Nova Scotia

Department of Education

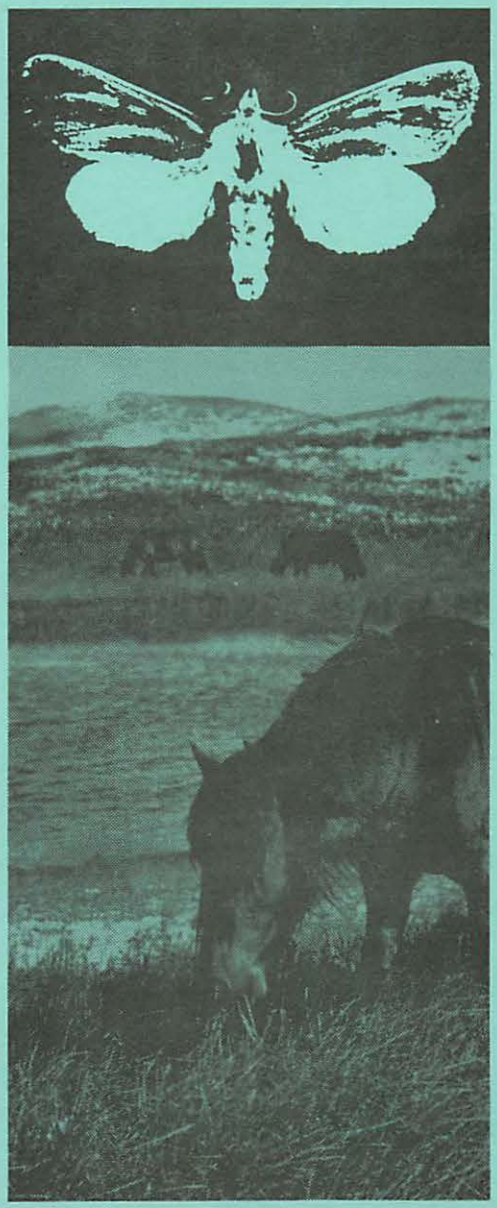
Nova Scotia Museum Complex

Curatorial Report Number 68

The Fauna of Sable Island

By
Barry Wright
October 1989

Nova Scotia Museum
1747 Summer Street
Halifax, Nova Scotia, Canada
B3H 3A6



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Errors and Omissions

Insert the following at the bottom of page 74

Gasterosteus aculeatus Linnaeus	Threespine Sticklebacks were collected by David Marcogliese in Pond number 7 in August 1990. The Fourspine Sticklebacks taken in East Pond (Garside 1969) were checked by John Gilhen and found to be identified correctly.

Insert the following references on Page 92.

Erskine, J.S., 1954. The Ecology of Sable Island, 1952. *Proc. N.S. Inst. Sci.*, 23: 120-145.

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Fernald, M.L., & St. John, H., 1914. The varieties of *Hieraceum scabrum*. *Rhodora*, 16: 181-183.

Freedman, B., Catling, P.M. and Lucas, Z., in Taylor, R.B., 1982. The Vegetation of Sable Island, Nova Scotia. *Report on Terrain Management and Biological Studies on Sable Island, 1981, Prepared for the Sable Island Environmental Advisory Committee.* 71 pp.

Ganong, W.F., 1908. The Description and Natural History of the Coasts of North America (Acadia) by Nicholas Denys. The Champlain Society, Toronto. p 207.

Garside, E.T., 1969. Distribution of Insular Fishes of Sable Island, Nova Scotia. *J. Fish. Res. Bd. Canada*, 26: 1390-1392.

Gilpin, .B., 1858. Sable Island: Its Past History, Present Appearance, Natural History, etc., a Lecture. Wesleyan Conference Steam Press, Halifax, N.S., 24 pp.

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Grosvenor, M.B., 1965. Safe Landing on Sable. *National Geographic*, 128: 398-431.

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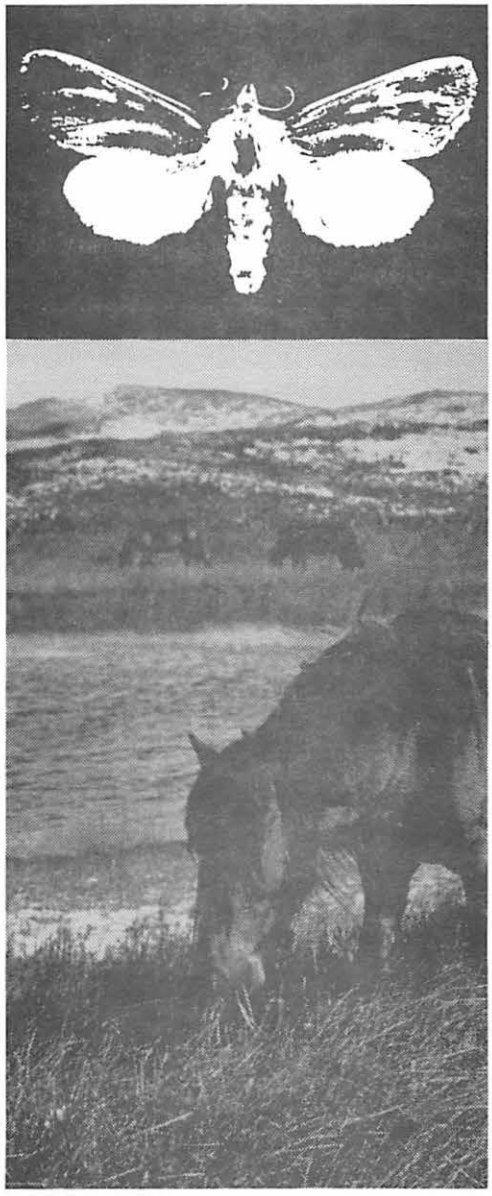


The Curatorial Reports of the Nova Scotia Museum Complex make technical information on Museum programs, procedures and research accessible to specialist audiences.

CONTENTS

The Fauna of Sable Island

Sable Island, an emergent sand bar, is situated in the Atlantic Ocean at 44N 60W and lies 160 km southeast of Canso, Nova Scotia, the closest point on mainland North America. A slender crescent of sand, no more than 24 metres high, with long, low sandspits at each end, the island is approximately 35 km long and less than 1.5 km wide. This island with its unstable sand spits surrounded for many kilometres by shifting underwater sandbars has long been known as the 'Graveyard of the Atlantic' because of the numerous shipwrecks prior to the installation of electronic navigation aids.

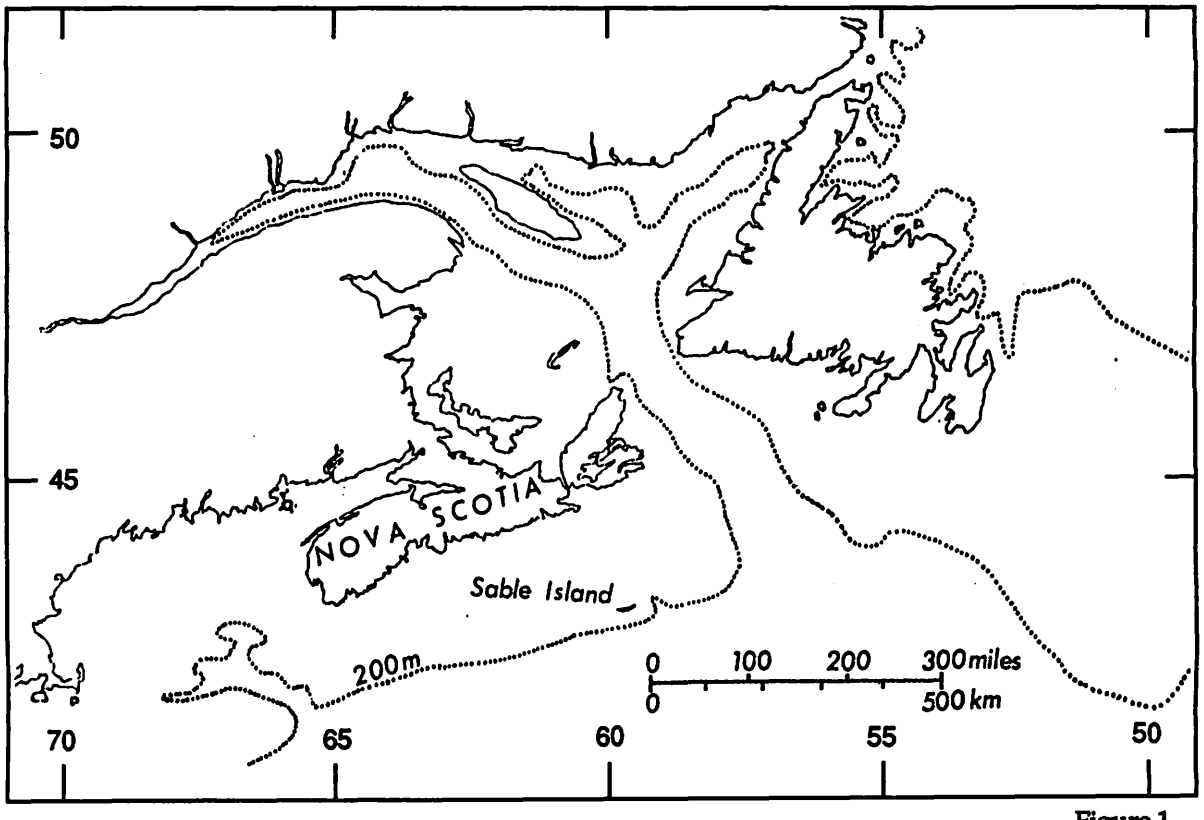


Figure 1.

GEOGRAPHY

The island can be considered to consist of two parallel beaches joined at each end and separated by a ragged series of dunes which, at their widest parts, enclose heathland and shallow brackish and freshwater ponds. The shape of the island is reminiscent of a somewhat flattened new moon, aligned east to west and open to the north. The North Beach slopes steeply to the sea and is generally less than 100 metres wide. The sea

frequently reaches the foot of the 10-15 metre high dunes during storms and unusually high tides, especially toward the western end of the island. The South Beach is low lying and extremely wide, being up to 1.2 km from high tide to the base of the low dunes. Wallace Lake, the largest body of water on the island, lies in the upper part of this beach and varies considerably in size throughout the year. During the summer the lake is reduced to two or three small areas, but in winter, or following prolonged heavy rain, it may cover the beach for a distance of 14 km. The brackish water is no deeper than 4 metres and is fed by fresh water percolating from the dunes and by salt water from the sea during storms. The dunes above this beach are seldom more than 3 metres high and barely protect the series of more or less brackish ponds behind them. Toward the east end of the island the South Beach resembles the North Beach in being steep and narrow. As one approaches the East Spit the dunes become progressively higher and then end abruptly, being followed by low, grassy, meadow-like mounds which give way to patches of Sandwort further out on the narrow spit.

The interior of the island west of Wallace Lake is an extensive area of 'old land' consisting of shrubby heath, junipers, cranberry patches and freshwater ponds. This is the site of the Upper Atmospheric Environment Station (Met Station) and the West Light, an automatic lighthouse and radio beacon. Other extensive heathland lies to the east of Wallace Lake in the vicinity of the ruins of Number 3 Lifesaving Station. The brackish ponds in this area are known collectively as the East Pond. Apart from the heathland and pond margins, the dune vegetation consists mainly of American Beach Grass, Beach Pea and Bayberry. There are no native trees other than the two species of Juniper, which form dense mats in the heath areas.

Looking Southeast over Main Station, 1980. North Beach is in the foreground, the west end of Wallace Lake is in the left background.

In winter and spring the island appears to be almost devoid of vegetation. The American Beach Grass is barely visible as needle-sharp young shoots and Beach Pea is present only as slender underground rhizomes and seed. Only the patches of heathland with their evergreen Juniper mat remain. On the apparently endless South Beach, the constantly blowing sand which stings the face and forms drifts around debris, makes one aware of the harsh conditions which life on this island must tolerate.

CLIMATE

The climate is more maritime than that of the mainland, with milder winters and cooler summers. June and July are usually extremely foggy, with the island being fogbound on 20 out of 30 days. The total precipitation is similar to that of the mainland but there is little snow in winter and that soon melts due to milder temperatures and the salty atmosphere. There are few calm days, the average windspeed being in the vicinity of 25 km/h.

HISTORY

Sable Island was apparently first frequented by Europeans in the 16th century when Portuguese fishermen used it as a fishing station. The Marquis de La Roche of France made an abortive attempt at settlement between 1598 and 1604. Survivors returned to France and then came back to Sable Island to conduct a lucrative Walrus fishery for several years. Later, in the 18th century, attempts were made at settlement by French and New England colonists. Shipwrecks became commonplace toward the end of the 18th century and a Humane Establishment was built on the island in 1801 and maintained throughout the 19th century and until 1958. The staff of this establishment manned four lifesaving stations spaced along the island, operated successful farms and were practically self-sufficient. Farming activities were undoubtedly the source of most of the introduced flora and fauna.

Vegetable garden at Main Station. Photo by Captain J.U. Blakeley, 1913-1919.

The installation of a radio beacon in the 1930s greatly reduced the incidence of shipwrecks. The Old Main Station was abandoned in 1950 when lifesaving staff were relocated at West Light which was then known as Main Station. Weather reports were sent from Sable Island from 1944 onward, but it was not until 1958 that the Upper Atmospheric Environment Station was built at its present site. With the departure of the Lifesaving Establishment, the main activity became the operation of the Met Station which is now the only permanently staffed facility on the island. In 1971 the Nova Scotia Department of Mines set up a survey camp near the ruins of the Old Main Station, from which water table levels and sand movement were monitored. This camp is now used occasionally by Department of Mines and Energy, and other Provincial Government personnel. Since 1963, biologists studying seals, horses and birds normally stayed in the house at East Light or in the quonset hut at West Light until 1971 when Henry James, Professor of Psychology at Dalhousie University, built a field station near the centre of the island. This building, known as Henry House, is now used mainly by staff of the Dune Restoration Project. This project, managed by the Terrain Management Committee under the Sable Island Environmental Advisory Committee, is now funded primarily by Mobil Oil although it was initially funded jointly by the Federal Government and The Province of Nova Scotia.

The first oilfield test hole on Sable Island was drilled in the centre of the island in 1967. Although the presence of oil-bearing structures was confirmed, there was little sign of oil or gas and drilling was abandoned until 1970 when a second test hole was drilled on West Spit. Since then, several additional test holes have been drilled in the vicinity of the island and commercial quantities of gas have been confirmed. There has been no further drilling on the island and it appears that oil companies are careful not to involve the island in their day-to-day drilling operations, and are servicing the rigs directly from the mainland. The barracks at West Light now serves as emergency quarters for oil rig staff and others.

Admission to the island is difficult to arrange and is limited to persons who have legitimate business there. Occasional transients are normally accommodated at the Met Station Staff House.

GEOLOGICAL HISTORY

The Pleistocene period commenced 1-1.5 million years BP. Within that period there were four great climatic upheavals, The Nebraskan, Kansan, Illinoian and Wisconsinan ice ages. The Wisconsinan ice cap reached its maximum approximately 40,000 BP, at which time ice fields extended over the edge of the Continental Shelf off Nova Scotia, and south to New York. At that time, boreal species of plants and animals were crowded southward and concentrated in the Southern United States (Howden 1966). A glacial interstadial warming occurred 28-22,000 BP (Mathews 1979) during which time boreal forest with its faunal complement returned to mainland Nova Scotia.

The glacial advance, 21,000 - 14,000 BP extended only a few km offshore (Grant 1988) but, through a combination of crust movement and water lost to ice, the sea level off Nova Scotia was reduced to 120 m below present levels (King and Fader, 1986). At this time the continental shelf would have presented an almost continuous land area from Cape Cod to the Grand Banks, which would have supported plants and animals adapted to a cool, moist climate (Howden 1966).

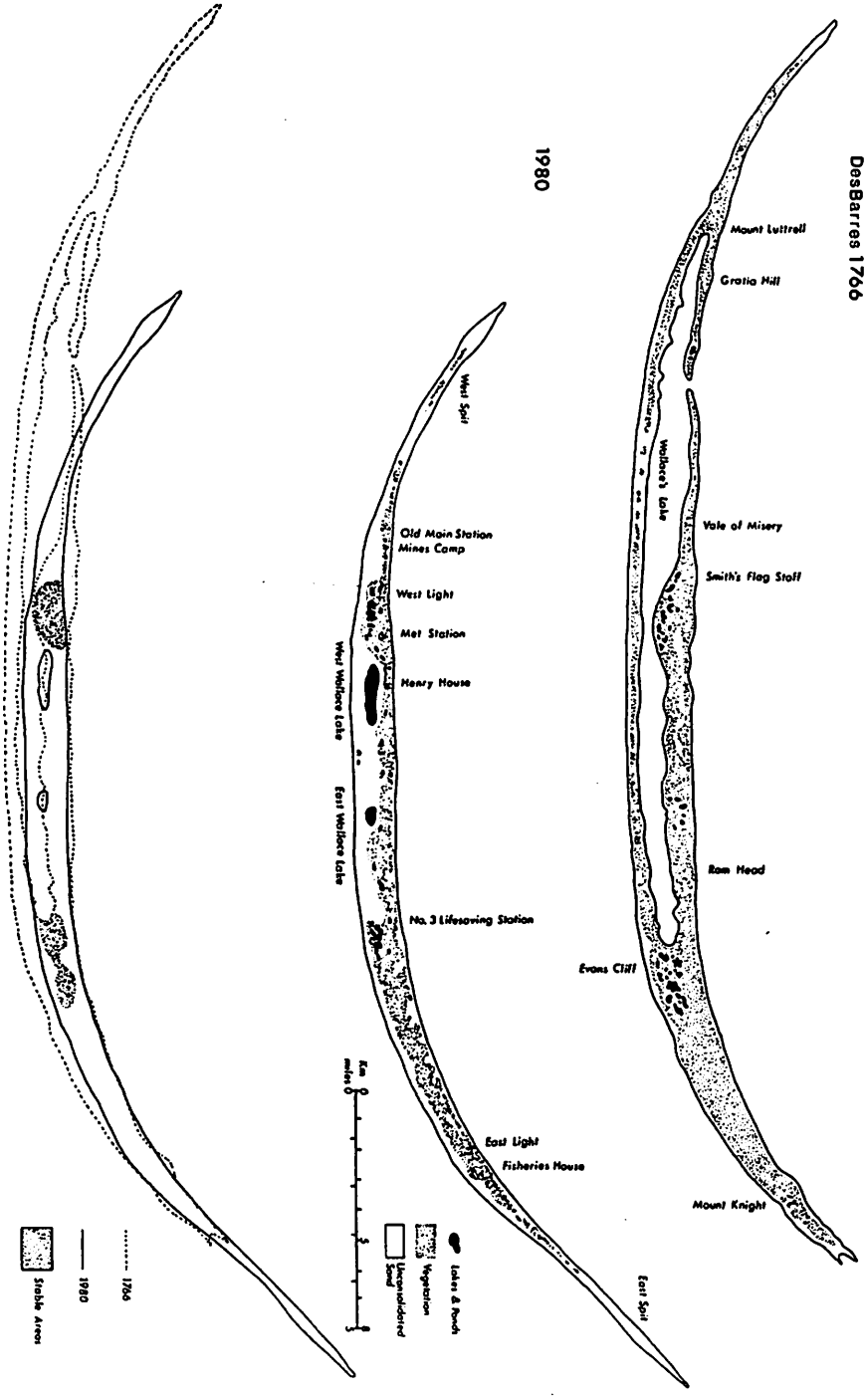
By 12,000 BP the climate had warmed considerably, raising the sea level to 60 m below present levels and isolating the banks from each other and the adjacent mainland. By this time, many species of plants and animals would have become re-established on the mainland. This would have been the source of biota from offshore refugia (Hamilton and Langor 1987). Good examples of this are found in the Coastal Plain flora of southwestern Nova Scotia and in the flora of St Pierre et Miquelon, consisting of 628 species, 35 of which are not found in Newfoundland (Rouleau 1956).

A recent study of leafhoppers (Hamilton and Langor 1987) showed that three species are endemic to Newfoundland and four endemic to Cape Breton Island. An additional five species are endemic to Newfoundland, Cape Breton Island and the Gulf of St Lawrence area.

The climate reached its post-glacial thermal optimum 8,000 - 6,000 BP by which time the banks would have been practically inundated. The sea level has risen at an almost constant 5.4 m per 1,000 years since then, however, storms and ocean currents have maintained the summit of Sable Bank slightly above water throughout this period. This rise in sea level is recorded beneath Sable Island in a series of soil and peat horizons down to 50 m below present sea level and 11,000 years BP (David Scott pers. comm.).

The island is fast disappearing. Since the first accurate survey of Sable Island in 1766 by J.F.W. Des Barres, the greatest elevation has decreased from 50 m to 24 m, and the area of vegetated terrain and ponds (excluding Wallace Lake) has decreased from 69.15 to 34.25 sq. km. In other words, the volume of the island is now 1/4 of what it was 200 years ago. The reduction in area has resulted from the loss of much of the western end of the island and the southern range of dunes which once enclosed Wallace Lake. Previously protected freshwater ponds have become brackish as the sea breached the low dunes of the interior during storms. Only one truly freshwater pond remains. This, the Lily Pond, lies protected by high dunes between the Met Station and West Light.

Figure 2. The changing shape of Sable Island, 1766 to 1980.



FLORA

William Saunders, Director of the Experimental Farm in Ottawa, conducted tree planting experiments on the island in 1901. 68,755 evergreens of 25 varieties and 12,590 deciduous trees and shrubs of 79 varieties together with 50 pounds of seed were planted in six widely separated locations. These plantings, an effort to stabilize the dunes, were, for all practical purposes, a failure. In 1977, remnants were discovered near Number 3 Lifesaving Station. A single maple tree, consisting of 100 or more tiny shoots, no more than 15 cm high and covering an area approximately one meter in diameter has been tentatively identified as *Acer pseudoplatanus* L., a species not listed in the record of plantings, although other *Acer* species were. Two or three metres away was a clump of alder-like bushes about one metre high, which turned out to be American Elms, *Ulmus americana* L. In addition, there were several clumps of Buckthorn, *Rhamnus frangula* L., which also grows near the West Light. These are the only known survivors of the plantings. Two pine trees were planted, on the sheltered banks of a pond south of the Met Station, by staff in the 1970s. These trees, struggling to survive the effects of sand abrasion and salt spray are bush-like and less than one metre high.

Harold St.John, who visited the island in 1913, published a report which included an annotated list of plants. He, together with M.L. Fernald, also described one new species and twelve new varieties of plants. Of these, only four varieties are now considered to be endemic, and one of these is probably extinct. The rest are now known to have wider distributions. John Erskine listed 268 species of plants as a result of visits to the island in 1952 and 1953. Paul Keddy described the pond and wet meadow vegetation in the report on Terrain Management Activities on Sable Island in 1975.

The Vegetation of Sable Island, by P.M. Catling, B. Freedman and Z. Lucas (1985), is the most recent of a series of similar studies. In this report, the history of botanical work on Sable Island is reviewed and previous plant lists are compared with their own collections and observations.

FAUNA

Apart from Willis' list of molluscs in 1858 and MacKay's description of the sponge *Heteromeyenia macouni* in 1900, studies on the invertebrate fauna of Sable Island began with expeditions by staff of the National Museum of Natural History, the Entomology Research Institute in Ottawa and the Geological Survey of Canada in 1966 and 1967. The results were published in 1970 (Howden et al.) and have been incorporated in the present publication.* A total of 171 invertebrate species, mainly beetles was recorded in an annotated list. The zoogeography of several species was discussed in detail and the conclusion was reached that the biological evidence collected supported the thesis that

Sable Island and adjacent fishing banks served as refugia during the most recent Wisconsinan glaciation.

Fred Scott of the Nova Scotia Museum collected invertebrates while gathering material and information for an exhibit on the Ipswich Sparrow, 25 July to 11 August 1969.

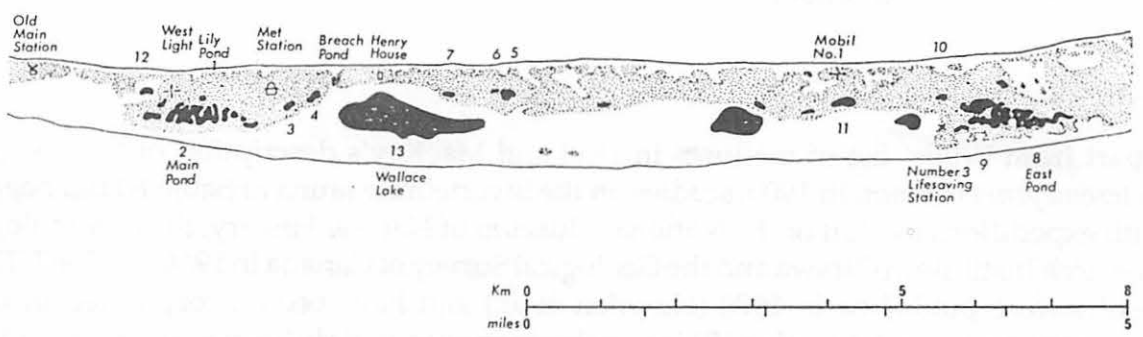
Birds, seals and horses have been intensively studied by staff and students from Dalhousie University, beginning in 1963. A.W. Mansfield, Fisheries Research Board of Canada, studied the life histories of seals on Sable Island and initiated the horse census in 1961 which has been carried out annually since then.

Joe Kerekes, Canadian Wildlife Service, Dalhousie University, conducted a pond plankton survey, 23 May to 1 June 1976, the results of which are included in this publication.

Eric Mills, Professor of Oceanography, Dalhousie University, collected aquatic invertebrates, 25 August to 4 September 1979, which are now in the Nova Scotia Museum Collection.

The author collected terrestrial and freshwater invertebrates more or less intensively on the island on the following dates: 22 April to 1 May 1976, 19-27 July 1976, 22-23 November 1976, 9-16 June 1977, 8-13 September 1977 and 11-14 August 1978. Douglas C. Ferguson, a lepidopterist at the United States National Museum, accompanied the author in August 1978. Eric Quinter, a lepidopterist associated with the American Museum of Natural History, visited the island 2-15 July 1980 and contributed information on larvae to this publication. More recently, beginning in 1981, Agricultural Services, Kentville, operated a light trap for insects at the Met Station in August and September of each year. Some interesting records have come from this source.

Figure 3. Collection sites



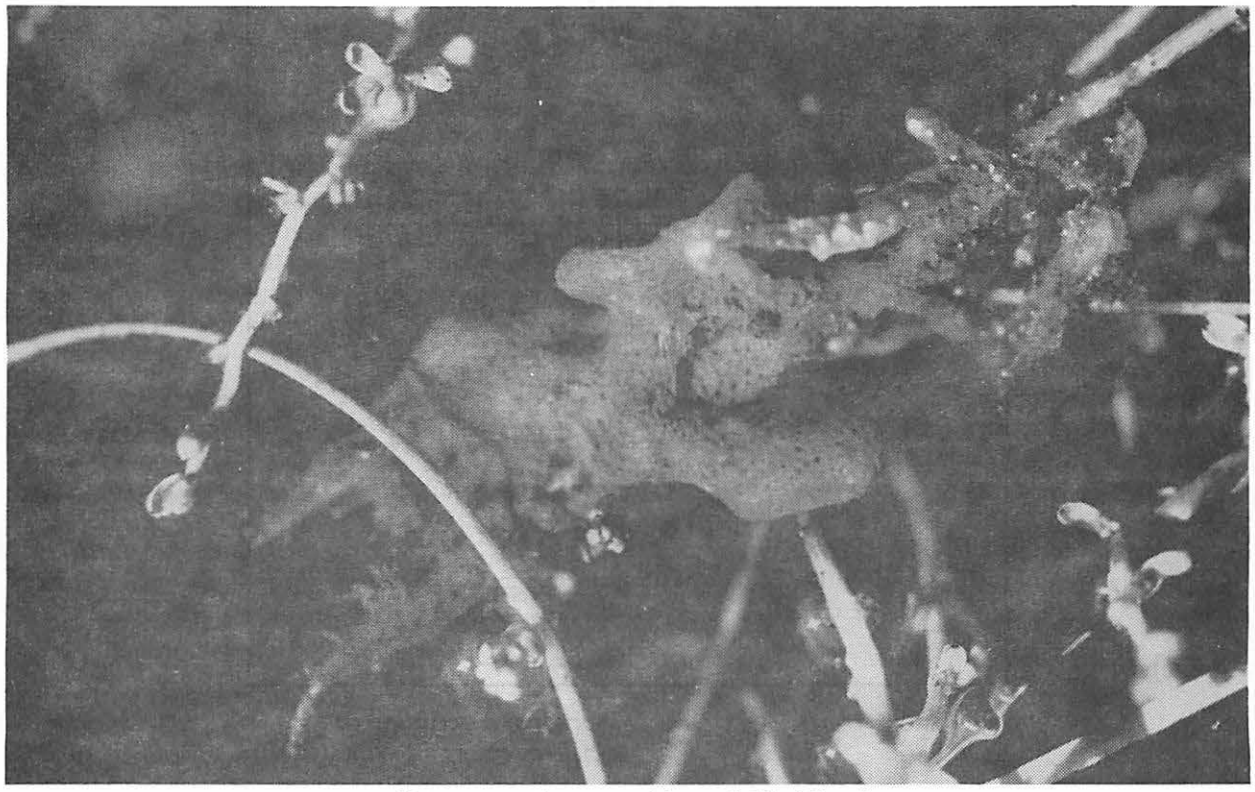
*Records quoted from this work are followed by (OS).

Systematic List

The following list was prepared to include all available material and records in order to establish a reference for future studies, ecological or otherwise, on the island. This list is by no means complete, many groups of soil (sand) animals and micro-organisms having been entirely overlooked. However, the macroscopic, or more obvious invertebrates have been reasonably well collected and every effort has been made to ensure correct identifications.

Phylum Porifera

The only sponge so far recorded from Sable Island was first collected by John Macoun, a botanist with the Geological Survey of Canada, and was described as a new species in 1900 by A.H. MacKay of Halifax.

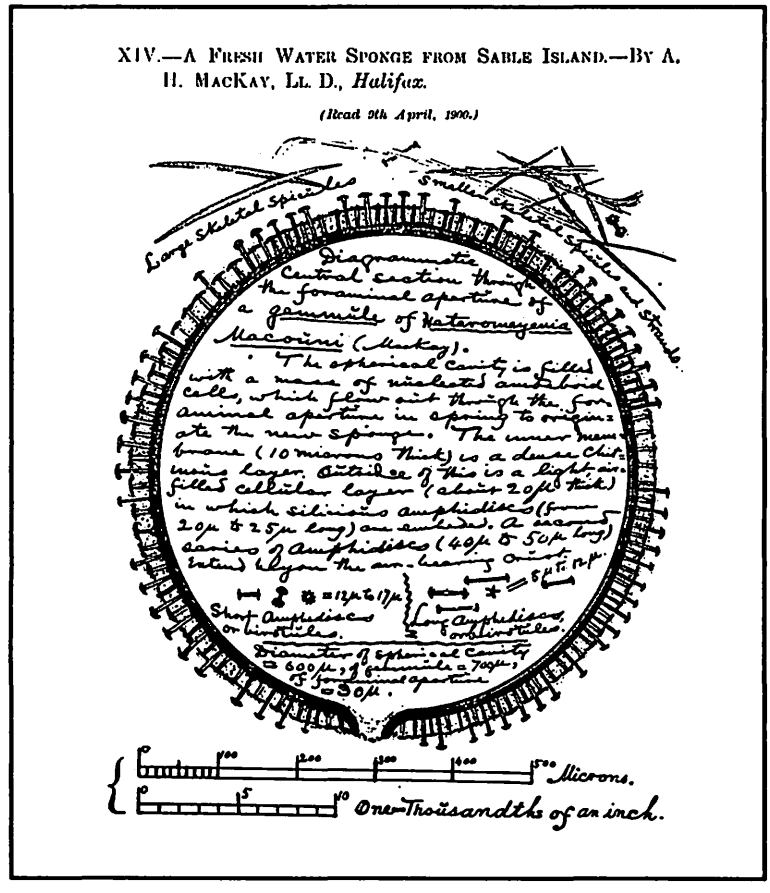


Heteromeyenia macouni from Sable Island

Family Spongillidae
Heteromeyenia macouni MacKay

The type series, collected in a freshwater pond in the centre of the island (Lily Pond?), was growing in green, compact, lobular masses around submerged stems of *Myriophyllum tenellum* Bigelow, 18 August 1899. Part of the type specimen is in the Nova Scotia Museum collection. John Erskine collected this sponge in the shallows of Lily Pond, 28 August 1953, and Eric Mills found it on submerged vegetation in pond #3 south of the Met Station, 26 April 1979.

Barring a taxonomic error, this sponge is undoubtedly a member of the relict fauna and is significant because it is confined to freshwater habitats.



XIV.—A Fresh Water Sponge from Sable Island.—By A. H. MacKay, Ll. D., *Halifax*.

(Read 9th April, 1900.)

Original description of
Heteromeyenia macouni

Phylum Rotifera

The following list of rotifers is based on an identification report prepared by Ian Sutherland of the Canadian Aquatic Identification Centre in Ottawa for Joe Kerekes of the Canadian Wildlife Service in Halifax. The samples were taken 23 May to 1 June 1976 in plankton nets.

At that time, water samples were taken at each site and a detailed analysis of the results is being prepared for publication. At present one can only note that each pond has a different complement of organisms.

Pond	1	2	3	4	5	6	7	8	9	10	11	12	13
Family Brachionidae													
Keratella cochlearis	x	x	x	x	x	x	x	x	x	x	x	x	
Keratella quadrata		x							x			x	x
Keratella serrulata		x			x	x			x	x	x	x	
Trichotria tetractis			x			x	x						
Euchlanis sp.				x		x							
Lepadella ovalis											x		
Nothalca acuminata		x	x				x	x			x		
Family Synchaetidae													
Polyarthra sp.	x	x	x		x	x				x	x	x	
Synchaeta pectinata													x
Synchaeta sp.		x	x					x		x	x	x	
Ploesoma truncatum										x			
Family Trichocercidae													
Trichocerca longiseta			x							x			
Trichocerca sp.		x		x				x	x		x		x
Family Lecanidae													
Lecane luna		x			x						x		x
Lecane sp.						x				x			
Family Testudinellidae													
Testudinella obscura		x						x	x				
Testudinella patina		x	x		x	x		x			x		

Phylum Nematoda

Order Rhabditida

Family Diplogasteridae
Koerneria mulveyi Ebsary

This new species was described from specimens collected by R.H. Mulvey, July 1967, from lilies and moss on Sable Island.

Phylum Mollusca

The earliest published records of Sable Island Mollusca were by J.R. Willis who, in 1858, listed 38 native and 5 drift shells. In his 1863 list of Nova Scotian Mollusca he records 41 marine and 1 terrestrial species from Sable Island together with 18 generally distributed species which could include the island. The Sable Island specimens were sent to him by P.S. Dodd and James Farquhar. Unfortunately the taxonomy of these lists is confused and misleading and the collections involved cannot be located in the institutions to which they were distributed. None of his material is in the Nova Scotia Museum collections.

The present study includes the ten terrestrial and freshwater species recorded by Clarke (1968) and adds two more. Seven native North American and five European introductions are represented. Of the native species, *Hydrobia totteni*, a saltmarsh snail, is interesting since it is probably a member of the relict fauna and, if this is the case, some of the other North American species could also fall into this category.

Marine shells are not included in this paper since most are benthic with almost continuous distributions to the mainland. A few species are of some interest to this study however, and deserve mention. In 1858 Gilpin says of Wallace Lake that some parts of the lake are almost floored by large and pleasant-flavoured clams. At that time the lake was about 19 km long, sheltered from the sea by a range of dunes, but with frequent and shifting channels to the sea between the dunes. The clams were probably *Mya arenaria* Linnaeus. It is interesting to note that Willis listed *Ostrea borealis* (=*Crassostrea virginica* Gmelin) among the drift shells in 1858. Oyster shells, *Crassostrea virginica* (Gmelin) and Bay scallop shells, *Argopecten irradians sablensis* A.H. Clarke, are still quite

common on the beaches. Radio-carbon dating (Clarke 1968) indicates that these oyster shells are 3540-5650 years old and the scallop shells are 1432-1800 years old. Clarke believes that Sable Island must have been much wider during the hypsithermal and, further, that other portions of the shelf may have been exposed during this period and later.

Identifications of the following terrestrial and aquatic Mollusca were by D.S. Davis of the Nova Scotia Museum.

Order Stylommatophora

Family Hydrobiidae ***Hydrobia totteni*** Morrison	Pond 9, July, on Sea Lettuce, *Ulva lactuca* L., East end Lake Wallace, September, on sand and Eel grass.
Family Succineidae ***Oxyloma*** ? sp.	Under boards and logs in damp situations in April and June to August. Abundant on cement foundation walls of Met office following heavy rain in July. This is the only land snail mentioned by Willis who recorded it as *Succinea* sp.
Family Cionellidae ***Cionella lubrica*** (Muller)	Under boards near Main Pond in June. On the mainland *C. lubrica* is associated with *Zonitoides* and *Retinella* in natural habitats and with *Oxychillus* and *Hygromia* in agricultural and similarly disturbed areas. It therefore seems likely that the Sable Island population is native and relict.
Family Endodontidae ***Discus cronkhitei*** Newcomb	Under debris at edges of ponds in June. a widespread, common native species in North America.
Family Zonitidae ***Retinella electrina*** (Gould)	Under boards near Main Pond in June. This is also a widespread, native North American snail which is common in Nova Scotia.

Zonitoides arboreus (Say)	Under logs between ponds 8 and 9 in April. This is a very common and widespread native North American species. On the mainland it is associated with both woodland and sand dune habitats.
Family Arionidae *Arion subfuscus* (Drap.)	Abundant in clumps of Iris on the western edge of the Met Station compound in July; also under a log beside the Lily Pond. This species was considered rare by Clarke. All three species of arionid slugs were introduced from Europe and are common on the Nova Scotia mainland.
Arion hortensis Ferussac	Under cardboard in the Met Station compound and under a board at West Light. Collected by Clarke in July but considered rare. The taxonomy of this species complex is under review in Europe.
Arion circumscriptus Johnston	Collected, along with *Oxyloma* sp., on wet cement foundation walls at the Met Station in July.
Family Limacidae *Derocerus laeve* (Muller)	Clarke found this species to be abundant in July. In the present study it was collected only once, under a board beside Main Pond in April. This species is widespread in North America and was probably introduced from Europe since it is associated with disturbed habitats close to agricultural and urban areas.
Family Helicidae *Cepaea hortensis* (Muller)	On vegetation, under juniper and under boards at West Light and in the Met Station compound in July and August. Clarke also found this snail to be abundant. This European species has been introduced into Eastern North America where it is associated with disturbed land in the vicinity of seaports. The banding patterns of Sable Island snails, 00000 (13) and 12234 (7), are typical of most coastal mainland Nova Scotia populations, although other patterns are also present. The distribution of *C. hortensis* on Sable Island appears

to be confined to weedy areas around habitations and is either limited by suitable habitat, or reflects points of introduction.

CLASS BIVALVIA

Order Veneroida

Family Sphaeriidae
Pisidium casertanum (Poli)

Clarke found this pea-clam to be common in Lily Pond. The author collected it only from Pond 4, but it could easily have been overlooked in other ponds. Eric Mills took it in ponds 3,4,5,6,10 and 11 in his pond survey in August, 1979. This ubiquitous, almost cosmopolitan species is widespread in North America and very common on mainland Nova Scotia.

Phylum Annelida

Order Polychaeta

Although they are generally considered to be marine fauna, polychaetes are included in this study since many of them were collected in pitfall traps on the shores of Wallace Lake. These annelids were also collected by sampling and sifting sand from 50 cm below low tide to high tide level on both beaches. The largest samples came from this source but most species were collected at the edge of Wallace Lake. The collections were identified by Patricia Pocklington of Dartmouth, Nova Scotia.

Family Spionidae
Scolelepis squamata (Muller)

Intertidal, 10-15 cm below sand surface near low tide on North Beach near Met Station in April.

Scolelepis sp.

Intertidal on North Beach near Met Station in July

Family Paraonidae ***Paraonis fulgens*** (Levinson)	In pitfall traps on wet sandy shore of northwest corner of Wallace Lake in July.
Family Nephtyidae ***Nephtys bucera*** Ehlers	In pitfall trap in wet sand on edge of Wallace Lake near northwest corner in July.
Family Nereidae ***Nereis diversicolor*** (O.F.Muller)	In wet sand on northwest corner of Wallace Lake in July.
Nereis sp.	In pitfall traps on the northwest corner of Wallace Lake and on South Beach in July.

Order Oligochaeta

No earthworms were collected in this study and the following records were taken from the Ottawa survey.

Family Lumbricidae ***Lumbricus rubellus*** Hoff.	Collected by A.H. Clarke in the vicinity of West Light, June 1966. This is a common mainland species of European origin.
Dendrobaena sp.	Also collected by A.H. Clarke in the vicinity of West Light in June 1966. The only species of this genus occurring on mainland Nova Scotia is *D. octraedra* (Savigny). It too is of European origin.

Order Hirudinea

No leeches were collected in the present survey. The following records are taken from correspondence with A.H. Clarke. Biological and distributional information is taken from an unpublished manuscript at the Nova Scotia Museum by R.P. McClung.

Family Hirudinidae ***Haemopis marmorata*** (Say)	Lily Pond, June 1966 and July 1967. Commonly called the Horse Leech, this is a widespread species

	on the mainland. It is an active scavenger, frequently leaving the water to feed on earthworms, slugs, snails and carrion. It will also feed on open wounds on vertebrates such as horses, hence its common name.
Family Glossiphonidae ***Helobdella stagnalis*** (L.)	Lily Pond, June 1966, July 1967, also Pond 10, August 1979. This leech is common in ponds on the mainland where it feeds on worms, soft bodied insects and carrion.
Family Erpobdellidae ***Erpobdella punctata*** (Leidy)	Lily Pond, June 1966. This is probably the most common species in ponds on the mainland. It also feeds on earthworms and insect larvae.

Phylum Arthropoda

CLASS ARACHNIDA

Spiders were collected in pitfall traps, sweep netted, under boards, on pond margins, on the dunes and around lights at night. The collections were determined by C.D. Dondale of the Biosystematics Research Centre in Ottawa. This list follows the arrangement by Kaston (1948).

Order Araneae

Family Theridiidae ***Enoplognatha*** sp.	Juvenile found under a board at Old Main Station, June.
Steatoda sp.	Juvenile under a board at Met Station, April.

Family Linyphiidae ***Stemonyphantes blauveltae*** Gertsch	One specimen under a board in Met Station compound, April.
Family Erigonidae ***Erigone blaesa*** Crosby & Bishop	One specimen on muddy shore of Pond 12, June
Erigone dentigera O. Pickard-Cambridge	One specimen from a pitfall trap at the edge of Pond 3, July.
Erigone sp.	Under debris on dunes near West Light and in a pitfall trap beside horse dung in a blowout from North Beach at Old Main Station, April.
Grammonota capitata Emerton	Both males and females in June, also a single specimen from a pitfall trap at the edge of Pond 3, July.
Family Araneidae ***Nuctenea*** sp.	Juveniles sweep-netted in vegetation on margin of Pond 3 in September.
Neoscona arabesca (Walckenaer)	Very common, sweep-netted from dune vegetation in September and from grass around Lily Pond in July. Also collected on shores of Pond 3 in September and both adults and juveniles at lights around the Met Station in July and September
Family Tetragnathidae ***Pachygnatha brevis*** Keyserling	Under boards at Met Station and at Old Main Station in April and June.
Tetragnatha extensa (L.)	In herbaceous vegetation and sedges on margins of Main Pond. Also sweep-netted from dune vegetation and collected around lights at Met Station at night. Juveniles and adults, June to September.
Family Agelenidae ***Tegenaria domestica*** (Clerck)	On outside wall of a building at Met Station at night in June.

Agelenopsis utahana (Chamberlin & Irie)	Attracted to lights around Met Station in September
Family Pisauridae	
Dolomedes striatus Giebel	Pitfall trap in July (Dondale)
Family Lycosidae	
Pirata piraticus (Clerck)	Pitfall trap at edge of Pond 3 in July.
Arctosa littoralis (Hentz)	The largest and most striking spider on the island, this species is cryptically coloured to resemble the sand upon which it flattens itself so that no shadows are cast. Rarely seen by day unless it is disturbed, this is a common spider at night when it feeds on small animals on the sand. Reported to feed on copepods, it no doubt also feeds on amphipods which are nocturnal and abundant. *A. littoralis* was found in burrows on South Beach just above high tide in August, under boards at Old Main Station and near pond margins, in pitfall traps on the dunes and, most abundantly, on walls of buildings at Met Station near lights at night. Adults June to September, juveniles in June and September.
Trochosa terricola Thorell	Juveniles and adults were collected at Met Station in July and one juvenile was collected in reeds bordering Main Pond near West Light in August.
Pardosa fuscula (Thorell)	Two females taken, one under a board beside Pond 3, and the other, carrying eggs, in vegetation on the dunes west of Met Station. Also, males and females in July (Dondale).
Pardosa moesta Banks	Two males in a pitfall trap beside Pond 3.
Family Gnaphosidae	
Zelotes fratris Chamberlin	Pitfall trap in July (Dondale)
Family Clubionidae	
Clubiona abboti L. Koch	Female in pitfall trap at west end of island, July (Dondale)
Clubiona norvegica Strand	Juveniles under boards at Old Main Station in

	April, adults in June. Also in a pitfall trap beside Pond 3 in July and around lighted windows at Met Station in June.
Clubiona sp.	One juvenile under a board at Met Station in April
Agroeca sp.	Juvenile under a board at Met Station in April.
Family Philodromidae ***Ebo pepinensis*** Gertsch	Male in pitfall trap in June (Dondale)
Family Thomisidae ***Xysticus elegans*** Keyserling	Female in pitfall trap in June (Dondale)
Xysticus ferox (Hentz)	Juveniles under boards at Met Station in April and around lighted windows in September, adults in June and July. Adults also under boards near Henry House in June.
Family Salticidae ***Salticus scenicus*** (Clerck)	One specimen collected under a board at Old Main Station in June

Order Opiliones

Family Phalangidae ***Phalangium opilio*** L.	Common on walls near lights at night at Met Station in July and September, also under boards at Old Main Station in August and September, and on the sandy shore of Main Pond near West Light in August.
Leiobunum calcar (Wood)	Juveniles under boards at Old Main Station and Met Station in June. A single adult was taken at a light at Met Station in July.

CLASS BRANCHIOPODA

Order Cladocera

Pond	1	2	3	4	5	6	7	8	9	10	11	12	13
Family Chydoridae													
Chydorus sp.	x	x	x	x	x	x	x	x	x	x	x	x	x
Alona guttata	x	x	x	x		x				x			
Alona circumfimbriata												x	
Alona sp.													x
Family Macrothricidae													
Ceriodaphnia quadrangula											x	x	
Ceriodaphnia sp.											x		
Family Bosminidae								x					
Cladoceran neonate											x		

CLASS COPEPODA

Pond	1	2	3	4	5	6	7	8	9	10	11	12	13
Order Calanoida				x	x	x	x	x	x		x	x	
Diaptomus minutus	x	x	x	x									
Diaptomus sp.	x	x	x	x									
Eurytemora americana							x						
Eurytemora affinis		x		x	x	x				x		x	
Eurytemora sp.		x		x	x		x			x		x	x
Order Cyclopoida				x					x		x	x	x
Cyclops vernalis	x	x					x	x			x		
Cyclops sp.	x	x	x	x						x			
Eucyclops sp.	x												
Halicyclops sp.nr. *magniceps*								x					
Order Harpacticoida							x	x	x				x
Tachidius discipes							x						x
Praleptastacus sp.													x
Mesochra sp.							x						
Paronychocamptus sp. nr. *huntsmanni*								x					
Acartia sp. (*bifilosa* group)													x
Aartia sp.													x
Copepod nauplii undet.		x	x	x	x	x	x	x	x	x	x	x	x

The foregoing lists of cladocerans and copepods are based on an identification report prepared by Ian Sutherland of the Canadian Aquatic Identification Centre in Ottawa for Joe Kerekes of the Canadian Wildlife Service in Halifax. The samples were taken between 23 May and 1 June 1976 in plankton nets.

At that time, water samples were taken at each site and a detailed analysis of the results was being prepared for publication. At present one can only note that each pond has a different complement of organisms.

CLASS MALACOSTRACA

Order Isopoda

Marine Isopods were fairly common in shallow water at the edge of Wallace Lake, swimming among gammarid amphipods within a metre of the shoreline. Collections were made by using a dipnet. Isopods were identified using Gosner as the principal reference.

Terrestrial isopods were collected along with insects and were observed to be most abundant and diverse under rotting timbers around collapsed buildings at Old Main Station. Most were captured by hand but many were taken in pitfall traps in the same locations. A few were found under dead seagulls and under horse dung.

Family Asellidae
Jaera albifrons (Leach)

This minute isopod was encountered in Pond 9 in massive growths of sea lettuce, *Ulva lactuca* L. in July. Seven specimens were collected by chance, the largest being 3 mm long. An attempt to identify it to subspecies placed it between *J. a. albifrons* and *J. a. ischiosetosa*. Either subspecies would be in agreement with Veuille's observations since both are distributed along the Atlantic coast of Nova Scotia.

Family Idoteidae
Idotea phosphorea Harger

This species is common among rocks and seaweeds along the New England coast and into the Gulf of St. Lawrence. On Sable Island it is common in shallow water along the North and West shores of Wallace Lake near Henry House. There are no seaweeds and the isopods were found swimming parallel to the shore over a gently sloping loose

sandy bottom. Collections were made in June, July and September. In July, adults and early juveniles less than 2mm long, were taken in pitfall traps on the shore of Wallace Lake. In September lengths ranged from 10 to 20 mm.

Chiridotea caeca (Say)

This Florida to New England species has been taken occasionally in the Bay of Fundy and more frequently along the Atlantic coast of Nova Scotia. On Sable Island it was collected in shallow water at the edge of Wallace Lake in the same localities as *I. phosphorea*. Both adults and juveniles were present in July, but only a single specimen was collected in September.

Family Oniscidae

Oniscus asellus L.

This is a fairly common isopod on the mainland, having been introduced from Europe. On Sable Island it is found under rotting boards at Old Main Station and at Number 3 Lifesaving Station from April to September.

Porcellio scaber Latr.

Far more abundant than the preceding species, this animal has been found under boards in a variety of habitats from Old Main Station to Number 3 Lifesaving Station between April and November. There is, however, a distinct possibility that more than one species is involved since there is a range of pattern variation from solid lead grey, through pale margins, to white with grey patches.

Porcellio sp. (***dilatatus*** Brandt)?

A single female was reported in the Ottawa survey and it is possible that this record refers to one of the variants included under *P. scaber* above.

Trachaeoniscus (Trachelipus) rathkei (Brandt)

Collected under boards and logs at the Met Station and in the vicinity of Number 3 Lifesaving Station from April to September. Many of the specimens are entirely orange, most are mottled or patchy orange and grey. This is a widespread European species which is also found on mainland Nova Scotia.

Cyclisticus convexus (DeGeer)

This is a common isopod on the mainland but has not been previously recorded from Sable Island. This species is apparently confined to the Old Main Station area where it occurs under rotting boards from April to September.

CLASS CRUSTACEA

Order Amphipoda

Amphipods were dipnetted from all of the ponds investigated during the author's six visits to the island. They were also collected on the beaches at night and under tidal drift by day. They were collected from under driftwood at the tops of beaches, and under horse dung, carrion, driftwood and boards on the dunes. Most were taken in pitfall traps set in a variety of habitats and some were taken at lights at the Met Station at night. The principal reference used for identifications was Bousfield (1973).

Parathemisto gaudichaudi (Guerin)	McLaren (1981:52) noted that unprecedented numbers of Black-legged Kittiwakes were feeding voraciously on swarms of these amphipods on the island's beaches in May and early June of 1978.
Calliopus laeviusculus Kr.	The Ottawa survey recorded this species from Wallace Lake in July. This is a common pelagic and epibenthic coastal marine species, amphi-Atlantic south to the mid-Atlantic States.
Crangonyx r. richmondensis Ellis	In Main Pond, June and July. According to Bousfield (1970) this bog-pond inhabiting species has a relatively restricted ecological tolerance, thus its presence on Sable Island may indicate former connections to mainland habitats.
Gammarus annulatus Smith	Collected in June, July and August in shallow water along the north shore of Wallace Lake, intertidal zones on both North and South Beaches, and abundant in a breach pond containing a decomposing whale, west of Henry House. This is a pelagic and epibenthic species of sandy coastal marine areas from Long Island Sound to New Hampshire (Bousfield 1970).
Gammarus lawrencianus Bousf.	A few specimens were collected along with *G. annulatus* in the breach pond in June and in the sandy shallows of Wallace Lake in September. Most were collected in pitfall traps on the northern shore of Wallace Lake in July.
Gammarus mucronatus Say	Several specimens were collected from the sandy shallows of Pond 9 in July. This is a common brackish water species from the Gulf of St. Lawrence to the Gulf of Mexico (Bousfield 1973) but it apparently has a very limited distribution on Sable Island.

Gammarus oceanicus Segestrale

One specimen was taken in a pitfall trap on the northern shore of Wallace Lake in July. Several were netted in the sandy shallows in June (Ottawa survey) and in September. This is a common intertidal and shallow water species of rocky shores and estuaries, amphi-Atlantic, south to Long Island Sound (Bousfield 1973).

Amphiporeia virginiana Shoem.

Two collections of this species were made in July, one in sandy shallows on the north shore of Wallace Lake and the other intertidal, on North Beach. This is a surf-sand beach species which may also be associated with stream outflows over sand beaches (Bousfield 1973); the Sable Island collections strongly support this statement. The mainland distribution is from Nova Scotia (Guysborough Co.) to Nantucket.

Hyalella azteca Saussure

This species is common in Main Pond, abundant in Lily Pond and has also been taken in Wallace Lake and Ponds 8 and 9 from June to August. As in the Ottawa survey, all specimens have two dorsal pleosomal spines. On the mainland, this widely distributed species is found in freshwater ponds, barachois ponds and in tidal estuaries.

Orchestia grillus Bosc.

A single specimen was taken in a pitfall trap under a board at Old Main Station in September. This saltmarsh species is usually found between the supralittoral drift level and mean high tide and its distribution range is from Newfoundland to the Gulf of Mexico.

Talorchestia longicornis (Say)

This is a common amphipod on the dunes and on both beaches, April to August. Most were collected under boards and driftwood or in pitfall traps. However, several were taken at night in the vicinity of Met Station lights and lighted windows where they were apparently feeding on insects which had been attracted to those lights. This is a semi-terrestrial species which, on Sable Island, ranges up to 500 metres from the sea and up to 10 metres above sea level.

Talorchestia megalophthalma (Bate)

This species is more abundant than *T. longicornis* and occurs at lights and in the same terrestrial situations from April to November. This amphipod was also taken intertidally on both beaches in July and September. This common dune species ranges far inland on Sable Island although Bousfield (1970,

	1973) believes it to be associated with surf-pounded, flat, sandy beaches at and below high tide level. The distribution ranges from the Gulf of St. Lawrence to Georgia.

Order Mysidacea

Mysid shrimps were found only in the brackish waters of Wallace Lake and ponds 8 and 9. They were identified by using Gosner (1971).

Mysis mixta Lill.	This species was dipnetted from pond 9 in July. This is a littoral to deepwater species which occurs northwards from Massachusetts Bay.
Mysis stenolepis (S.L. Smith)	Taken in a plankton tow in Wallace Lake in May (Kerekes).
Neomysis americana (S.L. Smith)	Taken in Wallace Lake by Kerekes in May and abundant in shallow water along the north shore of the lake in September. It was also collected in Pond 9 in July.

CLASS INSECTA

Order Thysanura (Silverfish)

Lepisma saccharina L.	Two of these silverfish were collected, and several others seen, in the staff house bathrooms at the Met Station in June.

Order Collembola (Springtails)

Only three species are recorded here and these probably represent a very small fraction of those present on the island. It was noted, however, that Collembola were not easy to find except on the water surface at the extreme edges of ponds.

Family Hypogastruridae ***Hypogastrura*** sp.	This springtail was common on the water surface among weeds at the edges of shallow bays in Main Pond in July.

Family Entomobryidae
Entomobrya sp.

This species was found under rotting boards at Old Main Station in April.

Family Sminthuridae
Sminthurus purpurescens (MacGillivray)

This species was also common on the water surface at the edges of shallow bays in Main Pond in July.

Order Orthoptera (Grasshoppers)

Apparently, there is only one species of this order on Sable Island, a grasshopper, *Melanoplus sanguinipes* (Fab.). No crickets or cockroaches were observed at times and in places where one would expect to encounter them. The migratory grasshopper, *M. sanguinipes*, was first recorded in 1896 by Harry Piers, who identified specimens collected by the Marine and Fisheries Department in 1894 as *Melanoplus atlanis* (Riley). These grasshoppers were so abundant that they threatened to destroy all the vegetation and, consequently, the island. It was believed at that time that the outbreak followed the arrival of a migrating swarm since no grasshoppers had been noted prior to 1891. However, the island was so overrun with rabbits in the late 1880s, that cats were set loose to control them. During the winter of 1890-91, seven foxes were released on the island to control the cats that had also become a nuisance. Between the cats and the foxes, birdlife was severely curtailed and it is no wonder that grasshoppers became abundant. With the removal of the foxes there was a noticeable increase in bird life (Saunders 1902).

Family Acrididae
Melanoplus sanguinipes (Fab.)

Nymphs were collected near the Met Station, Number 3 Lifesaving Station and in the Green Plains area in June and July. Adults were abundant at Old Main Station, Met Station and Number 3 Station from August to October.

Order Odonata (Dragonflies)

Good series of damselflies were easily collected around pond margins but the dragonflies were more localised in distribution and seemingly concentrated on narrow ridges between the arms or bays of Main Pond. Species determination in *Sympetrum* is very difficult with *rubicundulum* and *internum* being easily confused. Determinations were by J.E.H. Martin of the Biosystematics Research Centre in Ottawa.

Family Lestidae *Lestes congener* Hagen	One male was netted on the margin of Pond 12 in September. This is a widely distributed species which also occurs on the mainland.
Family Coenagriidae *Enallagma civile* (Hagen)	Common around the margins of Main Pond from July to September. Nymphs were also collected in July. This is a common mainland species.
Ischneura verticalis (Say)	Adults were common around margins of Main Pond from June to September. Brown females were less abundant in September. Nymphs were collected in July and September (Ottawa Survey). This species is also common on the mainland.
Family Aeschnidae *Anax junius* (Drury)	Nymphs were collected by the Ottawa Survey in July, producing adults in August. One specimen was collected and others seen hawking over Main Pond in August 1978. This is a strongly migratory species throughout North America.
Family Libellulidae *Sympetrum internum* Montgomery	Adults were common in September around the margins of Main Pond. This species is widespread on the mainland.
Sympetrum corruptum (Hagen)	Two dragonflies of this species were collected by the Ottawa survey in July. This species has not been taken on mainland Nova Scotia and is not normally taken northeast of Southern Ontario and New York State.
Sympetrum rubicundulum Say	Nymphs and adults collected by the Ottawa survey in July may have been *S. internum,* since this species was not recorded by the Ottawa survey and *rubicundulum* was not seen by the author.

Order Heteroptera (True bugs)

The arrangement of this list follows that used in Leonard's Insects of New York. Identifications were by D. Brown and K.G.A. Hamilton of the Biosystematics Research Centre in Ottawa.

Family Lygaeidae	
Cymus luridus Stal.	Swept from cranberries near Pond 3 in June.
Blissus hirtus Mont.	Common under boards, especially at Old Main Station in April, June and September. Nymphs were taken at Old Main Station in September.
Eremocoris ferus (Say)	Taken at lights at Met Station in June and September.
Family Ploiariidae	
Metapterus annulipes Stal.	A single specimen taken at light at Met Station in September.
Family Nabidae	
Nabis sp. nr. *limbatus* Dahl.	Occasional specimens taken at lights at Met Station in June and September. This species was also found on the upper shore of a pond near West Light in June.
Family Miridae	
Leptopterna dolabratus (L.)	Nymphs and adults swept from dune vegetation; Green Plains in July and Old Main Station in September.
Adelphocoris rapidus (Say)	Adults were common at lights at Met Station in August and September. Nymphs were swept from vegetation in Green Plains area in July.
Trigonotylus sp.	A single specimen was taken at light at Met Station, 12 August 1978.

Family Saldidae ***Salda obscura*** Prov.	Collected on shores of Main Pond in July.
Saldula boucherville (Prov.)	Also collected on shore of Main Pond in July.
Saldula palustris (Douglas)	Collected on shores of Main Pond and Lily Pond in June and July.
Saldula xanthochila (Fieber)	On shores of Main Pond, June July and September.
Family Notonectidae ***Notonecta borealis*** Bo.& H.	Adults and early nymphs were collected in shallows at the edge of Pond 3 in July.
Family Corixidae ***Sigara decoratella*** (Hfd.)	In shallow water of Main Pond in June, July and August; nymphs in July. Specimens from Sable Island are smaller than those from the mainland.
Trichocorixa verticalis Fieb.	In shallows of Main Pond from June to September, nymphs in July.

Order Homoptera (Bugs)

The arrangement of this list follows that used in The Insects of New York by Leonard. Identifications were provided by K.G.A. Hamilton of the Biosystematics Research Centre in Ottawa.

Family Cicadellidae ***Aphrodes bicinctus*** (Sch.)	Leafhoppers were found under boards at Old Main Station in September. Nymphs were swept from vegetation near Met Station in July.
Streptanus deceptus (Sand and DeL.)	Under boards at Old Main Station in September.
Amplicephalus inimicus (Say)	Nymphs swept from dune vegetation in Green Plains area in July.
Elymana sulphurella (Zett.)	One specimen swept from dune vegetation near Met Station in September.

Macrosteles quadrilineatus (Forbes)	Swept from vegetation on pond margins near Met Station and also in Green Plains area in July.
Family Cercopidae *Philaenus spumarius* (L.)	The Meadow Spittlebug was abundant in the vicinity of Met Station in July, August and September. Most, if not all, colour pattern variations are represented.
Family Membracidae *Strictocephalus basalis* (Wlk.)	Swept from vegetation on the dunes near Met Station in September.
Family Delphacidae *Liburnia* sp	Abundant on herbaceous vegetation around Number 3 Station in September.
Family Aphididae	Several undetermined species of aphids are present on the island, including a black species on Beach Pea, *Lathyrus palustris* L., in July; and orange and grey species on the subterranean parts of American Beach Grass, *Ammophila breviligulata* Fern.

Order Mallophaga (Chewing Lice)

The following six species of bird lice from Sable Island were identified by J.E.H. Martin of the Biosystematics Research Centre in Ottawa.

Family Philopteridae *Saemundssonia lari (F.)*	From the head and neck of a Herring Gull, 28 May 1969, A.R. Lock.
Halipeurus sp.	From a Greater Shearwater, June 1971, A.R. Lock.
Quadraceps sp.	From the head of a Herring Gull, 28 May 1969,

Family Menoponidae	
Procellariphaga paulula (Kellogg and Chapman)	From a Greater Shearwater, June 1971, A.R. Lock.
Ancistrona vagelli (F.)	From a Greater Shearwater, July 1976, Doug Nakashima.

Order Thysanoptera (Thrips)

Only one species of thrips was encountered, although numerous species are doubtless present on the island. Identification is tentative and was arrived at by consulting Stannard (1968).

Family Phlaeothripidae	
Liothrips citricornis (Hood)	Abundant in flowers of Ox-eye Daisy, *Chrysanthemum leucanthemum* L., in the Met Station Compound, 23 July 1976.

Order Neuroptera (Lacewings)

Lacewings were found resting on the walls of buildings and many were trapped in the sunporch of the staff house at the Met Station. The twelve chrysopids were initially believed to belong to one species and no effort was made to search for others. Determinations were provided by J. Allan Garland of Macdonald College. The five species listed here are common throughout Atlantic Canada.

Family Chrysopidae	
Chrysopa oculata Say	One female, 11-14 August 1978.
Chrysopa rufilabris Burm.	Two males taken in July and August.
Chrysopa harrisii Fitch	Eight specimens, July, August, October.
Chrysopa carnea Stephens	One female, 11-14 August 1978.

Family Hemerobiidae	
Hemerobius stigmatarius Fitch	One specimen taken in a light trap at Met Station, 7 October 1982.

Order Coleoptera (Beetles)

The following list of beetles draws heavily on Howden's report, in The Fauna of Sable Island and its Zoogeographic affinities, where this order of insects received the most attention. Identifications of the Nova Scotia Museum material were provided by E.C. Becker, D.E. Bright, A. Smetana and J.M. Campbell of the Biosystematics Research Centre in Ottawa. (OS) refers to the Ottawa survey of 1966-67.

Family Cicindelidae	
Cicindela hirticollis Say	Common along the seaward edge of dunes along both North and South Beaches, rarely encountered inland except near pond margins. June through September. Mainland Nova Scotia records are all from sandy beaches on the coast.
Cicindela tranquebarica Hbst.	Very common, this tiger beetle is an active day-flier over loose, exposed sand inland, particularly along roadways, June through September.
Family Carabidae	
Carabus serratus Say	One specimen was found under a board near Met Station (Howden). Scarce on the mainland, a single specimen from Tidnish, Cumberland Co., is in the Nova Scotia Museum collection.
Calosoma calidum F.	Common in tall grass around the foundations of buildings, also found occasionally on the dunes. June to September.
Calosoma frigidum Kby.	Taken at black light near West Light in July (OS), and one found wandering on the dunes near Met Station in September.
Dyschirius sphaericollis (Say)	Abundant on wet sand on lake shores, active mainly at night but also by day. Numbers were seen floating on the surface of shallow water on South Beach, north of Wallace Lake in June and July. In August, larvae were observed travelling just below the surface on wet sand flats around ponds, making dendritic networks of ridges. Pupation took place at the ends of tunnels, located under boards, where adults also congregated.
Bembidion mimus Hayw.	Occasionally found under boards in damp areas,

	June to September (Howden)
Bembidium sejunctum Csy	Common under driftwood, mainly on North Beach, June to September (Howden). Also common under boards at Old Main Station in April.
Bembidion versicolor LeC.	A single specimen was collected on the shore of Pond 3 in July.
Bembidion sp. nr. ***castor*** Lindroth	A single specimen from the shore of Pond 3 in July.
Pterostichus mutus (Say)	Common under boards and driftwood, also in grass around foundations and at light. June to September. This species was abundant under rotting lumber at Old Main Station in April.
Amara aenea (DeG.)	Recorded by Howden in June and July, also on the shore of Pond 12 and at Met Station lights in June.
Amara familiaris Dft.	Moderately abundant in dune areas behind beaches in June and July (Howden). Also under boards at West Light in April and on dunes near Met Station in June.
Amara impuncticollis (Say)	One beetle collected in July (Howden).
Amara quenseli (Schonh.)	Under boards and litter inland, quite common around Met Station buildings July to September, mostly in September. Sable Island specimens are unusually large and flat and belong to the form *silvicola* Zimm. named in Europe (Lindroth).
Amara musculis (Say)	Common at lights and under boards at Met Station, June to September. June specimens are pale, orange brown, September specimens are much darker. Howden lists this species under *A. rubrica* (Hald.).
Amara torrida (Panzer)	Common under boards and debris away from the beaches, April to September, most abundant in September.
Agonum cincticolle (Say)	Common inland, under debris, June to September (Howden).
Agonum gratiosum Mann.	Found occasionally, under debris near ponds in June and July (Howden).
Agonum placidum (Say)	Common under boards at Old Main Station in April and June; at lights and under debris at Met Station in June and July. The Ottawa survey found

this species most commonly under debris near ponds, June to September.

Agonum sordens (Kby.) — Common under driftwood on beaches, June to September (Howden), also common under boards at Old Main Station in April and June.

Agonum harrisi LeC. — Two beetles in a pitfall trap at the edge of Pond 4 in July.

Metabletus americanus (Dej.) — Three beetles were found under boards by the Ottawa survey in June and July. This beetle is found across North America and is wing dimorphic. The specimens collected on Sable Island were wingless.

Cymindis cribricollis Dej. — One beetle in July (Howden) and one at West Light in August.

Cymindis neglecta Hald. — One specimen at light at Met Station in July, another in September.

Chlaenius pensylvanicus Say — In pitfall traps and under debris near ponds, June to September.

Chlaenius sericeus (Forst.) — One specimen under dry horse dung in September. On the mainland this species is associated with carrion near streams and ponds.

Harpalus affinis (Schrk.) — Under boards near ponds and around Met Station foundations in June and July. Introduced from Europe, this beetle is also present on the mainland.

Harpalus pleuriticus Kby. — One specimen was collected under debris near a lake margin in June (Howden).

Harpalus erythropus Dej. — Fairly common under boards inland, June to September. Howden listed this species under *H. rufipes* (DeG.)

Harpalus longicollis LeC. — One specimen near West Light, 5 August 1969, another 12 September 1977.

Harpalus fallax LeC. — One specimen, 3 August 1969, near West Light.

Stenolophus fuliginosus Dej. — Under debris July to September.

Omophron labiatum (F.) — This is a common beetle on damp upper shores of ponds, active at night and occasionally during the day, June to September.

Omophron tesellatum Say	Howden found this species in the same habitat and localities as *O. labiatum*. A single specimen was collected on wet sand beside Pond 12, 3 August 1969. The author could not locate this species in 1976-77 despite careful searching.
Family Haliplidae	
Haliplus immaculicollis Harris	Common in Main Pond, June to September.
Family Dytiscidae	
Bidessus affinis (Say)	Common in Main Pond, June to September
Hygrotus impressopunctatus (Schaller)	In ponds near West Light in June and July (Howden).
Deronectes griseostriatus (DeG.)	In ponds near West Light, June to September (Howden).
Hydroporus notabilis LeC.	Collected occasionally in Main Pond, June to September.
Hydroporus signatus Mann.	Common in Main Pond and Lily Pond, June to September.
Ilybius angustior (Gyll.)	Common in Main Pond, July to September.
Ilybius biguttulus (Germ.)	Common in Main Pond and attracted to lights at Met Station, July to September.
Colymbetes sculptilis Harr.	Collected in Main Pond, but most were taken at lights at the Met Station in July and August.
Family Hydrophilidae	
Hydrophilus triangularis Say	One specimen of this large water beetle was collected on the shore of Pond 7 by Zoe Lucas, summer 1978.
Anacaena limbata (F.)	In shallows of Main Pond near West Light, June and July
Enochrus hamiltoni (Horn)	In shallows of Main Pond near West Light, June and July.
Cercyon haemorrhoidalis (F.)	Common in horse dung, June and July.

Cercyon pygmaeus (Ill.)	One specimen in horse dung, July, (Howden).
Cryptoleurum minutum (F.)	In horse dung, June and July (Howden).
Family Silphidae *Thanatophilus lapponicus* Herbst	Common under carrion, especially seagulls, June to September.
Family Leiodidae *Leiodes assimilis* LeC.	Found flying at dusk and crawling at base of dunes along North Beach in the early evening, June to September (Howden).
Family Staphylinidae *Bledius basalis* LeC.	Two specimens were collected under a dead seagull near the top of North Beach in July (Howden).
Bledius opaculus LeC.	Howden found this species mostly under dead seagulls at the top of South Beach. In June these beetles were encountered in large numbers, swarming like flies along the north shore of Wallace Lake. At other times they were found on wet sand at the edges of freshwater ponds.
Stenus dissentiens Csy.	Under dead grass and debris near pond margins in June and July (Howden).
Stenus gratiosus Csy.	Under dead grass and debris near pond margins in June and July (Howden).
Stenus juno (F.)	Under debris in moist areas away from beaches in June and July (Howden).
Euasthetus americanus Er.	Under dead porpoise on North Shore in June (Howden).
Paederus littorarius Grav.	Under dead grass and debris near pond margins. Some specimens were found on wet, sandy shores of ponds, June to September.
Neohypnus obscurus (Erich.)	Common under debris and horse dung, June to September (Howden's *Hypnogyra* sp. no. 1).
Gyrohypnus fracticornis Mull.	Under boards and debris on dunes, April to

	September (Howden's *Hypnogyra* sp. no. 2).
Philonthus alumnus Er.	Under debris and carrion, June and July. This is a southern species (Howden).
Philonthus couleensis Hatch	Under debris in June and July (Howden)
Philonthus cruentatus (Gmel.)	Under debris and horse dung, June and July.
Philonthus debilis (Grav.)	Three specimens collected in June and July (Howden).
Philonthus fuscipennis (Mann.)	Under dead grass, boards and debris near pond margins in June and July, also under boards at Old Main Station in April.
Philonthus lomatus Er.	Under debris, horse dung, carrion and boards, June to September.
Philonthus politus (L.)	Under carrion and horse dung, June and September.
Philonthus sordidus (Grav.)	Under carrion, horse dung, debris, boards and driftwood on North Beach as well as inland, April to September.
Philonthus varians (Payk.)	One specimen in July (Howden).
Philonthus varius (Gyll.)	Under debris and horse dung, June to September.
Philonthus vulgatus Csy.	Under debris and carrion, June to September (Howden).
Ocypus ater (Grav.)	Under boards from Old Main Station to Number 3 Lifesaving Station, July to September.
Creophilus maxillosus villosus (Grav.)	Under carrion and horse dung, June to September. Extremely abundant under an old horse carcass near East Light in June.
Heterothops fusculus LeC.	Two specimens in July and September (Howden).
Quedius mesomelinus (Marsh.)	In old starling nest in July (Howden).
Sepedophilus testaceus (F.)	Under boards at Old Main Station, April to September. The single specimen of *Conosoma pubescens* Payk. recorded by Howden belongs here.
Tachyporus mexicanus Sharp	Under boards, debris and dead gulls at Old Main Station in April, and on upper shores of ponds, in

	horse dung and under dead gulls in June. Howden's *T. jocosus* records belong here.
Mycetoporus americanus Er.	A southern species, taken by the Ottawa survey, June and July.
Atheta sp.	Extremely common under horse dung and litter, June and July (Howden).
Gnypeta sp.	Six specimens collected in July (Howden).
Falagria dissecta Er.	Under debris near ponds, June to September (Howden).
Oxypoda sp. 1	Two specimens in July (Howden).
Oxypoda sp. 2	Two specimens, June and September (Howden).
Oxypoda sp. 3	A large series was taken under boards at Old Main Station and from pitfall traps on dunes in April.
Family Histeridae	
Hister curtatus LeC.	Common under carrion in July.
Hypocaccus fraternus (Say)	Common under horse dung and carrion, also found wandering on sand, June to September.
Baeckmanniolus palmatus (Say)	Under horse dung and carrion, also found on surface of sand in June and July.
Family Oedemeridae	
Nacerda melanura (L.)	Wharf borer beetles were abundant on and under driftwood on North Beach, occasional elsewhere in July.
Family Anthicidae	
Malporus formicarious (Laf.)	Common in litter and dead grass around pond margins, June to September (Howden).
Sapintus pusillus (Laf.)	In dead vegetation around pond margins (Howden).

Family Elateridae *Negastrius delumbis* (Horn)	A common, flightless, coastal sand dune species found at the base of Beach Grass and Cakile on dunes bordering South Beach. Beetles frequently wander away from plants, at which time they are easily spotted. Also found crawling on sand at night (Howden), June and July.
Dalopius pallidus Brown	Found under boards at Old Main Station in April and swept from a cranberry patch beside a pond near Met Station in June. In the Ottawa survey this species was swept from herbaceous vegetation. June to September.
Agriotes fucosus (LeC.)	Under boards in mixed vegetation near Met Station and West Light in June and July.
Ampedus subtilis (LeC.)	Several beetles collected in damp, rotting wood at Old Main Station in June.
Family Dermestidae *Dermestes lardarius* L.	In staff house at Met Station in June and July, larvae not located.
Family Heteroceridae *Neoheterocerus fatuus* (Kies.)	Common in shallow edges of ponds in June and July.
Family Eucinetidae *Eucinetus terminalis* LeC.	Under boards in cranberry patches, June to September (Howden).
Family Byrrhidae *Cytilus alternatus* (Say)	Near pond margins, and under boards, June and July (Howden).
Family Nitidulidae *Omosita colon* (L.)	On and under old carrion in June and July (Howden).

Omosita discoidea F.	On wet shore of Main Pond near West Light in June.
Family Cryptophagidae	
Cryptophagus fallax B-B.	Two specimens in July, presumably in Sparrow nests (Howden).
Anchicera ochracea Zimm.	In straw and sparrow nests, July to September (Howden).
Family Lathridiidae	
Lathridius minutus (L.)	Common in straw and sparrow nests July to September (Howden).
Thes bergrothi (Reitt.)	One specimen from straw in July (Howden).
Microgramme ruficollis (Marsh.)	In straw and chicken litter in July (Howden).
Melanophthalmia sp. nr. *cavicollis* Mann.	In dead vegetation around pond margins, June to September (Howden).
Melanophthalmia sp. nr. *pusilla* Mann.	In dead vegetation around pond margins, June to September (Howden).
Family Mycetaeidae	
Mycetaea hirta (Marsh.)	One specimen in July (Howden).
Family Coccinellidae	
Coccinella undecimpunctata L.	A common species on mixed vegetation inland, these beetles were also found on wet, muddy sand on the upper shores of ponds, June to October.
Coccinella transversoguttata richardsoni Brn.	One specimen on dunes near Henry House, four on goldenrod flower heads near Met Station, 7 October 1982.
Coccinella septempunctata L.	Two specimens of this recent introduction to the mainland were found on goldenrod flower heads near Met Station, 7 October 1982.

Family Tenebrionidae	
Blapstinus metallicus (F.)	Occasionally found crawling on sand inland, June to September (Howden). Also found under boards at Old Main Station in April and under boards in several localities in June.
Ephalus latimanus (LeC.)	A flightless, coastal sand dune species commonly found at night on sand in the lower parts of dune grass formations, June to September (Howden).
Tribolium destructor Uytten	Two specimens of this flour beetle were found in the staff house at Met Station in September.
Family Cucujidae	
Oryzaephilus mercator Fauvel	Several specimens found in association with spilled flour in kitchen closets in the staff house at Met Station in June and September.
Family Ptinidae	
Ptinus fur (L.)	Several beetles found feeding on dead insects in a quonset hut at West Light in July.
Ptinus ocellus Brown	One specimen found in the staff house at Met Station in June.
Family Scarabaeidae	
Onthophagus nuchicornis L.	Common in horse dung in June and July.
Aegialia arenaria (F.)	A common, flightless beetle found crawling and blowing around on dunes. Abundant in April near Old Main Station, it was also commonly encountered from June to September. This species is known only from Cape Cod and Sable Island.
Aegialia spissipes LeC.	Found crawling along the base of high dunes on North Beach in early evening in July (Howden).
Aphodius fimetarius (L.)	Common under boards in April, in horse dung in June and July.
Aphodius subterraneus (L.)	In horse dung and crawling on dunes, June to August.
Serica tristis LeC.	Found blowing around and crawling on dunes in daytime, June to September.

Phyllophaga drakii (Kby.)

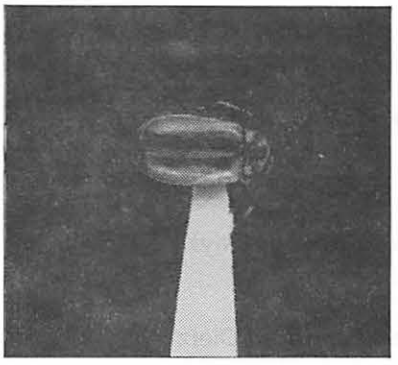
June beetles are most active in the early evening, feeding on herbaceous plants. They are abundant at lights from June to September, with peak activity in July.

Family Chrysomelidae
Phaedon sp. nr. ***oviformis*** LeC.

Around pond margins in June and July.

Pyrrhalta sablensis Brown

Common in July 1966-67 on cranberry east of Lily Pond. Careful searching by the author in 1976-77 failed to yield a single specimen.



Pyrrhallta sabensis Brown

Altica potentillae Brown

Feeds in June and July on *Potentilla anserina* L. (Howden).

Mantura floridana Crotch

Feeds on *Rumex crispus* L. in June and July (Howden).

Phyllotreta chalybeipennis (Crotch)

Feeds on *Cakile edentula* (Bigel) growing near the top of South Beach in June and July.

Family Curculionidae
Otiorhynchus ovatus (L.)

Found under boards and feeding on leaves of a weedy plant near West Light in April, also under a dead gull, crawling on dunes and under boards in grassy, herbaceous areas, June to September.

Otiorhynchus sulcatus (F.)

Mostly under boards and driftwood on dunes, April to November, often comes to lights in June and July.

Sitona scissifrons Say

Several colour morphs of this species occur on

	Sable. Most weevils have been taken by sweeping Beach Pea, *Lathyrus palustris* (L.), others have been found under boards at Old Main Station. April to September.
Hypera nigrirostris (F.)	One specimen in July (Howden).
Hypera punctata (F.)	Two specimens taken in July by sweeping herbaceous vegetation near ponds (Howden).
Hyperodes sp.	Most were taken by sweeping herbaceous vegetation near ponds, others have been found crawling on damp upper shores of ponds in June and July. One specimen from under a board at Old Main Station in April.
Notaris bimaculatus (F.)	Found in a variety of habitats, usually under boards on the beaches and dunes, occasionally found wandering on the sand. April to September.
Rhynchaenus pallicornis (Say)	Swept from herbaceous vegetation near ponds, June to September (Howden).
Ceutorhynchus hamiltoni Dietz	One specimen taken on *Cakile edentula* (Bigel) in July (Howden).
Rhinoncus sp. nr. ***sulcicollis*** Fahr.	One specimen in July (Howden).
Anthonomus signatus Say	On herbaceous vegetation near ponds, June to September (Howden).
Campylirhynchus castor (F.)	Mostly on Dock, *Rumex maritimus* L., in June and July also found on damp upper shores of ponds.
Sphenophorus cariosus (Oliv.)	On damp upper shores of ponds from June to August. This is a southern species, distributed from Cape Cod to Florida and Louisiana.
Dryophthorus americanus Bedel	Abundant in and under rotting driftwood in a grassy depression at the edge of dunes west of Number 3 Livesaving Station.

Order Trichoptera (Caddisflies)

Four species have been found on Sable Island and, since they are attracted to lights, are easily collected. All are common on the mainland. Specimens were identified by F. Schmid at the Biosystematics Research Centre in Ottawa.

Family Phryganeidae *Agrypnia vestita* (Wlk.)	Occasional specimens at lights at Met Station, several taken in Agriculture Canada light trap, August.
Family Limnephilidae *Platycentropus radiatus* Say	Several specimens at lights at Met Station, July to September.
Limnephilus submonilifer Wlk.	Adults were very common at lights at Met Station, June to September
Family Leptoceridae *Oecetis inconspicua* Wlk.	Abundant around pond margins at dusk, July to September.

Order Lepidoptera (Moths and Butterflies)

The arrangement of this list follows the Check List of the Lepidoptera of America North of Mexico (Hodges et al 1983). It is anticipated that the following records are far from complete and careful collecting and rearing of larvae will add a considerable number of species, particularly Microlepidoptera and those which are not readily attracted to lights. Identifications were by E.W. Rockburne and E. Munroe of the Biosystematics Research Centre in Ottawa; by D.C. Ferguson and R.W. Hodges of the United States National Museum; and by comparison with the collection at the Nova Scotia Museum.

Family Tineidae *Monopis monachella* (Hbn.)	Very common on the island, coming to lights in July and August. Larvae were found in June feeding on feathers on a gull carcass, below the surface of the sand, with chimney-like tubes up to 2 cm long leading up to the surface. Larvae were also found feeding on horse hair on a dry carcass, also 2 cm below the surface of the sand.
Family Gracillariidae *Caloptilia vacciniella* (Ely)	One specimen netted, 13 August 1978, on dunes south of Met Station.

Phyllonorycter sp. nr. *scudderella* (F.& B.)	One specimen reared from a larva on Bayberry, *Myrica pensylvanica* (Loisel), emerged during the winter, 1972.
Family Oecophoridae	
Agonopterix lythrella (Wlsm.)	Two moths were taken at lights at Met Station in September. This species is abundant on the mainland, where the larvae feed on *Lythrum alatum* Pursh and *Hypericum* sp.
Depressaria alienella Bsk.	A very common moth at lights around Met Station in August and September. There are only two records from mainland Nova Scotia, dating back to 1939.
Hofmannophila pseudospretella (Staint.)	One specimen, in the staff house at Met Station, 10 September 1977. This is a common species on the mainland and has been reared from dried corn in Halifax.
Family Blastobasidae	
Glyphidocera septentrionella Bsk.	Abundant at lights at Met Station in late July and early August.
Family Coleophoridae	
Coleophora glaucicolella Wood	Moths were netted in the same locality along with *C. bispinatella.* Larvae were collected on *Juncus canadensis* Gay and *Juncus articulatus obtusatus* Engelm. in September. This coleophorid is found on both sides of the Atlantic Ocean and has been reared on several species of *Juncus.*
Coleophora bispinatella McD.	Moths were netted around *Juncus* on the north shore of Main Pond, 23-26 July. Recorded only from Nova Scotia, *C. bispinatella* has been reared on several species of *Juncus.*
Family Gelechiidae	
Monochroa sp.	Common at lights at Met Station, 23-26 July 1976.
Aristotelia sp.	Common at lights at Met Station in August and September, also reared from a larva collected on

	Bayberry, *Myrica pensylvanica* (Loisel), collected in mid July, emerged 4 August 1980.
Lita sp.	A greyish-brown gelechiid with rust fringes and rust streaked forewings was common at light, 6-8 October 1981.
Chionodes arenella (Fbs.)	Quite common at lights in August and September at Met Station and West Light.
Chionodes sp.	Two specimens similar to the preceeding species but with narrower forewings and pale hindwings, at light at Met Station, September 1977.
Filatima sp.	Two specimens at light, 8-12 September 1977.

Family Yponomeutidae

Atteva punctella (Cram.)	One specimen at light, 24 September 1981. The larva of this tropical migrant feeds on *Ailanthus*. This is the first record of this species in Nova Scotia.

Family Tortricidae

Bactra furfurana (Haw.)	Moths were common around the north shore of Main Pond in late July. On the mainland the larvae feed on *Juncus* and *Scirpus*.
Olethreutes bipartitana (Clem.)	Three specimens were netted at Met Station and Number 3 Lifesaving Station in June.
Olethreutes cespitana (Hbn.)	Numbers of these moths came to a 15 watt u/v light set beside an Iris patch near Met Station in late July. Several more were taken in August at lighted basement windows at Met Station. The Forest Insect Survey records this species mainly on Poplars.
Olethreutes sp.	An undetermined species taken by D.C. Ferguson, 11-13 August 1978.
Phaneta sp.	Common at light in August and September. A faintly marked species with cream forewings and dark grey hindwings. Does not resemble any mainland Nova Scotia species.
Eucosma dorsisignatana (Clem.)	Common at lights at the Met Station in September.

	Larvae and pupae collected in August, boring in the roots of Goldenrod, *Solidago sempervirens* L., produced adults in September. Two forms occur on the mainland: The normal form has the dark median area extending narrowly to the hind margin; in the rare, second form the dark area is broadly rounded and does not reach the hind margin. Only the second form has been found on Sable Island.
Eucosma derelecta Heinr.	Occasional specimens at light, July to September.
Notocelia culminana (Wlsm.)	Four specimens at light in September, closely resembling series from the mainland but smaller and darker. Reared from larvae on rose on the mainland.
Gretchena delicatana Heinr.	One specimen at light at Met Station, 14 June 1977.
Rhopobota unipunctana geminana (Steph.)	Very active on warm, sunny days, flying over cranberry and heather patches in July. The larva feeds on cranberry.
Ancylis subaequana (Zell.)	One moth at light at Met Station in July.
Ancylis maritima Dyar	A common diurnal species netted around Beach pea, *Lathyrus maritimus* (L.), on the dunes north of Main Pond in June, one specimen at light in August. This species has been reared from Beach pea on the mainland.
Croesia curvalana (Kft.)	At light at Met Station in late July, also netted near Number 3 Lifesaving Station.
Acleris fragariana Kft.	One specimen netted at Old Main Station in September. A series of what appears to be this species, but with many specimens of both sexes lacking the orange basal area, was reared from larvae on *Aronia prunifolia* (Marsh). The moths emerged 15 September from larvae collected in August.
Acleris sp.	A single specimen was reared from a larva on Cranberry, *Vaccinium macrocarpon* Ait., collected 11 September 1977 and emerged 27 October. This appears to be conspecific with a specimen from Kennebunkport, Maine, in the USNM collections.
Argyrotaenia repertana Free.	At lights at Met Station in late July.

Choristoneura obsoletana (Wlk.)	Common at light at Met Station from the end of July to mid August.
Choristoneura fumiferana (Clem.)	The Spruce budworm was common at lights and flying over dunes by day, 22-23 July 1976. Evidently these were strays from the mainland. On Cape Breton Island larvae have been observed to feed on Juniper which is common on Sable. However, no budworms were collected 1977-81.
Archips purpurana (Clem.)	Common at light at Met Station in August, a single specimen in September. The larvae probably feed on Blackberry, *Rubus* sp., on Sable Island.
Ptycholoma peritana (Clem.)	At light at Met Station, July and August.
Sparganothis xanthoides (Wlk.)	At light at Met Station in late July.
Sparganothis daphnana McD.	At lights at Met Station in July and reared from larvae on Bayberry, *Myrica pensylvanica* Loisel, emerged 2 August 1980.
Sparganothis salinana McD.	Reared from larvae on *Solidago sempervirens* L., emerged in August. Collected at lights at Met Station in August and September.
Platynota idaeusalis (Wlk.)	At light at Met Station in July.

Family Cochylidae

Aethes rutilana (Hbn.)	One specimen netted on dunes near Met Station in July. The larva feeds on Juniper.
Hysterosia sp. nr. ***angulatana*** Rob.	A single specimen at light near Pond 3, 11-14 August 1978.
Hysterosia sp. nr. ***temerana*** Bsk.	Several specimens at light near Pond 3 in August 1978, also one at West Light, 3 August 1969.

Family Pieridae

Colias philodice Godt.	One battered female was netted 13 June and another sighted. These were probably strays from the mainland although clover, the larval foodplant, grows sparingly on the island.

Family Nymphalidae

Vanessa virginiensis (Drury)	Occasional adults were sighted or collected in August and September. Larvae were common in September in Pearly Everlasting, *Anaphalis margaritacea subalpina* Gray, flower-heads.
Vanessa atalanta (L.)	One specimen taken in a light trap, 16 September 1981, was probably a stray.

Family Pyralidae

Scoparia biplagialis bellaeislae Mun.	Three specimens at Met Station lights, 8-12 September 1977, one, 12 August 1978.
Ostrinia nubilalis (Hbn.)	One specimen at light near Met Station, 12 August 1978. This is the European Corn Borer, a well known migrant.
Fumibotys fumalis (Gn.)	At light near Met Station, 11-13 August 1978.
Udea rubigalis (Gn.)	Netted near West Light, 25 July 1976.
Nomophila nearctica Munroe	One specimen netted, 22 July 1976, near Met Station, two at light in mid August 1978.
Spoladea recurvalis (F.)	One specimen of this southern migrant at light, 6 October 1981.

The larvae of the next eight species, the crambids, live in silken tubes in the earth and feed on the roots, stems and blades of grasses and other low plants.

Crambus perlellus innotatellus Wlk.	Netted at dusk on dunes, July to September.
Crambus leachellus (Zinck.)	This is the most abundant crambid on the island, readily attracted to light and frequently netted on the dunes, particularly at dusk, July to September.
Crambus caliginosellus Clem.	Scarce, one specimen netted, another at light at Met Station, 22-25 July.
Raphiptera argillaceela minimella (Rob.)	Several specimens netted in July and one in September.
Agriphila ruricolella (Zell.)	Flying over dunes by day and at light after dusk in September.
Agriphila vulgivagella (Clem.)	Eight specimens in September, two netted at Old Main Station and six at light at Met Station.

Pediasia trisecta (Wlk.)	Common, active over the dunes by day, and at lights at night, June to August.
Fissicrambus mutabilis (Clem.)	At light at Met Station in July.
Acrobasis rubrifasciella Pack.	This alder feeder was taken near Met Station, 11-13 August 1978. There is no alder on the island.
Pima albiplagiatella (Pack.)	An active day-flyer, this moth was also taken at lights from June to September. The larva can be found in Beach Pea, *Lathyrus maritimus* (L.), pods in September.
Pyla fusca (Haw.)	Occasional specimens at light in August and September. This species could be resident since heather, blueberry and cranberry, its reported foodplants, grow on the island.
Dioryctria reniculelloides Mun.& Mutuura.	Three specimens at light 22-25 July 1976. These are obviously strays since no spruce, fir or hemlock, the larval foodplants, grows on the island.
Elasmopalpus lignosellus (Zell.)	One specimen of this migrant at light at Met Station, 10 September 1977.
Homoeosoma electellum (Hulst.)	Common at lights from July to September. Larvae found feeding in flower heads of Pearly everlasting, *Anaphalis margaritacea subalpina* Gray, probably belong to this species.

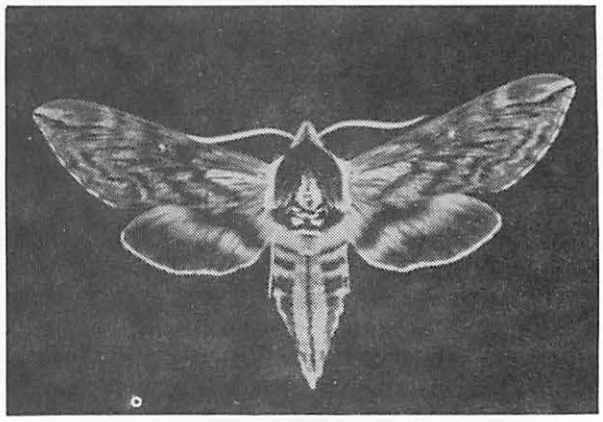
Family Pterophoridae

Platyptilia pallidactyla (Haw.)	An active day flyer in July and August, this species was also taken at lights at Met Station and West Light.

Family Sphingidae

Agrius cingulata (F.)	Two specimens at light, 18 September 1981. There are frequent records of the Sweetpotato hornworm, a strong migrant from the subtropics, reaching mainland Nova Scotia, but it cannot breed there.
Sphinx gordius Cram.	Moths are abundant at lights in June and July. The green larvae with black tails and mauve-over-white diagonal streaks are often found struggling

in loose sand on roadways in September. In captivity they readily accept Bayberry, *Myrica pensylvanica* Loisel, which is probably their principal foodplant on Sable. On the mainland they feed on Sweet fern, *Comptonia peregrina* (L.), Sweet gale, *Myrica gale* L., and Blueberry, *Vaccinium* sp. (Ferguson 1954). Other authors list a much wider range of plants.



Sphinx gordius Cramer

Xylophanes tersa (L.)

One specimen at light, 18 September 1981. This is the first record of this subtropical migrant in Nova Scotia.

Family Arctiidae

Pyrrharctia isabella (J.E. Smith)

One specimen in a light trap at Met Station, 20 July 1985.

Spilosoma virginica (F.)

The cinnamon-brown 'Woolly Bear' larvae were abundant on Beach Pea, *Lathyrus palustris* (L.), in the vicinity of Old Main Station in August and September 1977-78. Pupae were abundant under boards in the same area in April 1976. The moths are attracted to lights from June to September. Ferguson reared one adult from a larva feeding on *Iris versicolor* L.

Apantesis parthenice (Kby.)

One specimen at light at Met Station, 11-13 August 1978.

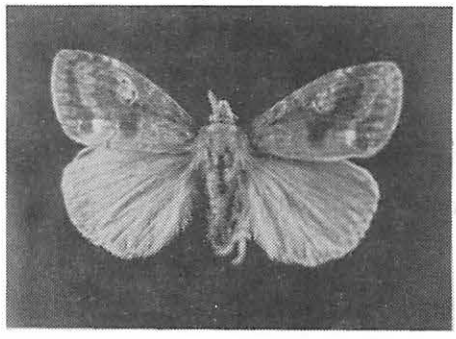
Cisseps fulvicollis (Hbn.)

One worn specimen at light, 12 August 1978, another, 3 September 1985.

Family Lymantriidae

Orgyia leucostigma sablensis Neil

Larvae were abundant in July 1976, defoliating Bayberry, *Myrica pensylvanica* Loisel, and *Iris versicolor* L. They were particularly noticeable when feeding on rushes in shallow water at the edges of ponds. In August 1978, a good series of adults was collected and larvae were still quite abundant. Male moths differ slightly from our mainland series in that they are darker, more orange, and less distinctly marked. The moths emerge in August and September. The wingless female climbs up the outside of the cocoon from which she emerged, mates and lays her eggs in a hard, white frothy mass. This is the overwintering stage and the larvae hatch in spring.



Orgyia leucostigma sablensis Neil

Family Noctuidae

Plathypena scabra (F.)

Two specimens netted 25 July 1976 and abundant at bait in mid August 1978. Another was taken at light, 7 October 1981.

Anticarsia gemmatilis Hbn.

One specimen taken at light at Met Station on 11 September 1977 and another, 20 September 1981. This is a common tropical species which strays northward in the fall, often in large numbers. The larva feeds on legumes but does not breed in the north.

Zale lunata (Drury)

A general feeder on trees and shrubs, it is possible that the single specimen taken at bait, 12 August 1978, is an island resident, though more likely it is a stray.

Caenurgina crassiuscula (Haw.)

One record from West Light, 8 August 1976, two

from Met Station, 12 August 1978. The Clover looper is a common species on the mainland.

Caenurgina erechtea (Cram.) — Several specimens were taken at bait, 11-14 August 1978. The larva also feeds on clover and low plants and could be resident.

Catocala ilia (Cramer) — One specimen at bait, 12 August 1978. An oak feeder, this moth must be a visitor.

Catocala relicta Wlk. — One specimen at bait, 12 August 1978. An Aspen feeder, this moth also has to be a visitor.

Catocala unijuga Wlk. — One fresh male at light at Met Station, 20 July 1976. This is too early for mainland Nova Scotia and suggests that this moth came from further south. Several specimens were taken at bait in mid August. The foodplants are Poplar and Willow.

Anagrapha falcifera (Kby.) — A single specimen taken at bait, 12 August 1978.

Syngrapha octoscripta (Grt.) — Abundant at light in late August 1980 and one specimen netted in bright sunlight, 8 September 1977. This species could be resident on the island since its foodplant, *Vaccinium*, grows here.

Syngrapha selecta (Wlk.) — Two specimens taken at light at Met Station, 21, 30 August 1980. This is a new species record for Nova Scotia, since all specimens recorded from the mainland as *S. selecta* are, in fact, *S. viridisigma* (Grt.). The Sable Island records are, no doubt, strays.

Syngrapha rectangula (Kby.) — One specimen at light, 23 July 1976. Probably a stray since this species feeds on spruce, hemlock and fir.

Trichoplusia ni (Hbn.) — A single specimen at bait, 12 August 1978. The larva feeds on low plants, including cabbage.

Diachrysia aeroides (Grt.) — Several specimens at light at Met Station in July and at West Light in August. Common at bait and light in mid August.

Autographa precationis (Gn.) — Occasional specimens, 23 July to 4 October, flying by day and taken at bait and light at night.

Apamea verbascoides (Gn.) — Two very worn specimens at bait, 12 August 1978. This species is common on the mainland.

Apamea lignicolora (Gn.) — One specimen at bait, 12 August 1978.

Apamea amputatrix (Fitch) — One fresh specimen taken at light in July, worn specimens at bait in mid August.

Apamea inordinata (Morr.) — Fairly common at light at Met Station in June and early July.

Apamea finitima Gn. — Much more common at light than *A. inordinata* at both West Light and Met Station, June to early July.

Agroperina dubitans (Wlk.) — Two fresh specimens at bait, 12 August 1978.

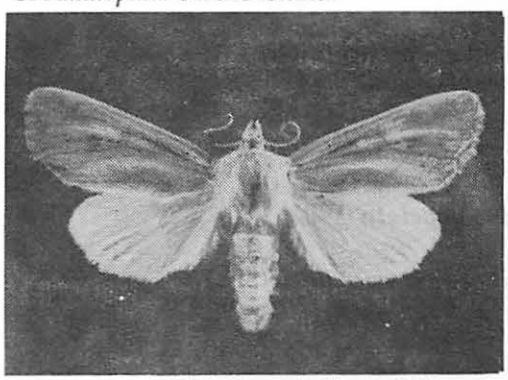
Protagrotis niveivenosa (Grt.) — Two specimens at light in late July, and two in mid August. This is a western species which is occasionally found in the Atlantic Provinces.

Protagrotis extensa Sm. — A freshly emerged male at light at Met Station, 12 August 1978.

Crymodes devastator (Brace) — Fairly common at light at Met Station in July, occasional specimens in August and September.

Luperina stipata (Morr.) — One specimen at Met Station, 11-13 August 1978. The larva is a stem borer in grasses (Forbes).

Ommatostola lintneri Grt. — One of the most abundant moths on the island, this species comes to lights from late July to early September. The moth was first recorded from Sable Island, 16 August 1899 (Ferguson, 1955, Forbes, 1954). *O. lintneri* is a characteristic species of East Coast sand dunes and is fairly common on the coasts of Nova Scotia. The larva was observed by Eric Quinter to feed on the subterranean parts of *Ammophila* on the island.



Ommatostola lintneri Grote

Oligia modica (Gn.)

Two worn specimens at bait, 12 August 1978. This is a common species on the mainland.

Oligia bridghami (G.& R.)

Occasional specimens at light, 4 August to 10 September, most abundant at bait.

Oligia mactata (Gn.)

One moth at light at Met Station, 10 September 1977.

Parastichtis discivaria (Wlk.)

Two specimens, one of the normal mainland brown form and the other pale grey, were taken at bait at Met Station. This is not a common species on the mainland and the grey form has not been taken there, although Ferguson found both species to be common at Cavendish Beach on Prince Edward Island.

Spartiniphaga inops (Grt.)

Three specimens taken in a light trap at West Light, 16 August to 3 September. As the name suggests the larva feeds on *Spartina*, where it is a stem borer. Marsh grass is not common on the island, but is found in ponds near West Light.

Hypocoena defecta (Grt.)

Two fresh males collected at light at Met Sation, 8 September 1977 and 12 August 1978 indicate that this species breeds on the island. The larva probably bores in the stems of marsh grasses.

Archanara subflava (Grt.)

Several fresh specimens taken at light near Ponds 3 and 4, 12-13 August 1978. The stem boring larvae were collected in *Scirpus validus* Vahl. by Eric Quinter in July 1980.

Macronoctua onusta Grt.

Two moths at light at Met Station, 20 September and 7 October 1981. The food plant, Iris, is plentiful and this species is no doubt resident, though scarce.

Helotropha reniformis (Grt.)

Common at bait at Met Station in mid August 1978. Most specimens are from *atra Grt*. The larva probably bores in the stems of Iris and other marsh plants.

Amphipoea velata (Wlk.)

One worn male at bait in mid August.

Amphipoea interoceanica (Sm.)

Three specimens were recorded from Sable Island (OS). It is possible that these records apply to *A. americana* or vice versa.

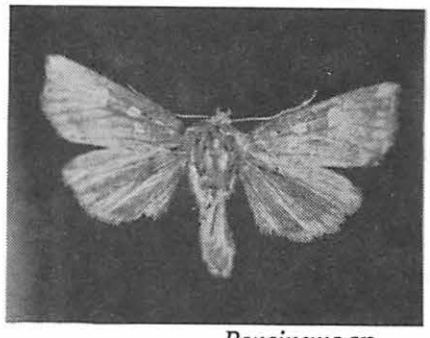
Amphipoea americana (Speyer)

Both forms of this moth were abundant at light and bait in August and September but were not

recorded in the Ottawa survey. Eric Quinter collected the larva boring in the crowns of Iris roots.

Papaipema sp. nr. ***nelita*** (Stkr.)

Thirteen specimens of an obviously new species of *Papaipema* have been taken between 12 August and 15 September at both West Light (OS) and Met Station. Eric Quinter, a specialist on this genus, visited Sable Island in July, 1980, with the express purpose of locating larvae of this moth, but was unsuccessful.



Papaipema sp.

Papaipema unimoda (Sm.)

A single specimen at light, 29 September 1981. Meadow Rue, *Thalictrum pubescens* Pursh., the host plant for this species, is quite plentiful between Met Station and West Light.

Hydraecia micacea (Esp.)

One specimen at light, 1 September 1982.

Enargia decolor (Wlk.)

A fresh specimen of this species was found on a Bayberry leaf on the dunes near Met Station, 8 September 1977. The larva is reported to be a general feeder on trees, principally poplars, so this moth was undoubtedly a stray.

Hyppa xylinoides (Gn.)

Fred Scott took one specimen of this moth at West Light 3 August 1969.

Nedra ramosula (Gn.)

Two specimens collected at Met Station in August. Two species of the larval foodplant, St. John's Wort, *Hypericum mutilum* L. and *Triadenum fraseri* (Spach) are common around freshwater ponds.

Magusa orbifera (Wlk.)

One specimen at light, 18 August 1981. This southern species was taken for the first time on mainland Nova Scotia in several localities, 11-20 August 1981.

Amphipyra tragopoginis (Cl.)	One specimen at light, 1 September 1982.
Proxenus miranda (G)	This is a common moth at lights from mid June to late July, a straggler in mid August.
Spodoptera frugiperda (J.E. Smith)	A southern migrant, common at bait in mid August, one specimen at light, 10 September.
Spodoptera ornithogalli (Gn.)	At bait, 12 August 1978 and at light, 4 October 1981. This is another southern migrant.
Spodoptera dolichos (F.)	One specimen of this southern migrant at light, 25 August 1982.
Elaphria festivoides (Gn.)	One specimen at light, 19 September 1981.
Xylena nupera (Lint.)	One specimen at light at Met Station in April, four in October. Ferguson reared this species from a larva collected on the island in August.
Sutyna privata (Wlk.)	Several specimens at light at Met Station, 21 September to 7 October. Sable Island specimens resemble those from Ontario and New York, mainland Nova Scotia specimens are dark and heavily marked.
Melanchra pulverulenta (Sm.)	One specimen was taken at West Light (OS). This species feeds on larch on the mainland.
Lacinipolia renigera (Steph.)	Occasional specimens at bait and lights around West Light and Met Station, July to September.
Lacinipolia lorea (Gn.)	The Ottawa survey found this species to be common at West Light. Several specimens have been taken in a light trap at Met Station in June and July. Specimens are generally smaller and more yellow than those from the mainland, but occasional normal specimens are also taken.
Faronta diffusa (Wlk.)	Common at light at Met Station in June, also taken at West Light (OS). The larva is reported to feed on grasses.
Aletia oxygala (Grt.)	Common at light at Met Station in July, stragglers in August, also at West Light (OS). After dusk, moths were abundant around Iris patches near Met Station and could be easily netted. The larva is a grass feeder, hiding at the base of tufts during the day.

Pseudaletia unipuncta (Haw.)

Common at lights, June to August. Two moths, possibly hibernating, were found under driftwood near Old Main Station in April, 1976. The Army worm larva is reported to feed on grasses in damp meadows.

Nephelodes minians Gn.

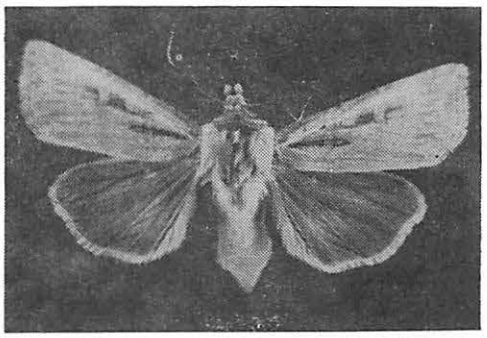
This is a very common moth at lights at Met Station, mid August through September. In Ontario this species is sometimes a pest of cereal crops.

Agrotis venerabilis Wlk.

One battered male taken on goldenrod, *Solidago sempervirens* L., flowers, 10 September 1977.

Agrotis arenarius Neil

This is a very distinct, pale cream agrotine which occurs only on Sable Island. The moths are readily attracted to ultra violet light but are rarely seen at incandescent lights. The colour and maculation of the moth is cryptic for resting on dead grass and this, together with its apparent abundance at Henry House and West Light, suggests that the larva is a subterranean feeder on roots and shoots of American Beach Grass, *Ammophila breviligulata* Fern.



Agrotis arenarius Neil

Agrotis ipsilon (Hufn.)

Common at light and bait, August to October.

Agrotis subterranea (F.)

This southern migrant was taken at light at Met Station, 29 September and 5 October 1981. It also occurs occasionally on the mainland.

Feltia herilis (Grt.)

Two worn specimens at light at Met Station, 12 August 1978. This species is common on the mainland.

Euxoa scandens (Riley)

Common at Met Station lights in late July and early August.

Euxoa mimallonis (Grt.)

This is a rare moth on the mainland but five specimens, including a very fresh female, were taken at light and bait on 12 August 1978. These could have been strays which arrived with *Catocala* species at this time.

Euxoa campestris (Grt.)

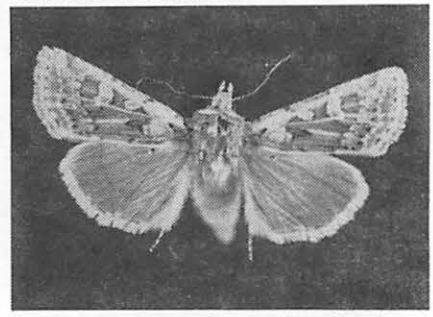
One female at light, 12 August 1978. There is but a single record of this species from mainland Nova Scotia.

Euxoa ochrogaster (Gn.)

One specimen in a light trap, 15 September 1985.

Euxoa detersa (Wlk.)

Originally described from Nova Scotia, this cutworm is not well represented in collections from the mainland where it is confined to coastal localities in the southern part of the province, but it is abundant on Sable Island where the population is comparatively pale and grey. The moths come to lights from mid August to the end of September. Larvae wander at night on the surface of dunes in July and numbers may be found trapped in the cement ditch surrounding the generator building at the Met Station.



Euxoa detersa (Walker)

Ochropleura plecta (L.)

Very common at lights in July at both West Light and Met Station.

Anicla infecta (Ochs.)

One male at bait, 12 August 1978. There is only one record of this species from mainland Nova Scotia.

Peridroma saucia (Hbn.)

Four fresh specimens at light at Met Station in June, one in mid August and another 30 October 1981. The Ottawa survey also took one specimen at West Light.

Spaelotis clandestina (Harr.)

One specimen at light at Met Station 15 June 1977,

	another at West Light (OS). On the mainland this species flies from early July to mid August.
Eurois occulta (L.)	Common at bait at Met Station in mid August, one battered specimen at light in September. Larch is the principal host on the mainland.
Xestia adela Franc.	Abundant at ultraviolet light at Met Station, 3 September to 16 October 1981. This moth was also abundant on the mainland at the same time, though comparatively rare in former years.
Xestia dolosa Franc.	Abundant at lights at Met Station 19 July to 23 September. Sable Island specimens are smaller than those on the mainland and have paler hindwings. No differences were detected in genitalia.
Xestia smithii (Snell.)	Taken at bait in mid August and common at lights at Met Station, 8-12 September 1977, also at West Light (OS).
Xestia tenuicola (Morr.)	One specimen at light at Met Station, 31 August 1980.
Anaplectoides prasina (D.& S.)	One specimen at bait, 12 August 1978. The larva is a cutworm and the moth is common on the mainland.
Cryptocala acadiensis (Beth.)	Originally described from Halifax, this is a common species on mainland Nova Scotia. Six specimens were taken at light at Met Station, 12 August 1978.
Rhynchagrotis adulta (Gn.)	Common at light and bait at Met Station in mid August, two worn specimens at light 8-12 September 1977. These are late records, the mainland flight period ending 2 September according to Ferguson. Sable specimens are very dark.
Noctua pronuba L.	First recorded in Halifax in 1979, this European species has now become well established in Nova Scotia. A single specimen was taken at light at Met Station, 1 September 1981, another in August 1982, and eight were recorded in 1985. Unfortunately, the author has not had the opportunity to collect on the island recently and the Department of Agriculture light trap has not been successfully operated since that time.

Heliothis zea (Boddie)	This migrant was taken at lights in August 1976, September 1977 and August 1980.

Order Diptera (Flies)

The arrangement of this list follows McAlpine et al, 1981, 1987, Manual of Nearctic Diptera Volumes 1 & 2. Identifications were by D.M. Wood, M.E. Roussel, L. Forster, H.J. Teskey, B. Cooper, J.F. McAlpine, H.C. Walther and J.R. Vockeroth, all at the Biosystematics Research Centre in Ottawa, and by G.C.D. Griffiths at the University of Alberta. Biological notes have been taken from Stone, A., 1965. A Catalogue of Diptera of America North of Mexico.

Family Tipulidae	
Nephrotoma ferruginea (Fab.)	This was a common species at lights at Met Station from July to September.
Limnophila sp.	Most specimens were swept from herbaceous vegetation near freshwater ponds, June to September.
Family Psychodidae	
Psychoda sp.	Adults were found on the underside of a log in a wet hollow beside Met Station in September.
Family Culicidae	
Aedes vexans (Mg.)	One specimen was swept from vegetation on dunes near Met Station in June.
Family Ceratopogonidae	
Leptoconops (Holoconops) catawbee Boesel	A series of 42 specimens was netted by D.M. Wood, 5-15 July 1967, near West Light. According to J.A. Downes, these specimens are larger than typical mainland examples. The larvae must be in moist sand at the edge of ponds.
Family Chironomidae	
Chironomus tentans F.	This is the largest of the water midges on Sable

	Island and is not as common as other species. Found resting on vegetation near Met Station in July and around freshwater ponds in August and September.
Chironomus maturus Joh.	Swarms over vegetation bordering the north shore of Main Pond in June and July, not as abundant in August. This species was also collected under boards in April.
Glyptotendipes paripes (Edw.)	Swept from vegetation on margins of freshwater ponds in June and July.
Microtendipes pedellus (DeGeer)	Swarming over vegetation at edge of Pond 3 in June.
Family Tabanidae	
Hybomitra frontalis (Wlk.)	Three females and one male, netted in July in vegetation near the north shore of Main Pond. None were attempting to bite and none of the island residents had been bitten by or had noticed these horse flies.
Family Rhagionidae	
Chrysopilus quadratus group	Swept from vegetation at Met Station in July and August. The adults and larvae of this family are predaceous (Stone 1965).
Family Therevidae	
Psilocephala frontalis Cole	Swept from vegetation on dunes near West Light, Met Station and Number 3 Lifesaving Station. The larvae live in sand and are predaceous (Stone 1965).
Thereva cockerelli Cole	Netted on vegetation on the margins of Main Pond in June and July.
Family Asilidae	
Tolmerus snowii (Hine)	One specimen in July, several in August and September, netted between patches of vegetation on dunes near Met Station and at Number 3 Lifesaving Station.

Family Bombyliidae *Villa nigricauda* (Lw.)	One specimen, netted on dunes near Met Station in September. Larvae in this genus are parasitic on or in other insects and are predators on egg pods of grasshoppers (Stone).
Family Empididae *Rhamphomyia* sp.	Swept from a cranberry patch beside Pond 3 in June.
Platypalpus sp.	Swept from vegetation at Met Station and Number 3 Lifesaving Station in July.
Family Dolichopodidae *Dolichopus splendidus* Lw.	Netted in dune vegetation and caught in pitfall traps on pond shores in July.
Dolichopus plumipes (Scop.)	Netted in Met Station compound in July.
Chrysotus sp.	Netted in Met Station compound in July.
Family Lonchopteridae *Lonchoptera borealis* Curran	Under debris at Nova Scotia Camp in April. The larvae live under decaying vegetation (Stone).
Lonchoptera furcata (Fallen)	Shore of Pond 12, 20 July 1976.
Family Syrphidae *Syrphus torvus* O.S.	Crawling on North Beach near Old Main Station, 22 April 1976.
Sphaerophoria sp.	On flowers on dunes near Nova Scotia Camp in June and at Met Station in September. Larvae are predaceous on aphids and other soft-bodied Homoptera or Thysanoptera (Stone).
Syritta pipiens (L.)	One specimen netted on dunes near Met Station in September. Larvae are scavengers in semi-liquid, rotting vegetable or animal material (Stone).
Eristalis arbustorum (L.)	One specimen on goldenrod flowers in September, another in October.

Eristalis nemorum (L.)	On goldenrod flowers in September.
Toxomerus marginatus (Say)	Two specimens swept from vegetation on margins of Main Pond in July, two in September.
Family Otitidae ***Chaetopsis massyla*** (Wlk.)	Swept from grass and Beach pea at Old Main Station in June. The larvae of this family are largely saprophagous (Stone).
Family Agromyzidae ***Phytomyza varipes*** Macq.	One specimen from Met Station in July.
Cerodontha (Icteromyza) capitata (Zett.)	One specimen from Met Station in July.
Agromyza albipennis Mg.	One specimen from Met Station in July.
Melanagromyza occidentalis Spen.	Two specimens, probably this species, swept from Beach pea and grass at Old Main Station in June.
Phytobia (Dizygomyza) sp.	One specimen swept from vegetation at Met Station in July.
Phytobia capitata (Zett.)	Swept from vegetation at Met Station and Number 3 Lifesaving Station in July.
Family Milichiidae ***Leptometopa rufifrons*** Becker	Reared from larvae on horse skeleton collected in April 1976, flies emerged in May.
Family Lauxaniidae ***Homoneura littoralis*** (Mall.)	Swept from grass and herbaceous vegetation at Met Station and Number 3 Lifesaving Station in July. The larvae are saprophagous (Stone).
Minettia lupulina (F.)	Swept from vegetation on dunes near Met Station in June and July.
Family Chamaemyiidae ***Chamaemyia geniculata*** (Zett.)	Swept from grass and Beach Pea at Old Main Station in June. Larvae of this family are predaceous on aphids (Stone).

Family Heleomyzidae *Anorostoma* sp.	Swept from grasses and Beach pea at Old Main Station, Met Station and Number 3 Lifesaving Station in June and July.
Family Sphaeroceridae *Sphaerocera curvipes* Latr.	Under horse dung in September.
Copromyza equina Fallen	Swarming over fresh horse dung in June and July, under boards at Old Main Station in April.
Copromyza sordida Zett.	Swarming over fresh horse dung in June and July.
Family Ephydridae *Hydrellia notiphiloides* Cresson	On shore of Main Pond near West Light in July. The larvae are leaf miners in aquatic and semi-aquatic plants (Stone).
Hydrellia griseola (Fallen)	On shore of Main Pond near West Light in July. The larvae are miners in emergent grasses (Stone).
Notiphila aenigma Cresson	North shore of Main Pond in July.
Cirrula gigantea Cresson	Shore of Main Pond near West Light in July and near Met Station in August.
Scatella favillacea Lw.	On shore of Pond 12 in July.
Family Chloropidae *Diplotoxa* sp.	Shore of Pond 4 in July.
Meromyza sp.	Swept from vegetation on dunes near Met Station, Number 3 Lifesaving Station and on Green Plains in July.
Apallates sp.	Swept from vegetation at Met Station, 21 July 1976.
Conioscinella sp.	Swept from grass at Old Main Station in June.
Family Scathophagidae *Scathophaga stercoraria* (L.)	Netted on dunes near Met Station in August.

Family Anthomyiidae	
Fucellia intermedia Lundbeck	Under dead Gannet at Old Main Station in April and at Met Station in September. The larvae in this genus are aquatic or semi-aquatic and zoophagus (Stone).
Hylemya (Delia) albula (Fallen)	A good series from the island, including five specimens reared from larvae in a cup fungus Peziza (Sarcosphaera) sp.
Hylemya (Delia) bucculenta (Coq.)	One series from Old Main Station.
Hylemya (Delia) pluvialis Malloch	These flies are active around horse dung near Met Station in July.
Hylemya (Delia) platura (Mg.)	Several specimens taken in July in pitfall traps on the shore of Pond 3, and swept from vegetation in the Met Station compound.
Hylemya (Delia) fennica (Karl)	Specimens were deposited in the Canadian National Collection, data not recorded.
Pegohylemyia fugax (Mg.)	One specimen taken at Met Station, 23 July 1976.
Family Muscidae	
Schoenomyza chrysostoma Loew	On the shores of Main Pond near West Light and Met Station, also Lily Pond in June and July.
Coenosia tigrina (F.)	Swept from vegetation on dunes near Met Station in June.
Coenosia nudiseta Stein.	Taken in a pitfall trap on shore of Pond 4.
Coenosia (Limosia) atrata Wlk.	Swept from vegetation on dunes near West Light and Met Station in June and July.
Coenosia (Limosia) furtiva Huck	Swept from vegetation at Met Station and West Light in July.
Coenosia (Limosia) incisurata Wulp.	Swept from grasses and Beach pea at Old Main Station in June, also at West Light and Met Station in July.
Coenosia (Limosia) lata Wlk.	One specimen taken at Met Station in July.
Coenosia (Limosia) triseta Stein	Swept from cranberry patches near Met Station in June.

Spilogona brevicornis (Mall.)	Shore of Pond 12 in July.
Helina obscurata (Mg.)	Swept from vegetation at Met Station and Number 3 Lifesaving Station in July.
Helina procedens (Wlk.)	Swept from vegetation at Met Station and Number 3 Lifesaving Station in July.
Helina troene (Wlk.)	Swept from vegetation near East Pond and Met Station in September.
Hebecnema vespertina (Fallen)	Swept from vegetation at Met Station in June and July.
Hydrotaea meteorica (L.)	Swept from vegetation on dunes near Met Station in June.
Hydrotaea armipes (Fallen)	One specimen taken at Met Station, 23 July 1976.
Family Calliphoridae	
Protophormia terraenovae (R.D.)	Trapped inside buildings from East Light to Nova Scotia Base from April to July.
Calliphora vicina R.D.	At lights at Met Station in June and July.
Cynomya cadaverina R.D.	Trapped in buildings in June and July, under boards in April.
Family Oestridae	
Gasterophilus nasalis (L.)	Common in August and September. Frequently trapped on the windows of the garage at Met Station and also netted close to the ground near horses. The larvae are intestinal parasites of horses.
Gasterophilus intestinalis (L.)	Not quite as common as *G. nasalis*, also flies in August and September. Most were netted around horses at Number 3 Lifesaving Station. The larvae are intestinal parasites of horses.
Family Sarcophagidae	
Boettcheria cimbicis (Tnsd.)	Swept from grass and Beach pea at Old Main Station in June and September, taken indoors at Henry House in June and netted on dunes near Met Station in June and July.

Sarcophaga sarracenioides Ald.	Netted near Met Station, West Light, Henry House, Old Main Station and freshwater ponds in June, July and September.
Sarcophaga sinuata Mg.	Two specimens collected at Met Station in July.

Family Tachinidae	
Linnaemya compta (Fall.)	Abundant in mid August, trapped in the sun-porch of the staff house at Met Station, also netted in the vicinity in September.
Lydina areos (Wlk.)	One specimen, trapped in the staff house at Met Station in June.
Archytas sp.	Monty Wood at the Biosystematics Research Centre in Ottawa added this genus to the manuscript and pointed out that the Canadian National Collection should also have been checked for records. However, this would have been a monumental task and the author settled for using the published records of the Ottawa survey.
Lydella sp.	Netted in the vicinity of Met Station in June and July.

Order Hymenoptera (Bees and Ants, Wasps)

The arrangement of this list follows that adopted by Cushman in Leonard's List of the Insects of New York. In the present survey, Hymenoptera were not the subject of careful collecting and the following records probably represent a small percentage of the species present on the island. Identifications were by C.C. Loan, C.H. Yoshimoto, M. Ivanochko, G. Gibson, H.E. Bisdee, J.R. Barron, W.R.M. Mason and L. Masner of the Biosystematics Research Centre in Ottawa.

Family Braconidae	
Microgaster hospes Marshall	Two specimens from a cranberry patch beside Pond 3.
Macrocentrus nigridorsis Vier.	Eleven specimens reared from a tortricid larva on False Soloman's Seal, *Smilacina stellata* (L.), collected 26 July, emerged 26 August 1976.
Macrocentrus canarsiae Mues.	One female at light at Met Station in September.

Meteorus communis Cress.	Three specimens at light at Met Station, 21 July 1976. This is a parasite of cutworm larvae.
Dacnusa sp.	One female swept from herbaceous vegetation at Old Main Station in June.

Family Ichneumonidae

Campoletis sp.	Swept from herbaceous vegetation at Number 3 Lifesaving Station in July.
Campoplex sp. 1	Two females and one male reared from galls on *Solidago sempervirens* L. collected in April and emerged in May. Also swept from a cranberry patch beside Lily Pond in June. Members of this genus have been reared from various microlepidopterous larvae on the mainland.
Campoplex sp. 2	One female swept from a cranberry patch beside Pond 3 in June.
Cratichneumon unifasciatorius (Say)	Males were netted on dunes near Met Station in August and September, females were found under boards at Old Main Station in September. This species probably parasitizes both *Orgyia leucostigma sablensis* Neil and *Spilosoma virginica* (F.) (order Lepidoptera).
Ctenichneumon excultus (Cress.)	One male netted near Met Station in August and another at Number 3 Lifesaving Station in September.
Diadegma sp.	Two males and two females swept from dune vegetation near Met Station in July. This genus has been reared from coleophorid larvae on the mainland.
Gambrus sp.	Reared from stem galls on *Solidago sempervirens* L. collected in April, emerged in May.
Gelis sp.	One female collected under debris near Nova Scotia Base in April. Some members of this genus are parasitic in spider egg coccoons; three species have been reared from coleophorid larvae on the mainland.
Ichneumon subdolus Cress.	Two specimens were netted on dunes near Met Station in September.

Iseropus stercorator (F.)	Five females were swept from herbaceous vegetation near ponds. This is a parasite of *Orgyia leucostigma* (J.E. Smith) (order Lepidoptera), the larvae feeding gregariously in the host (Cushman 1926).
Lissonota sp.	One male and one female swept from vegetation in August and September. Members of this genus have been reared from microlepidopterous larvae on the mainland.
Ophion spp.	Two different species in this genus were taken at lights at Met Station; species 1 in June and species 2 in September.
Netelia spp.	Three species were collected at light at Met Station; species 1 in June, July and August, species 2 in July and species 3 in September.
Pimpla pedalis Cress.	Four males netted on dunes near Met Station in August and one female and three males in September. One male was reared from an *Orgyia leucostigma* (J.E. Smith) (order Lepidoptera) larva on *Iris versicolor* L. in August.
Temelucha sp.	One specimen at light at Met Station in September.
Trathala sp.	Swept from grass and Beach pea at Old Main Station in June.
Thyrateles lugubrator (Grav.)	One specimen netted on dunes near Met Station in September. This species parasitizes nymphalid larvae and, on Sable Island, this would have to be *Vanessa virginiensis* (Drury).
Family Eulophidae *Pnigalio flavipes* (Ashmead)	Reared from blotch mines (Agromyzidae?) on Bayberry, *Myrica pensylvanica* Loisel, collected in September, emerged during the winter.
Family Eurytomidae *Harmolita* sp.	One male swept from grass and two females from a cranberry patch in June.

Family Pteromalidae *Syntomopus* sp.	Swept from herbaceous vegetation near Henry House in June.
Family Pompilidae *Anoplius (Lophopompilus) cleora* (Banks)	Three specimens collected near West Light, 10 August 1969.
Anoplius sp.	Two specimens of a much smaller species netted on the dunes near Met Station in September.
Family Formicidae *Lasius pallitarsus* (Prov.)	Under boards at Old Main Station in April. In dry horse dung, dry carrion and under boards in June.
Formica glacialis Whlr.	Under boards in April, in ant hills and swept from a cranberry patch in June, flying in September.
Family Sphecidae *Podalonia luctuosa* (Smith)	Two females flying over open, grassy dunes east of Met Station in June and five males in the same locality in August and September. Two males were taken in pitfall traps on the shore of Pond 3 in August. Members of this genus provision their burrows with caterpillars.
Family Halictidae *Lasioglossum (Halictus) lineatulus* (Cwfd.)	Swept from vegetation on dunes near Met Station in September.
Lasioglossum (Halictus) sp.	Swept from vegetation on dunes near Met Station in July and September.
Family Megachilidae *Megachile (Delomegachile) melanophaea* Smith	Netted on dunes around Met Station and West Light in July and August. Also observed constructing cells in holes in a steep, consolidated sand bank at Old Main Station in June. Several specimens were collected in pitfall traps on the shore of Pond 3 in August.

Osmia (Monilosmia) simillima Smith	Under boards at Old Main Station and Met Station in June.

Order Siphonaptera (Fleas)

Only two species of fleas have been collected from the island, both in association with bird nests. The fleas were identified by G.P. Holland of the Biosystematics Research Centre in Ottawa.

Family Ceratophilidae	
Ceratophyllus diffinis Jordan	Several specimens were collected in the vicinity of, and from, an Ipswich sparrow nest near West Light in 1969.
Ceratophyllus gallinae (Schrank)	Several specimens were reared from a swallow nest in a collapsed shed at Old Main Station, 11 May 1976.

Myriapoda (Millipedes and Centipedes)

Millipedes and centipedes were collected under boards and in rotting timbers along with isopods and insects. They were identified by Henrick Enghoff of the Zoological Museum in Copenhagen, who supplied information on their biology and distribution. Centipedes were also sent to R.E. Crabill at the Smithsonian Institution in Washington but have not yet been determined. The three species thus far identified are widely distributed in North America and are of European origin.

CLASS DIPLOPODA (Millipedes)

Family Blaniulidae	
Proteroiulus fuscus (Am Stein)	Under boards and in rotting timbers at Old Main Station in April and June. The normal habitat of this species is under the bark of dead trees and in forest litter (H. Enghoff pers. comm.).

Family Julidae
Cylindroiulus latestriatus (Curtis)

Under boards and logs at Old Main Station and at Number 3 Lifesaving Station in April, June and August. Its normal habitat is beaches, sand dunes and greenhouses (H. Enghoff pers. comm.).

CLASS CHILOPODA (Centipedes)

Family Lithobiidae
Lithobius forficatus (L.)

Two specimens collected under driftwood on dunes at Old Main Station and West Light in August.

Phylum Vertebrata

CLASS PISCES

All of the fish collected on the island are noted for their tolerance of brackish water and are common on the mainland. Eels probably made their way into ponds during high water periods or storms when the dunes were breached.

Family Anguillidae
Anguilla rostrata (LeSueur)

Sighted in Main Pond quite frequently by Ian McLaren, eels were seen in East Pond by the author.

Family Cyprinodontidae
Fundulus heteroclitus (L.)

Mummichogs have been collected several times from both Main Pond and East Pond.

Family Gasterosteidae
Gasterosteus wheatlandi Putnam

The Blackspotted stickleback, an estuarine species, was collected by E. Garside in East Pond.

Apeltes quadracus (Mitchill)	The Fourspine stickleback was also collected by E. Garside in East Pond and J.E.H. Martin found it in Wallace Lake.
Pungitius pungitius (L.)	Many records of the Ninespine stickleback from East Pond, Main Pond and Lily Pond.

Family Pleuronectidae Flounders	In the 1800's Wallace Lake was rich in fish and bivalve molluscs. With the loss of the south dunes, decreasing size over the years and fluctuations in the form and area of the lake, the salinity, temperature, vegetation and fauna have changed. At present, in late summer, the lake is reduced to two relatively small ponds, devoid of vegetation and somewhat stagnant looking, perhaps due to an accumulation of seal faeces in the water. Met Station personnel have reported catching flounders in the lake in the mid 1960's but Garside, in 1969, was unable to catch any despite the use of assorted collecting gear. None have been reported since then, although it is possible that flounders enter the lake during periods of high water levels when the lake occupies most of South Beach.

CLASS AVES

The birds of Sable Island have been intensively studied by Ian McLaren, of Dalhousie University, and his various students and associates. In a recent publication, McLaren (1981) gave detailed accounts of 324 species that have been sighted on the island. The following twelve species are the only ones that regularly nest there.

Family Anatidae	
Anas rubripes Brewster	American black duck
Mergus serrator L.	Red-breasted merganser

Family Charadriiformes	
Charadrius semipalmatus Bonaparte	Semipalmated plover

Family Scolopacidae	
Actitis macularia (L.)	Spotted sandpiper
Calidris minutilla (Vieillot)	Least sandpiper
Family Laridae	
Larus marinus L.	Great black-backed gull
Larus argentatus Pontoppidan	Herring gull
Sterna hirundo L.	Common tern
Sterna dougallii Montagu	Roseate tern
Sterna paradisaea Pontoppidan	Arctic tern
Family Sturnidae	
Sturnus vulgaris L.	European starling
Family Emberizidae	
Passerculus sandwichensis princeps Maynard	Ipswich sparrow

Of the remaining 312 species, 85 are vagrants or strays and these include two first records for North America, four for Canada and 24 for Nova Scotia. The vast majority of records are of migrants either passing through or staying as seasonal residents. Of the twelve nesting species, the Ipswich sparrow is of interest since it is considered to be an endemic Sable Island subspecies of the Savannah sparrow.

Ipswich sparrow

CLASS MAMMALIA

Order Rodentia

Family Muridae
Mus musculus L. — House mouse
Rattus norvegicus L. — Norway Rat

Throughout the history of the Lifesaving stations, rats and mice have been a problem. In 1848 provisions stored in refuge huts (placed in strategic locations for the shipwrecked) had to be suspended from ceilings and walls beyond the reach of rats. In the late 1800's Norway rats were very prolific and sometimes infested the island. In 1952 rats were said to be common but Erskine, who visited the island in 1952 and again in 1953, saw none. The author saw no sign of rats during his visits (1976-1987) and Met Station staff believe there are none on the island.

Order Carnivora

Family Odobenidae
Odobenus rosmarus (L.)

Walrus were plentiful when the Marquis de la Roche landed his colonists on Sable Island in 1598, and the settlers hunted them for food and skins. Later, in 1633, John Rose of Boston reported 'a great store of sea-horses' and, in 1642, the Boston Merchants' Expedition carried away 400 pairs of walrus tusks. There are no further records of living walrus on the island. During the mid 1800's many hundreds of tusks were collected as they washed out of the sand. Mansfield (1967) concluded that the Sable Island walrus was the same species as the present day Eastern Arctic Walrus.

Family Phocidae

Halichoerus grypnus (F.)

Grey seals are occasionally seen along South Beach in the summer but they are most numerous on the spits at each end of the island. They whelp in winter from mid November to late February on the low dunes of East Spit and on exposed sandbars at the island's extremities. Grey seals are not popular with fishermen because they are the terminal host for a nematode, *Porrocaecum decipiens*, the intermediate stage of which is the cod worm which encysts in the flesh of cod.

Phoca vitulina L.

Harbour seals are by far the most numerous on the beaches in the summer months when they may be seen basking in groups near the water's edge. When walking along the beach one is usually accompanied by one or more seals playfully keeping pace 10-20 metres offshore. Groups on the beach quickly disperse into the water as they are approached. They pup and breed from early May to mid June, mainly on South Beach in the vicinity of Wallace Lake, though groups may be found from one end of the island to the other.

Seals on North Beach

DOMESTIC ANIMALS

Order Lagomorpha

Family Leporidae	
Oryctolagus cuniculus (L.)	Domestic rabbit

Order Carnivora

Family Canidae	
Vulpes vulpes L.	Red Fox

Order Artiodactyla

Family Suidae	
Sus scrofa L.	Domestic Pig

Family Bovidae	
Bos taurus L.	Domestic Cattle

Cattle, pigs and foxes ran wild on Sable Island long before the horses. Portuguese fishermen used the island as a fishing station and landed cattle and pigs in 1553 to serve as a source of fresh meat (Elstracke 1625).

In 1598 the La Roche colonists used some of the cattle for food and clothing but there is no mention of pigs at this time (Champlain 1613).

In 1633 John Rose of Boston reported that there were 800 head of cattle and many foxes, some red and some black. Two years later, in 1635, the herd was reduced to 150 by 16 Frenchmen who overwintered on the island (MacDonald 1883, Patterson 1894). A Boston Merchants' expedition in 1642 and the shipment of cattle to the mainland by Acadians, further reduced the herd and by 1676 none remained.

In 1738 foxes were the only four-footed animals on Sable Island when Andrew LeMercier of Boston established his settlement. He introduced cattle, pigs and sheep

along with the horses. Thomas Hancock added more of each in 1760, perhaps as a business enterprise resulting from the expulsion of the Acadians, but ostensibly as a source of food for shipwreck survivors.

In 1776, following the actions of Privateers during the American Revolution, no cattle, pigs, sheep or foxes remained, only the horses.

In 1802, with the establishment of lifesaving stations, cattle, sheep and pigs were again brought to the island. The cattle remained domesticated but the pigs ran wild. Their feeding habits in connection with shipwreck victims did not sit well with station personnel and, when the entire hog population was destroyed by a severe winter in 1814 (MacDonald 1883, St John 1921), they were not restocked for several years. By 1844 the staff were using 8,000 pounds of pork annually, but the pigs were not permitted to run wild.

The lifesaving staff were unable to establish wild populations of sheep but they had better luck with English rabbits. At the same time, in 1803, rats and mice were so troublesome that cats were imported to control them. These cats also finished off the rabbits and became so numerous and wild that they had to be killed by dogs and men armed with shotguns (St John 1921).

In 1809 rabbits were again let loose and became abundant, they were killed off by Snowy owls (St John 1921). In 1850 lighthouse builders noted that the island was overrun with rabbits and rats. These rabbits must have been killed off by rats and owls.

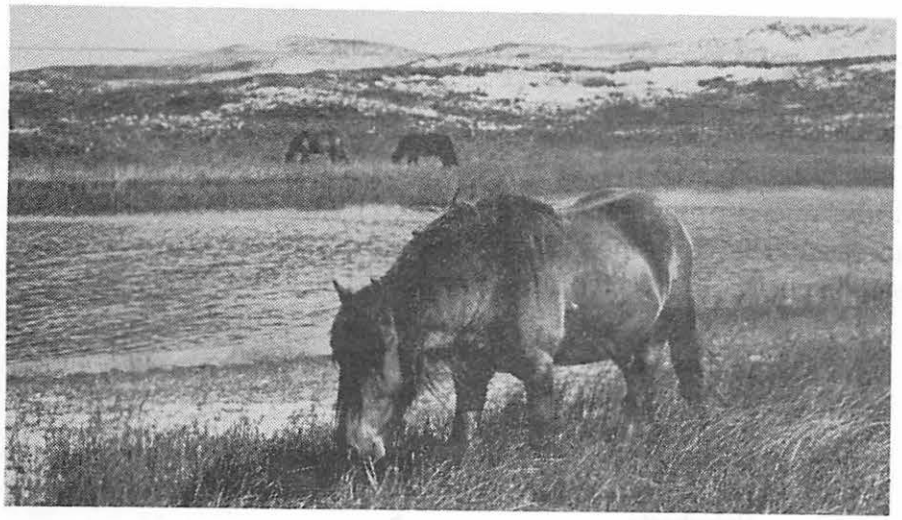
In 1882 rabbits were again introduced and became such a nuisance by 1889 that seven cats were sent from Halifax to control them. Another 30 cats were sent in 1890 and, that winter, while the cats were getting fat on rabbits, seven foxes were set loose to control the cats. They finished all of the cats and rabbits within one season. When it became evident that the foxes were endangering all bird life on the island, they were hunted and shot in 1897 (St John 1921).

Order Perissodactyla

Family Equidae
Equus caballus L.

Horse

Available literature indicates that horses have been on Sable Island since 1738 when Andrew LeMercier of Boston arranged for their shipment to the island in preparation for French Protestant settlers. The horses prospered and were reported in 1753 to breed and grow there without any care and trouble. In 1760, additional horses, probably of Acadian origin (B. Christie pers. comm.), were landed there



Horses on Sable Island

by Thomas Hancock, a Boston merchant. When lifesaving stations were established in 1802 the horses were used for food and transportation. In the mid 1800's horses and barrels of horse hair were shipped to the mainland to help pay for the upkeep of the Establishment. Throughout the history of the Lifesaving Stations there have been frequent records of introductions of breeding stock to improve the horses for draught work, patrol work and transportation between stations. However, the horses are reverting to the small size and wild appearance of their ancestors. D.A. Welsh, in his thesis (Dalhousie University 1975), described the horses as follows: "In appearance, they most closely resemble the Barb of North Africa. They tend to be chunky horses; narrow, deep chests, heavy shoulders and necks, and short, heavy legs are typical. All Sable Island horses have small, rounded wide-set ears that are slightly tipped inward, and many have fine muzzles and thin, curved nostrils. Roman noses are common, although a few have finely dished faces. Their hooves are small and round, but often become overgrown in the soft sand. The stallions have exceptionally long forelocks, manes and tails and, in extreme cases, mane and tail may even reach the ground. Manes and forelocks of mares are relatively short."

Barbara Christie (1980) researched the history of introductions of beeding stock and traced the origins of Sable Island horses in her book The Horses of Sable Island. Zoe Lucas (1981) published many excellent photographs of the horses in her children's book Wild Horses of Sable Island. During the last 30 years the horse population has varied between 360 and 158, though in most years it was between 220 and 200.

In 1961, the horses were given official protection in the Regulations Governing Sable Island under Section 258 of the Canada Shipping Act. Paragraph 5d states: No person shall, without prior written permission of the Agent, molest, interfere with, feed or otherwise have anything to do with the ponies on the island.

Discussion

The foregoing list includes and supplements that published by the National Museums of Canada in 1970. Whereas that list contained 174 species, 126 of which were Coleoptera, the present work lists 606 species of invertebrates comprised as follows:

PORIFERA	Demospongiae	1
ROTIFERA	Monogonta	17
NEMATODA	Rhabdita	1
MOLLUSCA	Gastropoda	11
	Bivalvia	1
ANNELIDA	Polychaeta	6
	Oligochaeta	2
	Hirudinea	3
ARTHROPODA	Arachnida	30
	Cladocera	7
	Copepoda	15
	Isopoda	8
	Amphipoda	12
	Mysidacea	3
	Insecta	
	Thysanura	1
	Collembola	3
	Orthoptera	1
	Odonata	7
	Heteroptera	15
	Homoptera	11
	Mallophaga	6
	Thysanoptera	1
	Neuroptera	5
	Coleoptera	144
	Trichoptera	4
	Lepidoptera	165
	Diptera	87
	Hymenoptera	34
	Siphonaptera	2
	Diplopoda	2
	Chilopoda	1

Prior to the publication of these lists, two Sable Island invertebrates had been described as endemics: A freshwater sponge *Heteromyenia macouni* MacKay and an extinct scallop *Aequipecten irradians sablensis* A.H. Clarke. Howden, in the National Museums publication, added a beetle, *Pyrrhalta sablensis* Brown, and the present list adds a nematode, *Koerneria mulveyi* Ebsary, and three moths: *Agrotis arenarius* Neil, *Papaipema* sp. and *Orgyia leucostigma sablensis* Neil.

Agrotis arenarius Neil is a cutworm moth which appears to be associated with American beach grass, *Ammophila breviligulata* Fern. The maculation of the moth is cryptic for resting on dead grass. The rather general distribution of the moth and its abundance at Henry House support this conclusion.

The *Papaipema* species, which is as yet undescribed, is closely related to *P. nelita* (Stkr.) which feeds in the roots of Coneflower, *Rudbeckia* sp., and Burdock, *Arctium* sp., neither of which grow on Sable Island. *P. nelita* does not occur on mainland Nova Scotia. Moths of this genus do not stray far from their foodplant and are definitely non-migratory.

Orgyia leucostigma sablensis Neil is a Tussock moth which differs considerably in colour from mainland populations. The females are wingless and lay their eggs on the outside of the coccoon from which they emerged. The larvae will feed on almost any green plant and are a pest species on the mainland. Their principal host on Sable Island appears to be Bayberry, *Myrica pensylvanica* Loisel.

Female tussock moths laying eggs

Several species of Lepidoptera may be sufficiently different from mainland populations to warrant designation as subspecies. The Sandhill cutworm, *Euxoa detersa* Wlk., one of the most abundant moths, is extremely pale and grey in comparison with the darker, more heavily marked mainland forms. Five specimens of an unusual form of *Euxoa messoria* Harris have been deposited in the Canadian National Collection for further examination. *Ochropleura plecta* L., a very common moth on the island, differs slightly from mainland populations and is possibly a distinct species. Both *Xestia dolosa* Franclemont and *Xestia adela* Franclemont are common on the island. *Adela* is a fall migrant which, in some years, is abundant on the mainland; however, *dolosa* is native and, being easily distinguished from mainland populations, is probably a distinct subspecies. Among the Microlepidoptera there are several species which could not be identified. For example, *Scoparia* sp., *Phaneta* sp., *Acleris* sp., *Cochylis* sp., *Hysterosia* sp., *Aristotelia* sp., *Filatima* sp., *Monochroa* sp., *Lita?* sp., *Chionodes* sp., and a *Phyllonorycter* species. Some of these will undoubtedly be undescribed species found only on Sable Island.

Of the 165 species of Lepidoptera thus far recorded from the island, approximately 44 are migrants or strays. Practically all of the Plusiinae are migrants, whereas many of the Catocalinae are strays. Noteworthy among the strays are two first records of tropical species in Nova Scotia: *Xylophanes tersa* L. and *Atteva punctella* (Cram.). The European yellow underwing, *Noctua pronuba* L., an introduced species from Europe which has recently become established in Nova Scotia is not usually considered to be a migrant, but it has been taken regularly on Sable Island since 1981. The first record for North America was in Halifax in 1979. Of the remaining 121 residents, there are two endemic species, one endemic subspecies and 15 others which are distinct from mainland populations. This compares well with Howden's observation that the distribution of 12% (15) of the beetles could best be explained by using the concept of a Coastal Plain refugium. Former connections with the mainland are also indicated by the presence of *Crangonyx richmondensis* Ellis, a freshwater amphipod with restricted ecological tolerance.

According to Catling et al (1985) there are approximately 177 species of plants on Sable Island, 135 of which are considered to be native and 42 introduced. Early botanists recorded longer lists of introduced plants due to horticultural, agricultural and silvicultural activities at the time of their observations. Fernald and St. John described 12 new taxa of plants based on St. John's collecting trip in 1913. Four of their varieties have been synonymized with those of wider distribution, but five have very limited distributions elsewhere in the Atlantic Provinces and three are confined to Sable Island. These three endemics are varieties of widely distributed species and one of them, *Epilobium nesophilum sabulonense* Fern. is now possibly extinct.

Palynological studies of the island indicate that the area was treeless for at least the last 11,000 years and that the natural vegetation has changed very little in that period although the area must have been far more extensive. It seems likely, therefore, that subspeciation would have occurred over the last 12,000 years since separation of the island from the mainland by rising sea levels.

It is impossible to determine the number of species of terrestrial invertebrates which were on Sable Island prior to the advent of man. Ballast from wrecked ships has introduced many of the terrestrial invertebrates now on the island, notably slugs, snails, earthworms, springtails, beetles, isopods, centipedes and millipedes. Tree planting experiments no doubt contributed more of the same along with some foliage feeders. Agricultural and horticultural introductions brought in cutworms and a variety of foliage feeders such as aphids and plant bugs. Domestic pests such as silverfish and houseflies would have arrived with the belongings of visitors.

Many species of Lepidoptera and similarly mobile insects which thrive on disturbed sites and agricultural land have become so abundant on the mainland that airborne strays from this source would be commonplace (Wright 1983). Similarly, coastal species stranded on tidal drift would eventually reach the island from many sources. No doubt some of these strays would be fertilized females and resulting populations may come and go depending on climatic conditions and available food.

Taking all of these factors into consideration it is possible that no more than 15% of the present day terrestrial invertebrate fauna is truly native, dating back to the last Wisconsin glaciation. The Coleoptera and Lepidoptera fit this assumption, with approximately 15% of the recorded species either differing from mainland populations or having distributions which suggest that they are part of the relict fauna. This relict fauna is of great interest in that several endemic species and subspecies are present in a very restricted habitat that is both fragile and rapidly disappearing.

In 1894, Piers reported that the migratory grasshopper, *Melanoplus atlanis* (Riley), was so abundant that it threatened to destroy all the vegetation and consequently the island. At least three species of moths could also have a significant effect on the grass, possibly leading to the destruction of dunes. When one examines insect light trap catches from the island in July and August one is struck by the predominance of moths which are cryptically coloured and marked for resting on dry grass. The most abundant large moth is *Ommatostola lintneri* Grt. whose larva is a cutworm on the underground shoots and rhizomes of American beach grass. *Agrotis arenarius* Neil, Sable Island's endemic cutworm, is also believed to be a grass rhizome feeder. *Euxoa detersa* (Wlk.), is somewhat smaller but far more abundant than the preceeding two moths and its larva, known as the Sandhill cutworm, no doubt also feeds on grass.

Conclusions

Sable Island is an oasis in the Northwest Atlantic where many strays and migrants find refuge. It has been of particular interest to ornithologists who, when studying the endemic Ipswich sparrow, had the opportunity to add new records of birds for Nova Scotia, Canada and even North America. The island has been, and still is, the site for studies on the biology of seals and Sable Island horses. Invertebrate animals have received little attention and the foregoing list is an attempt to present a general census of the land and freshwater animals on the island.

The 606 invertebrate species in this work include 5 endemic species, two endemic subspecies and several others which should probably be described. There is ample evidence that Sable Island is the last remnant of the Continental Shelf which was exposed during the last Wisconsinan glaciation. This coastal plain was inhabited by a diverse flora and fauna including mastodons and mammoths, the remains of which are frequently dredged on the fishing banks. Rising sea levels isolated and inundated all of the banks with the exception of Sable Island, the last remnant of the Coastal Plain.

The endemic species are, no doubt, members of the Coastal Plain fauna which either could not return to, or did not survive on, the mainland. The endemic subspecies of plants and animals probably became distinct from mainland populations during the period following separation from the mainland by rising sea levels.

Sable Island is still shrinking, having lost half its area in the last 220 years. The island is also in the area of extensive natural gas and oil discoveries and is in real danger of industrial encroachment. These factors place the unique biota in grave danger of extinction.

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