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ECOLOGY OF THE COMMON SNAIL HELIX ASPERSA MÜLLER
IN A DISTURBED DUNE ENVIRONMENT

A thesis presented in partial fulfilment
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Helix aspersa Müller on lupin in
study area 3



A B S T R A C T

A study was made of the population ecology of Helix aspersa Muller in coastal dunes at Santoft forest, near Bulls. The environment was being altered by afforestation processes.

The distribution of the animals is affected by the presence of tree lupin, Lupinus arboreus Sims, to which they are strongly attracted. Areas planted with lupin are capable of supporting a much greater density of snails than non-lupin areas, and this is thought to be due to the nutritive value of this species.

Snail population densities appear to increase rapidly after lupin seeding in the dunes and this results in widespread lupin die-back after as little as three years from seeding. After lupin die-back the snail population decreases again. Some suggestions are made as to the origin of H. aspersa in the dune country and on the eventual fate of the populations under the maturing forest.

Using shell characteristics, it was found that most juveniles in expanding populations reach maturity in little more than one year whereas those in high density, declining populations generally take two or three years. Individuals in expanding populations also attain a greater size on maturity than those in high density populations. The main factor affecting population density appears to be adult recruitment, which is considerably higher in expanding than in stable or decreasing populations.

H. aspersa is found to be socially gregarious and this is particularly marked over the winter period when adults and large juveniles aggregate for hibernation. Hibernation begins in May and reaches a peak in July. Many animals are active again in mid-August.

Predation by the song thrush Turdus philomelos was studied in one area. Predation occurs throughout winter and generally increases over late spring/early summer.

Snails affect nitrogen fixation levels in lupins before lupin death occurs and it is considered that this is due primarily to disruption of the phloem tissue of the stems during snail feeding.

It is suggested that this disruption of the translocation tissues is the ultimate cause of plant death. The possible economic significance of H. aspersa in dune forestry through its effects on lupin is discussed, and the need for further investigation indicated.

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TABLE OF CONTENTS

	Page
ABSTRACT	iii
ACKNOWLEDGEMENTS	iv
LIST OF FIGURES	x
LIST OF TABLES	xii
LIST OF PLATES	xiii
SECTION I Introduction	1
CHAPTER 1 Sand Dune Forestry and the Role of Lupin	1
1.1 Background	1
1.2 Initial dune stabilization	1
1.3 Nutritional role of lupin	2
1.4 Invertebrate pests of dune-country lupin.	3
CHAPTER 2 <u>Helix Aspersa</u>	4
2.1 Introduction	4
2.2 Range	4
2.3 Terrestrial life and the restriction of range	5
2.3.1 Water relations and estivation	5
2.3.2 Hibernation	8
2.3.3 Reproduction	9
2.3.4 Restrictions on range	10
2.4 Habitat preferences	10
2.4.1 The significance of calcium	11
2.5 Food and pest-status	12
2.5.1 Food	12
2.5.2 Pest-status	12
2.5.3 Control	13
2.6 Natural enemies	14
CHAPTER 3 Introduction to Study Areas	16
3.1 Santoft forest	16
3.2 Study areas	16
3.2.1 Area 1	19
3.2.2 Area 2	19
SECTION II Population Dynamics of <u>H. Aspersa</u>	22
CHAPTER 4 General Introduction to Population Dynamics Study	23
4.1 Introduction to topic	23
4.2 Aims of the study	24
4.3 Sampling program methods	24
4.3.1 Sampling procedures	24

4.3.1.1	Areas 1 and 2	24
4.3.2	Shell measurements and characteristics	27
4.3.2.1	Adults and juveniles	27
4.3.2.2	Shell size	28
4.3.2.3	Estimating juvenile size at emergence	29
4.4	Division of juvenile snails into size groupings	31
CHAPTER 5	Dispersion	35
5.1	Introduction	35
5.2	Methods	36
5.2.1	The distribution of <u>H. aspersa</u> in the environment	36
5.2.2	Aggregation for estivation	36
5.2.3	Measurement of dispersion	38
5.3	Results	40
5.3.1	Environmental heterogeneity	40
5.3.2	Changes in dispersion with time	41
5.3.3	Dispersion of estivating snails on lupin stems	45
5.4	Discussion	50
5.4.1	Environmental heterogeneity	50
5.4.2	Population dispersion	51
5.4.2.1	Dispersion of the 1975-76 cohort	51
5.4.2.2	Dispersion of adults and large juveniles	53
5.4.3	The importance of dispersion to the accuracy of population data	54
5.4.4	Lupin-stem aggregations	55
5.4.5	Possible behavioural bases for aggregation	56
5.4.6	Adaptiveness of aggregation	59
CHAPTER 6	Population Processes over the Sampling Period	60
6.1	Introduction	60
6.2	Methods	60
6.2.1	Sampling	
6.2.2	Ageing methods using shell characteristics	61
6.2.2.1	Juvenile ages	61
6.2.2.2	Adult ages	62
6.2.3	Desiccation and heat mortality on bare sand	63
6.3	Results	64
6.3.1	Population sampling	64
6.3.2	Individual ages from shell characteristics	64
6.3.2.1	Juvenile growth-checks	64
6.3.2.2	Adult growth layers	73
6.3.3	Sand-stranding mortality	74

	Page
6.4 Discussion	74
6.4.1 Juvenile growth and density	74
6.4.2 Adult longevity	80
6.4.3 Mortality from environmental hazards	81
6.4.4 Hibernation	83
6.4.5 Comparisons of populations from areas 1 and 3	84
6.4.6 Area 2	86
CHAPTER 7 Long-Term Population Processes	88
7.1 Introduction	88
7.2 Methods	89
7.2.1 Sampling and sample sites	89
7.2.1.1 Area 4	89
7.2.1.2 Area 3 and adjacent areas	89
7.2.2 Data analysis	90
7.3 Results	90
7.4 Discussion	96
7.4.1 Population density increase	96
7.4.2 The origin of snail infestations	97
7.4.3 The origin of snails in the sand dunes	98
7.4.4 Density effects in snail populations	100
7.4.5 The patterns of snail population growth and decline in the dunes	104
SECTION III Predation by the Song Thrush	
CHAPTER 8 Predation on <u>H. Aspersa</u> by the Song-Thrush (<u>Turdus Philomelos</u>) in Area 2	108
8.1 Introduction	108
8.2 Methods	109
8.2.1 The thrush anvil study	109
8.2.1.1 Anvil site locations	109
8.2.1.2 Shell collection and analysis	110
8.2.1.3 Predation mortality in relation to snail density	111
8.2.2 Predation on juvenile snails	112
8.2.2.1 Collection of faeces and extraction of radulae	112
8.2.2.2 Preparation of standard radulae for comparison	113
8.2.2.3 Staining and mounting of radulae	113
8.2.2.4 Description and measurement of the radulae	113
8.3 Results	115
8.3.1 Anvil study	115

8.3.2	Thrush faeces analysis	Page 123
8.4	Discussion	127
8.4.1	Accumulation of shells on anvils	127
8.4.2	Catch as a function of area	129
8.4.3	Predation on hibernating snails	130
8.4.4	Predation on juveniles	131
8.4.4.1	Large juveniles	131
8.4.4.2	Small juveniles	132
SECTION IV Feeding Studies		134
CHAPTER 9	The Food of Dune Populations of <u>H. Aspersa</u> and the Effects of Feeding on <u>Lupinus Arboreus</u>	134
9.1	Introduction	134
9.2	Methods	134
9.2.1	Cuticle analysis	135
9.2.2	Palatability trials	136
9.2.3	Structural damage to lupin caused by snail feeding	137
9.2.4	The effects of feeding by snails on nitrogen	137
9.2.4.1	Experimental procedure	138
9.2.4.2	Measurement of nitrogen fixation	139
9.3	Results	142
9.3.1	Cuticle analysis	142
9.3.2	Palatability trials	143
9.3.3	Structural damage to lupin stems caused by the feeding activities of snails	144
9.3.4	Effects on nitrogen fixation	145
9.4	Discussion	148
9.4.1	Food of <u>H. aspersa</u>	148
9.4.2	Effects on lupin of snail feeding	151
CHAPTER 10	Concluding Discussion and Comments	152
10.1	Issues for further investigation	152
10.1.1	Population ecology	152
10.1.2	Economic significance: friend or foe?	153
10.2	Comments on the study	155
APPENDIX		156
REFERENCES		157

LIST OF FIGURES

Figure		Page
1	Locality of Santoft forest	17
2	Northern Santoft, showing study site locations	18
3	Study sites in area 1	26
4	Method of obtaining shell height measurement with vernier calipers	30
5	Division of juvenile snail sizes into size classes	33
6	Dispersion of the total population of area 1 over the study period	42
7	Dispersion of the 1975-76 juvenile cohort (area 1) over the study period	44
8	Dispersion of area 1 adults; adults and large juveniles; and hibernating adults and large juveniles	46
9	Index of dispersion (I) plotted against sample mean (\bar{x}) for the lupin-stem samples	49
10	Population sampling results, area 1	65
11	Population sampling results, area 2	66
12	Population sampling results, area 3	67
13	Population densities in area 1 over the sampling period	68
14	Hibernation data	69
15	Weather data: January, 1976 - October, 1977	70
16	Distribution of adults and large juveniles captured in the September sample from area 1	78
17	Area 3 and surrounding areas, showing sites of samples A1 - A3 and B1 - B7	91
18	Population sampling results, area 4	93
19	Population compositions of single-site samples, A1 - A3	93
20	Population compositions of single-site samples, B1 - B7	94
21	Adult height distributions, areas 1, 2 and 3	95
22	Method of obtaining snail radula measurements	116
23	Plan of anvil study area, with 10 m radius of activity around each anvil	117
24	Numbers of shells collected from anvils	119
25	Plan of anvil study area, with 20 m radius of activity around each anvil	120

		Page
26	Juvenile radulae measurements plotted against shell height	124
27	Radula width measurement plotted against length measurement	124

LIST OF TABLES

Table		Page
I	Shell height distribution of all juveniles exceeding 1.20 cm captured in area 1.	34
II	Sample results from area 3,	40
III	Snail dispersion in relation to lupin in area 1	41
IV	Sampling results from areas 1 and 2.	43
V	Indices of dispersion for total population results from areas 1, 2 and 3.	45
VI	Indices of dispersion	47
VII	Indices of dispersion for adults	48
VIII	Age/size compositions of lupin-stem sample populations.	48
IX	Indices of dispersion for lupin-stem samples.	50
X	Numbers of juvenile growth-checks on the shells of adult and sub-adult animals.	71
XI	Numbers of juvenile growth-checks on the shells of juveniles.	73
XII	Age/size distribution of 1,186 snails stranded on a 30 m section of bare sand tracks.	74
XIII	Growth-checks numbers on the shells of adult snails.	92
XIV	Mean adult shell heights	96
XV	Catch per anvil over the study period.	121
XVI	Anvil catches as a function of a 10 m radius of thrush activity around each anvil.	121
XVII	Anvil catches as a function of a 10 m activity radius around each anvil for the period 12/8 - 2/12.	122
XVIII	Catch as a function of a 20 m activity radius around each anvil for the period 12/8 - 2/12.	122
XIX	Percentage of total adult catch bearing the remains of a thick epiphragm for each collection.	123
XX	Proportion of juveniles in anvil catches.	125
XXI	Height distributions of juvenile shells from anvils.	125
XXII	Measurements of radulae from thrush faeces.	126
XXIII	Palatabilities of green leaf material from different plant species.	143
XXIV	Ethylene/Acetylene peak-height ratios.	148

LIST OF PLATES

		Page
Frontispiece	<u>Helix aspersa</u> Müller on lupin in study area 3	
Plate 1	a. View of area 3	
	b. <u>H. aspersa</u> estivating on lupin	21
Plate 2	Growth-checks on adult and large juvenile snails from area 3.	72
Plate 3	Snail radulae prepared from thrush faeces	114
Plate 4	Incubation chamber for acetylene reduction assay	141
Plate 5	Snail damage to woody lupin stems	146
Plate 6	Snail-damaged lupin stems	147