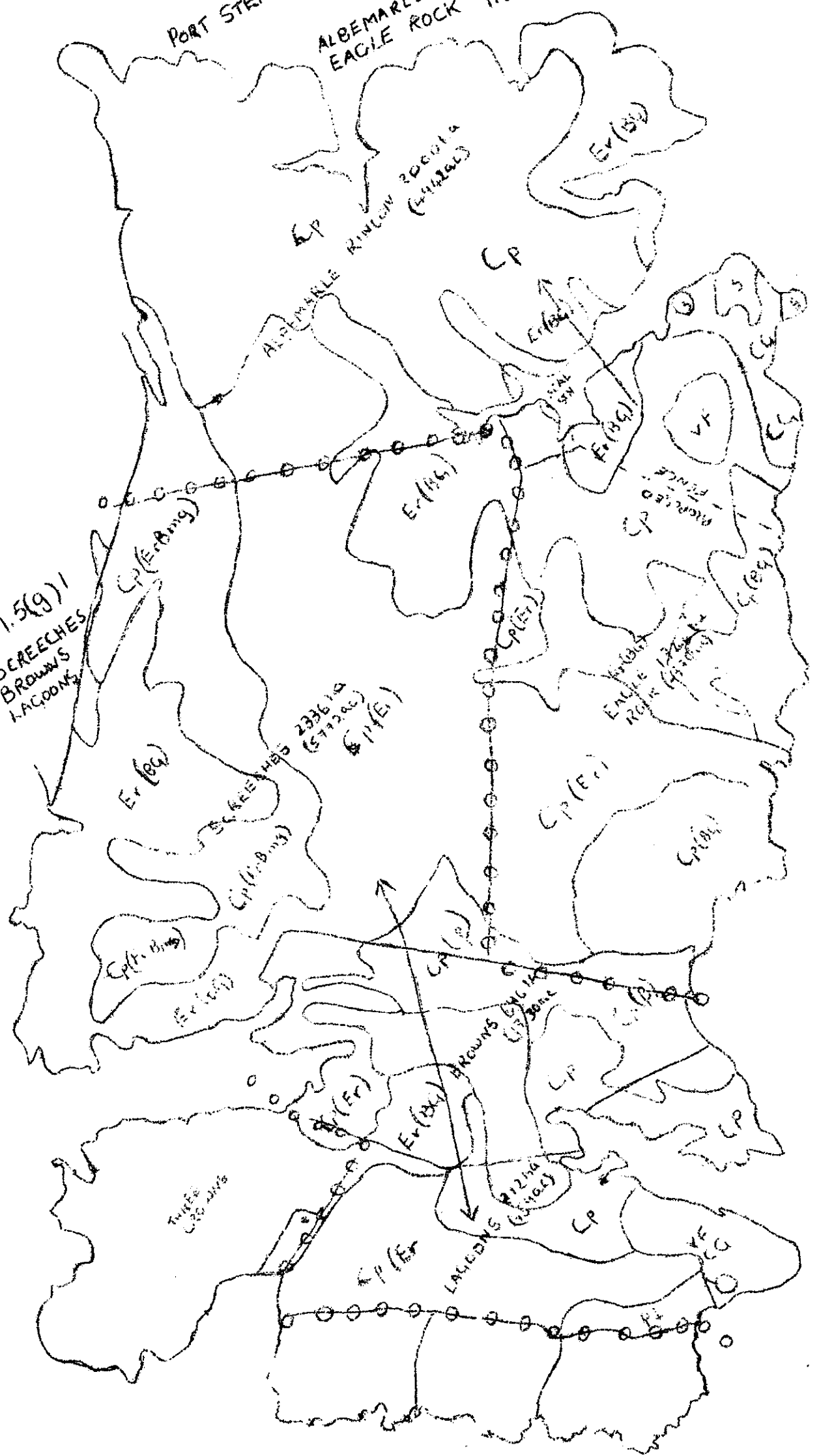
These ewes have been lambed later, commencing 1977, and the Holmsteds flock earlier (18th June 1976 to 4th June 1978) in order to receive an indication of the optimum lambing date for this district.

The mean weight of 79 weaned lambs (16/2/79) was 18.1kg, two days after gathering, 1.3kg less than the Holmsteds lambs (See Section 3.5).

PORT STEPHENS

ALBEMARLE RINLON
EAGLE ROCK 1.5(g)2

1.5(g)1
SCREECHES
BROWNS
LACEDNS



1.5(g)1 Port Stephens

A three-pasture system was commenced at Port Stephens season 77/78 which included Screeches (5772 ac) Browns (1720 ac) and Lagoons (1759 ac). A Yorkshire Fog reseed of approximately 600 acres mainly in Browns extends into Lagoons. The land was stocked with 2000 4-crop ewes.

Year	Ewes	Ages	Weaning %	Loss Rate
77/78	2000	4 crop	68%	11%
78/79	2000	4,5 crop	58%	11%
79/80	2000	2,4,5 crop	-	-

1.5(g)2 Port Stephens

A two-pasture system was commenced for season 77/78 which included Albermanle Rincon (4942 ac) and Eagle Rock (4310) and stocked with 1600 3-shear ewes (previously pro-lamb shearing flock)

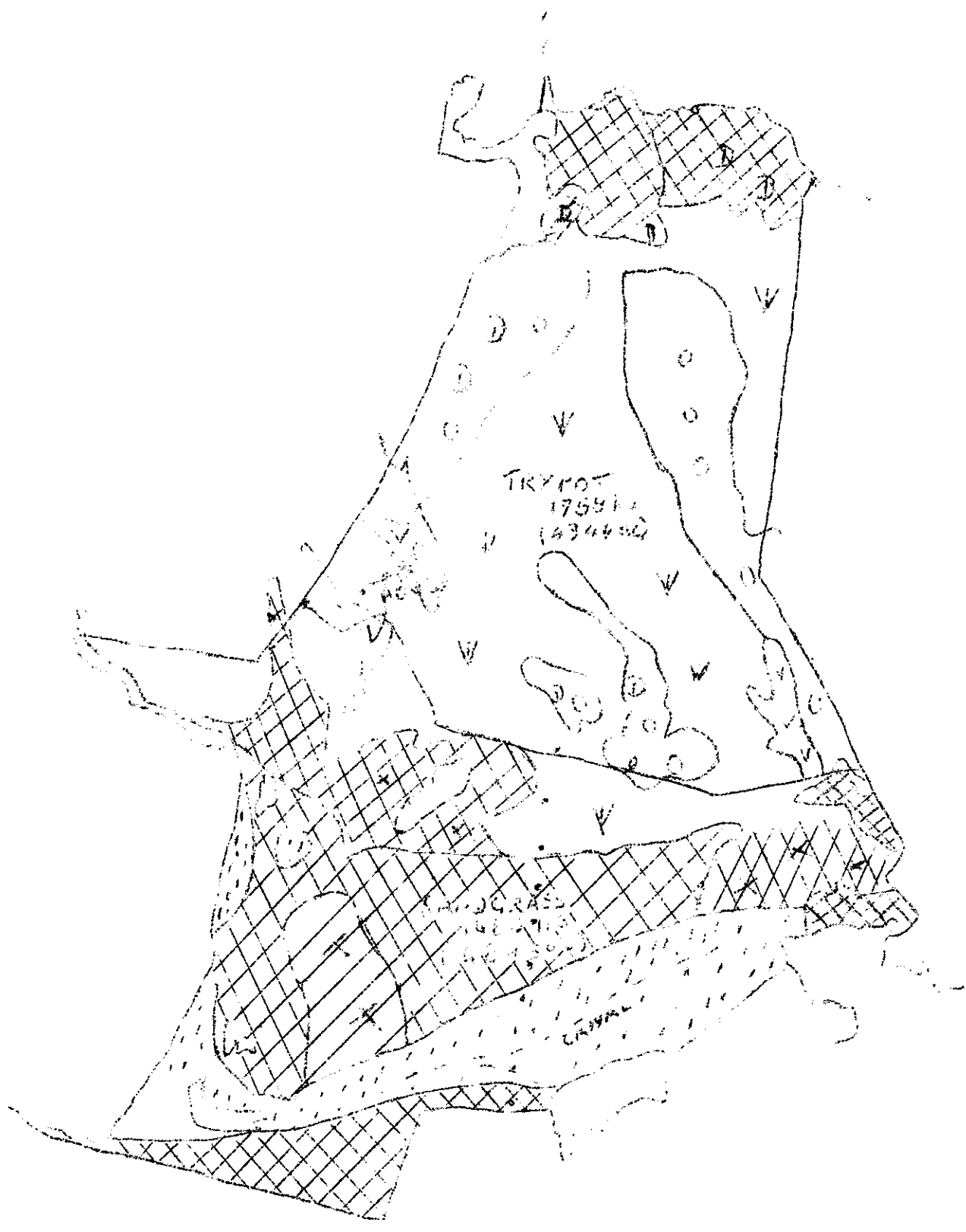
Year	Ewes	Ages	Weaning %	Loss Rate
77/78	1600	3 shear	58%	11%
78/79	1600	4 shear	68%	11%
79/80	1600	5 shear	-	-

The fleece weights from both flocks were at the Farm ewe average, as were those hoggs weighed and fleece weights noted.

The performance of both flocks is considered satisfactory. The low weaning percentage 78/79 of 1.5(g)1 is attributable to the severe drought experienced during lactation which necessitated the removal of the ewes from the Production paddocks during lactation.

KC. CAPE DOLPHIN
TRYPOT AND SANDGRASS
1.5 (H) 1

1:50,000



1.5(h) KC: 1 Trypot & Sandgrass

(h)1 The detailed vegetation map of Cape Dolphin is prepared and copied. The division of 9187 acres into Trypot (4344 ac) and Sandgrass (4843 ac) was completed in 1973, and the GTU 2-pasture system commenced 76/77.

		<u>Mating</u>		<u>Ewes</u>	<u>Ages</u>
70-73	Mean marking % before subdivision	26/4	78.4%	3,600	3,4,5 shear
74-76	Mean marking % after subdivision	26/4	81.4%	3,600	3,4,5 shear
76/77	Results	18/6	84.5%	3,800	3,4,5 shear
77/78		8/6	83.2%	3,800	3,4,5 shear
78/79		8/6	73.8%	3,800	3,4,5 shear
79/80		23/5		3,800	3,4,5 shear

Ewe loss rate has remained constant at about 9.1%.

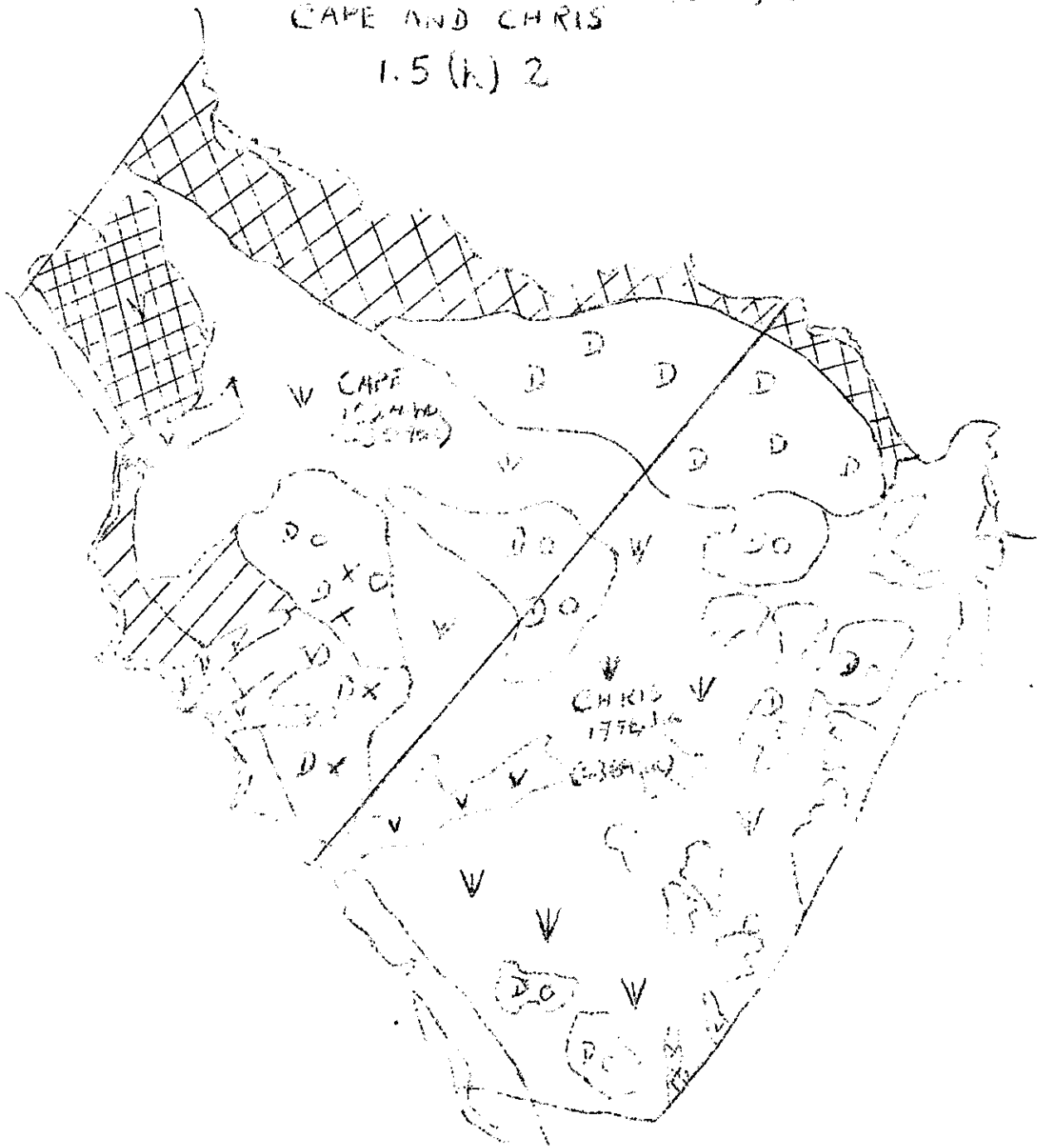
The low lambing percentage 78/79 is attributed to the November storm. In February 1977 300 weaned lambs were weighed, and again in mid-November 1978 (shearing). The Controls (h)2 were drawn from the adjoining ewe camps (Cape & Chris).

	<u>Lamb No.</u>	<u>Lambing</u>	<u>Marking</u>	<u>Wean Wt.</u>	<u>Shoaring No. Weighed</u>	<u>Shoaring Wt.</u>	<u>Trimmed Fleece Wt.</u>
(h)2	100	October	December	25.3	55	29.5	2.8
(h)2	100	October	February	25.6	49	30.8	2.7
(h)1	100	November	January	27.6	65	31.2	2.8

As a result of the apparent benefit of later lambing this comparison flock (Cape & Chris) was subsequently mated at the same time as Trypot & Sandgrass.

No reduction in hogg fleece weights is apparent.

KC CAPE DOLPHIN 1.50,000
CAPE AND CHRIS
1.5 (K) 2



1.5(h) KC 2 Cape & Chris

1.5(h)2 A further 8896 acres was divided in 1974 into Cape (4507 ac) and Chris (4389 ac) and the GTU 2-pasture system operated in Season 78/79.

	<u>Mating</u>		<u>Ewes</u>	<u>Agos</u>
70-74 Mean marking % before subdivision	26/4	83.4%	3,400	3,4,5 shear
74-78 Mean marking % after subdivision	26/4	81.4%	3,400	3,4,5 shear
78/79 Result	8/6	83.1%	3,600	3,4,5 shear

The benefit of later lambing at Cape Dolphin has resulted in this practice with the maiden ewes also, which are stocked at Race Point, to the East of the settlement, and which was subdivided in 1973.

	<u>Mating</u>		<u>Age</u>
70-73 Mean Marking % before subdivision	26/4	57.9%	2 shear
73-78 Mean Marking % after subdivision	26/4	58.9%	2 shear
78/79 Result	8/6	62.1%	2 shear

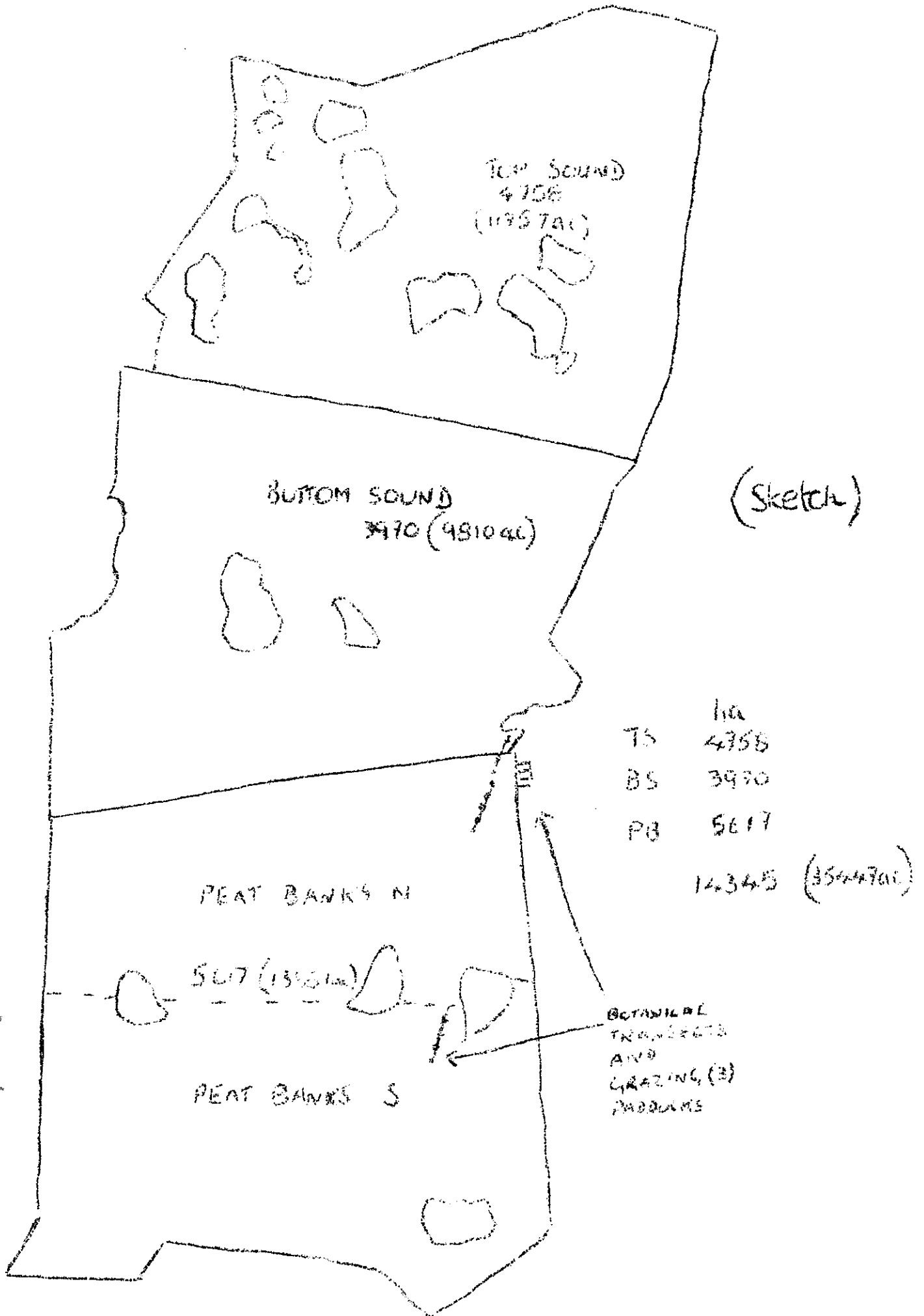
The mean ewe fleece weight (including Maiden ewes)

Farm mean 67-76	3.77kg untrimmed greasy
77	4.16kg untrimmed greasy
78	3.72kg untrimmed greasy
79	4.30kg untrimmed greasy

It is interesting to note that on this farm the limiting factor to increased wool production is not the supply of stock replacements, but the apparent restriction on the number of dry sheep that can be retained (see Section 1.6).

ROTATION SCHEME : NORTH ARM

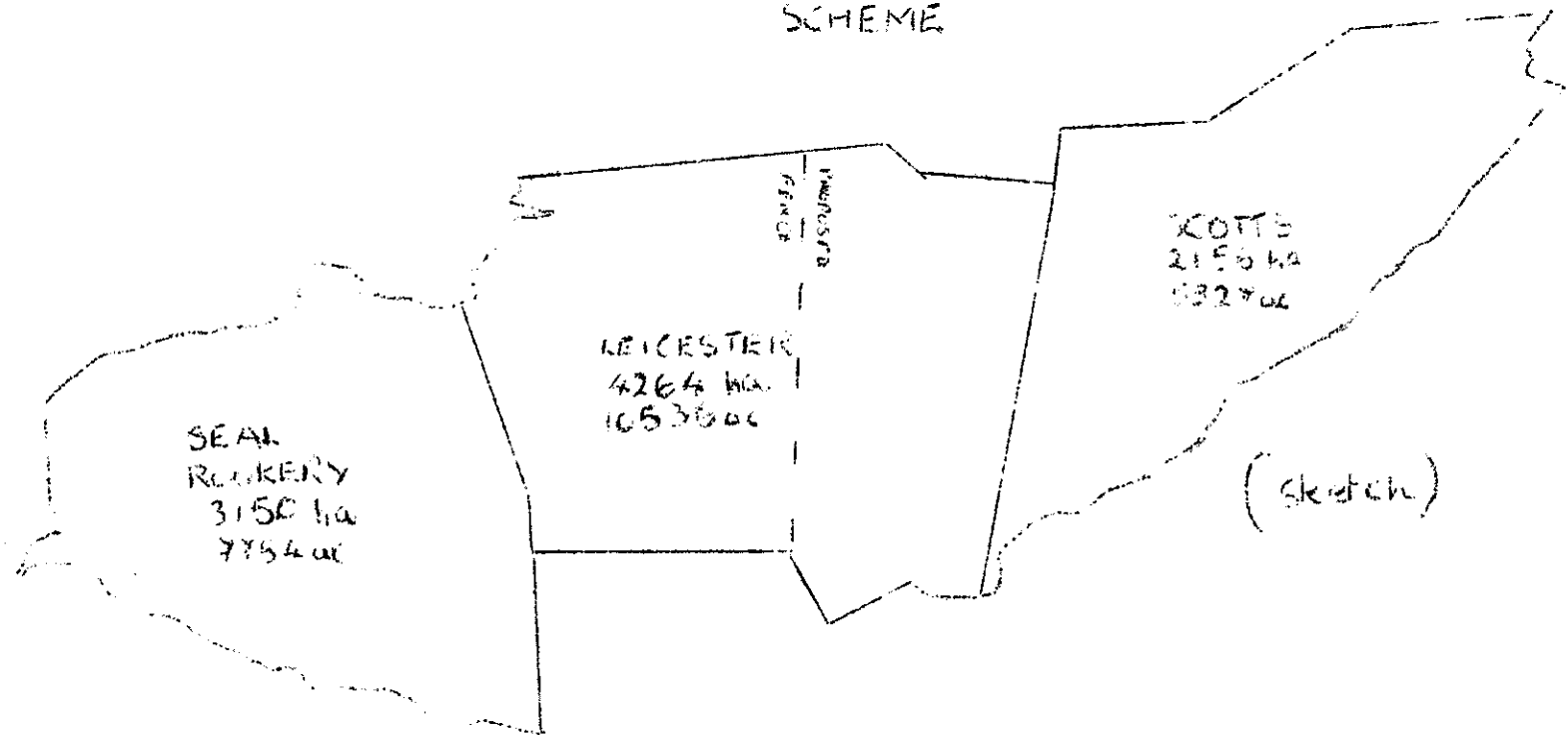
1.6/2.3

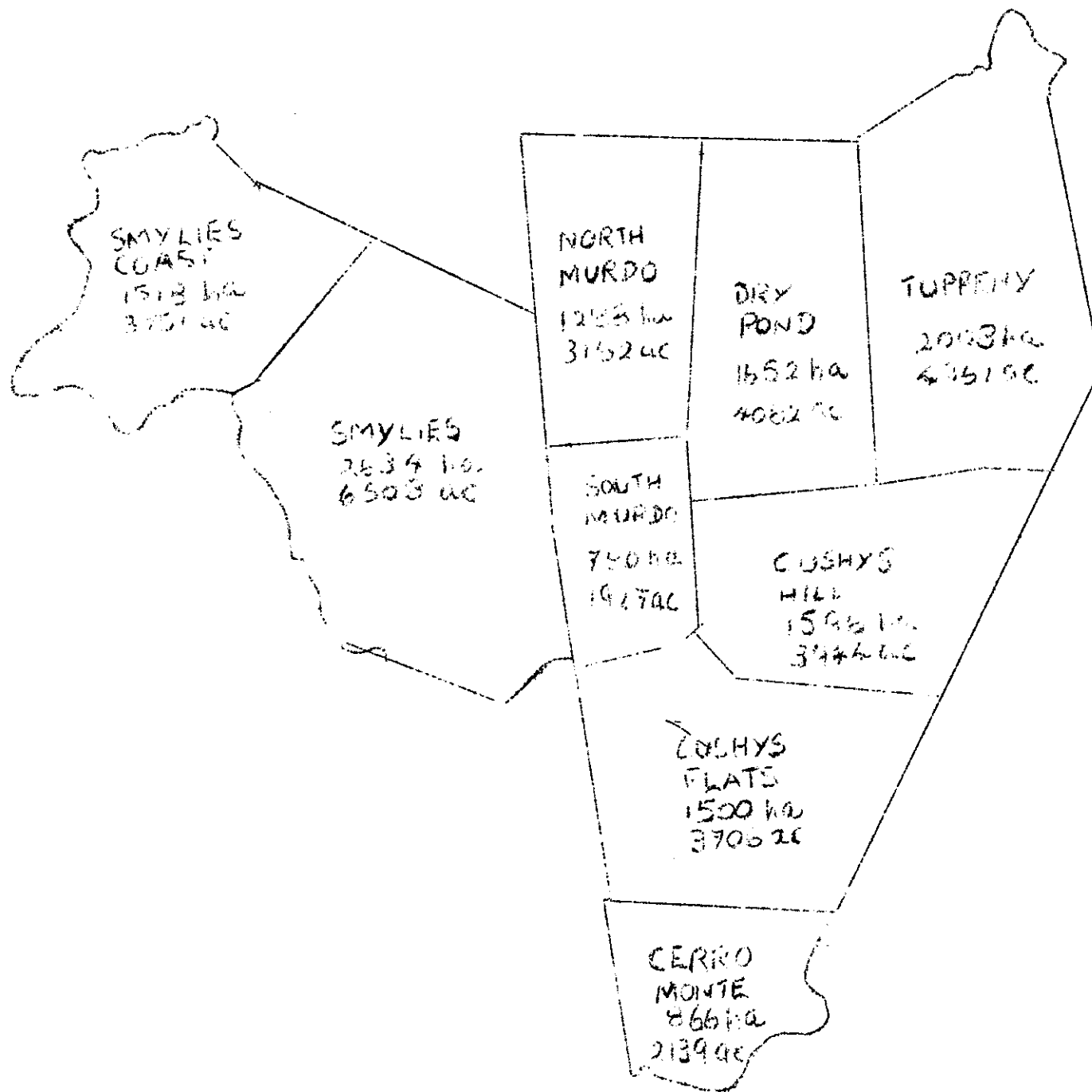


FOX BAY WEST

WETHER ROTATION
SCHEME

1.6 b





1.60

WETHER GROUNDS
PORT SAN CARLOS

(sketch.)

ECONOMIC APPRAISAL IN FALKLAND SHEEP PRODUCTION.*

An increase in sheep production depends upon increasing the quality and possibly quantity of pasture production, and improving the efficiency of its utilisation. It is known that the efficiency of utilisation is poor under traditional systems, and can be improved by land improvement and increased sheep performance, since the potential of the sheep is greater than that currently achieved.

In order to obtain an increase in efficiency of utilisation of the herbage, grazing control with fencing is necessary. To increase pasture quality and possibly quantity re-seeding or regeneration of the native pasture may be necessary. This involves relatively large sums of money, which will not be employed unless the farmer is certain that the returns will justify such expenditure. The Improvers of the past have shown that re-seeding and fencing gave a generous return on the invested capital (Theophilus, '72) and any entrepreneur would have been only too pleased to invest in these schemes. To estimate the return on any investment it is necessary to ensure that the proposed scheme is sound biologically; practical managerially; worthwhile financially.

The following is a description of the method used to determine the financial viability of an improvement scheme.

In order to calculate whether an improvement is justified in economic terms, the gross margin before improvement is calculated. Gross margin is the difference between gross output and variable costs, which are -

- seeds, fertilisers, sprays
- fuel, feed, stock transport
- veterinary costs
- specific casual labour
- contractors labour
- transport, freight, insurance, wool materials
- shearing fuel, levies (if any)

Such variable costs in the Falklands amount to a sum of £0.55 to £0.72 per head.

An example of Gross Output for a wether, say 3 shear, producing 3.8 kg wool at an adjusted sale price of 100p/kg would be -

3.8 x 100p	=	£3.80
less Variable Costs		<u>- 0.60</u> (average £0.55 - 0.72)
Gross Margin		£3.20

* The text for this paper quotes liberally from "The Economic Appraisal of Investments in Hill Sheep Production" H.F.R.O. Sixth Triennial Report, Maxwell, Eadie and Sibbald.

In order to make the calculation of Gross Margins more flexible, the cost of replacement is included. The price of a weaned lamb is taken as £4 and as the sheep matures its selling price is discounted according to the losses experienced each year.

3 shear wether			
Gross Output (wool)	£3.80	Variable costs	0.60
Sale of 4 SW	<u>2.64</u>	Cost of replacement	<u>2.93</u>
Adjusted Gross output	£6.44		3.53
less VC + Replacement	- <u>3.53</u>		
Adjusted Gross Margin	<u>£2.91</u>		

Adding in replacement costs depresses the Gross Margin, but makes the comparison of different structured flocks possible.

It is now possible to quantify in economic terms a contemplated improvement designed to increase production from the following simple formula -

$$W_1 GM_1 = W_2 GM_2 - Y \quad \text{per annum}$$

- where W_1 = the original number of wethers
- GM_1 = the previous gross margin per head
- W_2 = the subsequent number of wethers
- GM_2 = the resulting gross margin per head
- Y = the annual capital charge.

Let the initial GM be £2.91 per head, and the subsequent gross margin the same. This assumes there is no loss in productivity despite the increased numbers. As a result of fencing and land improvement the stock number is increased by 50%. The initial number of wethers is 3000.

$$\begin{array}{rcl}
 W_1 & GM_1 & = \\
 (3000 & \times & \text{£}2.91) \\
 \text{£}7,830 & & = \\
 & & = \\
 & & Y = \text{£}5,265 \text{ per annum} \dots \dots \dots A
 \end{array}
 \quad
 \begin{array}{rcl}
 W_2 & GM_2 & \\
 (4,500 & \times & \text{£}2.91) - Y \\
 13,095 & & - Y
 \end{array}$$

The increase in stock numbers involved expense in

- (a) buying the 1,500 wethers
- (b) fencing (two miles) at £925/mile
- (c) re-seeding 400 acres at £20/acre.

(a) The flock has 3 age-groups of wethers. If they have a loss rate of 7% p.a. it is composed of the following -

35%	2 - shear @ £3.060	=	1.062
33%	3 - shear @ £2.845	=	0.939
31%	4 - shear @ £2.646	=	<u>0.820</u>
	Average price/hd	=	<u>£2.861</u>

*. Total cost of extra stock = £2.861 x 1500 = £4,292.

(b) The cost of conventionally fencing two miles including labour = £925 x 2 = £1,850

(c) The cost of re-seeding an acre using modern machinery will have the following approximate cost -

<u>Application costs</u>	£	
Labour at 3 acres/hr	1.33	
Depreciation of machinery, tractor + fuel etc.	2.30	
Seeds: 16 lb. mixture @ £0.45/lb.	7.30	
Fertiliser: 1 - 1½ cwt @ £165/T	<u>9.00</u>	£19.93 per/ac.

At a projected increase in carrying capacity of 1500 adult wethers, the necessary increased acreage of "good" herbage can be calculated, given an expected level of production from the re-seed. It is assumed the stock will spend 6 months on the re-seed, and that it will be applied in patches throughout a larger area. A reasonable figure would be ¼ acre of re-seed per sheep (see G.T.U. Annual Report 77)

$$\frac{\text{STOCK INCREASE}}{4} = \frac{1500}{4} = 400 \text{ acres approx.}$$

$$\text{Total cost of re-seed} = 400 \times £20 = \underline{£8,000}$$

The total capital sum involved, (a) + (b) + (c) is

$$(a) \quad £4,292$$

$$(b) \quad £1,850$$

$$142 \quad (c) \quad \underline{£8,000} \quad \underline{£14,142} = C$$

The sum of £14,142 must be found in order to accomplish the improvement scheme. Let us assume it is borrowed over a reasonable period of time - say 10 years; that the interest rate to be paid is realistic - say 10% p.a. The annuity required to service such a loan (the annual capital charge Y) is calculated from the formula

$$Y = C \frac{i}{1 - (1 + i)^{-m}}$$

where C = capital investment i = the rate of interest m = the period of repayment.

The sum necessary each year for ten years from this example is Y = 0.163C

$$305 = 0.163 \times \underline{£14,142} =$$

£2,283.....B.

But the calculated margin, or difference between

$$W_2 \text{ GM}_2 \text{ and } W_1 \text{ GM}_1 \text{ was}$$

$$\underline{£5,265} \dots \dots \dots \text{A.}$$

which is more than double the annual charge required.

This example, if it is correct biologically and managerially, is very attractive financially, and would produce a generous internal rate of return.

TO SUMMARISE :

The Gross Output is calculated for the flock before improvement. From this is subtracted the Variable Costs, to give the Gross Margin.

The same calculation is done after the improvement. The difference is called the

/the

margin, which is available each year.

A proportion of the margin can be used in the form of an annuity to re-pay the loan raised to accomplish the improvement.

If we examine the example above with a more critical eye, we see it assumes the re-grassing will support the increased number of sheep immediately. This cannot happen in practice for at least a year after re-seeding, which will mean that the total stock increase which generates the money, must await the required grass production. Again, the stock increase cannot occur unless more stock are retained as lambs, weaning percentage is increased, wethers are bought from outwith the farm or wethers are retained for extra years. In this latter case, their individual performance must fall, as will their individual gross margin. When one considers tax rates paid, interest rates gained, incentives available and changes in fixed costs which may occur, the mathematics involved is long and very complicated. These are the questions the farmer must himself answer; these are the questions the Farm Manager will be asked by his Board. The computer programme made available by H.F.R.O. to G.T.U. answers these difficult questions for any given projected scheme and alternative policies can be compared on the basis of net present value to determine that which makes the best use of capital.

The example given in this paper is probably a sound financial investment, but must be examined in detail before the necessary capital, in the form of a loan repayable over a set period and at a realistic interest rate, can be requested.

C.D. KERR

G.T.U. TEAM LEADER.

10th January, 1978.

ACKNOWLEDGEMENT: The writer wishes to thank A.T. Blake, who made a considerable contribution towards the calculation of Gross Margins, and H.M. Milne for helpful suggestions.

THE CALCULATION OF GROSS MARGINS IN FALKLAND ISLAND SHEEP FARMING
AND THEIR USE.

- SUMMARY:
- (a) THE REASONS AND METHOD OF CALCULATING GROSS MARGINS FOR A RANGE OF STOCK TYPES ARE GIVEN.
 - (b) THE APPLICATION OF A METHOD OF INVESTMENT APPRAISAL IS DESCRIBED WHICH ACCOMMODATES THE RANGE OF STOCK TYPES.
 - (c) THE DESIRED PRODUCTION INCREASE CAN BE ACHIEVED BY AN INCREASE IN STOCK NUMBERS.
 - (d) THE INCREASE IN STOCK NUMBERS IS DEPENDENT UPON THE IMPROVED INDIVIDUAL PERFORMANCE OF EWES.
 - (e) IT IS SUPPOSED THIS CAN BE BROUGHT ABOUT BY PROVIDING IMPROVED NUTRITION FOR EWES IN THE FORM OF RE-SEEDS AT CERTAIN TIMES OF THE YEAR.
 - (f) THE DEMAND OF THE EWE (AND LAMB) IS ESTIMATED AND THEREBY THE REQUIRED PERFORMANCE OF THE RE-SEED.

C.D. KERR
G.T.U. TEAM LEADER.

22nd May, 1978.

1. The calculations entered in the Annual Report G.T.U. 76/77 were designed eventually to estimate the price of a wether lamb at weaning which when paid to the ewe would equalise the earning power (per year) of the adult wether and breeding ewe. (Although such sales do not happen in fact it is necessary to suppose they do in order to appraise any investment. At present the flocks on most farms roughly comprise $\frac{1}{3}$ breeding ewes $\frac{1}{3}$ sheep 2.5y.o. $\frac{1}{3}$ adult wethers. Wether and ewe replacements enter their respective flocks when not less than two-year-old).

2. From the Report:

Management and Investment Income = Total Revenue - Gross
Production Costs (FC+VC)

$$MII = TR - CP$$

Since $\frac{1}{2}$ of the Gross Production Costs are in the form of labour it was assumed that the presence of ewes necessitated four times as much labour as that for adult dry sheep. This is a matter of opinion, but can be calculated. In order to equalise the MII between adult ewes and wethers the price of the weaned lamb/hogg was taken to £4 approximately.

3. The calculation of Gross Margins requires the accurate determination of variable costs, which are -

Seeds, Fertiliser, Spray, Fuel, Feed, Stock, Transport, Veterinary.

	RANGE (£)	
Labour: Specific casual	0.0500	- 0.0600
" Contractors costs	0.2400	- 0.2700
Transport (Freight)	0.0360	- 0.0780
Transport (UK Freight)	0.2300	- 0.2500
Insurance	0.0010	- 0.0015
Wool Materials	0.0010	- 0.0015
Fuel	0.0030	- 0.0100
VARIABLE COSTS DRY SHEEP TOTAL (RANGE) =	£0.5610	- 0.6710

The Falkland freight rates vary with distance from Port Stanley and the facilities at each Station.

There is no difference in shearing rates for sheep type, but there is an increase after 1st March.

The above rates were calculated for a fleece weight of approx. 4kg, and transport costs would be reduced for less bulky fleeces.

No veterinary costs are included in the above calculation, but obvious costs would be cobalt dosing and worm drenching, especially for weaned lambs.

Ewes: an additional cost is ram replacement and this is estimated at -

	0.0800	- 0.1200
V. COSTS Breeding ewe Total (range) =	£0.6410	- 0.7910

4. It is necessary to develop a system which can deal with the range of classes of stock, viz.

wether h,	1 shear	2 shear	3 shear	4 shear	5 shear	6 shear	7 shear
ewe h,	1 "	2 "	3 "	4 "	5 "	6 "	7 "
age	0 1	2	3	4	5	6	7
lamb crop at mating	0		1	2	3	4	5

All female stock do not pay cost of replacement, and therefore receive no remuneration for 50% of the lambs weaned.

All male stock pay for cost of replacement, and this sum is dis-counted each year according to the loss rate (death + cull + black loss) experienced in that year. This fluctuates from age to age, for example the losses estimated between weaning and shearing (February and December) are on average 15% whereas 1 shear - 2 shear (wethers) only 7% and 7% thereafter. Ewe losses are generally higher than adult wethers, at 10 - 12%.

5. Wethers: The following is an actual example of wethers on a Station on West Falkland -

WETHER HOGG(Wh)	WOOL	PRICE	GROSS	15%LR	COSTS
	3.3	x 115	3.79	GO 7.19	0.62 VC
		SALE OF (SW)	<u>3.40</u>	-4.62	<u>4.00</u> REPLACE
			£7.19	GM <u>£2.57</u>	4.62
SHEARLING WETHER(SW)				10%LR	
	4.2	x 110	4.62	GO 7.68	0.62 VC
		SALE OF(2SW)	<u>3.06</u>	-4.02	<u>3.40</u> REPLACE
			7.63	GM <u>£3.66</u>	4.02
2 SHEAR WETHER(2SW)				7%LR	
	4.0	x 100	4.00	GO 6.85	0.62 VC
		SALE OF(3SW)	<u>2.85</u>	-3.68	<u>3.06</u> REPLACE
			6.85	GM <u>£3.17</u>	3.68
3 SHEAR WETHER(3SW)					
	4.0	x 100	4.00	GO 6.65	0.62 VC
		SALE OF(4SW)	<u>2.65</u>	-3.47	<u>2.85</u> REPLACE
			6.65	GM <u>3.18</u>	3.47
4 SHEAR WETHER(4SW)					
	4.0	x 100	4.00	GO 6.46	0.62 VC
		SALE OF(5SW)	<u>2.46</u>	-3.27	<u>2.65</u> REPLACE
			6.46	GM <u>£3.19</u>	3.27
5 SHEAR WETHER(5SW)					
	4.0	x 100	4.00	GO 6.29	0.62 VC
		SALE OF(6SW)	<u>2.29</u>	-3.08	<u>2.46</u> REPLACE
			6.29	GM <u>£3.21</u>	3.08
6 SHEAR WETHER(6SW)					
	3.0	x 100	3.00	GO 3.95	0.62 VC
		SKIN	0.54	-2.91	<u>2.29</u> REPLACE
		MEAT	<u>0.41</u>		
			3.95	GM <u>£1.04</u>	2.91

FLOCK STRUCTURE : 4 ages at 7% LR.

	22	24	26	28	
	5SW	4SW	3SW	2 SW	
GM	3.21	3.19	3.18	3.17	
% GM corrected	0.71	+ 0.76	+ 0.83	+ 0.89	= <u>£3.19</u> MEAN GM/hd.

It will be seen that the 6 SW age is run at a very low GM which supports the GM of the previous age. This is done on some farms only, the usual practice being to shear, remove and slaughter the 6y.o. after the sixth shearing.

6. EWES : From the same Station - GROSS MARGINS (females)

Hogg (eh)	wool 3kg x 115p = 3.45		3.45 VC	0.70 (8padd vet ch.)
			-0.70	
			GM <u>£2.75</u>	
SHEARLING (Se)	3.8 x 110 = 4.18		4.18 VC	0.62
OO crop			-0.62	
			GM <u>£3.56</u>	

FLOCK AT 65% WEANING

2 shear (2Se) 0 crop	3.7 x 105 = 3.88		4.96 VC	0.72 (RAM REP. ADDED)
SALE OF LAMB (27%)	= <u>1.08</u>		-0.72	
			GM <u>£4.24</u>	
3 shear (3Se) 1 crop	3.7 x 105 = 3.88		5.28 VC	0.72
£4 x 35%	= <u>1.40</u>		-0.72	
			GM <u>£4.56</u>	
4 shear (4Se) 2 crop	3.7 x 105 = 3.88		5.32 VC	0.72
35%	= <u>1.44</u>		-0.72	
			GM <u>£4.60</u>	
5 shear (5Se) 3 crop	3.7 x 105 = 3.88		5.28 VC	0.72
35%	= <u>1.40</u>		-0.72	
			GM <u>£4.56</u>	
6 shear (6Se) 4 crop	3.7 x 105 = 3.88		5.85 VC	0.72
32.5%	= 1.30		-0.72	
SKIN	0.67			
	<u>5.85</u>		GM <u>£5.13</u>	

FLOCK GROSS MARGIN.

10% Loss Rate - Structure at Mating.

CROP	4	3	2	1	0	00	h(weaned lamb)
100=	16	+ 18	+ 20	+ 22	+ 24)	26	30
age	6.5	5.5	4.5	3.5	2.5	1.5	0.5

CROP	GM	f	=	MEAN	COST
0	4.24	0.24	=	1.06	3.06 x 0.24 = 0.73
1	4.56	0.22	=	1.00	2.75 x 0.22 = 0.605
2	4.60	0.20	=	0.92	2.48 x 0.20 = 0.495
3	4.56	0.18	=	0.82	2.23 x 0.18 = 0.40
4	5.13	0.16	=	<u>0.82</u>	2.01 x 0.16 = <u>0.32</u>
		MEAN GM/hd		<u>£4.62</u>	MEAN PRICE <u>£2.55</u>

The cost of replacement calculation can be used, in wethers, as the price of the wether. For ewes it is seen that the "lamb cost" of £4 is discounted again according to the loss rate and the "price" of each age-group is roughly similar. The method therefore takes account of the potential earning power of the sheep.

7. There is some considerable variation in fleece weight between ages which is becoming apparent as the studies progress, and seems to range between 0.6 and 1.10kg. between the 3rd and 7th or 8th shearing, but has not been taken into account in the financial calculations. There is also some reason to believe that the fleece becomes "coarser" with age, which may affect price. There are a number of other factors liable to affect the calculation of Gross Margins, which will become apparent as the method is applied in more varied circumstances.

8. Investment Appraisal.

The method of investment appraisal is that developed by H.F.R.O. after Harkins (Jnl Scot Ag 68) and is described in H.F.R.O. 6th Triennial Report (71-73).

In order to appraise any investment the margin before and after investment is calculated, using the formula -

$$S_1 GM_1 = S_2 GM_2 - Y \pm FC$$

original stock no. X Initial Gross Margin = Subsequent stock no. X subsequent Gross Margin minus Y plus or minus any change in fixed costs.

Y must always be negative and is normally considered the annuity required to break-even on the investment over the period required to return the borrowed capital used for the investment and interest plus other associated costs. Thereafter, the business size increase totally contributes toward Station finance. It is relatively easy to calculate increases or decreases in fixed costs, and if the method of gross margin calculation is acceptable, promising schemes can be examined in detail.

H.F.R.O. have provided limited temporary access to G.T.U. of their computer programme which can calculate End-Year-Balances, Cash Flows, Internal Rates of Return, Net Present Values etc.

Initially/

Initially investment schemes are subjected to the simple formula (above) and if Y is 1.5 times the required annuity (at 10% interest, capital repayable over 10 years) the scheme is considered worth further study.

Work in this Section is modified continuously by the growing understanding of animal and vegetation production in the Falklands.

9. The record shows that since the period 1909 - 1913 no increase in wool production has occurred, as the reduction in sheep numbers (9.18%) has resulted in 10.05% less sheep being shorn which is only matched by a 10.35% increase in individual wool production. In fact the period 1974 - 1977 (3 yrs.) mean annual wool production was 1% less than the period 1909 - 1913.

In the face of rising world costs the only solution is greater production without a concomitant production cost rise. It is apparent that the utilisation rates are very low indeed, and that it is possible to correct this with adult wether sheep in suitable systems. Experience to date has shown that the two-pasture concept for ewes cannot produce the desired levels of production as the natural vegetation included in the production areas produces neither the required quality or quantity, Ewes must therefore be provided with suitable re-seeds. Improved nutritional provision may also need to be made for young sheep of both sexes. The average wool production of adult wethers is acceptable by world standards, and it may be inadvisable to attempt an increase in individual performance in this class of sheep except by better breeding methods. The answer must therefore be to increase production per acre by increasing stock numbers. The National average marking percentage remains at 63.5%. Clearly this production level from ewes does not permit stock increase.

10. Raising weaning percentages from around 60 to 90 would permit a stock increase of 42% in 5-7 years minimum and an increase of 87% in 8-12 years minimum depending upon circumstances. In order to achieve this stock and thereby production increase (a) a relatively massive investment per ewe is required bringing about (b) a re-allocation of land to different classes of stock (c) more intensive use of land generally.

The implications of creating the situation whereby more lambs are weaned are widespread and will affect the organisation of the whole station. The immediate reduction in area occupied by ewes releases land capable of supporting more hogs which may, in turn, release land for the better nutrition of shearlings. The more intensive use of land occupied by adult wethers will bring about an immediate increase in business size but may also release yet more land for other classes of stock.

It is possible to increase ewe numbers on a certain area of land sufficient to break-even on any investment. For example, a recent calculation shows that with a GM_1 of £4.58 and GM_2 of £5.195 one third of an acre of re-seed can be afforded at £27/ac. if the stock number is increased by 45%.

It seems therefore that the desired stock increase can be achieved with no financial penalty if

- (a) the proposed re-seeds can produce sufficient in value and quantity;
- (b) the estimates of necessary levels of intake are accurate;
- (c) present prices of wool are maintained;
- (d) the ewe, when given better nutrition responds sufficiently for the desired production increase to take place.

11. The Required Re-seed.

Grazing models matched to supposed ewe and ewe and lamb demand indicate the necessary periods of re-seed grazing. When this is allied to supposed intakes, the total re-seed demand can be estimated -

RE-SEED			
	lbs. DM INTAKE/DAY	DAYS	TOTAL
MAY	3	10	30
JUNE	3	30	90
JULY	3	15	45
OCT	4	21	84
NOV	4.75	30	142.5
DEC	4.75	31	147
JAN	4.75	31	147
FEB	4.75	10	47.5
		<u>178</u>	
TOTAL DM DEMAND (RE-SEED)			<u>733lbs.</u>

INDIGENOUS			
	lbs. DM INTAKE/DAY	DAYS	TOTAL
APR	3.25	30	97.5
MAY	3	21	63
JUL	3	16	48
AUG	3	31	93
SEP	2.5	30	75
OCT	3.5	10	35
FEB	3.5	18	63
MAR	3.5	31	108.5
		<u>187</u>	
TOTAL DM DEMAND (INDIGENOUS)			<u>583lbs.</u>

The estimated Total Demand (TD) is therefore 1316lbs. p.a.

The estimated annual dry-matter production of the indigenous vegetation is not normally less than 2000 lbs. DM/acre in ewe camps and can range to 6000 lbs. DM/acre in bogged whitegrass areas.

If therefore the re-seed ewe demand is 733lbs. of good quality vegetation how many acres does each sheep require? The suggested Stage 1 re-seed using prostrate cocksfoot (16lbs/ac) and smooth-stalked meadowgrass (4lbs/ac) supplied with lcwt/Ac compound fertiliser at sowing could be expected, when properly established, to produce 3000lbs. DM/ac. The supposed utilisation rate of 70% (about/

(about as much as one could expect) would provide -

$$\frac{3000 \times 0.7}{3} = 700\text{lbs. per ewe}$$

at 0.3 acres/ewe which approximates to the estimated 733 Demand.
The expected establishment cost is -

Seed @ 20lbs./ac	£8.00
Labour	4.30
Machinery Deprec., Tractor Fuel etc.	7.00
Fertiliser @ 1cwt/ac	<u>8.00</u>
	£27.30

It is interesting to note that the Stage 1 re-seed if producing 3000 lbs. DM/ac. at 70% utilisation rate costs 1.3p/lb.DM to establish whereas yorkshire fog re-seeds have an establishment cost (at 1000 lbs. DM and 50% utilisation rate) of 3.2p/lb.DM.

Green Patch Study - (a)

CALCULATION OF LAND VALUES AND EXPECTED REMUNERATION IN AN AREA OF THE
FAIKLAND ISLANDS

Preface

Two methods are postulated to calculate the gross value of Green Patch and two methods used to calculate the individual values of the proposed six sections.

The arrived-at values for published Schedules determined by the Green Patch Committee are subject to many other considerations such as:-

- (a) ease of management
- (b) location relative to shipping point
- (c) presence or absence of tracks
- (d) estimated potential for improvement
- (e) presence or absence of housing on Section

and so forth.

For these reasons the calculated relative values should not be used without modification, although methods 3 and 4 do demonstrate the calculated ability to repay a proportion (65%) of the estimated purchase price of each section.

- NOTE: (a) All the calculations are based on total value i.e. including Settlement facilities. If such facilities are retained by the initial Purchaser, leased and disposed of at a later date then the values of the separate sections should be reduced by the estimated value of these facilities, although it is recommended that the relative values of the sections are borne in mind.
- (b) All calculations are based on the stock type and stocking rate recommended by the original pre-schedule.

C. D. Kerr
6th February 1979

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SUMMARY

- METHOD 1 indicates that the purchase price should be £170,000 so long as the return on investment at 7.8% per annum is acceptable.
- METHOD 2 indicates that if the FIC figure for fixed costs of £37,316 is accepted the value should be approximately £170,000 and the expected return 10% per annum.
NOTE: It is considered that due to the low proportion of breeding ewes the stock replacement figures used by FIC may be too low.
- METHOD 3 From the individually calculated Gross Margins for each Section the Management and Investment Income (total revenues less total costs) was estimated and one half of this figure used as an annuity to service a loan at 8% per annum over 25 years. From this ability to pay (the total of which amounted to 64.6% of the estimated purchase price) the relative values of each Section were calculated.
- METHOD 4 One quarter of the Management and Investment Income from Method 3 for each Section was taken as the Return to Landlord's Capital of 3% per annum and the value of the Sections re-calculated. Very close agreement was found with Method 3, and Method 4 also indicated Capitalised Land Values for each section.

RELATIVE WORTH OF SECTIONS

As percentage values of the whole the Sections were found to vary as follows (from Methods 3, 4):-

SECTION	RELATIVE VALUE, EXPRESSED AS PERCENTAGES
1	10
2	18
3	13
4	7
5	11
6	<u>41</u>
	100

GREEN PATCH VALUE ESTIMATION

Method 1

Number of sheep x £10 = Gross Value

Recent purchase prices take historical number of sheep multiplied by £10.
Therefore 17014 sheep x £10 = £170,140 proposed purchase price.

Caution: For total stock number of 17,014 at moderate weaning percentage of 65, necessary number of breeding ewes is 5670

But at CP actual number of breeding ewes 3642 -

2028 = the shortfall of breeding ewes.

2028 ewes could be expected to produce 1105 shearlings of both sexes. A moderate cost for a shearling is £3,40 per head. The annual recurrent cost borne by this farm is thus estimated at 1105 x 3.4 = £3757

Because of this recurrent cost of £3757 (present day price) the profit that can result on the initial investment is reduced in this manner.

Expected profit:	5%	results in real profit of	2.8%
"	"	7.5%	" " " " 5.3%
"	"	10%	" " " " 7.8%

It therefore appears that the notional price of £10 per sheep which hopefully would result in "profit" of 10% per annum results in 7.8% per annum and the purchase price should therefore be reduced by $\frac{7.8}{100} = £132,500$

Summary

1. Gross value of GP = £170,000

2. Since stock is not self-supporting (2028 ewes are not run) 1100 shearlings must be purchased at estimated annual cost of £3757 which reduces, say, at 10% to 7.8%. If the purchase price is modified in this manner then the estimated gross value = £132,600

Method 2

The apparent "profit" per head of sheep is used as the interest that can be expected on original investment i.e. return on initial investment. The gross margins of all the sheep numbers and types given in GP Study 1978 was as follows:-

		<u>Corrected Flock</u>			
		GM			
e	3700	x	£4.42	=	£16,354
w	9800	x	£2.89	=	£28,322
Se	1250	x	£3.56	=	£ 4,450
R	130	x	£3.00	=	£ 450
eh	1000	x	£2.73	=	£ 2,730
wh	1000	x	£2.57	=	<u>£ 2,570</u>
				Total Gross Margin	£54,876 GM
				Less Fixed Costs	<u>£37,316</u> FC
				Therefore, Management Investment Income	= <u>£17,560</u> MII

From the table the total GM was reduced by the estimated fixed cost (£57,316) and the profit (MII) is £17,560.

<u>Annual Return Required</u>		<u>Estimated Value Stock and Land</u>
£17,560 @ 10% return	=	£175,600
£17,560 @ 15% return	=	£117,600
£17,560 @ 20% return	=	£57,800

Method 3

- a) The estimated MII of each section is divided by two and this sum used as an annuity of 8% over 25 years. The loan is used in each section to estimate:-
- i) relative value of the section
 - ii) the necessary deposit for entry
- b) These calculations are based on one value viz: £170,000

- NOTE: (1) The method of calculating GM is taken from "The Calculated GM in FI Sheep Farming etc." 22nd May 1978, Kerr, GTU which includes replacement cost of dry sheep.
- (2) It is assumed $FC = FCW + FCD$ where $FCW = FCD$ i.e. wages is equivalent to Depreciation, and wages = £1000 per 1000 sheep.
- (3) The assumption in (2) is based on figures from a sample of other established F.I. farms Theophilus 72, Shackleton 76.

1. Murrell

Acreage: 10,650
 Stock: 2779 wethers and dry ewes
 Acres per sheep: 3.83

GM
 w 2779 x 2.89 = £8031pa

Fixed Costs

- a) Wages £3000pa
 b) Depreciation £3000pa Total £6000

MII = GM - FC = £2031pa

If $\frac{1}{2}$ MII is used for "improvement" (development) in whatever form that available for repayment of purchase loan is £1015pa.

From the amortisation formula:

£1015 would repay at 8% interest over 25 years a loan of £10847
 (f = 0.09357)*

* divide annuity by f: i.e. $\frac{1015}{0.09357} = 10847$ (Loan x f = annuity)

See Appendix A

2. Saddlebacks East and West

Acreage: 7524 + 6764 = 14288
Horse Paddock 560
Long Island 800
Stock: 1860 wethers + 1235 shearling ewes = 3095
Acres per sheep: 4.6

GM
w 1860 x 2.89 = 5375
Se 1235 x 3.56 = 4395
£9771pa

Fixed costs:

a) Wages £3000pa
b) Depreciation £3000pa Total £6000

MII = GM - FC = £3771pa

If $\frac{1}{2}$ MII is used for "improvement" that available for repayment of purchase loan is £1885pa.

£1885 would repay at 8% interest over 25 years a loan of £20145

3. Mount Kent Green Hill Top Square Bottom Square

Acreage: 10138 + 4792 + 1448 + 868 = 17246
Stock: 3000 wethers
Acres per sheep: 5.74

GM
w 3000 x 2.89 = £8670

Fixed Costs:

a) Wages £3000
b) Depreciation £3000

MII = GM - FC = £2670pa

If $\frac{1}{2}$ MII is used for improvement that available for repayment of purchase loan is £1335pa.

£1335 would repay at 8% interest over 25 years a loan of £14267

4. Stud Rincon Sparrow Rincon Estancia

Acreage: 4712 + 2312 + 3236 = 10260
Stock: 1746 ewe hoggs + 956 wethers = 2702
Acres per sheep: 3.8

GM
eh 1746 x 2.73 = 4766
w 956 x 2.89 = 2762
£7528pa

Fixed costs:

a) Wages £3000
b) Depreciation £3000 Total £6000

MII = GM - FC = £1528pa

If $\frac{1}{2}$ MII is used for improvement that available for repayment of purchase loan is £764.

£764 would repay at 8% interest over 25 years a loan of £8165

5. Whittington's Rincon
Model Farm
Jack's Point
Horseshoe Bay East

Acreage: 3627 + 744 + 1150 + 2362 = 7883
Stock: 935 ewe hoggs + 270 ewes + 115 wethers + 928 ewes = 2248
Acres per sheep: 3.5

GM
eh 935 x 2.73 = 2552
w 270 x 4.42 = 1193
w 115 x 2.89 = 332
e 928 x 4.42 = 4101
£8178

Fixed costs:

a) Wages £3000
b) Depreciation £3000 Total £6000

MII = GM - FC = £2178

If $\frac{1}{2}$ MII is used for improvement that available for repayment of purchase loan is £1089.

£1089 would repay at 8% interest over 25 years a loan of £11,638

6. Bacon and Ham
Horseshoe Bay West
Ram Paddock

Acreage: 7750 + 4668 + 942 = 13360
Stock: 1917 wethers + 2452 ewes = 4369
Acres per sheep: 3.06

GM
w 1917 x 2.89 = 5540
e 2174 x 4.42 = 9609
e 278 x 4.42 = 1228
£16377

*Fixed Costs:

a) Wages £4000
b) Depreciation £4000 Total £8000

MII = GM - FC = £3377pa

If $\frac{1}{2}$ MII is used for improvement that available for repayment of purchase loan is £4188.

£4188 would repay at 8% interest over 25 years a loan of £44757.

*NB increase FC x 1.33

METHOD 3 SUMMARY TABLE

SECTION	SHEEP NUMBER	FIXED COSTS	LOAN REPAYMENT CAPABILITY	PERCENTAGE RELATIVE CONTRIBUTION	RELATIVE VALUES OF £170,000	35.4% OF PURCHASE PRICE
	A	B	C	D	E	F
1	2779	6000	10847	9.87	16779	5940
2	3095	6000	20145	18.33	31161	11031
3	3000	6000	14267	12.98	22066	7811
4	2702	6000	8165	7.43	12631	4471
5	2248	6000	11638	10.59	18003	6373
6	<u>4369</u>	8000	<u>44757</u>	<u>40.73</u>	<u>69241</u>	24511
	18193		109819	(64.6% of £170,000)	169881	

C: One half of the estimated MII from each section is used as an annuity to repay a loan over 25 years at 8% per annum.

D: Reflects the relative ability of each Section in C

E: D is taken as the relative value of each Section and set against the total purchase price (£170,000).

F: Can be considered as the deposit necessary at 35.4% of the purchase price.

METHOD 4

This calculation is designed to estimate the values of the Sections by taking a proportion (one quarter) of the previously estimated Management and Investment Income and using this as a moderate Return to Landlord's Capital of 3% per annum.

The capitalised value per mean acre per Section is calculated, and this can be compared with the Vegetation Map.

From the Method 4 Table it can be seen that there is close agreement on the values of the Sections between Methods 3 and 4 which indicates that the stock figures and the land allocated to the different stock types is correct.

METHOD 4

	SECTION £MII	SECTION £MII/4	SHEEP NUMBER	A ACRES	B ACRES PER SHEEP	C <u>£MII/4</u> SHEEP	D <u>C</u> <u>B</u> ($\frac{3\%RLL}{}$)	E <u>C x 100</u> <u>3</u> ACRE VALUE	F E x A = SECTION VALUE	ESTIMATED VALUE METHOD 3
								£	£	£
1	2031	508	2779	10650	3.83	18.3p	4.8p	1.60	17040	(16779)
2	3771	943	3095	14288	4.60	30.5p	6.6p	2.20	31433	(31161)
3	2670	667	3000	17246	5.74	22.2p	3.9p	1.30	22420	(22066)
4	1528	382	2702	10260	3.80	14.1p	3.7p	1.23	12620	(12631)
5	8178	544	2248	7883	3.50	24.2p	6.9p	2.30	18131	(18003)
6	8377	2094	4369	13360	3.06	47.9p	15.7p	5.23	69873	(69241)
								ESTIMATED VALUE	<u>£171,517</u>	(£169881)

Column D = the estimated Return to Landlords Capital of $\frac{3\%}{}$ per acre

E = Capitalised Value per acre

F = Capitalised Value per Section, Method 4

APPENDIX A

AMORTISATION FORMULA USED TO CALCULATE
THE ANNUITY (annual sum of money)
REQUIRED TO SERVICE A LOAN

$$Y = C \frac{i}{1 - (1 + i)^{-m}}$$

Y = the annuity, C = capital (loan), i = interest rate, m = years

Calculated at 8% over 25 years

$$Y = C \frac{i}{1 - (1.08)^{-25}}$$

$$\therefore Y = C \frac{0.08}{1 - 0.1460179}$$

$$\therefore Y = C \frac{0.08}{0.8549721}$$

$$\therefore Y = C \times 0.0935703$$

$$\therefore Y = C \times 0.0936$$

$$\text{and } C = \frac{Y}{0.0936}$$

APPENDIX B

GREEN PATCH ESTIMATED BWE GROSS MARGINS

	WOOL WT(kg)		PRICE(P)		LOSS RATE	VARIABLE COSTS	REPLACE MENT COST £
eh	3	x	115		15%	072	4.00
				3.45			
				<u>-0.72</u>			
				GM £2.73			
Se	3.8	x	110		10%	062	3.40
				4.18			
				<u>-0.62</u>			
				GM £3.56			
2Se 0 Crop	3.8	x	105	3.99	12%	072	3.13
			Sale Lamb 32%	<u>1.08</u>			
				5.07			
				<u>-0.72</u>			
				GM £4.35			
3Se 1 Crop	3.7	x	105	3.88	12%	072	2.75
			Sale Lamb 32%	<u>1.28</u>			
				5.16			
				<u>-0.72</u>			
				GM £4.88			
4Se 2 Crop	3.6	x	105	3.78	12%	072	2.42
			Sale Lamb 32%	<u>1.28</u>			
				5.06			
				<u>-0.72</u>			
				GM £4.34			
5Se 3 Crop	3.5	x	105	3.67	12%	072	2.13
			Sale Lamb 32%	<u>1.28</u>			
				4.95			
				<u>-0.72</u>			
				GM £4.23			
6Se 4 Crop	3.4	x	105	3.57	12%	072	1.88
			Sale Lamb 32%	<u>1.28</u>			
				4.85			
				<u>-0.72</u>			
				GM £4.13			
7Se 5 Crop	3.3	x	105	3.46	12%	072	1.65
			Sale Lamb 32%	<u>1.28</u>			
			Skin	<u>.50</u>			
				5.24			
				<u>-0.72</u>			
				GM £4.52			

APPENDIX C

GREEN PATCH - ESTIMATED WETHER GROSS MARGINS

	WOOL WT (kg)		PRICE(P)				
wh	3.3	x	115	3.79	7.19	0.62	VARIABLE COST
			Sale of 1Sw	<u>3.40</u>	<u>-4.62</u>	<u>4.00</u>	REPLACEMENT COST
				7.19	GM £2.57	4.62	
Ssw	4	x	110	4.40	7.46	0.62	VARIABLE COST
			Sale of 2Sw	<u>3.06</u>	<u>-4.02</u>	<u>3.40</u>	REPLACEMENT COST
				7.46	GM £3.44	4.02	
2Sw	3.8	@	100	3.80	7.46	0.62	VARIABLE COST
			Sale of 3Sw	<u>2.85</u>	<u>-3.68</u>	<u>3.06</u>	REPLACEMENT COST
				6.65	GM £3.78	3.68	
3Sw	3.8	@	100	3.80	6.45	0.62	VARIABLE COST
			Sale of 4Sw	<u>2.65</u>	<u>-3.47</u>	<u>2.85</u>	REPLACEMENT COST
				6.45	GM £2.98	3.47	
4Sw	3.7	@	100	3.70	6.16	0.62	VARIABLE COST
			Sale of 5Sw	<u>2.46</u>	<u>-3.27</u>	<u>2.65</u>	REPLACEMENT COST
				6.16	GM £2.89	3.27	
5Sw	3.6	@	100	3.60	5.89	0.62	VARIABLE COST
			Sale of 6Sw	<u>2.29</u>	<u>-3.08</u>	<u>2.46</u>	REPLACEMENT COST
				5.89	GM £2.81	3.08	
6Sw	3.5	@	100	3.50	4.45	0.62	VARIABLE COST
			Skin	.54	<u>-2.91</u>	<u>2.29</u>	REPLACEMENT COST
			Meat	<u>.41</u>	GM £1.54	2.91	
				4.45			

Annual Dry-matter Key	Production Estimate	: lbs/ac Range	3-yr means "VALUE" SCORE
••• Sandgrass	2000	*	1
T T Tussock		*	5
XXXX Coastal green	5500	4-7000	10
R R Yorkshire Fog	1500	6-1800	8
V V Valley Flush	4500	4-5000	9
+ + Tall rush	-	-	-
W W Cp(B)	6000	5-7000	8
// // Cp(B) Bpm Cm	3000	2-4000	7
□ Cp	2000	1-3,000	4
/// Cp Bm	1800	1-1500	4
/o/o/ Cp Bm Oo	1000	500-1500	3
oo Cp Oo	600	500-700	2
//°// Cp /Ap	300	*	-
//P// Ap banks	-	-	-
M M Mountain	900	*	6
X X Bare Ground	-	-	-
D D Er/Cp	1200	*	6
### Er	500	*	5
••• B mag	-	-	-
F F Fachine	1500	*	8
B B Balsam	300	*	4
// // Cp Bm Bpm	3000	3-4000	6

* not measured.

Additional Categories used in mapping

LD BB	500	*	3
DD CO	200	*	2
D/D/	1500	*	5
D W D	4000	*	7
etc			

2.1 STAGE 1 RESEED

As a result of Davies et al (71), Eadie Report Mar 78, Kerr (Gross Margins and their use, May 78), GTU Committee (London July 78), the Team Leader was instructed to select four sites for reseeding, each to be approximately 50 acres, and be part of a production paddock of a two- or three-pasture system for ewes (as in 1.5). The Committee agreed to extend the areas of reseed to 200 acres approximately, dependent upon their success. It was presumed that $\frac{1}{3}$ acre per ewe was necessary to provide a substantial production increase so that small flocks of ewes should be sought

$$\frac{200\text{ac RS1}}{0.3\text{ac REQUIREMENT}} = 666 \text{ ewes}$$

Permission was gained to proceed at

- 1.5 (a) 2 Picaso: Teal Inlet 510 ewes
 (b) Hope Cottage Rincon: Darwin 2600
 (c) Goring: Chartres 1750
 (d) 2 Herbert Stream; Roy Cove 1600

and where the ewe number exceeded 666 the Owners undertook to introduce sufficient Stage 1 Reseed to provide the assumed 3:1 ratio.

Soil samples were taken from all prepared seed beds immediately prior to sowing.

Seeds mixture	lbs
Certified S24 Perennial Ryegrass (Jp)	5
Roskilde Late Jockscot (Dg)	5
Certified S26 Cocksfoot (Dg)	5
Dasas Creeping Red Fescue (Fr)	5
Arina Dasas Smooth Stalked Meadow Grass (Pp)	3
Oregon Highland Bent (At)	2
	<u>25lbs/ac</u>

Sowing rate: 25lbs/acre

Fertilizer:

2cwt Fisons Heavy Land	12	24	0
1cwt Nitro-chalk	25	0	0
	<u> </u>	<u> </u>	<u> </u>
	N62	P48	K0

Recommended sowing times:

December and/or February

Recommended sowing method: broadcasting

1.5 (a) 2 Picaso: Teal Inlet 510 stud ewes
For description refer 1.5 and 1.5 Appendix

Seedbed Preparation/Sowing

- | | |
|--|-------------------|
| 1. Rotavation of 2 blocks of 20 acres: | 8-12 September 78 |
| 2. Rotavation of 1 block of 10 acres:
(ex Yorkshire Fog reseed) | 8-12 September 78 |
| 3. Burning of surface trash: | January 79 |
| 4. Heavy disc harrow, sowing, fertilizing: | 19-23 March 79 |
| 5. Roll | |

1.5 (b) Hope Cottage Rincon: Darwin

Seedbed preparation/sowing

- | | |
|---|--------------|
| 1. Rotavation 1 block of 50 acres; | September 78 |
| 2. Burning of surface trash: | January 79 |
| 3. Sowing, fertilizing, light harrowing:
(sowing confined to 32 acres at 39lbs
seed/ac and 2.5cwt Heavy Land) | 20 March 79 |

1.5 (c) Coring: Chartres

Seedbed preparation/sowing

- | | |
|---|-------------|
| 1. Rotavation 1 block of 45 acres: | October 78 |
| 2. Rotavation 1 block of 5 acres:
(ex Yorkshire Fog/Cocksfoot) | October 78 |
| SURFACE TRASH WAS NOT BURNED | |
| 3. Sowing, fertilizing, rolling: | 16 March 79 |

1.5 (d) Herbert Stream: Roy Cove

Seedbed preparation/sowing

- | | |
|---|-------------|
| 1. Rotavation 1 block of 35 acres:
(previously Yorkshire Fog Reseed) | December 78 |
| 2. Light harrowing | March 79 |
| SURFACE TRASH WAS NOT BURNED | |
| 3. Sowing, fertilizing, rolling | 20 March 79 |

