


Butterflies and moths of Newfoundland and Labrador

The Macrolepidoptera



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Fig. 1. Life history of the shorttailed swallowtail butterfly, *Papilio brevicauda* Saunders. From a painting by Philip Henry Gosse at Carbonear, Newfoundland, 1827–1834 and published in his *Entomologia Terrae Novae*. Courtesy National Museums of Canada.

Butterflies and moths of Newfoundland and Labrador

The Macrolepidoptera

Ray F. Morris

Research Station
St. John's West, Newfoundland

Research Branch
Agriculture Canada

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Cover photos: left, *Papilio brevicauda* Saunders, shorttailed swallowtail butterfly; right, *Platarctia parthenos* (Harris), St. Lawrence tiger moth.

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Introduction

Historical aspect

The first study of Newfoundland insects was made by the wealthy young British naturalist Joseph Banks. Banks is well known as the naturalist who sailed with Captain Cook on his voyage around the world from 1768 to 1771, but few people realize that this same Joseph Banks made an earlier voyage to Newfoundland and Labrador in 1766. While on the fishery patrol ship *Niger*, Banks spent 4½ months at St. John's, at Croque on the east side of the northern peninsula, and at Chateau Bay on the Labrador coast collecting plants, animals, birds, and insects. His collections were recorded in 1971 by Dr. A. M. Lysaght in a book entitled *Joseph Banks in Newfoundland and Labrador 1766, his diary, manuscripts and collections*. Dr. Lysaght could not trace any specimens of the insects collected by Banks. All that remains are Banks' diary and a few paintings by a draftsman, Sydney Parkinsons. It is possible that some of the specimens are in the Banksian cabinets in the Entomology Department of the British Museum. Dr. Lysaght points out that many specimens lack locality labels, but it is possible these could be supplied by an experienced Newfoundland entomologist.

Another pioneer in Newfoundland entomology was the famous British naturalist Philip Henry Gosse, who observed butterflies on Carbonear Island between 1832 and 1835. In 1882 Gosse wrote to William Saunders, Editor of the *Canadian Entomologist*, as follows:

I began the study of Insects in 1832, when I was a clerk in a mercantile house at Carbonear, Newfoundland. For more than three years I pursued the study with great ardour and industry, making careful drawings of nearly every species I found, of all orders, often magnified. These drawings, in a small 4to [quarto] book, I still possess, and for minute care I think they are in nowise inferior to any that I have executed in later years. They have never been used for publication, save a few slight allusions in my 'Canadian Naturalist', and I have of late thought some of you American entomologists might be interested in looking over so early a record, since you are including Newfoundland in your Fauna. If it would give you the least pleasure, I will at once post it to you.

At Saunders' request, Gosse sent the book with the following note:

I do not know what is known to the U.S. entomologists about the economy and natural history of the insects of Newfoundland. I am pretty sure English entomologists know nothing at all about them, for my own drawings and observations have never been published. Therefore, I have thought it just possible that these early notes of mine may embody facts sufficiently graphic and interesting to be published in one of your magazines. If you think so, you are perfectly at liberty to use them. I only stipulate that my *ipsissima verba* be not changed.

Gosse's book contained excellent colored illustrations of many Coleoptera (beetles), Hemiptera (true bugs), Orthoptera (grasshoppers and crickets), Diptera (two-winged flies), Hymenoptera (bees and wasps), and Lepidoptera (butterflies and moths). Dr. Saunders published Gosse's records of butterflies from Carbonear Island in the *Canadian Entomologist* in 1883; however, he was not interested in the other groups.

In 1930 Dr. F. A. Bruton of Somerset, England, published a paper entitled *Philip Henry Gosse's entomology of Newfoundland* in the *Entomological News*, Vol. XLI. Bruton notes that Gosse's *Entomologia Terrae Novae* was discovered after considerable searching by a grandson, Dr. Philip Gosse, in response to a number of requests from Canada and Newfoundland. Bruton describes it as a small book of 60 to 70 pages, containing nearly 250 beautiful hand-painted illustrations of insects, larvae, and pupae. Bruton had the insects identified and classified by the British Museum of Natural History and they are listed according to order in his paper. *Entomologia Terrae Novae* is now in the National Museum, Ottawa. None of Gosse's specimens are known to exist today. The frontispiece (Fig. 1) of this book was photographed from Gosse's painting of the shorttailed swallowtail, *Papilio brevicauda* Saunders, by kind permission of Miss A. E. Dawe, Chief of the Library Division, National Museums of Canada, Ottawa. It was thrilling to look at *Entomologia Terrae Novae* and hard to believe that such colorful and accurate illustrations are 140 years old.

A Norwegian naturalist, Peter Stuwitz, was sent to Newfoundland in 1839 by the Swedish-Norwegian Government and stayed at St. John's until his death in 1842. His main task was to investigate the fishing industry, but he found time to collect insects during his travels around the island. These were sent back to Norway and are still preserved at the Zoological Museum in Oslo. They are labeled "Newfoundland, P. Stuwitz," but unfortunately the localities are not included.

The North American literature on the Lepidoptera of Newfoundland is very limited. Early partial lists were recorded by Bates (1875) and Edwards (1883). More recent notes are those of Winn (1913) and Holland (1969). Dos Passos (1935, 1936, 1938, and 1943) has published several papers in the *Canadian Entomologist* on the butterflies of Newfoundland. Descriptions, notes, and collecting records for Labrador are given by Eidman (1935), Englehardt (1913), Hensel (1965), McDunnough (1921 and 1930), Möschler (1860), Packard (1868, 1888, and 1891), Scudder (1875 and 1895), and

Walker (1916). In 1949 Dr. Harry Krogerus investigated the Lepidoptera of Newfoundland with a Finnish-Swedish biological team and recorded 282 species (Krogerus 1954). Krogerus' records include 249 species collected by the expedition and 33 others previously reported in the literature, but not observed in the field. They are all included in this publication.

The insect fauna of Newfoundland is not impressive or large in numbers; however, it is extremely interesting to North Americans because many specimens are of European origin. In Newfoundland's early development, ships from Great Britain and Europe came out in ballast to take back cargoes of fish. The dumping of ballast into harbors was prohibited, so it was thrown on shore with whatever insect material it contained. Many insects, particularly the soil-inhabiting species, were introduced to North America in this manner. In later years, up to the time of Confederation with Canada in 1949, there were no restrictions on bringing plants into Newfoundland, and many insects were imported with them. Dr. Carl H. Lindroth stated, without any exaggeration, that Newfoundland has received more animals and plants from Europe than has any other part of North America (Lindroth 1957). Nineteen introduced species of carabid beetles have been recorded on the eastern coast of the Avalon Peninsula, and Dr. Lindroth stated that this was the highest number in any part of North America.

Another way in which insects reach Newfoundland is by the "drift migrant method." An example of this is the monarch butterfly, which is seen in eastern Newfoundland nearly every year in August and early September, although it is not known to breed there. These butterflies migrate each fall from southern Ontario to Florida and Mexico to overwinter and it is probable that storms carry some of them hundreds of miles off course to Newfoundland. A less frequent visitor to Canada is the black witch moth (*Erebus odora* Linnaeus), which normally lives and breeds in tropical regions of North America, particularly southern Florida and the warmer sections of the Gulf of Mexico. This species has been captured in Newfoundland after hurricane or near-hurricane storms.

More recent trends

Although early collections of Newfoundland insects may be found in European and United States museums, Canadian collections have been developed in recent years. The Canadian National Collection in Ottawa has many specimens from Newfoundland and Labrador, including those donated by the Canadian Northern Insect Survey. In addition, many members of the Biosystematics Research Institute, who are responsible for maintaining the Canadian National Collection, have spent considerable time during the summer months collecting insects at various localities in Newfoundland.

In Labrador, some members of the Moravian Mission, which operated stations at Okak, Hopedale, Hebron, Ramah, Makkovik, Nain, Nutak, and

Cartwright, have collected insects from time to time. Probably the most important naturalist was Rev. W. W. Perrett. Not only was he an outstanding missionary who worked among the Eskimos and settlers of Labrador for 45 years, but he had a great interest in nature. He collected many moths as he strolled around the gardens at Hopedale and other settlements in the evening. Many of these moths, collected between 1918 and 1936, are now in the Canadian National Collection or in the Royal Ontario Museum in Toronto.

Insects collected by Dr. E. Munroe in 1948 at Knob Lake (now called Shefferville), Que., are considered to exist in Labrador as well, as Knob Lake is on the border between the two provinces. Dr. Munroe's records are included in this publication.

A collection of Newfoundland and Labrador insects obtained during the past 25 years is housed at the Agriculture Canada Research Station, St. John's West, Nfld. The collection contains approximately 10 000 specimens, most of them identified by members of the Biosystematics Research Institute. New specimens are being added each year.

The Newfoundland Forest Research Centre at St. John's, now part of Environment Canada, maintains a collection of forest insects, both larvae and adults. Most Lepidoptera in this collection have been reared from larvae collected by forest rangers in Newfoundland. Records of species and their distribution were made available through the kindness of the Regional Director, Dr. W. J. Carroll, and are included in this publication.

There are very few amateur entomologists in Newfoundland and Labrador. However, scientists and amateur collectors have become increasingly interested in insects during the past 10 years, mainly because of the general public's increasing concern for the environment. In addition, entomology courses and graduate studies at Memorial University have encouraged an interest in Newfoundland insects among both amateurs and professionals.

Amateur entomologists from other areas of Canada and the United States continue to come to Newfoundland and Labrador during the summer. Their principal aim is to collect something different or to capture a few specimens of the shorttailed swallowtail butterfly, *Papilio brevicauda* Saunders.

Physical Geography of Newfoundland and Labrador

The island of Newfoundland, with an approximate area of 112 000 km², lies across the mouth of the Gulf of St. Lawrence, and is located between parallels 46°35' and 51°39'N and the meridians 52°36' and 59°25'W (Fig. 2). It is approximately twice the size of Nova Scotia and about the same size as Pennsylvania. It is the 12th largest island in the world, in shape resembling an equilateral triangle with sides slightly over 480 km in length. In the northwest it is separated from Labrador by the Strait of Belle Isle, which is only 18 km across at the narrowest point. In the southwest, it is 105 km across the Cabot Strait to Cape Breton Island. The Avalon Peninsula at the southeast corner of the island is, except for Greenland, the most easterly part of North America (Fig. 2).

Labrador is the large peninsula of high land that forms the northeast corner of North America, and is politically a part of the province of Newfoundland. It lies approximately between 51°21'N in the Gulf of St. Lawrence and 60°27'N in the Hudson Strait and between 55°40' and 67°18'W. Labrador covers about 292 000 km² of territory, nearly three times the area of Newfoundland.

Topography and ecology

Newfoundland is a huge plateau that slopes gradually from west to east, and from northeast to southeast. The highest elevations are on the west coast, where the Long Range Mountains, running northward from Bonne Bay (Fig. 3), occasionally rise to 762 m above sea level. West of the Long Range Mountains are the Anguille Mountains, which extend along the southwest coast almost to the corner of the island. Some distance east of the Long Range a fairly deep depression, approximately 32 km wide and running in a northeast and southwest direction, contains Deer Lake and Grand Lake. Red Indian Lake is in a shallower depression running parallel to Deer and Grand lakes and to the east of them. These depressions are the only really significant interruptions to an even decline in the plateau from west to east. The longest river in Newfoundland is the Exploits, which empties into Notre Dame Bay in the north central part of the province some 320 km northeast of its source. The second longest river, the Gander, flows for 160 km in the same general direction as the Exploits, but about 64 km to the east of it.



Fig. 2. Map of Newfoundland and Labrador showing their geographic relationship with the surrounding areas.



Fig. 3. Map of Newfoundland.

Although the shape of the plateau surface has considerable topographical interest, the nature and content of the surface has a greater influence on the flora of the area and its relationship to the insect fauna. Approximately three-fifths of the total area (112 000 km²) consists of barren lands, boglands in various stages of decomposition, and innumerable lakes. The so-called "barrens" vary from those with virtually bare rock surfaces to those with sufficient soil cover to produce large areas of brushy plants and limited amounts of wild grasses. Soil cover tends to vary inversely with the elevation. Some of the bogs are shallow and partly covered with stunted spruce and larch. Others are much deeper and wetter and have a fresh, spongy sphagnum surface that has scarcely started to decay. Still others have reached the dry mature peat stage. The many lakes and ponds occupy shallow basins hollowed out by glacial action. All but a small part of the

remaining two-fifths of the island is covered by forests of varying quality. The chief forest regions lie within the watersheds of the main rivers, the Humber, the Exploits, the Gander, and the Terra Nova. The principal forest trees are balsam fir, black spruce, white spruce, eastern white pine, red pine, tamarack, trembling aspen, balsam poplar, white birch, yellow birch, pin cherry, choke cherry, mountain ash, mountain maple, red maple, speckled alder, and black ash. Moss-covered barrens are found above 366 m because there is insufficient soil to support a forest cover.

In Labrador, the lofty cliffs that flank the seaboard from 56° to 60°N form three mountain ranges, but they are not the northern terminus of the great Appalachian range of mountains of eastern North America, as was previously thought (see Fig. 4). The southern range, the Kiglapaits or "Dog-Teeth" mountains, towers 838 m above the fjord of Port Manvers. The second range, the Kaumajets or "Shining Tops," rises 1220 m above the ocean at Cape Mugford. The northern range, the Torngats or "Devils," rises to a height of 610 m and is named for its sharp peaks that were never rounded off by an ice cap. The large triangular piece of territory to the south of the mountain ranges and the land forming the southeast boundary of Labrador slope gradually to the seaboard. Some 30 rivers drain into Hamilton Inlet, which is tidal for its first 217 km. To the south of this inlet are the Mealy Mountains, rising to about 610 m, and a sandy beach leading to Sandwich Bay, about 80 km away.

Labrador forms a part of the Canadian Shield and is therefore built up of Precambrian rocks. It has many fine rivers, some of them more than 480 km long. Probably the best known is the Churchill River, flowing into Hamilton Inlet, with its hydroelectric development at Churchill Falls. The towns of Wabush, Labrador City, and Knob Lake have recently been built near the extensive deposits of iron ore in northwest Labrador. The mineral labradorite was first discovered near Nain by the Moravian Mission in 1770.

Although the flora of Labrador is subarctic, it is singularly profuse. The land is not nearly as barren as the first glimpse of the cliffs and hillsides along the coast might suggest. On the contrary, the valleys and low hillsides are covered by dense woods of conifers, birches, and poplars. There are no pines and all timber is referred to as spruce. The Churchill River watershed and plateau have an estimated 103 600 km² of commercially valuable forests, parts of which were harvested for the Liner Board Mill at Stephenville between 1974 and 1976.

Attractive lichens and mosses grow over the cliff faces and give the appearance of elaborate carpet gardens. Brilliantly colored red azaleas, blue gentians, white orchids, and bunch berries provide a magnificent display, sometimes growing right to the water's edge. The baked-apple or cloudberry (*Rubus chamaemorus*) is harvested commercially.

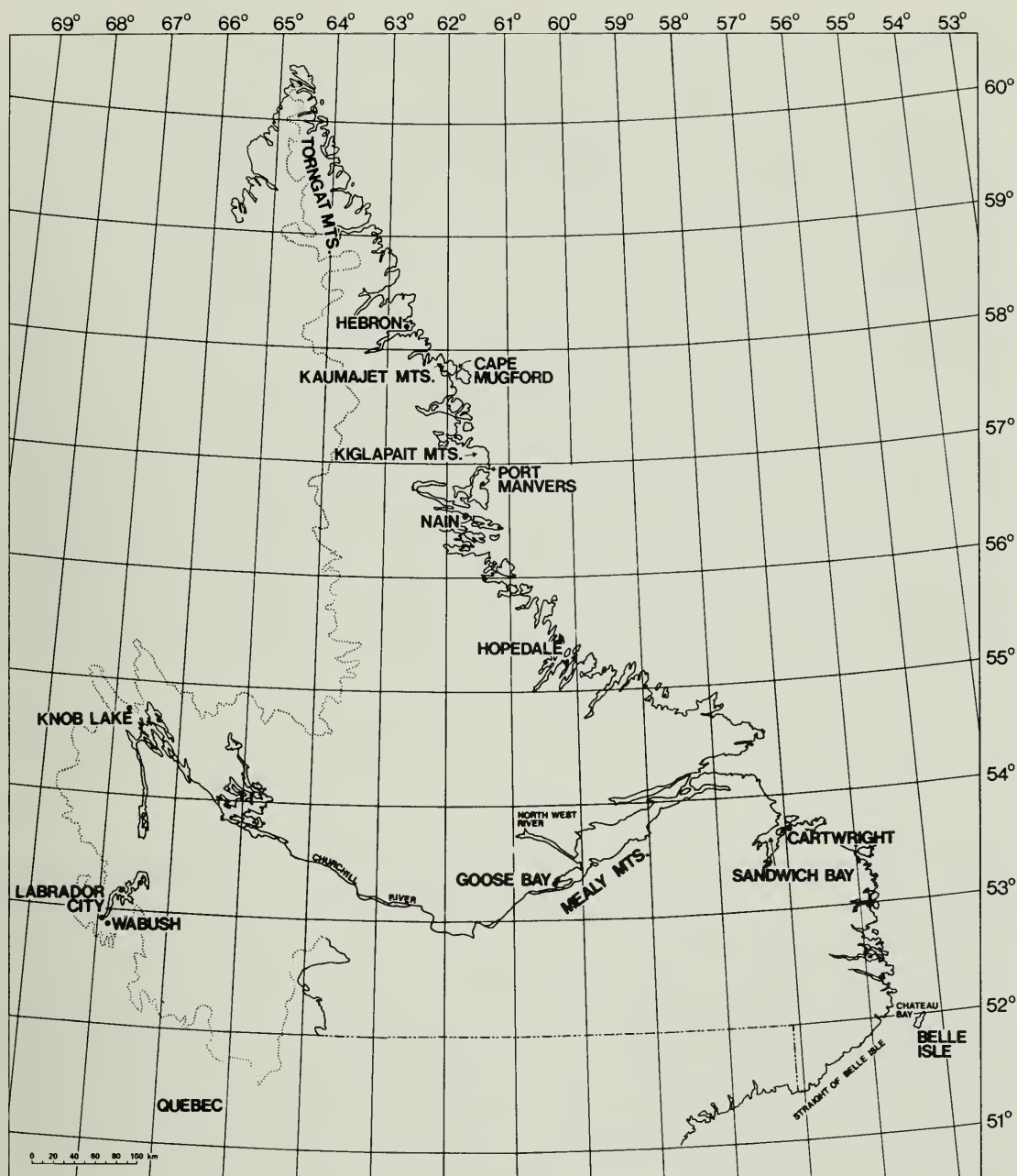


Fig. 4. Map of Labrador.

Geology and soils

The character and distribution of soils in Newfoundland have been greatly affected by the movement of ice masses that passed over the entire surface during the Pleistocene period. Soils formed before the glacial period were stripped from the underlying rocks and those that exist now have been formed during the short period since the last Wisconsin glaciers receded, about 10 000 years ago. This means that they are relatively young and are not very deep because not enough time has elapsed to permit much soil development under Newfoundland climatic conditions.

Climate, vegetation, and topography have also had their effect on the speed and character of soil formation. The humid, continental, rather cool, short summer season and the coniferous vegetation associated with it have produced podzolization in most cases (Clayton et al. 1977). This means that most of the soluble mineral elements as well as the organic matter have been removed from the topsoil and deposited in the subsoil. This leaching, combined with the lack of limestone in the underlying rocks, has produced a universal condition of strongly acid soils.

No description of Newfoundland's soils would be complete without mentioning the marsh or boglands, of which there are approximately 16 000 km². These vary greatly in depth, degree of decomposition, and drainage needs. They are all very acid and deficient in phosphorus and potash. Extensive collecting of moths with light traps was undertaken between 1957 and 1968 at the Substation at Colinet (Fig. 5) to determine what changes were occurring in the insect population as the peat soils were developed for agricultural purposes. Figures 6–9 give some idea of other areas in Newfoundland where specimens were collected.

Generally speaking, Labrador has very limited areas of soil suitable for agricultural use. Small garden plots are cultivated in southern coastal communities, particularly where a Moravian Mission is established. However, in most of these areas the soils are shallow and stony or of just plain peat, and all are highly acid. In the Goose Bay, Churchill River, and North West River areas the soil is generally sandy and considerable small gardening is carried on. Soil surveys in this area indicate that there are scattered sections where small fields, 0.5–2 ha in extent, could be cleared and cultivated with reasonable success. However, the soil would have to be managed judiciously. It would require drainage, topdressing with organic materials, liming, and fertilization before satisfactory crops could be produced.



Fig. 5. A bog habitat at the Peat Substation, Colinet, where many interesting species were captured.



Fig. 6. Gros Morne National Park, Bonne Bay, western Newfoundland. Many specimens were taken in this general area at Glenburnie, Woody Point, Norris Point, and Lomond.



Fig. 7. Newfoundland Government Farm, Pynns Brook, western Newfoundland, showing light trap in a typical birch-spruce forest area.



Fig. 8. Codroy Valley area in western Newfoundland, which includes the communities of Doyles, Tompkins, South Branch, O'Regan's, and Searston. Many species have been taken in and around these communities.



Fig. 9. The Avalon area near Pouch Cove, Newfoundland. Areas like this, commonly referred to as barrens, have yielded many interesting species.

Climate

Being an island, Newfoundland has a variable climate because of the currents that wash its shores. Any warming influence of the sea is modified by the cold, ice-laden Labrador current that sweeps down the east and west coasts. This makes the island colder than other coastal areas in comparable latitudes and causes a late, cold spring followed by a short, cool summer. However, this is to some extent compensated for by a long period of fine weather in the fall, although late spring and early fall frosts are normal. On the other hand the winters are mild, particularly in southeastern areas of the island. However, in January the average temperature of the west coast, because of its proximity to the continental landmass, is 3°C lower than that of the east coast. The lowest temperatures, both in summer and winter, are found in the northern extremity of the island. The mean July temperature is about 14°C , although 27°C may be reached during warm spells. The warmest region is on the western side near Corner Brook, which is some 2°C warmer than the eastern regions.

The rainfall in Newfoundland ranges from about 750 mm in the northwest to 1500 mm on the south coast and is evenly distributed throughout the year. Fog is prevalent and occurs most often in the southeast coastal areas. It is produced as a result of the warm, moist winds from the southwest meeting air cooled by the Labrador current. From December throughout the winter months the northeast and northwest coasts are usually closed because of ice. However, the south coast is entirely ice-free throughout the year.

The climate of Labrador is more continental than that of Newfoundland. It is not generally affected by the storms that track northward along the Atlantic seaboard. Rainfall in summer is not excessive; the infrequent storms are cyclonic in nature but tornadoes and typhoons are unknown on the coast. Even thunderstorms are almost nonexistent except in the northern mountains. Magnetic storms, on the other hand, are violent and common. The temperature in Labrador, particularly along the coast, is quite moderate in summer but in the interior it may become rather warm, sometimes reaching 32°C. The summer is usually short with early fall frosts, but the long hours of daylight compensate for the short growing season. Although the temperature of the water outside the bays is never higher than 9°C on the surface, in the bays it rises to 16–18°C, and temperatures of 21–27°C are common on land. Fog is scarce north of the Strait of Belle Isle and seldom occurs in Labrador.

Butterflies and Moths

Characteristics

Insects are the largest single group of living animals in the world. There are more than 800 000 species, including countless varieties of butterflies, moths, beetles, flies, bugs, bees, grasshoppers, and crickets. All mature insects, however, possess basic similarities in that they are cold-blooded and have a segmented exterior shell or exoskeleton and six jointed appendages. Their closest relatives, spiders, centipedes, millipedes, and crustaceans, have similar characteristics.

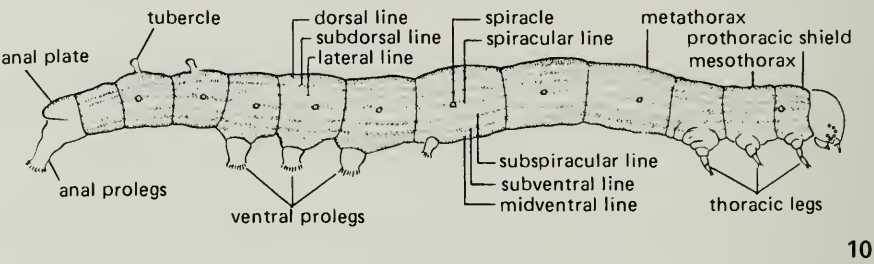
The wings are the most characteristic feature that distinguishes butterflies and moths from other insects. They are well developed and covered with what looks like fine powder, but is actually thousands of tiny overlapping scales, visible under a microscope. Because of these scales butterflies and moths have been placed in the order Lepidoptera, which means "scale-winged."

Some basic differences between butterflies and moths make differentiation possible. Butterflies are diurnal, that is, they fly during the day, especially in bright sunny weather, whereas moths, with a few exceptions, are nocturnal, that is, they fly at night and are attracted to electric lights. The exceptions are in the families Sphingidae, Noctuidae, and Geometridae, where a few species are both diurnal and crepuscular, flying in daylight or at dusk. Most butterflies hold their wings vertically when at rest, but moths usually rest with their wings held horizontally. Butterflies have clubbed antennae, with the exception of members of the skipper family (Hesperiidae), which have hooked antennae, whereas the antennae of moths may be threadlike, or plumose, resembling miniature feathers, but are never clubbed.

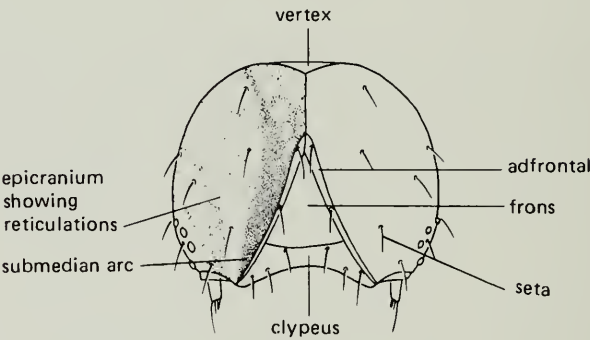
Although the wings of butterflies and moths differ in size, shape, and color according to species, they are basically similar in structure. Every species has two pairs of wings attached to the thorax, or midsection, of the body. The females of a few families of moths have segmented or rudimentary wings and are flightless. The delicate membranous areas of the wing are supported by riblike veins; the arrangement of these veins can facilitate identification. Many species of Newfoundland and Labrador butterflies and moths are easily identified by the shape and color pattern of the wings (Fig. 11).

Beneath the wings, attached to the thorax, are three pairs of legs. There is an interesting development in butterflies of the family Nymphalidae, which have dwarfed front legs and depend on the other four legs for walking. This characteristic accounts for their common name of “brushfooted butterflies.”

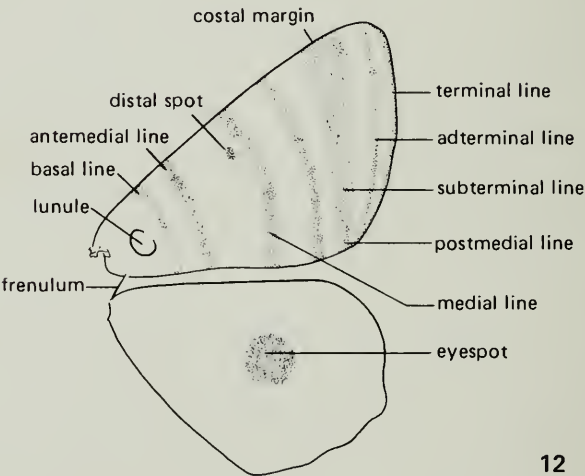
The heads of butterflies and moths bear the sensory organs, which consist of two antennae, a pair of compound eyes, and a tongue, or



10



11



12

Fig. 10. Diagrammatic drawing of a larva, showing possible longitudinal lines.

Fig. 11. Head of a larva.

Fig. 12. Diagrammatic drawing of a geometrid fore and hind wing.

proboscis. The antennae are used for detecting scents. Each compound eye is composed of many individual cells or facets, arranged to form one large conspicuous compound eye on each side of the head. The hollow tongue is coiled beneath the head when not in use, but may be extended for feeding on nectar or other sweetened liquids.

In addition to the head and thorax, there is an abdomen that functions primarily in nutrition, respiration, and reproduction. Located along each side are openings or spiracles through which air enters the breathing system and travels to the vital organs through tracheae and tracheoles, a complex and delicate maze of air passages. The eggs develop within the abdomen of the female and must be fertilized by a male of the same species. Females of some species may produce several hundred eggs.

Butterflies and moths, like other animals, obtain protection from their enemies by adaptation of their form and color. Some resemble objects of no interest to their predators, such as a dead leaf (*Polygonia* adults, *Limenitis* and *Polygonia* pupae), a bud (lycaenid larvae and pupae), or a bird dropping (young *Papilio* and *Limenitis* larvae). Others, such as the dull-colored adults of many Noctuidae, Satyridae, and Geometridae, and the green larvae and pupae of the Pieridae merge into the background and become invisible. Still others show a brilliant flash of color when in flight, then drop suddenly to a resting position, exposing the dull-colored underside of the wings. This alternation of brilliance and drabness, typical of *Polygonia*, *Vanessa*, and *Catocala* is confusing to a pursuer. Some butterflies and moths obtain protection through mimicry. For instance, the viceroy butterfly (*Limenitis archippus* Cramer) is edible to birds but resembles the inedible monarch (*Danaus plexippus* (Linnaeus)) in color and habits. Similarly, the diurnal hummingbird or common clear-wing moth (*Hemaris thysbe* (Fabricius)) is protected by its resemblance to the bumble bee (*Bombus* spp.).

Development

The life of a butterfly or moth has four very distinct stages or changes in form. These changes are known collectively as a complete metamorphosis, a process that many other groups of insects undergo.

Egg stage

After mating, the female oviposits her eggs on or near specific host plants that will provide suitable food for the larvae. The eggs may be laid singly on the top or bottom of a leaf, on stems and bark, or in flower blossoms. Others may be laid in a mass on or around a twig of the host plant. Some moths will even scatter their eggs on soil and lower shrubs as they fly at dusk. When viewed through a microscope, most insect eggs reveal amazing beauty in both shape and design. Some may be plain, smooth, and

oval, others elongate, ribbed, or with very intricate patterns. The color varies with the species and may be pure white, cream, yellow, blue, or shades of green and black.

The egg is a valuable stage in the life cycle, being a small, compact unit that is produced in large numbers, is well protected against drought and cold, and can be left to fend for itself if placed in a suitable environment. The duration of the egg stage is variable, depending on the species. In some species the egg overwinters; in others development is complete and the larva hatches in 7–10 days. Immediately before hatching, the egg darkens considerably and the young larva then gnaws through the shell. Many newly hatched larvae eat their empty egg shells before feeding on plant foliage.

Larval stage

Butterflies and moths consume food at a rapid rate during this stage, and cause a great deal of economic damage to agricultural crops, ornamental shrubs, trees, and flowers. The larvae grow at a tremendous rate and shed their skin 3–6 times, depending on the species. Each larval change is known as an instar. Many larvae have special protective adaptations; some are very hairy or spiny; others, depending on their host plant, have bitter or poisonous juices and are quite distasteful. Some larvae of the swallowtail family (*Papilio* spp.) have a Y-shaped scent organ, the osmeterium, that can be protruded from the first thoracic segment and emit an unpleasant odor. Other swallowtail larvae have a pair of large, orange, black-pupiled eyespots on the thorax that give a snake-like appearance and frighten away predatory birds and animals.

The larval stage is highly specialized, biologically speaking, as the nutritive part of a butterfly's or moth's life cycle (Figs. 10 and 12). Undisturbed, a larva eats, and eats, and then eats some more. It transforms incredible amounts of plant material into tissues and stored foods to be used during the succeeding pupal and adult stages.

Many of our species of butterflies and moths hibernate in the larval stage. Most of these do so when partly grown, but a number spend the winter as newly hatched larvae, not eating until spring.

A larva is one of the few creatures that can produce silk. This is accomplished by means of a special gland in the head called the spinneret. Some weave silken threads into nests in which to rest; others web together the foliage on which they feed. The larvae of many moths produce silken cocoons in which to pupate. It is from the cocoon of the silkworm (*Bombyx mori* Linnaeus) that the world obtains its supplies of raw silk.

Only a small percentage of larvae survive to the pupal stage. Many are eaten by birds and others are destroyed by parasitic wasps and flies. Countless numbers are destroyed by virus and mold infections and bacteria. Agricultural chemicals, applied by man to control harmful insects, also eliminate many less harmful species.

Pupal stage

After growth is completed, the larva looks for a suitable place in which to pupate, then performs the last larval molt and transforms to a pupa. The pupa is an intermediate, usually quiescent form assumed after the larval stage by insects that undergo complete metamorphosis and is maintained until the beginning of the adult stage. It is usually inactive and only able to wriggle its abdomen. Internally, however, a drastic reorganization takes place. The larval structures mostly break down and disappear and in their place the complex organs of the adults develop. When the transformation is completed the last molt occurs, and the adult emerges from the old pupal shell.

The pupae are exceedingly varied in shape and color. Some are plain, oval, and mummy-like. Others have elaborately sculptured shapes, or long spiny or knobby projections. Some are dull and plain brown or green; others are brilliantly colored, with metallic gold or silver markings. Each species, however, maintains its own true patterns.

Butterfly and some moth pupal structures have a spiny process at the end of the abdomen known as the cremaster. This is usually caught into a silk button spun by the larva, and so holds the pupa in place. Most butterfly pupae are not enclosed in silken cocoons as are so many moth pupae, but hang from the cremaster. There may also be a silk girdle around the pupa.

The pupal period may be short (8–10 days) or of very long duration (a year or more), depending on the time of year or the particular species. Many species hibernate as pupae; in most the adult emerges after one winter, but in a few species two winters may pass before the adult appears.

Adult stage

Several days before the butterfly or moth emerges, the pupa (or chrysalis) turns darker. In some species, the colors of the forewings may be observed inside the pupal case immediately before emergence. The casing splits suddenly and in a matter of moments a creature emerges that is often unrecognizable as a butterfly or moth. At first the wings are very small and crumpled, but soon the newly emerged adult pumps a special fluid into the tubular veins of the soft and pliable wings, which soon expand, becoming permanently rigid and ready for flight. The adult does not increase in size after this point.

Most butterflies and moths in Newfoundland and Labrador produce only one brood or generation a year. There are a few species, however, such as the imported cabbageworm, that have two or three generations a year. Some moths in Labrador, on the other hand, require 2 years to complete a single generation.

Almost everyone has observed butterflies and has never ceased to be amazed at their habits and behavior. An interesting habit frequently

observed in Newfoundland is a "Mud Puddle Club" gathering of the Canadian tiger swallowtails, *Papilio glaucus canadensis* Rothschild & Jordan. This is our most common butterfly and is usually in flight from mid-June to late July. They sometimes swarm and gather in large numbers at puddles or damp places on country roads; about 30 adults were seen on a heap of stable manure at La Manche. Klots (1960) listed the sulfurs (*Colias* spp.) and the swallowtails (*Papilio* spp.) as constant puddle visitors. Although less frequently observed among moths, a number of species of the family Geometridae, including the species *Rheumaptera*, also frequent mud puddles.

Collecting

There are approximately 12 000 butterflies and moths known to occur in North America. Although the Lepidoptera of many areas of Canada and the United States are well known, they are not as well known in Newfoundland and Labrador. Systematic collecting can provide valuable information on the ranges and habits of many species and will quite probably reveal some species not yet discovered. Most species of Lepidoptera have rather limited flight seasons, and many can be taken in good condition for only a week or two during the year. Thorough collecting in any locality, therefore, requires repeated searching of each type of habitat at all suitable seasons.

The life histories of most Canadian Lepidoptera are inadequately known, hence the assembling of a collection of well-preserved, identified specimens of eggs, larvae, and pupae is most important. Also, information on food plants and preferences is most useful and at the same time one of the simplest contributions that can be made by individual collectors.

There are four principal methods of collecting adult Lepidoptera: with a net; by attracting them to artificial light; by the use of baits or natural attractants; and by rearing from the early stages. Each method has advantages and disadvantages.

Equally important is the time-consuming work of curating these collections. Eggs and larvae are usually preserved in alcohol (70% ethanol); pupae can be preserved wet in ethanol or dry on pins. The alcohol must be kept at a safe level to prevent drying out, and the pupae on pins must be protected with paradichlorobenzene or naphthalene from dermestids and other museum pests.

The net is most often used for day-flying Lepidoptera, but it can also be used in conjunction with a flashlight or lantern to catch nocturnal species, particularly those attracted to flowers. Many diurnal Lepidoptera are attracted to flowers, some to wet places on roads. Butterflies are usually most prevalent from late morning to mid-afternoon, and moths fly most freely just after sundown. Warm, sunny, calm weather is generally best for collecting butterflies and diurnal moths.

Collecting with lights is the most productive method of obtaining moths. A strong black fluorescent light gives best results, and should be placed with a white sheet or other reflecting surface behind or below it. Adult moths attracted to the sheet can be carefully picked off in killing vials or bottles as they alight. Sufficient killing bottles should be available so that moths can be picked up singly to avoid damaging specimens. When killing jars are attached to light traps, they should be strong enough to kill very quickly, otherwise specimens will become damaged. Collecting with lights should not be confined to the early evening as some species rarely appear before midnight and there is generally a change in species as the night progresses. Excellent specimens have been taken in parks with a gas lantern hanging in a camper trailer near a nylon screen opening. As moths arrive on the netting they may be carefully captured.

The most widely used baiting method for Lepidoptera is called "sugar-ing," and recipes vary with individual preferences and available materials. This method chiefly attracts cutworm moths (Noctuidae) but species of other families will also, at times, be attracted. Sugar baits are sweet smelling liquids made up largely of sugar in some form and partly fermented. There is no standard formula, and collectors generally develop their own. The mixture usually consists of brown sugar and molasses to which stale beer is added. Mashed bananas, overripe peaches, or fermenting fruit juices may be added. The mixture becomes more attractive if left overnight to ferment; this process may be accelerated by adding a pinch of yeast. It is important that the mixture be aromatic, giving off odors of the lower alcohols and esters. The mixture must also be thick enough not to run off or soak into the trunks of trees. It should be applied with a brush to fence posts and tree trunks at dusk, covering a patch of about 150×150 mm at breast height. For convenience, the trees selected should be along a path that forms a closed circuit, reasonably sheltered from wind and with mixed vegetation. The sites should be periodically visited after dark when the moths and other insects are imbibing. The number of insects attracted will vary with locality, season, weather, and the presence or absence of natural food sources. Specimens may be captured from the baits by holding an open killing bottle or a net directly below and, if necessary, moving it up slowly until it touches the insect.

Rearing Lepidoptera from the early stages has many advantages. Specimens can be obtained in a perfectly fresh condition; females are obtained in as large a number as males; a series of a species can be obtained from eggs laid by one female; and, most important, the life histories and the food-plant preferences of each species can be learned. Rearing can be carried out by inducing a captured female to lay eggs or by collecting eggs, larvae, or pupae in their natural surroundings. The care of larvae is usually simple but very time consuming; essentials are clean surroundings and an abundance of fresh food. Both larvae and pupae should be handled as little as possible. Larvae should never be handled directly but should be transferred on a leaf or twig from one jar or cage to another. Butterflies and

moths emerging from the pupae should be given plenty of room, and should not be interfered with until their wings are hardened.

Lepidoptera are best killed with cyanide, but liquid killing agents such as tetrachlorethane are reasonably satisfactory. Because these insects are so easily damaged, the following precautions must be taken: the killing bottle must be clean; other insects must not be put in with Lepidoptera; some absorbent paper or cotton wool should be placed in the bottom of the jar; only one or two specimens should be put in at a time; and a bottle with specimens lying loosely in it should never be carried any distance. The specimens should be packed in layers of cotton wool if carrying is necessary.

Ideally, adult Lepidoptera should be pinned and spread as soon as they have been killed. When this is not possible, specimens can be layered on a sheet of cotton wool and covered with a layer of facial tissues in a large, shallow box. It is better to pin the specimens, even though time or facilities for spreading the wings are not available, as pinned specimens are less liable to be damaged. Insert the pin vertically through the middle of the thorax with the body of the specimen 15 mm below the top of the pin. Care should be taken to use a pin of the appropriate size. The scale of sizes is approximately as follows: for noctuids and other average-sized stout-bodied butterflies and moths, No. 3; for large geometrids and the smaller butterflies, No. 2; for small geometrids, Nos. 1 and 0; and for smaller forms, No. 00.

Eggs of some Lepidoptera may be preserved dry, but those with delicate shells should be preserved in 70% alcohol. For general purposes, larvae should be killed in hot water and preserved in alcohol. Preservation in alcohol will not retain colors, which should be recorded in notes and, if possible, color photographs. Skins of larvae can be inflated with wax, giving a very natural-looking specimen but one whose structure is difficult to study. Molted skins and head capsules of larvae that are being reared should be preserved. Also, the pupal skins from which adults have emerged should be preserved and associated with the adults to which they belong, either by being placed on the same pin or by an appropriate system of labeling.

Methods of collecting, rearing, and storing are described in great detail in a book compiled by J. E. H. Martin, entitled *The insects and arachnids of Canada. Part I. Collecting, preparing, and preserving insects, mites, and spiders*. This book is available by mail from the Canadian Government Publishing Centre, Printing and Publishing, Supply and Services Canada, Hull, Quebec, K1A 0S9, price \$3.50 in Canada, or from your local bookseller.

Classification and identification

A prime characteristic of science is its orderliness; hence a systematic method of naming, grouping, and classifying all known animals and plants

was an early scientific development. The method employs Latin as the international language of classification, although common or popular names, which may vary from country to country or from region to region, will be in the local language.

The imported cabbageworm can illustrate the method of classification. Its scientific name is *Pieris rapae* (Linnaeus), where the first word, *Pieris*, refers to the genus, or general group into which this butterfly and its closest relatives have been placed. The second word, *rapae*, designates the species, the specific kind of butterfly within the general group. Under natural conditions, a species can only breed with its own kind and not with related species in the same genus. Some species may be subdivided into subspecies according to minor but inherited characteristics developed within certain areas of its distribution. The last word in the scientific name, Linnaeus, is the name of the person who first described the species. Carolus Linnaeus originated this method of classifying animals and plants in 1758, thus his name is attached to many species, and the method is known as "the Linnaean Binomial System of Classification." The last word appears as (Linnaeus), the parentheses indicating that the species was originally classified or placed in some other genus and that it has subsequently been removed and placed in another genus.

The identification of butterflies, moths, and other insects often provides as much enjoyment to scientists and amateurs as does collecting specimens in the field. Many species can be identified by comparing newly captured specimens with photographs in prepared texts. It is hoped that this book will provide assistance to those interested in observing and studying the butterflies and moths of Newfoundland and Labrador.

BUTTERFLIES

Family PAPILIONIDAE

swallowtails

No family of butterflies is as impressive or as easily recognized as the swallowtails. Few other butterfly families approach the majestic size characteristic of most Papilionidae. Except for the monarch butterfly, *Danaus plexippus* (Linnaeus), which visits our shores each year, the swallowtails are the largest butterflies known in Newfoundland and Labrador.

There are numerous brightly colored species of swallowtails in the jungles and rain forests of South America, Africa, and the Far East. There are fewer species in more temperate regions but the family maintains a high degree of beauty; unattractive species are unknown. The swallowtails of Newfoundland and Labrador belong to the genus *Papilio*. They are characterized by the distinctive shape of the hindwings, where well-developed wing extensions or "tails" appear along the lower margins.

In general, the swallowtails are strong and erratic fliers. They may soar for long periods, pausing from time to time at mud puddles, or to feed at favorite flowers. They are sometimes attracted to unpleasant substances, such as decaying manure or animal matter.

The larvae feed openly on the vegetation of their choice, usually well camouflaged with appropriate coloring and markings. All larvae have a scent organ on the prothoracic segment, near the base of the head. This Y-shaped fleshy horn, called an osmeterium, is normally inverted in a concealed fold in the skin but can be thrust forward in an instant. The osmeterium is frightening in appearance and can emit an obnoxious odor to discourage predators.

The pupae have a pair of projections on the head, the ventral surface is bowed, and there is a dorsal hump or keel on the thorax. Pupae are usually suspended by a tuft of silk at the anal end and a loose girth in front of the thorax. This family passes the winter in the pupal stage.

Approximately 15 species and subspecies of swallowtails are recorded in Canada (Gregory 1975), but only 2, *P. brevicauda* and *P. g. canadensis*, are found in both Newfoundland and Labrador. Two others, *P. p. asterius* and *P. p. glaucus*, are said to occur in Newfoundland, but no specimens exist to confirm this report.

Genus *Papilio* Linnaeus

P. polyxenes asterius Stoll

BLACK OR PARSNIP SWALLOWTAIL

Plate 1, 1

According to Ebner (1970) the black swallowtail is common and widespread throughout the eastern part of southern Canada and the United States. The larva, sometimes called the parsleyworm, is often found in backyard gardens on carrots (*Daucus* spp.), parsnips (*Pastinaca* spp.), and parsley (*Petroselinum* spp.), sometimes in sufficient numbers to be considered a pest.

There are several reports in the literature of this butterfly occurring in Newfoundland. A specimen from Carbonear illustrated in Gosse's *Entomologica Terrae Novae* of 1835 is labeled as a black swallowtail, and Gosse refers to it by this name in his diary of 1903. Couper (1869) also stated that the species occurred in Newfoundland, but Pardy (1974) recorded it as *ajax* Linnaeus. All these records are thought to be misidentifications of *brevicauda* Saunders. Because *brevicauda* was at one time regarded as a subspecies of *polyxenes*, this confusion is understandable.

The species is illustrated here to show the difference in the length of the tails of *asterius* (Pl. 1, 1) and *brevicauda* (Pl. 1, 2), which is the main characteristic for separating the two species. Until authenticated specimens are obtained, it must be considered that *asterius* does not exist in Newfoundland and Labrador.

P. brevicauda Saunders

SHORTTAILED SWALLOWTAIL

Plate 1, 2

Few butterflies in Newfoundland and Labrador are seen as often and are as well known as this attractive swallowtail. It is widely distributed in Newfoundland (Fig. 13), southern Labrador, Quebec, the Maritime Provinces, on Anticosti Island, and on the shores of the Gulf of St. Lawrence. Klots (1951) lists three subspecies: *P. b. brevicauda* Saunders in Newfoundland and Anticosti, *P. b. bretonensis* McDunnough in the Maritime Provinces, and *P. b. gaspeensis* McDunnough on the Gaspé Peninsula, Que. These subspecies have few distinguishing characteristics, although the Newfoundland form is the largest and has the most orange on the spot band.

Adults have been collected in Newfoundland from mid-June to late July and in Labrador from late June to early August.

The young larva is brownish black with a white saddle, resembling a bird dropping, but the older larva is green and has a black band containing small round yellow spots across each segment. It feeds on Umbelliferae such

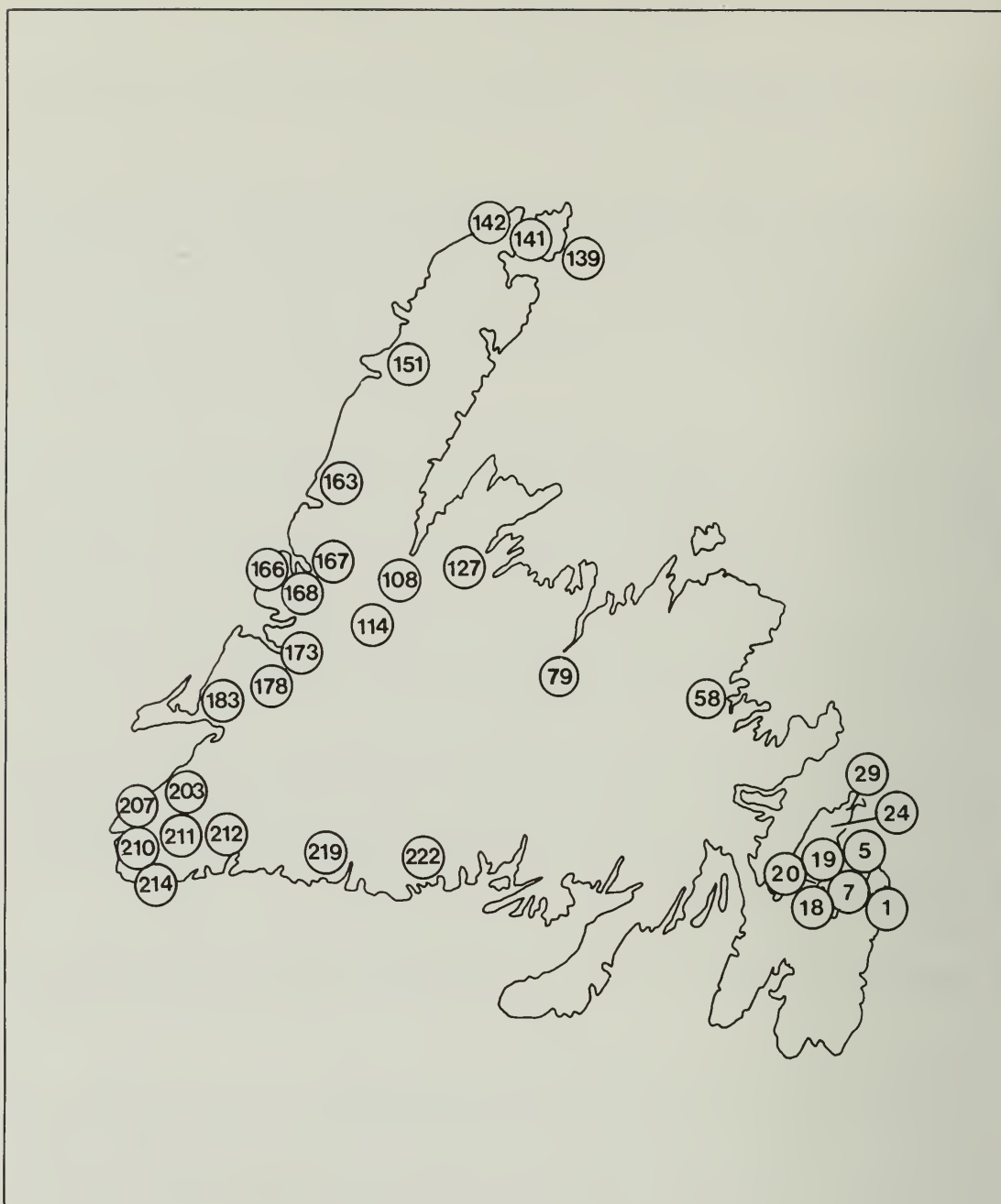


Fig. 13. Distribution of *Papilio brevicauda* Saunders in Newfoundland. Collection points in Newfoundland are listed alphabetically on page 296 and numerically on page 299.

as cow-parsnip (*Heracleum* spp.), parsley (*Petroselinum* spp.), and angelica (*Angelica* spp.). A single generation occurs annually and the pupae overwinter. The life history of the species (with the exception of the egg stage) was illustrated by Gosse (1835) and is reproduced as the frontispiece in this publication (Fig. 1).

P. glaucus canadensis Rothschild & Jordan
CANADIAN TIGER SWALLOWTAIL

Plate 1, 3

This pretty yellow and black subspecies ranges south from Newfoundland and Alaska into northern areas of Minnesota, Wisconsin, and Michigan, and to the mountains of New England. It is a widely distributed and sometimes abundant resident of Newfoundland (Fig. 14), where adults are in flight from mid-June to late July.

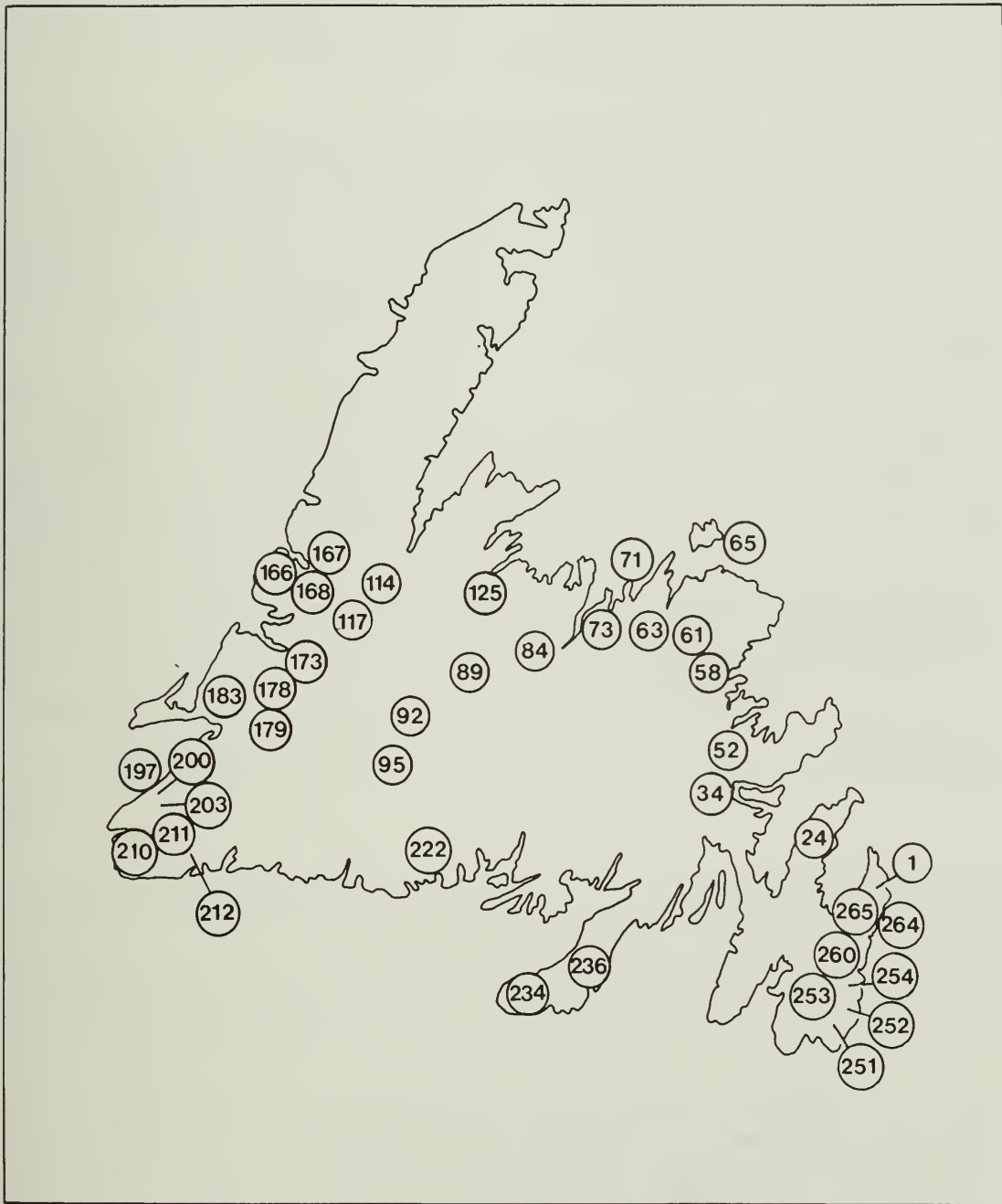


Fig. 14. Distribution of *Papilio glaucus canadensis* Rothschild & Jordan in Newfoundland.

The larva is smooth and green, and has a pair of large, orange, black-pupiled eyespots on the metathorax, probably a form of protection from birds and other animals that feed on insect larvae. Behind the eyespots there is a transverse orange and black stripe. Protection is also obtained by extending the foul-smelling osmeterium. The larva feeds on the tender leaves of young ash (*Fraxinus* spp.), wild cherry (*Prunus* spp.), birch (*Betula* spp.), poplar (*Populus* spp.), and apple (*Malus* spp.). The pupa is rough and brown, and sometimes has a mottled appearance. It is the overwintering stage. A single generation occurs each year.

P. glaucus glaucus Linnaeus

EASTERN TIGER SWALLOWTAIL

(Not illustrated)

Clarke and Clarke (1951) reported that both this subspecies and *canadensis* occur in Newfoundland. They thought that Rothschild and Jordan's description of *canadensis*, which was from Newfoundland specimens, fitted Newfoundland specimens less accurately than it did specimens from any other northern region. Although they are small, many specimens of both sexes from Newfoundland would be assigned to *P. g. glaucus* on the basis of the differential characters given.

Clarke and Clarke (1951) further support their claim by the fact that black females occur in Newfoundland, as they do in Maryland and Virginia, but not in New England, where black females of *glaucus* have never been found. These authors state that it is somewhat surprising to see this melanic character appear far to the northeast, in Newfoundland, where it is presumably a local variation of the New England type. The adult insects closely resemble *canadensis* except for the dark females. They appear in mid-June. The species is not found in Labrador.

The larvae feed on tender leaves of ash (*Fraxinus* spp.) and wild cherry (*Prunus* spp.).

Family PIERIDAE

whites and sulfurs

The pierids are medium to small-sized butterflies, usually white or yellowish in color, with black marginal wing markings. This is one of the major, worldwide families of butterflies, and the most primitive next to the skippers. Their pigments, formed from the uric acid wastes of their bodies, are not found in other families. The front legs are well developed and the tarsal claws are bifid. The members of this family are divided into three subfamilies: the whites, the sulfurs or yellows, and the orange tips. There are approximately 36 species in Canada, 9 of which are found in Newfoundland and Labrador. A few are serious agricultural pests, the most common being the imported cabbageworm, *Pieris rapae* (Linnaeus).

The eggs are elongate, spindle-shaped, and reticulated. The larvae are usually smooth, plain green, and slender. Most pupae have a central projection forward from the top of the head, and are suspended by both the cremaster hook and a silk girdle. Preferred food plants include the Cruciferae (mustard family), the Leguminosae (cassias), Mimosaceae (mimosas and acacias), and Fabaceae (peas, beans, clovers, vetches, etc.). The larval life tends to be short, so that many species have a number of generations each year.

Sexual dimorphism is marked, females consistently differing from males in pattern. Sometimes the dimorphism is also in color; white females occur in many yellow and some other-colored species.

Genus *Colias* Fabricius

C. hecla Lefèvre

ARCTIC SULFUR

Plate 2, 1

The southern limits in North America of this arctic species are Labrador, Baffin Island, and Churchill, Man. It is also found in arctic Europe and Asia.

Cashman collected the only specimen recorded from Labrador at Cartwright, 12 August 1955. However, it is probable that the species is more widespread than this single record would indicate. It has not been recorded from Newfoundland.

The larva is green with light lateral stripes and is covered with many tiny, hair-bearing black tubercles. It feeds on milk vetch (*Astragalus* spp.) and usually hibernates as a fully grown larva. However, hibernation may also be as a pupa.

C. eurytheme Boisduval

ALFALFA CATERPILLAR

Plate 2, 2

The adult insect can be recognized by the orange coloring on the upper surface of the wings. This marking differentiates it from its close relative, *C. philodice*, the clouded sulfur. Klots (1951) stated, "the *eurytheme-philodice* relationship cannot be expressed by our rigid system of nomenclature. They are neither obviously separate species, nor subspecies of the same species but something more fluid and in between these states."

The species is distributed from the Atlantic Provinces across Canada to the Pacific, and south to Florida and Mexico. In Newfoundland, specimens have been taken at St. John's, Long Pond, Witless Bay, North River, Lethbridge, Terra Nova National Park, Ladle Cove, Cormack, and Lomond. Adults are in flight from late June to late August. The species has not been reported from Labrador.

The larva feeds on alfalfa (*Medicago sativa*) and is sometimes a pest on this crop. It is also found on white clover (*Trifolium repens*), milk vetch (*Astragalus* spp.), and lupines (*Lupinus* spp.). It is grass green in color and has an indistinct dorsal stripe and white lateral stripes, edged below with black. The species overwinters as a pupa and possibly as an adult.

C. philodice Godart

CLOUDED SULFUR

Plate 2, 3

This is the most common yellow butterfly in Canada. It is sometimes seen in swarms on muddy country roads or hovering over clover fields. It is found from Newfoundland and the Maritime Provinces west to Ontario and south to Florida and Texas. Its relationship with *C. eurytheme*, with which it is often confused, is discussed under that species. It is widespread in Newfoundland, where specimens have been taken at Kilbride, Goulds, Renew, St. Shotts, Cupids, Port de Grave, North River, Terra Nova Park, Glenwood, Ladle Cove, Deer Lake, Cormack, Pasadena, Pynns Brook, Doyles, and Burgeo. The flight season extends from early July to late August. It is not found in Labrador.

The larva is grass green in color and has short hairs, a faint darker dorsal stripe and whitish lateral stripes. It feeds on white clover (*Trifolium repens*) and other clovers, vetch (*Vicia* spp.), lupines (*Lupinus* spp.), alfalfa (*Medicago sativa*), and other Leguminosae. The species hibernates as a pupa and sometimes as an adult or larva.

C. interior Scudder

PINK EDGED SULFUR

Plate 2, 4

This species ranges throughout Labrador, Newfoundland, northern New England, and New York, and extends south in mountainous terrain to Virginia, and west to Michigan and Minnesota. Specimens have been taken in Newfoundland at St. John's, Witless Bay Line, Cupids, Port de Grave, North River, New Melbourne, Peter's River, Lethbridge, Gander, Springdale, Woody Point, Glenburnie, Corner Brook, Cormack, Kitty's Brook, Gaff Topsail, Millertown Junction, Glenwood, The Tolt, Coal Brook, Doyles, Codroy Valley, View Hill, Table Mountain, Doctor's Hills, Flower's Cove, and Winterland. In Labrador, specimens have been taken at Goose Bay, Happy Valley, Cartwright, and Hebron. The flight season in Newfoundland begins in mid-July and continues to mid-August, and in Labrador it occurs from early to late July.

The larva is a rich yellowish green with a narrow darker dorsal stripe. It has innumerable small papillae bearing short dark hairs, and a white lateral fold with a bright crimson line. It feeds on sourtop and blueberry (*Vaccinium* spp.) and hibernates as a first instar larva.

This eastern arctic species extends from Newfoundland and Labrador west at least as far as the northern Rocky Mountains. In Newfoundland, specimens have been taken at St. John's, Port aux Basques, Table Mountain, The Tolt, Burnt Islands, Mummichog Park, St. John Island, Flower's Cove, St. Anthony, and Doyles. In Labrador, it is widely distributed at Hebron, Nutak, Okak, Nain, Black Island, Davis Inlet, Hopedale, Cartwright, and Knob Lake. McDunnough (1921) reported receiving many specimens of the subspecies *C. p. labradorensis* Scudder from Hopedale; however, Klots (1951) stated that *labradorensis* was a synonym. The adults are in flight in Newfoundland from early July to early August and in Labrador from mid-July to late August.

Klots (1951) stated that the species was widely distributed in arctic and subarctic areas of North America, Europe, and Asia. In Canada the subspecies occurs from Labrador westward and is common at Churchill, Man. Möschler (1860) and Packard (1888) both reported the species from Labrador. No specimens have been taken in recent years.

This is an arctic species, extending north and west from Labrador. Möschler (1860) and Packard (1888) reported the species from Labrador, where it is widely distributed along the coast. Scudder (1895) reported it north of the Moravian settlement at latitude 59°N. McDunnough (1921) reported two specimens from Nain. Since then, many specimens have been taken by Perrett in 1927, Stearns in 1954, and McAlpine in 1954 at Nain, Nutak, and Hebron, respectively, and by Ferris at Nain on 14 July 1975. The *nastes* sulfur is not found in Newfoundland.

The adults are characteristically small and dirty white in color, and both sexes have eight spots in the wing border. They are in flight from mid-July to mid-August.

The larva is generally dark moss green, but the head is lighter and has a pair of yellow and white lateral stripes. The body has many tubercles (Fig. 10), which bear short black spines. The larva feeds on milk vetch (*Astragalus* spp.). The species hibernates as a fully grown larva.

Genus *Pieris* Schrank

P. napi frigida Scudder

MUSTARD WHITE

Plate 2, 8

Mustard whites occur in races throughout North America. Records by Holland (1931) and dos Passos (1935) from Newfoundland were of the subspecies *P. n. acadia*, whereas early reports from Labrador were of *P. n. frigida*. McDunnough (1921) reported *frigida* from Hopedale, Labrador, and adjacent Quebec areas, and *acadia* from southern Newfoundland. However, more recently *frigida* has been recorded from Carbonear, St. Phillips, St. Anthony, Baccalieu Island, and Doctors Brook in Newfoundland and from Hopedale, Hamilton Inlet, and Cartwright in Labrador. Adults are in flight in both Newfoundland and Labrador from mid-June to early August.

The larva is velvety green with a middorsal stripe and greenish yellow lateral stripes. It feeds on most cultivated and wild members of the mustard family (Cruciferae). The pupa is the overwintering stage.

P. rapae (Linnaeus)

IMPORTED CABBAGEWORM

Plate 2, 9 and 10

This species was introduced into Quebec about 1860 and has since spread all over the continent. It was recorded from Newfoundland by dos Passos (1935) and Krogerus (1954). The adults are widely distributed throughout the island (Fig. 15) and are believed to migrate at times into Newfoundland from the Maritime Provinces and the New England States. The species has not been recorded from Labrador.

The larva, known as the "green grub" in Newfoundland, has a middorsal line and yellow lateral lines, and is covered with tiny hair-bearing wartlets. It feeds on most plants of the mustard family (Cruciferae) and also on mignonette (*Reseda* spp.). There are two or three generations yearly and the pupa hibernates. The species is a severe pest on cabbage, cauliflower, and rutabaga in Newfoundland.

Family DANAIDAE milkweed butterflies (monarchs)

This fascinating family of butterflies populates many of the tropical areas of the Orient, Africa, and South America in great abundance and diversity of form. However, only one variety, the monarch butterfly, *Danaus plexippus* (Linnaeus), is established throughout Canada.

One of the more interesting features about danaids is their disagreeable body juices, which discourage many insectivorous birds from eating them. In fact, some palatable butterflies and even some moths gain protection by mimicking the color patterns of danaids, particularly the viceroy, *Limenitis archippus* (Cramer), which mimics the monarch. This phenomenon is known as Batesian mimicry.

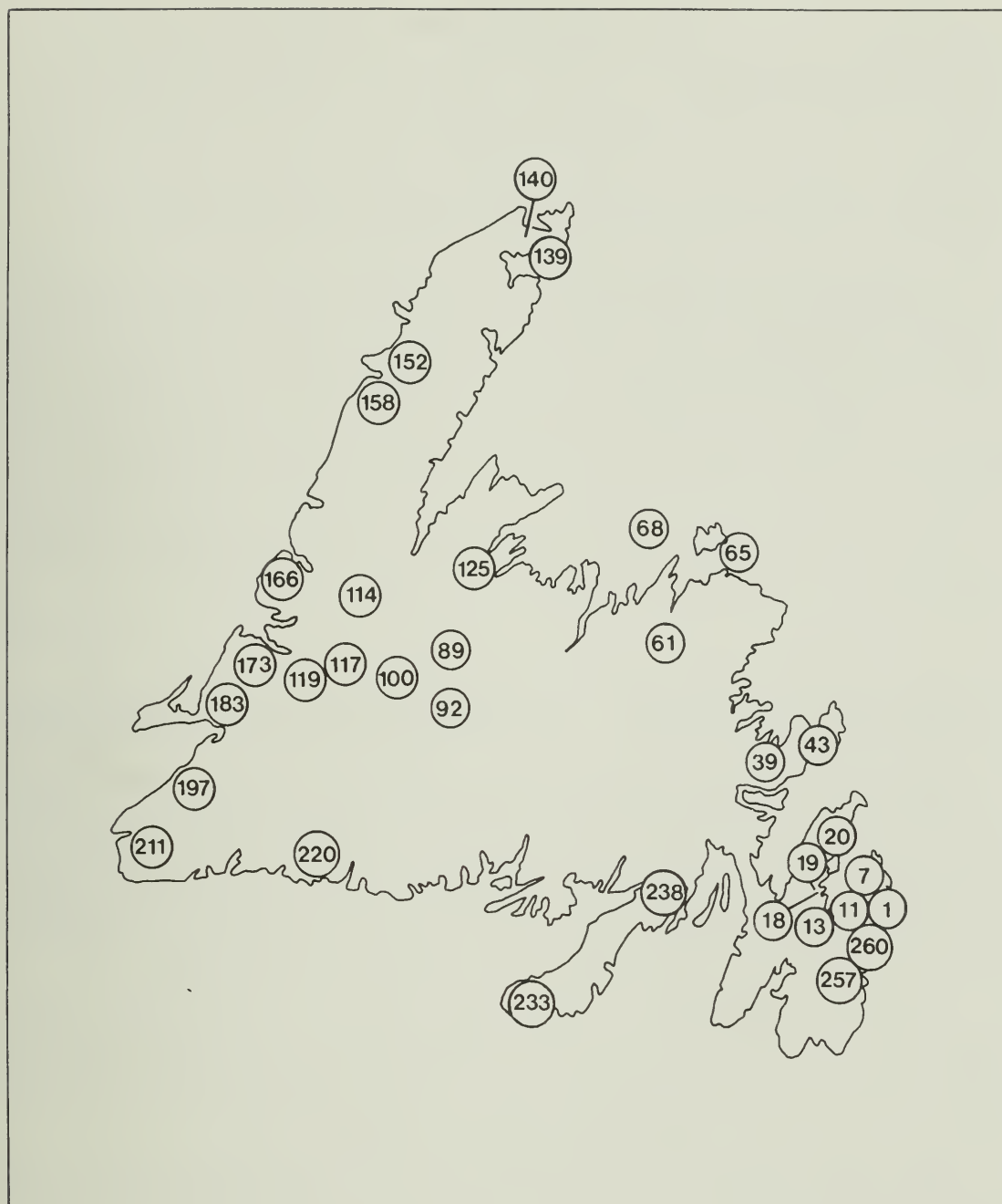


Fig. 15. Distribution of *Pieris rapae* (Linnaeus) in Newfoundland.

Genus *Danaus* Kluk

D. plexippus (Linnaeus)

MONARCH BUTTERFLY

Plate 3, 1

This is a widespread migratory species that populates Ascension Island, the Canaries, and the Azores, and is frequently found in western Europe. It

has spread across the Pacific from Hawaii to Formosa and the Andaman Islands (Klots 1951). This butterfly is observed in Newfoundland each year and was extremely numerous in 1973. Adults have been taken at St. John's, Goulds, Portugal Cove South, Cappahayden, St. Shotts, Carbonear, Doyles, Ramea, and Haystack (in Placentia Bay) from early August to early November. They are not known to breed in Newfoundland and are considered to be migrants. They have not been observed in Labrador.

The larva, when fully grown, measures nearly 5 cm in length and has a smooth yellow skin with a number of transverse black stripes. It feeds on milkweed (*Asclepias* spp.), which is not found in Newfoundland, or on dogbane (*Apocynum* spp.). A pair of black fleshy tentacles is conspicuous at each end of the larva. The pupa is a beautiful, translucent green with golden spots on each side. The adults overwinter in the southern United States and Mexico.

The monarch is best known for the great swarms that gather at night during the autumn migration southward.

Family SATYRIDAE

satyrs and wood nymphs

This is a fairly large family of butterflies that is widely distributed throughout the world wherever environmental conditions support grasses or sedges for the larvae to feed on. Some species such as the arctics (*Oeneis*) and alpines (*Erebia*) inhabit the treeless tundras of the arctic or the summits of mountain ranges. Other species are found on the grassy plains of Africa, the prairies of the Midwest, and in the tropical rain forests.

Members of this family are usually brown in color, and are dull compared to the brightly colored swallowtails and the gay brushfooted and sulfur butterflies. The numerous ringlets or blue-pupiled eyespots are the only features that brighten the otherwise dull-colored wings of some species.

The satyrs and wood nymphs found in Newfoundland and Labrador are small to medium-sized butterflies that frequent grassy meadows and woodland glades. Most species appear early in the season and restrict themselves to their breeding grounds. They fly low and seek cover in tall grasses and shrubs when alarmed. They are generally difficult to catch. Gregory (1975) reported 30 species in Canada, 8 of which have been recorded from Newfoundland and Labrador.

The eggs are reticulated and are usually spherical, but sometimes elongated. The larvae are striped and spindle-shaped, and the last segment is somewhat forked. Growth is slow, so that many species are single brooded. Larvae feed on grasses and sedges. The pupae are plain brown or green, and may be suspended by the cremaster, or may rest in a shallow cell on the ground among debris, or under rocks.

Genus *Coenonympha* Hübner

C. inornata inornata Edwards

INORNATE RINGLET

Plate 4, 1

According to Klots (1951), the species is found from Labrador, Quebec, and Ontario west to Lake Winnipeg, Man., and south to northern Minnesota and northern Michigan. In Newfoundland, specimens of the subspecies *inornata* have been taken at St. John's, New Melbourne, Gander, Corner Brook, Georges Lake, Harmon Field, Codroy, and St. Anthony, where adults are in flight from late May to late July. They have not been observed in Labrador.

The larva is long and slender, has two short projections on the last abdominal segment, and feeds on grasses. The species hibernates as a pupa.

C. inornata mcisaaci dos Passos

MCISAAC'S RINGLET

Plate 4, 2

This ringlet is similar to the previous subspecies, except that the male is a much darker, greener gray. The female is pale and buff-colored. *C. i. mcisaaci* was originally described in 1935 by dos Passos from specimens taken at Doyles Station. Forbes (1960) reported that the subspecies occurred in Newfoundland and Bradore Bay, Que., in forested areas. It is common in Newfoundland, frequenting cultivated meadows, bogs, and marshy ground; its distribution is shown in Figure 16. The adults are in flight from early June to late July. The species is not found in Labrador.

The larva is similar in appearance and habits to *C. i. inornata*.

Genus *Oeneis* Hübner

O. chryxus (Doubleday)

CHRYXUS ARCTIC

Plate 3, 2

This subarctic species ranges from the arctic south to the Gaspé, southcentral Canada, and northern Michigan. Bruton (1930) and dos Passos (1935) reported that the species was found at Carbonear by Gosse in 1832–35, but no specimens have been observed there in recent years. There are no records from Labrador. Forbes (1960) reported adults in flight from late May to early June.

The larva is sluggish, stout, and buff in color with a plain head and broad stripes. It feeds on grasses and sedges and hibernates when partly grown.

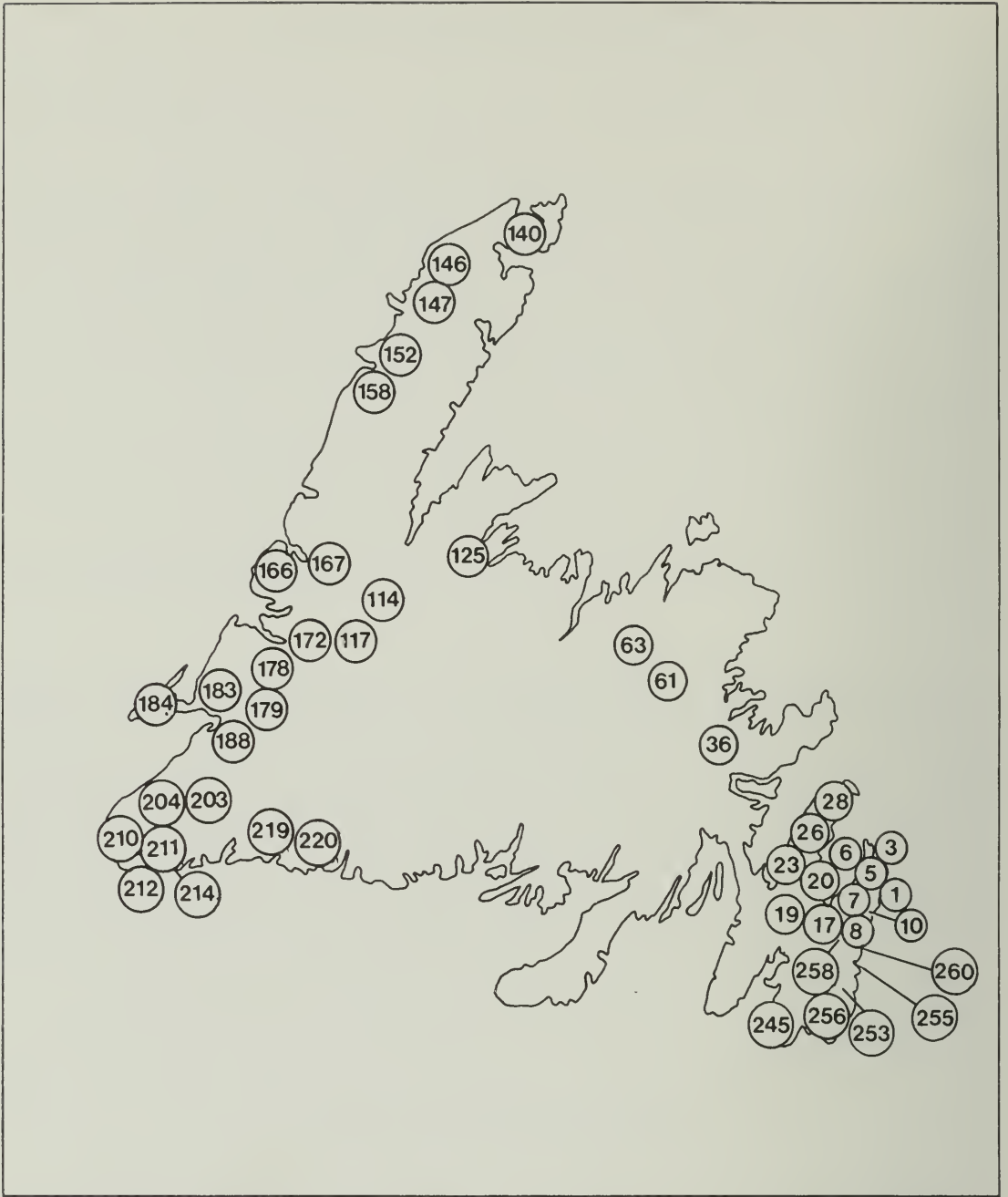


Fig. 16. Distribution of *Coenonympha inornata mcisaaci* dos Passos in Newfoundland.

O. taygete Geyer

WHITE VEINED ARCTIC

Plate 3, 3

Klots (1951) reported that this species has been found in the Arctic, in Labrador, and in the mountainous areas of Gaspé in the east and in the Rocky Mountains and Alaska in the west. It is not known to exist in Newfoundland but is fairly common in Labrador. Adults have been taken from late June to late August at Nain, Hebron, and Hopedale.

The wide-ranging, circumpolar species *O. jutta* is found in both Old and New Worlds, extending farther south than most other *Oeneis* species. In North America, it ranges from the Arctic south to Newfoundland, Nova Scotia, Maine, New Hampshire, and northern Michigan. It is often found on acid muskeg bogs. Adults have a strong erratic flight and are very wary and hard to approach, let alone to catch. The subspecies *terraenovae* was described by dos Passos (1935) from specimens taken at Doyles Station and Codroy Valley.

The adults are in flight in Newfoundland from mid-June to early August and in Labrador from late June to early August. Specimens have been taken at St. John's, Goulds, Cape Broyle, and Doyles Station in Newfoundland and at Nain, Cartwright, Hopedale, and Churchill Falls in Labrador. Möschler reported *terraenovae* from Labrador in 1860. Hettasch reported *O. j. jutta* from Nain, but this is a doubtful record.

The larva is sluggish and stout, and has a plain head and broad dark stripes. It feeds on sedge (*Carex* spp.) and bog-rush (*Juncus* spp.). The pupa is yellowish green, dotted with brown. This subspecies hibernates in various stages of development.

O. polixenes (Fabricius)

POLIXENES ARCTIC

The species is widely distributed in the arctic and there is one isolated colony on Mt. Katahdin, Maine. There are no records of this butterfly occurring in Newfoundland, although Belle Isle has been considered as northwest Newfoundland by some authors. In Labrador, adults have been taken at Nain, Hopedale, Rocky Bay, Hebron, Belle Isle, and L'Anse-au-Loup. Scudder (1895) reported the species along the Labrador coast at latitude 59°N. The flight period in Labrador is from early July to mid-August.

Adults may be differentiated from other *Oeneis* species by the fragments of white veining on the underside of the hindwing. The lower surface of the forewing is dull, and the eye spots on the wings are small.

O. melissa (Fabricius)

MELISSA ARCTIC

This heavily scaled butterfly is widely distributed in the arctic areas of both Old and New Worlds. It extends south to Labrador and has been found in one isolated colony in New Hampshire. It closely resembles *polixenes*, but may be distinguished by the upper surface of its wings, which is dull and

dark, and has no eye spots. Also, the outer edge of the hindwing is more irregularly and finely scalloped than that of *polixenes*.

Klots (1951) reported that the subspecies *O. m. melissa* was rare in Newfoundland but more common in Labrador. Adults have been taken in Labrador at Nain, Hopedale, and Knob Lake. Möschler (1860) and Scudder (1895) both reported species in Labrador as *oeno* Boisduval. Scudder identified it on the Labrador coast near Nachvak Fiord. The adults are in flight from late June to late July.

Eggs are laid on dry objects close to sedge (*Carex* spp.), which is the main food. The larva is stout and has stripes interrupted by broad pale transverse shades. When it is not feeding, it leaves the plants and hides. The species hibernates twice as a larva because 2 years are required to complete larval development. The pupa is brown with darker wingcases.

Genus *Erebia* Dalman

E. disa Thunberg

DISA ALPINE

Plate 4, 3

The species is distributed from Labrador west to Alaska, and as far south as Smoky Falls and Ogoki, Ont. It can be distinguished from related species because it has three or four eye spots in a reddish patch on its forewings, but none on its hindwings. It is not known to occur in Newfoundland, but in Labrador adults have been taken at Cartwright and Goose Bay.

The adults are in flight from late June to mid-July. Details of the immature stages of this species in Labrador are not available.

Family NYMPHALIDAE brushfooted butterflies

This is the largest single family of true butterflies, most of them medium to large in size and powerful fliers. The group is worldwide in range and some, like the mourningcloak (*Nymphalis antiopa* (Linnaeus)), are familiar sights on several continents.

Although members of the family are diverse in appearance, size, and habitat, they are united by the singular feature of the front pair of legs. In both sexes these are much smaller than the remaining four, and are useless for walking. Furthermore, the front legs are hairy and brushlike in appearance (hence the common family name).

Gregory (1975) listed approximately 62 brushfooted species in Canada; 23 of them are widely distributed in Newfoundland and Labrador. This family comprises the largest group of butterflies in the province.

The adults, as a rule, are active fliers and are found on a wide variety of habitat including sunny meadows, marshes, roadsides, gardens, forest trails, and dry meadows. Some members, such as the fritillaries, are avid flower visitors; others, including the angle wings, feed on sap or decaying fruit.

Almost all Newfoundland brushfooted butterflies are single brooded. A great many hibernate as pupae, but some overwinter as adults and immature larvae.

The eggs are nearly spherical and have vertical ribs. They are often very strong and flangelike, with the usual close circular ribbing. The larvae are quite varied, but most of them are spined. They feed on the foliage of many different trees, shrubs, and herbaceous plants. The pupae are angular and have smooth, nearly straight ventral surfaces. They are suspended at the hind tip by a button of silk, but never with a girth.

Genus *Speyeria* Scudder

S. atlantis (Edwards)

ATLANTIS FRITILLARY

Plate 4, 4

The species is distributed across Canada from Newfoundland to British Columbia and the Northwest Territories. In the United States it ranges from the Atlantic to Arizona and California. A subspecies, *canadensis*, was described by dos Passos (1935) from specimens taken at Doyles Station in Newfoundland; another specimen, taken at Witless Bay, is in the Allyn Museum Collection in Sarasota, Fla. Ferris (pers. commun.) recorded this species at Mummichog Park, and sighted it at Cormack. It has been found at Goose Bay in Labrador. The adults are in flight in Newfoundland from early July to mid-September and in Labrador during mid-July. They are swift fliers and frequent open woods.

The larva is black and has several rows of barbed spines. As far as is known it feeds at night on violets (*Viola* spp.) and hides during the day. The species hibernates as a newly hatched larva and although generally considered to produce a single generation each year, the adults emerge over an extended period of time.

Genus *Boloria* Moore

B. selene terraenovae (Holland)

SILVER BORDERED FRITILLARY

Plate 4, 5

The species is distributed from Newfoundland, Nova Scotia, and New England west to Alaska and south to Virginia and North Carolina. Holland

(1898) described *B. s. terraenovae* from adults collected in Newfoundland. Its present distribution in Newfoundland is shown in Figure 17. Ferris (pers. commun.) reported that he collected the species, which he identified as *B. s. atrocostalis* (Huard), at Happy Valley and Nain in Labrador, and at Mummichog Park, Cormack, and Deer Lake in Newfoundland in 1975. The adults are in flight in Newfoundland from late June to early September and are at times fairly common in moist meadows.



Fig. 17. Distribution of *Boloria selene terraenovae* (Holland) in Newfoundland.

The larva has long anterior subdorsal spines and probably feeds on violets (*Viola* spp.). It hibernates when newly hatched or partly grown. There are probably two broods a year.

B. eunomia (Esper)

BOG FRITILLARY

Plate 4, 6

This arctic species has been found in Labrador, Quebec, Ontario, Manitoba, Mt. Katahdin in Maine, and from the Rocky Mountains to Colorado. The subspecies *B. e. tricularis* Hübner has been reported from Labrador and is found in arctic and subarctic areas. One of the earliest Labrador reports was by Möschler (1860). Adults have been collected in Labrador at Nain, Black Island, Hopedale, Nutak, Hebron, and Knob Lake. Packard (1888), Scudder (1895), and McDunnough (1921) recorded specimens along the coast of Labrador. The adults are in flight from early July to mid-September but their swift movement makes them difficult to catch. The bog fritillary has only two Newfoundland records, one from Table Mountain, 15 July 1959, and a second from Terra Nova National Park, 3 July 1977, by Kevin Moore.

The species can be separated from others by the spots of the submarginal row on the underpart of the hindwing. In addition, the front two or three spots on the underside of the forewing are round, white, and ringed with black, whereas in other species they are solid black.

The larva is silver gray, finely dotted with white above. It feeds at night on violets (*Viola* spp.) and smartweed (*Polygonum* spp.), and hides during the day.

B. chariclea (Schneider)

ARCTIC OR CHARICLEA FRITILLARY

Plate 4, 7

This species extends across the Arctic and boreal North America from the Atlantic to the Pacific, ranging southward along the Rocky Mountains and the Alleghenies. It has been reported from Newfoundland by Seitz (1924) and Krogerus (1954), and from Labrador by Möschler (1860), Packard (1888), Scudder (1895), and McDunnough (1921).

A single specimen taken at Terrenceville by Krogerus on 14 August 1951 and adults observed at Gambo and Newman Sound, 1978, are the only recorded Newfoundland finds. In Labrador, adult specimens have been taken at Nain, Hopedale, and Knob Lake, where they are in flight from early to late July.

B. chariclea is similar to *B. titania boisduvalii* but is smaller and has more pointed forewings. The median areas of the upper surface of the hindwings are more heavily suffused with dark scales. Also, the silver spots on the underside of the hindwings are more prominent and there is a large costal spot and a long pointed distal one.

Little is known about the immature stages of this butterfly in Newfoundland and Labrador.

B. titania boisduvalii (Duponchel) PURPLE LESSER FRITILLARY

Plate 4, 8

This subspecies extends from the Arctic south to Labrador and Churchill, Man. It was probably described from specimens taken in Labrador. It is similar to *B. chariclea*, but may be separated by the marking on the underside of the hindwing. The silver spots are greatly invaded, and sometimes obliterated, by the darker yellow brown or red brown ground color.

Although never observed in Newfoundland, the species is widely distributed throughout Labrador. Adults have been taken at Hebron, Nain, Davis Inlet, Hopedale, Cartwright, Lake Attikamagen, and Knob Lake. The adults are in flight from early July to early August.

The larva is gray with a black head, black dorsal and lateral stripes, and orange spines. It feeds on violets (*Viola* spp.).

B. freija (Thunberg) FREIJA FRITILLARY

Plate 4, 9

This is a circumpolar species found in Newfoundland and Labrador and on the summits of the Rocky Mountains as far south as Colorado. It also occurs in Alaska, Scandinavia, and northern Russia. Adults have been taken in Newfoundland at St. Anthony and Burgeo and in Labrador at Nain, Davis Inlet, Hopedale, Happy Valley, Rocky Bay, and Goose Bay. They are in flight in Newfoundland from mid to late June and in Labrador from mid-June to late August.

The species can be recognized by the large white basal and submedian costal spots, and the long, pointed white submedian spot on the underside of the hindwings.

The larval stages are not very well known in Newfoundland and Labrador.

B. polaris (Boisduval) POLAR FRITILLARY

Plate 4, 10

This is another circumpolar species ranging from Baffin Island and Labrador to Southampton Island and Churchill, Man.

The adults are easily identified by their rather narrow front wings and the large number of small white markings on the underside of the hindwings. They have a rapid, somewhat erratic flight. The species is not

recorded from Newfoundland, but Möschler reported it in Labrador in 1860, and specimens have since been taken at Hebron, Nain, Hopedale, and Knob Lake. The adults are in flight from early July to late August.

B. frigga saga (Staudinger)

SAGA FRITILLARY

Plate 4, 11

This subspecies ranges from the north coast of Quebec, and Ogoki, Ont., to Churchill, Man., and Cape Prince of Wales, Alaska. It was first reported in Labrador by Möschler (1860) and later by Packard (1888). Adults have been taken at Nain from early July to early August. The species has not been recorded from Newfoundland.

Forbes (1960) stated that the young larva is chocolate brown in color and has light lateral spotting and light brown spines. It probably feeds on birch (*Betula* spp.).

B. bellona (Fabricius)

MEADOW FRITILLARY

Plate 4, 12

Forbes (1960) described this species as common and widely distributed in the north, south to Virginia, and west at least to Alberta. This is the only *Boloria* species not also found in Europe. The shape of the narrow forewing, seeming to be cut off diagonally at the apex, is distinctive and separates it from other related species. The underside of the hindwing is marked with brown, gray, lilac, and purple. There is one light spot near the costal margin. There are no records from Newfoundland, but a single specimen taken at Cartwright, Labrador, 25 July 1955, by E. E. Stearns is in the Canadian National Collection.

The larva is mottled, with a blackish lateral band and spines of even length. It feeds on violets (*Viola* spp.) and hibernates as a newly hatched or half-grown larvae.

Genus *Chlosyne* Butler

C. harrisii (Scudder)

HARRIS' CHECKERSPOT

Plate 4, 13

According to Klots (1951), this species is distributed from the Maritime Provinces west to Manitoba and south to New Jersey, Pennsylvania, West Virginia, Georgia, northern Ohio, Indiana, Illinois, Michigan, and Wisconsin. It was first recorded in Newfoundland by Geddes (1886). Later dos Passos (1935) referred to Geddes' find but stated that he had not seen specimens from Newfoundland.

The species has not been observed or taken in Newfoundland and Labrador since the original find of Geddes in 1886.

Genus *Phyciodes* Hübner

P. tharos arctica dos Passos

PEARL CRESCENT

Plate 4, 14

Krogerus (1954) gave the distribution of *P. tharos* as throughout North America from the Slave River and southern Labrador to Texas and Florida. The subspecies *P. t. arctica* was described by dos Passos (1935) from specimens taken at Port au Port, Nfld. This butterfly is widely distributed in Newfoundland, occurring in open spaces, in meadows, and along roadsides and frequently visiting mud puddles. It often visits flowers but also alights on leaves, stones, and bare ground. Specimens have been taken from late June to late August at Port de Grave, Adies Pond Road, Gander, Glenwood, Bishop's Falls, Springdale, Cormack, Steady Brook, Deer Lake, Lomond, Doyles Station, Crabbes, Table Mountain, View Hill, Stony Brook, and Harmon Field. There are no records from Labrador.

The larva is black with yellow dots, yellow lateral bands, and eight rows of yellow brown spines. It feeds on aster (*Aster* spp.) and hibernates when partly grown. There is only one generation a year.

Genus *Polygonia* Hübner

P. satyrus (Edwards)

SATYR ANGLE WING

Plate 5, 1

This butterfly is distributed in Newfoundland, Quebec, Ontario, New York, Michigan, and Minnesota, and throughout western North America.

It is not found in Labrador and is considered very rare in Newfoundland. Specimens reported by dos Passos (1935) were taken at Doyles Station on 23 August 1934 by McIsaac. The subspecies *P. s. marsyas* (Edwards) was recorded by dos Passos (1943) from Doyles Station on 5 and 23 August and 10 and 12 September. Three hibernating specimens are also recorded by dos Passos dated 23 June. No specimens have been taken since.

The larva feeds on nettle (*Urtica* spp.) and makes a crude nest. It is deep brown in color with a white dorsal area beginning at the metathorax. It has thorny spines. The species is single brooded and hibernates as an adult.

This species ranges from Eastern Canada and New England south to South Carolina, Minnesota, and Michigan and west to the Pacific. It was previously recorded from Newfoundland by dos Passos (1935). The green comma can be identified by its heavy spotting above and the pronounced black margins of the fore and hindwings, but the best distinguishing characteristic of this butterfly is the continuous row of small, attractive greenish spots near the outer margins of the underside of the wings. Adults have been taken in Newfoundland at Kilbride, Gambo, Lethbridge, Rattling Brook, Gander, Grand Falls, Bonne Bay Road, Cormack, Pinchgut Lake, Reidville, Harmon Field, and Doyles Station. The adults are in flight from mid-May to early September. The species has not been recorded from Labrador.

The larva, when fully grown, is approximately 2.5 cm long, is reddish or yellowish brown in color with a white saddle near the center of the back, and is heavily spined. It feeds on birch (*Betula* spp.), willow (*Salix* spp.), and alder (*Alnus* spp.). The species is single brooded and the adult overwinters.

Forbes (1960) stated that the species is distributed from Newfoundland and Labrador to the Yukon, and southward in the mountains, especially the White Mountains in New Hampshire and the Adirondacks. No specimens have been recorded from Newfoundland but 14 were taken at Goose Bay, Labrador, by Beckel and Delabio in 1948 and 1949, and a single specimen was collected at Happy Valley by Ferris in 1975. The adults are in flight from early June to mid-August. The species can be identified by the gray underside of the hindwing, and by the contrasting pale postmedian shade on both wings.

The life history in Newfoundland and Labrador is almost unknown. The larva is said to feed on birch (*Betula* spp.), willow (*Salix* spp.), and currant and gooseberry (*Ribes* spp.). The species is single brooded.

This butterfly is distributed from Newfoundland west to the Pacific and eastern Siberia, and south to North Carolina, Missouri, and Illinois. In Newfoundland, adults have been taken at Corner Brook, Reidville, Cormack, Harmon Field, and Whites Road. They are in flight from late May to late August. There are no records of the gray comma occurring in Labrador.

This butterfly can be differentiated from its relatives by the markings on the underside of its wings. Shades of black and gray are dominant, and there is a thin silver mark near the center of each hindwing that resembles a bent letter L. When closed, the wings resemble the bark of a tree. The insect has a rapid flight but not as rapid as other members of the family. It visits flowers but is also attracted to rotting fruit and compost.

The spiny larva is yellowish brown in color, and feeds on currant and gooseberry (*Ribes* spp.) and sometimes on elm (*Ulmus* spp.). The species hibernates as an adult.

Genus *Nymphalis* Kluk

N. vau-album (Denis & Schiffermüller) COMPTON TORTOISESHELL

Plate 5, 5

Forbes (1960) stated that this butterfly is most widely distributed in Canada, but is also found on low ground from Newfoundland to Massachusetts and New York, and at higher levels in the mountains between North Carolina and the Missouri Ozarks. The species is, at times, fairly common in central Newfoundland but is rare in Labrador. Dos Passos (1935) reported that the species was collected in Newfoundland, and Packard (1888) reported it from Labrador. Adults have been taken in Newfoundland at St. Phillips, Gander, Boyd's Cove, and Lumsden. Adults were observed in hundreds at Jonitons Provincial Park, near Gander, 23–28 August 1976, alighting on the trunks of white birch trees. The species has also been reported in Newfoundland by B. Jackson, who observed five adults feeding on goldenrod (*Solidago* spp.) at Terra Nova National Park, Trinity, and Eastport. The adults are in flight from mid-August to early September.

This large handsome butterfly prefers a habitat of dense woodland. It is crafty and difficult to capture. At times it may be found resting with wings upright on gravel roads and trails near forest areas. It hibernates in the adult stage and is one of the first butterflies out of hibernation in the spring. It lives for nearly a year. The species can be quickly identified by the small but distinct white J-shaped marking on the undersurface of each hindwing.

The larva is light green, and somewhat speckled and striped; the head and body have black bristly spines. It feeds on white birch (*Betula papyrifera*), willow (*Salix* spp.), and poplar (*Populus* spp.). There is only one generation each year.

N. milberti milberti (Godart)

MILBERT'S TORTOISESHELL

Plate 5, 6

Milbert's is the most common and colorful of the three subspecies of tortoiseshell butterflies found in Canada. It ranges from Newfoundland and

central and southern Canada south in the mountains to West Virginia, and north to Alaska. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, North River, Port de Grave, Bay Roberts, and Cormack. Adults have been taken in the field from early June to very early October, but are never common. There are no records from Labrador.

Although closely related to the following subspecies, *milberti* can be differentiated from *viola* by the pale basal edge of the submarginal band on the upper side of the forewings. *N. m. milberti* is more prevalent in the north, whereas *viola* predominates in the south.

The life history of the two subspecies is probably very similar.

N. milberti viola (dos Passos)

Plate 5, 7

This subspecies was described by dos Passos (1938) from specimens collected at Doyles Station in western Newfoundland. It is widespread throughout Newfoundland (Fig. 18) but has not been recorded from Labrador. Adults are in flight from early May to early November.

The eggs are laid during the first warm days of spring on nettles (*Urtica* spp.). They hatch within 5 days and enclose themselves collectively in a silken web within which they feed and mature. When fully grown, the spiny larva is about 2.5 cm long, black dorsally and green ventrally. The species overwinters as both adult and pupa. There are probably two broods a year.

N. antiopa (Linnaeus)

MOURNINGCLOAK

Plate 5, 8

This magnificent butterfly is found around the world in the North Temperate Zone. As the Camberwell beauty it is a greatly prized species in England, where it occurs as a migrant from Europe. The mourningcloak is a long-lived species that is widely distributed in Newfoundland, where it is one of the first butterflies on the wing in spring.

Adults have been taken in Newfoundland at St. John's, Kilbride, Bay Bulls, Witless Bay Line, Manuels, Cupids, North River, Ferryland, Carbonear, Gambo, Gander, Cormack, Lomond, Corner Brook, Gaff Topsail, Glenwood, Grand Falls, Victoria Lake, St. George's, and Doyles Station. The butterflies are in flight in Newfoundland from late April to late September. The species was reported in Labrador by Möschler (1860), and single specimens were taken at Cartwright in September 1925 by W. W. Perrett, and at Happy Valley in July 1975 by Ferris.

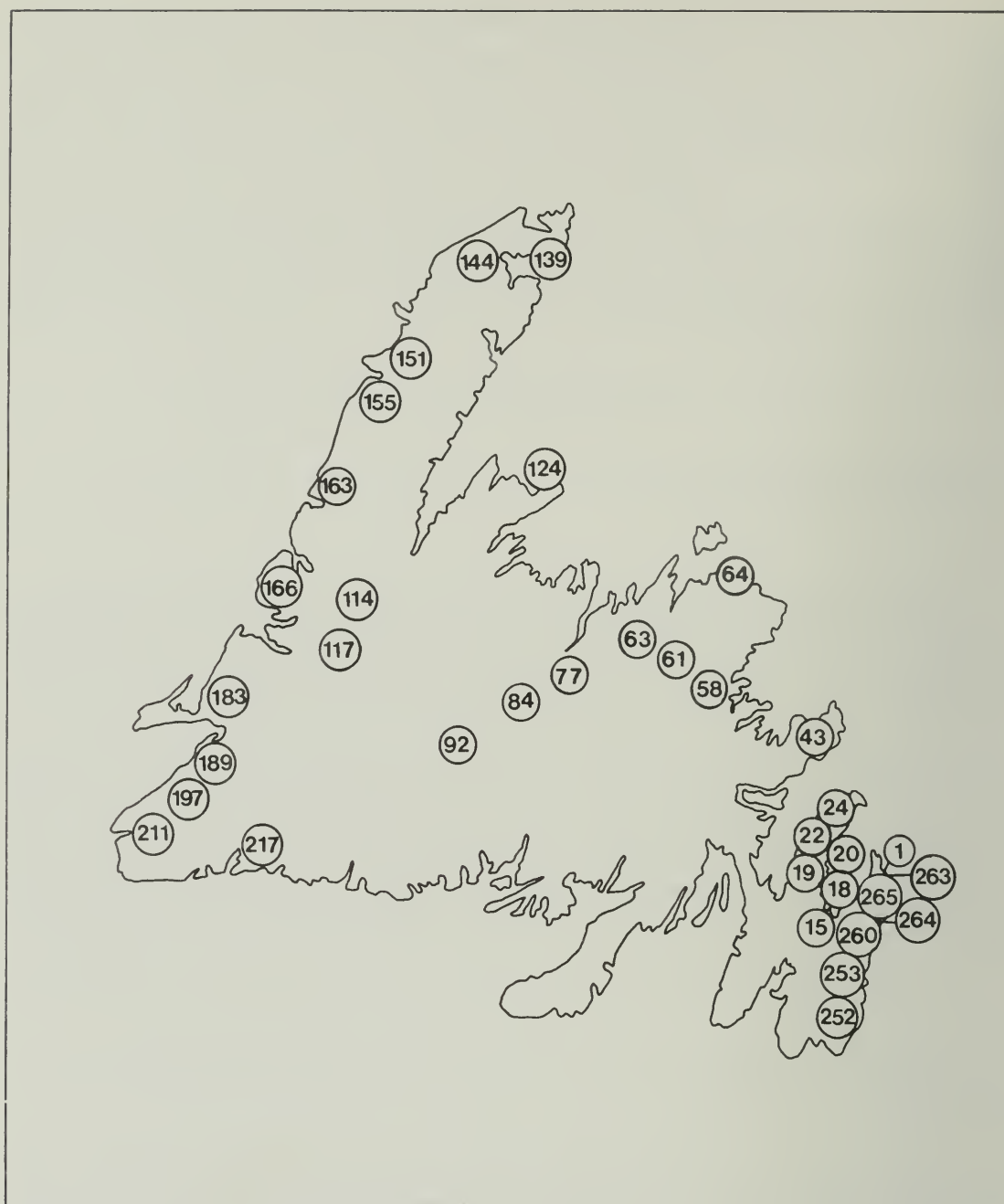


Fig. 18. Distribution of *Nymphalis milberti viola* (dos Passos) in Newfoundland.

The larva feeds on willow (*Salix* spp.) and elm (*Ulmus* spp.). The eggs are laid in a dense single-layered cluster, tightly packed around a twig. The mature larva, frequently referred to as the spiny elm caterpillar, is often found feeding in great numbers. Its colorful black body is speckled with red and white dots and has long barbed spines. The five pairs of fleshy prolegs are orange red in color. The species hibernates as an adult and has a single generation each year.

Genus *Vanessa* Fabricius

V. atalanta (Linnaeus)

RED ADMIRAL

Plate 5, 9

The red admiral occurs from Newfoundland east through central and southern Canada, and south through Florida and Texas to the Antilles and Guatemala. It is easily recognized because each forewing is split by a large showy orange red band. The species is widely distributed and common

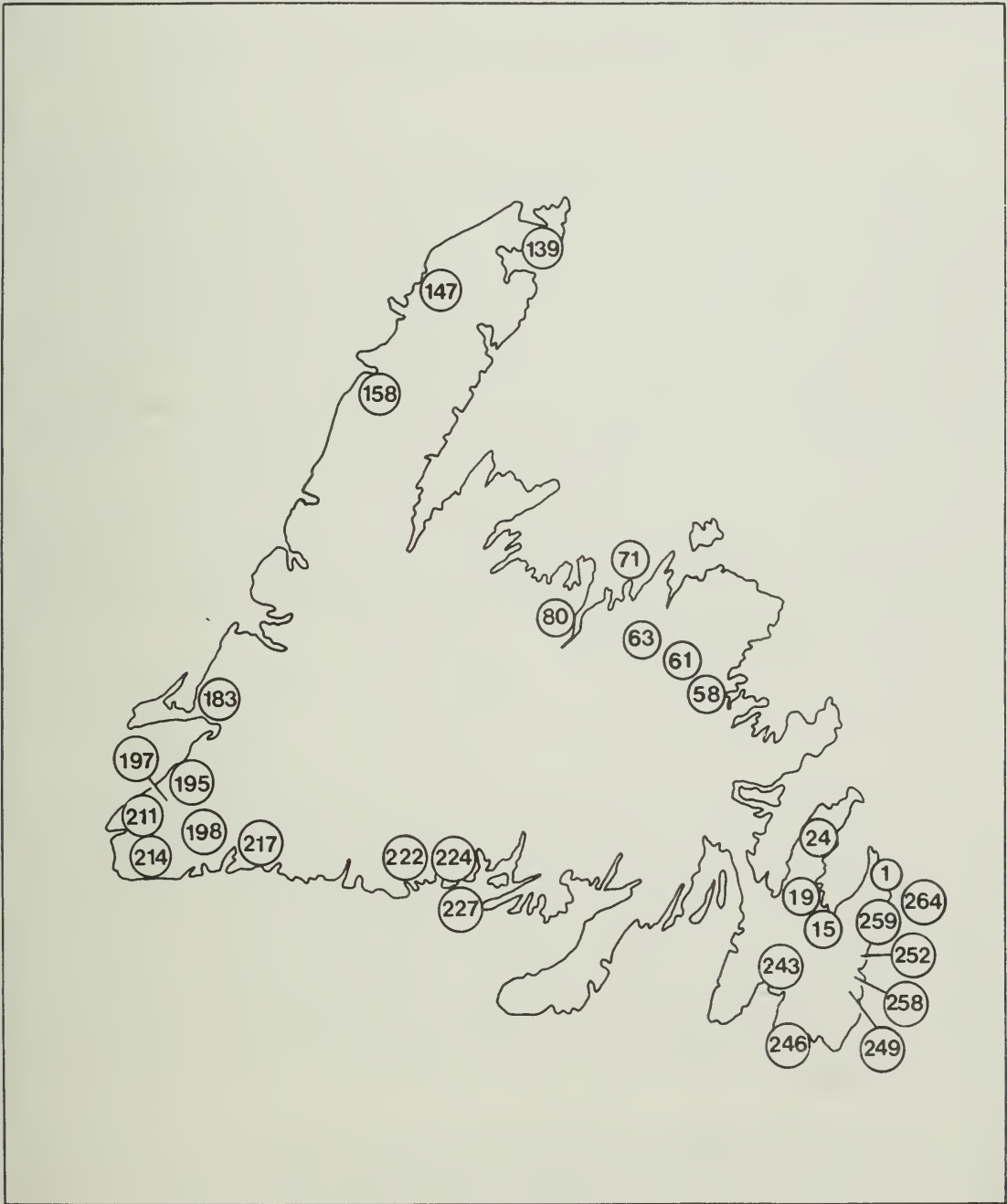


Fig. 19. Distribution of *Vanessa atalanta* (Linnaeus) in Newfoundland.

throughout Newfoundland (Fig. 19) but has not been recorded from Labrador. Adults have been taken from late May to mid-October. They are difficult to capture while flying because their flight is rapid and erratic. However, they are attracted to rotting fruit, garbage, and decaying mulch, and when they alight on these materials they are fairly easy to capture.

The spiny caterpillar varies in color from black to brownish yellow, and has many raised white warts along its sides. It feeds on nettles (*Urtica* spp.) within the protection of a silken nest. The species is single brooded and hibernates as an adult or pupa.

V. virginiensis (Drury)

PAINTED BEAUTY, AMERICAN PAINTED LADY

Plate 6, 1

This is a widespread species, inhabiting much of Canada and the United States, and extending south to Cuba and Guatemala in the tropics. The undersides of the wings are strongly tinged with delicate pink and are more attractive than the rusty brown and black upper wing surfaces. *V. virginiensis* has two large eyespots on each hindwing, and this enables it to be distinguished from the related form, *cardui*, which has four. This butterfly is rare in Newfoundland. Adults have been taken at St. John's, Bay Bulls, and Ferryland by B. Jackson (1976), and at Musgravetown by R. Stead (1972) between late August and late September. They have also been observed at Mt. Pearl. None have been recorded from Labrador.

The mature larva is spiny and black with a row of small white spots along the sides. It lives in its own silken nest, where it feeds on everlasting (*Antennaria* spp.) and other composite plants. The species hibernates as an adult or pupa and is single brooded.

V. cardui (Linnaeus)

PAINTED LADY

Plate 6, 2

This butterfly is found in all parts of the temperate regions of the earth and in many tropical areas. In North America, it is distributed over the entire continent, but is somewhat sporadic in its appearance. The species is well known for its extreme abundance one year and its scarcity the next. It is widely distributed throughout Newfoundland and Labrador (Figs. 20a and b). Möschler reported it in Labrador in 1860 and it has been taken at Hopedale and Cartwright. In Newfoundland, the adults are in flight from early June to mid-October and in Labrador from mid-July to mid-September.

The painted lady is often confused with the American painted lady but may be distinguished by the eyespots, as described under *virginiensis*. The painted lady is a swift flyer and prefers open spaces. It is attracted to a great variety of flowers.

The larva feeds on thistle (*Cirsium* spp.) and other composite plants. At maturity, it is yellowish green, mottled with black, and has yellow spines. It feeds singly within a silken shelter that encloses part of the host plant. The painted lady overwinters as an adult or pupa. The overwintering adult appears in spring as an extremely faded individual.

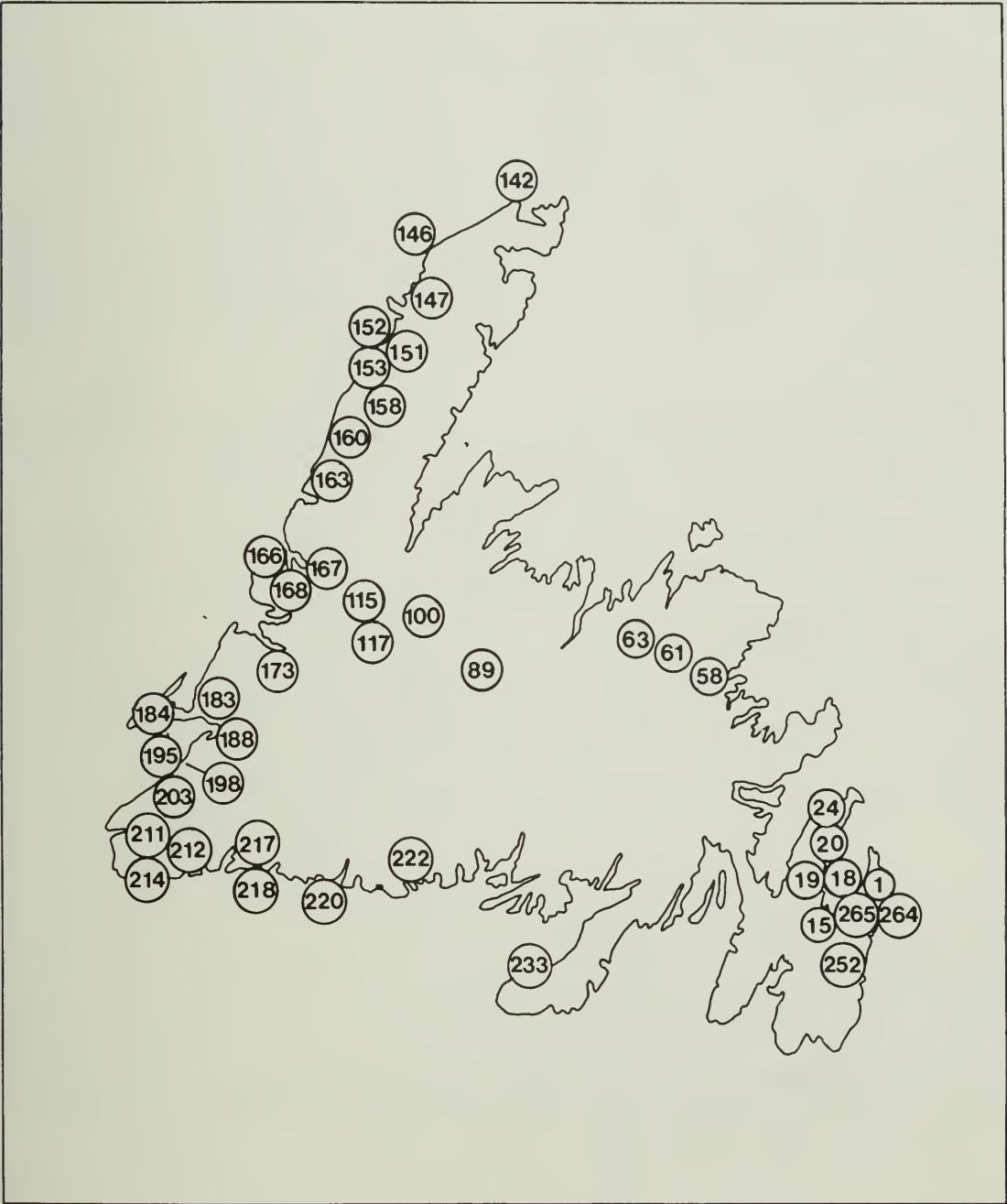


Fig. 20a. Distribution of *Vanessa cardui* (Linnaeus) in Newfoundland.

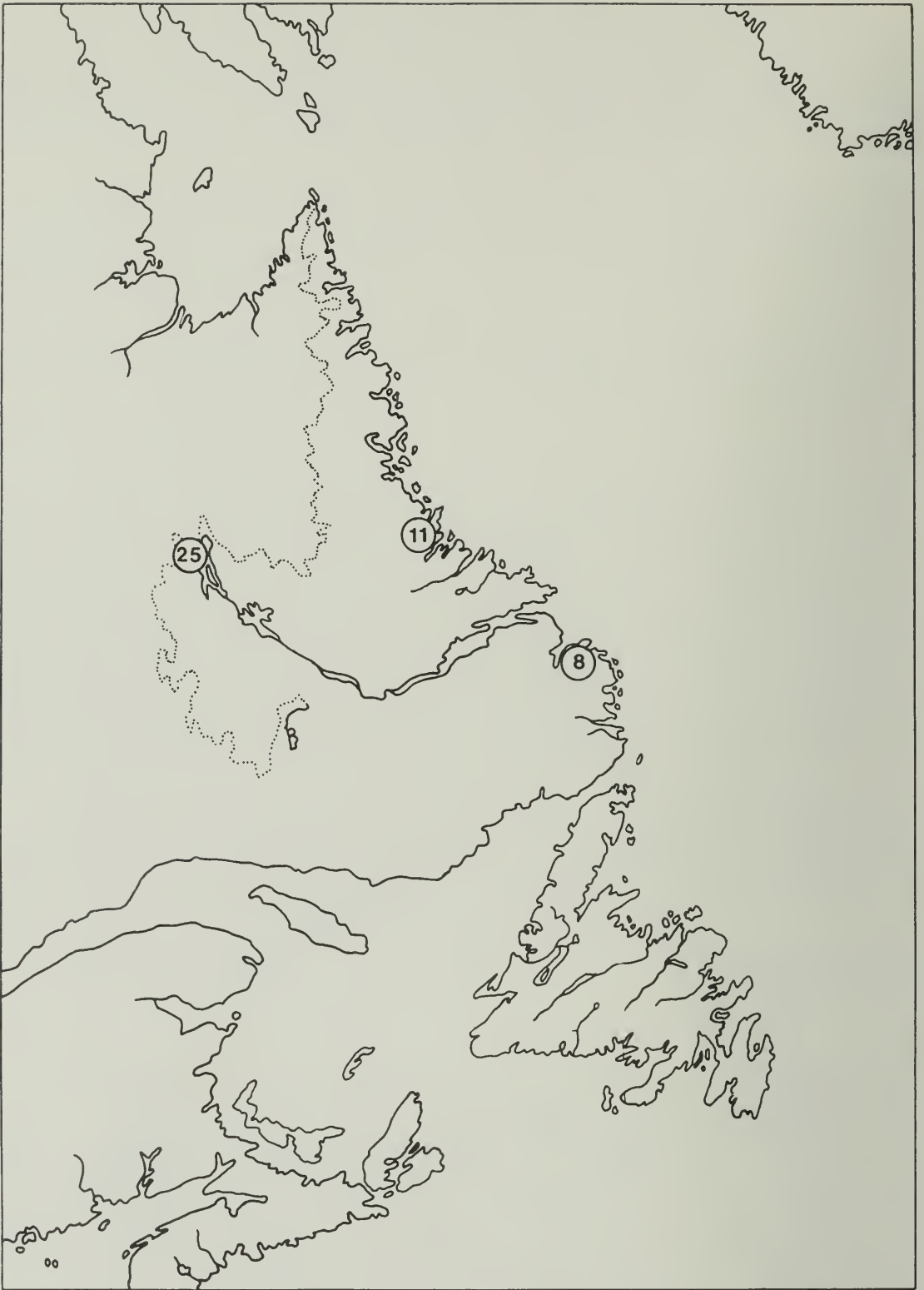


Fig. 20b. Distribution of *Vanessa cardui* (Linnaeus) in Labrador. Collection points in Labrador are listed alphabetically and numerically on page 302.

Genus *Limenitis* Fabricius

L. arthemis (Drury)

WHITE ADMIRAL

Plate 6, 5

The white admiral is an easy butterfly to identify. The upper surface of the wings is a deep shade of bluish black, with a bold, curved white band on each wing. It is essentially a native of the forested areas of Canada, extending south into northern New England, New York, Pennsylvania, Michigan, and Minnesota. The white admiral is an inhabitant of open woodlands, particularly sunny trails. It is rare in Newfoundland, but adults have been taken at St. David's, Corner Brook, Coal Brook, Reidville, Dildo Run Park (near Twillingate), and Doyles Station. It has also been taken at Goose Bay in Labrador. The white admiral is in flight in Newfoundland from mid to late July and in Labrador from late July to mid-August.

Eggs are laid on birch (*Betula* spp.), poplar (*Populus* spp.), and willow (*Salix* spp.). The fully grown larva is somewhat grotesque, black with spines and a white saddle. The species overwinters as a partly grown larva in a hibernaculum, which it makes by folding together a leaf of the host plant. There is a single generation each year.

Family LYCAENIDAE hairstreaks, blues, and coppers (gossamer-winged butterflies)

This is an extensive and interesting family of butterflies, and is worldwide in distribution. Gregory (1975) recorded 56 species in Canada, 10 of them in Newfoundland and Labrador.

The local lycaenids are small, frail, delicate butterflies that can fly with amazing speed. Depending on the species, they are found in all types of environment from the high foliage of the deciduous forest to a low swampy bog or meadow. Some, such as the spring azure (*Celastrina argiolus pseudargiolus*), are abundant throughout the summer, whereas others, such as the bog copper (*Lycaena epixanthe phaedrus*), are rare and may be found for only a few weeks.

The life cycles are variable also, but for the most part adults are single brooded. The larvae of many species are green, usually short, broad, and oval, and rather flattened and sluglike. They feed on a wide variety of plants, eating the buds, leaves, flowers, and fruits. However, some larvae possess glands that secrete honeydew to attract ants, with which they have a symbiotic (mutually beneficial) relationship; some live in ant nests, feeding on debris or on the ant brood; and some feed on aphids. The pupae are robust, usually covered with hairs, and are brownish in color. Most species hibernate in either the egg or larval stage. Adults are attracted to flowers and may often be collected on the blossoms of clover (*Trifolium* spp.) and alfalfa (*Medicago sativa*).

Genus *Callophrys* Scudder

C. augustinus (Westwood)

BROWN ELFIN

Plate 6, 9

The brown elfin is distributed from the Atlantic Provinces and New England west to northern Manitoba and south at least as far as North Carolina and the western mountains of New Mexico. It is found in early spring in brushy areas and along the edges of open woods, where the food plants occur. In Newfoundland, adults have been taken at Port de Grave, Holyrood, and St. John's from mid-May to early June and in Labrador at Goose Bay in mid-May.

The brown elfin may be distinguished from other elfins by the two shades of reddish brown on the undersides of the fore and hindwings; the basal regions are a rich deep color that contrasts boldly with the paler marginal areas. In addition there is a series of small dots parallel to the margin of the hindwing and the top half of the forewing.

The larva feeds on blueberry (*Vaccinium* spp.) and laurel (*Kalmia* spp.). When fully grown it is a vivid green color, with a number of yellow green markings. The species hibernates as a hairy, dull-colored pupa and has one generation annually.

C. a. helenae (dos Passos)

Plate 6, 10

This subspecies was described by dos Passos from specimens collected at Doyles Station. Klots (1951) gave its distribution as Newfoundland and Cape Breton Island. It may be identified by its wings, which are golden brown above, with distinct markings and contrasts of colors beneath, and checkered fringes.

In Newfoundland, adults have been taken at St. John's, Holyrood, Gander, Cinq Cerf River, Harmon Field, and Doyles Station from mid-May to late June. The species has not been reported from Labrador.

Its life history and feeding habits are similar to those of *C. augustinus*.

C. niphon clarki (Freeman)

PINE ELFIN

Plate 6, 11

The pine elfin is distributed from the Atlantic Provinces to Manitoba, and south to Florida, Texas, and Colorado. The larval stage was recorded from St. George's by Reeks and Smith (1945) on balsam. According to D. Lafontaine of the Biosystematics Research Institute in Ottawa, it is probable that the western species *eryphon*, not *niphon*, exists in Newfoundland. Recent occurrences of *eryphon* in the east and the fact that they are reported to feed on balsam make Reeks and Smith's record doubtful until specimens are obtained.

Genus *Lycaena* Fabricius

L. dorcas Kirby

DORCAS COPPER

Plate 6, **12** and **13**

This is a northern species extending across Canada to Alaska and south to the Atlantic States and Michigan, Wisconsin, and Minnesota. In Newfoundland, adults have been taken at Petty Harbour, Butterpot Park, Witless Bay Line, Seal Cove, Come By Chance, Kitty's Brook, Millertown Junction, Corner Brook, Doyles Station, Cow Head, Lomond, and St. Pauls. In Labrador, specimens have been taken at Davis Inlet, Hopedale, and Cartwright. The adults are in flight in Newfoundland from early to late August and in Labrador from late July to late August.

The male is dark brownish purple dorsally. The female is brown, reflecting very little violet, and sometimes has traces of orange smears on the forewing. The undersides of the sexes are similar. The forewings are a toast brown color, moderately dotted with black spots; the hindwings have a purplish sheen.

Details of the life history of the dorcas copper in Newfoundland and Labrador are not available. The food plant is thought to be cinquefoil (*Potentilla* spp.), but larvae have never been successfully reared to the adult stage.

L. epixanthe phaedrus (Hall)

BOG COPPER

Plate 6, **14** and **15**

The species *L. epixanthe* is distributed throughout Canada from Newfoundland to British Columbia and south to Minnesota, Michigan, and the New England States. The subspecies *L. e. phaedrus* is found in Newfoundland and Nova Scotia. It is widely distributed in Newfoundland, and adults have been taken at St. John's, Paradise, Donovans, Witless Bay Line, Biscay Bay, Port de Grave, Carbonear, Heart's Content, New Melbourne, Gander, Gaff Topsail, Stephenville Crossing, Doyles, Cow Head, Eddies Cove West, Doctors Brook, Hawkes Bay, St. Barbe, and St. Anthony. Adults are in flight from mid-July to mid-August. Ferris (pers. commun.) reported taking *L. e. amecitus* (Scudder) males at View Hill, near South Branch, on 9 July 1975. The species has not been reported from Labrador.

The male has a faint purplish gloss on the upper side of the wings, whereas the female is grayer and duller. The black spots on the underside of the hindwings are clear cut, distinct, and round.

The life history in Newfoundland is not completely known, but the large cranberry (*Vaccinium macrocarpon*) has been established as its food plant. A single brood is produced each year and the subspecies hibernates as an egg, which is able to withstand being flooded in winter.

Genus *Plebejus* Kluk

P. argyrognomon aster (Edwards)

NORTHERN BLUE

Plate 6, 16–18

The northern blue is generally distributed throughout Canada and the northern United States, west to Alaska. The subspecies *P. a. aster* was described by Edwards (1882) from a number of adults taken from the Cape Race region of the southern Avalon Peninsula. It occurs in Newfoundland, and south of the Gulf of St. Lawrence. In Newfoundland, adults have been taken at Quidi Vidi, Witless Bay Line, Flatrock, Portugal Cove, Petty Harbour, Port de Grave, Carbonear, St. Shotts, Winterton, Heart's Content, Black Duck, Georges Lake, View Hill, Mummichog Park, Codroy Valley, Eddies Cove, Eddies Cove West, Cow Head, Hawkes Bay, The Tolt, St. Pauls, and St. John Island. The adults are in flight from late July to mid-August. No specimens have been taken from Labrador. *P. a. aster* may be distinguished from *P. a. empetri* by its smaller size and darker underside with indistinct markings.

Its life history in Newfoundland and Labrador is unknown, but in Europe the larva of this butterfly feeds on various legumes.

P. argyrognomon empetri (Freeman)

NORTHERN BLUE

Plate 6, 19

This subspecies of northern blue is found in Labrador, Nova Scotia, New Brunswick, and Prince Edward Island, but has not been recorded from Newfoundland. It has been collected at Hopedale and Cartwright in Labrador. The adults are in flight from late July to mid-August. It may be distinguished from *P. a. aster* by its deeper blue color, the heavy black pattern of the underside, and the rather large, distinct dark spots.

The life history is unknown except that the female lays her eggs on black crowberry (*Empetrum nigrum*) and the larva probably feeds on this plant.

P. aquilo Boisduval

ARCTIC BLUE

Plate 6, 8

This is a circumpolar arctic species, distributed in Canada from Newfoundland and Labrador west to the Pacific. The species also occurs in the Rocky Mountains as far south as California and Arizona. Its small size, dull colors, hairiness, and dingy appearance give it a real "arctic" appearance.

The arctic blue is widely distributed and fairly common in Newfoundland and Labrador. In Newfoundland, specimens have been taken at Pouch

Cove, Carbonear, Ferryland, Steady Brook, Lomond, Doctor's Hills, St. Anthony, South Branch, Codroy, Table Mountain, and Port aux Basques. The adults are in flight from early to late July. Möschler (1860) reported it in Labrador. Adults have since been taken at Chateau Bay, Belle Isle, Battle Harbour, Hopedale, Black Island, Hebron, Nain, Nutak, Okak, Payne Bay, Rocky Bay, Ryans Bay, Sugluk, Kangalak, and Knob Lake. In Labrador, the adults are in flight from late July to mid-August.

Details of the life history in Newfoundland and Labrador are not known. However, females have been observed ovipositing on diapensia (*Diapensia lapponica*) and blueberries (*Vaccinium* spp.).

Genus *Glaucopsyche* Scudder

G. lygdamus couperi Grote

SILVERY BLUE

Plate 6, 6 and 7

The silvery blue butterfly is distributed from Newfoundland west to Manitoba and south into northern Illinois, Michigan, Minnesota, and Wisconsin. It can be distinguished from related species by its predominantly gentle tone of silvery blue on the upper surface of both wings. On the underside the species is dark brownish gray and displays a crooked row of black spots near the margin of each wing. The male has a narrow black border surrounding the upper surface of the wings' outer margins, whereas in the female the border tends to be suffused and broader.

The silvery blue is considered to be somewhat rare in Newfoundland. It was reported by Holland (1898), Seitz (1924), and dos Passos (1935) as taken by Gosse at Carbonear 1832–35. It was also taken at St. Anthony by B. B. Moore and J. B. Wallas in 1951. The adults are in flight from mid-June to mid-July. The silvery blue has a rather rapid flight, and occurs in both open woods and fields. No specimens have been observed from Labrador.

The white-flecked, light green larva is slug shaped and has a black head and dark green dorsal stripes bordered with light yellow green. It is closely attended by ants and feeds on wild peas (*Lathyrus* spp.) and vetch (*Vicia* spp.). The species is single brooded and probably hibernates as a pupa.

Genus *Celastrina* Tutt

C. argiolus pseudargiolus (Boisduval & LeConte)

SPRING AZURE, JENNY LIND

Plate 6, 3 and 4

The species ranges over almost the whole of Canada and the United States. Dos Passos (1935) reported the subspecies *C. a. lucia* and form

marginata from Newfoundland but these are now considered as *C. a. pseudargiolus*. This subspecies is the largest of the blue butterflies. Most of the upper surface of the male is sky blue with thin black outer marginal lines on the forewings. Females often have these marginal lines to a greater degree and the outer third of the forewings is quite dark in some.

The spring azure, or Jenny Lind as it is sometimes called, is widely distributed in Newfoundland and Labrador (Figs. 21*a* and *b*). The adults are in flight from early June to mid-August, and from mid-June to late July, respectively.

Eggs are laid on dogwood (*Cornus* spp.), sumac (*Rhus* spp.), blueberry (*Vaccinium* spp.), and other plants. The larva is white, tinged with pale rose, and has a dusky dorsal stripe and slanted greenish marks on the sides; its body is covered with white hairs. Ants are known to attend the larvae to obtain the sweet liquid that they secrete. There is only one brood a year and hibernation is as a pupa.

Family HESPERIIDAE

skippers

Skippers are a very large, worldwide group of stout-bodied insects with proportionately small wings. Gregory (1975) listed 57 species of skippers in Canada, 4 of which occur in Newfoundland and Labrador.

The family contains many brightly colored species in the tropics, but in temperate latitudes they are not so attractive. In Newfoundland and Labrador, they are varying shades of black, brown, and orange, and in many instances collectors consider them so dull in appearance that, unfortunately, they disregard them altogether.

Skippers are generally easily identified by their distinctive antennae, which are markedly hooked at the tips. The adults, with few exceptions, are swift, erratic fliers and many are attracted to flowers. The larvae are plain, dull colored, and unornamented, with few hairs, but often with distinctive head patterns. They feed mainly on grasses and pupate within a loose, silken cocoon, a characteristic much commoner among moths than butterflies. The pupa is generally suspended by a silk girdle inside the silken cocoon.

Genus *Pyrgus* Hübner

P. centaureae (Rambur)

GRIZZLED SKIPPER

Plate 6, 20

The grizzled skipper is a circumpolar species, occurring all over northern North America and on the higher mountains southward. Two subspe-

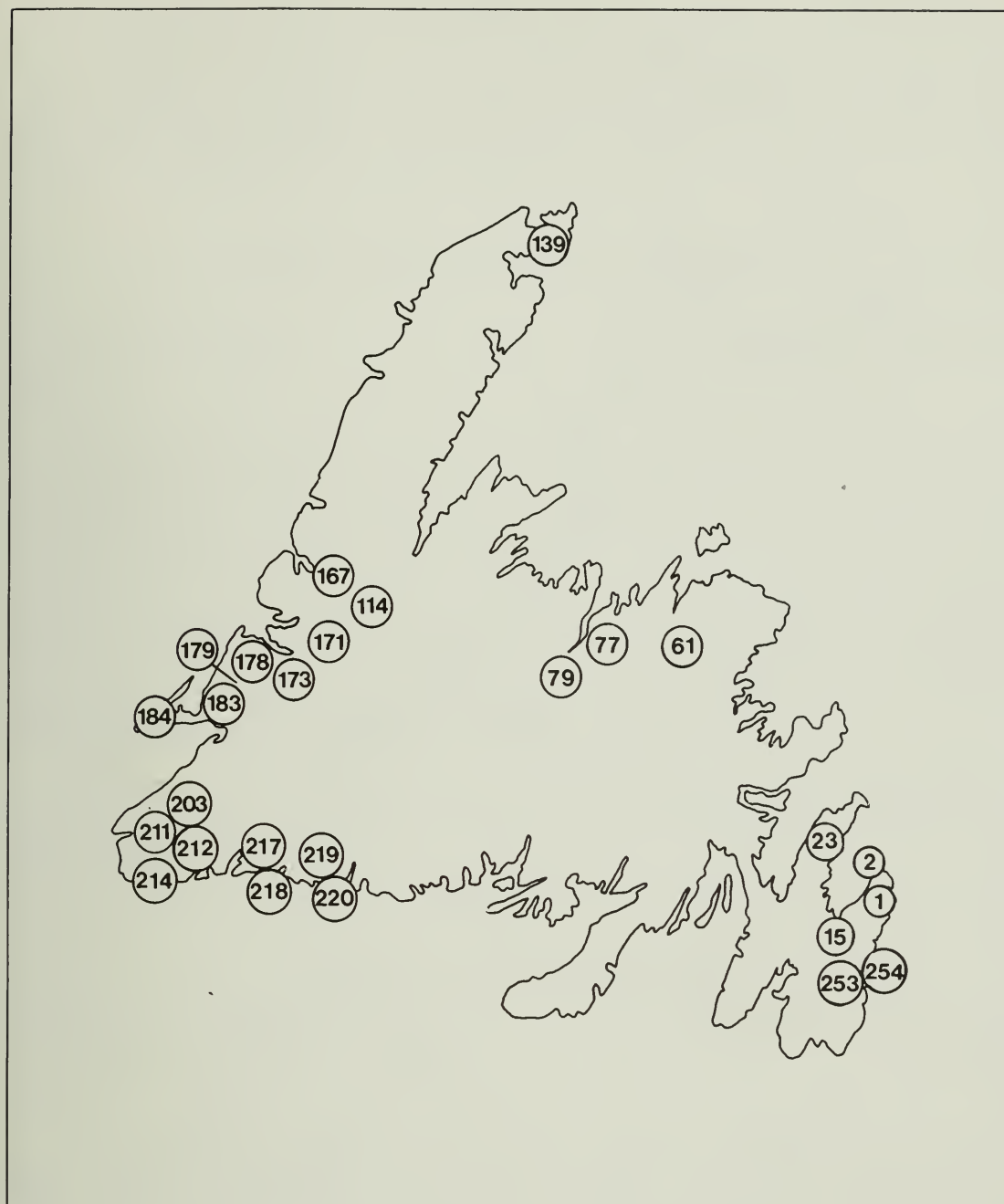


Fig. 21a. Distribution of *Celastrina argiolus pseudargiolus* (Boisduval & LeConte) in Newfoundland.

cies, including *P. c. freija*, were originally described from specimens taken in Labrador, the most northerly part of their range.

P. centaureae has been recorded from Newfoundland by dos Passos (1935) but is not considered common. In Labrador, specimens have been taken at Nain, Hopedale, and Knob Lake. Packard (1888) first reported the species from Labrador. The adults are in flight in Labrador from mid-June to very early August.



Fig. 21b. Distribution of *Celastrina argiolus pseudargiolus* (Boisduval & LeConte) in Labrador.

The species may be distinguished from its relatives by the basically white marginal area of its hindwing. Also, the subterminal lunules are large and are joined to the vein lines to make a series of small outer subterminal spots. Although very little is known about the early stages of the grizzled skipper, it is believed that the larva feeds on grasses.

Genus *Carterocephalus* Lederer

C. palaemon (Pallas)

ARCTIC SKIPPER

Plate 6, 21

The arctic skipper has a wide distribution but despite its name is not truly arctic. It is found across central and southern Canada, and south to Connecticut, New York, Pennsylvania, Michigan, and Minnesota. It is also found in Europe and Asia. Adults have been collected in Newfoundland at the Oxen Pond Botanical Park in St. John's, Gander, Grand Falls, Spruce Brook, Harmon Field, and Doyles Station between late June and mid-July. Three specimens, now in the Canadian National Collection, were taken at Cartwright in Labrador by E. Cashman on 28 July 1955. Specimens were also collected by Ferris at Nain and Happy Valley in 1975.

The mature larva is yellowish green and has a pale dorsal line and finer yellowish lateral lines. It feeds on grasses and hibernates when fully grown. The species is single brooded.

Genus *Thymelicus* Hübner

T. lineola Ochsenheimer

EUROPEAN SKIPPER

Plate 34, 1

The European skipper was first found in North America near London, Ont., and has since spread throughout Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland. The species was first observed in Newfoundland by B. Jackson at the Oxen Pond Botanical Park, St. John's, 3 August 1976 (Jackson 1978). He captured 2 adults and observed approximately 12 others flying in a grassy meadow. Three adults were taken at Wooddale, near Grand Falls, 26 July 1977 and Eberlie collected three specimens at Deer Lake, 28 July 1977 (Eberlie 1978). A single specimen was taken from the radiator of a car, 24 July 1975. It is considered a serious pest of hayfields in Quebec and Prince Edward Island.

The larva feeds on coarse grasses, usually between blades that are spun together. It is green, with yellowish incisions between the bands; there is a darker green dorsal stripe and yellow lateral lines. When fully grown it spins some lower stems of grass together with a network of white silk to hold the

pupa. The species overwinters in the egg stage. The eggs are pale greenish yellow and oval in shape. They are laid in August in dried grass seed heads or inside the sheath of a leaf, and hatch the following spring.

Genus *Hesperia* Fabricius

H. comma borealis Lindsey

COMMA, LABRADOR SKIPPER

Plate 6, 22

The comma, or Labrador skipper as it is sometimes called, extends from northern Newfoundland and Labrador through northern Quebec and Manitoba to the Yukon. Adults have been taken in Newfoundland at St. Barbe, Loon Motel (32 km west of St. Anthony), and St. John Island from mid-July to early August, and in Labrador at Nain, Hopedale, and Cartwright from mid to late July. *H. c. borealis* was originally described from specimens taken at Nain, Labrador. Ferris reported the subspecies *manitoba* Scudder from Nain. A specimen of *laurentina* Lyman was also recorded from Nain and is now at the Allyn Museum of Entomology in Sarasota, Fla.

The species may be differentiated from related species by the white spots on the underside of the hindwing, which coalesce to form a continuous band, and by the presence of dark patches outside and, in some specimens, inside these spots.

The life history of *borealis* in Newfoundland and Labrador is not known but it is thought to be single brooded.

Genus *Polites* Scudder

P. coras (Cramer)

PECK'S SKIPPER

Plate 6, 23

Peck's skipper occurs in Eastern Canada, the northern Atlantic States, west to Kansas, Iowa, and Illinois, and south to Georgia and Texas. Adults have been taken in Newfoundland at Deer Lake, Woody Point, Doyles Station, South Branch, and St. Anthony from mid-June to late July, and in Labrador at Cartwright from mid-July to early August.

Peck's skipper may be easily distinguished from related species by its small size and the characteristic light patch, consisting of greatly enlarged and fused spots on the underside of the hindwing. It frequently visits summer flowers.

The fully grown larva is deep maroon, mottled with light brown, and has white streaks and a blackish head. It feeds on grasses. The species is probably single brooded, and hibernates as a fully grown larva or pupa.

MOTHS

Family SPHINGIDAE sphinx moths (hawkmoths)

This is a moderate-sized family of nearly 1000 species. Hodges (1971) reported 115 species in the southwestern United States. The largest number of species is found in the wet, tropical parts of the world; only 13 species occur in the cooler climate of Newfoundland and Labrador.

Sphingids are medium to large-sized moths that have rather long, slender wings. The body is usually long and torpedo-shaped. Adults are often observed hovering in front of deep-throated flowers to feed on nectar and thus are often called hummingbird moths. Some species are diurnal, some crepuscular, and others nocturnal.

The eggs are rounded or slightly flattened with very little surface sculpturing. They are usually laid singly, but in a few cases are found in masses. The larva is cylindrical or tapering at the anterior segments. The 11th segment usually has a caudal horn, which is occasionally replaced with a button-like structure. The body has sparse, very fine secondary hair. The pupa is torpedo-shaped like the body of the adult, and its head is distinctly narrower than the thorax. The 5th and 6th segments are movable. Pupation occurs either in a chamber in the soil, or in a loosely spun cocoon on or above the ground.

Genus *Agrius* Hübner

A. cingulatus (Fabricius)

SWEET-POTATO HORNWORM, PINK SPOTTED HAWKMOTH

Plate 7, 1

A. cingulatus is a tropical and semitropical insect occurring throughout the southern parts of the United States. It breeds in the Gulf Coast region, including Florida, and may be resident on the east coast of the United States north to South Carolina. It is sometimes found in the northern United States and Canada, but only as a straggler.

Four specimens have been taken in Newfoundland, one at Corner Brook by the Forest Research Laboratory, 31 August 1960, one at Port aux

Basques, 5 August 1975, one at St. John's, 10 October 1977, and another at Mt. Pearl, 23 August 1968. They were probably stragglers, but are nonetheless of interest because of their large size and beauty. The larva feeds on sweet potato (*Ipomoea batatas*) and other members of the Convolvulus family. When fully grown, it bores into the ground and forms a chamber in the soil where pupation occurs.

Genus *Ceratomia* Harris

C. undulosa (Walker)

WAVED SPHINX

Plate 7, 2

The waved sphinx ranges widely from the Atlantic Provinces to western and southern Alberta, south to Florida and west to Kansas and Texas.

A single specimen taken at Corner Brook by the Forest Research Laboratory and reported by McGugan (1958) is the only record of this species occurring in Newfoundland. Ferguson (1954) reported it as a common species near Annapolis, N.S. It is not found in Labrador.

The larva is grayish green to green with seven pairs of lateral, greenish oblique bands on the body. It feeds on ash (*Fraxinus* spp.), privet (*Ligustrum* spp.), and hawthorn (*Crataegus* spp.).

Genus *Sphinx* Linnaeus

S. canadensis Boisduval

Plate 7, 3

This species is distributed from Newfoundland to Massachusetts, west to Ohio and Montana. Brower (1974) reported it to be widespread but scarce in Maine. He observed adults in flight from mid-June to early August. According to Forbes (1948), the species has been reported from Newfoundland. However, no specimens have been observed or taken in recent years, and the species has not been recorded from Labrador.

Forbes (1948) stated the larva may feed on blueberry (*Vaccinium* spp.) and Brower (1974) reported that it had been reared on ash (*Fraxinus* spp.).

S. kalmiae J. E. Smith

LAUREL SPHINX

Plate 8, 1

This species is known to occur from Newfoundland west to southeastern Saskatchewan and south to Georgia, Arkansas, and Mississippi. In Newfoundland, *S. kalmiae* has been taken at St. John's, Mt. Pearl, Colinet,

Gander, Gambo, Corner Brook, Cow Head, Lomond, Stephenville Crossing, and Tompkins. It has not been recorded from Labrador. The adults are in flight from mid-July to mid-August and, although widely distributed, are never abundant.

The larva is yellowish green, with somewhat paler thoracic segments. The oblique bands are comprised of a very narrow white central line, preceded by a blue black one and followed by a rather broad yellow one that extends to the horn. The caudal horn is dark blue mottled with black. The pupa has a fairly short, slightly curved tongue case that is not completely flat against the surface of the body.

Larval food plants are diverse and include laurel (*Kalmia latifolia*), lilac (*Syringa vulgaris*), privet (*Ligustrum* spp.), ash (*Fraxinus* spp.), and poplar (*Populus* spp.).

S. gordius Cramer

APPLE SPHINX

Plate 8, 2

The apple sphinx has a fairly wide range, from Newfoundland and Labrador south to central Florida, west to the Peace River, Alta., and south along the Rocky Mountains to Colorado and Utah. Its seasonal abundance varies considerably, but it is the most common sphinx in Newfoundland, where adults have been taken at St. John's, Kilbride, Mt. Pearl, Goulds, Colinet, Wild Cove, Gander, Pynns Brook, and Tompkins. The adults are in flight from early June to late August. Specimens have been taken in mid-July at Goose Bay in Labrador.

The fully grown larva is yellow green with seven pairs of lateral oblique bands that have purple anterior borders. The caudal horn is quite short and has a purple lateral border that is a continuation of the seventh band. The larva feeds on apple (*Malus* spp.), prairie crab apple (*Malus ioensis*), ash (*Fraxinus* spp.), blueberry (*Vaccinium* spp.), eastern larch (*Larix laricina*), and white spruce (*Picea glauca*). Pupation takes place in the soil, and the pupa has a very short tongue case. The species is single brooded.

S. drupiferarum J. E. Smith

PLUM TREE SPHINX, WILD CHERRY SPHINX

Plate 8, 3

Forbes (1948) stated that this moth ranged, in races, from Quebec and Maine to Georgia and west to the Pacific. According to McGugan (1958) the species has been collected from western Newfoundland, eastern Nova Scotia, eastern and central Ontario, and central British Columbia. The Newfoundland record is based on larvae taken at St. George's. There are no records from Labrador.

The larva is grass green with a deep red brown stripe on its head and horn and purple-shaded lateral stripes. It is a solitary defoliator on apple (*Malus* spp.), cherry (*Prunus* spp.), plum (*Prunus* spp.), and lilac (*Syringa* spp.).

Genus *Smerinthus* Latreille

S. jamaicensis (Drury)

TWIN-SPOTTED SPHINX

Plate 8, 4

The twin-spotted sphinx is found from Newfoundland south to Georgia and west to British Columbia and Arizona. Although considered rare in Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Colinet, Gambo, Gander, Lewisporte, Millertown Junction, Badger, Gaff Topsail, Kitty's Brook, Corner Brook, Pynns Brook, and Tompkins, where they are in flight from late June to early September. The species has not been recorded from Labrador.

The larva has a soft pinkish horn no longer than the height of the head. It feeds on cherry (*Prunus* spp.), willow (*Salix* spp.), and aspen (*Populus* spp.). There is a single generation each year and the pupa is the overwintering stage.

S. cerisyi Kirby

CERISY'S SPHINX MOTH

Plate 9, 1

This sphinx moth occurs in small numbers from Newfoundland, the Maritime Provinces, and Ontario west to British Columbia. It also occurs in races from Rhode Island, N.Y., west across the United States to the Pacific and south in the Rocky Mountains to Mexico City. In Newfoundland, adults have been taken at Grand Falls, Pynns Brook, Corner Brook, and Tompkins from early June to mid-July. The species is not found in Labrador.

The larva has a blue, black-tipped horn and is a solitary feeder on willow (*Salix* spp.), and poplar (*Populus* spp.). The species is single brooded, and hibernates as a pupa.

Genus *Paonias* Hübner

P. excaecatus (J. E. Smith)

BLINDED SPHINX

Plate 9, 2

In Canada, the blinded sphinx is known to exist from Newfoundland west to Saskatchewan and the interior of British Columbia. Forbes (1948)

stated that it extends south from Canada to Florida and west to the Mississippi Valley. Krogerus (1954) reported taking larvae at Corner Brook, Newfoundland, from a small shadbush (*Amelanchier* spp.). In Labrador, a single adult was taken at Nagrak [Nachvak] Fiord by E. E. Sterns, 15 August 1954. This specimen is now in the Canadian National Collection.

The larva has a blue green horn, and sometimes has fairly regular subdorsal and lateral rows of red spots. It feeds on wild cherry (*Prunus* spp.), birch (*Betula* spp.), and aspen (*Populus* spp.) and is most prevalent during August. The pupa overwinters.

Genus *Pachysphinx* Rothschild & Jordan

P. modesta (Harris)

MODEST SPHINX, BIG POPLAR SPHINX

Plate 9, 4

This large, beautiful sphinx is found across Canada from central Newfoundland and Labrador to the interior of British Columbia. Holland (1903) stated that the species ranged across the United States and as far south as northern Mexico. McGugan (1958) reported it from central Newfoundland in the Grand Falls area and E. E. Sterns collected adults in mid-August, 1954, at Nagrak [Nachvak] Fiord and Hebron, Labrador. In Canada, adults are in flight from early June to mid-August, but are most abundant in late June.

The green larva is a solitary defoliator on poplar (*Populus* spp.) and willow (*Salix* spp.). The species is single brooded and hibernates as a pupa.

Genus *Hemaris* Dalman

H. thysbe (Fabricius)

HUMMINGBIRD MOTH, COMMON CLEAR-WING

Plate 9, 6

The hummingbird moth ranges across Canada from Newfoundland to British Columbia, south to Florida and west to Texas. This beautiful diurnal moth is widely distributed in Newfoundland. For protection the species mimics a bee. Adults have been taken at St. John's, Bell Island, Logy Bay, Kilbride, Ferryland, Cappahayden, Gambo, Gander, Glenwood, Fortune, Woody Point, Spruce Brook, and Harmon Field. Adults are in flight from mid-June to early September and frequently visit flowers, particularly lilacs. Specimens taken by A. English at St. John's, 5-8 July 1919, are in the Canadian National Collection. There are no records from Labrador.

The larva has a very rough round head and an even rougher cervical shield. Its skin is green and somewhat granular, and it has a long, slender-

tipped horn and red spiracles. White subdorsal lines and a pale double dorsal line, often red in the center, extend to the horn. The larva normally feeds on viburnum (*Viburnum* spp.), hawthorn (*Crataegus* spp.), honeysuckle (*Lonicera* spp.), and snowberry (*Symphoricarpos* spp.).

The species is single brooded and overwinters as a brown pupa enclosed in a rather dense cocoon, formed on the surface of the ground under fallen leaves.

Genus *Proserpinus* Hübner

P. flavofasciata (Walker)

YELLOW-BANDED DAY SPHINX

Plate 9, 3

According to Forbes (1948), this moth ranges from Maine to British Columbia, but only in a narrow strip of country, as it has been found in southern Quebec but not south of Massachusetts. This sphinx is generally considered a collector's prize when taken. The only record from Newfoundland is a single specimen taken at Cormack on 16 June 1961; this was probably a migrant from Quebec. The moths are diurnal and mimic bumble bees in their appearance and behavior, as their coloring is yellow and black, their bodies are hairy, and they frequently visit flowers.

The larva is brown and has rows of black dots. The horn is replaced by an eyespot with a rough, obliquely pointed center and a deep black ring round the outside. The larva feeds on fireweed (*Epilobium* spp.) and the species hibernates as a pupa.

Genus *Hyles* Hübner

H. gallii intermedia (Kirby)

DARK-VEINED DEILEPHILA

Plate 9, 5

According to Forbes (1948), the species ranges from Labrador to Georgia in the east and from Vancouver Island to California in the west. In Newfoundland, adults of the subspecies *H. g. intermedia* have been taken at St. John's, Lethbridge, Glenwood, Grand Falls, Pynns Brook, Doctors Brook, Corner Brook, and Tompkins from late May to late July. In Labrador, adults were taken at Hopedale by W. W. Perrett from mid-July to late July. This subspecies is considered rare in both Newfoundland and Labrador.

The larvae are black or green in color. The black form has diffuse yellow powdering on the dorsal and subdorsal regions and a regular subdor-

sal series of eyespots. In the green form, the last eyespot is extended to the horn. Both forms feed on fireweed (*Epilobium* spp.). The species hibernates as a pupa.

Family SATURNIIDAE

giant silkworm moths (emperor moths)

Most of this family are medium-sized or very large. All species weave a cocoon for pupation. None of them has a frenulum for coordinating wing movement in flight. The tongue is aborted, or at most extremely rudimentary, indicating that adult moths of this family do not feed. Most species are beautifully colored, and many have large colored or opaque eyespots on their wings.

The antennae of the males, and sometimes of the females, are either singly or doubly bipectinated to the tips. Bipectination also occurs in other families of moths, but it never extends to the tip of the antenna as in this family.

Well-known saturniids include the cecropia moth (*Platysamia cecropia* (Linnaeus)), the luna moth (*Actias luna* (Linnaeus)), and the polyphemus moth (*Antheraea polyphemus* (Cramer)). None of these are found in Newfoundland, and only the polyphemus moth has been recorded from Labrador.

Genus *Antheraea* Hübner

A. polyphemus polyphemus (Cramer)

POLYPHEMUS MOTH

Plate 10, 1

The species is the most widely distributed of all North American Saturniidae, occurring from coast to coast across Canada and the United States and south to Mexico. Although found in Labrador, it has never been recorded in Newfoundland.

A single specimen of *A. p. polyphemus*, taken by E. E. Sterns at Hebron in Labrador, 12 August 1954, is the only representative of this family from Newfoundland and Labrador. The specimen is in the Canadian National Collection, and was probably a stray from a more southern Canadian region.

The larva is a beautiful bright green with an almost translucent quality, and has silvery white raised lateral lines. The larva feeds on many species of trees and shrubs, including white birch (*Betula papyrifera*), willow (*Salix* spp.), maple (*Acer* spp.), cherry (*Prunus* spp.), hawthorn (*Crataegus* spp.),

trembling aspen (*Populus tremuloides*), and shadbush (*Amelanchier* spp.). The cocoon is firm and compact, ovoid in shape, and has a tough, thick, rigid outer covering of silk. It is wrapped in a leaf, drops to the ground when the leaves fall, and passes the winter there concealed in the leaf litter. Consequently it is very difficult to find. The moth is single brooded in Canada. The life history of this beautiful moth is fully described by Ferguson (1972).

Family AMATIDAE

This family consists of approximately 2000 species. Many of them are thickly covered with hair and resemble arctiids (tiger moths) in both appearance and habits. They also spin cocoons similar to those of arctiids. However, the moths of this family can easily be distinguished from related families by the structure of the hindwing. The subcostal vein in amatid moths can only be seen at the base of the wing, where it is separated from the radial vein for a very short distance.

Almost all members of this family are diurnal and brilliantly colored. Many species are mimics of Hymenoptera (bees and wasps) and several mimic chrysomelid beetles. The larvae are tussock-like, and have dense feathery hair growing from warts, and some long pencils of hair. They generally feed on grasses and pupate in cocoons lined with larval hairs.

Genus *Ctenucha* Kirby

C. virginica (Charpentier)

Plate 10, 2

This species is distributed from Labrador, Newfoundland, and Nova Scotia south to Pennsylvania and west to Manitoba. Forbes (1960) reported *C. virginica* as occurring in Newfoundland. A single specimen was taken at Tompkins, 7 July 1975. Larvae of the species appeared in outbreak numbers in St. George's and Robinsons in 1977 and adults emerged in large numbers from 27 June to 15 July. In Labrador, adult specimens were taken at Hebron and Nogbak [Nachvak] Fiord by E. E. Sterns during the period 10–15 August 1954.

The adult moth is easily recognized by its coloration. The forewing is brown black, the hindwing black, the body a brilliant peacock blue, and the vertex and shoulders orange.

The larva has a red and black head and a brown body with narrow and broken subdorsal and lateral lines. The hair may vary from practically all white with black dorsal tufts to mostly black. The larva is a general feeder,

but confines itself chiefly to grass. The outbreak at St. George's and Robinsons caused light damage to hay and pasture fields.

Family ARCTIIDAE

tiger moths and allies

This is a large family of some 2000 species, but only 14 of them are known in Newfoundland and Labrador. Most adults have stout, thickly haired bodies, and closely resemble the noctuids. The head is often retracted into the thorax and the legs are short and strong, with very short spurs. Most adults are brilliantly colored. The eggs are usually laid in clusters of about 100. The larvae are hairy, and remain in groups at first, scattering later in almost all cases to feed singly. They develop colorful tufts of hairs from large warts on the thorax and abdomen, which is why they are often called "woolly bears." The pupae are stout, and the cremaster, if there is one, is weak; the warts are usually represented by groups of minute setae; the cocoon is light or even flimsy, mainly covered with barbed larval hairs, with little or no silk. Most species overwinter as larvae, a few as pupae.

Genus *Lexis* Hampson

L. bicolor (Grote)

YELLOW-EDGED LEXIS

Plate 10, 3

The species occurs in all provinces of Canada in appreciable numbers and in the northern areas of the United States. In Newfoundland, it has been observed at St. Anthony, Corner Brook, Grand Falls, Gander, Gambo, and Swift Current, and in Labrador at Cartwright. Adults are in flight in Newfoundland from early July to early August and in Labrador from late July to mid-August.

The larva is clay colored with brown mottling and a black head. The thorax has large anterior and smaller posterior warts. It feeds on lichens growing on conifers but can, however, develop satisfactorily under artificial conditions on the trees themselves. McGugan (1958) recorded the principal host plants as white spruce (*Picea glauca*) and balsam fir (*Abies balsamea*).

Genus *Halisidota* Hübner

H. maculata (Harris)

SPOTTED TUSOCK MOTH

Plate 10, 4

The spotted tussock moth occurs in Newfoundland, Nova Scotia, Ontario, west to Manitoba and Colorado, south to Massachusetts and west

across the United States to California. In Newfoundland, specimens have been taken at Doyles, Tompkins, South Branch, Stephenville, Corner Brook, Pasadena, Pynns Brook, Lewisporte, Kilbride, and St. John's, and in Labrador at Nachvak Fiord. The adult is in flight in Newfoundland during July and in Labrador in mid-August.

The larva is cream or yellow in the middle and blackish at the ends, and is conspicuously marked with massive tufts of black hair and some thin pencils of white hair. It feeds mainly on alder (*Alnus* spp.), willow (*Salix* spp.), poplar (*Populus* spp.), and maple (*Acer* spp.).

Genus *Phragmatobia* Stephens

P. fuliginosa (Linnaeus)

RUBY TIGER MOTH

Plate 10, 5

This is a circumpolar species, extending throughout Canada from the Atlantic to the Rocky Mountains and Alaska, and south along the Appalachian Mountains into the Carolinas. It has been taken in Newfoundland at Colinet, Stephenville, and Lomond, but is not recorded from Labrador. The adult is in flight from late June to mid-July.

The larva is blackish and the stiff hair is black in front and tawny in the middle and at the rear; there are no tufts of longer hair. The species is single brooded and hibernates as a partly grown larva.

Genus *Apantesis* Walker

A. virgo (Linnaeus)

VIRGIN TIGER MOTH

Plate 10, 6

This species is generally distributed throughout Eastern Canada, south to Florida and west to Arizona. Specimens have been taken at Tompkins and Cow Head in western Newfoundland, where the adult is in flight from early July to early August. There are no records from Labrador.

The larva is black, with dorsal warts. The upper hairs are black and the lower ones are reddish. There is sometimes a pale dorsal line. Ferguson (1954) reared adults from larvae found in May under logs and flat stones in fields and open grassy places.

A. parthenice (Kirby)

Plate 10, 8

This moth is similar to *A. virgo* but the vein lines are much finer and usually there are no median spots on the hindwing. Forbes (1960) reports its

distribution as being quite common across Canada from Nova Scotia to Vancouver and across the United States from Smoky Falls to Iowa. Adults have been taken in light traps in Newfoundland at St. John's, Mt. Pearl, and Colinet, where the adult is in flight from mid-June to late July. *A. parthenice* has not been reported from Labrador.

The larva is usually wholly black, but may have some brown hair or a pale dorsal line. Forbes (1960) stated it can be carnivorous on occasion.

A. quenselii (Paykull)

Plate 10, 9

According to Forbes (1960), this species is found in the arctic, south to Mt. Katahdin, Maine, and Mt. Washington, N.H., and west to Manitoba and the mountains of Colorado and Vancouver Island. Möschler (1860) recorded it in Labrador, and 14 specimens in the Canadian National Collection were taken at Hopedale, Labrador, between 1924 and 1928 by W. W. Perrett, but the species has not yet been found in Newfoundland. The adult is in flight from late June to late July.

The larva is black with a broken dorsal line.

A. virguncula (Kirby)

LITTLE VIRGIN MOTH

Plate 10, 7

Holland (1903) reported that this species occurs in the northern United States and Canada. Ferguson (1954) called it a bog species, abundant on the Mount Uniacke bogs and the barren bogs at Peggy's Cove in Nova Scotia. In Newfoundland, specimens have been taken at St. Anthony, Fortune, and Colinet. Forbes (1960) stated that the subspecies *A. v. speciosa* Möschler from Labrador was smaller but nearly identical in pattern with *A. virguncula* from Newfoundland. However, the Newfoundland specimens have narrower forewings and the subterminal line toward the costa curves in an S-shape, suggesting *A. quenselii*. The adult is in flight from mid-July to mid-August.

The larva is black dorsally, reddish ventrally, and has some shiny-based warts.

Genus *Diacrisia* Hübner

D. virginica (Fabricius)

YELLOW WOOLLY BEAR, VIRGINIAN TIGER MOTH

Plate 10, 11

This species is distributed from Newfoundland, Nova Scotia, and Hudson Bay to Vancouver, and south to Florida and Mexico. In Newfound-

land, specimens have been taken at Port aux Basques, South Branch, St. George's, Stephenville Crossing, Georges Lake, Corner Brook, Hampton, Eddies Cove, Cow Head, Pynns Brook, and Lewisporte. The adults are in flight from early July to mid-August. The species has not been recorded from Labrador.

The orange brown or pale yellow, hairy larva is one of the commonest woolly bears and may be found feeding on a variety of garden plants. In some areas it can cause damage by feeding on corn silks. Ferguson (1954) reported it on vines (*Ampelopsis* spp.). McGugan (1958) lists willow (*Salix* spp.), trembling aspen (*Populus tremuloides*), Manitoba maple (*Acer negundo*), and alder (*Alnus* spp.) as the most common larval host plants.

Genus *Pyrrharctia* Packard

P. isabella (J. E. Smith)

BLACK-ENDED BEAR

Plate 10, 10

According to Forbes (1960) this arctiid is distributed quite generally across temperate Canada and the United States. It has not been taken in Newfoundland, but is known to occur in western Labrador because E. G. Munroe took a single specimen in August 1948 at Knob Lake on the Quebec-Labrador boundary. The attractive larva, brown in the middle and black at each end, is a familiar woolly bear in many areas.

Genus *Estigmene* Hübner

E. acrea (Drury)

SALTMARSH CATERPILLAR

Plate 33, 3

This species is distributed from the Atlantic Provinces to the interior of British Columbia and south to Central America, but is not seen in the far north. In Newfoundland, adults have been taken at Pynns Brook and Tompkins. The species is considered rare and has not been recorded from Labrador.

The larva has a dull brownish body with some mottling and faint broken lines. The hair is usually dusty gray brown dorsally and tawny laterally, or is sometimes all tawny. It is a very general feeder, mainly on low plants, but is also an efficient climber on cherry (*Prunus* spp.), apple (*Malus* spp.), alder (*Alnus* spp.), and poplar (*Populus* spp.). The species overwinters as a pupa.

Genus *Hyphantria* Harris

H. textor Harris

SPOTLESS FALL WEBWORM

Plate 10, 13

According to Forbes (1960), the species is distributed in Eastern Canada and the eastern United States, Texas, Colorado, and New Mexico. In Newfoundland, only two specimens are recorded, both taken by Krogerus on 1 July 1949 around the village lamps at Port aux Basques (Krogerus 1945). McGugan (1958) included original records designated as *H. textor* Harris under the species *H. cunea* (Drury). Ferguson (1954) noted some specimens with black-spotted primaries and stated they were merely forms of *textor*, not *cunea*. The larva is sometimes abundant in the fall, frequently in large webs on apple trees (*Malus* spp.).

H. cunea (Drury)

FALL WEBWORM

Plate 10, 12

McGugan (1958) gives the distribution of *H. cunea* and *H. textor* as general throughout southern Canada from coast to coast. Forbes (1960) considered *H. cunea* to be rare north of central New York and eastern Massachusetts, but to be more common than *H. textor* from southern New York to Florida. In Newfoundland, adults have been taken at South Branch, St. George's, Stephenville, Corner Brook, Deer Lake, and Grand Falls.

The larva feeds in colonies that form a distinct web over the branch of the tree as feeding progresses. It is found on pin cherry (*Prunus pensylvanica*), willow (*Salix* spp.), alder (*Alnus* spp.), apple (*Malus* spp.), and many other trees and shrubs.

Genus *Platarctia* Packard

P. parthenos (Harris)

ST. LAWRENCE TIGER MOTH

Plate 11, 1

This species is widely distributed across Canada from Newfoundland and Labrador to the Yukon and British Columbia, south to Massachusetts and New York, and west to Colorado. In Newfoundland, adults have been taken at Colinet, Corner Brook, Pynns Brook, Tompkins, Doyles, River of Ponds, and St. Anthony; and in Labrador at Cartwright, Hopedale, Goose Bay, and Nachvak Fiord. Packard (1888) recorded the species from all the Moravian Stations in Labrador. The adults are in flight in Newfoundland and Labrador from early July to mid-August.

The larva is black with some white warts and long, irregular hairs. It is a solitary defoliator on willow (*Salix* spp.), alder (*Alnus* spp.), and birch (*Betula* spp.). This moth is considered rare and is usually taken in small numbers.

Genus *Arctia* Schrank

A. caja (Linnaeus)

GARDEN TIGER MOTH

Plate 11, 2

Forbes (1960) gave the distribution of this species as general in the north, and south to Ithaca and Saratoga, N.Y. The race of *A. americana* is found across Canada from Labrador to Saskatchewan. It is not known to occur in Newfoundland but Möschler recorded it from Labrador in 1860 and Packard (1888) reported the species as prevalent all along the coast of Labrador. It is widely distributed in Quebec, appearing late in the season, usually in October and early November.

The larva is black with some pale warts on the thorax and abdomen. The hairs are long, mainly mixed black and white but with some tawny coloring on the sides and thorax. The white hairs are longest, particularly toward the rear. McGugan (1958) recorded the larvae as feeding on willow (*Salix* spp.), alder (*Alnus* spp.), and birch (*Betula* spp.).

Genus *Utetheisa* Hübner

U. idae Clarke

(Not illustrated)

Clarke described this species from specimens taken by a Commander G. S. Stephenson on 1 July 1937, supposedly from Swain's Island, Newfoundland. Clarke stated they were strikingly similar in all characteristics except genitalia to two other species of *Utetheisa*, *bella* (Linnaeus) and *ornatrix* (Linnaeus), found in North America. A paratype of *U. idae* Clarke was deposited in the Canadian National Collection.

However, Forbes (1960) reported that the type specimen of *U. idae* was similar to a species found near the Indian Ocean, and Robinson and Robinson (1974) stated that it was identical with *U. puchelloides marshallorum* Rothschild, which is found on Swain's Island, American Samoa. Thus it seems that Commander Stephenson's specimens were attributed to the wrong Swain's Island and that the species does not, in fact, occur in Newfoundland or Labrador.

Family NOCTUIDAE

cutworm or owlet moths, underwings

This is a very large family of medium-sized, stout-bodied moths. Most species have well-developed mouthparts and palps. The tongue is always coiled, but is sometimes weak and perhaps not functional.

The body is usually hairy, with spreading or divided tufts of hair on the thorax, and sometimes with distinct dorsal tufts on the abdomen. The legs are strong, and have two pairs of spurs on the hind tibia. The valves of the male genitalia are usually visible externally, as are the two lobes of the female ovipositor.

The family is distinguished from others by the quadrifid forewing, the fusion, without any thickening, of the subcostal and radial veins of the hindwing near the base, and the presence of ocelli and a developed tongue.

The width of the eggs is usually greater than the length, and they are often laid in clusters with some overlapping. They generally have a well-marked raised pattern radiating from the middle of the top.

The larvae can usually be recognized by the absence of hairs. The majority are plant feeders, although a few are carnivorous and feed on scale insects. Many species feed openly on plant leaves and stems and then rest among leaf litter on the ground or burrow into the soil. Some larvae pupate in the soil, others excavate rotting wood and form cocoons with the chips, and still others form regular silk cocoons. Most species hibernate as pupae or partly grown larvae, but a few hibernate in the egg stage.

Genus *Androloma* Grote

A. mac-cullochi (Kirby)

Plate 11, 4

This species is distributed from Labrador, Quebec, and Ontario west to the Northwest Territories and British Columbia. It is not found in Newfoundland but adults have been taken at Hopedale, Goose Bay, and Cartwright in Labrador, where the moths are in flight from early July to late August. McDunnough (1921) reported specimens taken at Hopedale, 14 July and 23 August. Specimens taken by W. W. Perrett at Hopedale between 1918 and 1933 are now in the Canadian National Collection. The St. John's Forest Research Laboratory took two specimens on the Churchill Falls Road, near Goose Bay, 21 July 1975 and 19 July 1976.

The larva, according to Crum (1956) is about 30 mm long, and generally white in color with a black middorsal stripe. Its head and body are covered with a network of fine black markings, and it has a cream-colored

subdorsal stripe, which is cut into by large black tubercles. According to Forbes (1954) it feeds on plants of the grape (Vitaceae) and evening-primrose (Onagraceae) families, and Crumb (1956) has found it on fireweed (*Epilobium* spp.).

Genus *Alypia* Hübner

A. octomaculata (Fabricius)

EIGHT-SPOTTED FORESTER

Plate 11, 3

The eight-spotted forester extends from Eastern Canada and the northern Atlantic States westward beyond the Mississippi. Krogerus (1954) reported the species, which is common in eastern North America, on small grass and gravel islands in the mouth of Grandy Brook at Burgeo, at Tompkins, and north as far as Lomond. He also reported the moths flew very rapidly in bright sunshine in late July and were difficult to capture. Ferguson (1956) expressed doubt that this species was present in Newfoundland. There are no records from Labrador.

The spectacular larva is about 35 mm long. It is white, with about eight fine black transverse lines, a single orange stripe on each segment, and very prominent black tubercles. It feeds on the foliage of decorative vines (*Ampelopsis* spp.).

A. langtoni Couper

LANGTON'S FORESTER

Plate 11, 5

This species extends from Eastern Canada and the northern Atlantic States west to California, British Columbia, Alaska, and the Yukon. It has not been observed in Labrador, but in Newfoundland adults have been taken at St. George's, Spruce Brook, and Springdale, where they are in flight in mid-July. It is quite probable that Krogerus's misidentified *octomaculata* specimens are actually *langtoni* males, because both are very similar except for the shape of the wing spots.

The larva is similar to *A. octomaculata*, except that the white coloring is more evident than the black and the black tubercles are much more conspicuous. It feeds on fireweed (*Epilobium* spp.).

Genus *Colocasia* Hübner

C. propinquinella Grote

CLOSE-BANDED DEMAS

Plate 11, 6

This species is distributed in Canada from the Atlantic Provinces west to Manitoba, and in the United States from Maine to western Pennsylvania

and Tennessee. One unlabeled specimen reported by Pardy (1974), probably taken at St. George's in the early fifties, is the only record of its occurrence in Newfoundland. It has not been recorded from Labrador.

The larva is white, shaded with black laterally, and has a red or dark brown head. It is a solitary feeder on birch (*Betula* spp.), maple (*Acer* spp.), and beech (*Fagus* spp.), and forms a cocoon between the leaves.

Genus *Panthea* Hübner

P. acronyctoides Walker

Plate 11, 7

This species is found in all provinces as far west as eastern British Columbia and also in Maine, New York, Massachusetts, Minnesota, and Wisconsin in the United States. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Colinet, Port Blandford, Burin, Main Brook Junction, Big Falls, Georges Lake, Corner Brook, Woody Point, Doyles, and Tompkins. Moths are in flight from mid-May to mid-August. They have not been recorded from Labrador.

The larva is a solitary defoliator on balsam fir (*Abies balsamea*), spruce (*Picea* spp.), and tamarack (*Larix* spp.). Its body is contrastingly mottled in white with shades of brown and black and has conspicuous oblique white lateral patches. Brown and McGuffin (1942) fully described and illustrated this larva. The cocoon is constructed of tough silk.

Genus *Raphia* Hübner

R. frater Grote

BROTHER

Plate 11, 8

According to Forbes (1954) this species is distributed from Nova Scotia and Ontario south to New Jersey and Mississippi and west to British Columbia, Colorado, and New Mexico. It has not been reported from Newfoundland but adults have been taken at Hebron and Nagraak [Nachvak] Fiord in Labrador during July.

The larva is a light translucent green, dusted with white, with a pair of yellow, red-tipped tubercles close together dorsally on the 2nd abdominal segment. It is a solitary feeder on trembling aspen (*Populus tremuloides*) and balsam poplar (*Populus balsamifera*). The species is single brooded and hibernates as a pupa.

Genus *Acronicta* Ochsenheimer

A. americana (Harris)

AMERICAN DAGGER

Plate 11, 9

The American dagger moth is distributed from Newfoundland west to Alberta and south to Georgia, Kansas, and Texas. In Newfoundland, adults have been taken at Mt. Pearl, Gander, Corner Brook, Cormack, Daniel's Harbour, St. George's, and Gambo and are in flight from mid-July to mid-August. There are no records from Labrador.

The larva is about 50 mm long and greenish white in color with black markings. It has very long tufts of yellow or white hair and dense secondary hair. It feeds on maple (*Acer* spp.), birch (*Betula* spp.), and other deciduous trees. The pupa is formed in a dense, rather flat cocoon in which it hibernates. The species is single brooded.

A. dactylina (Grote)

FINGERED DAGGER

Plate 11, 10

This species occurs generally from Newfoundland west to Alberta, south to the district of Columbia and the mountains of North Carolina, and west across the United States to Colorado. In Newfoundland, adults have been taken at Mt. Pearl, Kilbride, St. John's, Gander, Pynns Brook, Corner Brook, Dribble Brook, Stephenville Crossing, St. George's, Doyles, and Tompkins. Adults are in flight from mid-May to early September. The species has not been recorded from Labrador. Although the markings on the forewings of this moth are similar to *A. americana*, it can be distinguished by its smaller size and white hindwings.

The larva has black skin covered with short dense hair that is brown dorsally and yellowish laterally. There are three long black pencils of hair. It is a solitary feeder on birch (*Betula* spp.), willow (*Salix* spp.), alder (*Alnus* spp.), and trembling aspen (*Populus tremuloides*), and is generally considered rare.

A. lepusculina Guenée

COTTONWOOD DAGGER

Plate 11, 11

The species ranges all over North America from Eastern Canada and the Atlantic States to the Pacific. It has been collected in Canada from Newfoundland to British Columbia, with the exception of Prince Edward Island. Krogerus collected larvae at Glenwood in Newfoundland between 22 and 24 August 1949. No adults have been taken in either Newfoundland or Labrador. The species is considered rare throughout Canada except in British Columbia, where it is generally common.

The larva's skin may be pale or black, the yellow hair is fine and soft, and there are three pencils of long hair. It is a solitary defoliator on trembling aspen (*Populus tremuloides*), willow (*Salix* spp.), and balsam poplar (*Populus balsamifera*). The species overwinters as a pupa and is single brooded.

A. leporina (Linnaeus)

MILLER (BR.)*

Plate 11, 12

This species ranges from Newfoundland to southern New York and west to British Columbia. In Newfoundland, adults have been taken at Mt. Pearl, Kilbride, Gander, Comfort Cove, Deer Lake, Harvey's Stillwater, Humber, Pynns Brook, Corner Brook, and Tompkins from late May to mid-July. In Labrador, a single moth was taken at Goose Bay, 27 July 1948, by W. W. Beckel.

The larva is greenish white and about 40 mm long. The skin is covered with minute rounded granules and fine hair that is always turned forward on one side and back on the other side, probably because it lies in a doubled-up position when resting. It feeds on trembling aspen (*Populus tremuloides*), birch (*Betula* spp.), and willow (*Salix* spp.).

A. innotata Guenée

Plate 11, 14

The species is found in Newfoundland, Nova Scotia, northern Quebec, and Ontario, south to New Jersey, west to Manitoba, and in a darker race to the Pacific. In Newfoundland, adults have been taken at Gander, Rattling Brook, Pynns Brook, Corner Brook, St. George's, Flat Bay Brook, and Doyles from mid-June to early August. The species has not been reported from Labrador and is generally rare except in the Prairie Provinces.

The larva is about 30 mm long and has dark greenish skin with two rows of yellow spots on each side, sparse dull white hair, and short spinules. The larva is a solitary defoliator on birch (*Betula* spp.) and cherry (*Prunus* spp.).

A. radcliffei (Harvey)

Plate 11, 13

The species ranges from Newfoundland, Nova Scotia, and Quebec south to Maine and North Carolina and west to Manitoba, Saskatchewan, and British Columbia. In Newfoundland, it is generally considered to be rare, but adults have been taken at St. John's, Kilbride, Corner Brook, and St. George's from late June to late July. It is not recorded from Labrador.

*(BR.) denotes a common name used in Great Britain.

The larva is about 30 mm long and has a red head and a black body with seven longitudinal yellow stripes. It is a solitary defoliator on shadbush (*Amelanchier* spp.), birch (*Betula* spp.), and wild cherry (*Prunus* spp.).

A. grisea Walker

GRAY DAGGER

Plate 11, 15

According to Forbes (1954) this moth is distributed from Labrador and northern localities in Ontario west to the Pacific, and south to central Maine and the mountains of New Hampshire and New York. Prentice (1962) stated that the species is distributed quite generally from Newfoundland to British Columbia. In Newfoundland, adults have been collected at St. John's, Mt. Pearl, Gander, Hampden, Pynns Brook, Corner Brook, Doyles, Tompkins, and Port aux Basques; and in Labrador at Hamilton Inlet and Goose Bay. The moths are in flight in Newfoundland from late June to mid-August and in Labrador from mid to late July.

The larva is green or brown, with a somewhat mottled head and a purplish middorsal stripe that broadens to form a central patch over abdominal segments 5–7. It feeds on willow (*Salix* spp.), birch (*Betula* spp.), alder (*Alnus* spp.), and apple (*Malus* spp.). The species is single brooded and probably hibernates as a pupa.

A. superans Guenée

(Not illustrated)

This species ranges from Newfoundland, Nova Scotia, New Brunswick, Quebec, and Eastern Ontario south to Maine and the District of Columbia and west to Manitoba. In Newfoundland, a single specimen was taken at Pynns Brook, 9 June 1976, and is considered rare. It is not recorded from Labrador.

The larva is green, with a black brown dorsum that is set off by a slightly yellow subdorsal line. The dorsal surface has very long but sparse hair. The head is a mottled brownish color. Prentice (1962) reported that the larva is a solitary feeder, active from mid-July to mid-August, and that the species overwinters as a pupa. Larvae feed on plum (*Prunus* spp.), apple (*Malus* spp.), mountain ash (*Sorbus americana*), and birch (*Betula* spp.) (Forbes 1954).

A. fragilis (Guenée)

FRAGILE DAGGER

Plate 11, 16

This delicate little moth is distributed from western Newfoundland to British Columbia and south through Maine to Virginia. In Newfoundland, specimens have been taken at Doyles by A. Mutuura, and at Tompkins.

Adults are in flight from mid to late July. This species is considered rare and has not been reported from Labrador.

The larva is about 25 mm long, pale gray faintly tinged with green, and has brown and black spots on the head. It has a narrow brown middorsal band and a paler broken subdorsal band on its thorax and abdomen. It is most numerous in mid and late August, feeding on birch (*Betula* spp.), mountain ash (*Sorbus* spp.), and apple (*Malus* spp.). The species is single brooded and hibernates as a pupa.

A. auricoma Fabricius

Plate 34, 12

This European species was first observed at Kilbride in July 1976. One adult moth was taken on 4 July and a second on 9 July. This is a first record for the species in Canada. It occurs in England and extends to southern Russia and Siberia.

A. impressa Walker

PRINTED DAGGER

Plate 12, 1 and 2

The printed dagger moth has been collected at widely scattered points in Canada from Newfoundland to British Columbia, and in the United States south to central New York and west to the Rocky Mountains. It is fairly common in Newfoundland and specimens have been taken at St. John's, Mt. Pearl, Kilbride, Colinet, Gambo, Glovertown, Glenwood, Millertown Junction, Robert's Arm, Ming's Bight, Kitty's Brook, Cow Head, Pynns Brook, Corner Brook, Stephenville, South Branch, Tompkins, Port aux Basques, and Burgeo. Adults are in flight from late June to late August. The species has not been reported from Labrador.

The larva is black dorsally and brown elsewhere, with lateral red lines. It feeds on willow (*Salix* spp.), aspen, and poplar (*Populus* spp.). The species is single brooded and overwinters as a pupa.

A. longa Guenée

(Not illustrated)

According to Forbes (1954), this moth is distributed throughout Canada and from Massachusetts to Florida, and west to Texas and the Rocky Mountains. In Newfoundland, Moore and Wallace collected eight specimens at St. Anthony between 21 June and 9 July 1951. The species has not been reported from Labrador.

The larva has a black or red brown head and a blackish or gray body, finely striated with a longitudinal middorsal stripe and somewhat obscure oblique ones. It feeds on willow (*Salix* spp.), birch (*Betula* spp.), cherry

(*Prunus* spp.), and alder (*Alnus* spp.). The spindle-shaped cocoon is formed between leaves that are drawn together.

A. oblinita (J. E. Smith)

SMEARED DAGGER

Plate 12, 3

This species has been found in Newfoundland, Nova Scotia, New Brunswick, northern Ontario, Manitoba, Saskatchewan, and western British Columbia, and south to Florida and across the United States to Texas. According to Ferguson (1954) it is widely distributed and common in Nova Scotia. In Newfoundland, specimens are recorded by Prentice (1962) as being taken near Corner Brook. The species has not been observed in Newfoundland since 1962 and it is not recorded from Labrador.

The larva, known as the smartweed caterpillar, is brilliantly colored; the head is black and the body, also black, is dotted with yellow in a variable pattern. It has black warts with tufts of stiff hair located in transverse red bands. The larva is a general feeder on low shrubs and herbs, particularly smartweed (*Polygonum* spp.), fireweed (*Epilobium* spp.), willow (*Salix* spp.), and alder (*Alnus* spp.). The pupa overwinters in a silk cocoon between leaves.

Genus *Harrisimemna* Grote

H. trisignata (Walker)

HARRIS' THREE SPOT

Plate 12, 4

According to Forbes (1954) this species is distributed from Nova Scotia and Quebec to Mississippi and west to Saskatchewan and Missouri. In Newfoundland, it is represented by a single specimen taken at Corner Brook, 16 August 1956, and now in the Canadian National Collection, and by three specimens collected at Tompkins, 3–8 July 1975.

The larva is patchily marked with brown, black, and white and is grotesque in appearance because as many as four cast-off head capsules and parts of the prothorax from previous larval molts may remain attached as a hanging chain. It feeds on lilac (*Syringa* spp.), holly (*Ilex* spp.), and blueberry (*Viburnum* spp.).

Genus *Euxoa* Hübner

E. detersa (Walker)

Plate 33, 6

This species is distributed from Newfoundland, Nova Scotia, and Maine west to Manitoba and south to New Jersey and Colorado. In

Newfoundland, where the species is considered rare, adults have been collected at Tompkins during August. There are no records from Labrador.

According to Forbes (1954), the larva is thin-skinned and brownish, with white dorsal, subdorsal, lateral, and spiracular lines and black spiracles. The head and cervical shield are also brownish. The larva feeds on grass, and may be found most frequently in wet places or sand barrens.

E. perpolita (Morrison)

POLISHED DART

Plate 12, 5

The polished dart is distributed from Newfoundland and Nova Scotia west through Quebec to British Columbia, south into the New England States and New York and west to Montana. It was recorded by Krogerus (1954) at Millertown Junction, 21 August 1949, but no additional specimens have been taken. It has been found in Labrador.

Details of the immature stages of this species in Newfoundland are not available.

E. scandens (Riley)

WHITE CUTWORM

Plate 33, 12

Hardwick (1970a) reported the species as being distributed on the Atlantic coast and west through southern Canada and the northern and central United States to Alberta and Utah. In Newfoundland, adults have been collected at Doyles, Millville, and Tompkins, where the moths are in flight from mid-July to early August. The species has not been recorded from Labrador.

The larva is a translucent pale gray, with a whitish dorsal area, some whitish lateral shading, and white spiracular lines with contrasting black spiracles. The head and cervical shield are a mottled buff color. This cutworm lives in sandy places, hiding by day in the soil, feeding at night, and climbing for food if necessary. It has been reported as damaging young apple trees in spring by feeding on the buds. The species overwinters as a partly grown larva (Forbes 1954).

E. messoria (Harris)

DARKSIDED CUTWORM

Plate 12, 6

According to Forbes (1954) the species is distributed from Nova Scotia and Quebec south to New Jersey and west to British Columbia. In Newfoundland, adults have been taken at St. John's and Pynns Brook, where moths are in flight from early to mid-September. They have not been recorded from Labrador.

This is one of the most common cutworms in Canada and a notorious pest in many Canadian agricultural areas. It is dull gray with dark sides and a flecked head. It feeds on a wide variety of vegetable plants, tobacco, and weeds by cutting off the plants at ground level. The larva hibernates when partly grown, maturing the following season.

E. ontario (Smith)

Plate 12, 7

This species is found in Newfoundland, Nova Scotia, New Brunswick, Quebec, northern Ontario, and the northern New England States. The moths are strongly attracted to the honeydew produced by aphids on birch. They are fairly common in Newfoundland but are not recorded from Labrador. Adults have been taken at St. John's, Kilbride, Mt. Pearl, Colinet, Gambo, Lumsden, Lewisporte, Kitty's Brook, Pynns Brook, Tompkins, and St. Anthony and are in flight from late July to mid-September.

Details of the immature stages in Newfoundland are not available.

E. quebecensis (Smith)

Plate 12, 8

According to Forbes (1954) this species extends from Newfoundland, Quebec, and northern Ontario west to the Pacific and south to Colorado. Forbes reported moths in flight in late August and September in Newfoundland. Adults have been taken at Goose Bay, Labrador, from mid to late July.

Details of the immature stages in Labrador are not available.

E. tessellata (Harris)

STRIPED CUTWORM

Plate 12, 9

This species is common from Nova Scotia to Virginia and west to Vancouver Island. In Newfoundland, where it is considered rare, adults have been taken at Kilbride, Pynns Brook, Doyles, and Tompkins from late July to early September. It has not been recorded from Labrador.

The larva is grayish and has yellow dorsal shading and white dorsal, subdorsal, and spiracular lines. Dark flecks on the head are partially fused into lines. The larva feeds on vegetable crops and is sometimes a serious pest.

E. pleuritica (Grote)

Plate 34, 2

This species occurs in Newfoundland, Nova Scotia, Maine, Massachusetts, northern New York, west through southern Canada and the northern

United States to the interior of British Columbia, Washington, and Oregon, and south in the Rocky Mountains to central New Mexico. The species is rare in Newfoundland and only one adult specimen has been taken at Kilbride, 13 August 1976. It has not been found in Labrador.

Details of the immature stages in Newfoundland are not available.

E. campestris (Grote)

SILLY DART

Plate 12, 10

This species is distributed from Newfoundland and Nova Scotia to New York, west to the Pacific, and south to New Mexico and Arizona. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Colinet, Gander, Woody Point, Pynns Brook, Kitty's Brook, and Tompkins. The moths are in flight in Newfoundland from mid-August to late September, but have not been recorded from Labrador.

The larva is a translucent dull brown with pale dorsal, subdorsal, and lateral lines, and a more distinct white subspiracular line. Its head is brown, streaked with a darker brown. The cutworm has been reported as injurious in Manitoba under the name *E. insulsa*.

E. dissona (Möschler)

DISSONANT DART

Plate 12, 11

According to Hardwick (1970a) the dissonant dart is distributed in subarctic northeastern North America, occurring as far west as the Northwest Territories. It also occurs at higher elevations in the Appalachians of New Hampshire and Maine. In Newfoundland, adults have been collected at Witless Bay Line, Tompkins, and Port aux Basques from mid to late July. The species is widely distributed in Labrador and adults have been taken at Nain, Rama, Makkovik, Cartwright, Hopedale, and Belle Isle. Möschler (1860) recorded the species in Labrador and Packard (1888) reported it from the Moravian Stations in Labrador. The moths are in flight in Labrador from late June to early August.

The larva has a black head and blackish body with pale dorsal and subdorsal lines. It hibernates when partly grown and there is a single brood each year.

E. divergens (Walker)

Plate 12, 12

According to Hardwick (1970a) this species is distributed from coast to coast in southern Canada and the northern United States. In the west it

ranges from the southern Yukon and the Northwest Territories to central California and northern New Mexico, but is found only at higher altitudes in the more southern parts of its range. In Newfoundland, adults have been taken at Tompkins, Gander, Doyles, and Millville. The moths are in flight from mid-July to early August. The species is considered rare in Newfoundland and is not reported from Labrador.

The larva has a shining brown head and a translucent dirty gray body with an unmarked pale dorsal area. It hibernates when partly grown. There is a single brood each year.

E. sinelinea Hardwick

Plate 33, 7

According to Hardwick (1970a) this species is distributed from Goose Bay in Labrador south to central Michigan. In Newfoundland, a single specimen was taken at Tompkins on 30 July 1975 and in Labrador 20 specimens were taken at Goose Bay by Beckel between 20 July and 5 August 1948. The species was described by Hardwick (1965) from a male specimen taken at Goose Bay.

The immature stages in Newfoundland and Labrador are unknown but are probably similar to those of *E. divergens*, which the adult moth closely resembles.

E. redimicula (Morrison)

FILLET DART

Plate 12, 13

This species is distributed from Newfoundland and Nova Scotia through southern Quebec and Ontario to New York and west to Saskatchewan and Montana. In Newfoundland, Krogerus (1954) reported taking a single specimen at Deer Lake, 12 July 1949, on a sandy area between the town and the lake itself. The species has not been observed since, and is not recorded from Labrador.

Details of the larval stage in Newfoundland are not available.

E. westermanni (Staudinger)

Plate 12, 14

Hardwick (1970a) stated that the species was recorded from Greenland and Labrador in the east, and from Great Bear Lake and the Canadian Rocky Mountains in the west. In the Rocky Mountains, it occurs at least as far south as Lake Louise, Alta. It has not been found in Newfoundland, but has been collected at Hopedale and Cartwright in Labrador, where the moths are in flight from mid to late July.

Details of the immature stages in Labrador are not available.

E. solitaria (Smith)

(Not illustrated)

Although treated as a distinct species by Forbes (1954), Hardwick (1970a) considered the species as synonymous with *E. dissona*. He stated, "The Northern Insect Survey which was conducted by the Entomology Research Institute, Ottawa, over a period of 12 years in the Arctic and Subarctic regions of North America, provided a fairly good picture of the noctuid fauna of northeastern North America. Of the few species of *Euxoa* occurring in the region, only two, *dissona* (Möschler) and *chimoensis* Hardwick, bear the slightest resemblance to Smith's original description (the forewing of the specimen, which was collected in Labrador, is described by Smith as yellowish rust red). The species *chimoensis* Hardwick has little, if any, reddish coloring to the forewings and the transverse lines are dark brown rather than pale gray. Some of the weakly marked, reddish-suffused specimens of *dissona*, however, match Smith's original description fairly well, and it is for this reason the name *solitaria* is tentatively placed here." Although Smith described *solitaria* from Labrador, the original specimen has never been located, so its identity remains unknown.

E. ochrogaster (Guenée)

REDBACKED CUTWORM

Plate 12, 15

According to McDunnough (1950) this moth is generally distributed throughout Canada and the northern and western United States. It is fairly common in Newfoundland and adults have been taken at St. John's, Mt. Pearl, Kilbride, Foxtrap, Cupids, Colinet, Gander, Lewisporte, Millertown Junction, Badger, Pynns Brook, Corner Brook, Plum Point, St. Anthony, and Tompkins. The moths are in flight from mid-July to mid-September. They have not been recorded from Labrador.

The larva is the well-known redbacked cutworm, a serious pest of a wide variety of cultivated plants, including cereals, sugar beet, and flax in the Prairie Provinces (Beirne 1971). It is reddish dorsally and has dark subdorsal bands and a pale median line. The underside is grayish to brownish and the head is yellow brown. The larva hibernates when partly grown and the species is single brooded in Newfoundland.

Genus *Agrotis* Ochsenheimer

A. mollis (Walker)

Plate 12, 16

According to Forbes (1954) the species has been found in Newfoundland, the Hudson Bay area, and Alberta, south to Mt. Desert, Maine, and in

Colorado. Ferguson (1954) reported it as rare in Nova Scotia. In Newfoundland, adults have been taken at St. John's, Kilbride, Colinet, Lewisporte, and Gander from mid-July to early August. In Labrador a single specimen, now in the Canadian National Collection, was taken at Cartwright, 2 August 1955.

Details of the immature stages in Newfoundland and Labrador are not available.

A. patula Walker

Plate 12, 17

The species is known from Labrador, Knob Lake, Que., and Churchill, Man., and from the Rocky Mountains to Alaska and Siberia. It is not recorded from Newfoundland but specimens taken by W. W. Perrett at Hopedale, Labrador, between 1928 and 1936 are now in the Canadian National Collection. The moths are in flight from late July to late August. Packard (1888) reported that the subspecies *A. p. septentrionalis* was found at the Moravian Stations in Labrador. Holland (1903) illustrated a female specimen (Plate 22, 31) taken at Nain.

Details of the immature stages in Labrador are not available.

A. venerabilis Walker

DUSKY CUTWORM, VENERABLE DART

Plate 12, 18

The dusky cutworm is distributed from Newfoundland and Nova Scotia south to Texas and west to British Columbia and California. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Colinet, Pynns Brook, Georges Lake, and Tompkins. The moths are in flight from late August to mid-September. Ferguson (1954) reported them as abundant in Nova Scotia, but not common in Newfoundland. The species has not been reported from Labrador.

The larva has a reticulate head with heavy bars on the front and a granulose body. The back, to below the level of the spiracles, is dark with pale flecks, and the underside is pale. This cutworm is sometimes a pest on vegetable crops and particularly likes white clover (*Trifolium* spp.). The species is single brooded and hibernates as a partly grown larva.

A. musa Smith

Plate 12, 19

According to Draudt (*in* Seitz 1924) this species is recorded from Newfoundland. Forbes (1954) reported that the only specimen he had seen

from Newfoundland was the type specimen described by Smith. He considered it to be a possible aberration of *volubilis*, but further stated it was unlike any seen from elsewhere. Two specimens now in the Canadian National Collection were taken by W. E. Beckel at Goose Bay, Labrador, 3 and 20 August 1948.

Details of the immature stages in Newfoundland and Labrador are not available.

A. volubilis Harvey

VOLUBLE DART

Plate 12, 20

The species is distributed from Newfoundland, Nova Scotia, Quebec, and Maine south to North Carolina and west to the Pacific. In Newfoundland, adults have been taken at St. John's and Colinet. The moths are in flight from mid-June to mid-July. They have not been reported from Labrador.

Details of the immature stages in Newfoundland are not available.

A. obliqua (Smith)

Plate 12, 21

The species is represented by a single specimen taken at Kilbride, 12 July 1968. It is considered very rare in Newfoundland and is not recorded from Labrador.

A. ipsilon (Hufnagel)

BLACK CUTWORM

Plate 13, 1

This species has a wide distribution in the Old and New Worlds, and occurs almost everywhere in Canada and the United States. It is one of the most abundant noctuids in Newfoundland and Labrador (Figs. 22*a* and *b*). Adults are in flight from early June to late September in Newfoundland, and from early to mid-September in Labrador.

The larva is heavily granulose, with a pale head and gray body. It is a notorious cutworm that, according to Beirne (1971), will attack any kind of plant. In Canada it is known to have damaged crops of potato, tomato, turnip, mangel, radish, cabbage, cauliflower, lettuce, carrot, corn, oats, barley, grasses, and many others. *A. ipsilon* is a burrowing species that feeds at night. It is single brooded in Newfoundland and overwinters as a pupa.

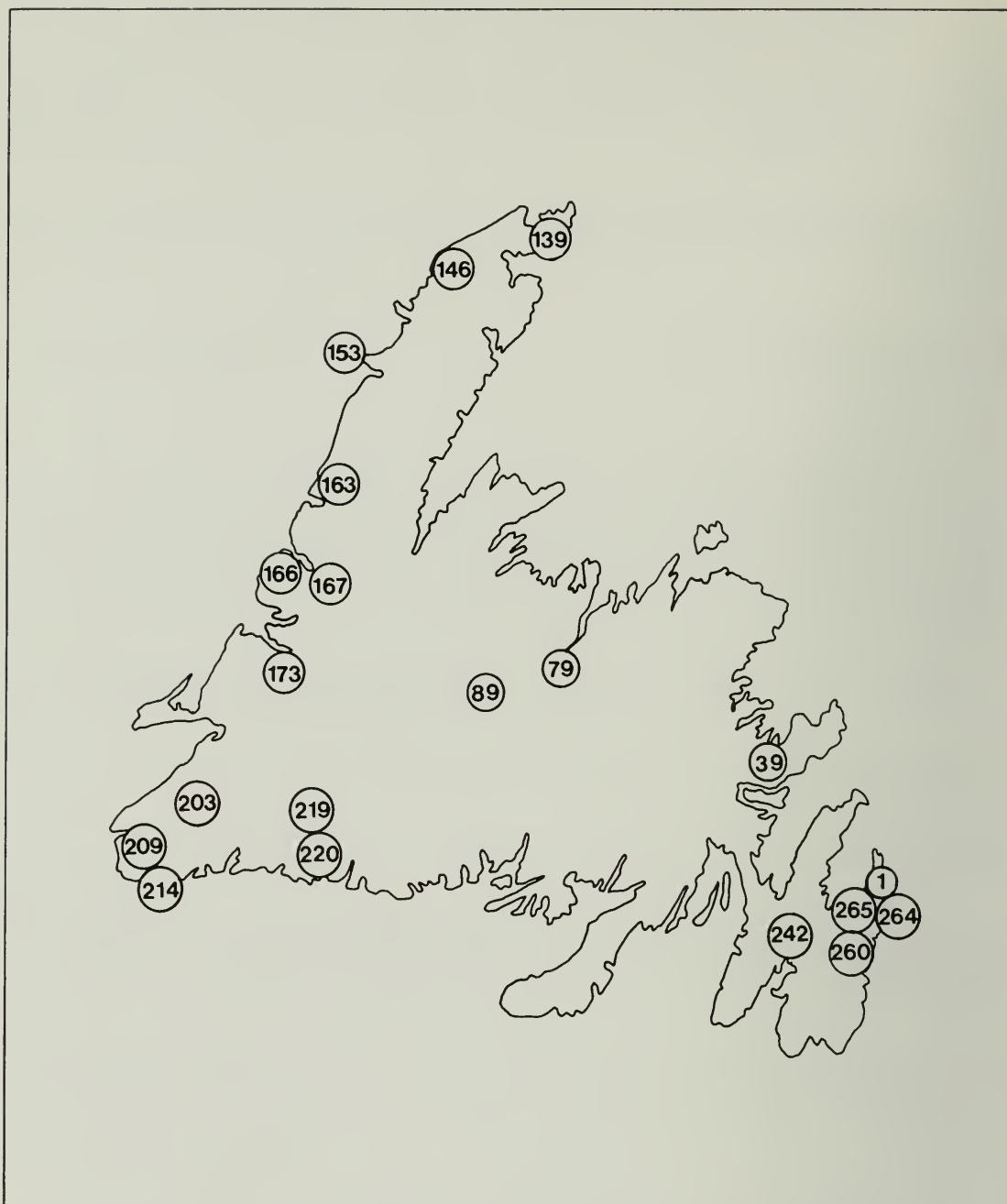


Fig. 22a. Distribution of *Agrotis ipsilon* (Hufnagel) in Newfoundland.

Genus *Actebia* Stephens

A. fennica (Tauscher) BLACK ARMY CUTWORM, FINNISH DART

Plate 13, 4

This circumpolar species ranges from Newfoundland to British Columbia, and south to Massachusetts and Wisconsin. In Newfoundland, it is widely distributed but rare; adults have been taken at Kilbride, Colinet,



Fig. 22b. Distribution of *Agrotis ipsilon* (Hufnagel) in Labrador.

Eddies Cove West, Port au Choix, Cow Head, and St. Anthony, where they are in flight from early July to early September. In Labrador, specimens have been taken at Goose Bay, Hopedale, and Cartwright, where the moths are in flight from mid-July to mid-August.

The larva is about 32 mm long, smooth skinned, and black or brownish black in color. It has a white dorsal line and a broad white spiracular line with a brown central stripe. Its head is broad and brown. This cutworm often damages blueberry crops (*Vaccinium* spp.) in northern Canada. The species is single brooded and hibernates as a partly grown larva.

Genus *Spaelotis* Boisduval

S. clandestina (Harris)

W-MARKED CUTWORM, CLANDESTINE DART

Plate 13, 3

The species has a wide range in North America, from Eastern Canada and the northern Atlantic States west to the Rocky Mountains. It is also found in Greenland. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Colinet, Gander, North Pond, South Pond, Bay L'Argent, Pynns Brook, Tompkins, and St. Anthony. The moths are in flight from early June to mid-September. They have not been reported from Labrador.

The larva is about 28 mm long and 5 mm wide, smooth skinned, and varies from pale to dark gray. A thin, pale, broken middorsal line with black subdorsal spots forms a W-shape on each segment. According to Beirne (1971) this cutworm can be a serious pest on vegetables, root crops, alfalfa (*Medicago sativa*), clover (*Trifolium* spp.), and blueberry (*Vaccinium* spp.). There is only one generation a year and the partly grown larva hibernates under logs and similar objects.

Genus *Eurois* Hübner

E. occulta (Linnaeus)

GREAT GRAY DART

Plate 13, 2

This beautiful large gray moth is a circumpolar species. In North America it extends from Greenland and the eastern part of Canada and the United States at least as far as Colorado. It is widely distributed but never abundant in Newfoundland and Labrador (Figs. 23a and b). In Newfoundland the moths are in flight from early July until early September and in Labrador from mid-July to early September.

The larva is about 55 mm long and has a violet-tinged head with curved bands on the sides of the face. The body is dark velvety black dorsally, usually with a faint middorsal line. The larva is a solitary feeder on tamarack (*Larix* spp.), snowberry (*Symphoricarpos* spp.), and blueberry (*Vaccinium* spp.). The species is single brooded and hibernates as a partly grown larva.

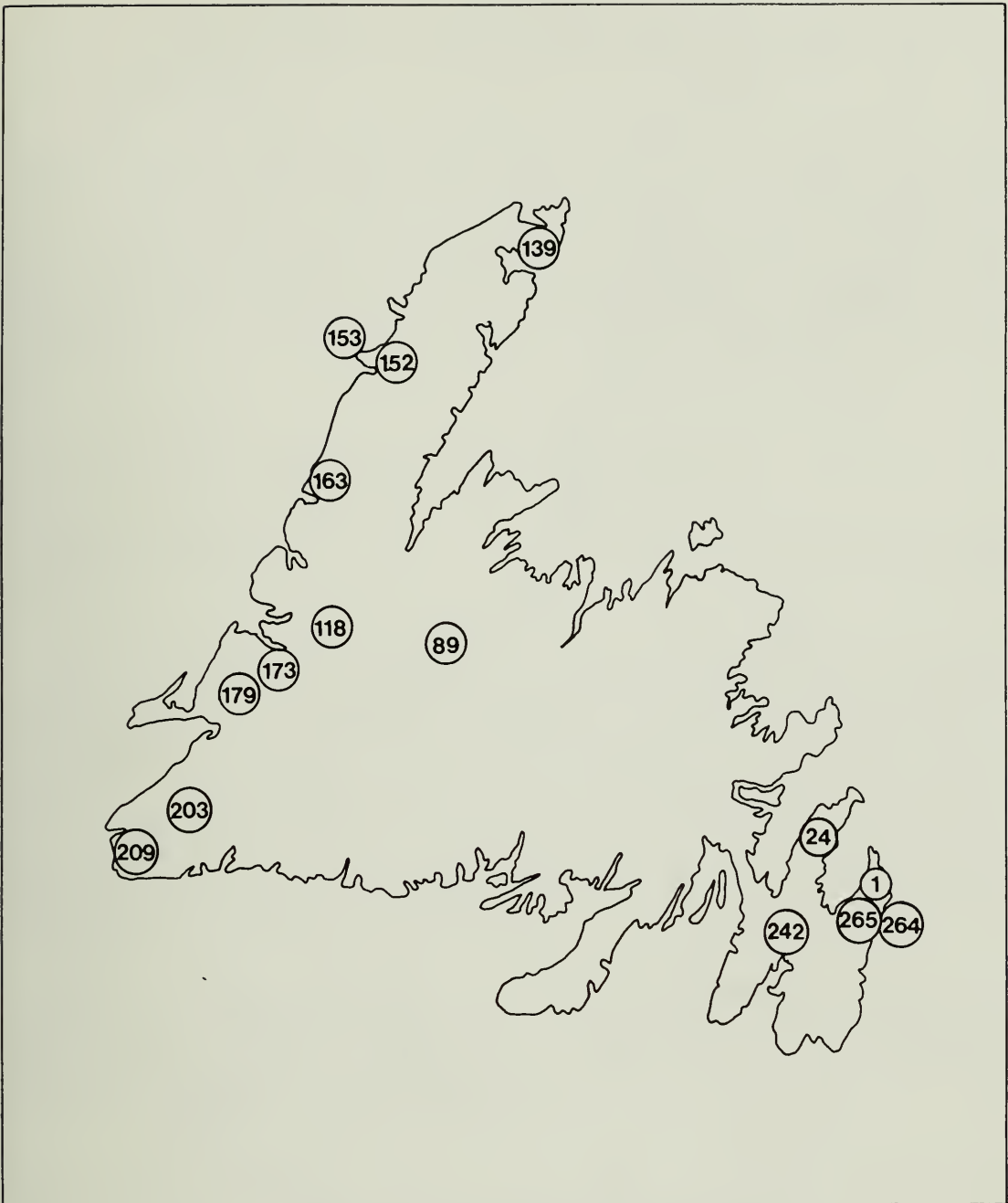


Fig. 23a. Distribution of *Eurois occulta* (Linnaeus) in Newfoundland.

E. astricta Morrison

GREAT BROWN DART

Plate 13, 6

This large brown moth is distributed from Labrador, Newfoundland, Quebec, and the northern Atlantic States west to the Rocky Mountains and Colorado. It is widely distributed in Newfoundland and is sometimes abundant. Krogerus (1954) reported that as many as 200 adults visited bait at Kitty's Brook in one night. Moths have been taken at St. John's, Mt.



Fig. 23b. Distribution of *Eurois occulta* (Linnaeus) in Labrador.

Pearl, Kilbride, Chamberlains, Colinet, Gambo, Gander, Cow Head, Port au Choix, Eddies Cove West, St. Anthony, Kitty's Brook, Glenwood, Lewisporte, Millertown Junction, Pynns Brook, Corner Brook, Georges

Lake, Tompkins, and Doyles. The moths are in flight from early July to late August. In Labrador, adults have been collected at Cartwright from late July to mid-August.

The larva is about 50 mm long with a pinkish brown head and black lines on the sides of the face. The body is dark lilac brown, uniformly penciled with black. It has a fine white middorsal line and yellowish subdorsal and lateral lines. The species is a solitary defoliator on trembling aspen (*Populus tremuloides*), birch (*Betula* spp.), maple (*Acer* spp.), and balsam fir (*Abies balsamea*), is single brooded, and hibernates as a partly grown larva.

Genus *Ochropleura* Hübner

O. plecta (Linnaeus)

FLAME-SHOULDERED DART

Plate 13, 5

This small, well-marked species is circumpolar in its distribution. It has a wide range in Canada from Newfoundland and Labrador west to British Columbia, and in the United States from the Atlantic west to Texas. It is common at light traps in Newfoundland. Adults have been taken at St. John's, Mt. Pearl, Kilbride, Goulds, Carbonear, Colinet, Eddies Cove West, Port Au Choix, St. Anthony, Woody Point, Corner Brook, Georges Lake, Stephenville Crossing, St. George's, South Branch, Doyles, and Tompkins. The moths are in flight from mid-June to late August. In Labrador, adults were taken at Cartwright, 25–26 July 1955.

The larva is approximately 30 mm long and the upper surface is usually reddish brown with broken dorsal and subdorsal white lines. The spiracular lines are edged on both sides with buff and white; the underside is grayish. The favorite food plant is willow (*Salix* spp.).

Genus *Metalepsis* Grote

M. fishii (Grote)

Plate 34, 3

The species is found in Newfoundland, Nova Scotia, New Brunswick, Maine, Quebec, New Hampshire, Massachusetts, New Jersey, and New York. It is rare in Newfoundland, and a single adult specimen taken at Kilbride, 10 May 1976, is the only record to date. Adult moths are in flight in April and May.

Details of immature stages in Newfoundland are not available.

M. salicarum (Walker)

Plate 13, 7

The species is distributed from Newfoundland, Nova Scotia, Quebec, and northern Ontario west to Alberta, and south to New York and Massachusetts. It is rare in Newfoundland, although adults have been taken at St. John's, Mt. Pearl, Kilbride, Goulds, Pynns Brook, and Corner Brook. The moths are in flight from late April to early June. They have not been recorded from Labrador but probably exist there. Ferguson (1954) reported the species in Nova Scotia as locally common near lights, around bait, and on willow catkins.

The pupa is the overwintering stage.

Genus *Cerastis* Ochsenheimer

C. tenebrifera (Walker)

REDDISH SPECKLED DART

Plate 13, 10

This species is distributed from Newfoundland and Quebec to New Jersey and Illinois. It is very rare in Newfoundland and is represented by a single specimen taken at Kilbride, 11 July 1968. Forbes (1954) reported that it was present in Newfoundland. It is not found in Labrador.

The larva is about 40 mm long, green shaded with red and with a broad, pale lateral stripe. The head is reticulate, and has a dorsal stripe in front and two short vertical bars on the sides. The food plants are dandelion (*Taraxacum* spp.), lettuce (*Lactuca* spp.), and grape (*Vitis* spp.). The pupa overwinters.

Genus *Peridroma* Hübner

P. saucia (Hübner)

VARIEGATED CUTWORM

Plate 13, 9

The variegated cutworm has a worldwide distribution. It occurs across Canada from Newfoundland to British Columbia and north to Hudson Bay. It is sometimes a serious agricultural pest. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Trepassey, Moreton's Harbour, Browns Arm, Wooddale, Pynns Brook, St. David's, Stephenville Crossing, and Tompkins. The moths are in flight from early July to early October and at times are locally numerous. Larvae have been taken in early July at Goose Bay in Labrador.

The larva is about 40 mm long, pale gray to dark brownish gray in color, with a W-shaped mark on the 8th abdominal segment. Its head is

whitish, with broad black submedian arcs and dark reticulations. Beirne (1971) lists approximately 30 vegetable, fruit, and ornamental plants on which this pest feeds. It is not known to overwinter in Newfoundland and may possibly migrate into the area. In other areas, the winter is spent in the pupal stage.

Genus *Hemipachnobia* McDunnough

H. monochromatea (Morrison)

Plate 13, 8

This species is distributed from Newfoundland and Nova Scotia west to Alberta and south to the Northern States, including New York. It is fairly common near bogs in Newfoundland. Adults have been taken at St. John's, Goulds, Colinet, Lomond, Georges Lake, and Burgeo and are in flight from mid-June to late July. The species has not been reported from Labrador.

The young larva feeds on sundew (*Drosera* spp.) but later moves to cranberry (*Vaccinium* spp.). It is red brown dorsally, pale ventrally, and has a white middorsal line edged with black, and three dark lateral lines. The head is a dark tawny yellow. The species overwinters as a fully grown larva and is single brooded.

Genus *Paradiarsia* McDunnough

P. littoralis pectinata (Smith)

Plate 13, 11

According to Forbes (1954) this subspecies is distributed in Labrador, Quebec, Ontario, Pennsylvania, Minnesota, and probably farther west. It has not been recorded from Newfoundland but six specimens, now in the Canadian National Collection, were taken at Cartwright, Labrador, between 26 July and 2 August 1955.

Details of the immature stages in Labrador are not available.

Genus *Graphiphora* Ochsenheimer

G. haruspica (Grote)

SOOTHSAYER DART

Plate 13, 12

This species has a wide range in North America, extending from the Atlantic to the Pacific in both Canada and the northern United States. It

has only been found in western and central Newfoundland and is sometimes common in restricted localities. Adults have been taken at Gander, Glenwood, Cow Head, Doyles, Tompkins, and St. Anthony. The moths are in flight from mid-July to late August. The species has not been recorded from Labrador.

The larva is 35–40 mm long, its head is white with strong black reticulations, and its body is pale gray to blackish, often with a purplish tinge. The middorsal line is fine and white, widening into yellow spots posteriorly. It is a common cutworm that feeds on a variety of plants, but is periodically reported in large numbers on forest trees, particularly birch (*Betula* spp.). The species hibernates as a fully grown larva.

Genus *Rhyacia* Hübner

R. quadrangula (Zetterstedt)

Plate 13, 13

This species is found in Iceland, Greenland, Labrador, Newfoundland, Nova Scotia, subarctic Quebec, and Manitoba. In Newfoundland, adults have been taken at St. John's, Kilbride, Lumsden, Lewisporte, Gander, Tilting, Fogo Island, Cow Head, Port au Choix, and St. Anthony. The moths are in flight from late June to early September. In Labrador, adults have been taken at Hebron, Hopedale, and Cartwright. W. W. Perrett provided 104 specimens for the Canadian National Collection from Hopedale between 1923 and 1925. Packard (1888) reported the subspecies *umbratus* from the Moravian Stations.

Details of the immature stages of this species in Newfoundland are not available.

Genus *Chersotis* Boisduval

C. juncta (Grote)

Plate 13, 14

Plate 33, 8

The species is distributed from Newfoundland, Maine, Quebec, and Ontario west to Alberta and south to Arizona and California. In Newfoundland, five adults were taken at Tompkins, 27–29 July 1975 and a single specimen at Badger, 27 July 1978. Krogerus (1954) reported taking *C. j. patefacta* Smith adults at St. George's, Stephenville, Corner Brook, and Cow Head. These are now considered to be *C. juncta*. The species is considered rare in Newfoundland and is not recorded from Labrador.

The larva is gray, with a broken yellow dorsal line bordered with dark lines, a yellow subdorsal, and a broader brown spiracular stripe. The head is yellow brown with three dark stripes. The larva feeds on sweetclover (*Melilotus* spp.) and campion (*Lychnis* spp.) and is considered a cutworm in habits (Forbes 1954).

Genus *Heptagrotis* McDunnough

H. phyllophora (Grote)

Plate 13, 17

This species is distributed from Newfoundland, Nova Scotia, and northern Ontario south to North Carolina in the mountains and west to Wisconsin. It is common on bogs and in the surrounding woodlands. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Chamberlains, Colinet, Lethbridge, Gander, Woody Point, St. George's, Tompkins, and St. Anthony. The moths are in flight from early July to mid-September. The species has not been recorded from Labrador.

The mature larva is about 30 mm long, smooth skinned, and generally dark in color. Its head is suffused with dark brown and pinkish reticulations. The body has a strong white middorsal line broken between segments. Crumb (1956) reported its food plant to be antelope brush.

Genus *Diarsia* Hübner

D. rubifera (Grote)

Plate 13, 15

The species is known from Newfoundland, Nova Scotia, Quebec, New Jersey, and New York west to Wisconsin and Manitoba. It is rare in Newfoundland, but adults have been taken at Colinet, Gambo, Gander, Millertown Junction, Kitty's Brook, Corner Brook, Cow Head, St. George's, and Georges Lake. The moths are in flight from mid-July to late August. They have not been reported from Labrador.

The larva is brown dorsally, mottled with white, and has finely dark-edged middorsal and subdorsal lines and a duller lateral line. The underside is gray, and the head is deep brown with a pale spot on each side.

D. dislocata (Smith)

Plate 13, 16

The distribution of this species in North America seems to be somewhat uncertain. Seitz (1924) reported finds from Eastern Canada, but it is

possible that the species ranges throughout the boreal parts of the country. Krogerus (1954) reported this moth as quite common in the northwestern parts of Newfoundland. Adults have been taken at Colinet, Eddies Cove West, Port au Choix, St. Anthony, and Pynns Brook, where they are in flight from mid-July to mid-August. In Labrador, moths have been taken at Hopedale, Cartwright, Goose Bay, and Knob Lake from mid-July to mid-August.

Details of the immature stages in Newfoundland and Labrador are not available.

D. jucunda (Walker)

Plate 13, 18

According to Krogerus (1954) the species is found in eastern and central parts of Canada, extending south to the middle Atlantic States. It is fairly common in the spruce forests of Newfoundland. Adults have been taken at Colinet, Witless Bay Line, Port au Choix, Corner Brook, Lomond, St. George's, and George's Brook. The moths are in flight from mid-July to mid-August. The species has not been recorded from Labrador.

Details of the immature stages in Newfoundland are not available.

D. pseudorosaria freemani Hardwick

Plate 13, 19

This subspecies was first described by Hardwick (1950) from specimens taken by Perrett at Hopedale, Labrador, 1933–35. It ranges from the coast of Labrador and Newfoundland west to the foothills of the Rocky Mountains. In Newfoundland, adults have been taken at St. John's and Tompkins, where the moths are in flight from early to late July. In Labrador, adults have been taken at Cartwright and Hopedale.

Details of the immature stages of this species in Newfoundland and Labrador are not available.

Genus *Amathes* Hübner

A. c-nigrum (Linnaeus)

SPOTTED CUTWORM

Plate 14, 1

This circumpolar species has a wide range in North America, extending throughout Canada and the United States from the Atlantic to the Pacific. It is widely distributed in Newfoundland but is not reported from Labrador.

In Newfoundland, adults have been taken at St. John's, Goulds, Kilbride, Chamberlains, Colinet, Salmonier, Gander, Lewisporte, Corner Brook, Cow Head, Port au Choix, Pynns Brook, Georges Lake, Stephenville, Doyles, and Tompkins. The moths are in flight from mid-June to early September.

The larva is a well-known cutworm, about 35 mm long and drab gray to brown in color. It has faint pale middorsal and subdorsal lines, a broad, hardly noticeable lateral line, and a series of black trapezoidal wedges on its posterior segments, larger toward the rear. According to Beirne (1971) it feeds on a wide variety of vegetable and grain crops, sometimes causing extensive damage. The larva hibernates when partly grown and there is probably a single brood each year.

A. smithii (Snellen)

Plate 14, 2

The species is distributed from Newfoundland to Vancouver Island, and south to New Jersey and Colorado. It is widely distributed (Fig. 24) and is at times very abundant in Newfoundland, but is not recorded from Labrador. The moths are in flight from mid-July to early September.

The larva is similar to *A. c-nigrum*, but may be distinguished by its more distinct dorsal and subdorsal stripes. Also, the body is browner in color and has fewer subdorsal black spots. This cutworm does a certain amount of damage by climbing and feeding on cultivated plants in the autumn when the weeds it usually feeds on are not available. Prentice (1962) reports that it also occasionally feeds on birch (*Betula* spp.) and alder (*Alnus* spp.).

The partly grown larva overwinters and there is a single brood each year.

A. oblata (Morrison)

ROSY DART

Plate 14, 3

The species is distributed from the eastern parts of Canada and the northern Atlantic States west to British Columbia, Montana, and California. This pretty moth is rare but widely distributed in Newfoundland. Adults have been taken at St. John's, Kilbride, Chamberlains, Colinet, Gander, Lewisporte, Pynns Brook, Port au Choix, St. Anthony, Doyles, and Tompkins. The moths are in flight from late June to mid-August. In Labrador, adults have been taken at Cartwright and Goose Bay, where they are in flight from early to late July.

The larva is a pale reddish brown with a faint broken white dorsal line and a reddish lateral line with a yellow upper edge. The head is brown with darker reticulations and the prothoracic shield has black points forming a V-shape. This climbing cutworm causes some damage to willow (*Salix* spp.) and hibernates as a fully grown larva.

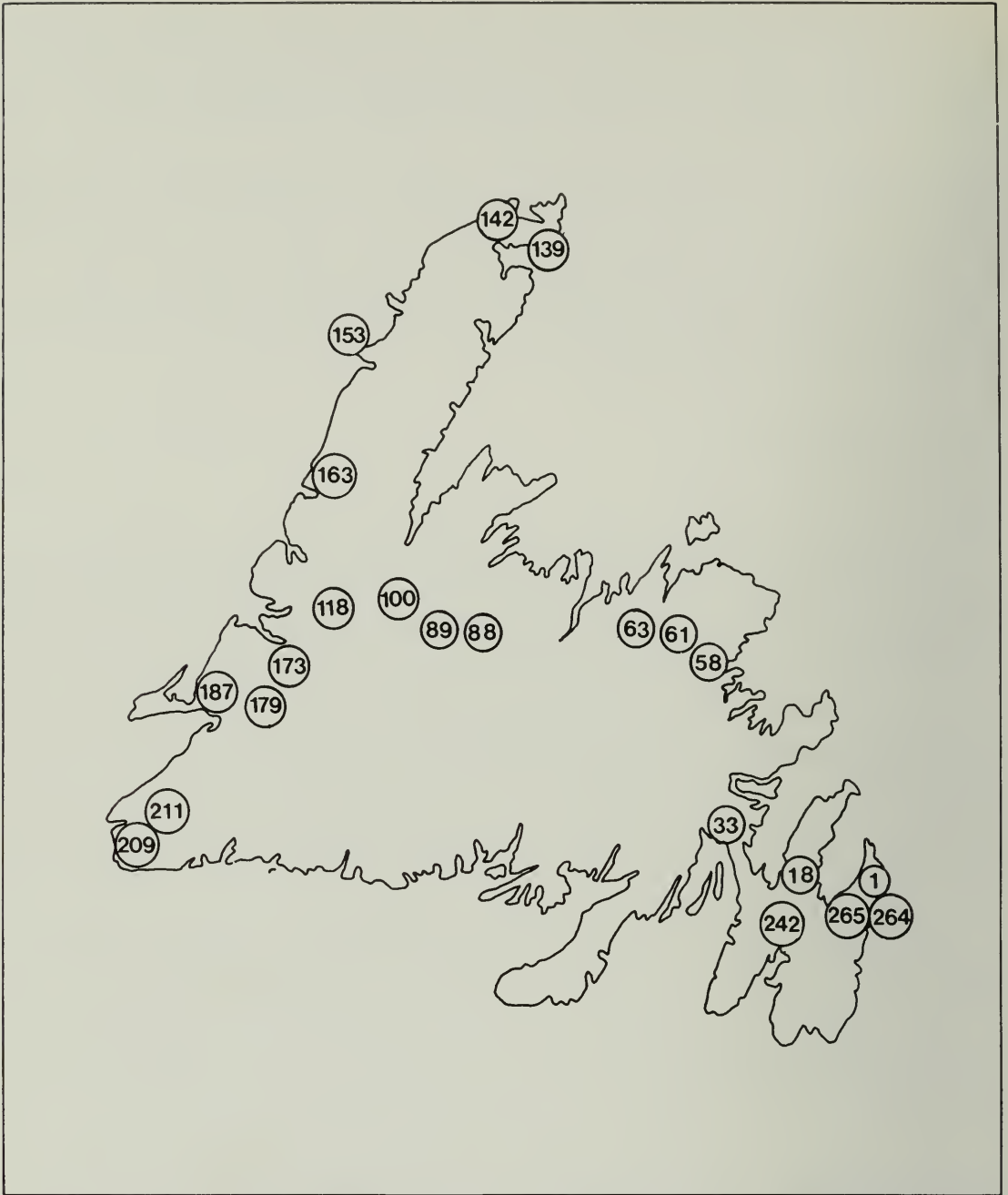


Fig. 24. Distribution of *Amathes smithii* (Snellen) in Newfoundland.

A. collaris (Grote & Robinson)

Plate 33, 9

This species is distributed from Newfoundland, Nova Scotia, and Maine south to New Jersey and west to Alberta and Colorado. In Newfoundland, adults were collected at Mt. Pearl and Pynns Brook from late July to late August. The species is considered to be rare in Newfoundland and is not recorded from Labrador.

Details of the immature stages in Newfoundland are not available.

Plate 14, 4

The species is widely distributed in North America from Newfoundland and Nova Scotia west to British Columbia and south to Washington, D.C., and in the mountains of North Carolina and Colorado. It is generally rare in Newfoundland. Adults have been taken at St. John's, Glenwood, Cow Head, St. John Island, Corner Brook, and Tompkins. The species has not been reported from Labrador.

The larva is about 30 mm long, smooth skinned, and pale to dark brown in color. It has strong, pale middorsal and subdorsal lines. The head is pale with strong black submedian arcs and reticulations. This cutworm causes some damage, and probably hibernates as a partly grown larva. The species is single brooded.

A. tenuicula (Morrison)

Plate 14, 5

According to Forbes (1954) the species is distributed from Newfoundland, Gaspé, and the Laurentians, Que., south to Virginia and west to the Pacific. It is rare in Newfoundland and is not recorded from Labrador. The moth closely resembles *A. bicarnea*, but may be distinguished from it by the front of the head, which has less black, and by the thorax, which has little or no black. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Chamberlains, Witless Bay, Salmonier, Burin, Gander, Pynns Brook, Doyles, and Tompkins.

Details of the immature stages in Newfoundland are not available.

A. opacifrons (Grote)

Plate 14, 6

This is a bog species, distributed from Newfoundland and Nova Scotia west to Alberta and south to Connecticut and New York. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Colinet, Come By Chance, Gambo, Millertown Junction, Cow Head, St. Anthony, Pynns Brook, Harmon Field, and Tompkins. The moths are in flight from early to late August. The species has not been recorded from Newfoundland.

The larva is clay colored, finely reticulated with dark brown. The middorsal line is narrow and white, the subdorsal line broad, and the lateral band whitish but not so distinct. The head is yellow with brown crescent-shaped marks. The larva feeds on bog plants, including leatherleaf (*Chamaedaphne* spp.) and blueberry (*Vaccinium* spp.). The species is single brooded and hibernates as a young larva.

Genus *Pachnobia* Guenée

P. tecta (Hübner)

Plate 14, 7

According to Forbes (1954) this species is found in Labrador, the Yukon, Alaska, Northern Scandinavia, and Russia, but not in Newfoundland. In Labrador, adults have been taken at Knob Lake and Hopedale and were first recorded by Möschler (1860) and Packard (1888) at the Moravian Stations and along the entire coast. The moths are in flight from mid-June to early August and can be distinguished from related species by their sparsely but distinctly haired eyes.

The larva is reddish brown, thickly striated with black. The middorsal line is white, edged with black on the abdomen, but the subdorsal lines are faint. The spiracles are white and ringed with black. The larva is said to feed on low plants.

P. wockei (Möschler)

Plate 14, 8

This species is recorded only from Labrador and Quebec. Packard (1888) reported it as being present at the Moravian Stations in Labrador. E. G. Munroe collected nine specimens at Knob Lake between 5 July and 1 August 1948, and these are now in the Canadian National Collection.

Details of the immature stages in Labrador are not available.

P. scropulana (Morrison)

Plate 14, 9

The species is found in Labrador, Mt. Washington, N.H., and Churchill, Man., but not in Newfoundland. In Labrador, adults have been taken at Makkovik, Hopedale, Cartwright, and Knob Lake. The moths are in flight from mid-June to the beginning of August.

Details of the immature stages of this species in Labrador are not available.

P. okakensis (Packard)

Plate 14, 10

This species is found in Labrador and Mt. Washington, N.H., but not in Newfoundland. In Labrador, adults have been taken at Nain, Okak, Makkovik, Hopedale, and Knob Lake. The moths are in flight from early June to late August. W. W. Perrett took several hundred moths at Hopedale

between 1922 and 1936. These are now in the Canadian National Collection.

Details of the immature stages of this species in Labrador are not available.

Genus *Anomogyna* Staudinger

A. atrata (Morrison)

Plate 14, 11

Forbes (1954) recorded the species from Newfoundland, New Hampshire, Ontario, Alberta, and British Columbia. A paler subspecies exists in the Yukon and Alaska. Adults taken at Knob Lake in Labrador by E. G. Munroe between 24 July and 1 August 1948 are now in the Canadian National Collection.

Details of the life history of the species in Newfoundland and Labrador are not available.

A. fabulosa Ferguson

Plate 14, 12

This species has been collected in Labrador at Hopedale by W. W. Perrett, 4 August 1932, and at Cartwright by E. E. Sterns, 1 August 1955. Both specimens are in the Canadian National Collection. No specimens have been taken since. There are no records from Newfoundland.

Details of the immature stages in Labrador are not available.

A. sincera (Herrich-Schäffer)

Plate 34, 4

Forbes (1954) reported the species as occurring in Labrador and southward in the mountains. Prentice (1962) recorded it from Newfoundland only. Larvae collected at Birchy Lake between mid-August and the end of September in 1941 and 1944 were reared to adults successfully after the pupa had overwintered. The larva is recorded as a solitary feeder on spruce (*Picea* spp.) and is rare.

Although Prentice (1962) believed the adults to be the same species as the European *A. sincera*, they are now considered to be synonymous with *A. fabulosa*.

A. speciosa mixta (Walker)

Plate 14, 13

Forbes (1954) gave the distribution of the species as Labrador to Hudson Bay, south through the mountains of New Hampshire, Vermont, and New York, and in Scandinavia. Walker described the subspecies from Labrador specimens and Smith described *A. s. livalis* from Newfoundland ones. However, Forbes stated the two subspecies are not obviously distinct. Seitz (1924) reported the species from Newfoundland, where adults have since been taken at St. John's, Colinet, and St. Anthony from mid-July to mid-August. In Labrador, adults have been taken at Hopedale, Goose Bay, and Knob Lake, where the moths are in flight from mid-July to early August. Packard (1888) reported the species from all the Moravian Stations in Labrador.

The larva is a shining chestnut brown marbled with black dorsally and a greenish color underneath. The middorsal and subdorsal lines are clear only on the thorax; the lateral lines are yellow. The larva feeds on blueberry (*Vaccinium* spp.) and grasses.

A. perquiritata perquiritata (Morrison)

Plate 14, 14

This species was first reported from Newfoundland by Seitz (1924). Forbes (1954) reported that the species was distributed in Newfoundland, Quebec, and westward in Canada, and south in New Hampshire and New York. Prentice (1962) gave the distribution as being from Newfoundland to the interior of British Columbia, but more abundant in Eastern Canada. Adults of the nominate subspecies have been taken at Cartwright, Labrador, from early July to early August.

The larva is a solitary defoliator on balsam fir (*Abies balsamea*), white spruce (*Picea glauca*), tamarack (*Larix* spp.), and black spruce (*Picea mariana*). The larva is about 25 mm long, smooth skinned and green to gray in color. The strong middorsal and subdorsal lines are white with black edges. The head is a pale greenish brown. The species overwinters as a partly grown larva and is single brooded.

A. perquiritata beddeci (Hampson)

Plate 14, 15

This subspecies is distributed in Newfoundland; *A. p. perquiritata* is the subspecies found in Labrador. Adults of *beddeci* have been taken at St. John's, Molliers, Mt. Pearl, Kilbride, Grand Falls, Victoria Lake, Sandy Lake Road, Great Cat Arm, St. Anthony, and Tompkins. The moths are in flight from early July to early August.

The larva is probably similar to that of *A. p. perquiritata*.

A. laetabilis (Zetterstedt)

Plate 14, 16

The species is recorded by Forbes (1954) from Labrador, Newfoundland, Alberta, and the Yukon. It is also found in Europe. Adults were taken by W. W. Perrett between 1922 and 1931 at Hopedale, Labrador, where the moths are in flight from early July to late July. The male moth has a wingspan of 30–35 mm but the female is smaller and flightless.

Details of the immature stages in Newfoundland and Labrador are not available.

A. homogena McDunnough

Plate 14, 17

This species, which is similar to *A. sincera* but with a much duller ground color, has been found in Labrador, northern Newfoundland, parts of Quebec, Alberta, and the Northwest Territories. In Newfoundland, a single specimen was taken at St. Anthony by Moore, 10 July 1951. In Labrador, the species is more widespread, and adults have been taken at Davis Inlet, Hopedale, Matamek River, and Knob Lake from late July to mid-August.

Details of the immature stages of this species in Newfoundland and Labrador are not available.

A. imperita (Hübner)

Plate 14, 18

This species is distributed from Newfoundland, Labrador, Quebec, Mt. Washington, N.H., and Hudson Bay west to Alberta and Colorado. It has also been found in Norway, Sweden, and Amur in the USSR. In Newfoundland, where the species is rare, adults have been taken at St. John's, Kilbride, and Colinet from early August to early September. In Labrador, adults have been collected at Ramah Bay, Hebron, Nutak, Hopedale, Cartwright, Goose Bay, and Knob Lake. The moths are in flight from early July to mid-August. Packard (1888) reported the subspecies *A. i. comparata* from the Moravian Stations in Labrador.

Details of the immature stages in Newfoundland and Labrador are unknown.

A. elimata (Guenée)

Plate 14, 19

Prentice (1962) reported that the species is generally distributed throughout Canada from Newfoundland to the interior of British Columbia. However, although prevalent in Eastern Canada generally, it is considered rare in Newfoundland. Adults have been taken at Colinet, Grand Falls,

Corner Brook, and St. Anthony. The moths are in flight from early August to mid-September. They have not been recorded from Labrador.

The larva is about 25 mm long, and velvety green to gray in color with whitish middorsal and subdorsal lines. It is a solitary feeder on balsam fir (*Abies balsamea*), pine (*Pinus* spp.), and spruce (*Picea* spp.) during the night, hiding deep in moss during the day. The larva feeds until late in the fall, then hibernates and pupates the following spring. The species is single brooded.

A. dilucida (Morrison)

Plate 14, 20

Forbes (1954) stated that the species was distributed from southern Labrador and Ontario to the mountains of North Carolina. It is never abundant in Newfoundland. Adults have been taken at St. John's, Kilbride, Colinet, Gander, Pynns Brook, and Tompkins from mid-July to mid-September. In southern Labrador, six adult specimens were taken by Dr. Eldmann at Matamek River between July and September 1931.

The larva is found in dry upland areas feeding on blueberry (*Vaccinium* spp.). Ferguson (1954) reared larvae on larch (*Larix* spp.). The smooth-skinned larva is about 35 mm long and brown dorsally with an inconspicuous white middorsal line.

A. youngii (Smith)

Plate 14, 21

Forbes (1954) recorded the species from Ontario, Maine, New York, and New Jersey. *A. youngii* is found on acid bogs and is considered very rare in Newfoundland. A single specimen taken at Colinet, 23 August 1962, is the only record from Newfoundland. There are no records from Labrador.

The larvae are reported by Forbes (1954) to feed on blueberry (*Vaccinium* spp.).

Genus *Aplectoides* Butler

A. condita (Guenée)

Plate 15, 1

This species is distributed from Newfoundland, Nova Scotia, New Brunswick, and Quebec south to Massachusetts and Pennsylvania and west to British Columbia. Prentice (1962) reported a specimen from northern New Brunswick that was reared from a larva on balsam fir. In Newfoundland, adults have been taken at Doyles and Tompkins and are considered rare. The moths are in flight from late June to early July. They are not found in Labrador.

The larva feeds on balsam fir (*Abies balsamea*), hibernates in a tough cocoon, and pupates the following spring.

Genus *Anaplectoides* McDunnough

A. pressus (Grote)

Plate 15, 2

The species extends from the Atlantic, throughout the eastern and central parts of Canada and the United States, to the Rocky Mountains. In Newfoundland, it frequents spruce and balsam woods on marshy ground. Adults have been taken at St. John's, Mt. Pearl, Eddies Cove, Port au Choix, St. Anthony, Pynns Brook, Stephenville, Doyles, and Tompkins. The moths are in flight from mid-July to late August. They have not been reported from Labrador.

The smooth-skinned larva is about 30 mm long, generally pale brown, with dark segmental markings dorsally. The middorsal line is pale and strong. The head is pale brown with black reticulations. Crumb (1956) stated that the larva feeds on corn salad (*Valerianella* spp.).

A. prasina (Schifferrmüller)

GREEN ARCHES (BR.)

Plate 15, 3

This is a circumpolar species. It ranges from the Atlantic to the Pacific throughout Canada and the northern United States. It is rare in Newfoundland, but adults have been taken at St. John's, Gander, Eddies Cove West, Port au Choix, and Pynns Brook. The moths are in flight from late July to mid-August. They have not been reported from Labrador.

The larva is about 35 mm long, smooth skinned, and generally dark gray. The middorsal and subdorsal lines are pale and broken. The head is about 3.5 mm wide and has black submedian arcs and reticulations. This cutworm causes some economic damage and is reported to feed on huckleberry (*Vaccinium* spp.), maple (*Acer* spp.), and foxglove (*Digitalis* spp.).

Genus *Protolampra* McDunnough

P. rufipectus (Morrison)

Plate 15, 4

The species is distributed from the eastern parts of Canada and the United States west to British Columbia, Montana, Arizona, and California. Prentice (1962) reported it in small numbers from Nova Scotia, New

Brunswick, Ontario, Manitoba, Alberta, and British Columbia. It is probably transcontinental in distribution. In Newfoundland, adults have been taken at St. John's, Gander, Glenwood, Lewisporte, Kitty's Brook, and Pynns Brook. The adults are in flight from early to late August. The species has not been reported from Labrador.

The larva is about 30 mm long and the skin is smooth with a silky sheen. Its body is purplish gray to dark brown, shaded with green on the sides and with a slightly broken whitish middorsal line. The head is pale and mottled. The larva generally feeds on grasses but has also been observed on birch (*Betula* spp.), aspen (*Populus* spp.), and willow (*Salix* spp.).

Genus *Cryptocala* Benjamin

C. acadiensis (Bethune)

CATOCALINE DART

Plate 15, 5

The catocaline dart is distributed throughout Eastern Canada, south to the Atlantic States and west to Montana. Forbes (1954) reported the species from Labrador. In Newfoundland, adults have been taken at Gander, Lewisporte, Pynns Brook, Cow Head, St. George's, Doyles, and Tompkins. The moths are in flight from mid-July to early August. Although Ferguson (1954) reported that the species was often abundant in Nova Scotia, it is considered rare in Newfoundland. Krogerus (1954) reported that there were four specimens of this species in the collection of P. Stuwitz, which was made in Newfoundland about 1850 and is now in the Oslo Museum. There are no available specimens from Labrador.

Details of the immature stages in Newfoundland are not available.

Genus *Eueretagrotis* Smith

E. perattenta (Grote)

Plate 15, 6 and 7

The species is distributed from the Atlantic throughout southern Canada and the northern United States, as far west as the Rocky Mountains. It frequents wooded areas with rich vegetation and at times is common in Newfoundland. Adults have been taken at St. John's, Kilbride, Chamberlains, Gander, Cow Head, Eddies Cove West, St. Anthony, Corner Brook, Lomond, Georges Lake, Stephenville, St. George's, Doyles, and Tompkins. The adults are in flight from mid-July to late August. A specimen was taken at Nachvak Fiord in Labrador by McAlpine, 15 August 1954.

Details of the immature stages in Newfoundland and Labrador are not available.

Genus *Abagrotis* Smith

A. placida (Grote)

RED CUTWORM

Plate 15, 8

Forbes (1954) reported that this species occurred rarely in Ontario and New York, but was more common in the west. The only records from Newfoundland are by Krogerus (1954) who reported taking six specimens at Gander, Kitty's Brook, and Corner Brook. Ferguson (1956) doubted Krogerus' records because *A. placida* is a rare species. Its presence in Newfoundland is possible but seems unlikely because there are no other records from the Atlantic Provinces. There have been no further records of its occurrence in Newfoundland, and there are no records from Labrador.

It has been reported that the larva has caused damage in Michigan.

A. alternata (Grote)

GREATER RED DART

Plate 15, 9

This species is distributed from Newfoundland and Nova Scotia west to Alberta and Utah and south to Mississippi. In Newfoundland, a single specimen taken at Kilbride, 15 August 1971, is the only record. It is not recorded from Labrador.

The larva is a climbing cutworm that causes damage to cherry (*Prunus* spp.) and strawberry (*Fragaria* spp.). Its head is pale, reticulated with brown, and the body is heavily mottled with dark brown. The slender broken middorsal, faint subdorsal, and white lateral lines are shaded with red. According to Crumb (1956) its body is about 35 mm long and its head 3 mm wide.

Genus *Rhynchagrotis* Smith

R. cupida (Grote)

Plate 15, 10

The species is distributed from Newfoundland west as far as Manitoba and Vancouver Island and south to North Carolina. It is rare in Newfoundland, where adults have been taken at Colinet, Lewisporte, and Gander from late July to late August. There are no records from Labrador.

The smooth-skinned larva is about 30 mm long, the upper surface varying in color from brown to gray. The middorsal and subdorsal lines are pale, broad, and broken. The ventral surface is pale gray. The larva feeds on the buds and new growth of apple trees (*Malus* spp.).

Genus *Scotogramma* Smith

S. trifolii (Rottenberg)

CLOVER CUTWORM

Plate 15, 11

This moth has a very wide distribution in North America, extending from the Atlantic to the Pacific and south to the southern boundaries of Virginia, Kentucky, Missouri, and Texas. The species is rare in Newfoundland and Labrador. A single specimen taken in Newfoundland by Krogerus at South Branch, 4 August 1949, and a single specimen taken by Perrett at Hamilton Inlet, Labrador, 14 August 1933, are the only records to date.

The larva, sometimes called the clover cutworm, has been reported by Forbes (1954) to cause damage to cabbage (*Brassica* spp.) and clover (*Trifolium* spp.). Crumb (1956) also records it on Russian thistle (*Salsola* spp.), sugar beet (*Beta* spp.), lamb's-quarters (*Chenopodium* spp.), and probably many other plants. Beirne (1971) stated that it was regarded as a minor pest of the mustard family (Cruciferae) in eastern Ontario. It is about 32 mm long, smooth skinned, dusky green but sometimes varying to pale brown, yellowish, or gray.

Genus *Mamestra* Ochsenheimer

M. curialis (Smith)

Plate 15, 12

The species is distributed from Newfoundland, Nova Scotia, Quebec, Maine, and New Hampshire west to Alberta. In Newfoundland, where it is rare, three specimens were taken at St. John's, three at Kilbride, 12, 22, and 23 July 1976, and one at St. George's, 15 July 1976. It has not been recorded from Labrador.

The larva is reported by Forbes (1954) as a cutworm that is occasionally injurious in Canada.

Genus *Polia* Ochsenheimer

P. nimbosa (Guenée)

Plate 34, 5

This species is found in Newfoundland, Nova Scotia, Quebec, and Maine, south to the mountains of Virginia, and west to British Columbia. In

Newfoundland, a single adult was taken at Stephenville, 14 August 1976. The species is considered rare and has not been recorded from Labrador. Ferguson (1954) reported it as locally common in Nova Scotia.

Prentice (1962) reported collecting two larvae on red alder (*Alnus rubra*) in British Columbia and stated that the species was a solitary defoliator. He considered it to be rare in forest insect survey collections.

P. leomegra (Smith)

Plate 15, 13

The species was first reported from Newfoundland by Draudt (*in* Seitz 1924). Forbes (1954) reported that several specimens were taken at Grand Lake on 28 August (year not listed) and considered they might be a dark form of *P. imbrifera* or an eastern colony of *P. carbonifera*. In Labrador, adults have been taken at Cartwright, Goose Bay, and Knob Lake from mid-July to early August.

Details of the immature stages in Newfoundland and Labrador are not available.

P. rogenhoferi (Möschler)

Plate 15, 14

This species is found from southern Labrador west to Alberta and Colorado. In Newfoundland, a single specimen taken at Gander, 29 July 1949, is now in the Canadian National Collection, and three specimens were collected at Tompkins between 1 July and 28 September 1975. The species is considered rare and is not recorded from Labrador.

Details of the immature stages of this species in Newfoundland are not available.

P. carbonifera (Hampson)

Plate 15, 16

This large robust moth is distributed from Newfoundland west to Alberta and is also found in the mountains of Colorado. In Newfoundland, adults have been taken at Colinet, where the moths are in flight from late July to mid-August. In Labrador, adults have been collected at Knob Lake and Goose Bay between 20 and 22 August 1948.

Details of the immature stages in Newfoundland and Labrador are not available.

P. imbrifera (Guenée)

Plate 15, 17

This species is distributed in Canada from Newfoundland, Nova Scotia, and Quebec to British Columbia, and in the United States through the northeastern and central parts to Colorado, the mountains of Virginia, and west to New Mexico. In Newfoundland, adults have been taken at Gander, Georges Lake, Cow Head, Pynns Brook, Tompkins, and Doyles. The moths are in flight from early July to mid-August.

The larva has dark diamond-shaped markings dorsally, and is reported to feed on chokeberry (*Aronia* spp.).

P. atlantica (Grote)

Plate 15, 15

The species is distributed from Newfoundland, Nova Scotia, and Ontario west to Alberta, south to Virginia, and west to the Rocky Mountains. In Newfoundland, adults have been taken at Kilbride, Eddies Cove West, Woody Point, Corner Brook, Georges Lake, and Stephenville Crossing. The moths are in flight from early to late July. They have not been recorded from Labrador.

The larva is about 36 mm long, smooth skinned, and varies in color from yellowish green to dark brown. The middorsal line is broken and inconspicuous and the subdorsal line is divided into sections from the middle of each segment to the middle of the next. The head is brown and approximately 3 mm wide. The larva has been reared on honeysuckle (*Lonicera* spp.), dandelion (*Taraxacum* spp.), plantain (*Plantago* spp.), and clover (*Trifolium* spp.).

P. nevadae canadensis (Smith)

Plate 15, 18

The species is distributed from Newfoundland, New Brunswick, and Ontario to Manitoba, Alberta, and British Columbia, south to Maine and New York, and west to California. It is rare in Newfoundland, represented by a single specimen of *P. n. canadensis* taken by Krogerus (1954) at Corner Brook, 11 July 1949. It has not been recorded from Labrador.

The larva is a dark reddish brown with oblique subdorsal dark shades, and a broad white lateral line, partly filled with red. Its head is reddish and reticulate, with distinct vertical bands. It is a general feeder, particularly on poplar (*Populus* spp.), but also on tamarack (*Larix* spp.) and juniper (*Juniperus* spp.). The species is single brooded and probably overwinters as a pupa.

The species is distributed from Labrador, Newfoundland, Nova Scotia, and Quebec to Maine and New Hampshire, west to the Pacific, and south to California and New Mexico. It is not common but is fairly widely distributed in Newfoundland. Adults have been taken at St. John's, Mt. Pearl, Kilbride, Chamberlains, Gander, Corner Brook, Georges Lake, Pynns Brook, Stephenville, St. George's, Doyles, and Tompkins. The moths are in flight from early June to mid-August. A single specimen was taken at Goose Bay, Labrador, 21 July 1948.

The larva is light gray brown with blackish subdorsal wedge-shaped marks that each has an oblique dark line from the posterior end to the middorsal line, forming a W-shape. The dorsal and subdorsal lines are faint, and the lateral line is broad and pale. The head is black, with small dotted pale patches. The larva is a cutworm in habits, and is reported to feed on willow (*Salix* spp.), white birch (*Betula papyrifera*), and alder (*Alnus* spp.).

The species is distributed from Newfoundland, Nova Scotia, and Quebec south to Georgia and west to the Pacific. In Newfoundland, adults have been taken at St. John's, Kilbride, Colinet, Lethbridge, Georges Lake, Doyles, and Tompkins. The moths fly freely in the daytime from mid-June to early August, especially during cloudy weather. They are not common in Newfoundland and are not reported from Labrador.

The larva is about 35 mm long, smooth skinned, and violet brown or yellow green in color. It has prominent black and yellow longitudinal stripes and a yellow head with brown markings. It is a general feeder, sometimes in exposed positions on low plants, but the preferred foods are slender grasses such as *Agrostis* spp.

This species closely resembles *P. legitima* and at times it may be hard to distinguish between the two species. However, *P. tacoma* is generally larger and the dark brown suffusion of the basal and median areas of the forewings contrasts sharply with the smooth, blue gray postmedian shade. The species is found throughout the eastern parts of Canada and the United States. Adults have been taken at Kilbride in Newfoundland, where moths are in flight from mid to late July. They are not recorded from Labrador.

The larva is probably similar to that of *P. legitima*.

P. rugosa (Morrison)

Plate 16, 1

This rather pretty moth is distributed from Newfoundland, Nova Scotia, New Brunswick, Quebec, and Ontario south to Maine and New York. It is rare in Newfoundland and is not recorded from Labrador. Adults have been taken at St. John's, Kilbride, Colinet, and Tompkins, where the moths are in flight from late June to mid-July.

Details of the immature stages in Newfoundland are not available.

P. lilacina (Harvey)

Plate 16, 2

This species is known in Canada from Newfoundland, Nova Scotia, and Quebec west to Alberta, and in the northern United States from Maine, New Hampshire, Connecticut, and New York west to Washington and Oregon. It is widely distributed and common in some localities in Newfoundland but is not recorded from Labrador. Adults have been taken at St. John's, Mt. Pearl, Kilbride, Gander, Pynns Brook, Stephenville, St. George's, and Tompkins. The moths are in flight from late June to late August.

The larva is about 34 mm long, dark, and smooth skinned, with prominent black, yellow, and purplish longitudinal stripes. Its head is whitish, faintly tinged with yellow, and with black to brownish reticulations. It feeds on aster (*Aster* spp.) and has also been found on asparagus (*Asparagus* spp.).

P. adjuncta (Boisduval)

Plate 33, 13

This species is distributed from Newfoundland, Nova Scotia, Maine, and Quebec west to Manitoba and south to Kentucky. In Newfoundland, a single adult was taken at Pynns Brook, 11 July 1975. The species is considered rare in Newfoundland and is not reported from Labrador.

The larva is olive green with a pale mottled head. The 1st and 2nd abdominal segments have deep olive semicircular patches, divided by a pale middorsal line, and the 8th segment has a pair of olive triangles. The other segments have slightly darker oblique shades. The thorax has a yellow spiracular line with a dark lower margin. The larva feeds on low plants and hibernation may be as a larva or pupa.

P. pulverulenta (Smith)

Plate 16, 3

This species is known from Newfoundland, Labrador, and Nova Scotia west to the Pacific and Alaska, south to New York, and west to Colorado

and Washington. It is not common in Newfoundland, but adults have been taken at St. John's, Mt. Pearl, Kilbride, Pynns Brook, Georges Lake, St. George's, and St. David's. The moths are in flight from mid-June to mid-August. In Labrador a single specimen was taken at Hopedale, 6 August 1928, by W. W. Perrett.

The larva is approximately 32 mm long, smooth skinned, and has a brilliant green body with yellow longitudinal stripes, and a brownish green unmarked head. It is a solitary feeder on willow (*Salix* spp.), tamarack and larch (*Larix* spp.), and aster (*Aster* spp.). The species is single brooded and overwinters as a pupa.

P. ingravis (Smith)

Plate 16, 4

This species is distributed throughout Canada. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Goulds, Colinet, Pynns Brook, St. George's, and Tompkins. The moths are in flight from late May to late July, and at times are fairly common. Adults have been taken at Cartwright in Labrador from late June to mid-July.

The larva is a solitary defoliator on a variety of trees and shrubs including willow (*Salix* spp.), alder (*Alnus* spp.), trembling aspen (*Populus tremuloides*), and gooseberry (*Ribes* spp.).

P. frustrata McDunnough

Plate 16, 5

This species is found in Newfoundland, Nova Scotia, New Brunswick, and Maine. It was first described from specimens taken by McDunnough at Humber in 1946. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Goulds, Colinet, North Pond, Terra Nova National Park, Deer Lake, Sandy Lake, Birchy Basin, White Bay, Humber, and St. George's. The moths are in flight from mid-June to late July but a single specimen was taken at St. John's on 20 October 1965. It has not been recorded from Labrador.

The larva is a solitary defoliator on tamarack (*Larix* spp.). The pupa overwinters.

P. cristifera (Walker)

Plate 16, 6

This species has been found in Newfoundland, Labrador, Nova Scotia, New Brunswick, Maine, and from Ontario west to British Columbia. It is

common on the eastern slopes of the Rocky Mountains in Alberta. It is rare in Newfoundland and Labrador; single specimens have been taken at St. John's, 7 July 1967, and at Cartwright, 12 July 1955.

The larva is a brown cutworm with a tawny head and body and faint subdorsal oblique shading. It feeds on willow (*Salix* spp.), larch and tamarack (*Larix* spp.), and alder (*Alnus* spp.).

P. lutra (Guenée)

Plate 16, 7

This species is found in all provinces of Canada and south as far as North Carolina and California. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Topsail, Witless Bay Line, Benton, Gander, and Doyles. The moths are in flight from early July to early August but always in small numbers. They have not been recorded from Labrador.

The larva is about 37 mm long, smooth skinned, and occurs in two color phases, green or yellow with purplish markings. It feeds on alder (*Alnus* spp.), willow (*Salix* spp.), birch (*Betula* spp.), spiraea (*Spiraea* spp.), and plaintain (*Plantago* spp.).

P. secedens (Walker)

Plate 16, 8

This species is found in Labrador, Quebec, Maine, Manitoba, and Alberta, but not in Newfoundland. In Labrador, single specimens have been taken at Cartwright, 5 July 1955, by E. Stearns; Hopedale, 1 July 1933, by W. W. Perrett; and Knob Lake, 31 July 1948, by E. G. Munroe.

Details of the immature stages in Labrador are not available.

Genus *Lacinipolia* McDunnough

L. lustralis (Grote)

Plate 33, 10

This species is distributed from Newfoundland, Nova Scotia, New Brunswick, Maine, and Quebec west to Alberta and south to Virginia. In Newfoundland, the species has been taken only at Colinet and has not been recorded from Labrador.

The larva is a pale-backed cutworm very similar to *L. olivacea* and *L. renigera* except that the back is broader and the diagonal dorsal pattern is inconspicuous.

L. anguina (Grote)

Plate 16, 9

This small gray moth occurs from Newfoundland and Nova Scotia to Maine, New Jersey, and Pennsylvania and west to Alberta and Arizona. It is rare but widely distributed in Newfoundland; single specimens have been taken at Corner Brook, Georges Lake, and Colinet. The moths are in flight from early to late July.

Details of the immature stages in Newfoundland are not available.

L. renigera (Stephens)

BRISTLY CUTWORM

Plate 16, 10

This pretty species is distributed from Newfoundland, Nova Scotia, and Maine south to Georgia and west to the Pacific coast. It is fairly common in Newfoundland. Adults have been taken at St. John's, Mt. Pearl, Kilbride, Chamberlains, Georges Lake, Pynns Brook, Corner Brook, Stephenville, St. George's, and Tompkins. The moths are in flight from early July to late August. They are not found in Labrador.

The larva is about 25 mm long and 4.5 mm wide at the middle and the skin has coarse, isolated granules and is generally gray. Tubercles of moderate size bear simple setae, hence the name bristly cutworm. The larva feeds on apple (*Malus* spp.), grape (*Vitis* spp.), and many species of herbaceous plants.

L. lorea (Guenée)

Plate 16, 11

This moth occurs from Newfoundland, Nova Scotia, Quebec, Ontario, and Maine south to Virginia and west to Utah and British Columbia. Ferguson (1954) reported it as common in Nova Scotia. In Newfoundland, it is represented by a single specimen taken by the Forestry Research Laboratory at Lake St. George in 1954.

The larva is clay colored, pale dorsally with vague oblique shading, flattened, and exceptionally wide. The head is blackish, mottled with white. Although a cutworm, this larva stiffens straight out when disturbed instead of curling up. It pupates in a cocoon on the ground.

L. olivacea (Morrison)

Plate 16, 12

Krogerus (1954) stated that this moth was distributed throughout southern Canada and the United States as far south as Florida and California. Ferguson (1954) recorded it in Nova Scotia as common in the

Annapolis Valley and Cumberland County but scarcer elsewhere. It is widely distributed in Newfoundland but not common. Adults have been taken at St. John's, Kilbride, Chamberlains, Colinet, Glenwood, Kitty's Brook, Pynns Brook, Corner Brook, Cow Head, Georges Lake, Stephenville, Doyles, and Tompkins. The moths are in flight from mid-July to late August. The species has not been reported from Labrador.

The larva is about 25 mm long, light gray to brownish in color, and the skin has coarse, isolated granules. It is a cutworm that feeds on clover (*Trifolium* spp.), grasses, and probably various herbs.

Genus *Lasionycta* Aurivillius

L. albinuda (Smith)

Plate 16, 13

This species is found only in Labrador. Forbes (1954) reported it from Rama and a single specimen was taken by W. E. Beckel at Goose Bay, 13 July 1948.

Details of the immature stages in Labrador are not available.

L. subdita (Möschler)

Plate 16, 14

This species occurs only in Labrador and was first recorded by Möschler in 1860. W. W. Perrett took 2 specimens, 1 July 1928, and E. G. Munroe took 15 specimens at Knob Lake during the period 13–27 July 1948. Packard (1888) reported that the species occurred at the Moravian Stations in Labrador.

Genus *Lasiestra* Hampson

L. leucocycla moeschleri (Staudinger)

Plate 16, 16 and 18

This subspecies occurs in Labrador and other localities in the Hudson Bay area, but has not been recorded from Newfoundland. It is very similar to *L. leucocycla* but has more gray in the ground color. A few specimens in the Canadian National Collection are labeled from "Bang Hass, 1913, Labrador only," and another one was taken at Hopedale, 25 July 1923, by W. W. Perrett.

Details of the immature stages in Labrador are not available.

L. leucocyclus flanda (Smith)

Plate 16, 17

This subspecies was described by Smith from specimens taken in Newfoundland. It may be differentiated from *L. l. moeschleri* by the more distinct double lines on the forewing, the deeply serrated postmedial line that tends to break up into two alternate series of white dots, and the more ochreous hindwing.

Seven specimens were taken at Gander during the period 15–24 July 1949.

The immature stages of this colorful moth in Newfoundland have yet to be determined.

L. phoca (Möschler)

Plate 16, 15

According to Forbes (1954) this species occurs in Labrador; Churchill, Man.; Alberta; and Mt. Baker, Wash. Packard (1888) reported it from the Moravian Stations in Labrador. Adults have more recently been taken at Hopedale, Cartwright, and Knob Lake. The moths are in flight from early July to early August. There are no records from Newfoundland.

Details of the immature stages in Labrador are unknown.

Genus *Anarta* Ochsenheimer

A. cordigera (Thunberg) SMALL DARK YELLOW UNDERWING

Plate 16, 19

This species occurs in Labrador, Quebec, Ontario, Maine, west to Colorado and British Columbia, in the Yukon, and in northern Europe. Möschler (1860) reported it in Labrador and Packard (1888) from the Moravian Stations there. Adults taken by W. W. Perrett at Hopedale between 1924 and 1933 are in the Canadian National Collection. The moths are in flight from late May to late July. They have not been found in Newfoundland.

The larva is crimson with yellow dark-edged dorsal and lateral lines, and dark oblique subdorsal shades on each segment. It feeds on blueberry (*Vaccinium* spp.) and bearberry (*Arctostaphylos* spp.).

A. melanopa (Thunberg) BROAD-BORDERED WHITE UNDERWING

Plate 16, 20

This species occurs throughout arctic alpine areas in North America and Europe, ranging southward along the highest mountains. It is diurnal

and often locally common. In Newfoundland, a single specimen was taken by Krogerus at Grand Bruit, 18 June 1949. Krogerus also observed larvae at Port au Choix, 4 August 1949, feeding on *Dryas integrifolia*, a ground cover growing on open limestone fields by the seashore (Krogerus 1954). In Labrador, adults have been taken at Hopedale, Natasklivan Pt., and Knob Lake, where moths are in flight from early to late July.

The larva is rosy purple, with red-spotted yellow dorsal and lateral lines. It feeds on *Vaccinium* spp. and *Dryas* spp.

A. richardsoni tamsi Benjamin

Plate 16, **21** and **22**

This Labrador subspecies may be differentiated from typical *richardsoni* by its strongly contrasting black and gray pattern and yellow scaling. Adults have been taken at Hebron, Makkovik, Nain, Okak, and Hopedale, where they are in flight from mid-June to late July.

Details of the immature stages in Labrador are not available.

Genus *Sideridis* Hübner

S. maryx (Guenée)

Plate 16, **24**

This species occurs in Newfoundland, Nova Scotia, Quebec, Maine, Ontario, Pennsylvania, New Jersey, and west to the Pacific. It is not common generally but is sometimes plentiful at bait in specific localities. In Newfoundland, adults have been taken at St. John's, Gander, Corner Brook, and Tompkins. The moths are in flight from late June to mid-July.

The larva is brown and mottled, with pale, vague middorsal and spiracular lines. The head is also mottled brown.

Genus *Astrapetis* Hübner

A. sutrina (Grote)

Plate 16, **23**

This species is recorded in Newfoundland, Labrador, Quebec, and Manitoba. Adults have been taken at St. John's, Kilbride, Goulds, St. Anthony, and Tompkins in Newfoundland, and at Cartwright in Labrador.

The moths are in flight from mid-June to late July in Newfoundland and from early to late July in Labrador. The species is considered rare but has been taken at light traps each year since 1964.

Details of the immature stages in Newfoundland and Labrador are not available.

Genus *Protorthodes* McDunnough

P. oviduca (Guenée)

Plate 33, 11

This species is distributed in Newfoundland, Nova Scotia, Quebec, Ontario, and south to Florida. In Newfoundland, a single specimen was taken at Pynns Brook, 9 July 1975. The species is considered rare and is not recorded from Labrador.

According to Forbes (1954) the larva is dull brown but the dorsal area is paler and filled with dark diamonds. The head is shining brown with dark adfrontals, and the tubercles and shields are black. The posterior third of the cervical shield and the 8th abdominal segment are orange in color.

P. lindrothi Krogerus

Plate 17, 1

This new species was described by Krogerus (1954) from five specimens taken at Badger, Nfld., by Dr. Carl H. Lindroth, 22–23 June 1951. Adults have also been collected at Glenwood and Gander. From limited records, the moths have been seen in flight from 22 June to 1 July. Larvae were also collected by Krogerus at Glenwood on 23 August 1949. The species has not been found in Labrador.

The immature stages in Newfoundland have not been described.

Genus *Pseudorthodes* Morrison

P. vecors (Guenée)

Plate 17, 2

According to Krogerus (1954) this species is distributed from Eastern Canada and the New England States west to the Mississippi. Ferguson (1954) reported it as not especially common in Nova Scotia. In Newfoundland, adults have been taken at Kilbride, South Branch, and Tompkins between 2 July and 19 July. The species has not been recorded from Labrador.

The larva is said to feed on low plants.

Genus *Nephelodes* Guenée

N. minians Guenée

BRONZED CUTWORM

Plate 17, 3

This species is distributed from Eastern Canada south to Virginia and west to the Rocky Mountains. It is widely distributed and common in Newfoundland (Fig. 25) but is not recorded from Labrador. The moths are in flight from early July to late September.

The larva is 35–45 mm long and 9 mm wide. Its skin is set closely with small, dark, nearly flat, shining granules, and its general color is dark brown to blackish, distinctly paler ventrally and usually with a bronzy sheen. It is a localized but sometimes significant pest of grasslands in the Atlantic Provinces (Beirne 1971); severe outbreaks have occurred in reclaimed salt marshes in New Brunswick and Nova Scotia around the head of the Bay of Fundy. Eggs are apparently laid in late summer and hatch in the fall. The larva feeds on grasses, cereal crops, and weeds, and pupates in July.

Genus *Cerapteryx* Curtis

C. graminis (Linnaeus)

ANTLER MOTH (BR.)

Plate 17, 4

The only part of North America where this European species is found is Newfoundland. South (1961) reported that it occurred in all parts of the British Isles, through Northern Asia to Siberia. In Newfoundland, the first specimen was taken at St. John's, 10 August 1966 (Hardwick 1969) and since then there has been a gradual population buildup. Adults have been taken at St. John's, Mt. Pearl, Goulds, Chamberlains, and Kilbride. The moths are in flight from late June to late August. In 1975, a single specimen was taken at Kilbride as late as 24 September but this may have been part of a second brood.

The larva is a glossy, bronzy brown and the skin is very wrinkled. It feeds on grasses, and in some years and localities in Europe occurs in enormous numbers, denuding considerable areas of grasslands. When feeding on hillsides, the larvae are sometimes washed off by heavy rain, and drains and ditches become filled with them.

Genus *Orthosia* Ochsenheimer

O. revicta (Morrison)

Plate 17, 5

This species has been found in Newfoundland, Nova Scotia, Quebec, Ontario, and Maine, south to New Jersey, and west to the Pacific. In

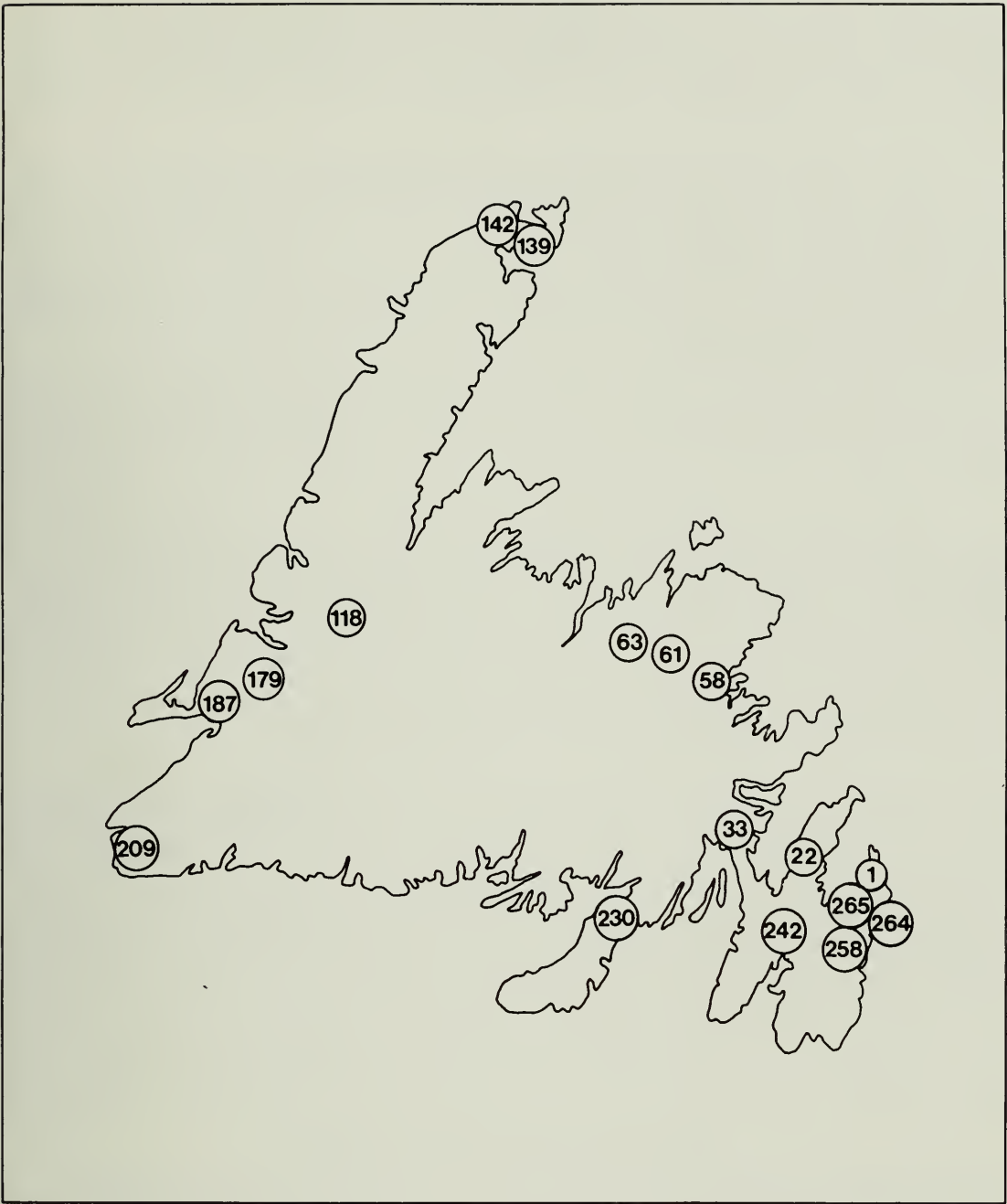


Fig. 25. Distribution of *Nephelodes minians* Guenée in Newfoundland.

Newfoundland, adults have been taken at St. John's, Gander, Mt. Pearl, Kilbride, Grand Falls, Pynns Brook, and Corner Brook but never in very large numbers. The moths are in flight from mid-May to mid-July. They are not found in Labrador.

The larva is about 25 mm long, smooth skinned, and brown in color. The middorsal and subdorsal lines are pale and obscure with diffuse dark markings. It is a solitary defoliator on a wide variety of deciduous trees including willow (*Salix* spp.), trembling aspen (*Populus tremuloides*), maple (*Acer* spp.), and birch (*Betula* spp.). The species is single brooded and overwinters as a pupa.

O. hibisci (Guenée)

GREEN FRUITWORM

Plate 17, 6

This species has been found in all provinces of Canada except Prince Edward Island, but is most common in the Prairie Provinces. It occurs generally throughout the northern United States as far south as Georgia, and is also found in Alaska. In Newfoundland, adults have been collected at St. John's, Mt. Pearl, Kilbride, Pynns Brook, and Corner Brook. The moths are in flight from early May to mid-June but are considered rare. There are no records from Labrador.

The larva is about 33 mm long, smooth skinned, and olive green in color with a strong white middorsal line. The head is green, with yellowish or white markings. The larva is a general feeder on a wide variety of deciduous trees and shrubs, particularly trembling aspen (*Populus tremuloides*), willow (*Salix* spp.), white birch (*Betula papyrifera*), and balsam poplar (*Populus balsamifera*). The species is single brooded and overwinters as a pupa in the soil.

Genus *Ceramica* Guenée

C. picta (Harris)

ZEBRA CATERPILLAR

Plate 17, 7

This species is distributed in Canada from Newfoundland and Nova Scotia west to Alberta, south to New Jersey, and across the United States to Colorado and California. Adults have been taken in Newfoundland at Tompkins, St. John's, St. George's, Pynns Brook, and near St. Anthony. The moths are in flight from mid-July to early August and are considered to be rare. They are not recorded from Labrador.

The mature larva is about 35 mm long and 5 mm wide, and is black in color with prominent black and yellow longitudinal stripes. The head is reddish and unmarked. It is a general feeder on herbs and a wide variety of

garden and field crops. Beirne (1971) listed 27 varieties of vegetables and fruits attacked by this insect but stated that it is not normally a significant pest.

Genus *Faronta* Smith

F. diffusa (Walker)

WHEATHEAD ARMYWORM

Plate 17, 8

This species is distributed generally throughout North America. Adults have been taken in western Newfoundland at St. George's, Pynns Brook, Georges Lake, and Tompkins. The moths are in flight from late June to late July but are never plentiful. The species has not been recorded from Labrador.

The larva is about 25 mm long, broad, and tapers posteriorly. It is smooth skinned, and varies from green, yellow, or pink to a brownish color. It feeds on various grasses, particularly timothy, and on the heads of cereal crops.

Genus *Leucania* Ochsenheimer

L. commoides Guenée

Plate 17, 9

Krogerus (1954) stated that the species was generally distributed throughout North America from the Atlantic to the Pacific. Forbes (1954) reported that it occurred from Nova Scotia to British Columbia and south to Florida and New Mexico. In Newfoundland, adults have been taken at South Branch, Stephenville Crossing, and Woody Point. The adults are in flight from early to late July and are rare. The species is not recorded from Labrador.

The larva is straw colored with conspicuous dark middorsal and subdorsal lines and a greenish yellow head with a dark ventral band in front. It is believed to feed on grasses.

L. insueta Guenée

Plate 17, 10

This species is distributed from Newfoundland, Labrador, and Nova Scotia south to the District of Columbia and west to the Pacific. Adults have been taken in Newfoundland at Kilbride, Colinet, Georges Lake, Codroy Pond, Tompkins, and Doyles, where the moths are in flight from mid-June to late August. In Labrador, a single specimen was taken by Beckel at Goose Bay, 20 July 1948.

The larva is light brown with a slight, pale middorsal line and darker subdorsal and lateral bands. Its head is shining brown, with distinct vertical black bands and faint reticulations. The species is single brooded and feeds on grasses.

L. comma (Linnaeus)

Plate 17, 11

This species is somewhat similar to *L. insueta*, but is smaller and without a reddish tint. However, Forbes (1954) stated that it was hardly more than a subspecies. Ferguson (unpublished) reported that *L. comma* and the closely related *L. insueta* were abundant in southwest Newfoundland but there was no evidence of interbreeding. The only specimens in the Canadian National Collection are from Newfoundland, indicating that the species is probably a European introduction. Adults have been taken in Newfoundland at Gander, St. Anthony, Doyles, Table Mountain, and Tompkins from late June to late August.

Genus *Pseudaletia* Franclemont

P. unipuncta (Haworth)

ARMYWORM

Plate 17, 12

This species is widely distributed throughout the Old and New Worlds. It is found from Newfoundland across Canada to the Pacific, and south to Texas. It is widely distributed in Newfoundland (Fig. 26) but is not recorded from Labrador. The moths are in flight from mid-June to late September, sometimes in large numbers.

The larva is the well-known armyworm. It is about 35 mm long and 5 mm wide, smooth skinned, and varies in color from red through pinkish and pale gray to the more usual dark gray. It has fine white middorsal, subdorsal, and lateral lines edged with blackish shades. According to Beirne (1971) the species does not survive the winter in Canada, but is a migrant from the south in May. The preferred foods are grasses and cereal crops, but the armyworm will attack a wide range of plants when necessary. It is a serious agricultural pest and, when numerous, the larvae move like an army, destroying crops in their path. Fortunately they disappear as quickly as they appear.

Genus *Aletia* Hübner

A. oxygala (Grote)

Plate 17, 13

This species is distributed throughout Canada and Alaska, south to New Jersey, Pennsylvania, Colorado, Utah, and California. It is widely

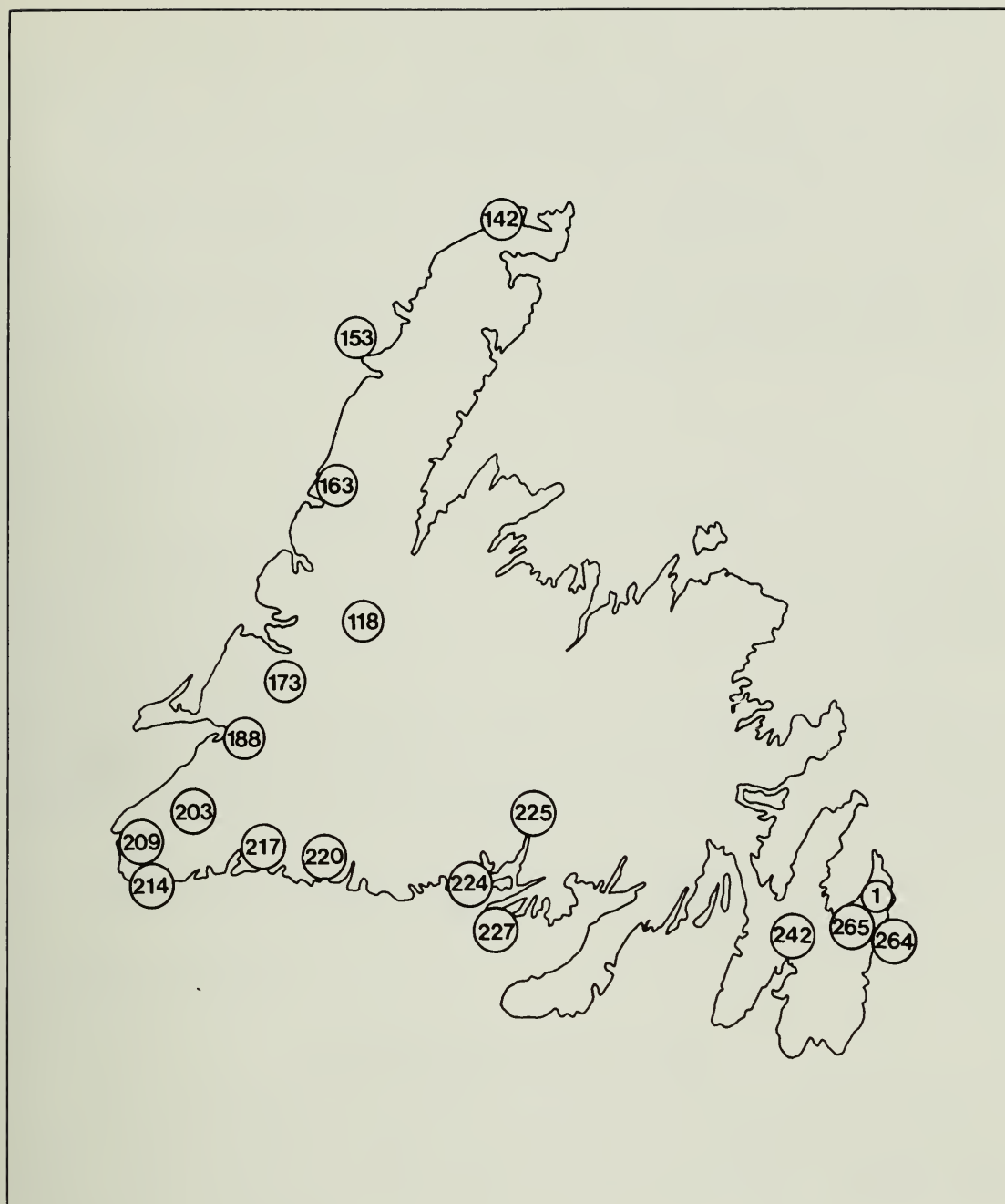


Fig. 26. Distribution of *Pseudaletia unipuncta* (Haworth) in Newfoundland.

distributed in Newfoundland but is not recorded from Labrador. Adults have been taken at St. John's, Chamberlains, Colinet, Salmonier, Witless Bay Line, Gander, Lewisporte, Pynns Brook, Corner Brook, Cow Head, Georges Lake, Burin, Stephenville, St. George's, Doyles, and Tompkins. The moths are in flight from early June to mid-September.

The larva is about 30 mm long and 4 mm wide at the middle, tapering posteriorly. It is smooth skinned and varies in color from light yellow to pale brownish. The head is whitish with faint black submedian arcs and reticulations. The larva feeds on grasses and sedges, hiding at the base of the tufts by day, but does not normally leave the food plant.

Genus *Brachionycha* Hübner

B. borealis (Smith)

Plate 17, 14

Forbes (1954) gave the distribution of this species as Pennsylvania, Manitoba, Saskatchewan, and Alberta. Krogerus (1954) reported taking larvae in Newfoundland at Gambo, 26–27 August 1949, and at Gander, 1 September 1949. There have been no further records for Newfoundland and the species has not been reported from Labrador.

Details of the immature stages in Newfoundland are not available.

Genus *Cucullia* Schrank

C. intermedia Speyer

Plate 17, 16

This species has been collected from Newfoundland west to Saskatchewan but is most common in Manitoba and Saskatchewan. It has also been found in the northern United States west as far as the Rocky Mountains. In Newfoundland, adults have been taken at St. John's, Kilbride, Colinet, Eddies Cove West, Port au Choix, St. Anthony, Woody Point, Pynns Brook, Corner Brook, Spruce Brook, Stephenville Crossing, and Tompkins. The moths are in flight from mid-June to early August. They have not been recorded from Labrador.

The larva is black with a series of yellow spots, large in front but gradually decreasing or fading out to the rear. It feeds on white birch (*Betula papyrifera*) and trembling aspen (*Populus tremuloides*).

C. florea Guenée

Plate 17, 17

This species is distributed from Eastern Canada and the Atlantic States west to Montana and Colorado. In Newfoundland, a single specimen taken by Krogerus at Spruce Brook, 8 July 1949, is the only representative of the species taken to date. There are no records from Labrador.

Ferguson (1954) reported rearing the species from larvae that were green with thin white and yellowish lines. He fed them aster (*Aster umbellatus*) and goldenrod (*Solidago graminifolia*).

C. asteroides Guenée

Plate 17, 18

The species is found from Newfoundland, Nova Scotia, New Brunswick, and Quebec west to Saskatchewan and south to Maine, Tennessee, and California. A single specimen taken at Gander by Krogerus, 5 July 1949, is the only record of its occurrence in Newfoundland. There are no records from Labrador.

The larva is about 40 mm long and 6 mm wide, has a slightly granulose skin, and is generally green with black longitudinal stripes. It feeds on aster (*Aster* spp.) and goldenrod (*Solidago* spp.).

Genus *Homohadena* Grote

H. badistriga (Grote)

Plate 17, 15

This species has a wide range, extending from the Atlantic regions of Canada and the United States west to Texas, Kansas, and Colorado. A single specimen taken at Millertown Junction by Krogerus, 21 August 1949, is the only record of its occurrence in Newfoundland. It has not been reported from Labrador.

The larva is about 35 mm long and 5 mm wide at the middle, tapering posteriorly. The skin bears very small, rounded granules and is generally brown. The head is coarsely granulose and pale brown. The larva feeds on honeysuckle (*Lonicera* spp.).

H. infixa (Walker)

Plate 17, 19

This species occurs across Canada from Newfoundland to British Columbia. In Newfoundland, adults have been taken at St. John's, Kilbride, Chamberlains, Mt. Pearl, Witless Bay Line, and Seal Cove, but are

uncommon. The moths are in flight from late July to mid-August. The species has not been recorded from Labrador.

The immature stages in Newfoundland are unknown but are probably similar to *H. badistriga*.

Genus *Apharetra* Grote

A. dentata Grote

Plate 17, 20

This species is distributed from eastern and central Canada and the northern United States west at least as far as Alberta. In Newfoundland, adults have been taken at St. John's, Colinet, Gander, Glenwood, and Tompkins; although widely distributed they are somewhat rare. The moths are in flight from early to late August. The species has not been recorded from Labrador.

Ferguson (1954) reported the larva feeding on blueberry (*Vaccinium* spp.) in Nova Scotia. Details of the immature stages in Newfoundland are not available.

A. purpurea McDunnough

Plate 18, 1

This species is distributed from Newfoundland, Quebec, and Ontario west to at least Manitoba and south to New Jersey and Massachusetts. In Newfoundland, single specimens have been taken at Colinet, 10 August 1961, Pynns Brook, 5 July 1975, and two specimens at Lewisporte, 6 August 1976. There are no records from Labrador.

The larva feeds on blueberry (*Vaccinium* spp.).

Genus *Sympistis* Hübner

S. melaleuca (Thunberg)

Plate 18, 2

This species is found in Labrador, Quebec, Manitoba, and the Northwest Territories. First reported in Labrador by Möschler (1860), adults have since been taken at Hebron, Hopedale, and Knob Lake, where moths are in flight from early July to late August. Packard (1888) reported the species as being found at all the Moravian Stations and along the entire Labrador coast. It has not been found in Newfoundland.

The larva is found on crowberry (*Empetrum* spp.). It is dark chocolate brown, shading into violet gray on the sides, and has a slight orange-colored head with black setae and mouthparts. The middorsal line is yellow brown and the subdorsal lines are orange yellow in color.

S. lapponica (Thunberg)

Plate 18, 3

According to Forbes (1954) this species occurs in Labrador, Greenland, Baffin Island, the Northwest Territories, and arctic Europe. In Labrador, a single specimen taken at Davis Inlet by W. W. Perrett, 7 August 1928, is the only record to date. Packard (1888) also reported the species as occurring in Labrador, at the Moravian Stations. Adults resemble *S. melaleuca*, but may be distinguished by the more triangular forewing and the deeper scalloping of the postmedial line.

The larva is dark brown, grayish, or reddish, with a dorsal series of black spots, a pale lateral line, and a series of dark oblique subdorsal streaks. It feeds on blueberry (*Vaccinium* spp.) and birch (*Betula* spp.).

S. labradoris (Staudinger)

Plate 18, 4

This species occurs in Labrador, along the Hudson Strait, on Baffin Island, in Manitoba, Alberta, Saskatchewan, British Columbia, and arctic Eurasia. In Labrador, four adults were taken at Hebron, 9–10 August 1954. Packard (1888) reported the species as *Anarta zetterstedtii* Staudinger from the Moravian Stations in Labrador. *S. labradoris* may be differentiated from the two preceding species by its dark smoky forewing and obscure markings.

According to Forbes (1954) the larva feeds on *Dryas* spp.

S. funesta (Paykull)

Plate 18, 5

This species is found in Labrador, New Brunswick, Quebec, Manitoba, Alberta, and Wyoming. A western subspecies occurs in British Columbia and Alaska. It is also recorded from arctic Eurasia and Switzerland. Adults have been taken at Hopedale, where they are in flight from late June to mid-August. Two specimens from the Wolley-Dodd collection, labeled Labrador 1913, are now in the Canadian National Collection. This species was recorded by Möschler in 1860 from Labrador, but no locations were given. Packard (1888) also reported that this moth was found at the Moravian Stations in Labrador. There are no records from Newfoundland.

The adult may be differentiated from related species by its dark hindwing with a white fringe.

Genus *Feralia* Grote

F. jocosa (Guenée)

Plate 18, 6

This species is generally distributed and common throughout Canada and the northern United States. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Pasadena, and St. George's, but Prentice (1962) indicated a much wider distribution. The moths are in flight from mid-May to mid-July. They have not been recorded from Labrador.

The larva is about 30 mm long and 5 mm wide at the middle, tapering slightly. Its general color is green with conspicuous longitudinal white lines. It is a solitary defoliator on balsam fir (*Abies balsamea*), white and black spruce (*Picea* spp.), and hemlock (*Tsuga* spp.). The species is single brooded and overwinters as a pupa.

F. comstocki Grote

Plate 18, 7

This species occurs from Newfoundland, Nova Scotia, New Brunswick, Quebec, and Maine west to British Columbia and Oregon and south to the mountains of North Carolina. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, and Colinet, where moths are in flight from late May to mid-July and are considered rare. The species has not been recorded from Labrador.

The larva is similar to that of *F. jocosa*, but has red spots that are more or less connected to form undulating lines. Ferguson (1954) reported it as probably feeding on balsam fir (*Abies balsamea*) and Prentice (1962) reported that Douglas-fir (*Pseudotsuga taxifolia*) was its preferred host. It is a solitary feeder and the pupa is probably the overwintering stage.

Genus *Bombycia* Stephens

B. algens (Grote)

Plate 33, 14

This species is found from Newfoundland, Nova Scotia, Maine, and Ontario south to New York and west to Alberta and Colorado. The eastern specimens are usually lighter colored than those from Alberta. In Newfoundland, single specimens were taken at Mt. Pearl, 21 August 1975, and at Kilbride, 22 August 1976. Ferguson (1954) reported that *B. algens* was abundant in Nova Scotia in wet marshy habitats where cattails grow. The species has not been recorded from Labrador.

Details of the immature stages in Newfoundland are not available.

Genus *Hillia* Grote

H. iris (Zetterstedt)

Plate 18, 8 and 13

This species is found in Labrador, northern Newfoundland, Nova Scotia, Maine, Ontario, Manitoba, Saskatchewan, and Alberta. It is also found in northern Scandinavia and Eurasia. In Newfoundland, adults have been taken at St. Anthony, 20–22 August, and in Labrador at Hopedale, 14–20 August. The species is considered rare in both Newfoundland and Labrador. Two forms of adults are known to exist: *iris* is typically light gray with a violet tint; *vigilans* is a dark brown form with black outside the subterminal line, and a darker hindwing.

The larva is a solitary defoliator on willow (*Salix* spp.) in June and probably also feeds on low plants in damp areas.

Genus *Lithomoia* Hübner

L. solidaginis (Hübner)

GOLDENROD BRINDLE

Plate 18, 20

The goldenrod brindle occurs from Newfoundland, Nova Scotia, Quebec, and Ontario west to Manitoba and Vancouver and north to Alaska. It also ranges from Maine south to Connecticut, New York, Pennsylvania, and Washington. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Gander, Pynns Brook, and Tompkins, where the moths are in flight from late August to mid-October. The species has not been recorded from Labrador.

The larva is about 33 mm long and 5 mm wide at the middle, smooth skinned, and generally dark gray in color. The middorsal, subdorsal, and ventral lines are white and the head is pale brown with faint pinkish or brownish reticulations. The larva feeds on blueberry (*Vaccinium* spp.), Labrador-tea (*Ledum* spp.), and spiraea (*Spiraea* spp.).

Genus *Lithophane* Hübner

L. amanda (Smith)

Plate 18, 9

This species occurs from Newfoundland, Nova Scotia, and Ontario west to British Columbia and south to Maine, Pennsylvania, and New York. The Forest Research Laboratory successfully reared larvae taken from

willow (*Salix* spp.) at Hawkes Bay. The adults emerged 7–14 November 1966. The species is considered rare in Newfoundland and has not been recorded from Labrador.

The larva is a solitary feeder on willow (*Salix* spp.), birch (*Betula* spp.), and trembling aspen (*Populus tremuloides*). It is green in color, with a broad white dorsal line and yellowish spiracular lines. The head is pale green variegated with white.

L. georgii Grote

Plate 18, 12

This species ranges from Newfoundland, Nova Scotia, and New Brunswick to British Columbia and the Northwest Territories. It is also found in Maine, New Hampshire, New York, Massachusetts, and Pennsylvania, and west to Colorado, Utah, and California. In Newfoundland, adults have been taken at Mt. Pearl, Kilbride, and Gallants. The moths are in flight from mid-September to mid-October. The species has not been reported from Labrador.

The larva is about 32 mm long and 6 mm wide. Its skin is rough but not granulose and is generally green in color with a white middorsal stripe. It feeds on apple (*Malus* spp.), willow (*Salix* spp.), birch (*Betula* spp.), and raspberry (*Rubus* spp.).

L. pexata Grote

Plate 18, 11

This species occurs from Newfoundland and Nova Scotia west to British Columbia and south to Washington, D.C. Adults have been collected in western Newfoundland by the Forestry Research Laboratory at Corner Brook and Grand Lake. The moths are in flight from mid-September to late October, but are considered rare. They are not recorded from Labrador.

The larva is a solitary feeder on alder (*Alnus* spp.) and birch (*Betula* spp.).

L. lepida (Lintner)

Plate 18, 14

This species is found in Newfoundland, Nova Scotia, Ontario, Maine, New York, New Jersey, and west to Saskatchewan. In Newfoundland, a single specimen taken at Gambo by Krogerus, 27 August 1949, is the only record for the species. There are no records from Labrador.

The larva is a solitary defoliator on jack pine (*Pinus banksiana*) and red pine (*Pinus resinosa*). The species is single brooded and probably overwinters as an adult.

Plate 18, 15

This species is distributed from Newfoundland to British Columbia, and north to the Northwest Territories. It is considered rare in Newfoundland and is not found in Labrador. Adults have been taken at Kilbride, St. John's, Mt. Pearl, and La Scie Road, where the moths are in flight from early June to late October.

The larva is bluish green with a yellow brown head. The middorsal and subdorsal lines are white and the lateral lines are yellow. It feeds on tamarack (*Larix* spp.), alder (*Alnus* spp.), and willow (*Salix* spp.).

Genus *Xylena* Ochsenheimer

X. nupera (Lintner)

RED SWORDGRASS MOTH (BR.)

Plate 18, 17

The red swordgrass moth is found in Newfoundland, Nova Scotia, and Ontario and west to British Columbia. It also occurs in Maine, Vermont, New Hampshire, New York and west to Colorado, Utah, California, Oregon, and Washington. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, St. Thomas, and Carbonear. Adults are in flight from mid-May to mid-June and in late September, but are never numerous. The species has not been recorded from Labrador.

The larva is about 45 mm long and 7.5 mm wide, and occurs in both a green and a darker phase. The head is greenish or brown, unmarked, or with faint greenish or pink reticulations. The middorsal and subdorsal lines are pale and sometimes inconspicuous. Crumb (1956) reported it feeding on *Iris* spp. and willow (*Salix* spp.) whereas Ferguson (1954) observed it on marsh grasses and sedges (*Scirpus* spp.).

X. curvimacula (Morrison) DOT AND DASH SWORDGRASS MOTH

Plate 33, 15

This species is distributed from Newfoundland, Nova Scotia, New Brunswick, Maine, and Quebec south to New Jersey and west to Vancouver Island and Oregon. In Newfoundland, a single specimen was taken at Tompkins, 27 June 1975. The species is considered to be rare in Newfoundland, and has not been recorded from Labrador.

The larva is dull brown with a faint white dorsal line, oblique subdorsal shades, and white spiracles. The adult moth overwinters and the species is single brooded.

X. thoracica (Putnam-Cramer)

Plate 18, **18** and **19**

This species is similar to *X. nupera*, but the forewings have a more bluish cast, more distinct markings, and less brownish shading. In Canada, it is found in Newfoundland, Nova Scotia, Ontario, Alberta, and British Columbia. In the United States it occurs in Maine, New Hampshire, New York, Colorado, Utah, and Alaska. In Newfoundland, a single specimen taken at Colinet, 18 October 1962, is the only record to date. It is not found in Labrador.

The larva is reported by Ferguson (1954) to feed on various plants, but shows a preference for willow (*Salix* spp.).

X. cineritia (Grote)

(Not illustrated)

This species occurs from Labrador, Newfoundland, Nova Scotia, New Brunswick, and Quebec south to Maine and New Jersey and west to Saskatchewan, British Columbia, and Washington. In Newfoundland, adults have been taken at Colinet during early May and from mid to late September. In Labrador, a single specimen was taken by W. W. Perrett at Hopedale, 17 October 1934.

The larva is about 42 mm long and 6 mm wide, smooth skinned, and pale yellowish brown to dark brown in color. The middorsal and subdorsal lines are obscure but have dark margins. The head is pale brown with darker brown reticulations. Ferguson (1954) reported that the feeding habits were similar to those of *X. thoracica*, and Crumb (1956) observed larvae on lupines (*Lupinus* spp.).

Genus *Xylotype* Hampson

X. acadia Barnes & Benjamin

Plate 18, **16**

This species occurs in Newfoundland, Labrador, Nova Scotia, Ontario, New Hampshire, southern Alberta and southern British Columbia. In Newfoundland, adults have been collected at Mt. Pearl, Pynns Brook, and Tompkins, where moths are in flight from late August to early October. In Labrador, adults have been taken at Hopedale, Goose Bay, and Matamek River. The moths are in flight from mid-August to early September but are rare.

Prentice (1962) reported the larva to be a solitary defoliator on alder (*Alnus* spp.) and tamarack (*Larix* spp.).

Genus *Platypolia* Grote

P. anceps (Stephens)

Plate 18, 10

This species occurs from Eastern Canada west to Alberta and south to the northern Atlantic States. In Newfoundland, a single specimen was taken at Gander, 1 September 1949, by Krogerus and another at Stephenville, 15 September 1975. There are no records from Labrador.

Ferguson (1954) reported that larvae were reared on *Aster macrophyllus* by Brower at Maine. Details of the immature stages in Newfoundland are not available.

Genus *Mniotype* Franclemont

M. ducta (Grote)

Plate 19, 1

This species is found in Newfoundland, Labrador, and Nova Scotia, west to Alberta, and south to the New England States and Wisconsin. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Colinet, Eddies Cove West, Cow Head, Port au Choix, St. Anthony, Corner Brook, Georges Lake, and Tompkins. The moths are in flight from mid-June to mid-August. In Labrador, a single adult was taken at Cartwright, 29 July 1953.

Details of the immature stages in Newfoundland and Labrador are not available.

M. ferida Smith

Plate 19, 2

According to McDunnough (1946a) the description of this species is based on females from Newfoundland. It is also known from Labrador, the Hudson Bay area, and Arrowhead Lake, B.C. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Corner Brook, Port au Choix, St. Anthony, and Tompkins. The moths are in flight from late June to early August. In Labrador, adults have been taken at Cartwright, Hopedale, and Goose Bay, where moths are in flight from early to late July. Forbes (1954) noted the species closely resembled *M. tenera* as described by Smith from Alaska, and it is possible that the three species *M. miniota*, *M. ferida*, and *M. tenera* may in fact be races of one species.

Details of the immature stages in Newfoundland and Labrador are not available.

Genus *Fishia* Grote

F. enthea Grote

Plate 19, 4 and 5

According to Forbes (1954) this species is found in Nova Scotia, Maine, Ontario, Manitoba, and Alberta. In Newfoundland, four adults were collected at Colinet on a peat bog, 27–29 September 1960, and a single specimen at St. John's, 21 September 1975. The species is considered rare, and is not found in Labrador.

Details of the immature stages in Newfoundland are not available.

Genus *Sutyna* Todd

S. privata (Walker)

Plate 19, 8

This species is found in Eastern Canada and the New England States. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Colinet, Plum Point, Woody Point, Pynns Brook, and Tompkins. The moths are in flight from mid-July to late October but never in large numbers. They have not been recorded from Labrador.

Details of the immature stages in Newfoundland are not available.

Genus *Epiglaea* Grote

E. apiata (Grote)

Plate 19, 9

This species is distributed from Newfoundland and Nova Scotia west to British Columbia, south to Maine, New Jersey, New York, and Washington, D.C., and west to Illinois. In Newfoundland, adults have been taken at Mt. Pearl, Colinet, Kilbride, St. John's, Pynns Brook, and Tompkins, from mid-September to late October. The species is never common.

The larva is about 36 mm long and 5 mm wide, smooth skinned, and reddish brown in color. The head is pale with brown submedian arcs and reticulations. The larva feeds on cranberry (*Vaccinium* spp.).

Genus *Agrochola* Hübner

A. lota (Clerck)

RED-LINED QUAKER (BR.)

Plate 34, 11

This species is widely distributed throughout Great Britain and Europe. In Newfoundland, the Forest Research Centre reared four adults from

larvae found on willow at St. John's. The moths emerged 3–27 September 1976. This is a first record for the species in Canada (Pardy 1977). In Europe the moth flies in September, October, and sometimes November.

The larva is ochereous brown, tinged with reddish or purplish brown on the sides. There are three whitish lines along the back; the center one is composed of spots and the outer ones are not well defined. The lateral line is reddish. The head is glossy and pale reddish brown, marked with darker brown. In Europe the larva feeds on willow (*Salix* spp.) and may be found on the foliage from early summer. It frequently spins the topmost leaves of a branch together to form a daytime retreat.

Genus *Parastichtis* Hübner

P. discivaria (Walker)

Plate 34, 7

This species is known to occur in Newfoundland, Nova Scotia, Maine, and New Hampshire, south to North Carolina in the east and from the Yukon to Utah in the west. Ferguson (1954) reported the species as "not common" in Nova Scotia. Two adult moths taken at Lewisporte, 6 August 1976, are the only records of the species occurring in Newfoundland to date. It has not been recorded from Labrador.

Details of the immature stages in Newfoundland are not available.

Genus *Sunira* Franclemont

S. bicolorago (Guenée)

Plate 19, 6

This species occurs from Newfoundland and Nova Scotia west to Alberta and Colorado, and south to North Carolina. Although reported as numerous in some areas in Canada, it is considered rare in Newfoundland. Adults have been taken at St. John's, Mt. Pearl, Kilbride, and Pynns Brook from mid-September to mid-October. It is not found in Labrador.

The larva is about 27 mm long, 4 mm wide at the middle, and smooth skinned. It is dark brown in color, with white flecks and purple tinges. The middorsal and subdorsal lines are obscure. The head is deep brown with black reticulations. Crumb (1956) stated that the larva feeds on tobacco (*Nicotiana* spp.), dock (*Rumex* spp.), maple (*Acer* spp.), and cabbage (*Brassica* spp.).

Genus *Xanthia* Ochsenheimer

X. lutea (Strömberg)

PINK-BARRED SALLOW (BR.)

Plate 19, 3

This species is distributed from Newfoundland west to British Columbia, Washington, and Oregon and south to Pennsylvania. It is rare in Newfoundland. Adults have been taken at St. John's, Kilbride, Mt. Pearl, and Pynns Brook from mid-September to early October. They are not found in Labrador.

The larva is about 25 mm long and 4 mm wide at the middle, smooth skinned, and blackish in color with purple tinges. The middorsal line is visible only on the thorax, and the subdorsal line is inconspicuous. The head is pale brown with strong black submedian arcs and reticulations. The larva feeds on willow (*Salix* spp.), preferring the catkins.

Genus *Apamea* Ochsenheimer

A. verbascoides (Guenée)

Plate 19, 10

This species occurs in Eastern Canada west to Saskatchewan, and in the northern and middle Atlantic States. In Newfoundland, adults have been taken at St. John's, Kilbride, Chamberlains, Eddies Cove West, and Cow Head. The moths are in flight from late July to mid-August, but are never very abundant. However, more collecting would, no doubt, show a wider distribution. The species has not been recorded from Labrador.

A. vultuosa (Grote)

Plate 19, 11

This species is found in Newfoundland, Nova Scotia, Maine, Ontario, south to New Jersey, and west to Alberta. It is replaced on the coast of British Columbia by the related species, *A. multicolor*. In Newfoundland, adults have been taken at St. John's, Eddies Cove West, and Port au Choix from mid-July to early August. The species is considered uncommon and is not found in Labrador.

The larva is about 32 mm long and 5 mm wide at the middle, tapering posteriorly. The general color is brownish with a pale middorsal line on a dark area. The head is darker brown with black submedian lines and reticulations. The larva feeds on grasses.

A. amputatrix (Fitch)

YELLOWHEADED CUTWORM

Plate 19, 7

This moth has a wide range in North America, extending from Labrador and the eastern areas of Canada and the United States west to Montana, Colorado, Washington, and California. The species is widespread and abundant in Newfoundland (Fig. 27). The moths are in flight from late June to late August. The species has been listed by Forbes (1954) as occurring in Labrador.

The larva is a true cutworm, hiding underground by day and feeding at night. It is a pale smoky color with a tawny head. Beirne (1971) reported that it infested tobacco and grainfields in Ontario between 1896 and 1911.

A. alia (Guenée)

Plate 19, 12

This species is widely distributed in North America from the Atlantic to the Pacific, north to Natashquan, Que., and south to New Jersey and New Mexico. In Newfoundland, adults have been taken at St. John's, Kilbride, Mt. Pearl, Woody Point, Eddies Cove West, Corner Brook, and Georges Lake. The moths are in flight from late June to late August. They do not occur in Labrador.

The larva is about 35 mm long and 5 mm wide at the middle, tapering posteriorly. The skin is smooth, generally black, with faint middorsal and subdorsal lines. The head is pale brown with black submedian lines and reticulations. The larva feeds on grasses.

A. commoda (Walker)

Plate 19, 13

This species occurs from Newfoundland, Nova Scotia, Quebec, Maine, and Ontario west to Alberta, and south to New York. In Newfoundland, adults have been taken at St. John's, Kilbride, Colinet, Witless Bay Line, Salmonier, Gander, Corner Brook, Stephenville, and Tompkins. The moths are in flight from mid-July to mid-August, but are never abundant. They are not found in Labrador.

Details of the immature stages in Newfoundland are not available.

A. impulsa (Guenée)

Plate 19, 14 and 15

This species is known from Newfoundland and Nova Scotia to Labrador, the Hudson Bay area, and British Columbia, south to Maine and New

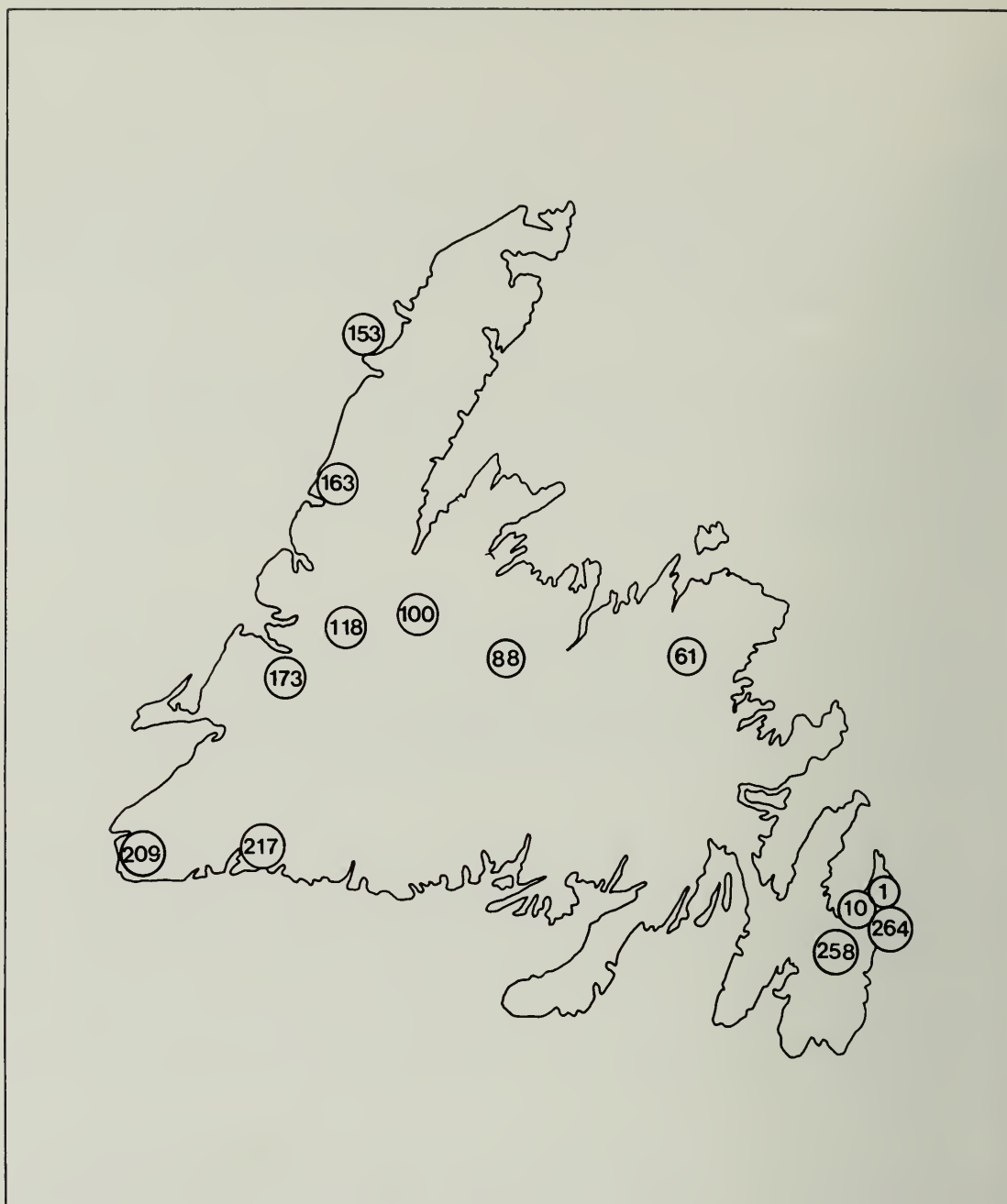


Fig. 27. Distribution of *Apamea amputatrix* (Fitch) in Newfoundland.

Jersey, and west to California. In Newfoundland, adults have been taken at St. John's, Kilbride, Colinet, Witless Bay Line, Gander, Corner Brook, Georges Lake, Stephenville, and Tompkins. The moths are in flight from late June to late August. In Labrador, adults have been taken at Hebron and Cartwright from early to mid-August.

Forbes (1954) described the larva as mottled gray brown with a yellow head, a reticulate body, a narrow broken pale dorsal line, traces of a subdorsal line, and a narrow pale spiracular line.

A. indocilis (Walker)

Plate 19, 16

This colorful species is widely distributed in Eastern Canada and the northern Atlantic States, and extends south to New York and west to the Rocky Mountains. In Newfoundland, adults have been taken at St. John's, Eddies Cove West, St. Anthony, and Doyles. The moths are in flight from mid-July to mid-August, and are considered rare. The species has not been recorded from Labrador.

The larva is about 20 mm long and 4 mm wide at the middle, smooth skinned, and generally gray in color, slightly tinged with purple. The middorsal line is continuous but pale, and the head is brown with black submedian arcs and reticulations. The larva feeds on coarse grasses and sedges.

A. finitima Guenée

Plate 19, 17

This moth is a circumpolar species that ranges throughout North America. It is widely distributed in Newfoundland; adults have been taken at St. John's, Kilbride, Chamberlains, Mt. Pearl, Carbonear, Lewisporte, Woody Point, Port au Choix, St. Anthony, Corner Brook, and Tompkins. The moths are in flight from mid-June to late August. In Labrador, adults have been taken at Cartwright and Goose Bay from early July to late August.

The larva is about 25 mm long and 4.5 mm wide at the middle, the skin is coarsely and intricately wrinkled but not granulose, and the general color is purplish gray. The middorsal line is strong and whitish and the head is brown with darker brown submedian arcs and reticulations. The larva feeds on wheat (*Triticum aestivum*), wild-rice (*Zizania* spp.), corn (*Zea mays*), and grasses. Beirne (1971) reported it as a pest on ryegrass (*Lolium* spp.) and brome grass (*Bromus inermis*) in southern Manitoba.

Genus *Agroperina* Hampson

A. lateritia (Hufnagel)

Plate 19, 18

This is a circumpolar species and is generally distributed throughout Canada and the United States. In Newfoundland, adults have been taken at St. John's, Colinet, Gander, Woody Point, Doctors Brook, St. Anthony, and

Tompkins. The moths are in flight from mid-July to mid-August and are plentiful at times. In Labrador, adults have been taken at Hebron, Hopedale, and Goose Bay from mid-July to late August.

Forbes (1954) described the larva as a cutworm, dark gray with a brown head and black plates.

A. dubitans (Walker)

Plate 19, 19

This species is generally distributed throughout the continent from Newfoundland to British Columbia, and from the Atlantic States to California. In Newfoundland, adults have been taken at St. John's, Carbonear, Witless Bay Line, Gambo, Millertown Junction, Kitty's Brook, and Tompkins. The moths are in flight from mid-July to late August, and are widely distributed and at times abundant. The species has not been recorded from Labrador.

The larva is about 35 mm long and 6 mm wide at the middle, tapering posteriorly. The skin is smooth and has many impressed lines dorsally. The general color is a drab gray usually tinged with pinkish dorsally. The larva feeds on grasses.

A. cogitata (Smith)

Plate 19, 20

This species is distributed from Newfoundland, Nova Scotia, Maine, and Quebec to the Pacific. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Donovans, Chamberlains, Salmonier, Gander, Badger, Pynns Brook, Corner Brook, St. Anthony, Tompkins, and Doyles. The moths are in flight from early July to early September and are fairly common. In Labrador adults have been collected at Cartwright, Hamilton Inlet, and Goose Bay from mid-July to early August.

The immature stages in Newfoundland and Labrador are unknown, but are probably similar to *A. dubitans*.

A. inficita (Walker)

Plate 19, 21

This is a northern species, occurring from Newfoundland and Nova Scotia to Quebec. Brower (1974) also reports it from northern Maine. In Newfoundland, adults have been taken at Kilbride, St. John's, Mt. Pearl, Gambo, Lewisporte, Kitty's Brook, Cow Head, Port au Choix, St. Barbe, Pynns Brook, Corner Brook, Stephenville, and Tompkins. The moths are in flight from late July to mid-September but are never abundant and are not found in Labrador.

Details of the immature stages in Newfoundland are not available.

Genus *Crymodes* Guenée

C. devastator (Brace)

GLASSY CUTWORM

Plate 20, 1

This moth is found throughout the North American continent. In Newfoundland, it is widely distributed and abundant; adults have been taken at Kilbride, Terra Nova National Park, Gander, Cow Head, Port au Choix, Port Saunders, Eddies Cove, St. Anthony, Corner Brook, St. George's, and Stephenville. The moths are in flight from mid-July to mid-August. In Labrador, adults have been taken at Nutak, Hopedale, Goose Bay, and Knob Lake from mid-July to late August.

The larva is 35–40 mm long and 5.5 mm wide at the middle, tapering slightly posteriorly. The skin is slightly granulose and the general color is a translucent greenish white with a dark subcutaneous middorsal line. The head is a bright reddish brown with dark subdued reticulations. It is essentially a subterranean turf-feeding species, but is destructive to many plants in the absence of its normal food. Beirne (1971) records it as a sporadic pest on cereals, corn, and tobacco.

C. maillardi (Geyer)

NORTHERN ARCHES (BR.)

Plate 22, 19

This subarctic species is found in northeastern Canada and in the northeastern United States. It also occurs in northwest Europe. Packard (1888) reported the species as *Hadena exulis* from the Moravian Stations in Labrador. Two adults taken at Hopedale, 10 August 1923 and 14 August 1934, are in the Canadian National Collection. Möschler (1860) also reported it from Labrador. In Newfoundland, a single specimen was taken at St. Anthony, 16 July 1951.

The larva in Europe is ochreous white shaded with gray, and has a reddish brown head, yellow plates, and black spiracles. It feeds on grasses, boring into the lower stems and roots when very young, and normally hibernates twice.

Genus *Trichoplexia* Hampson

T. exornata (Möschler)

Plate 20, 2

This species has been taken in Labrador, Newfoundland, Quebec, and Maine. A larger subspecies is found from Alberta to Colorado. In New-

foundland, adults have been taken at St. John's, Witless Bay Line, Topsail, and Colinet from late June to mid-July, but they are considered rare. In Labrador, adults have been taken at Hopedale, Cartwright, and Knob Lake from early July to late August.

Details of the immature stages in Newfoundland and Labrador are not available.

Genus *Luperina* Boisduval

L. passer (Guenée)

Plate 20, 3

This species is distributed from Newfoundland, Nova Scotia, Quebec, and Maine south to New Jersey and west to Alberta and Oregon. In Newfoundland, four adults now in the Canadian National Collection were taken by J. B. Wallace at St. Anthony, 8–9 August 1951. The species was first reported as occurring in Newfoundland by Draudt (*in* Seitz 1924) and is probably more widespread than indicated, although it has not so far been recorded from Labrador.

The larva is reported by Forbes (1954) to feed on dock (*Rumex* spp.).

Genus *Oligia* Hübner

O. modica (Guenée)

Plate 34, 8

This species is distributed in Newfoundland, the Gulf of St. Lawrence, south to Georgia, and west to Manitoba and Colorado. Brower (1974) reported the species from 24 localities in Maine. In Newfoundland, adults have been taken at Gander and Pynns Brook, where moths are in flight from late July to late August. There are no records of the species from Labrador.

Details of the immature stages in Newfoundland are not available.

O. bridghami (Grote & Robinson)

Plate 20, 4

This colorful species is distributed from Newfoundland, Nova Scotia, Quebec, and Maine south to Long Island and Pennsylvania and is represented by the closely related species *O. violacea* on the Pacific Coast. It is fairly

common and widely distributed in Newfoundland. Adults have been collected at St. John's, Kilbride, Colinet, Pynns Brook, Corner Brook, and Tompkins. The moths are in flight from mid-July to late September. There are no records from Labrador.

Details of the immature stages in Newfoundland are not available.

O. minuscula (Morrison)

Plate 20, 5

This species is distributed from Newfoundland, Nova Scotia, and Maine west to Manitoba and south to New Jersey and New York. It is extremely rare in Newfoundland but four adults have been taken at Colinet, Georges Lake, and Tompkins during the last half of August. The species is usually associated with bogs, but has not been recorded from Labrador.

Details of the immature stages in Newfoundland are not available.

O. illocata (Walker)

Plate 20, 6

This species has been collected in Newfoundland, Nova Scotia, New Brunswick, Ontario, southwestern Alberta, and in the interior and south coastal regions of British Columbia. In the United States, it occurs in Pennsylvania, and west to Colorado. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Colinet, Pynns Brook, Portland, and Tompkins from mid-July to mid-October. At times the moths are common but never abundant. The species has not been recorded from Labrador.

The larva is a solitary defoliator on alder (*Alnus* spp.), birch (*Betula* spp.), and willow (*Salix* spp.).

Genus *Eremobina* McDunnough

E. claudens (Walker)

Plate 20, 7

This species, originally described from a Newfoundland specimen, is distributed from Newfoundland, Nova Scotia, and Maine west to the Rocky Mountains and south to the middle Atlantic States. The species is widely distributed in Newfoundland (Fig. 28) but is never common. The moths are in flight from mid-July to mid-September. They have not been reported from Labrador.

Details of the immature stages in Newfoundland are not available.

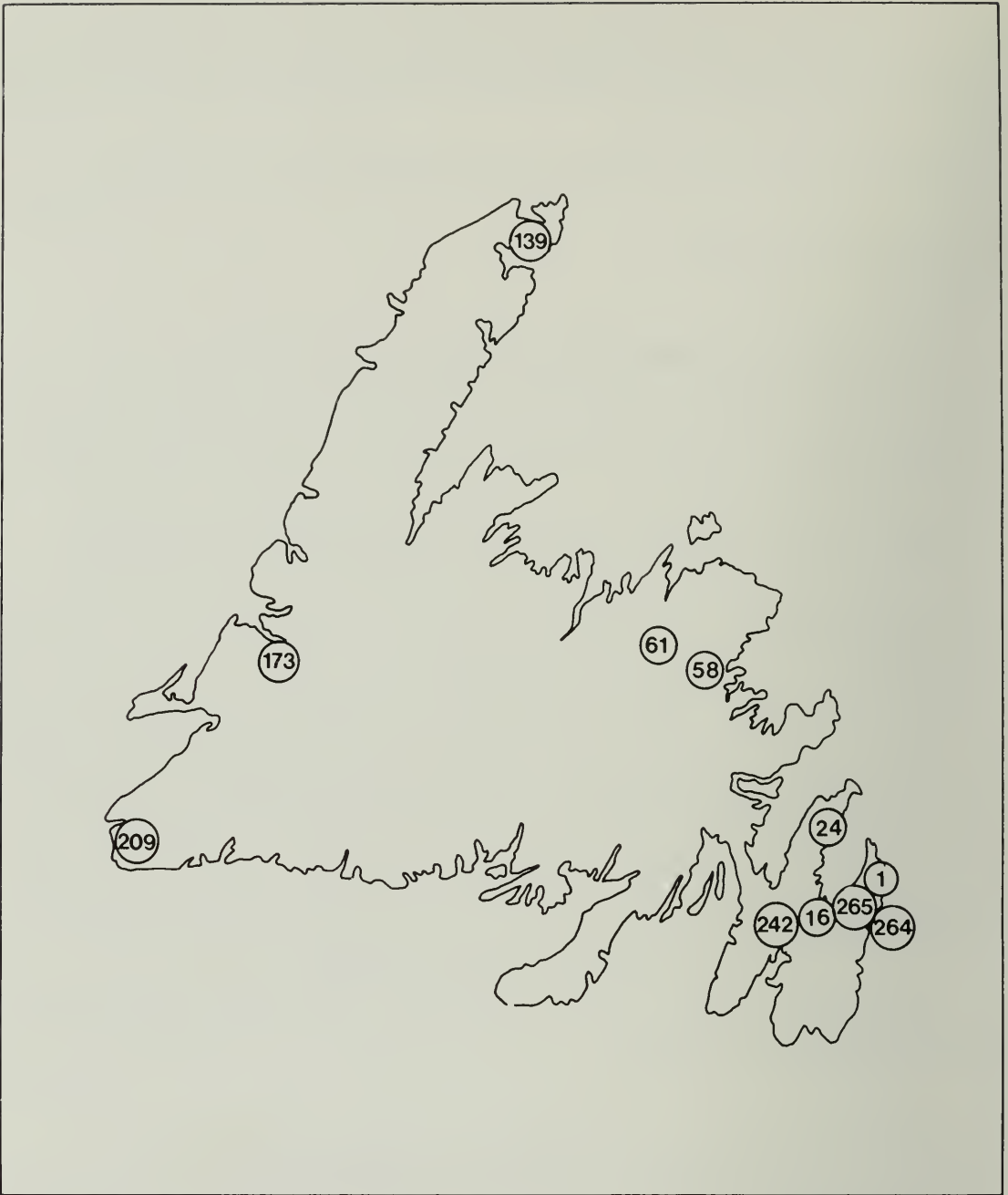


Fig. 28. Distribution of *Eremobina claudens* (Walker) in Newfoundland.

Genus *Hypocoena* Hampson

H. rufostrigata (Packard)

Plate 33, 1

Forbes (1954) gave the distribution for this species as southern Labrador and the Saguenay River, Que., west to Alaska, and south in the west to Utah and California. Packard (1888) reported the species from Caribou Island, Labrador. There are specimens in the Canadian National Collection, from Brador Bay, Que., near the southern Labrador boundary, which indicates that the species probably occurs in the adjoining Labrador region. It has not been recorded from Newfoundland.

The moth is described by Forbes (1954) as a pale clay color shaded with light pink. The veins, especially the outer ones, are streaked with black, and there are dark streaks in between them.

Details of the immature stages in Labrador are not available.

H. inquinata (Guenée)

Plate 20, 8

This species is found from Newfoundland, Nova Scotia, Quebec, and Maine west to Alberta, south to Connecticut, and west across the United States to Colorado. In Newfoundland, adults have been taken at St. John's, Kilbride, Mt. Pearl, Donovans, Chamberlains, Bellevue, Colinet, and Pynns Brook. The moths are in flight from mid-July to late August, but are never abundant. The species has not been reported from Labrador.

Details of the immature stages in Newfoundland are not available.

H. basistriga McDunnough

Plate 20, 9

This species is widely distributed in Western Canada from Saskatchewan to British Columbia. The only records of its existence in Eastern Canada are from Newfoundland, where adults have been taken at Colinet and Kilbride from mid-September to mid-October, and Labrador, where a single specimen, now in the Canadian National Collection, was taken by Perrett at North West River, Hamilton Inlet, 4 September 1922.

Very little is known about the immature stages in Newfoundland and Labrador.

Genus *Ipimorpha* Hübner

I. pleonectusa Grote

Plate 20, 11

This species is found from Newfoundland, Nova Scotia, Quebec, and Maine west to Manitoba and Alberta and south to New Jersey. In New-

foundland, adults have been taken at Gambo, Gander, Notre Dame Junction, Buchans Junction, Pynns Brook, and Badger, but the species is considered rare. The moths are in flight from early July to late August. They have not been recorded from Labrador.

The larva is about 25 mm long and 4 mm at the middle, tapering posteriorly. The green skin is closely covered with minute granules, and has a broad white middorsal line that becomes narrower on the thorax. The head is yellowish white. The larva feeds on poplar, particularly trembling aspen (*Populus tremuloides*).

Genus *Helotropha* Lederer

H. reniformis (Grote)

Plate 20, 12

This species is distributed across Canada and the United States from the Atlantic to British Columbia and California. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Cow Head, Eddies Cove West, Port au Choix, Tompkins, and Doyles. The moths are widely distributed and locally common, and are in flight from late July to early October. Two color phases, including the dark variety, *atra* Grote, are present among local specimens.

The larva is about 35 mm long, 5 mm wide at the middle, smooth skinned, and generally dull black in color. The middorsal line is pale and subdued. The larva bores in the stems of sedges (*Scirpus* spp.) and probably iris (*Iris* spp.).

Genus *Amphipoea* Billberg

A. velata (Walker)

Plate 20, 13

This species is distributed throughout the eastern regions of Canada and the United States, south to the mountains of North Carolina and west to Wisconsin. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Donovans, Salmonier, Gambo, Gander, Pynns Brook, Corner Brook, and Tompkins. The moths are in flight from late July to early September and at times are fairly common. The species has not been recorded from Labrador.

The larva is green, with slender middorsal, subdorsal, and spiracular stripes that usually have dark upper edges. The head has oblique dark side stripes. The larva feeds on grasses, and is sometimes abundant, but is not considered injurious.

A. americana (Speyer)

Plate 20, 14

This species is common and widely distributed from the Atlantic west to California and Colorado. In Newfoundland, adults have been taken at Kilbride, Mt. Pearl, St. John's, Goulds, Renewes, Colinet, Gambo, Glenwood, Lewisporte, Kitty's Brook, Georges Lake, Woody Point, Brig Bay, Pynns Brook, Corner Brook, Stephenville, and Tompkins. The moths are in flight from mid-July to early October. The species has not been recorded from Labrador.

The larva is believed to be a minor pest on young corn.

Genus *Hydroecia* Guenée

H. micacea (Esper) POTATO STEM BORER, ROSY RUSTIC MOTH

Plate 20, 15

This species occurs in Eastern Canada and the northern Atlantic States and was probably introduced from Europe. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Bell Island, Trepassey, St. Mary's, Pynns Brook, Corner Brook, Stephenville, and Tompkins. The moths are in flight from mid-August to late September and at times are fairly common. They are not found in Labrador.

The larva is about 30 mm long and 4 mm wide at the middle, tapering posteriorly. It is smooth skinned and generally pale in color with purplish transverse bands on all segments except the prothorax and the 9th abdominal segment. The head is yellow without markings. The larva bores in the stems of various plants and apparently prefers potatoes. The damage it causes is usually light or moderate, although it has been known to destroy 50% of the potato stems in small gardens. However, it is not considered a major pest. There is only one generation a year. The eggs are laid in the fall on various grasses and hatch in May. The larva feeds first on young grass blades and later moves to other, larger plants and enters their stalks, ultimately causing them to wilt and die. Beirne (1971) lists corn, potato, tomato, rhubarb, sugar beet, beans, and strawberry as crops that are subject to larval attack.

Genus *Papaipema* Smith

P. impecuniosa (Grote)

Plate 20, 16

This species is found in Nova Scotia, New Brunswick, Quebec, and Maine, south to New York, and west to Alberta. Forest Insect Surveys in Newfoundland have recorded the species, but this report is considered doubtful because no specimens have been observed or taken in recent years. Ferguson (1954) reported that the species was taken occasionally in Nova Scotia.

The larva is said to bore into aster (*Aster umbellatus*) and sneezeweed (*Helenium* spp.).

P. pterisii Bird

Plate 20, 17

This species occurs in Newfoundland, Nova Scotia, Quebec, Maine, southern New York, and Pennsylvania. It is considered rare in Newfoundland, where adults have been taken at Colinet, Pynns Brook, and Tompkins from mid-September to early October. The species has not been recorded from Labrador.

The larva, as far as is known, bores into bracken (*Pteridium aquilinum*). It completely eats out the tender rootstock, killing the plant.

P. frigida (Smith)

Plate 20, 18

The species is found from Newfoundland, Nova Scotia, Quebec, and Maine south to New York and west to Manitoba and Colorado. In Newfoundland, adults have been taken at Mt. Pearl, Kilbride, and Colinet. The moths are in flight from late July to mid-October, but never in large numbers. The species has not been recorded from Labrador.

The larva is about 30 mm long and 5 mm wide at the middle, somewhat whitish in color and when young has pale reddish brown segmental bands. It feeds on meadow rue (*Thalictrum* spp.).

P. thalictri Lyman

Plate 20, 19

This species was at one time considered to be a form of *P. frigida* and the distribution of the two species is similar. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Pynns Brook, and Tompkins.

The moths are in flight from early September to early October but are never common. The species has not been recorded from Labrador.

Genus *Euplexia* Stephens

E. benesimilis McDunnough

Plate 20, 10

This species occurs in Canada and the United States from the Atlantic region west to British Columbia, Alaska, Washington, and California. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Eddies Cove West, Corner Brook, St. George's, Table Mountain, Doyles, and Burgeo. The moths are in flight from late June to late July, but are never common. The species has not been recorded from Labrador.

The larva is about 28 mm long and 4.5 mm wide, smooth skinned, and occurs in both green and brown phases. The head is green with dark reticulations. The larva is a solitary defoliator, feeding on shield ferns (*Dryopteris* spp.), alder (*Alnus* spp.), foxglove (*Digitalis* spp.), and willow (*Salix* spp.). There is one brood a year and the pupa overwinters.

Genus *Phlogophora* Treitschke

P. iris Guenée

Plate 20, 20

This species is found in the Atlantic Provinces and the northern Atlantic States, extending south to southern New York and west to Minnesota and Manitoba. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Gander, Lewisporte, Pynns Brook, Corner Brook, Woody Point, Stephenville, and Tompkins, where the moths are in flight from late June to early August, but are never common. The species has not been recorded from Labrador.

The larva is about 35 mm long and 5.5 mm wide at the middle, and the skin is smooth and generally gray. The middorsal line is pale and interrupted at the junctures of segments by small black dots. The head is brown with dilute black submedian lines and reticulations. It is a cutworm in habits and feeds on dandelion (*Taraxacum* spp.), dock (*Rumex* spp.), and thistle (*Cirsium* spp.). The species is single brooded and overwinters as a fully grown larva.

P. periculosa Guenée

Plate 20, 21

This species is very common in North America and is generally distributed from the Atlantic to the Pacific throughout Canada and the

United States. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Goulds, Kilbride, Chamberlains, Cupids, Salmonier, Gambo, Burin, Glenwood, Lewisporte, Millertown Junction, Kitty's Brook, Pynns Brook, Steady Brook, Gallants, Cow Head, Port au Choix, Eddies Cove, Corner Brook, Georges Lake, and Tompkins. The moths are in flight from late June to late August and are common in some localities. The form *brunneum* was taken by Ferguson at Donovans, 27–28 August 1954. In Labrador, adults were taken at Matamek River by Eldmann between July and September 1931.

The larva is about 32 mm long and 5 mm wide at the middle. It is smooth skinned and varies from light brown to dark green. The middorsal line is yellow and the head pale brownish to greenish gray with reddish, brownish, or green reticulations. It feeds on alder (*Alnus* spp.), blueberry (*Vaccinium* spp.), and plum (*Prunus* spp.).

Genus *Euherrichia* Grote

E. monetifera (Guenée)

Plate 20, 22

This very pretty species ranges from Newfoundland, Nova Scotia, Quebec, and Maine south to Florida and west to Wisconsin. In Newfoundland, a single specimen taken by Krogerus at Stephenville Crossing, 6 July 1949, is the only record to date.

The larva is green with oblique white lines and feeds on bracken (*Pteridium aquilinum*).

Genus *Agriopodes* Hampson

A. fallax (Herrich-Schäffer)

GREEN MARVEL

Plate 21, 1

This species is distributed from Newfoundland, Nova Scotia, Quebec, and Manitoba south to Illinois, Texas, and Florida. In Newfoundland, a single specimen taken by Mutuura at Doyles, 29 July 1968, is the only record to date.

The larva is about 28 mm long and 5 mm wide at the middle, tapering somewhat posteriorly. It is velvety green in color, with inconspicuous but definite tufts of hair growing from warts. The middorsal and subdorsal lines

are narrow and white and the head is wrinkled and has black dots on the edge. The larva feeds on arrowwood (*Viburnum* spp.) and poplar (*Populus* spp.).

Genus *Amphipyra* Ochsenheimer

A. pyramidoides Guenée

COPPER UNDERWING

Plate 21, 5

This large coppery-colored moth is found from Newfoundland and Nova Scotia to British Columbia, from Maine to the Rocky Mountains, and south to Arizona and California. In Newfoundland, a single specimen taken by Krogerus at Kitty's Brook, 18 August 1949, is the only specimen to date.

The larva is about 35 mm long and 6 mm wide at the middle, and is light green in color. It has a small head, a slight bump on the 1st abdominal segment, and a high sharp one on the 8th segment. The middorsal, subdorsal, and spiracular lines are fine and white with the latter angled almost up to the top of the hump of the 8th segment. The larva feeds on basswood (*Tilia* spp.), elm (*Ulmus* spp.), birch (*Betula* spp.), poplar (*Populus* spp.), and raspberry (*Rubus* spp.).

A. tragopoginis (Linnaeus)

MOUSE (BR.)

Plate 21, 2

This is a circumpolar species. In North America, it has a wide range in southern Canada and the United States. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Chamberlains, Colinet, Gambo, Corner Brook, and Tompkins. The moths are in flight from mid-July to mid-October and at times are quite common. The species has not been reported from Labrador.

The larva is about 35 mm long and 5 mm wide at the middle. The skin, of a general green color, bears minute spinelike granules both dorsally and ventrally. The strong middorsal line, spiracles, and subventral line are white. The head is green, without markings. The larva feeds on strawberry (*Fragaria* spp.) and plantain (*Plantago* spp.).

Genus *Nedra* Clarke

N. ramosula (Guenée)

Plate 21, 7

This species is distributed from Newfoundland, Nova Scotia, New Brunswick, Quebec, Ontario, Maine, and Wisconsin south to Florida,

Mississippi, and Arkansas. In Newfoundland, adults have been taken at St. John's and Colinet where the moths are in flight from mid to late July. The species is considered rare in Newfoundland and has not been recorded from Labrador.

The larva is about 37 mm long and 4.5 mm wide at the middle, tapering posteriorly. Its general color is dark brown both dorsally and ventrally with broken, pale middorsal and subdorsal lines. It is reported to feed on St. John's-wort (*Hypericum* spp.).

Genus *Andropolia* Grote

A. contacta (Walker)

Plate 21, 4

This large blue gray moth is found in Newfoundland, the Maritime Provinces, the Atlantic States, and west to the Rocky Mountains. It is rare in Newfoundland, although adults have been taken at St. John's, Mt. Pearl, Gambo, Gander, St. Anthony, and Tompkins, where the moths are in flight from mid-August to early September. It has not been recorded from Newfoundland.

The larva is a solitary defoliator on deciduous trees, and prefers trembling aspen (*Populus tremuloides*), willow (*Salix* spp.), and birch (*Betula* spp.).

Genus *Hyppa* Duponchel

H. xylinoides (Guenée)

Plate 21, 8

This species occurs from the Atlantic Provinces west to British Columbia and south to southern New York and Virginia. It is widely distributed, but never abundant in Newfoundland and is not recorded from Labrador. Adults have been taken at St. John's, Mt. Pearl, Colinet, Kilbride, Chamberlains, Carbonear, Gander, Lewisporte, Woody Point, Glenburnie, Cow Head, Port au Choix, Eddies Cove West, St. Anthony, Corner Brook, Georges Lake, and Doyles. The moths are in flight from early July to early August.

The larva is a cutworm that feeds on cranberry (*Vaccinium* spp.). It is yellow brown to black with darker sides, and has a distinctive hump on the 8th abdominal segment. The lateral line is pale and white-edged and the

head is shining brown. The species is single brooded and pupates between leaves on the ground.

H. indistincta Smith

Plate 21, 3

This species is known to exist in Labrador, Newfoundland, Alberta, British Columbia, and Washington. Adults have been taken in Newfoundland at Pynns Brook in late July and in Labrador at Goose Bay and Hopedale, 18–20 July.

Details of the immature stages in Newfoundland and Labrador are not available.

Genus *Platysenta* Grote

P. sutor (Guenée)

Plate 21, 6

This species is found in Labrador and Maine, west to Wisconsin and south to South America. In Labrador, a single specimen was taken at Goose Bay, 15 August 1948. It has not been found in Newfoundland.

Details of the immature stages in Labrador are not available.

Genus *Elaphria* Hübner

E. versicolor (Grote)

Plate 21, 9

Recognized as an eastern species, *E. versicolor* has been collected from Newfoundland, Nova Scotia, and Maine, and west to the interlake region in Manitoba. Prentice (1962) recorded the species from central Newfoundland in the Grand Falls area. No specimens have been taken during recent years and the species is considered rare.

The larva is about 16 mm long, 2.5 mm wide at the middle, mottled black and brown in color, and has a swollen thoracic region. It feeds on balsam fir (*Abies balsamea*) and white spruce (*Picea glauca*).

E. festivoides (Guenée)

Plate 21, 10

This species has a wide range that extends from Newfoundland, Nova Scotia, and Maine south to Florida and Texas and west to British Columbia

and New Mexico. However, it is rare in Newfoundland and is not recorded from Labrador. Six specimens taken by Krogerus at South Branch, 4 July 1949, are the only records to date. Ferguson (1954) reported that the species was often plentiful at light traps and bait in Nova Scotia.

Details of the immature stages in Newfoundland are not available.

Genus *Platyperigea* Smith

P. multifera (Walker)

Plate 33, 2

This species is found in Newfoundland, Nova Scotia, Maine, Quebec, Ontario, Minnesota, and south to the District of Columbia. In Newfoundland, five adults were taken at Pynns Brook between 8 August and 4 September 1975. The species is considered rare in Newfoundland and is not recorded from Labrador.

Details of the immature stages in Newfoundland are not available.

Genus *Enargia* Hübner

E. infumata (Grote)

Plate 34, 9

This species occurs from Newfoundland, Nova Scotia, and New Brunswick west to the interior of British Columbia, south to Maine and New York, and west across the United States to Colorado and California. In Canada it is most common in western Alberta. In Newfoundland, adult moths have been taken at Gander from mid to late August and at times are fairly common. The species has not been reported from Labrador.

The larva is a solitary defoliator on trembling aspen (*Populus tremuloides*) and is also recorded as feeding on white birch (*Betula papyrifera*), willow (*Salix* spp.), and balsam poplar (*Populus balsamifera*). When fully grown it is green with white dorsal, subdorsal, and lateral lines, white tubercles and white, black-ringed spiracles. The head is yellowish green.

Genus *Bellura* Walker

B. diffusa (Grote)

BROWNTAILED DIVER

Plate 21, 11

The browntailed diver is found in Newfoundland, Quebec, and Ontario, south to Maine and New Jersey, and west to Michigan and Illinois. It occurs

frequently in Newfoundland but never in large numbers. Adults have been taken at St. John's, Kilbride, and Colinet from early July to early August. The species does not occur in Labrador.

The slender larva is unique in that the 9th segment is only half as high as the 8th and the spiracles are turned backward and overhang the opening, enabling the larva to breathe under water. The early instar larva is a leaf miner, and later a borer in the petioles of the yellow pond-lily (*Nuphar* spp.). The species is single brooded and pupation occurs within the petiole, near the water level.

Genus *Pyrrhia* Hübner

P. umbra (Hüfnagel)

BORDERED SALLOW

Plate 21, 12

The bordered sallow is a circumpolar species, found throughout southern Canada and the northern United States. In Newfoundland, adults have been taken at Kilbride, South Branch, and Tompkins, where moths are in flight from early July to late August. The species has not been recorded in Labrador.

Hardwick (1970*b*) reported that the larva was a general feeder on flowers and fruits, primarily those of herbaceous plants.

The larva is about 30 mm long and 5 mm wide at the middle, tapering posteriorly. The skin bears short spinules growing from an enlarged base. The color of the skin may be white with orange markings, white with black markings in varying degrees with or without orange markings, or green throughout. The head is pale brown, marked with black. The larva feeds on monkshood (*Aconitum* spp.), cabbage (*Brassica* spp.), alder (*Alnus* spp.), and balsam poplar (*Populus balsamifera*).

P. exprimens (Walker)

Plate 21, 13

This species is distributed from Newfoundland, Nova Scotia, Maine, and Ontario west to Alberta and south to New York and Texas. It is rare in Newfoundland, where a single larval specimen taken at St. George's by the Forest Research Laboratory in 1958 emerged as an adult 3 March 1959. It has not been recorded from Labrador. The species is similar to *P. umbra*, but may be distinguished from it by the dark brownish border of the hindwing.

The larva varies in color from a bluish white with yellow brown lateral stripes to drab pink with orange lateral stripes. It is a solitary defoliator on balsam poplar (*Populus balsamifera*), trembling aspen (*Populus tremuloides*), willow (*Salix* spp.), rose (*Rosa* spp.), and plum (*Prunus* spp.).

Genus *Helicoverpa* Hardwick

H. zea (Boddie)

CORN EARWORM, BOLLWORM, TOMATO FRUITWORM

Plate 21, 14

This species is widely distributed throughout the world and occurs in nearly every part of Canada and the United States where corn is grown. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, and Topsail, where moths are in flight from early July to early September.

The larva is a serious pest of sweet corn, tomatoes, cotton, and many other crops. Beirne (1971) stated that the species is recorded as causing harm in corn-growing areas of Canada from Newfoundland to British Columbia, and in some years has infested the total crops of small plots in Newfoundland. It is a strong-flying immigrant from the south and does not usually survive the winter in Canada. The larva is about 30 mm long and 5 mm wide at the middle, tapering posteriorly. The skin bears short spinules and the general color varies from red, maroon, orange, yellow, and green to nearly black. The head, of the same color as the body, is often flecked with brown and sometimes reticulated with white, or rarely with black, markings.

Genus *Lithacodia* Hübner

L. bellicula Hübner

Plate 21, 16

This species is distributed from eastern and central parts of Canada south to Maine, New York, Florida, Colorado, and New Mexico. It is rare in Newfoundland but adults have been taken at Gander and Eddies Cove West, where the moths are in flight from early to late July. The species is said to be common on bogs. It has not been recorded from Labrador.

Details of the immature stages in Newfoundland are not available.

L. albidula (Guenée)

Plate 21, 17

This small cream-colored noctuid ranges from Eastern Canada and the Atlantic States west to the Pacific. It is widely distributed and common in

Newfoundland, where adults have been taken at St. John's, Mt. Pearl, Kilbride, Gander, Springdale, Steady Brook, Lomond, Woody Point, Stephenville, Stephenville Crossing, St. George's, Piccadilly, South Branch, Doyles, Tompkins, Port aux Basques, Burgeo, Grand Bruit, and Cinq Cerf River. The moths are in flight from mid-June to late July and usually frequent open, grassy places. They are not found in Labrador.

The larva is about 23 mm long and 2.5 mm wide at the middle, tapering posteriorly. It is smooth skinned, and soft gray in color, sometimes tinged with pink. The head is dull white and smooth, and has black reticulations. The larva feeds on grasses in moist localities.

L. carneola (Guenée)

Plate 21, 18

This small colorful pink and black noctuid is found throughout Eastern Canada, extending south to New York and Georgia and west to Saskatchewan and Colorado. It is rare in Newfoundland, and a single specimen taken by Krogerus at South Branch, 2 July 1949, is the only record for the species. It is not recorded from Labrador.

The larva is yellowish brown with an underlying greenish tint, and darker middorsal and lateral stripes. The upper half of the head is spotted with brown, and has a vertical clear band on the front. It feeds on dock (*Rumex* spp.) and smartweed (*Polygonum* spp.).

Genus *Nycteola* Hübner

N. frigidana (Walker)

Plate 21, 19

This small bluish ash gray noctuid occurs across Canada from Newfoundland to British Columbia, in the northern parts of the United States, and south as far as Virginia. It is generally rare in Newfoundland and is not recorded from Labrador. Adults have been taken at Bishop's Falls and Buchans and Krogerus (1954) reported taking larvae at Corner Brook, 16 August 1949.

The larva is about 22 mm long, 2.5 mm wide at the middle, smooth skinned, and green in color without markings. The spiracles are pale with a pale brown rim and the head is plain green. The larva feeds on willow (*Salix* spp.), is single brooded, and overwinters as a pupa.

N. cinereana Neumoegen & Dyar

Plate 33, 20

Prentice (1962) stated that this species occurred in Newfoundland, throughout most of Ontario, Manitoba, and Saskatchewan, and in southern British Columbia. It is similar to *N. frigidana* but the ground color is paler and the black shades are rarely present. In addition, the midcostal area of the forewing is often somewhat darker, and the hindwing slightly paler. Adults have been taken at Grand Falls and Corner Brook. They have not been found in Labrador.

The larva is usually a solitary feeder on balsam poplar (*Populus balsamifera*), and trembling aspen (*Populus tremuloides*) but when abundant may form a web and feed as a colony.

Genus *Caloplusia* Smith

C. ignea simulans McDunnough

Plate 21, 21

This subspecies occurs in Labrador, northern Quebec, and the White Mountains of New Hampshire, but has not been recorded from Newfoundland. It was described from specimens taken in Labrador at Rocky Bay, 17 July 1915. Four additional specimens were taken at Knob Lake by Munroe, 17–27 July 1948. Packard (1888) reported this moth and stated it was prevalent at the Moravian Stations in Labrador.

Genus *Syngrapha* Hübner

S. paralis (Hübner)

Plate 22, 21

This species is found in arctic regions of North America and south as far as Labrador and Alberta, and also in arctic areas of Europe. It is various shades of dull gray in color with a black brown median patch on the forewing below the discal cell. The hindwing is blackish with a vague but contrasting whitish postmedial band. The species was reported in Labrador by Möschler (1860) and was recorded by Packard (1888) as being prevalent at all the Moravian Stations in Labrador. It was also collected on a mountain near Knob Lake, but has not been recorded from Newfoundland.

Details of the immature stages in Labrador have not been recorded.

S. alticola (Walker)

Plate 21, 20

This species is found in Labrador, Quebec, and Alberta. A single adult was taken at Knob Lake by Munroe, 22 July 1948, and is the only

representative of the species to date. It was also reported, however, by Möschler in 1860 from Labrador, although a specific location was not given.

Details of the immature stages of this species in Labrador are not available.

S. microgamma nearctica Ferguson

Plate 21, 22

The species is distributed from Newfoundland, Nova Scotia, and Maine west to British Columbia. In Newfoundland, adults of *S. m. nearctica* have been taken at St. John's, Mt. Pearl, Kilbride, and Tompkins, where moths are in flight from late June to mid-July. The species is considered rare and is not recorded from Labrador. Ferguson (1954) reported that it flew by day on bogs in Nova Scotia and was extremely hard to capture.

Details of the immature stages in Newfoundland are not available.

S. montana (Packard)

Plate 21, 23

This species occurs from Labrador, Quebec, and Ontario west to Saskatchewan and south to the mountains of Maine and New Hampshire. In Labrador, adults have been collected at Cartwright, where moths are in flight from late July to early August. They have not been recorded from Newfoundland.

Details of the immature stages in Labrador are not available.

S. diasema (Boisduval)

Plate 21, 15

This Arctic species is found in the New and Old Worlds. It occurs in Labrador, northern Ontario, and the Yukon (where it is known as *S. borea*). It is also found in Lapland. In Labrador, adults have been taken at Hopedale and Knob Lake, where at times they are fairly common. The moths are in flight from late July to late August. They are not recorded from Newfoundland.

Details of the immature stages in Labrador are not available.

S. rectangula (Kirby)

Plate 22, 2

This species is distributed across Canada from Newfoundland to British Columbia, and south to Maine and the central United States. In Newfound-

land, adults have been taken at St. John's, Mt. Pearl, Kilbride, Victoria Road, Clarenville, Gambo, Gander, Glenwood, Lewisporte, Millertown Junction, Kitty's Brook, Cow Head, Pynns Brook, North Branch Road, Tompkins, and Doyles. The moths are in flight from early July to early September and are common at times in certain localities. The species has not been reported from Labrador.

The larva is about 22 mm long and 4 mm wide at the middle, tapering posteriorly. The skin bears minute spinules and is generally green with strong, sharply defined white lines. Its head is green and unmarked. The larva feeds on balsam fir (*Abies balsamea*), white spruce (*Picea glauca*), and hemlock (*Tsuga* spp.).

S. u-aureum (Guenée)

Plate 22, 3

This species occurs from Newfoundland and Labrador to Churchill, Man., and probably to Greenland and Iceland. In Newfoundland, adults have been taken at St. John's, Kilbride, Mt. Pearl, Colinet, Lethbridge, Gander, Lewisporte, Pynns Brook, Tompkins, and St. Anthony. The moths are in flight from mid-July to mid-August. In Labrador, adults have been taken at Hebron, Cartwright, and Hopedale, where moths are in flight from late July to mid-September.

The larva is said to feed on blueberry (*Vaccinium* spp.).

S. alias (Ottolengui)

Plate 22, 4

This species occurs from coast to coast in Canada, in the New England States, and south to New York. It is widely distributed in Newfoundland and is common in some localities but is not recorded from Labrador. Adults have been taken at St. John's, Mt. Pearl, Portugal Cove, Come By Chance, Gambo, Gander, Kitty's Brook, Pynns Brook, Cow Head, Port au Choix, South Brook, Jeffrey's, Searston, and Tompkins. The moths are in flight from early July to early September.

The larva is identical with *S. rectangula*. It is a solitary defoliator on white and black spruce (*Picea* spp.), balsam fir (*Abies balsamea*), and horse chestnut (*Aesculus hippocastanum*).

S. interrogationis (Linnaeus)

Plate 22, 5

This species is found from Labrador to Alaska. It also inhabits northern Europe and mountainous areas south to the Pyrenees. In Labrador, adults

have been taken at Cartwright, Hopedale, and Goose Bay, where the moths are in flight from early August to mid-September. They are not found in Newfoundland.

The larva has a double whitish middorsal line, several wavy and broken subdorsal lines, and a broad spiracular line on which the white, black-ringed spiracles lie. It feeds on blueberry (*Vaccinium* spp.).

S. altera variana (Ottolengui)

Plate 22, 6

This subspecies occurs in the eastern and central areas of Canada and in the northern Atlantic States. In Newfoundland, adults have been taken at St. John's, Gander, and Cow Head, where moths are in flight from early to late August. A single specimen was taken at Knob Lake by Munroe, 1 August 1948, indicating that *S. a. variana* also occurs in Labrador.

Details of the immature stages in Newfoundland and Labrador are not available.

S. octoscripta (Grote)

Plate 22, 7

This species is distributed across the entire continent from Newfoundland and Labrador to Alaska, and ranges south to Washington and the mid Atlantic States. In Newfoundland, adults have been taken at St. John's, Kilbride, Lewisporte, Kitty's Brook, Cow Head, Port au Choix, Eddies Cove West, St. Anthony, Corner Brook, and Tompkins. The moths are in flight from late July to late August. Adults have also been collected in Labrador at Hopedale, Hamilton Inlet, Matamek River, and Goose Bay, where moths are in flight from mid-August to mid-September. Although widely distributed in Newfoundland and Labrador, the species is never common.

The larvae are said to feed on blueberry (*Vaccinium* spp.).

S. surena (Grote)

Plate 22, 8

This species is found in Newfoundland, Labrador, northern Quebec, and northern Ontario. In Newfoundland, two adults were taken at Colinet, 12 and 18 August 1962, and in Labrador two were taken at Hopedale by Perrett, 15 and 18 August 1925. Although this moth is rare, it is probably more widely distributed than is presently indicated.

Details of the immature stages in Newfoundland and Labrador are not available.

S. epigaea (Grote)

Plate 22, 9

This beautiful moth is distributed from Newfoundland, Nova Scotia, Maine, Massachusetts, and New York west to British Columbia and Colorado. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Goulds, Colinet, Gambo, Gander, Glenwood, Millertown Junction, Kitty's Brook, Pynns Brook, Cow Head, Bottom Brook, and Tompkins. The moths are in flight from mid-July to late August. The species has not been reported from Labrador.

Details of the immature stages in Newfoundland are not available.

S. selecta (Walker)

Plate 22, 11

This species extends throughout Canada and the northern United States. In Newfoundland, adults have been taken at Kilbride, St. John's, Mt. Pearl, Gambo, Gander, Lewisporte, Buchans Junction, Kitty's Brook, Spruce Brook, Pynns Brook, Cow Head, Port au Choix, St. Anthony, Fischells Brook, Jeffrey's, and Tompkins. The moths are in flight from early July to early September. In Labrador, adults have been taken at Matamek River and Goose Bay, where moths are in flight from late July to early September. Specimens taken at Matamek River are now in the Canadian National Collection, labeled 1931. There is no such official name as Matamek River; it is thought to be an old Indian name for a small river near the North West River in Labrador.

The larva is indistinguishable from that of *S. rectangula*. It feeds on white spruce (*Picea glauca*), balsam fir (*Abies balsamea*), and pine (*Pinus* spp.).

Genus *Anagrapha* McDunnough

A. falcifera (Kirby)

CELERY LOOPER

Plate 22, 1

This species occurs throughout Canada from Newfoundland and Labrador to British Columbia, and in the United States from Maine to Oregon and south to Texas. In Newfoundland, adults have been taken at Harmon Field, South Branch, and Port aux Basques, where the moths are in flight from mid-June to early August. In Labrador, two specimens were taken by McAlpine at Hebron, 10 August 1954.

The larva is about 30 mm long and 5 mm wide at the middle. The green skin bears small spinules. The middorsal, subdorsal, and spiracular lines are

white, the spiracles are white, ringed with black, and the head is green and unmarked. The larva feeds on celery (*Apium* spp.), cabbage (*Brassica* spp.), lettuce (*Lactuca* spp.), corn (*Zea* spp.), and sugar beet (*Beta* spp.).

Genus *Autographa* Hübner

A. ampla (Walker)

Plate 22, 10

This species is distributed across Canada from Newfoundland to British Columbia, and in the United States from Maine to Colorado, Washington, and Oregon. It is rare in Newfoundland and is not found in Labrador. Adults have been taken at Gander, Pynns Brook, Corner Brook, and St. John's, where the moths are in flight from mid-July to mid-August.

The larva is about 30 mm long, 5 mm wide at the middle, and widens posteriorly to segment 8. The dark green skin bears minute, rounded granules. The middorsal line is strong and white and there is a yellowish line above the white spiracles. The head is green and unmarked. The larva feeds on alder (*Alnus* spp.), wild cherry (*Prunus* spp.), willow (*Salix* spp.), and trembling aspen (*Populus tremuloides*). The species is single brooded and overwinters as a partly grown larva.

A. bimaculata (Stephens)

Plate 22, 14

This species ranges from the Atlantic Provinces and the New England States west to the Rocky Mountains and New Mexico. The species is widely distributed in Newfoundland (Fig. 29), where it is at times locally common, but is not recorded from Labrador.

The larva is pale green, tapers a little anteriorly, and has a dark middorsal line, and a white lateral line that widens in the middle of the segments. The species probably hibernates as a partly grown larva and is single brooded.

A. mappa (Grote & Robinson)

Plate 22, 15

This species occurs in eastern, central, and western parts of Canada, and in the northeastern United States. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Gander, Lewisporte, Kitty's Brook, Port au Choix, Pynns Brook, Corner Brook, St. George's, Doyles, and Tompkins. The species has not been recorded from Labrador.

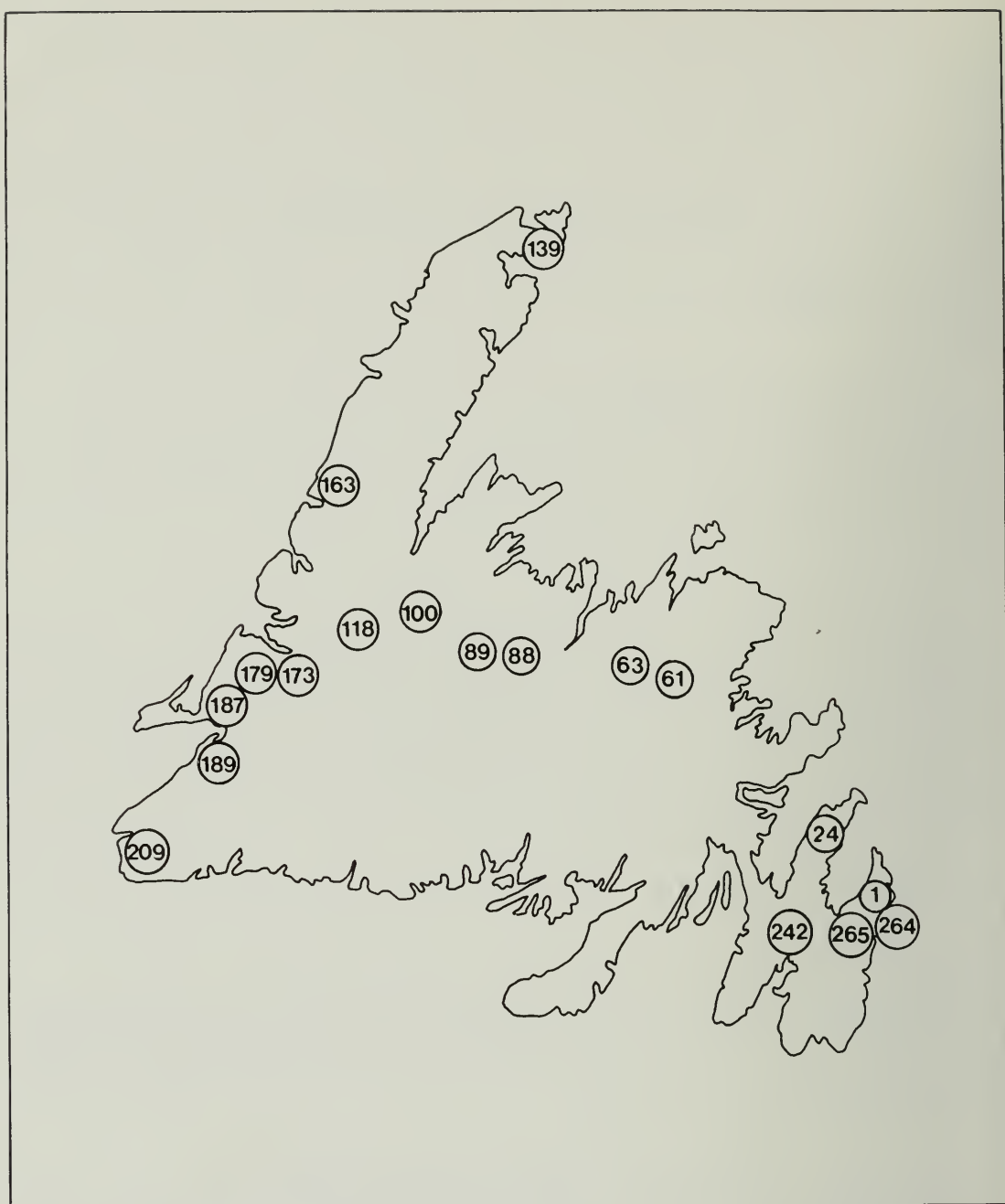


Fig. 29. Distribution of *Autographa bimaculata* (Stephens) in Newfoundland.

The larva is about 30 mm long and 5 mm wide at the middle. The skin bears minute rounded granules, is dark green in color with white flecks on the underside, and white subdorsal and lateral stripes. The larva feeds on stinging nettle (*Urtica* spp.). The species is single brooded.

A. pseudogamma (Grote)

Plate 22, 20

This species occurs from Newfoundland, Nova Scotia, and Maine west to Alaska, and sporadically south to Arizona. In Newfoundland, adults have been taken at St. John's, Kilbride, Corner Brook, St. Anthony, St. David's, and Tompkins, where moths are in flight from early July to late August. In Labrador, adults have been taken at Cartwright and Hopedale, where moths are in flight from early to mid-August. The species was first reported from Newfoundland as the form *freya* Strand (Draudt, in Seitz 1924).

The immature stages in Newfoundland and Labrador have not been clearly defined.

A. flagellum (Walker)

Plate 22, 17

This species ranges from Newfoundland, Nova Scotia, and Maine west to Alberta. In Newfoundland, adults have been taken at St. John's, Gander, Cow Head, Eddies Cove West, St. John Island, and St. Anthony. The moths are in flight from mid-July to late August. The species is widely distributed but is rare in Newfoundland and not reported from Labrador.

Details of the immature stages in Newfoundland are not available.

Genus *Trichoplusia* McDunnough

T. ni (Hübner)

CABBAGE LOOPER

Plate 22, 12

This very important economic species is known to occur from Newfoundland to British Columbia, south to California and also in the tropics. It is not reported from northern Canada. Summer migration from the south may account for its wide distribution in southern areas of Canada. In Newfoundland, adults have never been taken in night light traps but were reared from larvae infesting cabbage and broccoli at St. John's and Grand Falls in 1978. Larvae were reared under laboratory conditions and moths emerged in mid-September.

The larva, commonly known as the cabbage looper, is about 30 mm long, 4 mm broad at the middle and tapering posteriorly. It is generally green in color with minute rounded granules on the skin. The middorsal, subdorsal, and lateral lines are white and the spiracles pale with a brown rim. It overwinters as a pupa that is not hardy in cold climates. The larva feeds on, and is often injurious to, members of the cabbage family. Beirne (1971) stated that this species is normally the third most important pest of cabbage and related plants.

Genus *Chrysaspidia* Hübner

C. putnami (Grote)

Plate 22, 18

This pretty gold and brown moth is known from Newfoundland, Nova Scotia, and Maine west to British Columbia and south to Oregon, California, and Mississippi. Forbes (1954) recorded it as also occurring in Labrador. In Newfoundland, adults have been taken at Colinet, Mt. Pearl, St. John's, Carbonear, Gander, Lewisporte, Pynns Brook, Tompkins, and Doyles. The moths are in flight from mid-June to early August and are considered uncommon.

The larva is about 35 mm long and 5 mm wide at the middle, tapering posteriorly. It is generally green in color and has minute dark spinules on the skin and white middorsal, subdorsal, and lateral lines. The head is green and faintly freckled with black. The larva feeds on grasses and hibernates when partly grown.

C. venusta (Walker)

Plate 33, 5

This species is distributed from Newfoundland, Nova Scotia, and Maine west to Alberta and south to the District of Columbia. In Newfoundland, a single adult specimen was taken at Tompkins, 14 August 1975. The species has not been recorded from Labrador.

The larva feeds on swamp sedges or grasses in very wet areas.

Genus *Plusia* Ochsenheimer

P. aereoides Grote

Plate 33, 4

This species is widely distributed from Newfoundland, Nova Scotia, and Maine west to Vancouver Island and south to Texas. In Newfoundland, a single adult was taken at Tompkins, 13 August 1975. The species is considered rare in Newfoundland and has not been recorded from Labrador.

The larva is humpbacked and green with white markings. It feeds on aster (*Aster* spp.) and meadowsweet (*Spiraea* spp.).

Genus *Pseudeva* Hampson

P. purpurigera (Walker)

Plate 22, 13

This species ranges from Eastern Canada and New England west to Alberta, Colorado, and New Mexico. It is rare in Newfoundland and is not recorded from Labrador. Adults have been taken at Glenwood, Kitty's Brook, Pynns Brook, and Tompkins, where the moths are in flight from mid-July to late August.

The larva is translucent green with double white middorsal and oblique lateral lines. Abdominal segments 1–3 and 8 are somewhat swollen with enlarged tubercles. The larva feeds on meadow rue (*Thalictrum* spp.).

Genus *Chrysanympa* Grote

C. formosa (Grote)

Plate 22, 16

This delicate colorful species is distributed from Newfoundland, Nova Scotia, and Maine west to Manitoba and south to North Carolina. It is rare in Newfoundland and is not recorded from Labrador. Adults have been taken at St. John's, Gander, Kitty's Brook, and Tompkins, where the moths are in flight from mid to late August.

The fully grown larva is high and truncate posteriorly. It is light green in color and has a waxy middorsal line and pale indentations. It feeds on blueberry (*Vaccinium* spp.). The cocoon is distinctive, translucent, and interspersed with little masses of dense white silk.

Genus *Catocala* Schrank

C. ilia (Cramer)

ILIA UNDERWING

Plate 23, 1

This beautiful underwing is found in Newfoundland, Nova Scotia, Quebec, Maine, and Ontario, west into Minnesota, and south to Kansas, Missouri, Texas, and Florida. Forbes (1954) reported its occurrence in Newfoundland (Draudt, *in* Seitz 1924). A single specimen was taken at Tompkins, 22 August 1976. It has not been recorded from Labrador.

The larva is about 55 mm long and 8 mm wide at the middle, tapering posteriorly. It is generally pale gray and smooth skinned. The longitudinal

stripes are very narrow and not of a contrasting color. The underside is somewhat rose colored with black spots. The larva feeds on oak (*Quercus* spp.).

*C. relict*a Walker

WHITE UNDERWING

Plate 23, 2

This species is found from Newfoundland, Nova Scotia, and the Hudson Bay area west to the Pacific and south to Pennsylvania and Arizona. In Newfoundland, adults have been taken at St. John's, Clarenville, Grand Falls, Pynns Brook, Corner Brook, and St. George's where the moth is in flight from late June to early October. The species is considered rare in Newfoundland and is not recorded from Labrador.

The larva is about 60 mm long and 7 mm wide at the middle, tapering posteriorly. It is a pale greenish gray and smooth skinned; the usual light and dark stripes are almost completely absent. Its head is brownish and coarsely granulose. It feeds on willow (*Salix* spp.) and poplar (*Populus* spp.). The species is single brooded and overwinters as an egg.

C. unijuga Walker

Plate 23, 3 (female)

This beautiful underwing is widely distributed, ranging from Eastern Canada to the Northwest Territories and from New England through the central United States to Missouri, Colorado, and North Carolina. In Newfoundland, adults have been taken at Tompkins, Cow Head, Port au Choix, and Doctors Brook from late July to mid-August. The species is rare in Newfoundland and is not recorded from Labrador.

The larva is about 50 mm long and 6 mm wide at the middle, smooth skinned, and generally dark gray in color. The middorsal stripe is pale and very irregular. The underside is pinkish with segmental dark spots. The head has black side stripes broadly connected across the vertex. The larva is a solitary defoliator on poplar (*Populus* spp.) and willow (*Salix* spp.).

C. briseis Edwards

BRISEIS UNDERWING

Plate 23, 4 (female)

This colorful species ranges from Newfoundland and Nova Scotia west to the Mackenzie River area and British Columbia, and from the New England States west to Michigan, Illinois, Wisconsin, and Colorado. In Newfoundland, adults have been taken at Pynns Brook and Cow Head, where moths are in flight from early August to early September. The species is considered rare in Newfoundland and is not recorded from Labrador.

The larva is gray in color with lines in two shades, orange dorsal tubercles, and a well developed rusty or purplish hump on the 5th abdominal

segment. The underside is purplish pink with strong black dots and the head has black side lines connected across the vertex. The larva feeds on poplar (*Populus* spp.) and willow (*Salix* spp.).

Genus *Caenurgina* McDunnough

C. crassiuscula (Haworth)

GRASS LOOPER

Plate 24, 1

This species occurs generally across North America from the Atlantic to the Pacific and south to Mexico. In Newfoundland, adults have been taken at St. John's, Kilbride, Paddys Pond, Colinet, Cow Head, St. Pauls, Adies Pond Road, St. Anthony, Corner Brook, Harmon Field, Cinq Cerf River, Grand Bruit, Burgeo, and Grandy Brook. The moths are in flight from mid-May to late August but are never common. The species has not been reported from Labrador.

The larva is about 35 mm long and 3.5 mm wide at the middle, tapering posteriorly. Its color varies from pale gray to dark brown or nearly black and it is smooth skinned. There are prominent pale brownish or pink lines middorsally, subdorsally, and subventrally. The larva feeds on clover (*Trifolium* spp.), lupines (*Lupinus* spp.), and grasses.

Genus *Erebus* Latreille

E. odora (Linnaeus)

BLACK WITCH

Plate 24, 5

This large moth normally inhabits tropical areas and does not breed north of the Gulf of Mexico. However, it often flies north in the fall and has been taken in Newfoundland, Nova Scotia, Quebec, Ontario, Saskatchewan, and Alberta. Morris (1973) recorded a specimen from St. John's, 27 August 1970, and a find by W. J. Hintenberg at Spruce Brook, 15 July 1929.

According to Crumb (1956) the larva is about 70 mm long and 11 mm wide at the middle, and is generally dark gray, tinged with brown. It has a large dorsal black patch on the 1st abdominal segment, enclosing a round pale spot. It feeds on trees of the *Acacia* group.

Genus *Scoliopteryx* Germar

S. libatrix (Linnaeus)

HERALD MOTH, SCALLOPED OWLET

Plate 24, 4

This spectacularly colored moth has a worldwide distribution and occurs throughout North America. It is widely distributed in Newfound-

land, but is never common. Adults have been taken at St. John's, Mt. Pearl, Kilbride, Gambo, Glenwood, Westport, Fleur de Lys, Fortune Harbour, Southeast Arm, Hampden, Hawkes Bay, Pynns Brook, Corner Brook, St. George's, and South Branch. The moths are in flight from mid-June to late August. In Labrador, adults have been taken at Goose Bay, 6–10 August 1948.

The larva is about 40 mm long and 5.5 mm wide at the middle, tapering posteriorly. It is smooth skinned and green in color with a yellow or reddish spiracular line. It feeds on willow (*Salix* spp.), and sometimes on *Populus* spp. Pupation takes place in a thin cocoon between the leaves.

Genus *Bomolocha* Hübner

B. bijugalis (Walker)

Plate 24, 3

This species is distributed from Newfoundland, Nova Scotia, and Maine south to Florida, and west to the Rocky Mountains. In Newfoundland, Krogerus reported taking adults at Corner Brook, Lomond, and Glenburnie during the period 11–19 July 1949. No further specimens have been taken. The species has not been recorded from Labrador and is considered rare in Nova Scotia.

The larva is about 25 mm long, 3 mm wide at the middle, smooth skinned, and dark green in color. The spiracles are orange with a brown rim and the head is green with sparse black flecks along the dorsal line and on the occiput. The larva feeds on dogwood (*Cornus* spp.).

Genus *Lomanaltes* Grote

L. eductalis (Walker)

Plate 24, 2

This species is known from Newfoundland and Nova Scotia to Minnesota and south to New York and Pennsylvania. It is rare in Newfoundland and has not been recorded from Labrador. Adults have been taken at Gander, Stephenville Crossing, Woody Point, South Branch, and Doyles, where the moths are in flight from early to late July.

The larva is a solitary defoliator on alder (*Alnus* spp.).

Genus *Rivula* Guenée

R. propinqualis Guenée

Plate 24, 6

This small noctuid is distributed from Newfoundland, Nova Scotia, and the Atlantic States west to Texas and the Rocky Mountains. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Georges Lake, Cow Head, Doctors Brook, and Eddies Cove West, where the species is abundant at times. Moths are in flight from mid-July to late August. It has not been recorded from Labrador.

Details of the immature stages in Newfoundland are not available.

Genus *Epizeuxis* Hübner

E. americalis (Guenée)

Plate 24, 7

This colorful small noctuid ranges from Labrador, Newfoundland, Nova Scotia, and Maine south to Florida and Texas and west to the Pacific. In Newfoundland, where the species is rare, adults have been taken at Mt. Pearl, Colinet, St. George's, and Woody Point. The moths are in flight from mid-July to mid-August. In Labrador, adults have been taken at Goose Bay from 20 July to 14 August.

The larva is about 18 mm long and 2 mm wide at the middle, and is generally dull gray in color, sometimes suffused with pink. The skin is almost unpigmented and has small isolated round granules interspersed with larger ones. The spiracles are dark and the head is brown with no markings. Crumb (1956) stated that the larvae live in anthills and feed on debris, including the needles and dead leaves of various trees.

E. aemula (Hübner)

Plate 24, 8

This species is known to occur from the Atlantic Provinces, Ontario, and Maine south to Florida and west to British Columbia and New Mexico. In Newfoundland, where it is abundant only in some areas, adults have been taken at St. John's, Mt. Pearl, Eddies Cove West, and Doyles. The moths are in flight from late July to mid-August. The species has not been recorded from Labrador.

The larva is about 19 mm long and 12.6 mm wide at the middle. The skin is set closely with small round granules, and the color varies from darkish gray tinged with pink to rosy pink throughout. The spiracles are

brownish with black rims and the head is brownish and closely reticulate. The larvae usually feed on dead leaves on the forest floor, but can also be found in webs on the foliage of spruce, where they may have been feeding on dead needles or lichens. They have also been reported as damaging corn fodder in Mississippi.

Genus *Chytolita* Grote

C. petrealis Grote

Plate 24, 9

This species is distributed throughout the eastern areas of Canada and the United States, south as far as Virginia and Tennessee, and west to Montana. It is reported to be common in Nova Scotia and Maine. It is widely distributed in Newfoundland but considered uncommon. Adults have been taken at Gander, Millertown, Lomond, Woody Point, Corner Brook, Georges Lake, and Stephenville Crossing. Forbes (1954) reported that the species frequents swamps and acid bogs. It is not found in Labrador.

The larva is said to feed on tamarack (*Larix* spp.), but little is known of its habits except that it is a solitary defoliator.

Genus *Philometra* Grote

P. metonalis (Walker)

Plate 24, 10

This small noctuid is distributed from Newfoundland, Nova Scotia, and Quebec west to British Columbia and south to Maine, North Carolina, and Tennessee. It is rare in Newfoundland and is not found in Labrador. Adults have been taken at St. John's, Gander, Lomond, Glenburnie, Corner Brook, and Tompkins, where the moths are in flight from mid-July to mid-August.

The larva is about 20 mm long and 2.4 mm wide at the middle, and is dark gray in color. The skin bears an irregular mixture of fine and coarse granules. There is a dorsal line and a wider but less distinct lateral one. The spiracles are black and the head is pale but closely reticulated with dilute black. The larva feeds on lettuce (*Lactuca* spp.), dandelion (*Taraxacum* spp.), and dead grass and leaves, and pupates among the roots of grass.

Genus *Palthis* Hübner

P. angulalis Hübner

Plate 24, 11

This small noctuid occurs in eastern and central parts of Canada and the United States, south to Washington, D.C., Texas, and the Gulf of

Mexico. It is common in central and western Newfoundland, but is not recorded from eastern areas or from Labrador. Adults have been taken at Gander, Corner Brook, Steady Brook, Lomond, Eddies Cove West, Port au Choix, and South Branch. The moths are in flight from early July to early August.

The larva is about 22 mm long and 3 mm wide at the middle, tapering posteriorly, with a dorsal hump on the 8th abdominal segment. It is dusky brown, tinged with pink, and the skin bears coarse granules. It has a dark middorsal line and small, dark, shield-shaped dorsal markings on each segment. The spiracles are black with pale centers and the head is brown with black reticulations. The larva, which is the hibernating stage, feeds on serviceberry (*Amelanchier* spp.), blackberry (*Rubus* spp.), and alder (*Alnus* spp.).

Genus *Schrankia* Hübner

S. turfosalis Wocke

MARSH OBLIQUE-BARRED (BR.)

(Not illustrated)

Krogerus (1954) reported this species from Newfoundland as a first record for North America. It has a wide range across the northern parts of Europe and Asia, where it is found on peat bogs.

This small noctuid has a wingspan of approximately 23 mm. The forewings are a whitish ocherous color, sprinkled with brown. The first of three dark cross lines is often indistinct, the second is bent under the black central dot, and the third runs obliquely to the tip of the wing. The last two have whitish edges.

In Newfoundland, adults have been taken at Corner Brook, Lomond, Woody Point, Glenburnie, Daniel's Harbour, Eddies Cove West, and Kitty's Brook. The moths are in flight from mid-July to mid-August. They have not been found in Labrador.

Nothing is known about the early stages of this species in Newfoundland.

Family NOTODONTIDAE

notodontid moths, prominents

This family contains over 2000 species, many of them found in the wet tropics. Most species are of moderate size, and only a few of the larger ones have a wing expanse of more than 50 mm. The forewings of some notodon-

tids have a prominence or backward projecting lobe on the inner margin which is responsible for the common name of prominents, although in fact more larvae than adults bear these striking prominences. There are 10 known species of this family in Newfoundland and Labrador.

In general appearance, many Notodontidae bear a strong resemblance to the Noctuidae. Their rather stout bodies and their legs, especially the femora, are covered with hair. The wings are strong and not very broad, and the anal angle of the hindwings rarely reaches the end of the abdomen. Notodontids can be easily distinguished from the noctuids by the position of the wing veins. The median vein of their forewings does not arise nearer to the cubitus than to the radial vein, as it does in the noctuids. In addition, their subcostal and first radial veins do not coalesce with the radial sector vein of the hindwing as in the noctuids.

The eggs are upright, usually low or nearly spherical and not strongly sculptured. The larvae resemble noctuid larvae, but almost always the anal prolegs are reduced or modified, and raised when at rest. In some species they are not used for walking. The larvae feed on the leaves of shrubs and trees. The most common species live exposed, but some remain in folded leaves. They may be smooth or covered with hairs; some are humpbacked, and many have spines or fleshy tubercles. They pupate in thin cocoons or in the ground.

Genus *Ichthyura* Hübner

I. apicalis Walker

Plate 25, 1

This species is found from Newfoundland to British Columbia and south to Mexico. In Newfoundland, adults have been taken at St. John's, Kilbride, Gambo, Gander, Glenwood, Millertown Junction, Kitty's Brook, Pynns Brook, Corner Brook, and Tompkins, where they are in flight from early June to early August. Although widely distributed, they are never common and are not recorded from Labrador.

The fully grown larva is a dull yellow brown color, and has three faint dorsal lines and bright yellow brown warts. The species is single brooded and feeds on poplar (*Populus* spp.) and willow (*Salix* spp.).

I. albosigma (Fitch)

Plate 25, 2

This species occurs from Newfoundland to British Columbia but is common in the Prairie Provinces. It ranges south to Maine, New Jersey, and Missouri. In Newfoundland, adults have been taken at Gander, Lethbridge,

Springdale, Pynns Brook, and Bear Cove. The moths are in flight from mid-July to late August and are considered rare. The species has not been recorded from Labrador.

The larva is a solitary defoliator on trembling aspen (*Populus tremuloides*) and willow (*Salix* spp.), and usually feeds within a folded leaf. It is light yellow in color, with a broad smoky lateral and three small dorsal stripes. A black horn on the 1st abdominal segment is two or three times as long as it is thick.

Genus *Notodonta* Ochsenheimer

N. stragula Grote

Plate 25, 3

This species is recorded from Newfoundland, Nova Scotia, Quebec, and Ontario south to Maine, New Jersey, and Pennsylvania and west to Alberta and California. It is represented in Newfoundland by a single larval specimen taken by Krogerus (1954) at Glenwood, 24 August 1949. No additional specimens have been taken or observed since. It has not been recorded from Labrador.

The larva has fleshy humps on its 2nd, 3rd, and 8th abdominal segments. The anterior segments are gray and shaded brown, the posterior segments are mottled with brown, and there is yellow on the sides of the humps. There are double pale dorsal lines and about six oblique pale subdorsal lines on the middle segments. The larva feeds on poplar (*Populus* spp.) and willow (*Salix* spp.).

N. simplaria Graef

Plate 34, 10

This species is known to occur from Newfoundland, Nova Scotia, and Maine west to British Columbia and south to central New York. It is generally considered rare. The moth is dark powdery gray with a wing expanse of 40–55 mm. The terminal, medial, and basal lines on the forewings appear to be waved on wing veins, dark on pale. The hindwing of the male is white, brown-veined, and shaded with very pale gray, except for the posterior third, which is completely gray. The hindwing of the female is mostly light gray. In Newfoundland, adults have been taken at Gander, Glenwood, Millertown Junction, Corner Brook, and Hampden Road. The moths are in flight from mid-May to mid-August. They have not been reported from Labrador.

The larva is similar to *N. stragula*, but is somewhat paler. It is a solitary defoliator on poplar (*Populus* spp.) and willow (*Salix* spp.).

Genus *Phoesia* Hübner

P. rimosa Packard

Plate 25, 4

This beautiful medium-sized moth occurs from Newfoundland, Nova Scotia, and Ontario south to North Carolina and west to California. It is widely distributed in Newfoundland and is at times common. Adults have been taken at St. John's, Kilbride, Gander, Glenwood, Millertown Junction, Gaff Topsail, Kitty's Brook, Corner Brook, Stephenville, Stag Hill, and Tompkins. The moths are in flight from early July to late August. They have not been found in Labrador.

The larva is green, gray, or brown, unicolorous or shaded, and is easily recognized by its sphinxlike appearance. It feeds as a solitary defoliator on trembling aspen (*Populus tremuloides*).

Genus *Lophodonta* Packard

L. ferruginea Packard

Plate 25, 6

This species occurs from Newfoundland, Nova Scotia, Quebec, and Maine south to North Carolina and west to Colorado and eastern Manitoba. In Newfoundland, 12 adults were taken by Hennigar at Gander during the period 5–31 July 1949.

The larva is green, paler on the back, with an oblique pink line on the side of the head, not reaching the vertex, but continuing on the thorax as a lateral pink line and on the abdomen as a yellow line. There is also a double yellow dorsal line. The larva feeds as a solitary defoliator on white birch (*Betula papyrifera*).

Genus *Nadata* Walker

N. gibbosa (J. E. Smith)

Plate 25, 5

This beautiful tan-colored moth occurs from Newfoundland, Nova Scotia, Quebec, and Maine south to Florida and west to California and British Columbia. It is widely distributed in Newfoundland, and adults have been taken at St. John's, Kilbride, Mt. Pearl, Carbonear, Gambo, Gander, Glenwood, Badger, Pynns Brook, St. George's, and Tompkins. The moths are in flight from late June to mid-August. In Labrador, a single specimen was taken by McAlpine at Hebron, 12 August 1954.

The larva is a solitary feeder on white birch (*Betula papyrifera*), willow (*Salix* spp.), maple (*Acer* spp.), and oak (*Quercus* spp.). The species is single brooded and overwinters as a pupa.

Genus *Schizura* Doubleday

S. ipomoeae Doubleday

Plate 25, 15

This species is recorded from Newfoundland west to Saskatchewan, and in the interior of British Columbia. It is also generally distributed throughout the United States. In Newfoundland, the species was taken as a larva by Krogerus (1954) at Corner Brook and Glenwood, 15–23 August 1949. No additional specimens have been recorded.

The larva has a high, soft, forked process on the 1st abdominal segment and paired humps ending in tubercles on the 5th and 8th segments. The thorax is light green and the abdomen is dark brown with a white V on the 5th and 6th segments and some irregular pale shades on the back. The larva feeds on oak (*Quercus* spp.), birch (*Betula* spp.), maple (*Acer* spp.), and other trees.

S. unicornis (J. E. Smith)

Plate 25, 8

The species is generally distributed from Newfoundland to British Columbia, and from Maine to Florida, and west to Georgia, Texas, and Colorado. In Newfoundland, it is widely distributed but never common. Adults have been taken at St. John's, Kilbride, Mt. Pearl, Corner Brook, Georges Lake, and Doyles. The moths are in flight from late June to late August. They are not recorded from Labrador.

The larva is similar to *S. ipomoeae*, but does not have raised tubercles on the 5th abdominal segment. It is a solitary defoliator on white birch (*Betula papyrifera*), willow (*Salix* spp.), alder (*Alnus* spp.), and other trees.

Genus *Gluphisia* Boisduval

G. septentrionalis Walker

Plate 25, 9

This somewhat dull-colored species occurs in Newfoundland, Nova Scotia to Hudson Bay, south to Georgia, and west to the Pacific. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride,

Lethbridge, Terra Nova National Park, Gander, Millertown Junction, and Pynns Brook. The moths are in flight from late June to mid-August but are rare. The species has not been recorded from Labrador.

The larva is light green, but the head is darker and has a black line on each side. The body has a subdorsal yellow line that runs round the edge of the anal plate, and there are often dorsal red spots. The larva feeds on trembling aspen (*Populus tremuloides*), balsam poplar (*Populus* spp.), and other trees. The species is single brooded and overwinters in the pupal stage.

Family LYMANTRIIDAE

tussock moths

Members of this family are medium-sized moths; the male usually has a small body and ample wings, but the female has a heavy body and is sometimes wingless. The male antennae are broadly pectinate to the apex and generally strongly down-curved. The female also often has pectinate antennae. The legs are covered with woolly hairs and this makes them very conspicuous when at rest because the forelegs are then stretched forward. Tussock moths are mostly nocturnal but the males of some species fly in the daytime. Of the 46 recognized species and subspecies that occur in Canada and the United States 35% have been reported as pests, probably a higher proportion of economically important species than any other family of Lepidoptera in our fauna (Ferguson 1978). Six species are found in Newfoundland.

The larvae of the tussock moths are among the most beautiful of our caterpillars. They are covered with brightly colored tufts of hairs, which account for the common name. A typical larva has a hairy body, several conspicuous tufts of hairs on the dorsal area of the abdomen, often containing poison spinules, and long pencils of hairs at each end of the body. These hairy larvae may be distinguished from those of all other families in North America by the presence of dorsal glands, one in the middle of each of the 6th and 7th segments. The larva pupates in a thin cocoon, often incorporating some of the hair.

The eggs are laid in a cluster, frequently on top of the cocoon and are usually covered with hair from the large anal tuft, a hardened frothy substance, or both.

Genus *Gynaephora* Hübner

G. rossii (Curtis)

Plate 25, 16

This species occurs in northern areas including Labrador, Frobisher Bay, Baffin Island, the Northwest Territories, and Alaska. It has also been

taken on the tops of mountains to the south, including Mt. Albert, Que.; Mt. Katahdin, Maine; and Mt. Washington. The species has not been recorded from Newfoundland and is rare in Labrador. Two specimens taken at Hopedale by Perrett, 23 June and 4 August 1923, are the only records available.

The larva is black but appears gray because the matted and feathery tufts of hair have gray tips, except for one yellow tuft in each segment. The head is gray and the thorax has scattered yellow hairs. The larva feeds on willow (*Salix* spp.), but has also been reared by Brower (1974) on cinquefoil (*Potentilla trifoliata*). Ferguson (1978) reported that the larvae live in one of the severest habitats occupied by arctic insects. They may actually become frozen and development may take up to 11 years; however, this probably varies with conditions.

Genus *Orgyia* Ochsenheimer

O. antiqua nova Fitch

RUSTY TUSSOCK MOTH

Plate 25, 11 and 12

This subspecies is distributed throughout Canada from Newfoundland to British Columbia, and in the United States south to Massachusetts and west to the Pacific. In Newfoundland, Krogerus (1954) reported the species at Carbonear, Torbay, King's Cove, Gander, Glenwood, Southwest Pond, Lomond, Steady Brook, Corner Brook, Spruce Brook, and South Branch. The male moths are in flight from late July to early September, but the females are wingless. The species has not been reported from Labrador. Fergus (1978) referred all North American specimens of *antiqua*, except those from the Pacific Northwest, to the subspecies *nova* Fitch.

The larva is mainly mottled black and light gray with red warts and a black or chestnut-colored head. On young larvae, the first two toothbrush tufts of hair are black and the last two are pale. The larvae feed on various trees and shrubs, but particularly on balsam fir (*Abies balsamea*), tamarack (*Larix* spp.), white spruce (*Picea glauca*), willow (*Salix* spp.), and white birch (*Betula papyrifera*). The species is single brooded and overwinters as an egg. It has been recorded on more than 50 host trees in Canada. It is sometimes abundant, causing conspicuous defoliation. In 1975, about 30 children handling larvae in a biology class at Gander broke out in a hivelike rash that lasted for 48–72 h.

O. leucostigma (J. E. Smith)

WHITE-MARKED TUSSOCK MOTH

Plate 25, 13

In Canada, this species ranges from Newfoundland to Alaska. It is rare in Newfoundland but adults have been taken at St. John's, Mt. Pearl,

Lethbridge, Gander, Boyd's Cove, Grand Falls, Bishop's Falls, Corner Brook, Tompkins, Doyles, and Newmans Cove. The male moths are in flight from mid-August to early October but the females are wingless and have simple antennae. The species has not been recorded from Labrador.

The larva is a general feeder on at least 60 different trees. It is most common on balsam fir (*Abies balsamea*), white birch (*Betula papyrifera*), white spruce (*Picea glauca*), tamarack (*Larix* spp.), and maple (*Acer* spp.). It has a bright red head. The body varies from light green to dark gray, and has a contrasting yellow subdorsal band and cream toothbrush tufts of hair. The species is single brooded and overwinters as an egg in a mass covered with white froth.

Genus *Dasychira* Hübner

D. vagans (Barnes & McDunnough)

Plate 25, 7 and 14

This species occurs from Newfoundland, Nova Scotia, and Ontario west to British Columbia, and south to the Catskill Mountains of New York and North Carolina, and west to Utah. In Newfoundland, adults have been taken at Georges Lake and at Portland Creek by R. Holland (1969). The moths are in flight from early to late July. Ferguson (1978) recognized two subspecies, *D. v. vagans* Barnes & McDunnough in the east and *D. v. grisea* Barnes & McDunnough in the west.

The larva has mostly white hair, mixed with some black hairs, cream or light brown tufts, and single modified hairs. It is a solitary defoliator on trembling aspen (*Populus tremuloides*), willow (*Salix* spp.), birch (*Betula* spp.), oak (*Quercus* spp.), and apple (*Malus* spp.). The species is single brooded and overwinters as a partly grown larva.

D. plagiata (Walker)

PINE TUSSOCK MOTH

Plate 25, 17

This species is generally distributed from Newfoundland west to Alberta. In Newfoundland, adults have been taken at Gander, Burin, Stephenville Crossing, and Doyles, where moths are in flight from late June to early August and at times are locally common. Ferguson (1978) reports the species as occurring at Goose Bay, Labrador.

The larva is a solitary feeder on conifers, including white spruce (*Picea glauca*), balsam fir (*Abies balsamea*), jack pine (*Pinus banksiana*), and tamarack (*Larix* spp.). However, it may be collected and reared successfully on a number of deciduous trees. The species is single brooded and overwinters in the larval stage.

Genus *Leucoma* Hübner

L. salicis (Linnaeus)

SATIN MOTH

Plate 25, 10

This European pest was introduced on the Atlantic and Pacific coasts about 1920 and now occurs in Newfoundland, Nova Scotia, New Brunswick, eastern Quebec, and southern British Columbia. It is also found in the New England States. In Newfoundland, adults have been collected at St. John's, Kilbride, Mt. Pearl, Chamberlains, Carbonear, Lewisporte, Pynns Brook, Corner Brook, Cow Head, and Tompkins. The moths are in flight from early July to late August and at times are locally common. The species has not been reported from Labrador.

The larva has 10 large double cream dorsal patches, a vermiculate pattern of black on large yellowish red warts along the sides, and yellowish hairs. It feeds chiefly on poplar (*Populus* spp.) and willow (*Salix* spp.) and at times may cause extensive defoliation. The species is single brooded and hibernates as a young larva in a silken shelter on the rough bark of its host tree.

Family LASIOCAMPIDAE

tent caterpillar moths and allies (lasiocampids)

This family, as described by Franclemont (1973), is of moderate size and world wide in distribution, but with its greatest development in the tropics. Only two species occur in Newfoundland. The best known representatives of this family are the tent caterpillars and the lappet caterpillars. The adults are stout-bodied, hairy moths of medium size. The antennae are bipectinate to the apex in both sexes, and are from one-quarter to one-half as long as the front wings; the teeth of the antennae of the male are usually much longer than those of the female. The most distinct characteristic that separates this family from others is that there is no frenulum, the hook that joins the hind and forewing in flight; instead, the humeral angle of the hindwing is expanded, and is strengthened by the development of extra veins.

The more common species represent three genera: *Malacosoma*, which includes the tent caterpillars, and *Tolyte* and *Phyllodesma*, which include the lappet caterpillars. The larvae are cylindrical or flattened, and very hairy, with a considerable amount of secondary hair on all parts of the head and body. They feed on the foliage of trees and are often very destructive.

Genus *Malacosoma* Hübner

M. americanum (Fabricius)

EASTERN TENT CATERPILLAR

Plate 26, 1 and 2

The eastern tent caterpillar is distributed from Newfoundland to central Ontario, with the exception of Prince Edward Island. There are also scattered collections in southern Manitoba and Saskatchewan. The species is reported by Prentice (1963) as occurring in central Newfoundland, but no additional specimens have been observed or taken. It does not occur in Labrador.

The fully grown larva is approximately 65 mm long. The head and body are deep black with a white stripe along the back and many short, irregular, brownish markings along the side of each segment. There is also a row of oval pale blue spots nearly surrounded by black on each side. The body is sparsely covered with long, fine light brown hairs. The larvae build tents for shelter and these are common in the forks of wild cherry (*Prunus* spp.) and apple (*Malus* spp.) during June. The species is single brooded and overwinters as an egg.

M. disstria Hübner

FOREST TENT CATERPILLAR

Plate 26, 3 and 4

The forest tent caterpillar is distributed from Newfoundland west to British Columbia and in the adjoining United States. Franclemont (1973) noted that records exist for its occurrence in all states in the USA except Nevada and Arizona. It is rare in the eastern extremes of its range but is abundant in Ontario, Alberta, and British Columbia, where it periodically occurs in large numbers over extensive areas. In Newfoundland, a single male adult was taken by the Forest Research Centre at Georges Lake during July 1951, and Raske (1976) captured eight male moths at Corner Brook, 19 July 1975. The species is considered rare in Newfoundland and is not reported from Labrador.

The fully grown larva is approximately 50 mm long. The head and body are generally pale bluish and there is a row of keyhole-shaped spots along the back. It is a colonial defoliator, but the mature larva frequently wanders and feeds singly on trembling aspen (*Populus tremuloides*), white birch (*Betula papyrifera*), maple (*Acer* spp.), and willow (*Salix* spp.). The cocoon is usually spun in a folded leaf or in crevices in bark. The species is single brooded and overwinters as an egg in a mass of 100–350 entirely encircling a twig.

Family THYATIRIDAE

thyatirids

This is a very small family with only 12 known species, of which 3 occur in Newfoundland. It includes moths of medium size with elongated wings. The front wings are usually slightly widened at the anal angle (Plate 26, 5, 6, and 7) and are generally conspicuously marked with wavy or zigzag lines. The antennae are filiform and are of a velvety texture in the male. The moths are diurnal and when at rest fold their wings on the abdomen in a rooflike manner.

The larvae are hairless and live on the leaves of shrubs and trees. They often conceal themselves in a case made by loosely fastening together leaves or by folding a single leaf. They overwinter in a very thin cocoon within the folded leaves.

Genus *Habrosyne* Hübner

H. scripta Gosse

Plate 26, 5

This colorful species is known to occur from Newfoundland, Nova Scotia, and Maine west to Alberta and Alaska. Forbes (1923) reported it in New York and New Jersey. It is widely distributed but never common in Newfoundland, where adults have been taken at St. John's, Mt. Pearl, Kilbride, Gander, Eddies Cove West, Port au Choix, St. Anthony, Corner Brook, Georges Lake, Stephenville, and Doyles. The moths are in flight from late June to mid-August. In Labrador, adults have been taken at Goose Bay from late July to early August.

The larva has a dull, slightly wrinkled head and feeds on blackberry (*Rubus* spp.) and other members of the Rosaceae family.

Genus *Pseudothyatira* Grote

P. expultrix Grote

Plate 26, 6

This species ranges across Canada and the northern United States from the Atlantic to the Pacific. In Newfoundland, although widely distributed, the species is considered rare. Adults have been taken at St. John's, Mt. Pearl, Kilbride, Badger, Lomond, Corner Brook, Georges Lake, and Doyles. The moths are in flight from mid-June to very early August. The species has not been recorded from Labrador.

The larva is a solitary feeder on white birch (*Betula papyrifera*) and sometimes on mountain ash (*Sorbus* spp.). It is a mottled, dead-leaf brown, with a dark dorsal line and a rather smooth head. The brown back shades gradually into a paler ventral surface.

P. cymatophoroides Guenée

(Not illustrated)

Prentice (1963) reported the species as occurring in scattered collections from forest trees in Newfoundland, New Brunswick, Ontario, Manitoba, and British Columbia. Brower (1974) reported the moth from 45 localities in Maine. In Newfoundland adults have been taken at Corner Brook. The species is considered rare in Newfoundland and is not reported from Labrador.

The larva is a solitary defoliator on birch (*Betula* spp.), alder (*Alnus* spp.), aspen (*Populus* spp.), mountain ash (*Sorbus americana*), apple (*Malus* spp.), and willow (*Salix* spp.). Larvae are most active during August, but may be found in the field from early July to early October.

Genus *Euthyatira* Smith

E. pudens (Guenée)

Plate 26, 7

According to Forbes (1923) this colorful moth is distributed from Newfoundland south to West Virginia and west to British Columbia. In Newfoundland, adults have only been taken at St. John's, where moths are in flight from mid to late June. The species is considered rare in Newfoundland and has not been recorded from Labrador.

The larva is translucent and has four black spots on its head. It lives concealed in a loosely folded leaf and feeds on cornel and red osier dogwood (*Cornus* spp.).

Family DREPANIDAE

drepanids

The members of this family have small, slender bodies, and are known as hooktip moths because of the sickle-shaped apex of the front wings (Plate 26, 9, 10, 11, and 12). However, there is one species in Canada, *Eudeilinia herminiata* (Plate 26, 8), that does not have these typically shaped wings.

The larvae of this family are remarkable in having vestigial anal prolegs, and caudal segments that are prolonged into a somewhat lizardlike tail. They live on the foliage of shrubs and trees, and pupate in a web between leaves, or in a rolled leaf.

Four species, representing three genera of this family, are known to occur in Newfoundland.

Genus *Eudeilinia* Packard

E. herminiata (Guenée)

Plate 26, 8

This small delicate snow white moth is generally distributed over most of southern Canada and the northern United States. In Newfoundland, it is widely distributed but never common. Adults have been taken at St. John's, La Manche, Salmonier, Lethbridge, Corner Brook, and Piccadilly. The moths are in flight from late June to late August. The species has not been reported from Labrador.

The larva has a single tubercle on its anal plate. It feeds on shrubby species of dogwood (*Cornus* spp.).

Genus *Oreta* Walker

O. rosea americana (Herrich-Schäffer)

Plate 26, 10

This small, pretty moth occurs in Eastern Canada, west to Manitoba, and south to Connecticut, Ohio, and New Jersey. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Salmonier, Colinet, Gander, Bay L'Argent, Pynns Brook, Corner Brook, Georges Lake, and Tompkins. There is a second form, *irrorata*, which does not have yellow bands, and at times both forms are fairly common in some areas. The moths are in flight from early July to late August. Neither form has been recorded from Labrador.

The larva has a prominent hump on the metathorax and the caudal process is twice as long as the head. The head is more or less bilobed, and often wider than high, with primary setae only. The larva feeds on *Viburnum* spp.; Ferguson (1954) reported it at times plentiful on witherod (*V. cassinoides*).

Genus *Drepana* Schrank

D. arcuata Walker

Plate 26, 11

This species occurs across Canada from the Atlantic Provinces to British Columbia, and south to Pennsylvania and Indiana. It is widely

distributed, and at times fairly common in Newfoundland. Adults have been taken at St. John's, Salmonier, Chapel Island, Gander, Eddies Cove West, Pistolet Bay, Hawkes Bay, St. Anthony, Corner Brook, Georges Lake, St. George's, South Branch, Doyles, and Tompkins. The moths are in flight from late June to late July. The species has not been recorded from Labrador.

The larva has a caudal process about the same length as the head. There are hairy warts on the mesothorax, the metathorax, and the 2nd abdominal segment, and minute ones on the 8th. It is probably a solitary defoliator on white birch (*Betula papyrifera*) and alder (*Alnus* spp.).

D. bilineata (Packard)

Plate 26, 12

This straw-colored, medium-sized moth has been collected from Newfoundland to British Columbia, and south to New Jersey and New York. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Chamberlains, Corner Brook, and St. Anthony, and are considered rare. The moths are in flight from mid-July to mid-August. They are not found in Labrador.

The larva has enlarged warts on the mesothorax, the metathorax, and the 8th abdominal segment. The caudal process is about as long as the height of the head. It is a solitary defoliator on white birch (*Betula papyrifera*), speckled alder (*Alnus rugosa*), and trembling aspen (*Populus tremuloides*).

Family GEOMETRIDAE geometrids (geometers)

This is a very large family, mainly of medium size, although there are some small and a few large species. Usually the body is slender, and the wings are broad and delicate in appearance. These moths are often found on the borders of woods and in forests, rarely in meadows and pastures. Their flight is neither strong nor long-sustained. Many species hold their wings horizontally when at rest, scarcely overlapping, but some assume other positions.

The family is distinguished from other families of moths by the sharp angle and brace vein at the base of the subcostal vein of the hindwing.

A few genera have some wingless females, but these always have well-developed antennae and legs. The wingless genera are not closely related to one another, and most of them have close relatives with normal wings.

The larvae of this family are known as measuringworms, spanworms, or loopers. They are familiar insects, attracting attention by their peculiar manner of locomotion, in which the body is arched as the prolegs at the caudal end are placed near the thoracic legs. The thoracic legs are then moved forward, and thus progress is made in the characteristic looping manner. It was this unusual way of moving that suggested the name of a typical genus, *Geometra*, from the Greek word meaning a landmeasurer.

Sometimes a measuringworm, for protection while resting, will cling by its anal prolegs and hold the body out straight and motionless, thus resembling a twig. Most geometrid larvae are leaf-feeders, and some species occur in such large numbers as to be serious pests.

Most pupae are slender and brown, but some are green, or even mottled. The pupal stage is usually passed in a flimsy cocoon or in a cell in the soil.

Genus *Archiearis* Hübner

A. infans (Möschler)

FIRST BORN GEOMETER

Plate 26, 13

This colorful species is distributed from Newfoundland west to Alberta, north to the Northwest Territories and Alaska, and south to Pennsylvania, Wisconsin, and New York. It is considered rare in Newfoundland and has not been reported from Labrador. Adults and larvae have been taken by the Forest Research Centre at Tors Cove and Badger, where moths are in flight from mid-May to early June. They have been observed flying freely in the sun around young birch in early June while depositing their eggs on the opening buds, but are very difficult to capture.

The larva is green, with a paler head and underside, slender white longitudinal lines, and a broad subspiracular line. Its favorite food plant is white birch (*Betula papyrifera*), but it has also been observed on willow (*Salix* spp.) and trembling aspen (*Populus tremuloides*).

Genus *Leucobrephe* Grote

L. brephoides (Walker)

Plate 26, 15

This medium-sized species is found in arctic regions and south to New York, Wisconsin, Manitoba, Alberta, and central British Columbia. It has not been recorded from Newfoundland, but two specimens from Labrador are in the Canadian National Collection. They are both labeled "Labrador,

12 May, A.P. Low, No. 794," but the specific locality and the year in which they were taken are not indicated. The moth has similar habits to those of *A. infans*, flying near noon in early spring, sometimes before the snow is off the ground.

The larva is green with yellowish reflections and a lighter ventral surface. The longitudinal lines are yellow and fine, except the subspiracular, which is broad. The larva is a solitary defoliator on aspen (*Populus* spp.), white birch (*Betula papyrifera*), alder (*Alnus* spp.), and willow (*Salix* spp.).

Genus *Synchlora* Guenée

S. liquoraria albolineata (Packard)

Plate 26, 14

This small green geometrid moth is known to occur in Newfoundland, Nova Scotia, and Maine. Adults have been taken in western Newfoundland at Doyles, Tompkins, and Pynns Brook, where they are in flight from early to mid-August. Ferguson (1969) reported collecting larvae at Doyles and Millville on raspberry (*Rubus* spp.), *Rudbeckia* spp., and *Aster* spp. Although Forbes (1948) stated that this moth is common generally in North America, it is considered rare in Newfoundland and is not recorded from Labrador.

The larva is light brown or greenish, with thin lines and mottled markings of a darker shade, including a thin and somewhat interrupted middorsal line (Ferguson 1969). It feeds on flowers and seeds of various low plants, especially raspberry (*Rubus* spp.) and members of the Compositae family. Ferguson (1954) reared a larva on huckleberry (*Gaylussacia* spp.).

Genus *Mesothea* Warren

M. incertata (Walker)

Plate 26, 16 and 17

This small moth occurs from Newfoundland and Labrador west to Saskatchewan and south to Pennsylvania. In Newfoundland, adults have been taken at St. John's, Holyrood, Colinet, La Manche, Cape Broyle, Harmon Field, Table Mountain, Port aux Basques, Burgeo, Cinq Cerf River, Grand Bruit, Grandy Brook, and Doyles Station. The moths are in flight from late May to early July, and at times are fairly common. In Labrador, adults have been taken at Cartwright and Goose Bay from late May to late July, and are also common there at times. The moths are blue green on emerging, but some soon fade to a reddish brown. They are usually diurnal and are most common on bogs and blueberry barrens.

The larva is said to feed on blueberry (*Vaccinium* spp.), and is sometimes found on *Myrica* spp., willow (*Salix* spp.), and wire birch (*Betula populifolia*) on bogs. However, Ferguson (1969) recorded finding the moth on bogs where none of these plants were growing.

Genus *Scopula* Schrank

S. junctaria (Walker)

Plate 26, 18

This species is found from Newfoundland south to New York and west to Alberta. It is widely distributed and common in certain localities in Newfoundland, but is not known to occur in Labrador. Adults have been taken at St. John's, Kilbride, Gander, Springdale, Davis Pond, Lomond, Pynns Brook, Corner Brook, Piccadilly, Stephenville, St. George's, Doyles, and South Branch, where they are in flight from early July to early August. A single specimen taken at Pynns Brook 8 July 1975 has been identified as the subspecies *S. j. junctaria* Walker.

The larva is slender and smooth, and often rests with the forepart of its body coiled. It feeds on low plants and hibernates in this stage. According to McGuffin (1967) it pupates in a delicate cocoon of silk and soil particles after six or seven larval instars. The pupal stage lasts 11 or 12 days.

S. frigidaria (Möschler)

Plate 26, 19

This small grayish white species occurs from Newfoundland and Labrador to northern Quebec and west to Manitoba and the Yukon, but is not found in temperate areas of Canada. Forbes (1948) reported it flying in midsummer at Churchill, Man. The distribution of the species in Newfoundland and Labrador is shown in Figures 30*a* and *b*. The moths are in flight in Newfoundland from late June to early August and in Labrador from late June to mid-August, and at certain localities are fairly common.

Details of the immature stages and foods in Newfoundland and Labrador are not available.

S. inductata (Guenée)

Plate 26, 20

This small, dull clay-colored moth occurs from Newfoundland and Prince Edward Island west to British Columbia, and south to Alabama. In Newfoundland, specimens have been taken at St. John's, Salmonier, Lethbridge, Gander, Eddies Cove, St. Barbe, St. George's, and South Branch,

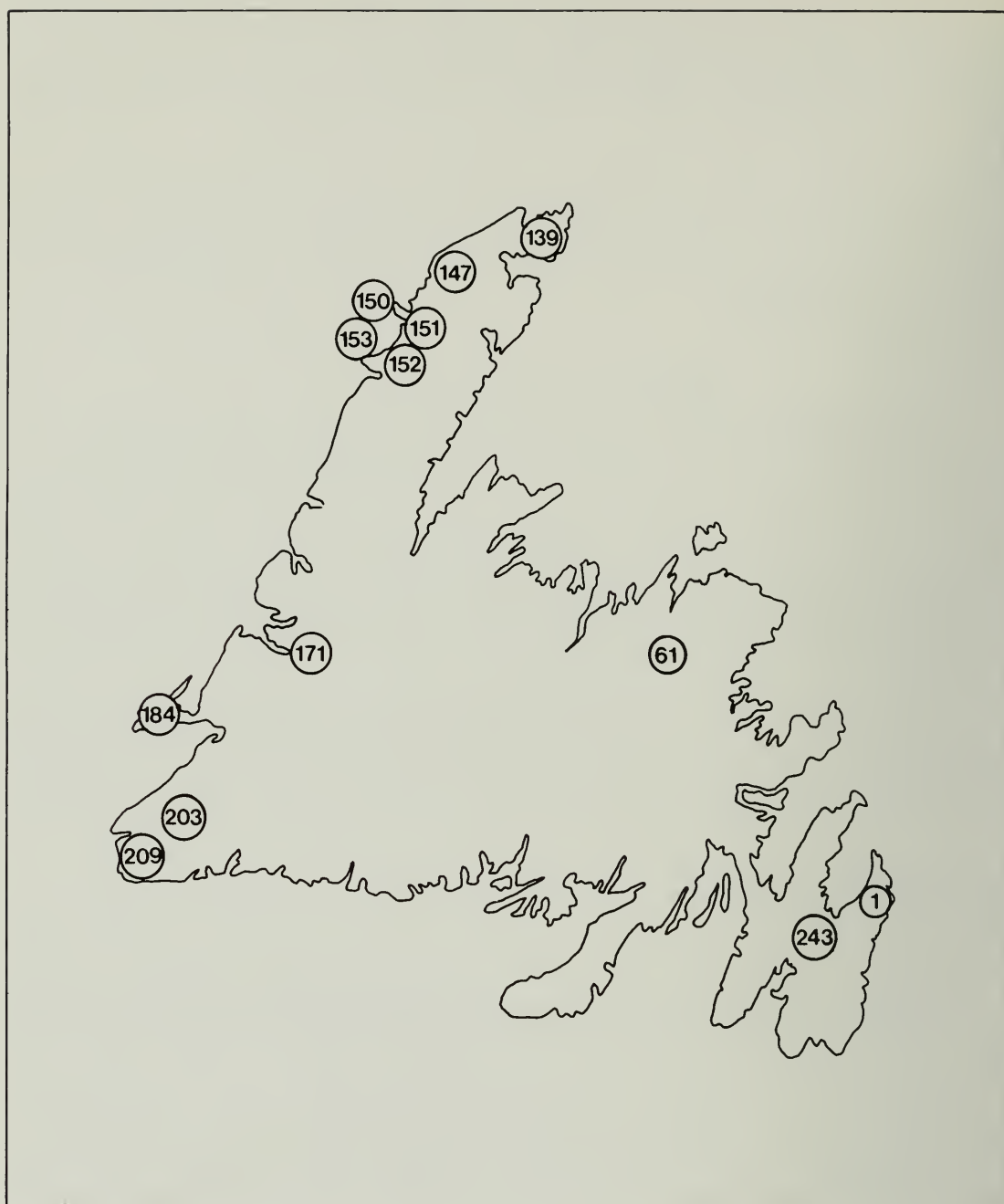


Fig. 30a. Distribution of *Scopula frigidaria* (Möschler) in Newfoundland.

where moths are in flight from early to mid-July. The species is considered rare in Newfoundland and has not been reported from Labrador.

The mature larva, according to McGuffin (1967) is 17–28 mm long, dark brown dorsally and light brown ventrally, and has a light brown head with darker brown streaks on the lobes. The subdorsal line is fine and white. The larva feeds on ragweed (*Ambrosia* spp.), aster (*Aster* spp.), and sweetclover (*Melilotus* spp.). Hibernation may be as a larva or a pupa.



Fig. 30b. Distribution of *Scopula frigidaria* (Möschler) in Labrador.

Genus *Holarctias* Prout

H. sentinaria Geyer

Plate 26, 21

This small, tawny brown moth is found in northern Labrador, west to the Rockies, Alaska, and south in the mountains of Colorado. The species has been taken in Labrador at Rama and Hebron, where the moths are in flight from mid-July to mid-August. Möschler (1860) reported the species from Labrador, and Packard (1888) from all the Moravian Stations in Labrador. One specimen from Rama, now in the Canadian National Collection, was taken in 1889 by A. Strecker and J. D. Sornboyer. There have been no records from Newfoundland.

The 5th-instar larva is 10 mm long and 1 mm broad, the head is black and the body is light gray with black lines. The larva hibernates when partly grown. The food plant in Labrador is unknown, but McGuffin (1967) reported rearing larva in captivity on smartweed (*Polygonum* spp.).

Genus *Cyclophora* Hübner

C. pendulinaria (Guenée)

SWEET FERN GEOMETER

Plate 26, 22

The sweet fern geometer is known to occur from Newfoundland, Nova Scotia, and Ontario west to British Columbia and south to New Jersey and Tennessee. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Bay Bulls, Gander, Lomond, Woody Point, Glenburnie, Eddies Cove West, St. Anthony, Corner Brook, Doyles, Port aux Basques, Rose Blanche, Grand Bruit, and Burgeo. The moths are in flight from mid-June to late July, and in some localities are quite common. In Labrador, adults have been taken at Cartwright and Goose Bay, where they are in flight from early July to early August.

According to Forbes (1948), the larva occurs in two color phases: light green with lighter dorsal and spiracular lines and several broken lines; and irregularly mottled with contrasting patches of black, white, yellow, and red that tend to form oblique side stripes. Both forms usually have a black lateral spot on the 1st segment of the abdomen. However, Forbes found that the larva also occurred in intermediate colorings. The larva, according to McGuffin (1967), feeds on sweet fern (*Comptonia* spp.), birch (*Betula* spp.), and alder (*Alnus* spp.). It is also found on willow (*Salix* spp.), larch (*Larix* spp.), and oak (*Quercus* spp.). The species overwinters as a green pupa with a black stripe.

Genus *Carsia* Hübner

C. sororiata labradorensis (Sommer)

Plate 27, 1

In Newfoundland, moths have been taken at St. John's, Colinet, Port de Grave, Tompkins, and Bay L'Argent, where they are in flight from early August to mid-September. In Labrador, adults have been taken at Hebron, Nutak, and Cartwright from late July to late August. At times, in certain localities, the moths are fairly common. Forbes (1948) stated *labradorensis* is hardly distinct from other North American subspecies.

Details of the immature stages in Newfoundland and Labrador are unknown but are probably similar to *C. s. thaxteri*.

C. sororiata thaxteri Swett

Plate 26, 23

The species *sororiata* is circumpolar and is distributed in North America from Newfoundland and Labrador to British Columbia and south to Mt. Washington, N.H. *C. s. thaxteri* closely resembles *C. s. labradorensis*, but is lighter in color. In Newfoundland, specimens have been taken at St. John's, Come By Chance, Gander, Gaff Topsail, and St. Anthony, where the moths are in flight from late July to mid-September. In Labrador, adults have been taken at Cartwright, Hopedale, and Goose Bay from early to late August.

The larva, described from a European specimen, is rather stout, deep brownish red above and greenish yellow below, with very fine dark dorsal and subdorsal lines and a broad yellow spiracular line, marked with red between the middle segments. It feeds on blueberry (*Vaccinium* spp.).

Genus *Acasis* Duponchel

A. viridata (Packard)

Plate 27, 2

This species occurs from Newfoundland, Labrador, Nova Scotia, and Quebec to British Columbia and south to Virginia. Forbes (1948) reported it as rare in New York and Ferguson (1954) stated it was never common in Nova Scotia. It is rare in both Newfoundland and Labrador. A single specimen taken by Krogerus (1954) at Burgeo, 22 June 1949, and four specimens taken at Mt. Pearl, 10–21 June 1976, are the only records for Newfoundland, and a single specimen taken at Cartwright by Sterns, 5 July 1955, and now in the Canadian National Collection, is the only known record for Labrador.

The larva is short, chunky, and sluggish. It has been reported to feed on witherod (*Viburnum cassinoides*) in a thin web on the underside of a flower head.

Genus *Cladara* Hulst

C. limitaria (Walker)

Plate 27, 3

This species is distributed from coast to coast in Canada and as far south as Pennsylvania. It is most common in the eastern and western areas of its range. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Colinet, Gambo Road, Norris Arm, Whites Road, Pynns Brook, Harmon Field, Tompkins, and St. George's, where they are in flight from mid-May to early August. Prentice (1963) reported that the species is also found at Corner Brook and St. Anthony. In Labrador, adults have been collected at Goose Bay from early to mid-June.

The mature larva, as described by McGuffin (1958a), is 13–19 mm long, has a roughened body, and is green with a yellow green subdorsal line, a yellow subspiracular line, and a green midventral line flecked with white. The head is rough, unmarked, and pea green in color. The larva feeds on conifers, particularly balsam fir (*Abies balsamea*), Douglas-fir (*Pseudotsuga taxifolia*), spruce (*Picea* spp.), and hemlock (*Tsuga* spp.). The species hibernates as a pupa.

C. atroliturata (Walter)

SCRIBBLER

Plate 27, 4

This species is known to occur from Newfoundland west to British Columbia and south to New Jersey, but it is recognized as rare. In Newfoundland, moths have been taken at St. John's, Mt. Pearl, Gander, Tompkins, and Steady Brook, where they are in flight from mid-May to late July. The species has not been recorded from Labrador.

The larva is a solitary defoliator on alder (*Alnus* spp.), white birch (*Betula papyrifera*), willow (*Salix* spp.), and maple (*Acer* spp.).

Genus *Lobophora* Curtis

L. nivigerata Walker

Plate 27, 5

This rather rare species is distributed from Newfoundland, Nova Scotia, Maine, and Ontario west to Alberta and Wisconsin, and south to Massachusetts, central New York, and Minnesota. In Newfoundland, adults

have been taken at Gander and St. Anthony, where they are in flight from early to late July. The species has not been recorded from Labrador.

The mature larva is 16–20 mm long, gray green or green flecked with white, and slightly roughened. The head is pale yellow green, with or without flecks. There is a prominent yellow middorsal line and a fine yellow spiracular line. The larva feeds on trembling aspen (*Populus tremuloides*) and the pupa is the hibernating stage.

Genus *Trichodezia* Warren

T. albovittata (Guenée)

WHITE STRIPED BLACK

Plate 27, 6

This small black and white moth is transcontinental in its distribution, occurring as far south as North Carolina. The moth is diurnal and frequents rich, damp woodland, or the edges of partly shaded streams where there is abundant vegetation such as violets, grasses, or meadow rue. In Newfoundland, the species is widespread (Fig. 31) and at times fairly common. In Labrador, adults have been taken at Cartwright, where the moths are in flight from about 5–25 July.

The mature larva is 8–20 mm long and has a pale green head with a black line. The thorax and abdomen are green and almost smooth. There is a black line along the thorax at the base of the legs that meets the line on the head. The food plants are fireweed (*Epilobium* spp.), meadow rue (*Thalictrum* spp.), and snapweed (*Impatiens* spp.). The species hibernates as a pupa (McGuffin 1958a).

Genus *Operophtera* Hübner

O. bruceata (Hulst)

BRUCE SPANWORM

Plate 27, 7

The Bruce spanworm is distributed from Newfoundland west to the interior of British Columbia and south to New Jersey. The female is wingless and a light brownish gray in color. The species is considered to be rare in Newfoundland and has not been recorded from Labrador. Moths have been reared by the Forest Research Centre from larvae collected at Glenwood and Appleton in 1955 and 1956. Bruton (1930) reported that adults were taken at Carbonear by Gosse in 1832, and Prentice (1963) shows the species as occurring in the St. George's area of western Newfoundland. A single adult was collected at Mt. Pearl, 9 November 1975.

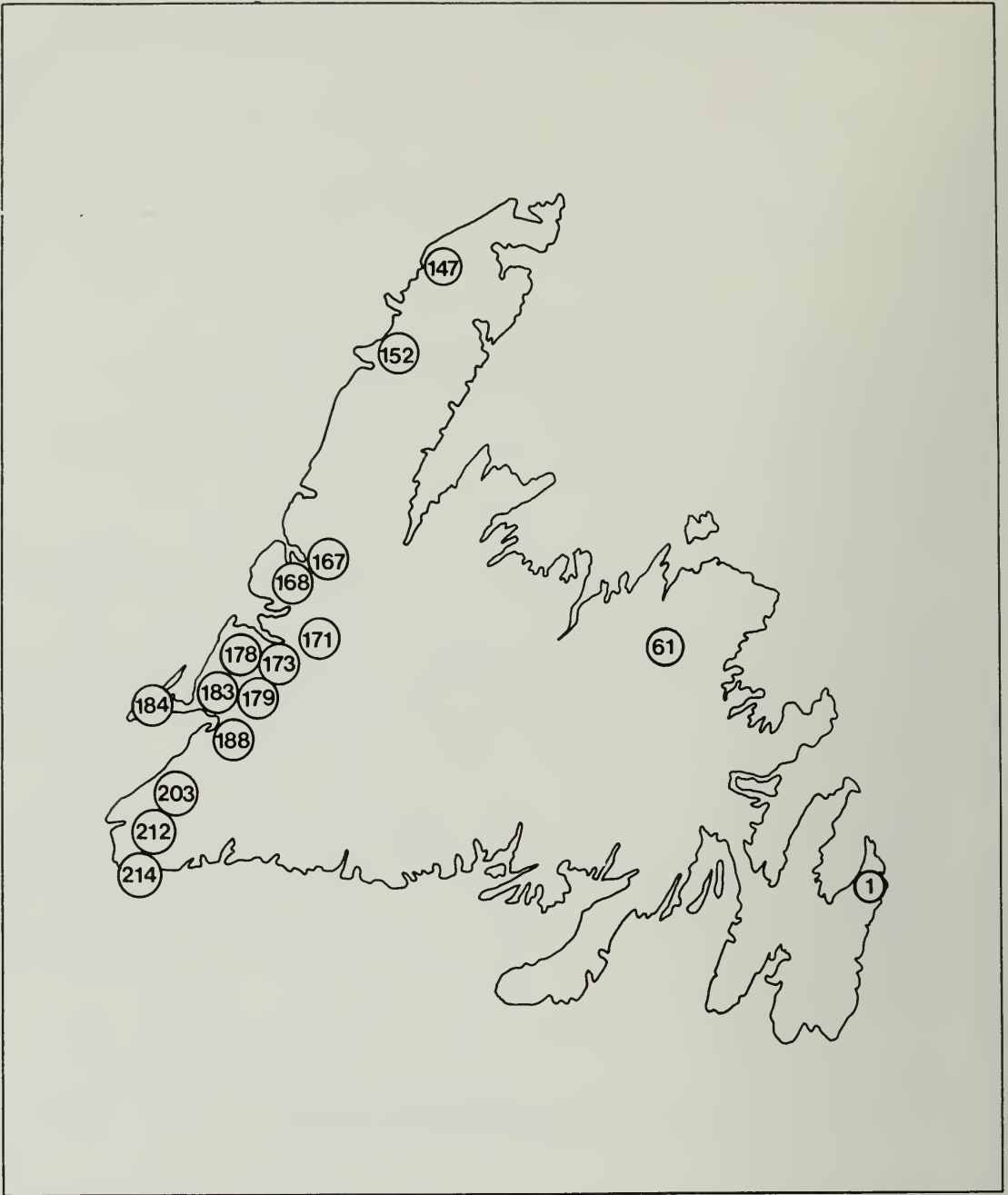


Fig. 31. Distribution of *Trichodezia albovittata* (Guenée) in Newfoundland.

The larva is green, darker dorsally, with three longitudinal yellow green stripes. The head, shields, and sides of the prolegs are sometimes black. The insect feeds on trembling aspen (*Populus tremuloides*), willow (*Salix* spp.), birch (*Betula* spp.), and balsam poplar (*Populus balsamifera*), and periodically occurs in high numbers locally in the Maritime Provinces and Quebec. It is sporadically injurious to apple trees in British Columbia (Downing et al. 1956). This species overwinters as an egg, hatching during the first warm days of spring.

The distribution of this introduced species is still limited to Nova Scotia, New Brunswick, Prince Edward Island, Newfoundland, and British Columbia. It is most common in Nova Scotia, where the larvae often cause severe defoliation of the principal host trees. In Europe, it is recognized as a serious pest of fruit trees, mainly apple. The female moths of this species are wingless. In Newfoundland, a single male moth was reared by the Forest Research Centre from a larva collected at St. John's. The moth emerged 30 February 1966. No specimens have been taken since then, but it is quite possible this species still exists in Newfoundland, but at an undetectable level.

The mature larva is 10–13 mm long. The reticulate head is gray or pale green, and the thorax and abdomen are smooth and pale green or green, with pale gray or green longitudinal lines. The larva feeds on oak (*Quercus* spp.), apple (*Malus* spp.), maple (*Acer* spp.), and elm (*Ulmus* spp.). The species overwinters in the egg stage (McGuffin 1958a).

Genus *Epirrita* Hübner

E. autumnata henshawi (Swett) AUTUMNAL OR NOVEMBER MOTH

This subspecies is found in the Atlantic Provinces, Quebec, and Ontario. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Daniel's Harbour, Plum Point, Glenburnie, St. Anthony, and Tompkins, where the moths are in flight from mid-August to mid-October. Prentice (1963) indicated that *henshawi* was widely distributed throughout the province. In Labrador, many adults taken at Hopedale by W. W. Perrett from late July to mid-September during the years 1931–35 are now in the Canadian National Collection.

The larva is dirty green dorsally and pale bluish white ventrally, sometimes with lateral yellow lines and orange spiracles. It is a solitary defoliator on balsam fir (*Abies balsamea*), white and red spruce (*Picea* spp.), and tamarack (*Larix* spp.).

Genus *Triphosa* Stephens

T. haesitata affirmaria (Walker)

TISSUE MOTH

Forbes (1948) gives the distribution of this medium size, dark brown geometrid moth as Labrador to North Carolina and west to Alberta. In

Newfoundland, adults have been taken at St. John's, Gander, and Georges Lake, where moths are in flight from mid to late August. No specimens have been observed from Labrador.

The larva is green dorsally with two fine lines on each side. It has a whitish yellow supraspiracular stripe and is white or pale gray ventrally. It is a solitary defoliator on cascara (*Rhamnus* spp.) and oak (*Quercus* spp.), and in Europe has been found on wild plum (*Prunus* spp.) and buckthorn (*Rhamnus* spp.).

Genus *Hydria* Hübner

H. undulata (Linnaeus)

SCALLOP SHELL MOTH

Plate 27, 11

The scallop shell moth occurs from Newfoundland, Labrador, Nova Scotia, and Maine south to New York and North Carolina and west to the Pacific. It is also recorded in Eurasia. In Newfoundland, adults have been taken at St. John's and Bruton (1930) reported the species taken by Gosse at Carbonear in 1822. The moths are in flight from mid-July to early August. In Labrador, 16 adults were taken at Cartwright by Sterns during the period 9 July – 2 August 1955.

The larva is dark olive dorsally, with three pairs of pale lines, and is yellow green ventrally. The head is a shiny orange brown with black markings laterally and dorsally. This species is single brooded and overwinters as a pupa in the soil. The larva is a solitary feeder on willow (*Salix* spp.), spiraea (*Spiraea* spp.), and azalea (*Azalea* spp.).

Genus *Eupithecia* Curtis

This is a very large and obscure genus that is nearly worldwide in distribution and difficult to differentiate. There are approximately 62 species in Canada, 25 of which occur in Newfoundland and Labrador. The wings of the moths are evenly round as a rule, giving them a characteristic appearance. Many species can only be separated by genital characteristics.

E. misturata frostiata Swett

Plate 27, 12

This small moth has a scattered and discontinuous distribution from Newfoundland west to Ontario and south to Pennsylvania, New York, and North Carolina. In Newfoundland, Prentice (1963) reports that adults were

taken at or near St. George's, Flower's Cove, Grand Falls, and Wesleyville. Adults were taken at Pynns Brook during mid-June 1975. However, there are no records of its occurrence in Labrador. The subspecies is considered rare in all regions.

The larva is 10–15 mm long, and has a rough, yellow, russet, or pale brown head and a pale gray thorax and abdomen with a dark gray middorsal line and a dark brown subdorsal line. The larva is a solitary defoliator on tamarack (*Larix* spp.). The pupa overwinters and there are two generations annually.

E. subfuscata (Haworth)

GRAY PUG (BR.)

Plate 27, 13

Krogerus (1954) stated that this circumpolar species is generally distributed in North America, extending across the northern half of the continent and down the Pacific coast into Oregon and presumably California. *E. subfuscata* is one of the most common members of this genus in Newfoundland. Adults have been taken at St. John's, Mt. Pearl, Kilbride, Salmonier, Lethbridge, Gander, St. Barbe, and Eddies Cove West, where they are in flight from late June to early August. The species has not been recorded from Labrador.

The larva is about 18 mm long and may vary in color, but is normally brown with contrasting diagonal mottling. It is a general feeder with a strong preference for flowers of the Compositae family. It has also been recorded feeding on willow (*Salix* spp.), alder (*Alnus* spp.), black spruce (*Picea mariana*), balsam poplar (*Populus balsamifera*), apple (*Malus* spp.), and fireweed (*Epilobium* spp.). It is free-living and the species hibernates as a pupa.

E. tripunctaria Herrich-Schäffer

WHITESPOTTED PUG (BR.)

Plate 27, 14

According to McDunnough (1949), this small circumpolar species ranges through Nova Scotia, Quebec, Labrador, New York, Alberta, British Columbia, and California. Brower (1974) recorded it from Maine. In Newfoundland, adults have been taken at Corner Brook, Flower's Cove, Port au Choix, and St. Anthony, where the moths are in flight from mid-July to early August. It is interesting to note that the species has not been taken in eastern Newfoundland. In Labrador, a single adult collected at Cartwright by Sterns, 26 July 1949, is the only available record.

The mature larva is about 15 mm long. Its rough head is dark brown with pale brown patches. The thorax and abdomen are rough and covered with small, rounded, wartlike spicules. Dorsally there are dark stripes on the brown thoracic segments, and dark triangles on the anterior abdominal

segments (McGuffin 1958a). The larva feeds on the flowers and seeds of *Viburnum* spp., and the flowers of *Angelica* spp. and elder (*Sambucus* spp.). The species probably hibernates as a pupa.

E. fletcherata Taylor

Plate 27, 15

This species occurs from Newfoundland west to British Columbia, and in New York, Maine, New Hampshire, Pennsylvania, and Michigan. Prentice (1963) reported the species as widely distributed in western and central regions of Newfoundland, but never common. In Labrador, adults have been taken at Cartwright and Hopedale during the period 9–14 July.

The free-living larva is about 13 mm long. Its color varies from yellow brown to orange or brown dorsally, and a paler color ventrally. The head is rough and grayish yellow to brown. The middorsal line is gray or dark brown, becoming double on the thorax, and forming diamond-shaped patches on the anterior abdominal segments. The larva feeds on tamarack (*Larix* spp.), spruce (*Picea* spp.), willow (*Salix* spp.), and alder (*Alnus* spp.). The species hibernates as a pupa (McGuffin 1958a).

E. bradorata McDunnough

Plate 33, 17

This species occurs in Newfoundland, Labrador, Nova Scotia, Maine, Quebec, and Ontario. Prentice (1963) recorded a single specimen collected near Sultan, Ont., and reported that the species was rare. In Newfoundland, adults have been taken at Mt. Pearl, 9–13 July 1975, and Kilbride, 10 June 1975, where moths are in flight from mid-June to early July. The species has also been taken at Hopedale, Labrador.

Both larvae and pupae have been recorded on white spruce (*Picea glauca*).

E. luteata Packard

Plate 27, 16

Prentice (1963) reported that this species has a general distribution throughout most of the survey region from Newfoundland to British Columbia, but is most common in the Atlantic Provinces and Alberta. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Grand Falls, Woody Point, Stephenville Crossing, St. George's, South Branch, Doyles, and Burgeo. The moths are in flight from late June to mid-July. Packard (1888) reported their presence in July on Caribou Island, Labrador.

The larva is 10–13 mm long, grayish yellow to yellow brown in color and has a rough, light yellow head. The middorsal line is grayish purple, somewhat thicker anteriorly and the lateral lines are yellowish brown. Some

larvae have grayish purple bands in the first five or six abdominal segments. The larva is a solitary defoliator on white spruce (*Picea glauca*), balsam fir (*Abies balsamea*), tamarack (*Larix* spp.), and black spruce (*Picea mariana*). The species hibernates as a pupa.

E. palpata Packard

Plate 27, 17

This species occurs in Newfoundland, Nova Scotia, New Brunswick, and from Quebec to British Columbia. It is also found in Maine, New York, and Connecticut. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Daniel's Harbour, South Branch, Stephenville Crossing, and Burgeo. The moths are in flight from late June to late July and are considered rare. They are not found in Labrador.

The free-living larva is 10–18 mm long. The thorax and abdomen are rough and may be yellow, orange, or red in color. The head is reddish orange and the longitudinal lines are dark gray, orange, or yellow. The larva feeds on pine (*Pinus* spp.). The species hibernates as a pupa.

E. transcanadata MacKay

Plate 27, 18

This species is found across the continent from Newfoundland to British Columbia, but is most common in the eastern and western areas of its range. In Newfoundland, Prentice (1963) reported it to be widely distributed throughout the province from the Codroy Valley in the west to Terra Nova National Park in the east and from Bay d'Espoir in the south to Hawkes Bay in the north. Specimens have been collected at South Brook and Doyles, where the moths are in flight from early to late July. The species has not been recorded from Labrador.

The larva resembles *E. palpata*, but is darker in color. It has been collected from a wide variety of hosts, but it generally feeds on white spruce (*Picea glauca*) and balsam fir (*Abies balsamea*). However, in British Columbia Douglas-fir (*Pseudotsuga taxifolia*) is the preferred host. The insect hibernates as a pupa.

E. columbiata erpata Pearsall

Plate 33, 19

This subspecies has been recorded from Newfoundland, New Brunswick, Maine, Massachusetts, and Manitoba. In Newfoundland, a single adult moth was taken at Mt. Pearl, 28 June 1975.

The larva is 10–22 mm long, and is pale gray suffused with pink dorsally, and pale yellowish white ventrally. There is a brown middorsal line and a red subspiracular line. The rough head is light brown with brown

markings arranged in a herringbone pattern. The larva is free-living on choke cherry (*Prunus virginiana*) in June and July. The pupa is the overwintering stage.

E. satyrata fumata Taylor

SATYR PUG (BR.)

Plate 27, 19

This subspecies occurs in Eastern Canada and the New England States (McGuffin 1958a), and is also found in Europe. In Newfoundland, adults have been taken at St. John's during July and in Labrador at Hopedale, Cartwright, and Goose Bay from early July to early August. This moth is considered rare in both areas.

The larva is normally green or whitish, with four diamond-shaped dorsal blotches connected by a dark line, or bisected by a pale dorsal line. Some larvae have extensive diagonal blotching. They feed on low plants and *Viburnum* spp. Ferguson (1954) reported rearing the species from larvae on the flower heads of bristly sarsaparilla (*Aralia hispida*), meadow rue (*Thalictrum* spp.), witherod (*Viburnum cassinoides*), turtlehead (*Chelone glabra*), and meadowsweet (*Spiraea latifolia*). Rindge (1952) reported larvae feeding on the fruit of witherod, flowers of turtlehead, and blossoms of *Spiraea* spp.

E. gibsonata Taylor

Plate 27, 20

This species is distributed throughout Eastern Canada, New England, and the northern Atlantic States, and has been found in southeastern Manitoba, northern Minnesota, and the coastal regions of British Columbia (McGuffin 1958a). In Newfoundland, adults have been taken at St. John's, Burgeo, Grandy Brook, and Port aux Basques, where the moths are in flight from late June to late July. The species is considered rare in Newfoundland and has not been reported from Labrador.

The larva is 17–19 mm long, and has a rough green body and pea green head. The longitudinal lines are bluish green to yellow and there is a large gray spot in the middle of the first eight abdominal segments. It is a solitary defoliator, particularly on eastern white cedar (*Thuja occidentalis*). The species hibernates as a pupa.

E. russeliata Swett

Plate 27, 21

This small, smoky brown moth is distributed from Newfoundland, Nova Scotia, and Maine south to Connecticut and New York. In Newfoundland, adults have been collected at St. John's, Mt. Pearl, Colinet, Lethbridge, Gander, Woody Point, Eddies Cove West, Steady Brook,

Corner Brook, St. George's, Tompkins, Port aux Basques, Burgeo, and Grand Brûlé. The moths are in flight from mid-June to mid-August and are at times common in certain localities. Ferguson (1954) reported this species to be the commonest *Eupithecia* in Nova Scotia; it was most abundant in heathy or acid bog areas and in spruce forests. It has not been recorded from Labrador.

The larva has been recorded on white spruce (*Picea glauca*), sheep-laurel (*Kalmia angustifolia*), and *Rhododendron canadense*.

E. strattonata Packard

Plate 27, 22

According to McDunnough (1949) this species is widespread throughout Eastern Canada, New England, and the northern Atlantic States, and ranges west to Michigan. In Newfoundland, adults have been collected by Krogerus (1954) at Woody Point and Port aux Basques from early to mid-July. No specimens have been taken since and the species is not recorded from Labrador.

The mature larva is 17–23 mm long, and has a very rough yellow green body and a head of the same color. The longitudinal lines are gray dorsally, yellow laterally, and fine and white ventrally. The larva is free-living, feeding on spiraea (*Spiraea* spp.) and alder (*Alnus* spp.). This species hibernates as a pupa.

E. grata Taylor

Plate 27, 23

According to McDunnough (1949) this species is distributed throughout Eastern Canada, possibly extending to the western provinces. A single adult taken by Krogerus at Port aux Basques, 28 June 1949, is the only record from Newfoundland. There are no records from Labrador.

Details of the immature stages in Newfoundland are not available.

E. fumosa (Hulst)

Plate 27, 24

McDunnough (1949) stated that this species was widespread, extending from eastern areas of Canada and the United States across the continent to British Columbia and Colorado. In Newfoundland, adults have been taken at Tompkins, Lomond, Port au Choix, and Eddies Cove West, where moths are in flight from mid-July to early August. The species is considered rare in Newfoundland and is not recorded from Labrador.

The larva has been reported on currant (*Ribes* spp.) in Manitoba.

E. coagulata Guenée

Plate 27, 25

This large *Eupithecia* species is transcontinental in its distribution, ranging as far north in Canada as Waskesiu and Meadow lakes, Sask., and as far south in the United States as Arizona and California (McGuffin 1958a). In Newfoundland, adults have been taken at St. John's, Gander, Glenwood, Eddies Cove West, Corner Brook, and Port aux Basques, where the moths are in flight from mid-July to late August. The species is never common in Newfoundland and has not been recorded from Labrador.

The larva is 12–18 mm long, and has a yellow or pale gray body and a rough pale brown or brown speckled head. The gray brown middorsal line becomes double on the thorax and forms an elliptical or diamond-shaped marking on each of the first five abdominal segments. The anterior spiracles are centered in red orange patches. The larva is free-living, feeding on the flowers of yarrow (*Achillea* spp.), goldenrod (*Solidago* spp.), aster (*Aster* spp.), and monkshood (*Aconitum* spp.). This species hibernates as a pupa.

E. nimbicolor (Hulst)

Plate 27, 26

This species is transcontinental, ranging from Newfoundland, Nova Scotia, Maine, Quebec, and Ontario to British Columbia and south to Arizona and California. In Newfoundland, adults have been taken at Colinet, Cinq Cerf River, and Burgeo, where the moths are in flight from mid to late June and are locally common on bogs.

The larva is 15–20 mm long and displays two color patterns in the 3rd and 4th instars. One is pale yellow green with fine gray, brown, and yellow longitudinal lines, and the other is yellow with gray, pale orange, and reddish brown longitudinal lines (McGuffin 1958a). Preferred foods are the flowers of yarrow (*Achillea* spp.) and painted-cup (*Castilleja* spp.), and the foliage of willow (*Salix* spp.), *Rosa* spp., and *Ribes* spp.

E. gelidata Möschler

Plate 27, 27

This species is transcontinental in North America, and extends south to Colorado and New Mexico and north to Alaska (McGuffin 1958a). In Newfoundland, adults have been taken at St. John's, Bonavista, and St. Anthony, where moths are in flight from mid to late July. In Labrador, adults have been taken at Cartwright and Hopedale from mid-July to late August. Möschler recorded specimens taken in Labrador in 1860, and Packard (1888) reported the species from the Moravian Stations in Labrador. These moths are considered rare in both Newfoundland and Labrador with no appreciable variation in annual numbers.

The larva is 15–22 mm long, and has a rough, yellow green body and a pale brown or green head. It is a solitary defoliator on white and yellow birch (*Betula papyrifera* and *B. lutea*), and occasionally on willow (*Salix* spp.) and alder (*Alnus* spp.). This species hibernates as a pupa.

E. perfusca youngata Taylor

ANGLE BARRED PUG (BR.)

Plate 27, 28

According to McDunnough (1949) this subspecies is widespread throughout the Atlantic Provinces, Quebec, and Ontario, extending south through the New England States into New York and Pennsylvania. In Newfoundland, adults have been collected at St. John's, Mt. Pearl, Woody Point, Eddies Cove West, Steady Brook, Corner Brook, and Tompkins, where the moths are in flight from mid-July to mid-August. A single specimen taken at Colinet, 2 August 1962, has been identified as *E. perfusca* Hulst. This species is rare in Newfoundland and is not recorded from Labrador.

The larva is a solitary defoliator on alder (*Alnus* spp.), willow (*Salix* spp.), and white birch (*Betula papyrifera*) and is most prevalent in August.

E. pusillata interruptofasciata Packard

JUNIPER PUG (BR.)

Plate 33, 18

This subspecies is distributed throughout eastern North America. In Newfoundland, adults have been taken at Kilbride, where the moths are in flight from mid-August to early October. They are not found in Labrador.

The mature larva is 10–14 mm long and its skin is rough and light green with a gray green middorsal line and a white subdorsal line. The head is rough and pale russet green in color. The larva is free-living on juniper (*Juniperus* spp.). This subspecies overwinters as an egg or perhaps as a larva in the egg shell.

E. filmata Pearsall

Plate 27, 29

This species is distributed from Newfoundland, Labrador, Nova Scotia, and Maine west to British Columbia and south to the Catskill Mountains and Long Island, N.Y. In Newfoundland, adults have been taken at St. John's, Grand Falls, Reidville, Felix Cove, and St. Fintan's, where the moths are in flight from late May to mid-June. Prentice (1963) showed a much wider distribution of the species in Newfoundland than indicated here. In Labrador, a single specimen taken at Cartwright by Cashman, 29 June 1955, is the only record to date.

The mature larva is 12–18 mm long with a pale brown head and a pale yellow body that has broad brown dorsal and brown lateral stripes, whose lower edges become diffuse in the spiracular area and form various patterns from lines to T-shaped markings (McGuffin 1958a). It feeds on spruce (*Picea* spp.) and occasionally on balsam fir (*Abies balsamea*). The species hibernates as a pupa in a light web under spruce needles.

E. albicapitata Packard

Plate 27, 30

This pale gray northern species occurs across Canada from the Atlantic to the Pacific and in the mountainous districts of New York and the New England States. In Newfoundland, adults have been taken at Stephenville Crossing and Glenburnie, where the moths are in flight from early to mid-July. This species is considered rare and has not been reported from Labrador.

The larva is about 10 mm long and has a flesh-colored body with red lines and a rough brown head. It is recorded as a solitary feeder on the cones of spruce (*Picea* spp.), fir (*Abies* spp.), and pine (*Pinus* spp.) in New Brunswick, Ontario, Alberta, and British Columbia. It also probably feeds on *Chermes* galls on conifers. This species hibernates as a pupa.

E. mutata Pearsall

CLOAKED PUG (BR.)

Plate 27, 31

This species is found from Newfoundland and Nova Scotia west to Ontario and Alberta, and in New England and the northern Atlantic States. In Newfoundland, adults have been taken at Grand Falls, St. Anthony, Glenburnie, and Stephenville Crossing, where moths are in flight from early to mid-July. This species has not been recorded from Labrador.

The somewhat stout larva is about 10 mm long, and is a dirty pink color, but without the red lines of *E. albicapitata*. The head and shield are shining brown. The larva bores in the cones of spruce (*Picea* spp.) and sometimes balsam fir (*Abies balsamea*) and pine (*Pinus* spp.). The species hibernates as a pupa.

E. anticaria Walker

Plate 27, 32

According to McDunnough (1949) this species is distributed from Nova Scotia west to the Rocky Mountains and is also found in the northern Atlantic States and Arizona. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Gander, Woody Point, St. George's, Tompkins, Cinq Cerf River, and St. Anthony. The moths are in flight from mid-June to late July. This species has not been recorded from Labrador.

The larva is 16–21 mm long and according to Ferguson (1954) is slender and green in color with a bright scarlet lateral line. It is often found feeding on the flower heads of meadowsweet (*Spiraea latifolia*), and is quite unlike other known *Eupithecia* larvae. It has also been reported on flowers of painted-cup (*Castilleja* spp.), aster (*Aster* spp.), and goldenrod (*Solidago* spp.). This species hibernates as a pupa.

Genus *Chloroclystis* Hübner

C. rectangulata f. *nigrosericeata* (Haworth)

Plate 34, 13

This species is very widespread and common in Europe where the main host plants are reported to be hawthorn (*Crataegus* spp.), cherry (*Prunus* spp.), and *Pyrus* spp. In 1970 Ferguson collected it in Nova Scotia, where it is fairly well distributed, including Cape Breton Island. In Newfoundland, a single specimen was taken at Stephenville, 10 July 1976. The larva probably fed on *Prunus* spp. and *Pyrus* spp.

Genus *Horisme* Hübner

H. intestinata (Guenée)

Plate 27, 33

This dark gray, medium-sized moth is distributed from Newfoundland, Nova Scotia, Quebec, and Ontario west to Alberta and British Columbia and south to Florida. It is considered a rare species in Newfoundland and is not recorded from Labrador. A single specimen taken at Eddies Cove by Krogerus, 30 July 1949, is the only record for the species.

The mature larva is 22–23 mm long, and has a rough, pale brown body and a pale brown head. The longitudinal lines are brown to dark brown and vary in width. The setae are moderately long, black, and pointed. The larva is free-living on clematis (*Clematis* spp.), and the species overwinters as a pupa.

Genus *Eustroma* Hübner

E. semiatrata (Hulst)

Plate 27, 34 and 35

This medium-sized, black and brown moth is found in Newfoundland, Nova Scotia, Quebec, Maine, New York, and west to British Columbia and California. It is widely distributed in western Newfoundland, but is con-

sidered rare. Adults have been taken at Woody Point, Cow Head, Port au Choix, and Corner Brook. The moths are in flight from early to mid-August. A single specimen taken at Goose Bay in Labrador, 13 August 1949, is the only record for that area.

The mature larva, according to McGuffin (1958a), is 24–28 mm long and has a slightly rough, gray, mottled thorax and abdomen and a white reticulate head with black or brown markings. The setae are long, pale brown, and pointed. The larva feeds on fireweed (*Epilobium* spp.).

Genus *Eulithis* Hübner

E. propulsata (Walker)

Plate 28, 1

This ocher yellow, medium-sized moth is distributed from Newfoundland, Nova Scotia, Quebec, and Maine south to Pennsylvania and west to the Pacific, including the Yukon and Alaska. In Newfoundland, adults have been taken at St. John's, Terrenceville, Bay L'Argent, Gander, Kitty's Brook, Gull Pond Road, Port au Choix, Cow Head, Corner Brook, Spruce Brook, and Stephenville. There is one record from Labrador by Möschler (1860). The moths are in flight from late July to August and are considered rather rare. Bruton (1930) reported that this species was taken at Carbonear by Gosse in 1832.

The mature larva is 18–30 mm long and has a pale gray or pale brown reticulated thorax and abdomen and a pale yellow or pale brown head with brown markings. The middorsal line is dark brown or gray, broken by a conspicuous white triangle at the posterior edge of the anterior abdominal segments. The larva is free-living, feeding on currant and gooseberry (*Ribes* spp.). The egg is probably the overwintering stage (McGuffin 1958a).

E. testata (Linnaeus)

CHEVRON MOTH

Plate 28, 2

This light ocher yellow, medium-sized moth is found in Newfoundland, Nova Scotia, Quebec, and Maine, south to New Jersey and New York, and west to the Yukon and Vancouver Island. It is also found in Eurasia. In Newfoundland adults have been taken at Kilbride, Colinet, and St. Anthony, where the moths are in flight from early July to mid-September. The species is locally common, but unaccountably absent in many localities. There are no records of its occurrence in Labrador.

The larva, as described by McGuffin (1958a), is 16–18 mm long and has a pale gray reticulate body and a pale gray head with black or brown dots. The longitudinal lines are dark brown dorsally and pale brown

ventrally. The larva feeds on birch (*Betula* spp.), poplar (*Populus* spp.), willow (*Salix* spp.), and alder (*Alnus* spp.).

E. destinata (Möschler)

Plate 28, 3

This species is known to occur from Labrador to the White Mountains of New Hampshire and west to California. In Newfoundland, adults have been collected at Great River, Corner Brook, Woody Point, Port au Choix, and St. Anthony, where the moths are in flight from mid-July to late August. In Labrador, the species is widely distributed but never common. Adults have been taken at Hebron, Hopedale, and Goose Bay from mid-July to mid-September. Packard (1888) reported the species along the entire coast of Labrador.

The larva is 20–28 mm long, the reticulate body is light brown, and the head is pale gray with a broad inverted U-shaped brown band framing the face. There is a fine, dark gray middorsal line and various other gray or brown lines on the body. The larva is free-living on willow (*Salix* spp.).

E. flavibrunneata (McDunnough)

Plate 28, 4

This species is most common in the Prairie Provinces and is also reported from Nova Scotia, New Brunswick, and Maine. In Newfoundland, it is represented by a single specimen taken by the Forest Insect Service on white spruce (*Picea glauca*) 1.6 km north of Gargamelle (near Port au Choix) on 13 August 1965.

The mature larva is 21–26 mm long and has a pale brown reticulate body and a pale brown and white head. There is a brown pattern of lines and oblique shapes on abdominal segments 1–5. The larva is free-living on willow (*Salix* spp.).

E. explanata (Walker)

Plate 28, 5

This medium-sized moth is widely distributed from Newfoundland, Nova Scotia, New Brunswick, Quebec, and Maine west to Manitoba and south to Massachusetts. In Newfoundland, the species is widespread and at times fairly common in certain localities. Adults have been collected at St. John's, Mt. Pearl, Kilbride, Colinet, Gander, Lumsden, Glenwood, Millertown Junction, Gaff Topsail, Terrenceville, Burin, Woody Point, Pynns Brook, and Tompkins. The moths are in flight from late June to mid-September. In Labrador, adults have been taken at Goose Bay, where they are in flight from July to early September.

Very little is known about the immature stages in Newfoundland and Labrador. Prentice (1963) reported finding the pupal stage on balsam fir (*Abies balsamea*) and white spruce (*Picea glauca*).

E. serrataria (Barnes & McDunnough)

Plate 28, 6

This species is distributed throughout Newfoundland, Nova Scotia, Quebec, Maine, Ontario, and New Hampshire. In Newfoundland, it is occasionally common, but is generally scarcer than *E. explanata*, and has not been recorded from Labrador. Adults have been taken at St. John's, Musgravetown, Terrenceville, Gander, Kitty's Brook, Stephenville, Fischells Brook, and Cartyville. The moths are in flight from late June to mid-August.

Details of the early stages in Newfoundland are not available.

Genus *Diactinia* Warren

D. silaceata (Denis & Schiffermüller)

SMALL PHOENIX (BR.)

Plate 28, 7

This species is known to occur in Newfoundland, Labrador, Nova Scotia, Maine, Quebec, and Ontario. Forbes (1948) gave its distribution as general in northern areas of the continent. It is also found in Eurasia. In Newfoundland, adults have been collected at St. John's, Mt. Pearl, Salmonier, Gander, Corner Brook, Georges Lake, St. George's, and St. Anthony. The moths are in flight from late June to mid-August and are considered to be somewhat rare. In Labrador, adults have been taken at Cartwright and Hopedale, where they are in flight from early July to early August.

The mature larva, as described by McGuffin (1958a), is 24–31 mm long, and both the pale yellow or pink body and the pale russet green or pale brown head are finely reticulated. The longitudinal lines are gray green, yellow green, dark brown, pink, or pale gray. The larva feeds on fireweed (*Epilobium* spp.) and snapweed (*Impatiens* spp.). There are four larval instars and the pupa overwinters.

Genus *Plemyria* Hübner

P. georgii Hulst

Plate 28, 8

This species is distributed from Newfoundland, Nova Scotia, and Maine west to British Columbia and Washington. The species is considered

rare in Newfoundland and is not recorded from Labrador. Adults have been taken at Pinsent's Ridge, Corner Brook, and Southwest Pond by the Forest Research Centre. The moths are in flight from mid-July to late August.

The mature larva is 18–23 mm long, and has a rough body, yellow green in color with a rose-colored lateral line, and densely covered with minute convex spicules. The reticulate head is pale green or russet green with fine brown markings. The larva feeds on alder (*Alnus* spp.), willow (*Salix* spp.), and birch (*Betula* spp.) and may be free-living or may live in slight webbing among the leaves.

Genus *Dysstroma* Hübner

D. walkerata (Pearsall)

MARBLED CARPET (BR.)

Plate 28, 9 and 10

This species is extremely variable in coloring; two forms are illustrated. It is distributed from Labrador west across Canada to the Yukon and south through New York to North Carolina. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Clarenville, Lethbridge, Bay L'Argent, Burin, Gander, Woody Point, Georges Lake, Doyles, and Tompkins. The moths are in flight from mid-July to late September and at times are fairly common. In Labrador, McDunnough (1946*b*) reported three males from Hopedale. A single specimen was collected at Cartwright, 2 August 1955, and Packard (1888) reported that the species occurred along the entire coast.

The larva, according to McGuffin (1958*a*), is 13–25 mm long and has a slightly reticulate green body and head with white or cream-colored longitudinal lines. It is free-living on larch (*Larix* spp.) and alder (*Alnus* spp.) and hibernates in the second of four larval instars.

D. mackieata Cassino & Swett

Plate 28, 11

The only places in Canada where this northern species is distributed are Labrador and Quebec.

In Labrador, adults have been taken at Cartwright and Goose Bay. The moths are in flight from mid-July to mid-August and at times are common.

Details of the immature stages in Labrador are not available.

D. citrata (Linnaeus)

DARK MARBLED CARPET (BR.)

Plate 28, 12

This species occurs across Canada from Newfoundland to British Columbia and south to Maine and New York. In Newfoundland, adults

have been taken at St. John's, Mt. Pearl, Kilbride, Goulds, Gambo, Gander, Glenwood, Woody Pt., Cow Head, Hawkes Bay, Port au Choix, Eddies Cove West, St. Anthony, Corner Brook, and Georges Lake. The moths are in flight from mid-July to mid-September and at times are locally common. In Labrador, the species has been taken at Hopedale, North West River, Hamilton Inlet, and Goose Bay, where the moths are in flight from late July to early September.

The larva is 17–28 mm long and 1–2 mm wide, and has an almost smooth green body, and a reticulate pale green head with no markings. The longitudinal lines are gray green or blue green dorsally, and fine and white ventrally. The larva is free-living and feeds on a wide variety of low plants including *Symphoricarpos* spp., alder (*Alnus* spp.), *Rosa* spp., willow (*Salix* spp.), and currant (*Ribes* spp.). The species overwinters as an egg.

D. brunneata (Packard)

Plate 28, 13

This species occurs from Newfoundland, Labrador, Maine, and Quebec to Alaska. In Newfoundland, adults have been taken at Eddies Cove West and Port au Choix, where the moths are in flight from mid-July to early August. In Labrador, adults have been taken at Cartwright where they are in flight from early to late August. However, they are rare in all localities. Packard (1888) reported the species as *Petrophora suspectata* from all Moravian Stations in Labrador.

Details of the immature stages in Newfoundland and Labrador are not available.

D. hersiliata (Guenée)

Plate 28, 14

This species is distributed across Canada from the Atlantic to the Pacific and south to Pennsylvania, but is considered rare in both Newfoundland and Labrador. In Newfoundland, adults have been taken at St. John's, Carbonear, Eddies Cove West, Port au Choix, Pynns Brook, Stephenville, and Tompkins, where the moths are in flight from early to late August. In Labrador, a single specimen, now in the Canadian National Collection, was taken at Cartwright by Cashman, 2 August 1955.

The mature larva is green and rough and has minute secondary spines and small white tubercles. The rounded head is pale green and rough. The dorsal line is dark green, the subdorsal line is white, and there is a trace of a lateral one. The larva feeds on currant and gooseberry (*Ribes* spp.).

D. hersiliata cervinifascia (Walker)

Plate 28, 15

This subspecies, which is easily distinguished from *D. hersiliata* by the black bar near the base of the forewing, is northern in its distribution but ranges to the mountains of Pennsylvania, and west to Manitoba. In Newfoundland, adults have been taken at Carbonear, Bay L'Argent, Port au Choix, and Doyles, where the moths are in flight from mid-July to mid-August. This subspecies is considered rare in Newfoundland and is not recorded from Labrador. It is probably just a color variation of *hersiliata* and not a true subspecies.

The larva, according to Forbes (1948), is thought to be green with a yellow head, and with white subdorsal, broken midventral, and traces of lateral lines. The skin is spinulose with white tubercles and setae. The cocoon, containing a green pupa with a white middorsal line, is an open net type. The larva is said to feed on currant (*Ribes* spp.).

Genus *Thera* Stephens

T. contractata (Packard)

EVERGREEN SPANWORM

Plate 28, 16

This species is distributed from Newfoundland, Nova Scotia, Maine, and Quebec west to Manitoba and Wyoming. In Newfoundland, it is represented by a single specimen taken by the Newfoundland Forest Research Centre at Miguels Lake, 10 July 1958 (Pardy 1974). There are no records of the species from Labrador.

The larva, as reported by McGuffin (1958a), is similar to that of the following species, *T. otisi*. In fact, he could find no constant difference in color pattern or measurements between the two species. The larva of *T. contractata* is a solitary defoliator on juniper (*Juniperus* spp.).

T. otisi (Dyar)

Plate 28, 17

This species is normally found only in Alberta and British Columbia, but has been taken in Newfoundland at St. John's, Mt. Pearl, Lethbridge, Gander, Miguels Lake, Tompkins, Stephenville, Woody Point, and St. Anthony. The moths are in flight from early July to mid-August and are generally rare.

The mature larva is 11–18 mm long and has a reticulate, russet-colored head and a rough, pale green thorax and abdomen. It has a white or yellow subdorsal line, a red line above a white line in the subspiracular area, and a yellow green midventral line. The food plant is common juniper (*Juniperus communis*).

Genus *Hydriomena* Hübner

H. furcata (Thunberg)

Plate 28, **18** and **19**

This species is distributed from Newfoundland west to Alaska and south to northern California. A duller, smoky variety (Plate 28, **18**), is found in Labrador. In Newfoundland, adults have been taken at St. John's, Terrenceville, New World Island, and St. Anthony. The moths are in flight from late July to late August and are considered rare. In Labrador, this species has been taken at Hopedale and Goose Bay, where the moths are in flight from mid-July to early September.

The mature larva is 12–20 mm long. The head is brown with dark brown markings, the thorax and abdomen are slightly rough and red in color, and there is a longitudinal black or brown middorsal line. The larva is a solitary defoliator, primarily on willow (*Salix* spp.), but may wander and feed on other forest trees and shrubs.

H. divisaria frigidata (Walker)

Plate 28, **20**

This subspecies occurs from Newfoundland, Nova Scotia, New Brunswick, Quebec, and Ontario west to Manitoba and south to New York. In Newfoundland, adults have been collected at St. John's, Mt. Pearl, Lethbridge, Lomond, South Branch, and Tompkins. The moths are in flight from late June to early August and are generally considered rare. This subspecies has not been recorded from Labrador.

The larva, according to McGuffin (1958a), is 10–18 mm long, slightly rough, and pale gray in color, often suffused with pink on the anterior half of each abdominal segment. The middorsal line is a dark gray, broadened on the first six or seven abdominal segments to form rectangular gray patches. The slightly roughened head is light brown with brown markings. The larva is a solitary defoliator on white spruce (*Picea glauca*), balsam fir (*Abies balsamea*), and pine (*Pinus* spp.).

H. renunciata (Walker)

Plate 28, **21**

The species is found in Newfoundland, Labrador, Nova Scotia, Maine, Quebec, south to Florida and west to the Pacific. McGuffin (1958a) reported it is found across Canada. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Lethbridge, Gander, St. Anthony, Pynns Brook, Georges Lake, St. George's, Tompkins, and Doyles, where the moths are in flight from mid-June to late July. In Labrador, adults have been taken at Hamilton Inlet and Cartwright, where the adults are in flight from mid-July to early August. This species is considered rare in both regions.

The mature larva is 13–18 mm long, the head is brown with dark brown markings, and the thorax and abdomen are slightly rough and pale brown in color. The middorsal line is brown and in some larvae widens into rectangles. The setae are long, brown, and pointed. The larva feeds principally on alder (*Alnus* spp.), but has been collected and reared on other hosts.

H. ruberata (Freyer)

Plate 29, 1

This circumpolar species occurs from Newfoundland, Nova Scotia, and the Atlantic States to the Pacific. It is considered rare in Newfoundland and has not been recorded from Labrador. Adults were taken by Krogerus (1954) at South Branch and Stephenville Crossing, 3–6 July 1949.

The larva, described from European specimens, is usually brown with inconspicuous markings. It is social when young and feeds on willow (*Salix* spp.) by webbing together the terminal leaves, and sometimes the catkins. The species is single brooded and hibernates as a pupa.

Genus *Xanthorhoe* Hübner

X. lacustrata (Guenée)

Plate 29, 2

This species is found in Newfoundland, Labrador, Nova Scotia, Quebec, west to Alberta and British Columbia, and in Maine, Pennsylvania, and Texas. In Newfoundland this species has been taken at St. George's and Tompkins, where moths are in flight in mid-June. In Labrador, a single specimen was taken at Cartwright by Cashman, 28 July 1955, and is now in the Canadian National Collection.

The mature larva is about 22 mm long and has a rough brown body and a smooth greenish yellow head. The middorsal line is a series of dashes and patches, and the subdorsal and subventral lines are wavy and brown. The larva feeds on snapweed (*Impatiens* spp.) and probably hibernates when partly grown.

X. labradorensis (Packard)

Plate 29, 3

This species occurs in Labrador, Newfoundland, Nova Scotia, and Quebec, south to North Carolina, and west to British Columbia. In Newfoundland, adults have been taken at St. Anthony and St. George's from mid-June to mid-July and in Labrador at Cartwright, Hopedale, and Caribou Island from early to late July.

The mature larva, according to McGuffin (1958a), is approximately 16 mm long, and has a smooth head with brown markings, and a pale brown thorax and abdomen with dark brown dorsal markings. The larva feeds on *Alyssum* spp. and hibernation is probably as a pupa.

X. munitata (Hübner)

RED CARPET (BR.)

Plate 29, 4

This Arctic-alpine species is widespread in Canada from the Atlantic to the Pacific, including the Yukon and the Northwest Territories. In Newfoundland, the species is widely distributed (Fig. 32) and at times locally common. The moths are in flight from late June to mid-August. In Labrador, adults have been taken at Hopedale and Cartwright, where they are in flight from early July until early September and are common in some years.

The mature larva is 22–25 mm long, pale in color, mottled with purplish brown on abdominal segments 1–5 and has faint dotted dorsal and subdorsal lines. The head may be smooth or slightly rough, and is pale with brown markings. The larva feeds on lady's-mantle (*Alchemilla* spp.), chickweed (*Stellaria* spp.), and groundsel (*Senecio* spp.).

X. ferrugata (Clerck)

RED TWIN SPOT

Plate 29, 5

This circumpolar species occurs throughout Canada, and extends south to Pennsylvania. In Newfoundland, the species has been taken at St. John's, Mt. Pearl, Kilbride, Salmonier, Steady Brook, Lomond, Doctors Brook, St. Anthony, Tompkins, Port aux Basques, Rose Blanche, Burgeo, and Grand Bruit. Moths are in flight from mid-June to late July and at times are fairly common. In Labrador, adults have been taken at Nagraak [Nachvak] Fiord, Cartwright, Hopedale, and Knob Lake, where adults are in flight from late June to mid-August. Specimens of the form *unidentaria* (Haworth) were recorded at St. John's, 30 July 1968, at Mt. Pearl, 1 July 1976, and at Kilbride, 4–5 July 1976.

The mature larva is 14–25 mm long, pale gray in color with brown middorsal and subdorsal lines. The head may be smooth or slightly rough and is pale gray with brown spots. The larva feeds on dandelion (*Taraxacum* spp.), ground-ivy (*Glechoma* spp.), and smartweed (*Polygonum* spp.).

X. ramaria Swett & Cassino

Plate 29, 6

This species is somewhat rare but can be found throughout arctic and mountainous areas of Canada. It has been recorded by Brower (1974) at Mt. Katahdin, Maine. In Labrador, adults have been taken at Hopedale,

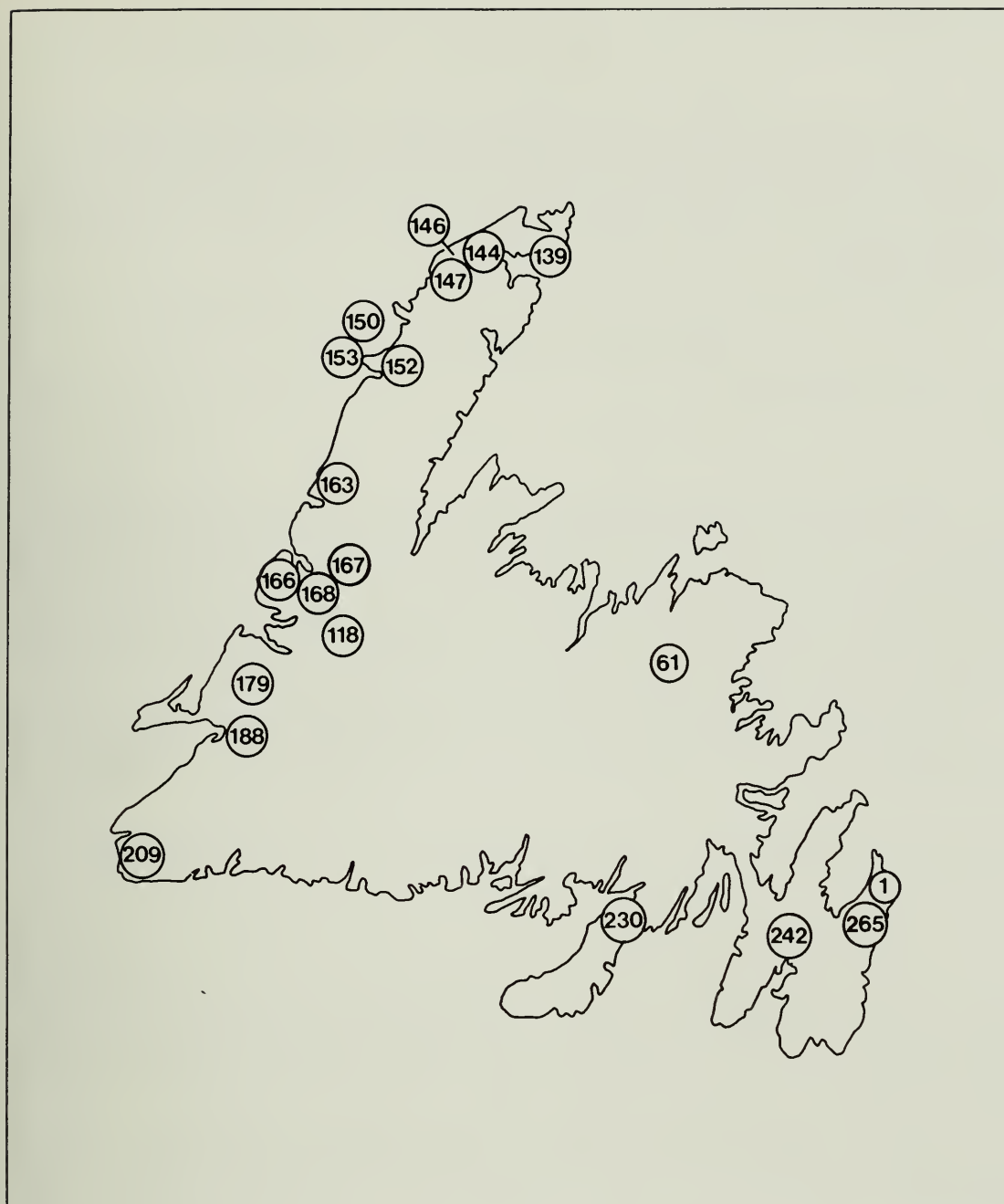


Fig. 32. Distribution of *Xanthorhoe munitata* (Hübner) in Newfoundland.

Cartwright, Hebron, and Knob Lake. The moths are in flight from mid-June to late July and are considered rare. The wings have an irregular pattern of lines and diagonals. This species has not been recorded from Newfoundland.

Details of the immature stages in Labrador are not available.

X. baffinensis McDunnough

Plate 29, 7

This unique species is, as the name implies, found on Baffin Island. In Labrador, it is represented by a single specimen taken at Knob Lake, on the Quebec–Labrador boundary, by Munroe, 1 July 1948. No additional specimens have been taken and the species has not been recorded from Newfoundland.

Details of the immature stages in Labrador are not available.

X. algidata (Möschler)

Plate 29, 8

This species is found in Quebec, Labrador, and western Newfoundland, and in the mountains of New York and New Hampshire. In Newfoundland, adults have been taken at Steady Brook and St. Anthony, where the moths are in flight from late June to mid-July and are, at times, locally common. In Labrador, adults have been taken at Hopedale, Cartwright, and Knob Lake, where they are in flight from mid-July to mid-August.

Details of the immature stages in Newfoundland and Labrador are not available.

X. iduata (Guenée)

Plate 29, 9

According to Krogerus (1954) this species is found in eastern and central areas of Canada, and south to North Carolina. In Newfoundland, adults have been taken at St. Barbe and Eddies Cove West, where the moths are in flight from mid to late July. In Labrador, a single specimen was taken at Cartwright by Stearns, 6 August 1955.

Details of the immature stages in Newfoundland and Labrador are not available.

X. abrasaria congregata (Walker)

Plate 29, 10

This subspecies is distributed throughout arctic Canada, and south in the higher mountains to New Hampshire and New York. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Colinet, Gander, Woody Point, Eddies Cove, Eddies Cove West, Doctors Brook, St. Anthony, Georges Lake, St. George's, Stephenville, Doyles, Tompkins, Codroy Valley, and Burin. The moths are in flight from mid-July to mid-August and at times are locally common. In Labrador, adults have been taken at Cartwright, Hopedale, Goose Bay, and Knob Lake, where they are in flight from

mid-July to late August. Packard (1888) also reported the subspecies from Caribou Island, Labrador.

Ferguson (1954) reported this subspecies as always occurring in spruce forest, although the larvae may not feed on conifers. However, further details of the immature stages in Newfoundland and Labrador are not available.

Genus *Dasyuris* Guenée

D. polata punctipes (Curtis)

Plate 29, 11

This subspecies is found in Labrador, Bradore Bay, Que., Port Burwell, Ont., and Churchill, Man. In Labrador, adults have been taken at Hopedale, Hebron, and Nain, where the moths are in flight from early July to late August. Many moths, now in the Canadian National Collection, were taken at Hopedale by Perrett between 1922 and 1934 and more were taken at Hebron by McAlpine between 19 July and 22 August 1954. Munroe (1951) reported that some of the species from Hopedale are transitional to the subspecies described below from Bradore Bay. *D. p. punctipes* has not been found in Newfoundland.

Details of the immature stages in Labrador are not available.

D. polata bradorata Munroe

Plate 29, 12

This subspecies was described by Munroe (1951) from a series of specimens taken by W. J. Brown at Bradore Bay in the Strait of Belle Isle between 30 July and 4 August 1930. Six specimens now in the Canadian National Collection were taken at St. Anthony by Moore and Wallis, 8–20 August 1951, and these are the only records from Newfoundland. However, more extensive collecting would probably prove *D. p. bradorata* to have a wider distribution.

Details of the immature stages in Newfoundland are not available.

Genus *Orthonama* Hübner

O. obstipata (Fabricius)

GEM

Plate 29, 13 and 14

This species is worldwide in its distribution. In North America, it is found from the Atlantic to the Pacific. In Newfoundland, adults have been taken at Woody Point, Eddies Cove West, and South Branch. The moths are

in flight from early to late July and are considered rare. The species has not been reported from Labrador.

The mature larva is 13–19 mm long. Its body is slightly roughened and green to reddish brown in color, and its pale brown head is reticulate and thickly dotted with dark brown. The middorsal and subdorsal lines are double but indistinct. The abdominal segments have five purplish intersegmental cross bands, each terminated laterally by a black longitudinal dash. The larva feeds on smartweed (*Polygonum* spp.) and dock (*Rumex* spp.) and there are probably two or more generations a year (McGuffin 1958a).

O. evansi McDunnough

Plate 29, 15

This rare species has been recorded from Nova Scotia, Quebec, and Ontario. In Newfoundland, a single specimen was taken by Krogerus at Stephenville Crossing, 7 July 1949. No additional specimens have been taken or observed and there are no records from Labrador.

Details of the immature stages in Newfoundland are not available.

Genus *Entephria* Hübner

E. aurata (Packard)

Plate 29, 16

This species is distributed from Labrador and Newfoundland west to the Northwest Territories, south to Maine, New Jersey, and New York, and west to Colorado. In Newfoundland, adults have been taken at Port au Choix and St. Anthony, where moths are in flight from early July to mid-August. In Labrador, adults have been taken at Hopedale and Knob Lake, where they are in flight from mid-July to late August.

The larva (Forbes 1948) is strongly mottled with red dorsally. It is found on heath (*Erica* spp.), orpine (*Sedum* spp.), saxifrage (*Saxifraga* spp.), and other alpine plants.

Genus *Mesoleuca* Hübner

M. ruficillata (Guenée)

Plate 29, 17

This species is found from Labrador, Newfoundland, Nova Scotia, Maine, and Quebec west to British Columbia and south to Carolina. In Newfoundland, adults have been taken at Mt. Pearl, Carbonear, and

Glenburnie, where the moths are in flight from mid to late July. In Labrador, adults have been taken at Cartwright, where they are in flight from late June to late July and are at times fairly common.

The mature larva is 18–28 mm long and has a smooth green body and a pale green head with brown markings. There is a red or brown triangular spot at the posterior edges of each of abdominal segments 1–7. The longitudinal lines are dark green dorsally and red laterally. There are four larval instars and the species hibernates as a pupa. The larva feeds on raspberry (*Rubus* spp.).

Genus *Epirrhoe* Hübner

E. alternata (Müller)

Plate 29, 18

This circumpolar species is distributed from Labrador, Newfoundland, and Nova Scotia south to the District of Columbia and west to Alaska and Washington. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, St. Barbe, Eddies Cove, Eddies Cove West, St. Anthony, Stephenville, Table Mountain, and Tompkins. The moths are in flight in Newfoundland from mid-July to mid-August and although widely distributed are never common. In Labrador, adults have been taken at Cartwright and Hopedale, where they are in flight from early July to early August.

The mature larva is 17–20 mm long and has a slightly rough pale gray body and a reticulate pale gray head with brown dots. The middorsal line is dark brown on the thorax and posterior abdominal segments, and there is a brown dorsal cross on each of abdominal segments 1–5. The other longitudinal lines are brown and irregular. The larva feeds on bedstraw (*Galium* spp.), is free-living, and has four larval instars. The species hibernates as a pupa (McGuffin 1958a).

Genus *Spargania* Guenée

S. magnoliata Guenée

Plate 29, 19

This species occurs from Newfoundland south to North Carolina and west to the Pacific. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Gander, Port au Choix, St. Anthony, Pynns Brook, Corner Brook, and Georges Lake. The moths are in flight from late June to mid-August and are considered rare. This species has not been recorded from Labrador.

The mature larva is 18–30 mm long and has a slightly roughened green, yellow green, or pale gray body and a green head with fine brown flecks. The longitudinal lines are pale gray, double gray, or brown. The larva feeds on fireweed (*Epilobium* spp.) and evening-primrose (*Oenothera* spp.), is free-living, and has four larval instars. The species hibernates as a pupa (McGuffin 1958a).

S. luctuata obductata (Möschler)

Plate 29, 20

This circumpolar subspecies is distributed in North America from Labrador south to New York and North Carolina and west to the Pacific. In Newfoundland, adults have been taken at Mt. Pearl, Gander, Lomond, Pynns Brook, Corner Brook, and St. George's, where the moths are in flight from mid-June to mid-July. In Labrador, adults have been taken at Hopedale, Makkovik, Hamilton Inlet, and Cartwright, where they are in flight from mid-June to late July. This species is considered rare, but at times may be locally common in both Newfoundland and Labrador.

The mature larva, according to McGuffin (1958a), is 20–25 mm long, and exists in two color forms. The green form has a pale russet green head, a yellow green body with grayish yellow green, yellow, and green longitudinal lines. The brown form has a pale brown head with brown markings, a yellow or pale brown body, and a brown middorsal line with a brown cross on each of abdominal segments 1–7. There are four free-living larval instars, which feed on fireweed (*Epilobium* spp.). This species overwinters as a pupa.

Genus *Euphyia* Hübner

E. unangulata (Haworth)

Plate 29, 21

This species is distributed from Labrador, Newfoundland, Nova Scotia, and Maine south to the District of Columbia and west to Alaska and Washington. It is also known to occur in Eurasia. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Lethbridge, Cow Head, Port au Choix, St. Barbe, St. Anthony, Corner Brook, Georges Lake, St. George's, Tompkins, and Port aux Basques. The moths are in flight from late June to early August and, at times, are quite common in some localities. In Labrador, adults have been taken at Cartwright and Goose Bay, where they are in flight from early July to early August.

The larva is brown, mottled, and variegated, with short dorsal lines at both ends. The first five abdominal segments have arrowhead-shaped dorsal markings which are dark but are edged on the inside with white. The larva feeds on bedstraw (*Galium* spp.) and plants of the Caryophyllaceae family.

Genus *Rheumaptera* Hübner

R. hastata (Linnaeus)

SPEAR-MARKED BLACK

Plate 29, 22 and 23

This circumpolar species is distributed in North America from Eastern Canada west to Manitoba, and south to Pennsylvania. *R. h. gothicata* (Guenée) is considered only a color variation of *R. hastata*. The variations in color are shown in Plate 29, 22 and 23; both forms occur in offspring of the same parent female. It is widely distributed in Newfoundland (Fig. 33) and is at times fairly common in some localities. These diurnal moths are in flight from mid-June to late July. In Labrador, adults have been taken at Cartwright, North West River, and Hamilton Inlet, where they are in flight from early to late July.

The mature larva, as described by McGuffin (1973), is 14–20 mm long and has an almost smooth dark brown to black body and a slightly roughened brown to dark brown or black head. The body may or may not have light lines; however, the spiracles of the abdomen are usually in light patches. The larvae feed within a shelter of leaves tied together and the pupal stage overwinters. Host plants include birch (*Betula* spp.), alder (*Alnus* spp.), willow (*Salix* spp.), and wax myrtle (*Myrica cerifera*).

R. subhastata (Nolcken)

Plate 29, 24

This species is distributed from Labrador, Newfoundland, Nova Scotia, and Maine west to Alberta and Vancouver Island. It is similar to *R. hastata*, but is smaller, the black coloring is more solid, and the underside of the hindwing is normally almost solid black. In Newfoundland, adults have been taken at Pynns Brook, St. Anthony, and St. George's, where the diurnal moths are in flight during mid-July. In Labrador, adults have been taken at Cartwright, Goose Bay, and Knob Lake, where they are in flight from late June to mid-July. This species is rare in both areas.

The mature larva is 12–17 mm long and has a light brown body with a light brown to white spiracular line. Other longitudinal lines are dark brown to black. The head is brown with dark brown markings in a herringbone pattern on the lobes. The larva feeds on alder (*Alnus* spp.), birch (*Betula* spp.), and willow (*Salix* spp.). The eggs are white or yellowish and are usually attached to the undersides of leaves of the host plant. The larva drops to the ground when fully grown, pupates, and hibernates in this stage. There is only one generation a year.

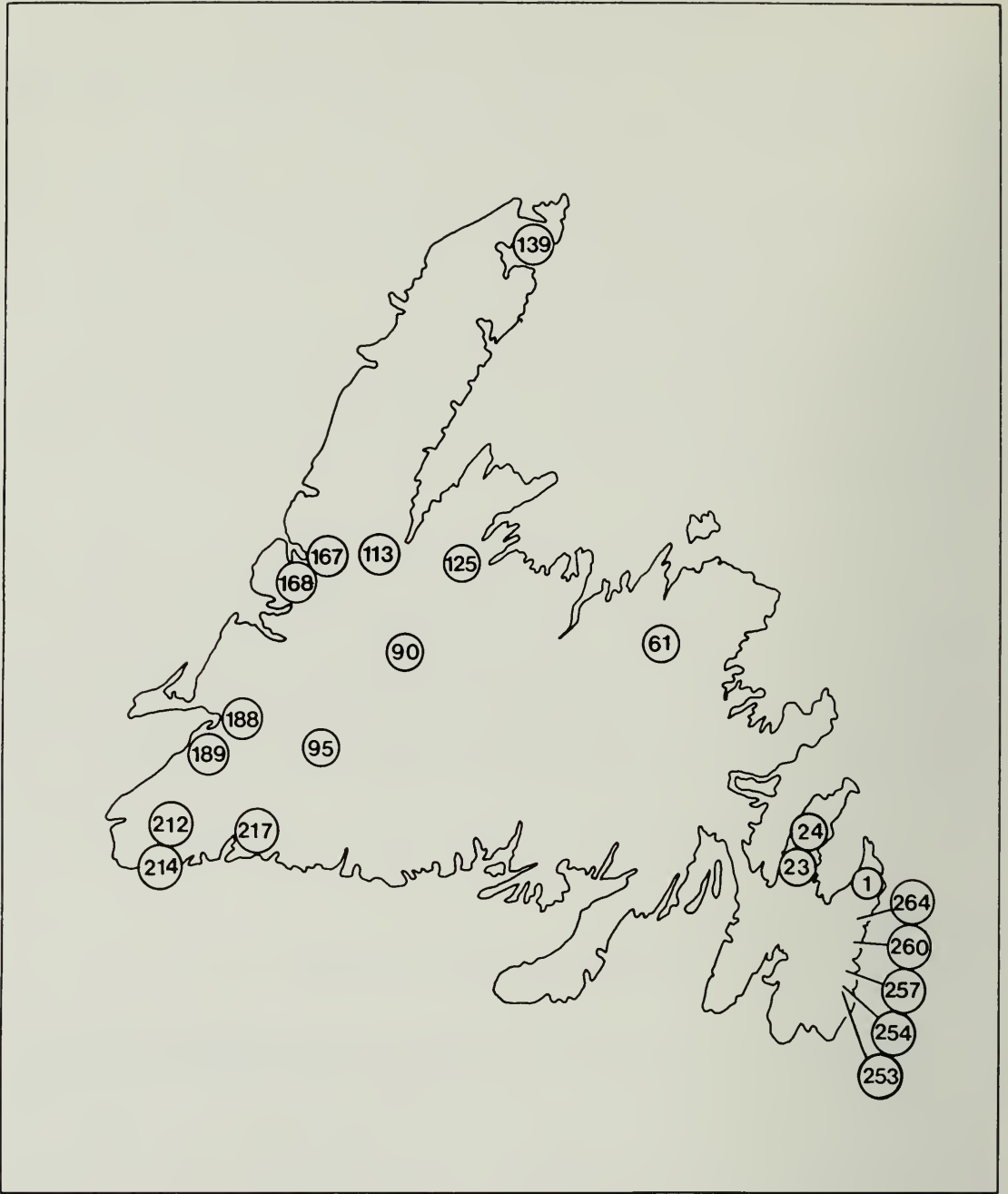


Fig. 33. Distribution of *Rheumaptera hastata* (Linnaeus) in Newfoundland.

Genus *Perizoma* Hübner

P. basaliata (Walker)

Plate 29, 25

This species is known to occur from Labrador, Newfoundland, Nova Scotia, Ontario, Maine, New Hampshire, and New York to Alberta. In

Newfoundland, adults have been taken at Corner Brook, Glenburnie, Woody Point, Lomond, Cow Head, Port au Choix, Eddies Cove West, and St. Anthony. The moths are in flight from early July to mid-August. In Labrador a single specimen was taken at Cartwright by Stearns, 5 August 1955.

Details of the immature stages in Newfoundland and Labrador are not available.

P. alchemillata (Linnaeus)

SMALL RIVULET (BR.)

Plate 29, 26

This species is found throughout the greater part of Europe, Asia Minor, and central Asia. It is relatively new to North America and is found only in Newfoundland (Morris and Bolte 1977). Adults were first taken at St. John's, 22 July 1954, and were also reported from Donovans and Mt. Pearl by Ferguson (1958) in the same year. Adults have since been taken at Bay Bulls, Kilbride, Lethbridge, Stephenville, St. George's, and Tompkins, where they are in flight from early July to early August. The species is now widely distributed and at times fairly common.

The larva, as described by South (1961), is plump, purplish dorsally, yellowish green ventrally, and has a glossy black head. The dorsal line is broad and yellow, and the lateral lines, also yellow but narrower, are above black spiracles. The larva feeds on the seed capsules of hemp nettle (*Galeopsis* spp.) and is single brooded. The species probably hibernates as a pupa.

Genus *Anticlea* Stephens

A. vasiliata (Guenée)

Plate 29, 27

This species is found from Newfoundland, Nova Scotia, Maine, and Quebec south to New Jersey and west to the Pacific. In Newfoundland, the species is widely distributed but not common. Adults have been taken at St. John's, Kilbride, Mt. Pearl, Pynns Brook, Harmon Field, St. George's, and Tompkins. The moths are in flight from mid-May to early July. This species has not yet been recorded from Labrador but probably exists there.

The mature larva is 20–30 mm long and has a slightly rough green head and a green thorax and abdomen with faint white lines. The larva is free-living, has five instars, and feeds on raspberry (*Rubus* spp.). The species probably hibernates as a pupa.

A. multifurcata (Walker)

Plate 29, 28

This species is transcontinental in its distribution, occurring in Labrador, Newfoundland, Nova Scotia, Quebec, and Maine, west to the Pacific,

and north to the Yukon. In Newfoundland, adults have been collected at St. John's, Mt. Pearl, Grand Bruit, Burgeo, and Port aux Basques, where the moths are in flight from mid to late June. Eight adults were taken at Cartwright in Labrador by Stearns between 5 and 19 July 1955, but the species is rare in both Newfoundland and Labrador.

The mature larva is about 20 mm long and has a finely reticulate white head with a broad brown line on the upper angles, a finely reticulate or smooth thorax and abdomen, and a yellow prothoracic shield. It feeds on fireweed (*Epilobium* spp.) and has four instars. The species probably hibernates as a pupa (McGuffin 1958a).

Genus *Venusia* Curtis

V. cambrica Curtis

WELSH WAVE (BR.)

Plate 29, 29

This circumpolar species occurs across North America from Labrador to Alaska and from North Carolina to northern California. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Salmonier, Bay L'Argent, Lethbridge, Gander, Glenburnie, Lomond, Port au Choix, Eddies Cove West, Pynns Brook, Spruce Brook, Georges Lake, St. George's, Tompkins, and Doyles. The moths are in flight from late June to mid-August and at times are locally common. Five adults, now in the Canadian National Collection, Ottawa, were taken at Cartwright, Labrador, by Stearns between 26 July and 2 August 1955.

The mature larva is 12–18 mm long and has a smooth pale green head, a slightly rough, pale green or yellow green thorax and abdomen, and sometimes a red triangular marking on the back of abdominal segments 1–6. It is free-living and feeds on alder (*Alnus* spp.) and mountain ash (*Sorbus americana*). The species hibernates as a pupa.

V. comptaria (Walker)

Plate 29, 30

This species occurs in Newfoundland, Nova Scotia, Maine, Quebec, and Ontario, and south to Washington, D.C. In Newfoundland this species is represented by a specimen taken at Gander by Krogerus, 2 June 1949, and another at Paddys Pond (approximately 13 km west of St. John's), 20 May 1976. There are no records from Labrador.

The mature larva is 8–16 mm long, has a rough, pale green head, and a green, slightly rough thorax and abdomen. It is free-living, matures in four instars, and feeds on alder (*Alnus* spp.) and mountain ash (*Sorbus americana*). The pupa is the overwintering stage.

Genus *Hydrelia* Hübner

H. lucata (Guenée)

Plate 29, 31

This species occurs from Newfoundland, Nova Scotia, Quebec, and Maine south to Virginia and Kentucky. In Newfoundland, specimens have been taken at St. George's, 11–12 July 1976, and by Krogerus (1954) at Glenburnie and Steady Brook between 10 and 19 July 1949. The Krogerus specimens were labeled as *H. inornata*; however, these specimens have recently been determined by K. Bolte of the Biosystematics Research Institute, Ottawa, to be *H. lucata*. For comparison, a specimen of *H. inornata* is shown in Plate 29, 32. The species has not been found in Labrador.

Details of the immature stages in Newfoundland are not available.

H. albifera (Walker)

Plate 30, 1

This species is known to occur from Newfoundland, Nova Scotia, New Brunswick, Maine, and Ontario south to Pennsylvania and west to eastern British Columbia. In Newfoundland, adults have been collected at Mt. Pearl, Lomond, Glenburnie, St. Barbe, Eddies Cove West, St. John Island, Corner Brook, Spruce Brook, South Branch, and Table Mountain. The moths are in flight from late June to late July. The species is considered to be rare in Newfoundland and is not recorded from Labrador.

The mature larva is 9–10 mm long, has a pale green or pale russet green head with pale brown specks, and a slightly rough green thorax and abdomen. The setae are long, brown, and pointed. The larva is free-living on dogwood (*Cornus stolonifera*).

H. terraenovae Krogerus

Plate 30, 2

This species was described by Krogerus (1954) from a single female moth collected 30 July 1949 at Eddies Cove West. So far, the species is known from Newfoundland only. The type specimens are now in the Canadian National Collection. No additional specimens have been taken or observed since.

Details of the immature stages in Newfoundland are not available so far.

Genus *Lomographa* Hübner

L. semiclarata (Walker)

Plate 30, 3

This species is known to occur from Newfoundland, Nova Scotia, New Brunswick, Quebec, and Maine south to New York and Virginia and west to southern British Columbia. The moths are diurnal and are reported to be locally common at times. In Newfoundland, adults have been collected at St. John's, Tors Cove, La Manche, Ferryland, Holyrood, and Millertown, where they are in flight from early to late June. There are no records from Labrador.

The larva is a solitary defoliator on cherry (*Prunus* spp.) and hawthorn (*Crataegus* spp.).

L. vestaliata (Guenée)

Plate 30, 4

This species is distributed from Newfoundland, Nova Scotia, Quebec, Maine, and Ontario south to Alabama and Texas and west to Alberta and Colorado. In Newfoundland, adults have been collected at widely separated localities, including Carbonear, Bay d'Espoir, Terra Nova, and Corner Brook. The moths are in flight from mid-June to mid-July.

The larva is a solitary defoliator on choke cherry and pin cherry (*Prunus* spp.), mountain ash (*Sorbus* spp.), and hawthorn (*Crataegus* spp.).

L. glomeraria (Grote)

Plate 30, 5

This species occurs in Newfoundland, Nova Scotia, New Brunswick, Maine, Quebec, and Ontario, west to Manitoba and Wisconsin, and south to Alabama. In Newfoundland, adults have been collected at St. John's, Kilbride, Pynns Brook, and Tompkins, where the moths are in flight from early to late June. The species is widely distributed in Newfoundland and is at times fairly common, but is not recorded from Labrador.

The larva is translucent blue green with thin whitish dorsal and lateral lines and a yellow green head (Ferguson 1954). It is a solitary defoliator on cherry (*Prunus* spp.) and hawthorn (*Crataegus* spp.).

L. glomeraria ab. *merricki* (Cassino & Swett)

Plate 30, 6

This aberration is found in Newfoundland, Nova Scotia, Ontario, and Quebec. It is similar to the preceding species but may be differentiated by

the median area of the forewing, which is a contrasting dark brown. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Pynns Brook, and St. George's, where the moths are in flight from late May to late June. This moth has not been recorded in Labrador.

Details of the immature stages in Newfoundland are unavailable but are probably similar to those of *L. glomeraria*.

Genus *Cabera* Treitschke

C. borealis (Hulst)

Plate 30, 7 and 8

This northern species is known to occur in Labrador and northern Quebec, and west to Alberta and British Columbia. In Labrador, adults have been taken at Hopedale and Cartwright from early to late July. The species is locally common in Labrador, but is not recorded from Newfoundland.

The larva has a pale green or pale yellow green thorax and abdomen, with a green middorsal line and a gray or green subspiracular line. The head is russet green or yellow green with a dark brown or red brown bar on the lower side of each cheek. The larva feeds on willow (*Salix* spp.) and when fully grown ties leaves together with silk and pupates within this shelter (McGuffin 1958b).

C. variolaria Guenée

PINK STRIPED WILLOW SPANWORM

Plate 30, 9

This small white moth is found in Newfoundland, Nova Scotia, New Brunswick, Maine, the Hudson Bay area, west to British Columbia, and south to North Carolina and Arizona. In Newfoundland, the species is represented by a single specimen taken at Gander by Hennigar, 29 July 1949. The species is considered rare, but is probably more widespread than present records indicate.

The larva is a solitary defoliator on willow (*Salix* spp.) and sometimes trembling aspen (*Populus tremuloides*). It has a smooth green head with pink lateral lines on the upper side, and a pale green or pale yellow green abdomen with eight brown middorsal spots, each flanked with a pale lilac patch. There is also a brown larval form of this species that has a pale blue abdomen.

C. erythemaria Guenée

Plate 30, 10

This species is distributed in Newfoundland, Labrador, Nova Scotia, Maine, Quebec, and Ontario, south to Pennsylvania, and west to Manitoba

and British Columbia. In Newfoundland, adults have been taken at St. John's, Kilbride, Mt. Pearl, Goulds, Chamberlains, Lethbridge, Gander, Eddies Cove West, Cook's Harbour, St. Anthony, Pynns Brook, Corner Brook, Georges Lake, Doyles, and Tompkins. The moths are in flight from late June to mid-August. In Labrador, adults have been taken at Cartwright from early to mid-July.

The mature larva is green, with a red brown stripe on each side of the head. The body has a diffuse white dorsal stripe and a white patch on the middle of each segment, divided by a deep crimson dash (Forbes 1948). The larva is a solitary defoliator on willow (*Salix* spp.).

Genus *Isturgia* Hübner

I. truncataria (Walker)

Plate 30, 11

This small, colorful, diurnal species is found in Newfoundland, Labrador, Nova Scotia, and Maine, south to New Jersey, and west to Alaska, Colorado, and Arizona. In Newfoundland, adults have been taken at Portugal Cove, St. John's, Colinet, Cinq Cerf River, Grand Bruit, and St. Anthony. Specimens from St. Anthony were taken by Winn (1913). The moths are in flight from early to late June and are found in peat or sphagnum bogs as they fly around their host plants during the day. In Labrador, adults have been taken at Cartwright and Goose Bay, where the moths are in flight from early June to early July.

The mature larva is 15–16 mm long and has a russet to green head with five brown marks, and a green body that has light green or white lines with gray margins. The larva feeds on bearberry (*Arctostaphylos* spp.) and has five instars. The species overwinters as a pupa.

Genus *Semiothisa* Hübner

S. bisignata (Walker)

REDHEADED INCHWORM

Plate 30, 12

This species, according to Prentice (1963), is distributed from Newfoundland west to central Ontario, with records of single specimens collected in Manitoba and Alberta. McGuffin (1972) gave the distribution as Nova Scotia to northwestern Ontario and south to North Carolina. In Newfoundland, Prentice (1963) reported that the species was taken in the Baie Verte area. No additional specimens have been taken or observed.

The mature larva is 14–22 mm long, and has a russet green head suffused with brown and a yellow green to green body with green or greenish white longitudinal lines. It feeds on eastern white pine (*Pinus strobus*) and spruce (*Picea* spp.), and has five instars. The species hibernates as a pupa.

S. signaria dispuncta (Walker)

Plate 30, 13

This subspecies is transcontinental in its distribution, occurring from Newfoundland and Labrador to the Queen Charlotte Islands, B.C. (McGuffin 1972). In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Topsail, Salmonier, Villa Marie, Mussel Pond, Triton Brook, Pynns Brook, Lomond, Glenburnie, St. Barbe, Eddies Cove West, Daniel's Harbour, Piccadilly, Stephenville Crossing, St. George's, Stephenville, South Branch, Tompkins, Doyles, Table Mountain, Port aux Basques, and Grand Bruit. The moths are in flight from early June to late July and at times are locally common. In Labrador, adults have been taken at Cartwright and Goose Bay, where they are in flight from late June to early August. Packard (1888) reported this subspecies from Square Island, Labrador.

The mature larva is 20–30 mm long, and has a yellow green head with brown markings, and a light green body with double gray, white-flecked green, and black longitudinal lines. The larva feeds on balsam fir (*Abies balsamea*), spruce (*Picea* spp.), tamarack (*Larix* spp.), and pine (*Pinus* spp.), and has five, and occasionally six, instars. The pupa is the overwintering stage.

S. submarmorata (Walker)

Plate 30, 14

McGuffin (1972) stated that this species was distributed from Nova Scotia to western Alberta. Ferguson (1974) reported that adults were taken in Newfoundland at Topsail, Bonavista South, Witless Bay Line, Salmonier, Grand Falls, Doyles, and Millville. The adults were in flight from late June to early August. This species has not been reported from Labrador.

The mature larva is 16–19 mm long, and has a light green to gray green head and a green body with double russet green, light green, and double dark gray longitudinal lines. It is a solitary defoliator on tamarack (*Larix* spp.). The species hibernates as a pupa (McGuffin 1972).

S. oweni (Swett)

Plate 30, 15

This species was originally described as a variety of *S. granitata* by Swett in 1907, based on a male specimen collected in August at Grand

Lake, Newfoundland. In 1917, the variety was raised to the rank of a species by Barnes and McDunnough. The species is now distributed from Newfoundland, Maine, and Nova Scotia to western Alberta. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Salmonier, Grand Lake, Pynns Brook, St. George's, Doyles, and Tompkins. The moths are in flight from early July to early August and are considered rare.

The mature larva is 17 mm long, and has a chestnut brown head and a green body with double gray longitudinal lines. It is a solitary defoliator on tamarack (*Larix* spp.). The species hibernates as a pupa.

S. sexmaculata (Packard)

Plate 30, 16

This small gray brown species was described by Packard in 1866 from specimens (both male and female) taken at Square Island, Labrador. It is distributed from Newfoundland to eastern British Columbia, north to the Northwest Territories, and south to Massachusetts, New York, and Oregon. The species is widely distributed and common in Newfoundland and Labrador (Figs. 34a and b). The moths are in flight in Newfoundland from late May to mid-August and in Labrador from late June to early August.

The mature larva is 12–18 mm long and is found in green and brown forms. The green form has a green head and body with dark green and whitish lines. The brown form has a gray head with dark gray or purplish gray markings, and a light gray body with double gray lines. The host plant is tamarack (*Larix* spp.) and the species hibernates as a pupa (McGuffin 1972).

S. neptaria (Guenée)

Plate 30, 17 and 18

This species is distributed from Newfoundland, Nova Scotia, and Maine west to Vancouver Island, north to the Yukon and Northwest Territories, and south to New Hampshire, New York, and California. Forbes (1948) reported the race *trifasciata* taken at Grand Lake, Newfoundland. No specimens have been taken or observed since. The moths are in flight from late June to mid-July and are considered rare. They have not been found in Labrador.

The mature larva, as described by McGuffin (1972) is 18–25 mm long and is known to exist in green and gray brown forms. The green form has a light gray green head with brown on the lobes, and a yellow green body with double green lines. The gray brown larva has a light gray to light brown head and a light brown to reddish yellow body with double gray or brown lines. The larvae feeds on willow (*Salix* spp.) and poplar (*Populus* spp.). The species hibernates as a pupa.

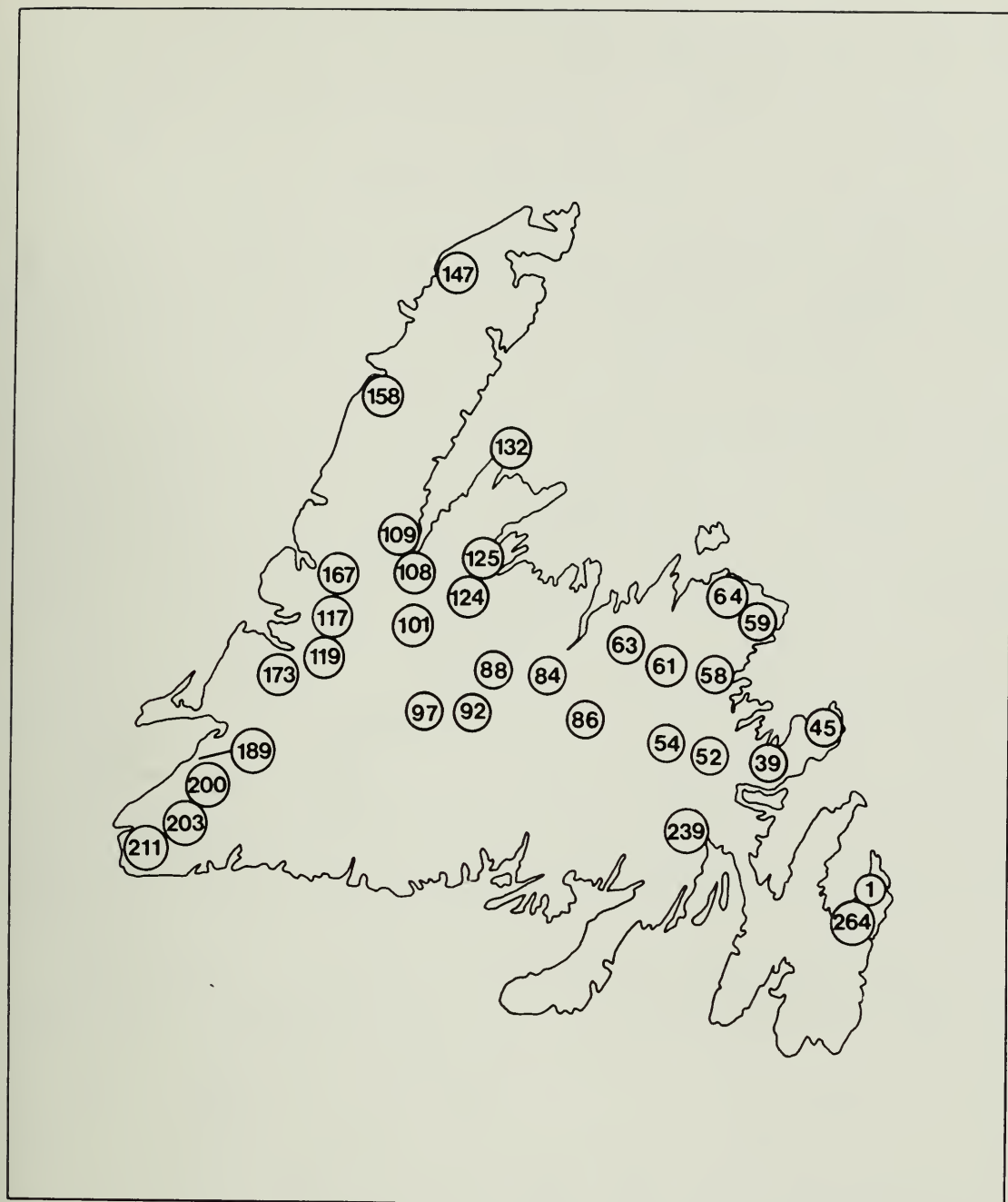


Fig. 34a. Distribution of *Semiothisa sexmaculata* (Packard) in Newfoundland.

S. hebetata (Hulst)

Plate 30, 19

This species is distributed from Labrador to the Yukon and south to Colorado. The dark-lined form was originally described as a distinct species but was later relegated to the form *ponderosa* of *hebetata* (McGuffin 1972). The species has been taken in Labrador at Cartwright and Goose Bay, where moths are in flight from mid to late June. They are considered rare and have not been recorded from Newfoundland.



Fig. 34b. Distribution of *Semiothisa sexmaculata* (Packard) in Labrador.

The mature larva is 18–24 mm long and may be found in two color forms. The brown form has a yellow head heavily marked with reddish brown, and a brown body with brown lines and patches. The green form has

a yellow green head with gray green markings, and a yellow green body with gray green double lines. The larva feeds on willow (*Salix* spp.). There are five instars, and the pupa hibernates.

Genus *Itame* Hübner

This is a large genus of homogenous species. There are 20 species in Canada, 10 of which have been recorded from Newfoundland and Labrador. Some species are related in such complex ways that they can be separated only with great difficulty. Ferguson (1953) and McGuffin (1972) have described the Canadian species in detail.

All species of the genus overwinter in the egg stage. The eggs are oval to ellipsoidal, sculptured, and sometimes have tiny white knobs on ridges. They are laid on the stems or branches of host plants or on the ground near the host plant. The larvae of this genus feed stretched out along the leaves of host plants and, after completing five instars of growth, form brown pupae either in cocoons of soil particles held together loosely with silk, or on the surface of the ground without cocoons.

I. pustularia (Guenée)

LESSER MAPLE SPANWORM

Plate 30, 20

This species is distributed from western Newfoundland, Nova Scotia, and Quebec south to Florida and west to Wisconsin, Iowa, and Saskatchewan. In Newfoundland, a single specimen was taken by the Forest Research Service at Stephenville Crossing, 6 August 1966. The species is considered rare and has not been reported from Labrador.

The mature larva is about 20 mm long, and has a green head and a cream body with double green lines. It feeds on maple (*Acer* spp.). The egg is the overwintering stage.

I. argillacearia (Packard)

Plate 30, 21

This species occurs in Newfoundland, Maine, Quebec, southern Ontario, New York, and New Jersey. In Newfoundland, adults have been taken on a sphagnum bog at Colinet. The moths are in flight from mid-July to early August, and are considered rare. The species has not been reported from Labrador.

The larva has been reported on *Vaccinium* spp.

I. andersoni (Swett)

Plate 30, 22

This species is known from Newfoundland and Labrador west to northern British Columbia and the Yukon. In Newfoundland, adults have

been taken at Kilbride, Gander, St. John Island, and Port au Choix, where the moths are in flight from mid-July to early August. In Labrador, adults have been collected at Cartwright and Knob Lake, where the moths are in flight from late July to early August. The species is considered rare in both regions.

The mature larva is 14–17 mm long, and has a white head with black patches, and a light body with two subdorsal rows of fine black dots and a lateral black line. Ferguson (1954) reported rearing adults from larva on *Vaccinium* spp.

I. sulphurea (Packard)

Plate 30, 23 and 24

This species occurs from Labrador, Nova Scotia, and Maine south to Massachusetts and west to British Columbia and California. The various races of the species have been illustrated by McGuffin (1972). In Newfoundland, adults have been taken at St. John's, Carbonear, Fortune, Gander, Gaff Topsail, Grand Lake, Woody Point, Doctor's Hills, Eddies Cove West, St. Anthony, Corner Brook, and Spruce Brook. The moths are in flight from mid-July to mid-August and at times are locally common. In Labrador, 104 adults, now in the Canadian National Collection, were taken at Cartwright by Stearns between 10 July and 11 August 1955.

The mature larva is 18–20 mm long, and has a light green body with a lateral cream stripe and a less distinctly green head with a lateral cream stripe on the lower lobe. It is a solitary defoliator on cranberry (*Vaccinium* spp.) and meadow fern (*Myrica gale*).

I. brunneata (Thunberg)

Plate 30, 26 and 27

This circumpolar species is distributed from Labrador, Newfoundland, Nova Scotia, and Maine west to Alaska and British Columbia and south to Massachusetts, Michigan, and Wyoming. It is also found in northern Europe, the mountains of central Europe, Siberia, and Japan (McGuffin 1972). In Newfoundland, adults have been collected at St. John's, Colinet, Port de Grave, Gander, Springdale, Davis Pond Road, Woody Point, and Eddies Cove, where the moths are in flight from early July to late August. In Labrador, the species has been taken at Cartwright and Goose Bay, where they are in flight from late July to mid-August.

The mature larva is brown and has many longitudinal lines that are predominantly green dorsally, reddish brown subdorsally, yellowish laterally, and a dirty white ventrally. The host plants are trembling aspen (*Populus tremuloides*), birch (*Betula* spp.), and *Vaccinium* spp.

I. subcessaria (Walker)

Plate 30, 25

This species occurs from Newfoundland, Nova Scotia, Maine, and Quebec west to Manitoba and Iowa and south to Pennsylvania and New York. Adults were recorded from Newfoundland by Bruton (1930) who reported that a specimen was taken by Gosse at Carbonear in 1832. No specimens have been taken or observed since and none have been recorded from Labrador. McGuffin (1972) stated that moths were present in July and early August and Forbes (1948) reported that the larva fed on red currant and could also be found on wild currant and gooseberry (*Ribes* spp.).

I. anataria (Swett)

Plate 30, 28

This species is distributed from Labrador, Newfoundland, Nova Scotia, and Maine west to British Columbia, Alaska, and the Yukon and south in the eastern United States to Massachusetts, New Hampshire, and New York. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Gander, Badger, Pynns Brook, and St. Anthony, where the moths are in flight from late June to mid-August. This species is generally considered rare, but at times may be locally common. In Labrador, adults have been collected at Cartwright, Hopedale, and Goose Bay, where they are in flight from mid-July to mid-September.

The mature larva is 12–22 mm long, and has a light brown to brown head and a light gray to green body with double black lines. It feeds on birch (*Betula* spp.), willow (*Salix* spp.), alder (*Alnus* spp.), and shrubby cinquefoil (*Potentilla fruticosa*, known as widdy in Newfoundland).

I. exauspicata (Walker)

Plate 30, 29

This species is found in Newfoundland, New Brunswick, and Maine, west to British Columbia, south to Pennsylvania in the east, and Idaho and Oregon in the west. In Newfoundland, the species is represented by a single specimen, now in the Canadian National Collection, taken by the Forest Research Service at Trinity, 12 July 1967. It is not found in Labrador.

The mature larva is 20–25 mm long, and has a light gray or light green body with double black lines and a light gray, light green, or light brown head with black markings. It feeds on willow (*Salix* spp.), elm (*Ulmus* spp.), poplar (*Populus* spp.), alder (*Alnus* spp.), and hawthorn (*Crataegus* spp.).

I. bitactata (Walker)

Plate 30, 30

This species occurs in Labrador, Newfoundland, Nova Scotia, and Maine, west to British Columbia and the Yukon, south to Pennsylvania in the east and California in the west. In Newfoundland, adults have been taken at Cow Head, Georges Lake, and St. Anthony. The moths are in flight from mid-July to late August and are considered rare. In Labrador, adults have been taken at Hopedale, where they are in flight from mid to late August.

The mature larva is 15–20 mm long and is known to exist in two phases. The green phase has a light russet green head and a green body with double white lines and a yellow lateral line. The brown phase has a brown head and a light gray body with double gray lines, usually with dark oblique markings. The larva feeds on currant and gooseberry (*Ribes* spp.) and alder (*Alnus* spp.).

I. loritaria (Eversmann)

Plate 30, 31 and 32

This species is distributed from Newfoundland west to British Columbia and Alaska and south to New York and Colorado. In Newfoundland, adults have been taken at Gander, where three specimens, now in the Canadian National Collection, were taken 29–31 July 1949. The female wings are reduced to short pads. The species has not been reported from Labrador.

The mature larva has a pea green head and a green body with a green middorsal line flanked by a white line, a greenish white lateral line, and a light midventral line. It feeds on poplar (*Populus* spp.), willow (*Salix* spp.), and birch (*Betula* spp.).

Genus *Eufidonia* Packard

E. convergaria (Walker)

Plate 30, 33

This geometrid occurs from Newfoundland, Nova Scotia, Maine, and Ontario west to eastern British Columbia and south to Wisconsin and West Virginia. It is most common in the Prairie Provinces. In Newfoundland, adults have been taken at St. George's, where the moths are in flight during early July. This species is considered rare and has not been recorded from Labrador.

The mature larva is green with double green dorsal and addorsal lines, a yellowish subdorsal line that has a dark lower edge, and a white

spiracular line with a yellow or crimson lower edge. The head has small brown spots in a diagonal pattern. The larva feeds on pine (*Pinus* spp.), tamarack (*Larix* spp.), hemlock (*Tsuga* spp.), and spruce (*Picea* spp.).

E. discospilata (Walker)

Plate 31, 1

The range of this species is more northern than that of *E. convergaria*, which it very closely resembles. It is found from Newfoundland west to British Columbia and south to Massachusetts. In Newfoundland, adults have been taken at St. John's, Goulds, Cochrane Pond, Cape Broyle, La Manche, Ferryland, Colinet, Holyrood, Salmonier, Gander, Grand Falls, Springdale, St. Anthony, Steady Brook, South Branch, Port aux Basques, Grandy Brook, Burgeo, Grand Bruit, and the Cinq Cerf River. The moths are in flight from early June to late July and are rare in all localities. In Labrador, adults have been taken at Goose Bay and Cartwright, where they are in flight from mid-June to late July.

The mature larva is green and has light dorsal lines with gray green edges, yellow lateral lines with a scarlet lower edge, and white ventral lines. It feeds on blueberry (*Vaccinium* spp.), laurel (*Kalmia* spp.), and birch (*Betula* spp.).

Genus *Hypagyrtis* Hübner

H. piniata (Packard)

PINE MEASURINGWORM

Plate 31, 2

This species ranges from Newfoundland to British Columbia and across the northern United States. In Newfoundland, adults have been taken at Clarendville, Sweet Bay, Lewisporte, South Brook, Spruce Brook, St. George's, and Grand Bruit. Prentice (1963) reported that the species is widely distributed throughout Newfoundland. The moths are in flight from mid-June to mid-August and are never common. There are no records from Labrador.

The larva is a solitary defoliator on balsam fir (*Abies balsamea*), spruce (*Picea* spp.), tamarack (*Larix* spp.), and pine (*Pinus* spp.).

Genus *Protoboarmia* McDunnough

P. porcelaria (Guenée)

Plate 31, 3

This species is distributed from Newfoundland, Nova Scotia, Quebec, and Maine west to Vancouver Island and south to Texas and Florida. In

Newfoundland, the species is generally in or near coniferous forests. Adults have been taken at Salmonier, Gander, Goose Arm Road, Wiley Brook, Cormack, Lomond, Glenburnie, Woody Point, Corner Brook, St. George's, and Doyles. The moths are in flight from early to late July and at times are moderately common. The species has not been reported from Labrador.

The larva is a solitary feeder on balsam fir (*Abies balsamea*), spruce (*Picea* spp.), tamarack (*Larix* spp.), pine (*Pinus* spp.), birch (*Betula* spp.), and many other forest trees. Prentice (1963) lists 45 host trees from survey records.

Genus *Anavitrinella* McDunnough

A. pampinaria (Guenée)

CRANBERRY SPANWORM

Plate 31, 4

This species is distributed from Newfoundland to British Columbia. Prentice (1963) reported that this moth was found at Corner Brook, Gander, Gambo, and Terra Nova in Newfoundland. The moths are in flight from mid-June to mid-August and are considered rare. They are not found in Labrador.

The larva, a general feeder, is usually pale yellowish green, but sometimes gray or brown. It has a broad reddish brown dorsal stripe edged with black, and a small black spot on each side of the 5th segment. It is a solitary defoliator on yellow birch (*Betula lutea*), willow (*Salix* spp.), white spruce (*Picea glauca*), and dock (*Rumex* spp.).

Genus *Iridopsis* Warren

I. larvaria (Guenée)

Plate 31, 5

This species is distributed from Newfoundland, Nova Scotia, Maine, and Ontario south to Georgia and west to Alberta and Oregon. In Newfoundland, adults have been taken at Salmonier, Gander, Lomond, Glenburnie, Pynns Brook, St. George's, and Doyles. Although widely distributed, the species is considered rare. The moths are in flight from early to late July. They have not been recorded from Labrador.

The mature larva is green, shaded with dull red. The dorsal band is widened in the middle of each segment and is broken between the abdominal segments (Forbes 1948). The larva is a solitary defoliator on birch (*Betula*

spp.), alder (*Alnus* spp.), willow (*Salix* spp.), and poplar (*Populus* spp.). The species hibernates as a pupa.

Genus *Anacamptodes* McDunnough

A. vellivolata (Hulst)

Plate 31, 6

This species occurs from Newfoundland, Nova Scotia, and New Brunswick west to central Saskatchewan and south to Florida, Oklahoma, and Texas. Prentice (1963) reported that the species was taken at Grand Falls, but no specimens have been taken or observed since.

The larva is red brown, heavily mottled and banded with purple, especially laterally, and with yellow patches near the spiracles. The head is reddish brown and yellow (Forbes 1948). It is a solitary defoliator on pine (*Pinus* spp.), spruce (*Picea* spp.), and tamarack (*Larix* spp.) and is considered to be rare.

Genus *Aethalura* McDunnough

A. anticaria (Walker)

Plate 33, 16

Prentice (1963) reported that this species had a discontinuous distribution from Nova Scotia west to southern British Columbia. It was first collected in Newfoundland in 1975 at Tompkins, St. George's, and Pynns Brook. The moths were in flight 6–25 June and were fairly common.

The larva feeds on white birch (*Betula papyrifera*), alder (*Alnus* spp.), and occasionally on willow (*Salix* spp.). The St. John's Forest Research Laboratory reared adult moths from larvae found feeding on balsam fir (*Abies balsamea*) at Grand Falls, 14 July 1976. It is sporadic in its appearance and may be plentiful in some regions and rare in others in the same year.

Genus *Ectropis* Hübner

E. crepuscularia (Denis & Schiffermüller) SMALL ENGRAILED (BR.)

Plate 31, 7

This moth is widely distributed throughout southern Canada from Newfoundland to Vancouver Island, and south to West Virginia. The species is widely distributed in Newfoundland and adults have been taken at

St. John's, Mt. Pearl, Windsor Lake, Baine Harbour, Exploits Dam, Western Brook, Western Brook Pond, Ochre Hill Road, South Brook, Cormack, Pynns Brook, St. George's, and Tompkins. The moths are in flight from mid-June to mid-July. In Labrador, a single specimen was reared from a larva taken at Snug Harbour by the Forest Research Centre. The adult emerged under laboratory conditions 27 February 1970.

The larva is a solitary defoliator on 70 host trees (Prentice 1963), the most common being hemlock (*Tsuga* spp.), balsam fir (*Abies balsamea*), Douglas-fir (*Pseudotsuga taxifolia*), and tamarack (*Larix* spp.).

E. crepuscularia f. *abraxaria* (Walker)

Plate 31, 8

This form is usually found in association with the previous species and has a similar, but more restricted, distribution. It can be differentiated by the dark, heavy lines in front of the antemedial line and behind the postmedial line on the forewing. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, and St. George's, where the moths are in flight from mid-May to late June. However, they have not been recorded from Labrador.

The larval feeding habits and host trees are probably similar to those of the preceding species.

Genus *Erannis* Hübner

E. tiliaria (Harris)

LINDEN LOOPER

Plate 31, 9

This species occurs from Newfoundland west to central Alberta and Colorado, and south to Pennsylvania and New York. In Newfoundland, adults have been taken at Terra Nova, Grand Falls, Corner Brook, St. George's, and South Branch. The male moths are in flight from mid-October to mid-November. The females are wingless and are usually found on the trunks of trees. The species is considered to be rare in Newfoundland and has not been recorded from Labrador.

The larva is either yellow or red brown dorsally, with numerous fine black hair lines. The underside is yellow and more or less contrasting, and laterally there are three black striae on each side. The larva feeds on numerous trees and shrubs, but particularly on basswood (*Tilia* spp.), elm (*Ulmus* spp.), white birch (*Betula papyrifera*), maple (*Acer* spp.), and trembling aspen (*Populus tremuloides*).

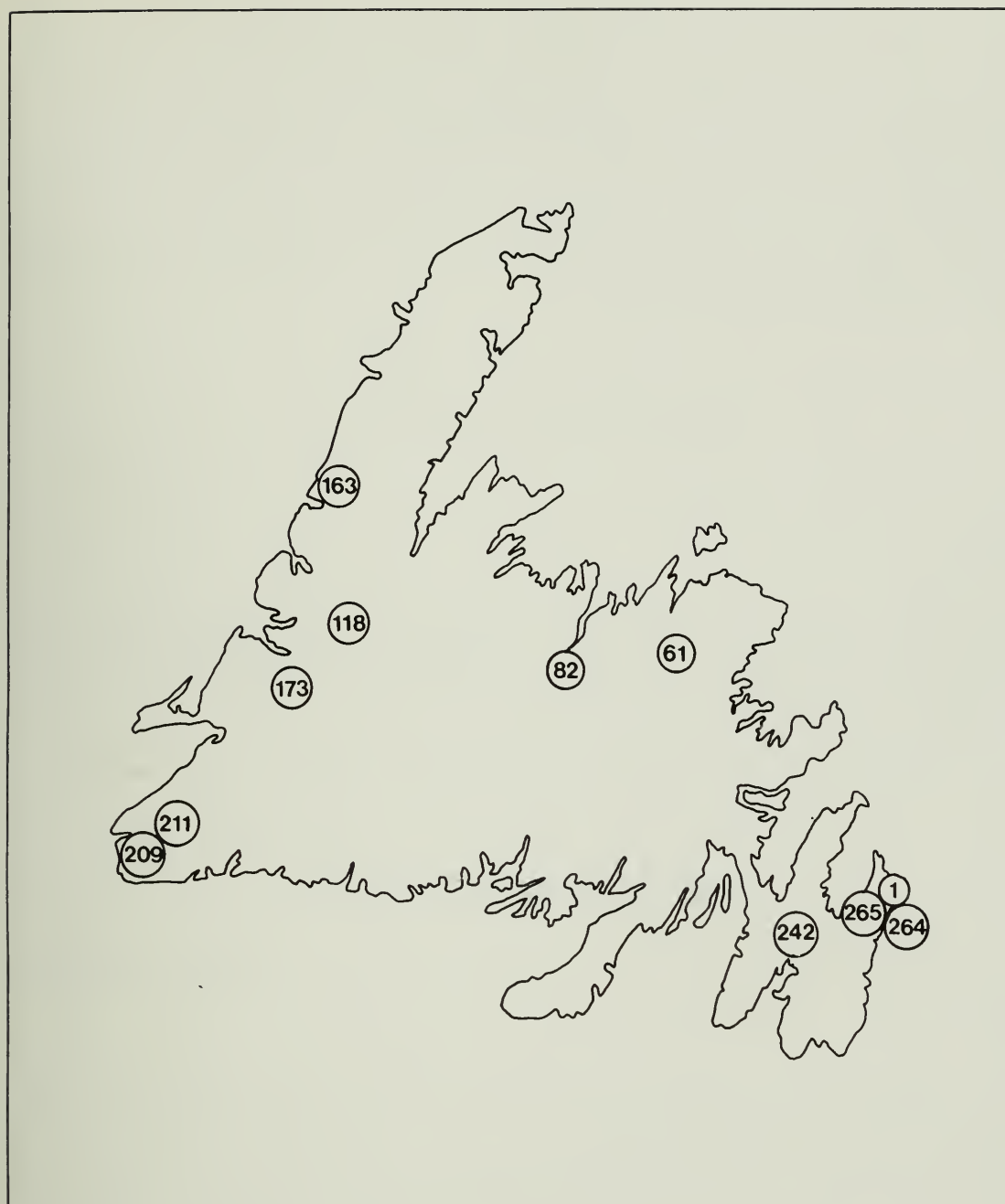


Fig. 35. Distribution of *Biston betularia cognataria* (Guenée) in Newfoundland.

Genus *Biston* Leach

B. betularia cognataria (Guenée)

PEPPER-AND-SALT

Plate 31, 10

This medium-sized, stout-bodied geometrid moth occurs from Newfoundland west to central Alberta and south to New Jersey and Pennsylvania. In Newfoundland, this subspecies is widely distributed (Fig. 35) and at times locally common. It has not been recorded from Labrador.

The mature larva is rather large, about 75 mm long, and has a deeply bilobed head, which accounts for its commonly used name of cleftheaded spanworm. The larva varies in color from gray to brown or green. Its body is granulate and has slightly enlarged tubercles, a large hump on the side of the 5th and a transverse ridge with raised tubercles on the 8th abdominal segments. It is a general feeder on deciduous trees, particularly willow (*Salix* spp.), white birch (*Betula papyrifera*), alder (*Alnus* spp.), tamarack (*Larix* spp.), and trembling aspen (*Populus tremuloides*). This species overwinters as a pupa in the soil.

Genus *Aspilates* Treitschke

A. conspersarius Staudinger

Plate 31, 11 and 12

This species occurs in the subarctic areas of Labrador and Quebec. In Labrador, adults have been taken at Hopedale, Nain, and Knob Lake. The moths are in flight from early July to late August and are considered rare. They are not found in Newfoundland.

Details of the immature stages in Labrador are not available.

Genus *Campaea* Lamarck

C. perlata (Guenée)

LIGHT EMERALD

Plate 31, 13

This delicate, medium-sized, greenish white moth is distributed from Newfoundland and Labrador south to North Carolina and west to the Yukon and Arizona. The species is widely distributed in Newfoundland (Fig. 36) and is at times locally common. The moths are in flight from mid-June to mid-August. They have also been found in Labrador at Cartwright and Goose Bay, where they are in flight the first three weeks in August.

The mature larva is mottled brown, resembling a piece of bark. Its pale head is heavily spotted with black, especially on the sides (Forbes 1948). It is a general feeder and has been recorded on 65 host trees and shrubs by Prentice (1963). The commoner hosts include: trembling aspen (*Populus tremuloides*), willow (*Salix* spp.), white birch (*Betula papyrifera*), and tamarack (*Larix* spp.). The larva overwinters and when fully grown pupates in a light cocoon.

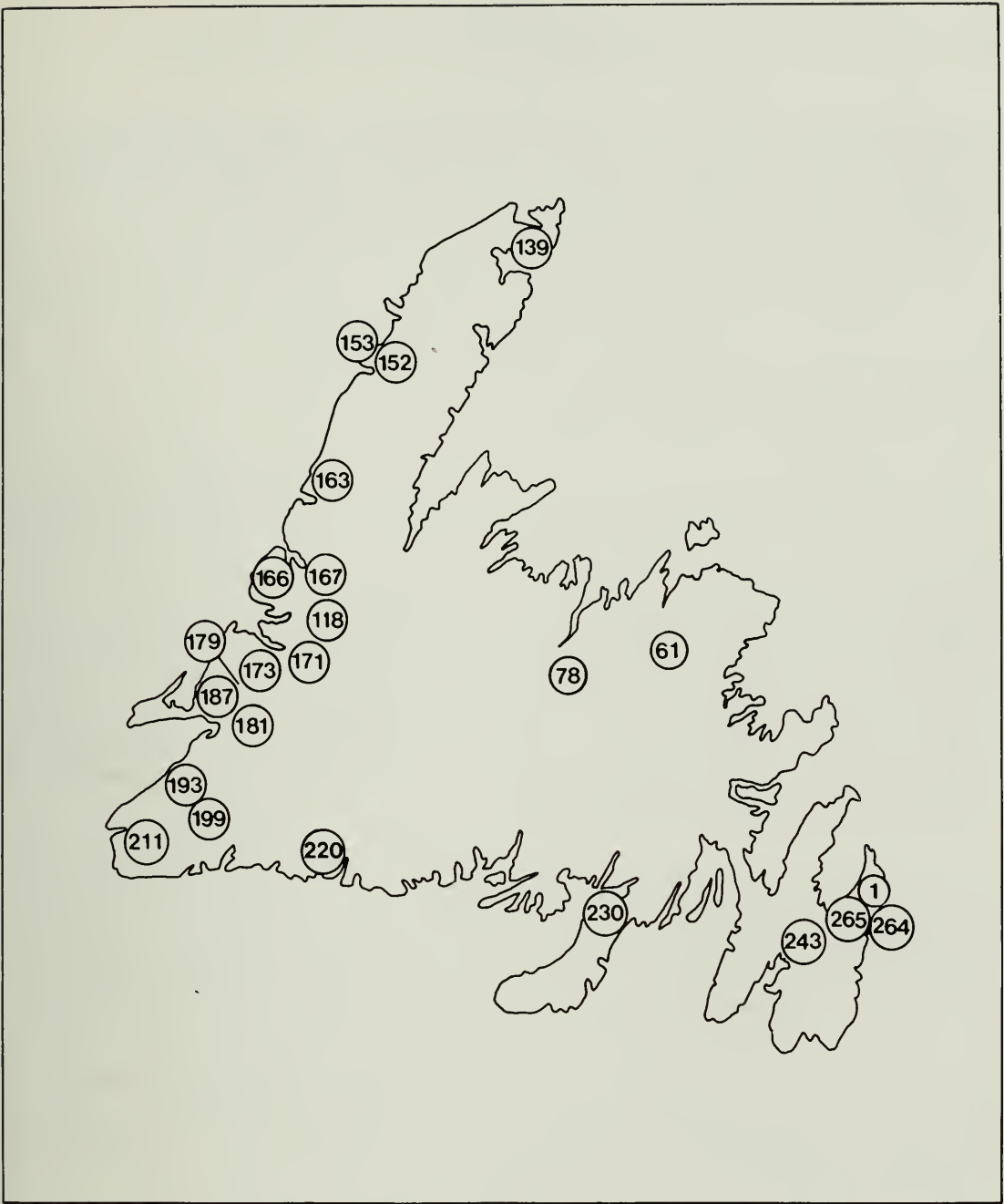


Fig. 36. Distribution of *Campaea perlata* (Guenée) in Newfoundland.

Genus *Homochlodes* Hulst

H. fritillaria (Guenée)

Plate 31, 14

This moth occurs from Newfoundland, Nova Scotia, Maine, and Quebec west to Wisconsin and south to North Carolina. The species is rare in Newfoundland and has not been recorded from Labrador. Adults have

been collected at Mt. Pearl, St. George's, Stephenville Crossing, and Grand Bruit, where the moths are in flight from mid-June to early July.

According to Forbes (1948), the mature larva is deep brown, with pale subdorsal bands on the thorax, and curved oblique subdorsal black lines on the abdominal segments. It can jump strongly by coiling and suddenly uncoiling its body. It feeds on bracken (*Pteridium* spp.).

Genus *Plagodis* Hübner

P. phlogosaria iris Rupert

Plate 31, 15 and 16

This subspecies occurs from Newfoundland, Nova Scotia, and Maine west to Ontario and Saskatchewan. Prentice (1963) reported that the species *P. phlogosaria* (Guenée) was taken at Baie Verte, but it is now generally recognized that only *P. p. iris* occurs in Newfoundland. For comparative purposes both are illustrated in Plate 31, 15 and 16. In Newfoundland, adults have been taken at St. John's, Goulds, Mt. Pearl, Mary March Park, Baie Verte, White Bay, Pynns Brook, Deer Lake, Corner Brook, and St. George's. The moths are in flight from early June to mid-July and although widely distributed are never common. The subspecies has not been recorded from Labrador.

The mature larva is 26 mm long, has a pale gray head heavily mottled with black, and a thorax heavily marked with black. The first six abdominal segments are light gray, strongly suffused with purple brown. There are strong dorsal humps or ridges on the mesothorax and 5th and 8th abdominal segments, the largest being on the 5th and the smallest on the 8th. The larva is a solitary defoliator on white birch (*Betula papyrifera*), alder (*Alnus* spp.), willow (*Salix* spp.), poplar (*Populus* spp.), basswood (*Tilia* spp.), apple (*Malus* spp.), and cherry (*Prunus* spp.). Munroe (1959) also reported that a specimen from Newfoundland had been reared on "fir" but suggested the record needed further confirmation.

Genus *Anagoga* Hübner

A. occiduaria (Walker)

BARRED UMBER

Plate 31, 17

This moth occurs from Newfoundland west to British Columbia and Alaska and south to North Carolina and northern California. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Corner Brook, St. George's, Port aux Basques, and Grand Bruit. The moths are in flight from early June to early October and are considered rare, the

numbers varying little from year to year. The species has not been recorded from Labrador.

The larva is 23 mm long, and is reddish brown or violet gray, mottled with yellowish brown. There is a middorsal brown stripe that is strongest on the back of the thorax and 1st abdominal segment. The larva has a dorsal hump on the 5th abdominal segment and a ridge on the 8th. It is a solitary defoliator on birch (*Betula* spp.), willow (*Salix* spp.), alder (*Alnus* spp.), raspberry (*Rubus* spp.), and shrubby cinquefoil (*Potentilla fruticosa*).

Genus *Hyperetis* Guenée

H. amicaria f. *nyssaria* (Guenée)

Plate 31, 18

This form of *amicaria* is distributed across Canada from Newfoundland to British Columbia and south to Pennsylvania, South Carolina, and Georgia. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Cape Broyle, Cupids, Spaniards Bay, Gander, Jackson's Cove, Steady Brook, Corner Brook, Piccadilly, St. George's, South Branch, Doyles, Port aux Basques, Burgeo, Grandy Brook, and Grand Bruit. The moths are in flight from mid-June to mid-July but are never common. The species is not recorded from Labrador.

The larva is green with a violet dorsal band and reddish lines on the side of the head. It is a solitary feeder on birch (*Betula* spp.), alder (*Alnus* spp.), willow (*Salix* spp.), balsam fir (*Abies balsamea*), and trembling aspen (*Populus tremuloides*).

H. nepiasaria (Guenée)

Plate 31, 19

This species occurs from Newfoundland, Nova Scotia, and New Brunswick south to New York and North Carolina and west to Michigan. The species is usually found in areas where laurel (*Kalmia* spp.) and rhododendron (*Rhododendron* spp.) grow. It is essentially a species of acid soil conditions, such as bogs, heaths, and scrubby woodlands. In Newfoundland, the species is considered rare but adults have been taken at St. John's, Boat Harbour, Lake Ambrose, St. George's, and Pynns Brook. The moths are in flight from mid-June to mid-July.

Ferguson (1954) reported rearing a number of adults from larvae on sheep-laurel (*Kalmia angustifolia*).

Genus *Metarranthis* Warren

M. duaria (Guenée)

Plate 32, 1 and 2

This moth is known from Newfoundland, Nova Scotia, Ontario, and New England States west to Illinois, Manitoba, and British Columbia, and south to North Carolina and Washington. In Newfoundland, adults have been collected at St. John's, Kilbride, Mt. Pearl, Cape Broyle, Colinet, La Manche, Port aux Basques, Grand Bruit, Cinq Cerf River, and Burgeo. The moths are in flight from early June to early July but are never common. The species has not been recorded from Labrador. It was originally believed that the subspecies, *M. d. septentrionaria* Barnes & McDunnough occurred in Newfoundland as well as the species *M. duaria* (Guenée); however, it is now generally recognized that only the latter exists here. For comparative purposes both are illustrated in Plate 32, *M. duaria* in 1 and *M. d. septentrionaria* in 2.

The mature larva is various shades of gray or brown, with a pale dorsal line. It is a solitary defoliator on choke cherry (*Prunus virginiana*) and other wild cherry (*Prunus* spp.), willow (*Salix*, spp.), trembling aspen (*Populus tremuloides*), serviceberry (*Amelanchier* spp.), blueberry (*Vaccinium* spp.), and basswood (*Tilia* spp.).

Genus *Metanema* Guenée

M. inatomaria Guenée

Plate 32, 3

This species occurs from Newfoundland, Nova Scotia, Quebec, Maine, and Ontario south to New Jersey and west to British Columbia. In Newfoundland, a single specimen, now in the Canadian National Collection, was taken by Hennigar at Gander, 19 July 1949. No specimens have been taken or observed since, and there are no records from Labrador.

Forbes (1948) described the larva as short, stout, and flattened. It feeds on poplar (*Populus* spp.) and forms a cocoon in a crevice in the bark. Prentice (1963) reported it on trembling aspen, largetooth aspen, and balsam poplar (*Populus* spp.), willow (*Salix* spp.), hazel (*Corylus* spp.), and birch (*Betula* spp.). The pupa is also flattened.

M. determinata Walker

Plate 32, 4

This species is found in Newfoundland, Nova Scotia, New Brunswick, Quebec, Maine, and Ontario, south to New Jersey and west to Alberta and Alaska. In Newfoundland, adults have been taken at St. John's, Kilbride,

and Gander. The moths are in flight from mid to late July and are considered rare. The species is not recorded from Labrador.

The larva, as described by Forbes (1948), is slender, somewhat flattened and twiglike, smooth, and light brown with vague oblique mottling. The subventral line is deep brown, narrow, and lightly broken in the middle. It is a solitary defoliator on willow (*Salix* spp.). The pupa is unusual in being decidedly flattened dorsoventrally.

Genus *Selenia* Hübner

S. alciphearia Walker

Plate 32, 5

This species is found in Newfoundland, Labrador, Nova Scotia, Quebec, Maine, and Ontario, south to New Hampshire, Massachusetts, and New York, and west to Alberta and British Columbia. In Newfoundland, adults have been taken at St. John's, Mt. Pearl, Kilbride, Hampden, and Tompkins. The moths are in flight from mid-June to early July and are considered rare. In Labrador, two specimens were taken at Cartwright, 29 June 1955.

The larva is dark to rusty brown frosted with gray dorsally, with a contrasting pale patch on the back of abdominal segments 2, 4, and 5. Segments 4 and 5 have transverse ridges bearing enlarged tubercles. The larva is a solitary defoliator on willow (*Salix* spp.), alder (*Alnus* spp.), birch (*Betula* spp.), and maple (*Acer* spp.).

Genus *Ennomos* Treitschke

E. subsignaria (Hübner)

SNOW-WHITE LINDEN

Plate 34, 14

This species is known to occur from Newfoundland to Saskatchewan but is most common in southern Ontario. It is also found in the New England States and New York. In Newfoundland, adults have been reared from larvae taken on willow (*Salix* spp.) and white birch (*Betula papyrifera*) at Shoal Harbour and St. George's. Moths emerged from mid-July to mid-September. The species is considered rare in Newfoundland and is not known to occur in Labrador.

The larva, commonly known as the elm spanworm, is a solitary defoliator on a wide variety of trees. Prentice (1963) lists 23 host species, of which sugar maple (*Acer saccharum*) and white elm (*Ulmus americana*) are the most preferred.

Genus *Pero* Herrich-Schäffer

P. honestaria (Walker)

Plate 32, 6

This species occurs from Newfoundland, Nova Scotia, Maine, and Quebec south to Florida and west to Texas and British Columbia. In Newfoundland, adults have been taken at Carbonear, Colinet, Georges Lake, and Tompkins. The moths are in flight from late June to mid-July and are considered to be rare. The species has not been recorded from Labrador.

The larva has a strongly bilobed light grayish brown head, and a brown body with paler longitudinal shades. There is a transverse ridge on the 8th abdominal segment, but otherwise the body is nearly smooth. The larva is a solitary defoliator on wild cherry (*Prunus* spp.). Pupation takes place in the soil.

P. morrisonaria (Henry Edwards)

Plate 32, 7

This species has been recorded from Newfoundland to British Columbia, south to Virginia and west to the Pacific. It is widely distributed in Newfoundland (Fig. 37) and is occasionally locally common with little variation in numbers from year to year. The species has not been recorded from Labrador.

The larva is similar to *P. honestaria* in appearance, but feeds on conifers. It is a solitary defoliator on balsam fir (*Abies balsamea*), white spruce (*Picea glauca*), willow (*Salix* spp.), tamarack (*Larix* spp.), and alder (*Alnus* spp.).

Genus *Nepytia* Hulst

N. canosaria (Walker)

FALSE HEMLOCK LOOPER

Plate 32, 8

This species is generally distributed from Newfoundland, Nova Scotia, Quebec, and Maine south to Pennsylvania and west to southern Saskatchewan. In Newfoundland, according to Prentice (1963), this insect has been found at Terra Nova, Gander, Grand Falls, Millertown, Comfort Cove, Badger, Georges Lake, and Bay d'Espoir. The moths are in flight from early July to early October and are said to be fairly common throughout Eastern Canada. They are not found in Labrador.

The larva is about 31 mm long, and is pale dull yellow or reddish. The head is pale or reddish brown with black dots, and the body has black dots on the tubercles and a yellow lateral line. The dorsal area is sometimes red

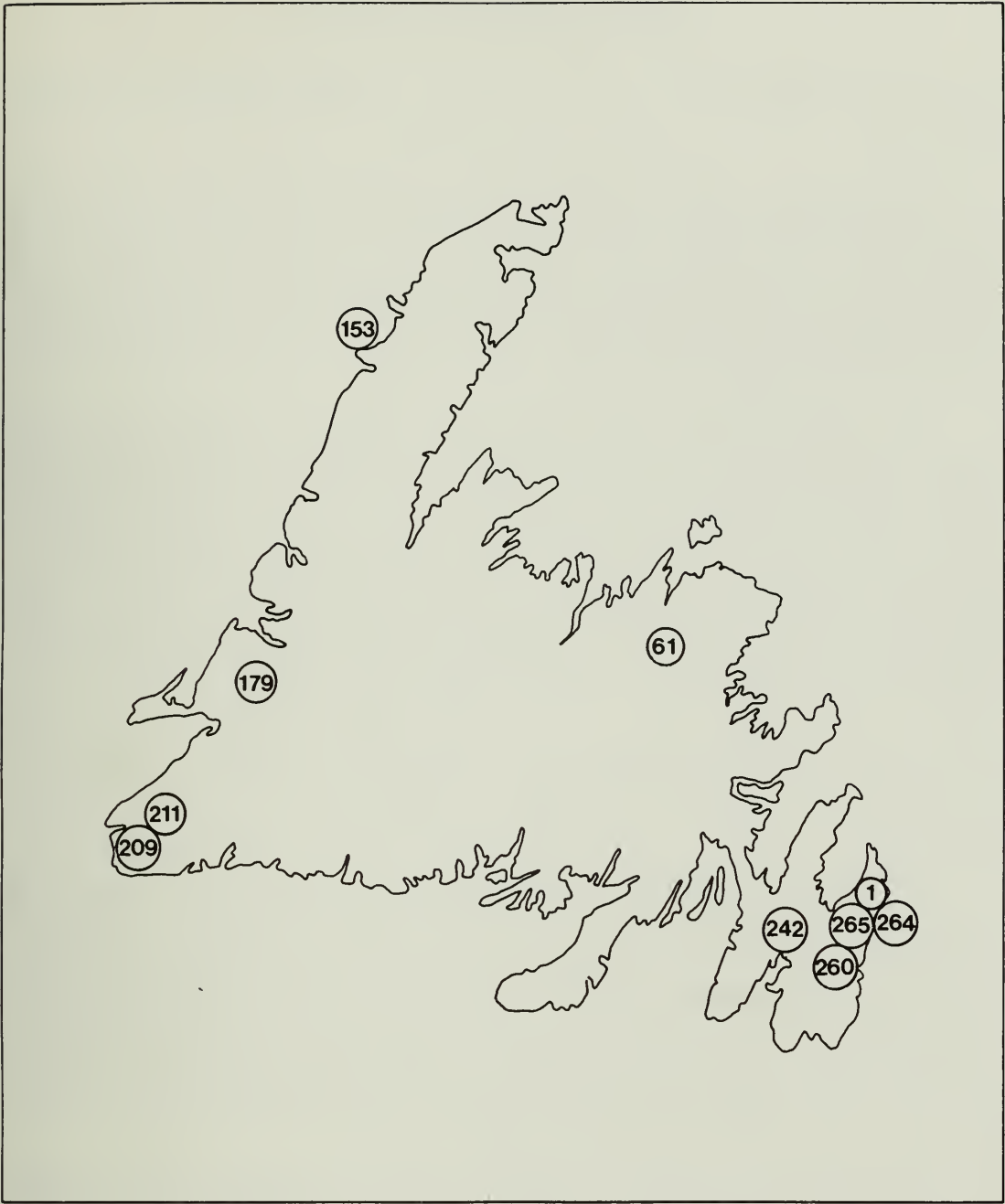


Fig. 37. Distribution of *Pero morrisonaria* (Henry Edwards) in Newfoundland.

brown, edged with a broken white subdorsal line. The underside is a pale flesh color. Dethier (1942) described the life history of this species in great detail. It feeds on balsam fir (*Abies balsamea*), white and black spruce (*Picea* spp.), hemlock (*Tsuga* spp.), and tamarack (*Larix* spp.). The pupa is green with white subdorsal and lateral lines, and brown ventral lines. The species overwinters as a pupa attached to the needles of spruce trees.

Genus *Caripeta* Walker

C. divisata Walker

GRAY SPRUCE LOOPER

Plate 32, 9

This species is widely distributed throughout Canada from Newfoundland to British Columbia, but is most prevalent in the extreme western and eastern areas of its range. In the United States it ranges from Maine south to Florida. It is widely distributed in Newfoundland (Fig. 38) and at times is fairly common in coniferous areas. The species has yet to be recorded from Labrador but probably exists there.

The mature larva is about 30–35 mm long and varies in color from yellow to light brown. The middorsal line is the same color as the body but is edged with fine brown lines, giving an appearance for most of its length of light diamond-shaped areas outlined by dark obliques on each segment. There are usually small gray crosses on the diamond-shaped areas on the first four abdominal segments (McGuffin 1943). The larva feeds on white and black spruce (*Picea* spp.), hemlock (*Tsuga* spp.), balsam fir (*Abies balsamea*), and tamarack (*Larix* spp.), and the species overwinters as a pupa.

C. divisata ab. *nigraria* Forbes

Plate 32, 10

In this melanic aberration of the preceding species the white in the basal and outer thirds of the forewings is largely replaced by black, but usually with some white longitudinal shades not corresponding to the normal markings. The discal spot remains white (Forbes 1948). In Newfoundland, a single specimen was reared from larvae taken by the Forest Insect Survey at Fischells Brook. The moth emerged in a laboratory, 27 December 1944, and is now in the Canadian National Collection. An additional moth was taken in a light trap at Chamberlains, 5 August 1976.

The immature stages are probably similar to those of the preceding species.

C. piniata (Packard)

Plate 32, 11

This species has a scattered and discontinuous distribution from Newfoundland to Saskatchewan and south to Maine and New Jersey. In Newfoundland, Prentice (1963) recorded the species from Terra Nova, Grand Falls, and Badger. The moths are in flight from mid-June to mid-July and are considered to be rare. They have not been found in Labrador.

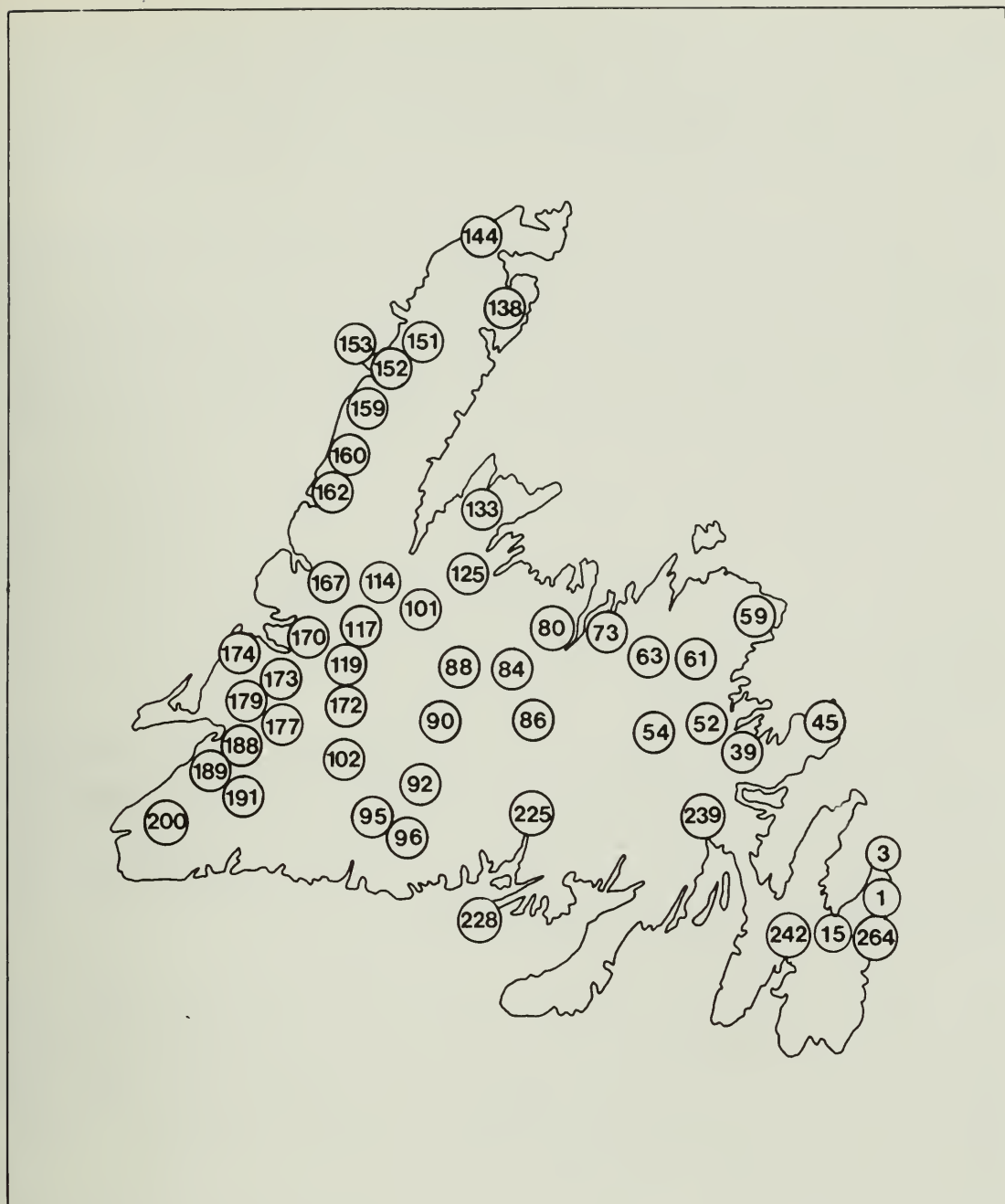


Fig. 38. Distribution of *Caripeta divisata* Walker in Newfoundland.

The larva is a solitary defoliator on jack pine, eastern white pine, and red pine (*Pinus* spp.), and has also been found on white spruce (*Picea glauca*). It is similar to the larva of the following species, *C. angustiorata*, with which it is often confused.

C. angustiorata Walker

BROWN PINE LOOPER

Plate 32, 12

This species has been recorded from Newfoundland to the interior of British Columbia, but it is most common along the eastern slopes of the

Rocky Mountains in Alberta. It also extends south to Virginia. In Newfoundland, adults have been taken at Newman Sound and Birchy Lake by the Forest Research Centre. The moths are in flight from late May to mid-June and are considered to be rare. The species has not been recorded from Labrador.

The larva is a pale lilac color with dark brown or whitish marbling and whitish gray specks, giving a slate gray or reddish effect. The head is double lobed, the prothorax has small warts on the sides, and the metathorax and most of the abdominal segments have transverse saddle-shaped ridges with a tubercle at each end, those on the 8th segment being higher (Forbes 1948). The larva is a solitary feeder on jack pine, eastern white pine, and lodgepole pine (*Pinus* spp.).

Genus *Besma* Capps

B. quercivoraria (Guenée)

Plate 32, 13

This species occurs in Newfoundland, Nova Scotia, New Brunswick, Maine, and Ontario, west to British Columbia, and south to Nebraska, New Hampshire, Florida, and Texas. In Newfoundland, adults have been taken at St. John's, Parson's Pond, St. George's, and Neyle's Bridge. The moths are in flight from late April to late May and are considered to be rare. There are no records from Labrador.

The larva is green, sometimes very pale, and sometimes striped with red. There are lateral humps on the mesothorax and a large lateral and dorsal transverse enlargement of the 3rd abdominal segment. Tubercles on the 6th segment are considerably enlarged and connected by a ridge. The larva is a solitary defoliator on white birch (*Betula papyrifera*), willow (*Salix* spp.), and sugar maple (*Acer saccharum*).

Genus *Lambdina* Capps

L. fiscellaria (Guenée)

HEMLOCK LOOPER

Plate 32, 14

This species extends from the Atlantic to the Pacific across Canada and south to Georgia and Florida. In Newfoundland, it is widely distributed (Fig. 39) and in some seasons is a serious pest in Canadian forests. From 1972 to 1975 it destroyed millions of hectares of mature timber in western and central Newfoundland. A single specimen was taken at Snug Harbour, Labrador, by the Forest Research Centre, 20 August 1969.

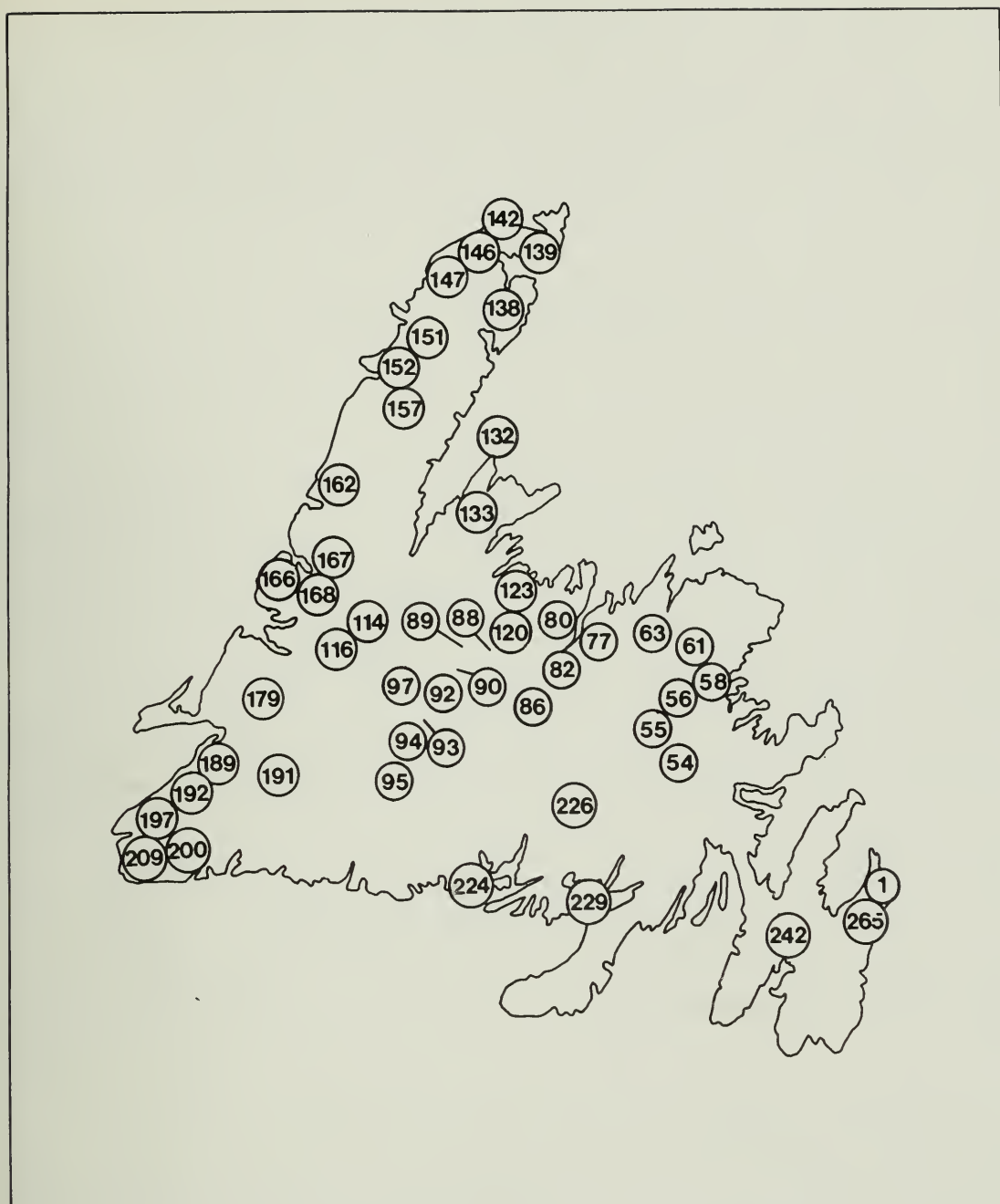


Fig. 39. Distribution of *Lambdina fiscellaria* (Guenée) in Newfoundland.

Larvae have been collected from 38 trees, of which balsam fir (*Abies balsamea*), white spruce (*Picea glauca*), eastern hemlock (*Tsuga canadensis*), and tamarack (*Larix* spp.) were the preferred hosts. When fully grown, the larva is 30–35 mm long, and is yellowish with dark markings. The head is marked with irregular brown or blackish spots. Dorsally the body is obscurely marked with areas of brown, white, and yellow and there are four black dorsal dots on each anterior abdominal segment. The sides are darker, with wavy lines of dark or reddish brown interrupted by an occasional dash of yellowish white. Ventrally there are five broken, wavy brown lines, sometimes indistinct. This species overwinters in the egg stage.

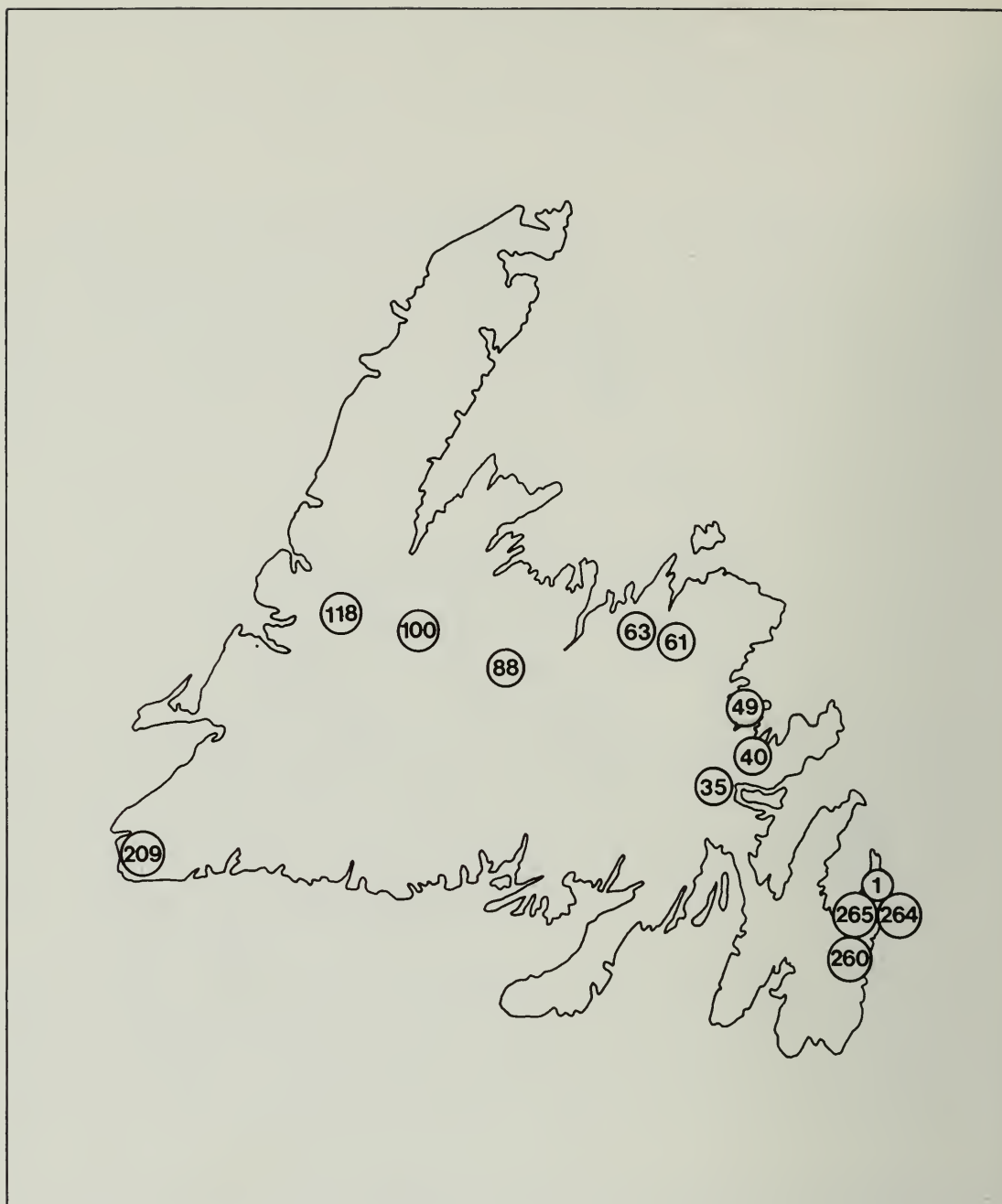


Fig. 40. Distribution of *Sicya macularia* (Harris) in Newfoundland.

Genus *Sicya* Guenée

S. macularia (Harris)

Plate 32, 15 and 16

This species is widely distributed from Newfoundland, Nova Scotia, Quebec, and Ontario west to Alberta and south to New Jersey and California. It ranges throughout Newfoundland (Fig. 40), but is considered to be rare in all localities, with very little variation in annual numbers. It has not been recorded from Labrador.

The mature larva is green and yellow with a brown dorsal line on the thorax only. The outstanding feature of the larva of this species is the presence of middorsal tubercles. There is one on the 3rd and one on the 5th abdominal segment. The larva is a solitary defoliator on trembling aspen (*Populus tremuloides*), willow (*Salix* spp.), and alder (*Alnus* spp.) and has also been reported on *Spiraea* and *Ceanothus* spp.

Genus *Apicia* Guenée

A. confusaria Hübner

Plate 34, 15

This species occurs in Newfoundland, Nova Scotia, west to Manitoba and south to Florida and Texas. Although reported to be common at times, it is considered rare in Newfoundland. Specimens have only been taken at St. George's in western Newfoundland, where moths are in flight from mid to late July. There are no records from Labrador.

The mature larva is smooth, with slightly raised white tubercles on the 8th abdominal segment. The head is white with brown markings and the body is brown with yellow lateral lines. The larva feeds on dandelion (*Taraxacum* spp.), aster (*Aster* spp.), goldenrod (*Solidago* spp.), and clover (*Trifolium* spp.).

Genus *Prochoerodes* Grote

P. transversata (Drury)

LARGE MAPLE SPANWORM

Plate 32, 17 and 18

This species is widely distributed from Newfoundland, Nova Scotia, and Quebec west to the Pacific and south to Maine and Florida. In Newfoundland, adults have been collected at St. John's, Colinet, Kilbride, Gander, Glenwood, Deer Pond, Pynns Brook, and Tompkins. The moths are in flight from mid-July to late September and are considered to be rare. No specimens have been recorded from Labrador.

The mature larva is about 50 mm long and purplish brown to light wood brown in color. The 2nd thoracic segment is swollen and has reddish streaks, the posterior part of the 4th abdominal segment is swollen dorsally and has white markings, and the posterior part of the 8th segment has a pair of prominent tubercles. The larva feeds on trembling aspen (*Populus tremuloides*), balsam fir (*Abies balsamea*), white birch (*Betula papyrifera*), eastern white cedar (*Thuja occidentalis*), maple (*Acer* spp.), and is occasionally found on many other species. Hibernation is as a brown pupa within a folded leaf.

Checklist of species

BUTTERFLIES

	Common name of butterfly or larva	Nfld.	Labr.
<hr/>			
Family PAPILIONIDAE	swallowtails		
Genus <i>Papilio</i> Linnaeus			
<i>P. polyxenes asterius</i> Stoll	black or parsnip swallowtail	+ ^a	
<i>P. brevicauda</i> Saunders	shorttailed swallowtail	+	+
<i>P. glaucus canadensis</i> Rothschild & Jordan	Canadian tiger swallowtail	+	+
<i>P. glaucus glaucus</i> Linnaeus	eastern tiger swallowtail	+	
Family PIERIDAE	whites and sulfurs		
Genus <i>Colias</i> Fabricius			
<i>C. hecla</i> Lefèvre	arctic sulfur		+
<i>C. eurytheme</i> Boisduval	alfalfa caterpillar	+	
<i>C. philodice</i> Godart	clouded sulfur	+	
<i>C. interior</i> Scudder	pink edged sulfur	+	+
<i>C. pelidne</i> Boisduval & LeConte	pelidne sulfur	+	+
<i>C. palaeno chippewa</i> Edwards	palaeno sulfur		+
<i>C. nastes</i> Boisduval	nastes sulfur		+
Genus <i>Pieris</i> Schrank			
<i>P. napi frigida</i> Scudder	mustard white	+	+
<i>P. rapae</i> (Linnaeus)	imported cabbageworm	+	
Family DANAIDAE	milkweed butterflies (monarchs)		
Genus <i>Danaus</i> Kluk			
<i>D. plexippus</i> (Linnaeus)	monarch	+	
Family SATYRIDAE	satyrs and wood nymphs		
Genus <i>Coenonympha</i> Hübner			
<i>C. inornata inornata</i> Edwards	inornate ringlet	+	+
<i>C. inornata mcisaaci</i> dos Passos	McIsaac's ringlet	+	
Genus <i>Oeneis</i> Hübner			
<i>O. chryxus</i> (Doubleday)	chryxus arctic	+	
<i>O. taygete</i> Geyer	white veined arctic		+

^aDoubtful record

	Common name of butterfly or larva	Nfld.	Labr.
<i>O. jutta terraenovae</i> dos Passos	jutta arctic	+	+
<i>O. polixenes</i> (Fabricius)	polixenes arctic		+
<i>O. melissa</i> (Fabricius)	melissa arctic	+	+
Genus <i>Erebia</i> Dalman			
<i>E. disa</i> Thunberg	disa alpine		+
Family NYMPHALIDAE	brushfooted butterflies		
Genus <i>Speyeria</i> Scudder			
<i>S. atlantis</i> (Edwards)	atlantis fritillary	+	+
Genus <i>Boloria</i> Moore			
<i>B. selene terraenovae</i> (Holland)	silver bordered fritillary	+	+
<i>B. eunomia</i> (Esper)	bog fritillary	+	+
<i>B. chariclea</i> (Schneider)	arctic or chariclea fritillary	+	+
<i>B. titania boisduvalii</i> (Duponchel)	purple lesser fritillary		+
<i>B. freija</i> (Thunberg)	freija fritillary	+	+
<i>B. polaris</i> (Boisduval)	polar fritillary		+
<i>B. frigga saga</i> (Staudinger)	saga fritillary		+
<i>B. bellona</i> (Fabricius)	meadow fritillary		+
Genus <i>Chlosyne</i> Butler			
<i>C. harrisii</i> (Scudder)	Harris' checkerspot	+	
Genus <i>Phyciodes</i> Hübner			
<i>P. tharos arctica</i> dos Passos	pearl crescent	+	
Genus <i>Polygonia</i> Hübner			
<i>P. satyrus</i> (Edwards)	satyr angle wing	+	
<i>P. faunus</i> (Edwards)	green comma	+	
<i>P. gracilis</i> (Grote & Robinson)	hoary comma	+	+
<i>P. progne</i> (Cramer)	gray comma	+	
Genus <i>Nymphalis</i> Kluk			
<i>N. vau-album</i> (Denis & Schiffermüller)	Compton tortoiseshell	+	+
<i>N. milberti milberti</i> (Godart)	Milbert's tortoiseshell	+	
<i>N. milberti viola</i> (dos Passos)		+	
<i>N. antiopa</i> (Linnaeus)	mourningcloak	+	+
Genus <i>Vanessa</i> Fabricius			
<i>V. atalanta</i> (Linnaeus)	red admiral	+	
<i>V. virginiensis</i> (Drury)	painted beauty, American painted lady	+	
<i>V. cardui</i> (Linnaeus)	painted lady	+	+
Genus <i>Limenitis</i> Fabricius			
<i>L. arthemis</i> (Drury)	white admiral	+	+

	Common name of butterfly or larva	Nfld.	Labr.
Family LYCAENIDAE	hairstreaks, blues, and coppers (gossamer-winged butterflies)		
Genus <i>Callophrys</i> Scudder			
<i>C. augustinus</i> (Westwood)	brown elfin	+	+
<i>C. augustinus helenae</i> (dos Passos)		+	
<i>C. niphon clarki</i> (Freeman)	pine elfin	+ ^a	
Genus <i>Lycaena</i> Fabricius			
<i>L. dorcas</i> Kirby	Dorcas copper	+	+
<i>L. epixanthe phaedrus</i> (Hall)	bog copper	+	
Genus <i>Plebejus</i> Kluk			
<i>P. argyrognomon aster</i> (Edwards)	northern blue	+	
<i>P. argyrognomon empetri</i> (Freeman)	northern blue		+
<i>P. aquilo</i> Boisduval	arctic blue	+	+
Genus <i>Glaucopsyche</i> Scudder			
<i>G. lygdamus couperi</i> Grote	silvery blue	+	
Genus <i>Celastrina</i> Tutt			
<i>C. argiolus pseudargiolus</i> (Boisduval & LeConte)	spring azure, Jenny Lind	+	+
Family HESPERIIDAE	skippers		
Genus <i>Pyrgus</i> Hübner			
<i>P. centaureae</i> (Rambur)	grizzled skipper	+	+
Genus <i>Carterocephalus</i> Lederer			
<i>C. palaemon</i> (Pallas)	arctic skipper	+	+
Genus <i>Thymelicus</i> Hübner			
<i>T. lineola</i> Ochsenheimer	European skipper	+	
Genus <i>Hesperia</i> Fabricius			
<i>H. comma borealis</i> Lindsey	comma, Labrador skipper	+	+
Genus <i>Polites</i> Scudder			
<i>P. coras</i> (Cramer)	Peck's skipper	+	+

MOTHS

	Common name of moth or larva	Nfld.	Labr.
Family SPHINGIDAE	sphinx moths (hawkmoths)		
Genus <i>Agrius</i> Hübner			
<i>A. cingulatus</i> (Fabricius)	sweet-potato hornworm, pink spotted hawkmoth	+	
Genus <i>Ceratomia</i> Harris			
<i>C. undulosa</i> (Walker)	waved sphinx	+	
Genus <i>Sphinx</i> Linnaeus			
<i>S. canadensis</i> Boisduval		+	
<i>S. kalmiae</i> J. E. Smith	laurel sphinx	+	
<i>S. gordius</i> Cramer	apple sphinx	+	+
<i>S. drupiferarum</i> J. E. Smith	plum tree, wild cherry sphinx	+	
Genus <i>Smerinthus</i> Latreille			
<i>S. jamaicensis</i> (Drury)	twin-spotted sphinx	+	
<i>S. cerisyi</i> Kirby	Cerisy's sphinx moth	+	
Genus <i>Paonias</i> Hübner			
<i>P. excaecatus</i> (J. E. Smith)	blinded sphinx	+	+
Genus <i>Pachysphinx</i> Rothschild & Jordan			
<i>P. modesta</i> (Harris)	modest sphinx, big poplar sphinx	+	+
Genus <i>Hemaris</i> Dalman			
<i>H. thysbe</i> (Fabricius)	hummingbird moth, common clear-wing	+	
Genus <i>Proserpinus</i> Hübner			
<i>P. flavofasciata</i> (Walker)	yellow-banded day sphinx	+	
Genus <i>Hyles</i> Hübner			
<i>H. gallii intermedia</i> (Kirby)	dark-veined deilephila	+	+
Family SATURNIIDAE	giant silkworm moths (emperor moths)		
Genus <i>Antheraea</i> Hübner			
<i>A. polyphemus polyphemus</i> (Cramer)	polyphemus moth		+

	Common name of moth or larva	Nfld.	Labr.
Family AMATIDAE			
Genus <i>Ctenucha</i> Kirby			
<i>C. virginica</i> (Charpentier)		+	+
Family ARCTIIDAE			
	tiger moths and allies		
Genus <i>Lexis</i> Hampson			
<i>L. bicolor</i> (Grote)	yellow-edged lexis	+	+
Genus <i>Halisidota</i> Hübner			
<i>H. maculata</i> (Harris)	spotted tussock moth	+	+
Genus <i>Phragmatobia</i> Stephens			
<i>P. fuliginosa</i> (Linnaeus)	ruby tiger moth	+	
Genus <i>Apantesis</i> Walker			
<i>A. virgo</i> (Linnaeus)	virgin tiger moth	+	
<i>A. parthenice</i> (Kirby)		+	
<i>A. quenselii</i> (Paykull)			+
<i>A. virguncula</i> (Kirby)	little virgin moth	+	
Genus <i>Diacrisia</i> Hübner			
<i>D. virginica</i> (Fabricius)	yellow woolly bear, Virginian tiger moth	+	
Genus <i>Pyrrharctia</i> Packard			
<i>P. isabella</i> (J. E. Smith)	black-ended bear		+
Genus <i>Estigmene</i> Hübner			
<i>E. acrea</i> (Drury)	saltmarsh caterpillar	+	
Genus <i>Hyphantria</i> Harris			
<i>H. textor</i> Harris	spotless fall webworm	+	
<i>H. cunea</i> (Drury)	fall webworm	+	
Genus <i>Platarctia</i> Packard			
<i>P. parthenos</i> (Harris)	St. Lawrence tiger moth	+	+
Genus <i>Arctia</i> Schrank			
<i>A. caja</i> (Linnaeus)	garden tiger moth		+
Genus <i>Utetheisa</i> Hübner			
<i>U. idae</i> Clarke			
Family NOCTUIDAE			
	cutworm or owlet moths, underwings		
Genus <i>Androloma</i> Grote			
<i>A. mac-cullochi</i> (Kirby)			+
Genus <i>Alypia</i> Hübner			
<i>A. octomaculata</i> (Fabricius)	eight-spotted forester	+	
<i>A. langtoni</i> Couper	Langton's forester	+	
Genus <i>Colocasia</i> Hübner			
<i>C. propinquilinea</i> Grote	close-banded demas	+	

	Common name of moth or larva	Nfld.	Labr.
Genus <i>Panthea</i> Hübner			
<i>P. acronyctoides</i> Walker		+	
Genus <i>Raphia</i> Hübner			
<i>R. frater</i> Grote	brother		+
Genus <i>Acrionicta</i> Ochseneheimer			
<i>A. americana</i> (Harris)	American dagger	+	
<i>A. dactylina</i> (Grote)	fingered dagger	+	
<i>A. lepusculina</i> Guenée	cottonwood dagger	+	
<i>A. leporina</i> (Linnaeus)	miller (Br.)*	+	+
<i>A. innotata</i> Guenée		+	
<i>A. radcliffei</i> (Harvey)		+	
<i>A. grisea</i> Walker	gray dagger	+	+
<i>A. superans</i> Guenée		+	
<i>A. fragilis</i> (Guenée)	fragile dagger	+	
<i>A. auricoma</i> Fabricius		+	
<i>A. impressa</i> Walker	printed dagger	+	
<i>A. longa</i> Guenée		+	
<i>A. obliqua</i> (J. E. Smith)	smear dagger	+	
Genus <i>Harrisimemna</i> Grote			
<i>H. trisignata</i> (Walker)	Harris' three spot	+	
Genus <i>Euxoa</i> Hübner			
<i>E. detera</i> (Walker)		+	
<i>E. perpolita</i> (Morrison)	polished dart	+	
<i>E. scandens</i> (Riley)	white cutworm	+	
<i>E. messoria</i> (Harris)	darksided cutworm	+	
<i>E. ontario</i> (Smith)		+	
<i>E. quebecensis</i> (Smith)		+	+
<i>E. tessellata</i> (Harris)	striped cutworm	+	
<i>E. pleuritica</i> (Grote)		+	
<i>E. campestris</i> (Grote)	silly dart	+	
<i>E. dissona</i> (Möschler)	dissonant dart	+	+
<i>E. divergens</i> (Walker)		+	
<i>E. sinelinea</i> Hardwick		+	+
<i>E. redimicula</i> (Morrison)	fillet dart	+	
<i>E. westermanni</i> (Staudinger)			+
<i>E. solitaria</i> (Smith)			+
<i>E. ochrogaster</i> (Guenée)	redbacked cutworm	+	
Genus <i>Agrotis</i> Ochseneheimer			
<i>A. mollis</i> (Walker)		+	+
<i>A. patula</i> Walker			+
<i>A. venerabilis</i> Walker	dusky cutworm, venerable dart	+	

*(Br.) denotes a common name used in Gt. Britain

	Common name of moth or larva	Nfld.	Labr.
<i>A. musa</i> Smith		+	+
<i>A. volubilis</i> Harvey	voluble dart	+	
<i>A. obliqua</i> (Smith)		+	
<i>A. ipsilon</i> (Hufnagel)	black cutworm	+	+
Genus <i>Actebia</i> Stephens			
<i>A. fennica</i> (Tauscher)	black army cutworm, Finnish dart	+	+
Genus <i>Spaelotis</i> Boisduval			
<i>S. clandestina</i> (Harris)	w-marked cutworm, clandestine dart	+	
Genus <i>Eurois</i> Hübner			
<i>E. occulta</i> (Linnaeus)	great gray dart	+	+
<i>E. stricta</i> Morrison	great brown dart	+	+
Genus <i>Ochropleura</i> Hübner			
<i>O. plecta</i> (Linnaeus)	flame-shouldered dart	+	+
Genus <i>Metalepsis</i> Grote			
<i>M. fishii</i> (Grote)		+	
<i>M. salicarum</i> (Walker)		+	
Genus <i>Cerastis</i> Ochsenheimer			
<i>C. tenebrifera</i> (Walker)	reddish speckled dart	+	
Genus <i>Peridroma</i> Hübner			
<i>P. saucia</i> (Hübner)	variegated cutworm	+	+
Genus <i>Hemipachnobia</i> McDunnough			
<i>H. monochromatea</i> (Morrison)		+	
Genus <i>Paradiarsia</i> McDunnough			
<i>P. littoralis pectinata</i> (Smith)			+
Genus <i>Graphiphora</i> Ochsenheimer			
<i>G. haruspica</i> (Grote)	soothsayer dart	+	
Genus <i>Rhyacia</i> Hübner			
<i>R. quadrangula</i> (Zetterstedt)		+	+
Genus <i>Chersotis</i> Boisduval			
<i>C. juncta</i> (Grote)		+	
Genus <i>Heptagrotis</i> McDunnough			
<i>H. phyllophora</i> (Grote)		+	
Genus <i>Diarsia</i> Hübner			
<i>D. rubifera</i> (Grote)		+	
<i>D. dislocata</i> (Smith)		+	+
<i>D. jucunda</i> (Walker)		+	
<i>D. pseudorosaria freemani</i> Hardwick		+	+

	Common name of moth or larva	Nfld.	Labr.
Genus <i>Amathes</i> Hübner			
<i>A. c-nigrum</i> (Linnaeus)	spotted cutworm	+	
<i>A. smithii</i> (Snellen)		+	
<i>A. oblata</i> (Morrison)	rosy dart	+	+
<i>A. collaris</i> (Grote & Robinson)		+	
<i>A. bicarnea</i> (Guenée)	pink spotted dart	+	
<i>A. tenuicula</i> (Morrison)		+	
<i>A. opacifrons</i> (Grote)			+
Genus <i>Pachnobia</i> Guenée			
<i>P. tecta</i> (Hübner)			+
<i>P. wockei</i> (Möschler)			+
<i>P. scropulana</i> (Morrison)			+
<i>P. okakensis</i> (Packard)			+
Genus <i>Anomogyna</i> Staudinger			
<i>A. atrata</i> (Morrison)		+	+
<i>A. fabulosa</i> Ferguson			+
<i>A. sincera</i> (Herrich-Schäffer)		+	+
<i>A. speciosa mixta</i> (Walker)		+	+
<i>A. perquiritata perquiritata</i> (Morrison)			+
<i>A. perquiritata beddeci</i> (Hampson)		+	
<i>A. laetabilis</i> (Zetterstedt)		+	+
<i>A. homogena</i> McDunnough		+	+
<i>A. imperita</i> (Hübner)		+	+
<i>A. elimata</i> (Guenée)		+	
<i>A. dilucida</i> (Morrison)		+	+
<i>A. youngii</i> (Smith)		+	
Genus <i>Aplectoides</i> Butler			
<i>A. condita</i> (Guenée)		+	
Genus <i>Anaplectoides</i> McDunnough			
<i>A. pressus</i> (Grote)		+	
<i>A. prasina</i> (Schiffermüller)	green arches (Br.)	+	
Genus <i>Protolampra</i> McDunnough			
<i>P. rufipectus</i> (Morrison)		+	
Genus <i>Cryptocala</i> Benjamin			
<i>C. acadensis</i> (Bethune)	catocaline dart	+	
Genus <i>Eueretagrotis</i> Smith			
<i>E. perattenta</i> (Grote)		+	+
Genus <i>Abagrotis</i> Smith			
<i>A. placida</i> (Grote)	red cutworm	+	
<i>A. alternata</i> (Grote)	greater red dart	+	
Genus <i>Rhynchagrotis</i> Smith			
<i>R. cupida</i> (Grote)		+	

	Common name of moth or larva	Nfld.	Labr.
Genus <i>Scotogramma</i> Smith			
<i>S. trifolii</i> (Rottenberg)	clover cutworm	+	+
Genus <i>Mamestra</i> Ochsenheimer			
<i>M. curialis</i> (Smith)		+	
Genus <i>Polia</i> Ochsenheimer			
<i>P. nimbosa</i> (Guenée)		+	
<i>P. leomegra</i> (Smith)		+	+
<i>P. rogenhoferi</i> (Möschler)		+	
<i>P. carbonifera</i> (Hampson)		+	+
<i>P. imbrifera</i> (Guenée)		+	
<i>P. atlantica</i> (Grote)		+	
<i>P. nevadae canadensis</i> (Smith)		+	
<i>P. radix</i> (Walker)	Dimmock's mamestra	+	+
<i>P. legitima</i> (Grote)	striped garden caterpillar	+	
<i>P. tacoma</i> (Strecker)		+	
<i>P. rugosa</i> (Morrison)		+	
<i>P. lilacina</i> (Harvey)		+	
<i>P. adjuncta</i> (Boisduval)		+	
<i>P. pulverulenta</i> (Smith)		+	+
<i>P. ingravis</i> (Smith)		+	+
<i>P. frustrata</i> McDunnough		+	
<i>P. cristifera</i> (Walker)		+	+
<i>P. lutra</i> (Guenée)		+	
<i>P. secedens</i> (Walker)			+
Genus <i>Lacinipolia</i> McDunnough			
<i>L. lustralis</i> (Grote)		+	
<i>L. anguina</i> (Grote)		+	
<i>L. renigera</i> (Stephens)	bristly cutworm	+	
<i>L. lorea</i> (Guenée)		+	
<i>L. olivacea</i> (Morrison)		+	
Genus <i>Lasionycta</i> Aurivillius			
<i>L. albinuda</i> (Smith)			+
<i>L. subdita</i> (Möschler)			+
Genus <i>Lasiestra</i> Hampson			
<i>L. leucocycla moeschleri</i> (Staudinger)			+
<i>L. leucocycla flanda</i> (Smith)		+	
<i>L. phoca</i> (Möschler)			+
Genus <i>Anarta</i> Ochsenheimer			
<i>A. cordigera</i> (Thunberg)	small dark yellow underwing		+
<i>A. melanopa</i> (Thunberg)	broad-bordered white underwing	+	+
<i>A. richardsoni tamsi</i> Benjamin			+
Genus <i>Sideridis</i> Hübner			
<i>S. maryx</i> (Guenée)		+	

	Common name of moth or larva	Nfld.	Labr.
Genus <i>Astrapetis</i> Hübner			
<i>A. sutrina</i> (Grote)		+	+
Genus <i>Protorthodes</i> McDunnough			
<i>P. oviduca</i> (Guenée)		+	
<i>P. lindrothi</i> Krogerus		+	
Genus <i>Pseudorthodes</i> Morrison			
<i>P. vecors</i> (Guenée)		+	
Genus <i>Nephelodes</i> Guenée			
<i>N. minians</i> Guenée	bronzed cutworm	+	
Genus <i>Cerapteryx</i> Curtis			
<i>C. graminis</i> (Linnaeus)	antler moth	+	
Genus <i>Orthosia</i> Ochsenheimer			
<i>O. revicta</i> (Morrison)		+	
<i>O. hibisci</i> (Guenée)	green fruitworm	+	
Genus <i>Ceramica</i> Guenée			
<i>C. picta</i> (Harris)	zebra caterpillar	+	
Genus <i>Faronta</i> Smith			
<i>F. diffusa</i> (Walker)	wheathead armyworm	+	
Genus <i>Leucania</i> Ochsenheimer			
<i>L. commoides</i> Guenée		+	
<i>L. insueta</i> Guenée		+	+
<i>L. comma</i> (Linnaeus)		+	
Genus <i>Pseudaletia</i> Franclemont			
<i>P. unipuncta</i> (Haworth)	armyworm	+	
Genus <i>Aletia</i> Hübner			
<i>A. oxygala</i> (Grote)		+	
Genus <i>Brachionycha</i> (Hübner)			
<i>B. borealis</i> (Smith)		+ ^a	
Genus <i>Cucullia</i> Schrank			
<i>C. intermedia</i> Speyer		+	
<i>C. florea</i> Guenée		+	
<i>C. asteroides</i> Guenée		+	
Genus <i>Homohadena</i> Grote			
<i>H. badistriga</i> (Grote)		+	
<i>H. infixa</i> (Walker)		+	
Genus <i>Apharetra</i> Grote			
<i>A. dentata</i> Grote		+	
<i>A. purpurea</i> McDunnough		+	
Genus <i>Sympistis</i> Hübner			
<i>S. melaleuca</i> (Thunberg)			+
<i>S. lapponica</i> (Thunberg)			+

	Common name of moth or larva	Nfld.	Labr.
<i>S. labradoris</i> (Staudinger)			+
<i>S. funesta</i> (Paykull)			+
Genus <i>Feralia</i> Grote			
<i>F. jocosus</i> (Guenée)		+	
<i>F. comstocki</i> Grote		+	
Genus <i>Bombycia</i> Stephens			
<i>B. albens</i> (Grote)		+	
Genus <i>Hillia</i> Grote			
<i>H. iris</i> (Zetterstedt)		+	+
Genus <i>Lithomoia</i> Hübner			
<i>L. solidaginis</i> (Hübner)	goldenrod brindle	+	
Genus <i>Lithophane</i> Hübner			
<i>L. amanda</i> (Smith)		+	
<i>L. georgii</i> Grote		+	
<i>L. pexata</i> Grote		+	
<i>L. lepida</i> (Lintner)		+	
<i>L. thaxteri</i> Grote	nonconformist (Br.)	+	
Genus <i>Xylena</i> Ochsenheimer			
<i>X. nupera</i> (Lintner)	red swordgrass moth (Br.)	+	
<i>X. curvimacula</i> (Morrison)	dot and dash swordgrass moth	+	
<i>X. thoracica</i> (Putnam-Cramer)		+	
<i>X. cineritia</i> (Grote)		+	+
Genus <i>Xylotype</i> Hampson			
<i>X. acadia</i> Barnes & Benjamin		+	+
Genus <i>Platypolia</i> Grote			
<i>P. anceps</i> (Stephens)		+	
Genus <i>Mniotype</i> Franclemont			
<i>M. ducta</i> (Grote)		+	+
<i>M. ferida</i> Smith		+	+
Genus <i>Fishia</i> Grote			
<i>F. enthea</i> Grote		+	
Genus <i>Sutyna</i> Todd			
<i>S. privata</i> (Walker)		+	
Genus <i>Epiglaea</i> Grote			
<i>E. apiata</i> (Grote)		+	
Genus <i>Agrochola</i> Hübner			
<i>A. lota</i> (Clerck)	red-lined quaker (Br.)	+	
Genus <i>Parastichtis</i> Hübner			
<i>P. discivaria</i> (Walker)		+	
Genus <i>Sunira</i> Franclemont			
<i>S. bicolorago</i> (Guenée)		+	

	Common name of moth or larva	Nfld.	Labr.
Genus <i>Xanthia</i> Ochsenheimer			
<i>X. lutea</i> (Strömberg)	pink-barred sallow (Br.)	+	
Genus <i>Apamea</i> Ochsenheimer			
<i>A. verbascoides</i> (Guenée)		+	
<i>A. vultuosa</i> (Grote)		+	
<i>A. amputatrix</i> (Fitch)	yellowheaded cutworm	+	+
<i>A. alia</i> (Guenée)		+	
<i>A. commoda</i> (Walker)		+	
<i>A. impulsiva</i> (Guenée)		+	+
<i>A. indocilis</i> (Walker)		+	
<i>A. finitima</i> Guenée		+	+
Genus <i>Agroperina</i> Hampson			
<i>A. lateritia</i> (Hufnagel)		+	+
<i>A. dubitans</i> (Walker)		+	
<i>A. cogitata</i> (Smith)		+	+
<i>A. inficita</i> (Walker)		+	
Genus <i>Crymodes</i> Guenée			
<i>C. devastator</i> (Brace)	glassy cutworm	+	+
<i>C. maillardi</i> (Geyer)	northern arches (Br.)	+	+
Genus <i>Trichoplexia</i> Hampson			
<i>T. exornata</i> (Möschler)		+	+
Genus <i>Luperina</i> Boisduval			
<i>L. passer</i> (Guenée)		+	
Genus <i>Oligia</i> Hübner			
<i>O. modica</i> (Guenée)		+	
<i>O. bridghami</i> (Grote & Robinson)		+	
<i>O. minuscula</i> (Morrison)		+	
<i>O. illocata</i> (Walker)		+	
Genus <i>Eremobina</i> McDunnough			
<i>E. claudens</i> (Walker)		+	
Genus <i>Hypocoena</i> Hampson			
<i>H. rufostrigata</i> (Packard)			+
<i>H. inquinata</i> (Guenée)		+	
<i>H. basistriga</i> McDunnough		+	+
Genus <i>Ipimorpha</i> Hübner			
<i>I. pleonectusa</i> Grote		+	
Genus <i>Helotropha</i> Lederer			
<i>H. reniformis</i> (Grote)		+	
Genus <i>Amphipoea</i> Billberg			
<i>A. velata</i> (Walker)		+	
<i>A. americana</i> (Speyer)		+	
Genus <i>Hydroecia</i> Guenée			
<i>H. micacea</i> (Esper)	potato stem borer, rosy rustic moth	+	

	Common name of moth or larva	Nfld.	Labr.
Genus <i>Papaipema</i> Smith			
<i>P. impecuniosa</i> (Grote)		+ ^a	
<i>P. pterisii</i> Bird		+	
<i>P. frigida</i> (Smith)		+	
<i>P. thalictri</i> Lyman		+	
Genus <i>Euplexia</i> Stephens			
<i>E. benesimilis</i> McDunnough		+	
Genus <i>Phlogophora</i> Treitschke			
<i>P. iris</i> Guenée		+	
<i>P. periculosa</i> Guenée		+	+
Genus <i>Euherrichia</i> Grote			
<i>E. monetifera</i> (Guenée)		+	
Genus <i>Agriopodes</i> Hampson			
<i>A. fallax</i> (Herrich-Schäffer)	green marvel	+	
Genus <i>Amphipyra</i> Ochsenheimer			
<i>A. pyramidoides</i> Guenée	copper underwing	+	
<i>A. tragopoginis</i> (Linnaeus)	mouse (Br.)	+	
Genus <i>Nedra</i> Clarke			
<i>N. ramosula</i> (Guenée)		+	
Genus <i>Andropolia</i> Grote			
<i>A. contacta</i> (Walker)		+	
Genus <i>Hyppa</i> Duponchel			
<i>H. xylinoides</i> (Guenée)		+	
<i>H. indistincta</i> Smith		+	+
Genus <i>Platysenta</i> Grote			
<i>P. sutor</i> (Guenée)			+
Genus <i>Elaphria</i> Hübner			
<i>E. versicolor</i> (Grote)		+	
<i>E. festivoides</i> (Guenée)		+	
Genus <i>Platyperigea</i> Smith			
<i>P. multifera</i> (Walker)		+	
Genus <i>Enargia</i> Hübner			
<i>E. infumata</i> (Grote)		+	
Genus <i>Bellura</i> Walker			
<i>B. diffusa</i> (Grote)	browntailed diver	+	
Genus <i>Pyrrhia</i> Hübner			
<i>P. umbra</i> (Hüfnagel)	bordered sallow	+	
<i>P. exprimens</i> (Walker)		+	
Genus <i>Helicoverpa</i> Hardwick			
<i>H. zea</i> (Boddie)	corn earworm, bollworm, tomato fruitworm	+	

	Common name of moth or larva	Nfld.	Labr.
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Genus <i>Lithacodia</i> Hübner			
<i>L. bellicula</i> Hübner		+	
<i>L. albidula</i> (Guenée)		+	
<i>L. carneola</i> (Guenée)		+	
Genus <i>Nycteola</i> Hübner			
<i>N. frigidana</i> (Walker)		+	
<i>N. cinereana</i> Neumoegen & Dyar		+	
Genus <i>Calophasia</i> Smith			
<i>C. ignea simulans</i> McDunnough			+
Genus <i>Syngrapha</i> Hübner			
<i>S. paralis</i> (Hübner)			+
<i>S. alticola</i> (Walker)			+
<i>S. microgamma nearctica</i> Ferguson		+	
<i>S. montana</i> (Packard)			+
<i>S. diasema</i> (Boisduval)			+
<i>S. rectangula</i> (Kirby)		+	
<i>S. u-aureum</i> (Guenée)		+	+
<i>S. alias</i> (Ottolengui)		+	
<i>S. interrogationis</i> (Linnaeus)			+
<i>S. altera variana</i> (Ottolengui)		+	+
<i>S. octoscripta</i> (Grote)		+	+
<i>S. surena</i> (Grote)		+	+
<i>S. epigaea</i> (Grote)		+	
<i>S. selecta</i> (Walker)		+	+
Genus <i>Anagrapha</i> McDunnough			
<i>A. falcifera</i> (Kirby)	celery looper	+	+
Genus <i>Autographa</i> Hübner			
<i>A. ampla</i> (Walker)		+	
<i>A. bimaculata</i> (Stephens)		+	
<i>A. mappa</i> (Grote & Robinson)		+	
<i>A. pseudogamma</i> (Grote)		+	+
<i>A. flagellum</i> (Walker)		+	
Genus <i>Trichoplusia</i> McDunnough			
<i>T. ni</i> (Hübner)	cabbage looper	+ ^a	
Genus <i>Chrysaspidia</i> Hübner			
<i>C. putnami</i> (Grote)		+	+
<i>C. venusta</i> (Walker)		+	
Genus <i>Plusia</i> Ochseneimer			
<i>P. aereoides</i> Grote		+	
Genus <i>Pseudeva</i> Hampson			
<i>P. purpurigera</i> (Walker)		+	

	Common name of moth or larva	Nfld.	Labr.
Genus <i>Chrysanympha</i> Grote			
<i>C. formosa</i> (Grote)		+	
Genus <i>Catocala</i> Schrank			
<i>C. ilia</i> (Cramer)	ilia underwing	+	
<i>C. relictata</i> Walker	white underwing	+	
<i>C. unijuga</i> Walker		+	
<i>C. briseis</i> Edwards	briseis underwing	+	
Genus <i>Caenurgina</i> McDunnough			
<i>C. crassiuscula</i> (Haworth)	grass looper	+	
Genus <i>Erebus</i> Latreille			
<i>E. odora</i> (Linnaeus)	black witch	+	
Genus <i>Scoliopteryx</i> Germar			
<i>S. libatrix</i> (Linnaeus)	herald moth, scalloped owlet	+	+
Genus <i>Bomolocha</i> Hübner			
<i>B. bijugalis</i> (Walker)		+	
Genus <i>Lomanaltes</i> Grote			
<i>L. eductalis</i> (Walker)		+	
Genus <i>Rivula</i> Guenée			
<i>R. propinqualis</i> Guenée		+	
Genus <i>Epizeuxis</i> Hübner			
<i>E. americalis</i> (Guenée)		+	+
<i>E. aemula</i> (Hübner)		+	
Genus <i>Chytolita</i> Grote			
<i>C. petrealis</i> Grote		+	
Genus <i>Philometra</i> Grote			
<i>P. metonalis</i> (Walker)		+	
Genus <i>Palthis</i> Hübner			
<i>P. angulalis</i> Hübner		+	
Genus <i>Schrankia</i> Hübner			
<i>S. turfosalis</i> Wocke	marsh oblique-barred (Br.)	+	
Family NOTODONTIDAE	notodontid moths, prominents		
Genus <i>Ichthyura</i> Hübner			
<i>I. apicalis</i> Walker		+	
<i>I. albosigma</i> (Fitch)		+	
Genus <i>Notodonta</i> Ochsenheimer			
<i>N. stragula</i> Grote		+	
<i>N. simplaria</i> Graef		+	
Genus <i>Phoesia</i> Hübner			
<i>P. rimosus</i> Packard		+	

	Common name of moth or larva	Nfld.	Labr.
Genus <i>Lophodonta</i> Packard			
<i>L. ferruginea</i> Packard		+	
Genus <i>Nadata</i> Walker			
<i>N. gibbosa</i> (J. E. Smith)		+	+
Genus <i>Schizura</i> Doubleday			
<i>S. ipomoeae</i> Doubleday		+	
<i>S. unicornis</i> (J. E. Smith)		+	
Genus <i>Gluphisia</i> Boisduval			
<i>G. septentrionalis</i> Walker		+	
Family LYMANTRIIDAE	tussock moths		
Genus <i>Gynaephora</i> Hübner			
<i>G. rossii</i> (Curtis)			+
Genus <i>Orgyia</i> Ochsenheimer			
<i>O. antiqua nova</i> Fitch	rusty tussock moth	+	
<i>O. leucostigma</i> (J. E. Smith)	white-marked tussock moth	+	
Genus <i>Dasychira</i> Hübner			
<i>D. vagans</i> (Barnes & McDunnough)		+	
<i>D. plagiata</i> (Walker)	pine tussock moth	+	+
Genus <i>Leucoma</i> Hübner			
<i>L. salicis</i> (Linnaeus)	satin moth	+	
Family LASIOCAMPIDAE	tent caterpillar moths and allies (lasiocampids)		
Genus <i>Malacosoma</i> Hübner			
<i>M. americanum</i> (Fabricius)	eastern tent caterpillar	+	
<i>M. disstria</i> Hübner	forest tent caterpillar	+	
Family THYATIRIDAE	thyatirids		
Genus <i>Habrosyne</i> Hübner			
<i>H. scripta</i> Gosse		+	+
Genus <i>Pseudothyatira</i> Grote			
<i>P. expultrix</i> Grote		+	
<i>P. cymatophoroides</i> Guenée		+	
Genus <i>Euthyatira</i> Smith			
<i>E. pudens</i> (Guenée)		+	
Family DREPANIDAE	drepanids		
Genus <i>Eudeilinia</i> Packard			
<i>E. herminiata</i> (Guenée)		+	
Genus <i>Oreta</i> Walker			
<i>O. rosea americana</i> (Herrich-Schäffer)		+	

	Common name of moth or larva	Nfld.	Labr.
Genus <i>Drepana</i> Schrank			
<i>D. arcuata</i> Walker		+	
<i>D. bilineata</i> (Packard)		+	
Family GEOMETRIDAE	geometrids (geometers)		
Genus <i>Archiearis</i> Hübner			
<i>A. infans</i> (Möschler)	first born geometer	+	
Genus <i>Leucobrephe</i> Grote			
<i>L. brephoides</i> (Walker)			+
Genus <i>Synchlora</i> Guenée			
<i>S. liquoraria albolineata</i> (Packard)		+	
Genus <i>Mesothea</i> Warren			
<i>M. incertata</i> (Walker)		+	+
Genus <i>Scopula</i> Schrank			
<i>S. junctaria</i> (Walker)		+	
<i>S. frigidaria</i> (Möschler)		+	+
<i>S. inductata</i> (Guenée)		+	
Genus <i>Holarctias</i> Prout			
<i>H. sentinaria</i> Geyer			+
Genus <i>Cyclophora</i> Hübner			
<i>C. pendulinaria</i> (Guenée)	sweet fern geometer	+	+
Genus <i>Carsia</i> Hübner			
<i>C. sororiata labradorensis</i> (Sommer)		+	+
<i>C. sororiata thaxteri</i> Swett		+	+
Genus <i>Acasis</i> Duponchel			
<i>A. viridata</i> (Packard)		+	+
Genus <i>Cladara</i> Hulst			
<i>C. limitaria</i> (Walker)		+	+
<i>C. atroliturata</i> (Walker)	scribbler	+	
Genus <i>Lobophora</i> Curtis			
<i>L. nivigerata</i> Walker		+	
Genus <i>Trichodezia</i> Warren			
<i>T. albovittata</i> (Guenée)	white striped black	+	+
Genus <i>Operophtera</i> Hübner			
<i>O. bruceata</i> (Hulst)	Bruce spanworm	+	
<i>O. brumata</i> (Linnaeus)	winter moth	+	
Genus <i>Epirrita</i> Hübner			
<i>E. autumnata henshawi</i> (Swett)	autumnal or November moth	+	+
Genus <i>Triphosa</i> Stephens			
<i>T. haesitata affirmaria</i> (Walker)	tissue moth	+	

	Common name of moth or larva	Nfld.	Labr.
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Genus <i>Hydria</i> Hübner			
<i>H. undulata</i> (Linnaeus)	scallop shell moth	+	+
Genus <i>Eupithecia</i> Curtis			
<i>E. misturata frostiata</i> Swett			
<i>E. subfuscata</i> (Haworth)	gray pug (Br.)	+	
<i>E. tripunctaria</i> Herrich-Schäffer	whitespotted pug (Br.)	+	+
<i>E. fletcherata</i> Taylor		+	+
<i>E. bradorata</i> McDunnough		+	+
<i>E. luteata</i> Packard		+	+
<i>E. palpata</i> Packard		+	
<i>E. transcanadata</i> MacKay		+	
<i>E. columbiata erpata</i> Pearsall		+	
<i>E. satyrata fumata</i> Taylor	satyr pug (Br.)	+	+
<i>E. gibsonata</i> Taylor		+	
<i>E. russeliata</i> Swett		+	
<i>E. strattonata</i> Packard		+	
<i>E. grata</i> Taylor		+	
<i>E. fumosa</i> (Hulst)		+	
<i>E. coagulata</i> Guenée		+	
<i>E. nimbicolor</i> (Hulst)		+	
<i>E. gelidata</i> Möschler		+	+
<i>E. perfusca youngata</i> Taylor	angle barred pug (Br.)	+	
<i>E. pusillata interruptofasciata</i> Packard	juniper pug (Br.)	+	
<i>E. filmata</i> Pearsall		+	+
<i>E. albicapitata</i> Packard		+	
<i>E. mutata</i> Pearsall	cloaked pug (Br.)	+	
<i>E. anticaria</i> Walker		+	
Genus <i>Chloroclystis</i> Hübner			
<i>C. rectangulata</i> f. <i>nigrosericeata</i> (Haworth)		+	
Genus <i>Horisme</i> Hübner			
<i>H. intestinata</i> (Guenée)		+	
Genus <i>Eustroma</i> Hübner			
<i>E. semiatrata</i> (Hulst)		+	+
Genus <i>Eulithis</i> Hübner			
<i>E. propulsata</i> (Walker)		+	+
<i>E. testata</i> (Linnaeus)	chevron moth	+	
<i>E. destinata</i> (Möschler)		+	+
<i>E. flavibrunneata</i> (McDunnough)		+	
<i>E. explanata</i> (Walker)		+	+
<i>E. serrataria</i> (Barnes & McDunnough)		+	

	Common name of moth or larva	Nfld.	Labr.
Genus <i>Diactinia</i> Warren			
<i>D. silaceata</i> (Denis & Schiffermüller)	small phoenix (Br.)	+	+
Genus <i>Plemyria</i> Hübner			
<i>P. georgii</i> Hulst		+	
Genus <i>Dysstroma</i> Hübner			
<i>D. walkerata</i> (Pearsall)	marbled carpet (Br.)	+	+
<i>D. mackieata</i> Cassino & Swett			+
<i>D. citrata</i> (Linnaeus)	dark marbled carpet (Br.)	+	+
<i>D. brunneata</i> (Packard)		+	+
<i>D. hersiliata</i> (Guenée)		+	+
<i>D. hersiliata cervinifascia</i> (Walker)		+	
Genus <i>Thera</i> Stephens			
<i>T. contractata</i> (Packard)	evergreen spanworm	+	
<i>T. otisi</i> (Dyar)		+	
Genus <i>Hydriomena</i> Hübner			
<i>H. furcata</i> (Thunberg)		+	
<i>H. divisaria frigidata</i> (Walker)		+	
<i>H. renunciata</i> (Walker)		+	+
<i>H. ruberata</i> (Freyer)		+	
Genus <i>Xanthorhoe</i> Hübner			
<i>X. lacustrata</i> (Guenée)		+	+
<i>X. labradorensis</i> (Packard)		+	+
<i>X. munitata</i> (Hübner)	red carpet (Br.)	+	+
<i>X. ferrugata</i> (Clerck)	red twin spot	+	+
<i>X. ramaria</i> Swett & Cassino			+
<i>X. baffinensis</i> McDunnough			+
<i>X. algidata</i> (Möschler)		+	+
<i>X. iduata</i> (Guenée)		+	+
<i>X. abrasaria congregata</i> (Walker)		+	+
Genus <i>Dasyuris</i> Guenée			
<i>D. polata punctipes</i> (Curtis)			+
<i>D. polata bradorata</i> Munroe		+	
Genus <i>Orthonama</i> Hübner			
<i>O. obstipata</i> (Fabricius)	gem	+	
<i>O. evansi</i> McDunnough		+	
Genus <i>Entephria</i> Hübner			
<i>E. aurata</i> (Packard)		+	+
Genus <i>Mesoleuca</i> Hübner			
<i>M. ruficillata</i> (Guenée)		+	+
Genus <i>Epirrhoe</i> Hübner			
<i>E. alternata</i> (Müller)		+	+

	Common name of moth or larva	Nfld.	Labr.
Genus <i>Spargania</i> Guenée			
<i>S. magnoliata</i> Guenée		+	
<i>S. luctuata obductata</i> (Möschler)		+	+
Genus <i>Euphyia</i> Hübner			
<i>E. unangulata</i> (Haworth)		+	+
Genus <i>Rheumaptera</i> Hübner			
<i>R. hastata</i> (Linnaeus)	spear-marked black	+	+
<i>R. subhastata</i> (Nolcken)		+	+
Genus <i>Perizoma</i> Hübner			
<i>P. basaliata</i> (Walker)		+	+
<i>P. alchemillata</i> (Linnaeus)	small rivulet (Br.)	+	
Genus <i>Anticlea</i> Stephens			
<i>A. vasiliata</i> (Guenée)		+	
<i>A. multiferata</i> (Walker)		+	+
Genus <i>Venusia</i> Curtis			
<i>V. cambrica</i> Curtis	Welsh wave (Br.)	+	+
<i>V. comptaria</i> (Walker)		+	
Genus <i>Hydrelia</i> Hübner			
<i>H. lucata</i> (Guenée)		+	
<i>H. albifera</i> (Walker)		+	
<i>H. terraenovae</i> Krogerus		+	
Genus <i>Lomographa</i> Hübner			
<i>L. semiclarata</i> (Walker)		+	
<i>L. vestaliata</i> (Guenée)		+	
<i>L. glomeraria</i> (Grote)		+	
<i>L. glomeraria</i> ab. <i>merricki</i> (Cassino & Swett)		+	
Genus <i>Cabera</i> Treitschke			
<i>C. borealis</i> (Hulst)			+
<i>C. variolaria</i> Guenée	pink striped willow spanworm	+	
<i>C. erythemaria</i> Guenée		+	+
Genus <i>Isturgia</i> Hübner			
<i>I. truncataria</i> (Walker)		+	+
Genus <i>Semiothisa</i> Hübner			
<i>S. bisignata</i> (Walker)	redheaded inchworm	+	
<i>S. signaria dispuncta</i> (Walker)		+	+
<i>S. submarmorata</i> (Walker)		+	
<i>S. oweni</i> (Swett)		+	
<i>S. sexmaculata</i> (Packard)		+	+
<i>S. neptaria</i> (Guenée)		+	
<i>S. hebetata</i> (Hulst)			+

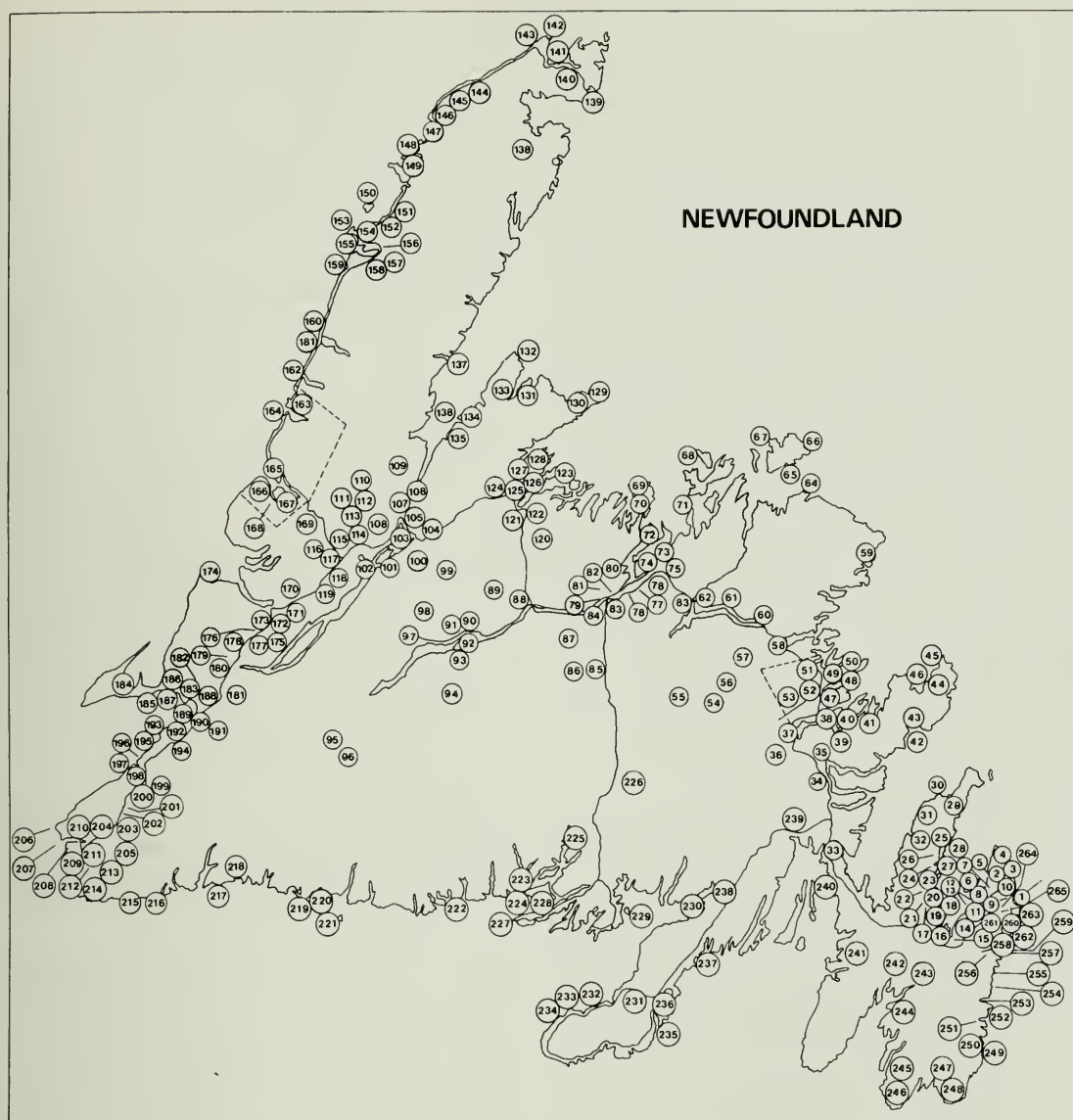
	Common name of moth or larva	Nfld.	Labr.
Genus <i>Itame</i> Hübner			
<i>I. pustularia</i> (Guenée)	lesser maple spanworm	+	
<i>I. argillacearia</i> (Packard)		+	
<i>I. andersoni</i> (Swett)		+	+
<i>I. sulphurea</i> (Packard)		+	+
<i>I. brunneata</i> (Thunberg)		+	+
<i>I. subcessaria</i> (Walker)		+	
<i>I. anataria</i> (Swett)		+	+
<i>I. exauspicata</i> (Walker)		+	
<i>I. bitactata</i> (Walker)		+	+
<i>I. loricaria</i> (Eversmann)		+	
Genus <i>Eufidonia</i> Packard			
<i>E. convergaria</i> (Walker)		+	
<i>E. discospilata</i> (Walker)		+	+
Genus <i>Hypagyrtis</i> Hübner			
<i>H. piniata</i> (Packard)	pine measuringworm	+	
Genus <i>Protoaboarmia</i> McDunnough			
<i>P. porcelaria</i> (Guenée)		+	
Genus <i>Anavitrinella</i> McDunnough			
<i>A. pampinaria</i> (Guenée)	cranberry spanworm	+	
Genus <i>Iridopsis</i> Warren			
<i>I. larvaria</i> (Guenée)		+	
Genus <i>Anacamptodes</i> McDunnough			
<i>A. vellivolata</i> (Hulst)		+	
Genus <i>Aethalura</i> McDunnough			
<i>A. anticaria</i> (Walker)		+	
Genus <i>Ectropis</i> Hübner			
<i>E. crepuscularia</i> (Denis & Schiffermüller)	small engrailed (Br.)	+	+
<i>E. crepuscularia</i> f. <i>abraxaria</i> (Walker)		+	
Genus <i>Erannis</i> Hübner			
<i>E. tiliaria</i> (Harris)	linden looper	+	
Genus <i>Biston</i> Leach			
<i>B. betularia cognataria</i> (Guenée)	pepper-and-salt	+	
Genus <i>Aspilates</i> Treitschke			
<i>A. conspersarius</i> Staudinger		+	
Genus <i>Campaea</i> Lamarck			
<i>C. perlata</i> (Guenée)	light emerald	+	+

	Common name of moth or larva	Nfld.	Labr.
Genus <i>Homochlodes</i> Hulst <i>H. fritillaria</i> (Guenée)		+	
Genus <i>Plagodis</i> Hübner <i>P. phlogosaria iris</i> Rupert		+	
Genus <i>Anagoga</i> Hübner <i>A. occiduaria</i> (Walker)	barred umber	+	
Genus <i>Hyperetis</i> Guenée <i>H. amicaria</i> f. <i>nyssaria</i> (Guenée)		+	
<i>H. nepiasaria</i> (Guenée)		+	
Genus <i>Metarranthis</i> Warren <i>M. duaria</i> (Guenée)		+	
Genus <i>Metanema</i> Guenée <i>M. inatomaria</i> Guenée		+	
<i>M. determinata</i> Walker		+	
Genus <i>Selenia</i> Hübner <i>S. alciphearia</i> Walker		+	+
Genus <i>Ennomos</i> Treitschke <i>E. subsignaria</i> (Hübner)	snow-white linden	+	
Genus <i>Pero</i> Herrich-Schäffer <i>P. honestaria</i> (Walker)		+	
<i>P. morrisonaria</i> (Henry Edwards)		+	
Genus <i>Nepytia</i> Hulst <i>N. canosaria</i> (Walker)	false hemlock looper	+	
Genus <i>Caripeta</i> Walker <i>C. divisata</i> Walker	gray spruce looper	+	
<i>C. divisata</i> ab. <i>nigraria</i> Forbes		+	
<i>C. piniata</i> (Packard)		+	
<i>C. angustiorata</i> Walker	brown pine looper	+	
Genus <i>Besma</i> Capps <i>B. quercivoraria</i> (Guenée)		+	
Genus <i>Lambdina</i> Capps <i>L. fiscellaria</i> (Guenée)	hemlock looper	+	+
Genus <i>Sicya</i> Guenée <i>S. macularia</i> (Harris)		+	
Genus <i>Apicia</i> Guenée <i>A. confusaria</i> Hübner		+	
Genus <i>Prochoerodes</i> Grote <i>P. transversata</i> (Drury)	large maple spanworm	+	

Collection points in Newfoundland

Arranged alphabetically

112	Adies Pond	226	Conne River Pond
113	Adies Pond Road	142	Cook's Harbour
62	Appleton	114	Cormack
251	Aquaforte	173	Corner Brook
88	Badger	163	Cow Head
133	Baie Verte	197	Crabbes (St. David's)
237	Baine Harbour	199	Crabbes River
2	Bauline Line (Torbay)	236	Creston
259	Bay Bulls	18	Cupids
223	Bay d'Espoir	160	Daniel's Harbour
230	Bay L'Argent	127	Davis Pond
22	Bay Roberts	126	Davis Pond Road
134	Bear Cove	117	Deer Lake
6	Bell Island	54	Deer Pond
60	Benton	151	Doctors Brook (Doctor's Hills)
106	Big Falls	10	Donovans
104	Birchy Basin (Birchy Lake)	211	Doyles (Doyles Station)
247	Biscay Bay	190	Dribble Brook
79	Bishop's Falls	50	Eastport
182	Black Duck	144	Eddies Cove
27	Blow Me Down	152	Eddies Cove West
143	Boat Harbour	93	Exploits Dam
45	Bonavista	185	Felix Cove
169	Bonne Bay Road	252	Ferryland
181	Bottom Brook	194	Fischells Brook
80	Botwood	170	Fishers Brook
149	Brig Bay	192	Flat Bay
97	Buchans	191	Flat Bay Brook
90	Buchans Junction	3	Flatrock
220	Burgeo	132	Fleur de Lys
235	Burin	146	Flower's Cove
215	Burnt Islands	67	Fogo
29	Burnt Point	234	Fortune
253	Cape Broyle	69	Fortune Harbour
249	Cappahayden	13	Foxtrap
24	Carbonear	99	Gaff Topsail
214	Channel (Port aux Basques)	180	Gallants
229	Chapel Island	58	Gambo
218	Cinq Cerf River	61	Gander
34	Clarenville	154	Gargamelle
202	Coal Brook	35	Georges Brook
261	Cochrane Pond	179	Georges Lake
206	Codroy	168	Glenburnie
200	Codroy Pond	63	Glenwood
242	Colinet	51	Glovertown
16	Colliers Ridge	116	Goose Arm Road
33	Come By Chance	260	Goulds
71	Comfort Cove	233	Grand Bank



- | | | | |
|-----|---------------------------|-----|-----------------------|
| 217 | Grand Bruit | 32 | Heart's Content |
| 84 | Grand Falls | 195 | Heatherton |
| 102 | Grand Lake | 227 | Hermitage |
| 219 | Grandy Brook | 15 | Holyrood |
| 137 | Great Cat Arm | 101 | Howley |
| 205 | Great Falls | 96 | Howley Lake |
| 86 | Great Rattling Brook | 173 | Humber (Corner Brook) |
| 83 | Great River | 124 | Indian Pond |
| 175 | Gull Pond Road | 128 | Jackson's Cove |
| 118 | Halstead (Pynns Brook) | 196 | Jeffrey's |
| 108 | Hampden | 78 | Jumpers Brook |
| 107 | Hampden Road | 264 | Kilbride |
| 183 | Harmon Field | 46 | King's Cove |
| 81 | Harvey's Stillwater | 100 | Kitty's Brook |
| 158 | Hawkes Bay | 64 | Ladle Cove |
| 240 | Haystack (on Long Island) | 94 | Lake Ambrose |

254	La Manche	20	Port de Grave
174	Lark Harbour	161	Portland Creek
129	La Scie	43	Port Rexton
130	La Scie Road	155	Port Saunders
39	Lethbridge	5	Portugal Cove
73	Lewisporte	248	Portugal Cove South
167	Lomond	4	Pouch Cove
11	Long Pond (Talcville)	224	Pushthrough
140	Loon Motel	118	Pynns Brook (Halstead)
263	Maddox Cove	1	Quidi Vidi (St. John's, Windsor Lake)
138	Main Brook Junction	221	Ramea
17	Makinsons	77	Rattling Brook
12	Manuels	115	Reidville
91	Mary March Park	222	Rencontre West
36	Middle Brook	250	Renews
85	Miguels Lake	159	River of Ponds
92	Millertown	204	Riverview Hill (View Hill)
89	Millertown Junction	123	Robert's Arm
225	Milltown	216	Rose Blanche
207	Millville	139	St. Anthony
131	Ming's Bight	147	St. Barbe
256	Mobile	197	St. David's (Crabbes)
232	Molliers	198	St. Fintan's
265	Mount Pearl	189	St. George's (Tolt)
210	Mummichog Provincial Park	150	St. John Island
38	Musgravetown	1	St. John's (Quidi Vidi, Windsor Lake)
244	Mussel Pond	164	St. Pauls
44	Newmans Cove	7	St. Phillips
48	Newman Sound	246	St. Shotts
30	New Melbourne	193	St. Teresa
74	Neyle's Bridge	8	St. Thomas
76	Norris Arm	28	Salmon Cove
201	North Branch Road	243	Salmonier
57	North Pond	49	Saltons Brook
19	North River	103	Sandy Lake
120	North Twin Lake	105	Sandy Lake Road
75	Notre Dame Junction	14	Seal Cove
47	Ochre Hill Road	208	Searston
162	Parson's Pond	65	Seldom
119	Pasadena	21	Shearstown
227	Pass Island	203	South Branch
145	Paynes Bay (Paynes Cove)	122	South Brook
245	Peter's River	121	South Pond
262	Petty Harbour	70	Southeast Arm
184	Piccadilly	55	Southwest Pond
177	Pinchgut Lake	23	Spaniards Bay
53	Pinsent's Ridge (Terra Nova)	125	Springdale
141	Pistolet Bay	178	Spruce Brook
148	Plum Point	176	Stag Hill
153	Port au Choix	171	Steady Brook
186	Port au Port	187	Stephenville
214	Port aux Basques (Channel)		
37	Port Blandford		

188	Stephenville Crossing	25	Victoria Road
87	Stony Brook	95	Victoria Lake
41	Sweet Bay	204	View Hill (Riverview Hill)
239	Swift Current	241	Villa Marie
212	Table Mountain	172	Watsons Brook
11	Talcville (Long Pond)	59	Wesleyville
109	Taylor's Brook	156	Western Brook
53	Terra Nova (Pinsent's Ridge)	157	Western Brook Pond
52	Terra Nova National Park	135	Westport
238	Terrenceville	136	White Bay
213	The Tolt	110	Whites Brook
72	Thwart Island	111	Whites Road
66	Tilting	165	Wild Cove
189	Tolt (St. George's)	98	Wiley Brook
209	Tompkins	1	Windsor Lake (St. John's, Quidi Vidi)
9	Topsail	40	Winter Brook
2	Torbay (Bauline Line)	231	Winterland
255	Tors Cove	31	Winterton
82	Tote Lake	257	Witless Bay
42	Trinity	258	Witless Bay Line
56	Triton Brook	166	Woody Point
68	Twillingate		
26	Victoria		

Arranged numerically

1	St. John's (Quidi Vidi, Windsor Lake)	28	Salmon Cove
2	Torbay (Bauline Line)	29	Burnt Point
3	Flatrock	30	New Melbourne
4	Pouch Cove	31	Winterton
5	Portugal Cove	32	Heart's Content
6	Bell Island	33	Come By Chance
7	St. Phillips	34	Clareville
8	St. Thomas	35	Georges Brook
9	Topsail	36	Middle Brook
10	Donovans	37	Port Blandford
11	Long Pond (Talcville)	38	Musgravetown
12	Manuels	39	Lethbridge
13	Foxtrap	40	Winter Brook
14	Seal Cove	41	Sweet Bay
15	Holyrood	42	Trinity
16	Colliers Ridge	43	Port Rexton
17	Makinsons	44	Newmans Cove
18	Cupids	45	Bonavista
19	North River	46	King's Cove
20	Port de Grave	47	Ochre Hill Road
21	Shearstown	48	Newman Sound
22	Bay Roberts	49	Saltons Brook
23	Spaniards Bay	50	Eastport
24	Carbonear	51	Glovertown
25	Victoria Road	52	Terra Nova National Park
26	Victoria	53	Terra Nova (Pinsent's Ridge)
27	Blow Me Down	54	Deer Pond

55	Southwest Pond	108	Hampden
56	Triton Brook	109	Taylor's Brook
57	North Pond	110	Whites Brook
58	Gambo	111	Whites Road
59	Wesleyville	112	Adies Pond
60	Benton	113	Adies Pond Road
61	Gander	114	Cormack
62	Appleton	115	Reidville
63	Glenwood	116	Goose Arm Road
64	Ladle Cove	117	Deer Lake
65	Seldom	118	Pynns Brook (Halstead)
66	Tilting	119	Pasadena
67	Fogo	120	North Twin Lake
68	Twillingate	121	South Pond
69	Fortune Harbour	122	South Brook
70	Southeast Arm	123	Robert's Arm
71	Comfort Cove	124	Indian Pond
72	Thwart Island	125	Springdale
73	Lewisporte	126	Davis Pond Road
74	Neyle's Bridge	127	Davis Pond
75	Notre Dame Junction	128	Jackson's Cove
76	Norris Arm	129	La Scie
77	Rattling Brook	130	La Scie Road
78	Jumpers Brook	131	Ming's Bight
79	Bishop's Falls	132	Fleur de Lys
80	Botwood	133	Baie Verte
81	Harvey's Stillwater	134	Bear Cove
82	Tote Lake	135	Westport
83	Great River	136	White Bay
84	Grand Falls	137	Great Cat Arm
85	Miguels Lake	138	Main Brook Junction
86	Great Rattling Brook	139	St. Anthony
87	Stony Brook	140	Loon Motel
88	Badger	141	Pistolet Bay
89	Millertown Junction	142	Cook's Harbour
90	Buchans Junction	143	Boat Harbour
91	Mary March Park	144	Eddies Cove
92	Millertown	145	Paynes Bay (Paynes Cove)
93	Exploits Dam	146	Flower's Cove
94	Lake Ambrose	147	St. Barbe
95	Victoria Lake	148	Plum Point
96	Howley Lake	149	Brig Bay
97	Buchans	150	St. John Island
98	Wiley Brook	151	Doctors Brook (Doctor's Hills)
99	Gaff Topsail	152	Eddies Cove West
100	Kitty's Brook	153	Port au Choix
101	Howley	154	Gargamelle
102	Grand Lake	155	Port Saunders
103	Sandy Lake	156	Western Brook
104	Birchy Basin (Birchy Lake)	157	Western Brook Pond
105	Sandy Lake Road	158	Hawkes Bay
106	Big Falls	159	River of Ponds
107	Hampden Road	160	Daniel's Harbour

161 Portland Creek
 162 Parson's Pond
 163 Cow Head
 164 St. Pauls
 165 Wild Cove
 166 Woody Point
 167 Lomond
 168 Glenburnie
 169 Bonne Bay Road
 170 Fishers Brook
 171 Steady Brook
 172 Watsons Brook
 173 Corner Brook (Humber)
 174 Lark Harbour
 175 Gull Pond Road
 176 Stag Hill
 177 Pinchgut Lake
 178 Spruce Brook
 179 Georges Lake
 180 Gallants
 181 Bottom Brook
 182 Black Duck
 183 Harmon Field
 184 Piccadilly
 185 Felix Cove
 186 Port au Port
 187 Stephenville
 188 Stephenville Crossing
 189 St. George's (Tolt)
 190 Dribble Brook
 191 Flat Bay Brook
 192 Flat Bay
 193 St. Teresa
 194 Fischells Brook
 195 Heatherton
 196 Jeffrey's
 197 St. David's (Crabbes)
 198 St. Fintan's
 199 Crabbes River
 200 Codroy Pond
 201 North Branch Road
 202 Coal Brook
 203 South Branch
 204 Riverview Hill (View Hill)
 205 Great Falls
 206 Codroy
 207 Millville
 208 Searston
 209 Tompkins
 210 Mummichog Provincial Park
 211 Doyles (Doyles Station)
 212 Table Mountain
 213 The Tolt

214 Port aux Basques (Channel)
 215 Burnt Islands
 216 Rose Blanche
 217 Grand Bruit
 218 Cinq Cerf River
 219 Grandy Brook
 220 Burgeo
 221 Ramea
 222 Rencontre West
 223 Bay d'Espoir
 224 Pushthrough
 225 Milltown
 226 Conne River Pond
 227 Pass Island
 228 Hermitage
 229 Chapel Island
 230 Bay L'Argent
 231 Winterland
 232 Molliers
 233 Grand Bank
 234 Fortune
 235 Burin
 236 Creston
 237 Baine Harbour
 238 Terrenceville
 239 Swift Current
 240 Haystack (on Long Island)
 241 Villa Marie
 242 Colinet
 243 Salmonier
 244 Mussel Pond
 245 Peter's River
 246 St. Shotts
 247 Biscay Bay
 248 Portugal Cove South
 249 Cappahayden
 250 Renews
 251 Aquaforte
 252 Ferryland
 253 Cape Broyle
 254 La Manche
 255 Tors Cove
 256 Mobile
 257 Witless Bay
 258 Witless Bay Line
 259 Bay Bulls
 260 Goulds
 261 Cochrane Pond
 262 Petty Harbour
 263 Maddox Cove
 264 Kilbride
 265 Mount Pearl

Collection points in Labrador

Arranged alphabetically

- | | |
|---|---|
| 4 Battle Harbour (Great Caribou Island, Caribou Island) | 25 Knob Lake (Schefferville) |
| 3 Belle Isle | 24 Lake Attikamagen |
| 15 Black Island | 1 L'Anse-au-Loup |
| 4 Caribou Island (Great Caribou Island, Battle Harbour) | 10 Makkovik |
| 8 Cartwright | 21 Nachvak Fiord (Nagrak Fiord, Nogbak Fiord) |
| 2 Chateau Bay | 14 Nain |
| 26 Churchill Falls | 27 North West River |
| 12 Davis Inlet | 16 Nutak |
| 28 Goose Bay (Happy Valley) | 17 Okak Bay |
| 4 Great Caribou Island (Battle Harbour, Caribou Island) | 20 Ramah Bay (Rama, Rama Bay) |
| 9 Hamilton Inlet | 7 Rocky Bay |
| 28 Happy Valley (Goose Bay) | 23 Ryans Bay (Rycon's Bay) |
| 18 Hebron | 19 Saglek Bay (Sugluk) |
| 11 Hopedale | 25 Schefferville (Knob Lake) |
| 22 Kangelaksiorwik Fiord (Kangalak) | 6 Snug Harbour |
| | 5 Square Island |
| | 13 Tuktuinak Island (Tukarek Isle) |

Arranged numerically

- | | |
|---|---|
| 1 L'Anse-au-Loup | 16 Nutak |
| 2 Chateau Bay | 17 Okak Bay |
| 3 Belle Isle | 18 Hebron |
| 4 Great Caribou Island (Caribou Island, Battle Harbour) | 19 Saglek Bay (Sugluk) |
| 5 Square Island | 20 Ramah Bay (Rama, Rama Bay) |
| 6 Snug Harbour | 21 Nachvak Fiord (Nagrak Fiord, Nogbak Fiord) |
| 7 Rocky Bay | 22 Kangelaksiorwik Fiord (Kangalak) |
| 8 Cartwright | 23 Ryans Bay (Rycon's Bay) |
| 9 Hamilton Inlet | 24 Lake Attikamagen |
| 10 Makkovik | 25 Knob Lake (Schefferville) |
| 11 Hopedale | 26 Churchill Falls |
| 12 Davis Inlet | 27 North West River |
| 13 Tuktuinak Island (Tukarek Isle) | 28 Goose Bay (Happy Valley) |
| 14 Nain | |
| 15 Black Island | |



Plates 1–34

All specimens in Plates 1–34 are reproduced at natural size

Plate 1

1, *Papilio polyxenes asterius* Stoll, male

2, *P. brevicauda* Saunders, male

3, *P. glaucus canadensis* Rothschild & Jordan, male



Plate 2

- 1, *Colias hecla* Lefèvre, male
- 2, *C. eurytheme* Boisduval, male
- 3, *C. philodice* Godart, female
- 4, *C. interior* Scudder, female
- 5, *C. pelidne* Boisduval & LeConte, male
- 6, *C. palaeno chippewa* Edwards, male
- 7, *C. nastes* Boisduval, female
- 8, *Pieris napi frigida* Scudder, female
- 9, *P. rapae* (Linnaeus), female
- 10, *P. rapae*, male



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Plate 3

- 1, *Danaus plexippus* (Linnaeus), male
- 2, *Oeneis chryxus* (Doubleday), female
- 3, *O. taygete* Geyer, female
- 4, *O. jutta terraenovae* dos Passos, male
- 5, *O. j. terraenovae*, paratype female
- 6, *O. polixenes* (Fabricius), male
- 7, *O. melissa* (Fabricius), male

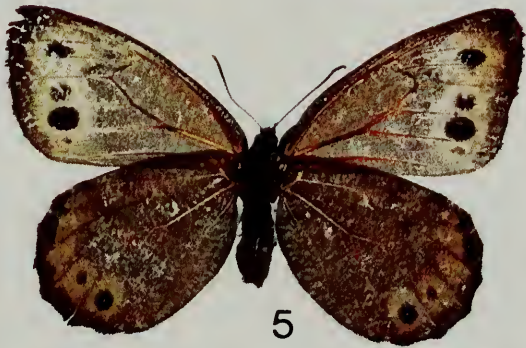


Plate 4

- 1, *Coenonympha inornata inornata* Edwards, female
- 2, *C. i. mcisaaci* dos Passos, male
- 3, *Erebia disa* Thunberg, male
- 4, *Speyeria atlantis* (Edwards), female
- 5, *Boloria selene terraenovae* (Holland), male
- 6, *B. eunomia* (Esper), male
- 7, *B. chariclea* (Schneider), male
- 8, *B. titania boisduvalii* (Duponchel), male
- 9, *B. freija* (Thunberg), male
- 10, *B. polaris* (Boisduval), female
- 11, *B. frigga saga* (Staudinger), male
- 12, *B. bellona* (Fabricius), male
- 13, *Chlosyne harrisii* (Scudder), male
- 14, *Phyciodes tharos arctica* dos Passos, male



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Plate 5

- 1, *Polygonia satyrus* (Edwards), female
- 2, *P. faunus* (Edwards), female
- 3, *P. progne* (Cramer), male
- 4, *P. gracilis* (Grote & Robinson), male
- 5, *Nymphalis vau-album* (Denis & Schiffermüller), male
- 6, *N. milberti milberti* (Godart), male
- 7, *N. m. viola* (dos Passos), female
- 8, *N. antiopa* (Linnaeus), female
- 9, *Vanessa atalanta* (Linnaeus), female



Plate 6

- 1, *Vanessa virginiensis* (Drury), female
- 2, *V. cardui* (Linnaeus), female
- 3, *Celastrina argiolus pseudargiolus* (Boisduval & LeConte), male
- 4, *C. a. pseudargiolus*, female
- 5, *Limenitis arthemis* (Drury), male
- 6, *Glaucopsyche lygdamus couperi* Grote, male
- 7, *G. l. couperi*, reversed male
- 8, *Plebejus aquilo* Boisduval, male
- 9, *Callophrys augustinus* (Westwood), male
- 10, *C. a. helenae* (dos Passos), female
- 11, *C. niphon clarki* (Freeman), reversed male
- 12, *Lycaena dorcas* Kirby, female
- 13, *L. dorcas*, male
- 14, *L. epixanthe phaedrus* (Hall), male
- 15, *L. e. phaedrus*, female
- 16, *Plebejus argyrognomon aster* (Edwards), male
- 17, *P. a. aster*, female
- 18, *P. a. aster*, reversed female
- 19, *P. a. empetri* (Freeman), reversed female
- 20, *Pyrgus centaureae* (Rambur), female
- 21, *Carterocephalus palaemon* (Pallas), male
- 22, *Hesperia comma borealis* Lindsey, male
- 23, *Polites coras* (Cramer), male



Plate 7

- 1, *Agrius cingulatus* (Fabricius), male
- 2, *Ceratomia undulosa* (Walker), male
- 3, *Sphinx canadensis* Boisduval, female



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Plate 8

- 1, *Sphinx kalmiae* J. E. Smith, male
- 2, *S. gordius* Cramer, male
- 3, *S. drupiferarum* J. E. Smith, male
- 4, *Smerinthus jamaicensis* (Drury), male



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Plate 9

- 1, *Smerinthus cerisyi* Kirby, male
- 2, *Paonias excaecatus* (J. E. Smith), male
- 3, *Proserpinus flavofasciata* (Walker), male
- 4, *Pachysphinx modesta* (Harris), female
- 5, *Hyles gallii intermedia* (Kirby), male
- 6, *Hemaris thysbe* (Fabricius), male



Plate 10

- 1, *Antheraea polyphemus polyphemus* (Cramer), male
- 2, *Ctenucha virginica* (Charpentier), female
- 3, *Lexis bicolor* (Grote), male
- 4, *Halisidota maculata* (Harris), male
- 5, *Phragmatobia fuliginosa* (Linnaeus), male
- 6, *Apantesis virgo* (Linnaeus), male
- 7, *A. virguncula* (Kirby), male
- 8, *A. parthenice* (Kirby), male
- 9, *A. quenselii* (Paykull), male
- 10, *Pyrrharctia isabella* (J. E. Smith), male
- 11, *Diacrisia virginica* (Fabricius), male
- 12, *Hyphantria cunea* (Drury), male
- 13, *H. textor* Harris, male



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Plate 11

- 1, *Platarctia parthenos* (Harris), male
- 2, *Arctia caja* (Linnaeus), male
- 3, *Alypia octomaculata* (Fabricius), female
- 4, *Androloma mac-cullochi* (Kirby), male
- 5, *Alypia langtoni* Couper, female
- 6, *Colocasia propinquilinea* Grote, male
- 7, *Panthea acronyctoides* Walker, male
- 8, *Raphia frater* Grote, male
- 9, *Acronicta americana* (Harris), female
- 10, *A. dactylina* (Grote), male
- 11, *A. lepusculina* Guenée, male
- 12, *A. leporina* (Linnaeus), male
- 13, *A. radcliffei* (Harvey), female
- 14, *A. innotata* Guenée, female
- 15, *A. grisea* Walker, male
- 16, *A. fragilis* (Guenée), male

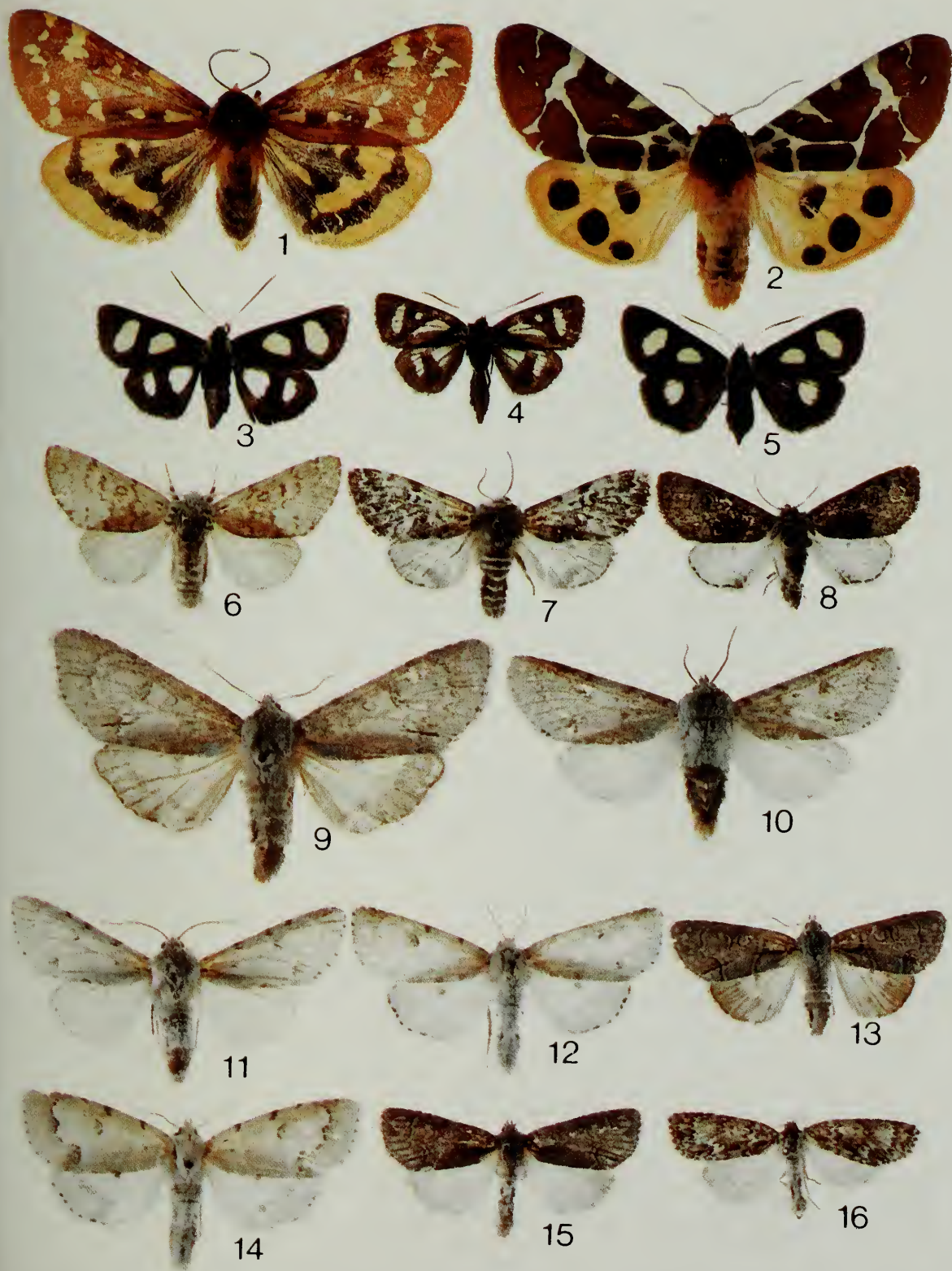


Plate 12

- 1, *Acronicta impressa* Walker, female
- 2, *A. impressa*, female
- 3, *A. obliterata* (J. E. Smith), male
- 4, *Harrisimemna trisignata* (Walker), male
- 5, *Euxoa perpolita* (Morrison), male
- 6, *E. messoria* (Harris), female
- 7, *E. ontario* (Smith), female
- 8, *E. quebecensis* (Smith), male
- 9, *E. tessellata* (Harris), female
- 10, *E. campestris* (Grote), female
- 11, *E. dissona* (Möschler), male
- 12, *E. divergens* (Walker), male
- 13, *E. redimicula* (Morrison), male
- 14, *E. westermanni* (Staudinger), male
- 15, *E. ochrogaster* (Guenée), male
- 16, *Agrotis mollis* (Walker), female
- 17, *A. patula* Walker, male
- 18, *A. venerabilis* Walker, male
- 19, *A. musa* Smith, female
- 20, *A. volubilis* Harvey, male
- 21, *A. obliqua* (Smith), male



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Plate 13

- 1, *Agrotis ipsilon* (Hufnagel), male
- 2, *Eurois occulta* (Linnaeus), female
- 3, *Spaelotis clandestina* (Harris), male
- 4, *Actebia fennica* (Tauscher), male
- 5, *Ochropleura plecta* (Linnaeus), male
- 6, *Eurois astricta* Morrison, male
- 7, *Metalepsis salicarum* (Walker), male
- 8, *Hemipachnobia monochromatea* (Morrison), male
- 9, *Peridroma saucia* (Hübner), female
- 10, *Cerastis tenebrifera* (Walker), male
- 11, *Paradiarsia littoralis pectinata* (Smith), male
- 12, *Graphiphora haruspica* (Grote), male
- 13, *Rhyacia quadrangula* (Zetterstedt), male
- 14, *Chersotis juncta* (Grote), male
- 15, *Diarsia rubifera* (Grote), female
- 16, *D. dislocata* (Smith), male
- 17, *Heptagrotis phyllophora* (Grote), female
- 18, *Diarsia jucunda* (Walker), male
- 19, *D. pseudorosaria freemani* Hardwick, male



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Plate 14

- 1, *Amathes c-nigrum* (Linnaeus), male
- 2, *A. smithii* (Snellen), male
- 3, *A. oblata* (Morrison), male
- 4, *A. bicarnea* (Guenée), male
- 5, *A. tenuicula* (Morrison), male
- 6, *A. opacifrons* (Grote), male
- 7, *Pachnobia tecta* (Hübner), male
- 8, *P. wockei* (Möschler), male
- 9, *P. scropulana* (Morrison), male
- 10, *P. okakensis* (Packard), male
- 11, *Anomogyna atrata* (Morrison), male
- 12, *A. fabulosa* Ferguson, male
- 13, *A. speciosa mixta* (Walker), male
- 14, *A. perquiritata perquiritata* (Morrison), male
- 15, *A. p. beddeci* (Hampson), male
- 16, *A. laetabilis* (Zetterstedt), male
- 17, *A. homogena* McDunnough, male
- 18, *A. imperita* (Hübner), male
- 19, *A. elimata* (Guenée), male
- 20, *A. dilucida* (Morrison), male
- 21, *A. youngii* (Smith), male



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Plate 15

- 1, *Aplectoides condita* (Guenée), male
- 2, *Anaplectoides pressus* (Grote), male
- 3, *A. prasina* (Schiffermüller), male
- 4, *Protolampra rufipectus* (Morrison), male
- 5, *Cryptocala acadiensis* (Bethune), male
- 6, *Eueretagrotis perattenta* (Grote), male
- 7, *E. perattenta*, female
- 8, *Abagrotis placida* (Grote), female
- 9, *A. alternata* (Grote), female
- 10, *Rhynchagrotis cupida* (Grote), male
- 11, *Scotogramma trifolii* (Rottenberg), male
- 12, *Mamestra curialis* (Smith), male
- 13, *Polia leomegra* (Smith), male
- 14, *P. rogenhoferi* (Möschler), female
- 15, *P. atlantica* (Grote), male
- 16, *P. carbonifera* (Hampson), male
- 17, *P. imbrifera* (Guenée), female
- 18, *P. nevadae canadensis* (Smith), male
- 19, *P. radix* (Walker), female
- 20, *P. legitima* (Grote), female



Plate 16

- 1, *Polia rugosa* (Morrison), male
- 2, *P. lilacina* (Harvey), male
- 3, *P. pulverulenta* (Smith), male
- 4, *P. ingravis* (Smith), male
- 5, *P. frustrata* McDunnough, male
- 6, *P. cristifera* (Walker), male
- 7, *P. lutra* (Guenée), male
- 8, *P. secedens* (Walker), male
- 9, *Lacinipolia anguina* (Grote), male
- 10, *L. renigera* (Stephens), male
- 11, *L. lorea* (Guenée), male
- 12, *L. olivacea* (Morrison), male
- 13, *Lasionycta albinuda* (Smith), female
- 14, *L. subdita* (Möschler), male
- 15, *Lasiestra phoca* (Möschler), male
- 16, *L. leucocyclus moeschleri* (Staudinger), male
- 17, *L. l. flanda* (Smith), male
- 18, *L. l. moeschleri*, male
- 19, *Anarta cordigera* (Thunberg), female
- 20, *A. melanopa* (Thunberg), female
- 21, *A. richardsoni tamsi* Benjamin, female
- 22, *A. richardsoni* (Curtis), female
- 23, *Astrapetis sutrina* (Grote), female
- 24, *Sideridis maryx* (Guenée), female



Plate 17

- 1, *Protorthodes lindrothi* Krogerus, paratype female
- 2, *Pseudorthodes vecors* (Guenée), female
- 3, *Nephelodes minians* Guenée, male
- 4, *Cerapteryx graminis* (Linnaeus), female
- 5, *Orthosia revicta* (Morrison), male
- 6, *O. hibisci* (Guenée), female
- 7, *Ceramica picta* (Harris), female
- 8, *Faronta diffusa* (Walker), male
- 9, *Leucania commoides* Guenée, male
- 10, *L. insueta* Guenée, male
- 11, *L. comma* (Linnaeus), male
- 12, *Pseudaletia unipuncta* (Haworth), male
- 13, *Aletia oxygala* (Grote), male
- 14, *Brachionycha borealis* (Smith), male
- 15, *Homohadena badistriga* (Grote), female
- 16, *Cucullia intermedia* Speyer, female
- 17, *C. florea* Guenée, male
- 18, *C. asteroides* Guenée, female
- 19, *Homohadena infixa* (Walker), male
- 20, *Apharetra dentata* Grote, female

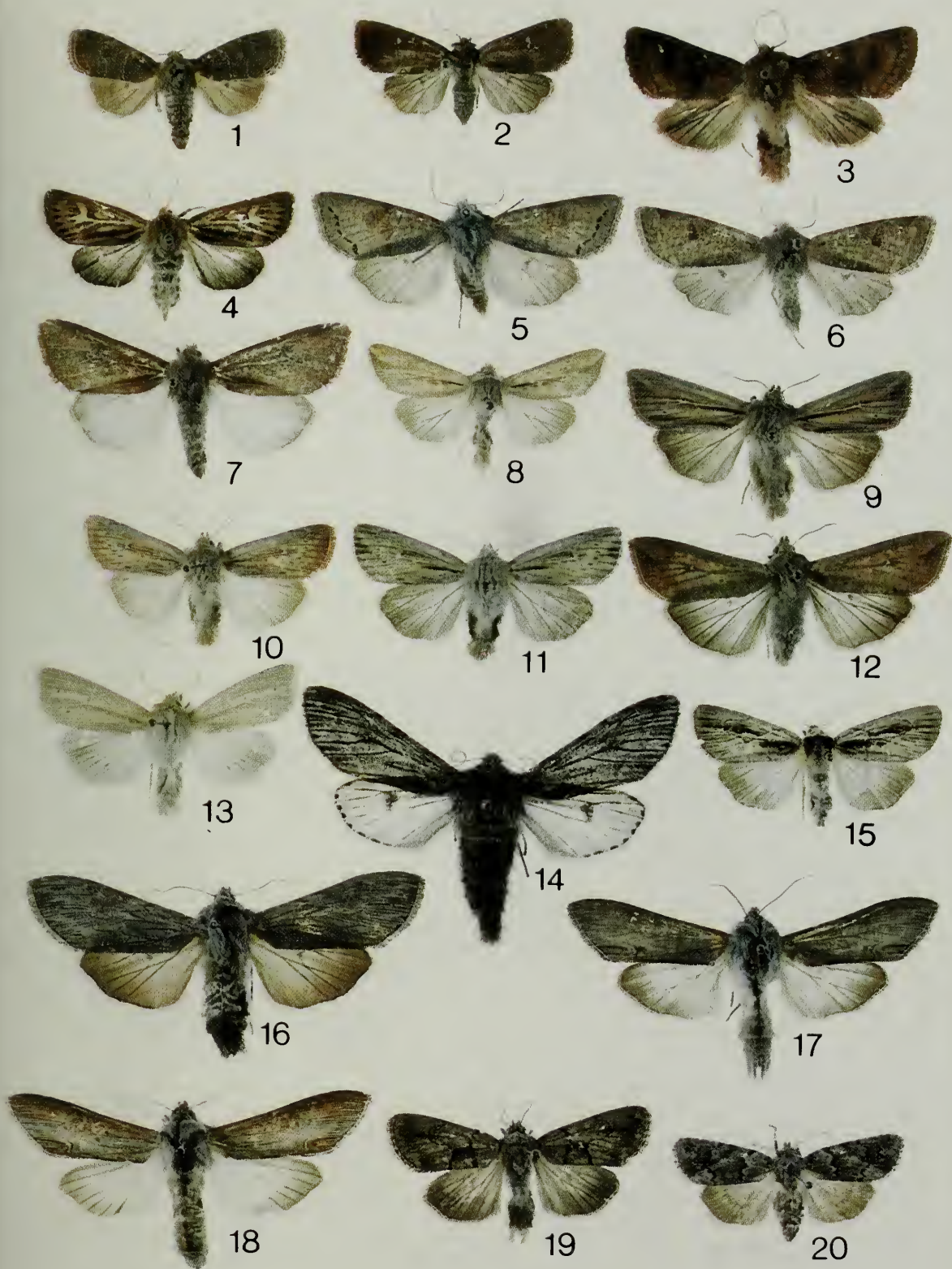
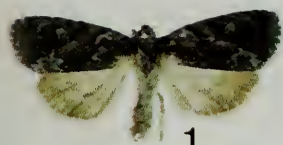


Plate 18

- 1, *Apharetra purpurea* McDunnough, male
- 2, *Sympistis melaleuca* (Thunberg), male
- 3, *S. lapponica* (Thunberg), male
- 4, *S. labradoris* (Staudinger), female
- 5, *S. funesta* (Paykull), male
- 6, *Feralia jocosa* (Guenée), male
- 7, *F. comstocki* Grote, male
- 8, *Hillia iris* (Zetterstedt), male
- 9, *Lithophane amanda* (Smith), male
- 10, *Platypolia anceps* (Stephens), male
- 11, *Lithophane pexata* Grote, female
- 12, *L. georgii* Grote, male
- 13, *Hillia iris* (Zetterstedt), male
- 14, *Lithophane lepida* (Lintner), male
- 15, *L. thaxteri* Grote, male
- 16, *Xylotype acadia* Barnes & Benjamin, male
- 17, *Xylena nupera* (Lintner), male
- 18, *X. thoracica* (Putnam-Cramer), female
- 19, *X. thoracica*, male
- 20, *Lithomoia solidaginis* (Hübner), female



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Plate 19

- 1, *Mniotype ducta* (Grote), female
- 2, *M. ferida* Smith, female
- 3, *Xanthia lutea* (Strömberg), female
- 4, *Fishia enthea* Grote, female
- 5, *F. enthea*, female
- 6, *Sunira bicolorago* (Guenée), female
- 7, *Apamea amputatrix* (Fitch), male
- 8, *Sutyna privata* (Walker), female
- 9, *Epiglaea apiata* (Grote), female
- 10, *Apamea verbascoides* (Guenée), female
- 11, *A. vultuosa* (Grote), male
- 12, *A. alia* (Guenée), female
- 13, *A. commoda* (Walker), male
- 14, *A. impulsiva* (Guenée), female
- 15, *A. impulsiva* (Guenée), female
- 16, *A. indocilis* (Walker), male
- 17, *A. finitima* Guenée, female
- 18, *Agroperina lateritia* (Hufnagel), male
- 19, *A. dubitans* (Walker), male
- 20, *A. cogitata* (Smith), male
- 21, *A. inficita* (Walker), male

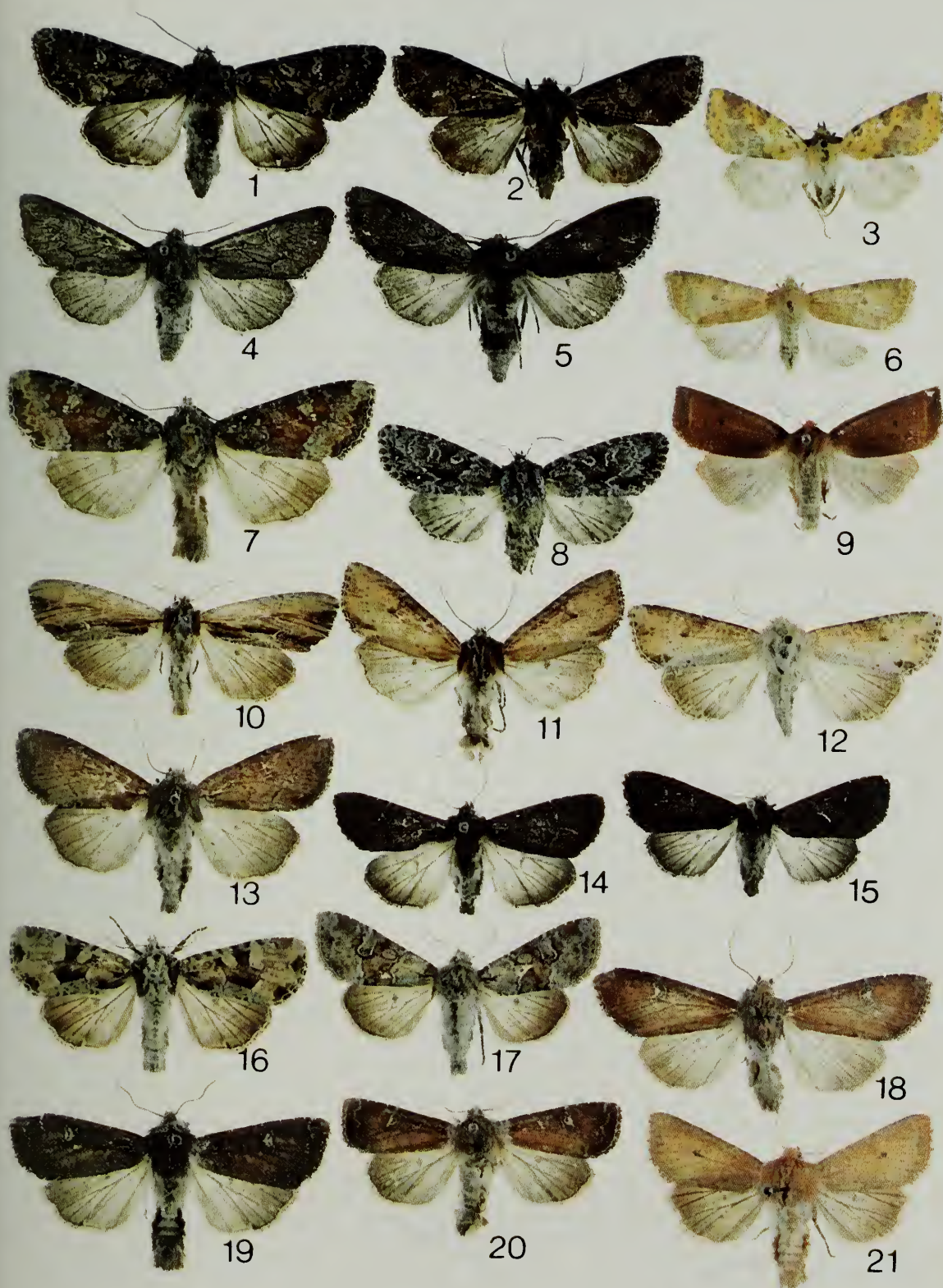


Plate 20

- 1, *Crymodes devastator* (Brace), female
- 2, *Trichoplexia exornata* (Möschler), male
- 3, *Luperina passer* (Guenée), male
- 4, *Oligia bridghami* (Grote & Robinson), male
- 5, *O. minuscula* (Morrison), female
- 6, *O. illocata* (Walker), male
- 7, *Eremobina claudens* (Walker), male
- 8, *Hypocoena inquinata* (Guenée), male
- 9, *H. basistriga* McDunnough, male
- 10, *Euplexia benesimilis* McDunnough, male
- 11, *Ipimorpha pleonectusa* Grote, female
- 12, *Helotropha reniformis* (Grote), male
- 13, *Amphipoea velata* (Walker), male
- 14, *A. americana* (Speyer), male
- 15, *Hydroecia micacea* (Esper), male
- 16, *Papaipema impecuniosa* (Grote), female
- 17, *P. pterisii* Bird, male
- 18, *P. frigida* (Smith), male
- 19, *P. thalictri* Lyman, female
- 20, *Phlogophora iris* Guenée, male
- 21, *P. periculosa* Guenée, male
- 22, *Euherrichia monetifera* (Guenée), female

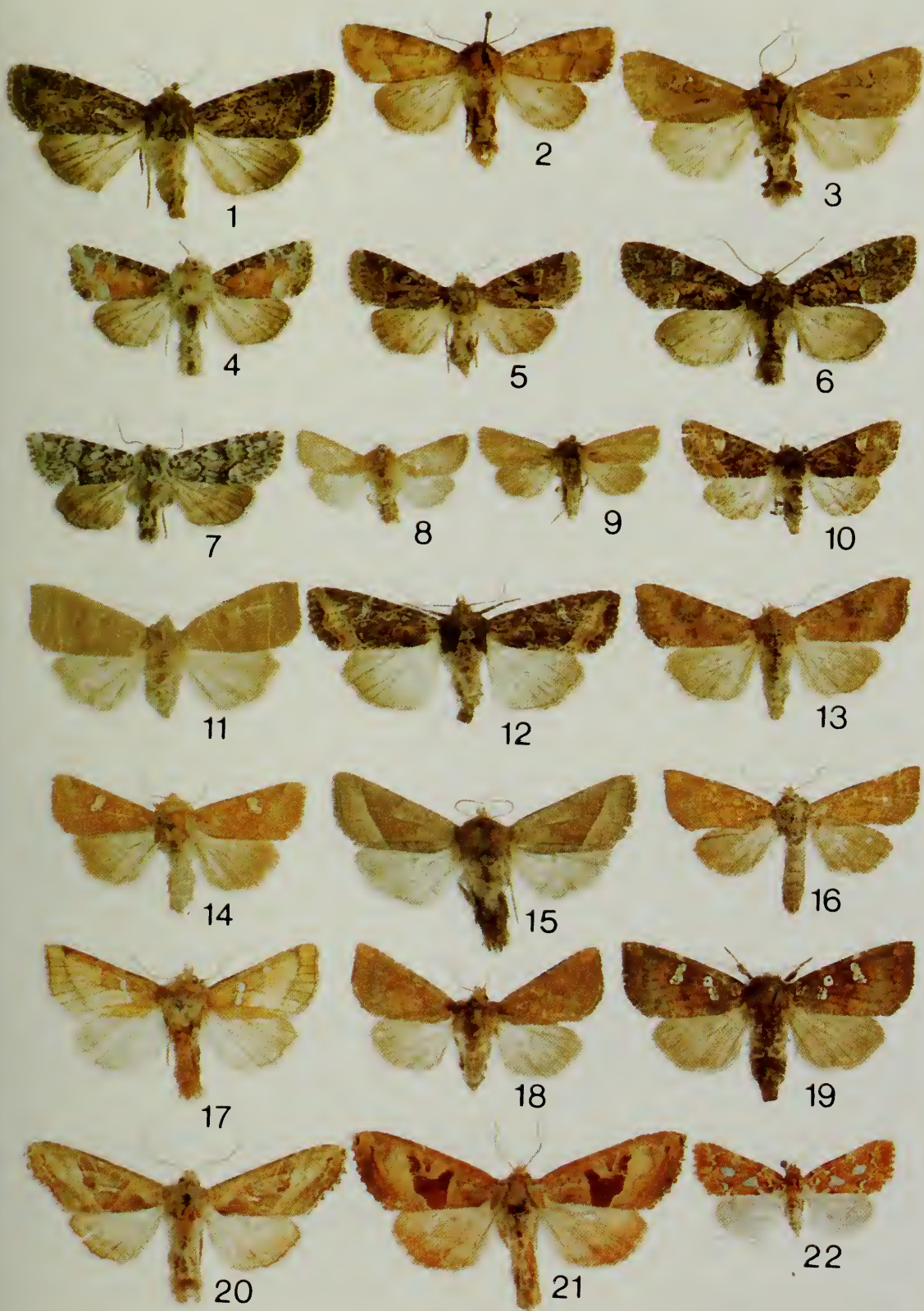


Plate 21

- 1, *Agriopodes fallax* (Herrich-Schäffer), male
- 2, *Amphipyra tragopoginis* (Linnaeus), male
- 3, *Hyppa indistincta* Smith, male
- 4, *Andropolia contacta* (Walker), male
- 5, *Amphipyra pyramidoides* Guenée, male
- 6, *Platysenta sutor* (Guenée), female
- 7, *Nedra ramosula* (Guenée), male
- 8, *Hyppa xylinoides* (Guenée), female
- 9, *Elaphria versicolor* (Grote), female
- 10, *E. festivoides* (Guenée), male
- 11, *Bellura diffusa* (Grote), male
- 12, *Pyrrhia umbra* (Hüfnagel), male
- 13, *P. exprimens* (Walker), female
- 14, *Helicoverpa zea* (Boddie), male
- 15, *Syngrapha diasema* (Boisduval), female
- 16, *Lithacodia bellicula* Hübner, female
- 17, *L. albidula* (Guenée), male
- 18, *L. carneola* (Guenée), female
- 19, *Nycteola frigidana* (Walker), male
- 20, *Syngrapha alticola* (Walker), female
- 21, *Caloplusia ignea simulans* McDunnough, male
- 22, *Syngrapha microgamma nearctica* Ferguson, female
- 23, *S. montana* (Packard), female

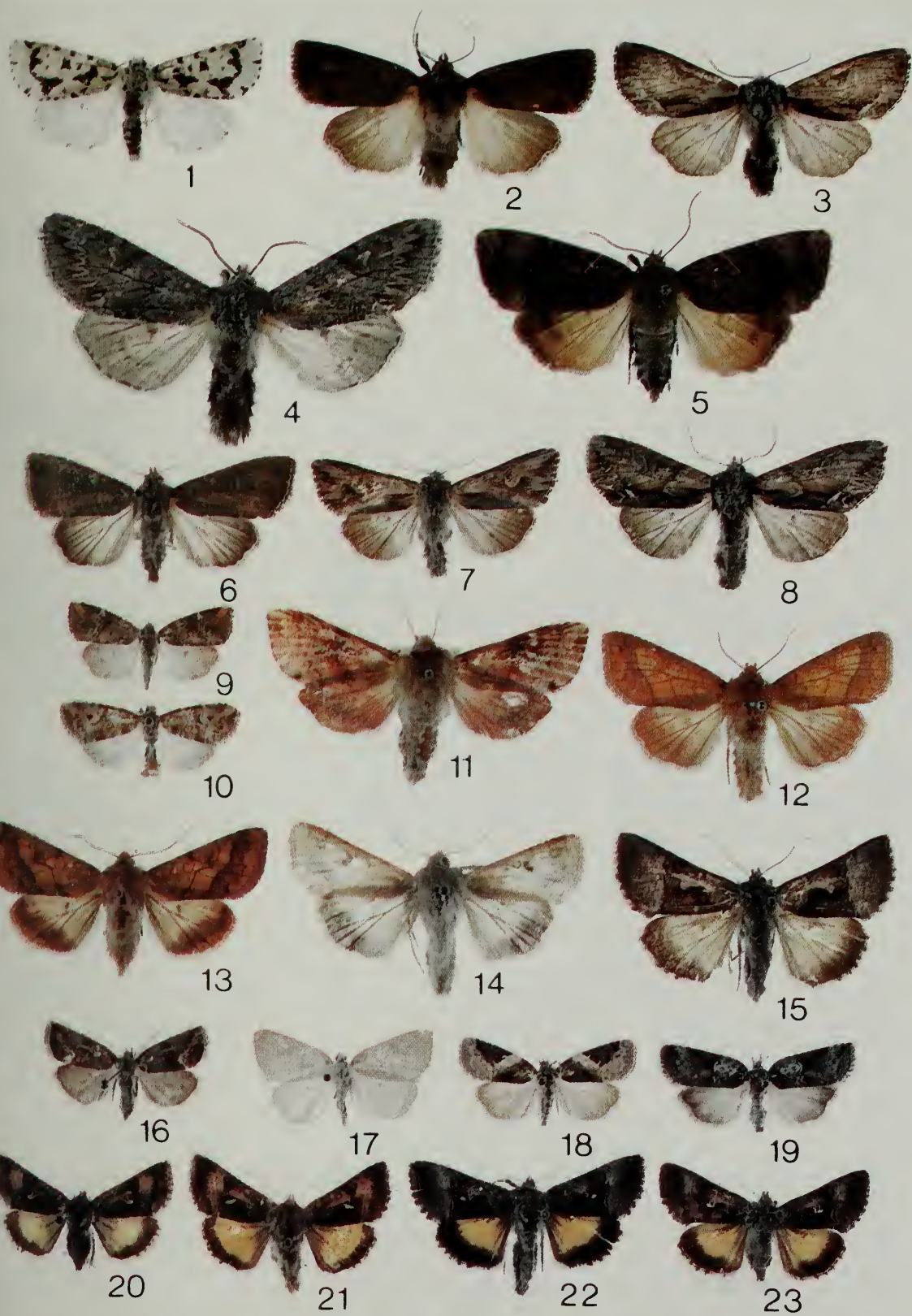


Plate 22

- 1, *Anagrapha falcifera* (Kirby), male
- 2, *Syngrapha rectangula* (Kirby), female
- 3, *S. u-aureum* (Guenée), male
- 4, *S. alias* (Ottolengui), male
- 5, *S. interrogationis* (Linnaeus), female
- 6, *S. altera variana* (Ottolengui), male
- 7, *S. octoscripta* (Grote), female
- 8, *S. surena* (Grote), male
- 9, *S. epigaea* (Grote), female
- 10, *Autographa ampla* (Walker), female
- 11, *Syngrapha selecta* (Walker), female
- 12, *Trichoplusia ni* (Hübner), male
- 13, *Pseudeva purpurigera* (Walker), male
- 14, *Autographa bimaculata* (Stephens), male
- 15, *A. mappa* (Grote & Robinson), male
- 16, *Chrysanympa formosa* (Grote), male
- 17, *Autographa flagellum* (Walker), male
- 18, *Chrysaspidia putnami* (Grote), male
- 19, *Crymodes maillardi* (Geyer), male
- 20, *Autographa pseudogamma* (Grote), female
- 21, *Syngrapha paralis* (Hübner), male



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Plate 23

- 1, *Catocala ilia* (Cramer), male
- 2, *C. relictæ* Walker, male
- 3, *C. unijuga* Walker, female
- 4, *C. briseis* Edwards, female



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Plate 24

- 1, *Caenurgina crassiuscula* (Haworth), male
- 2, *Lomanaltes eductalis* (Walker), male
- 3, *Bomolocha bijugalis* (Walker), female
- 4, *Scoliopteryx libatrix* (Linnaeus), female
- 5, *Erebus odora* (Linnaeus), male
- 6, *Rivula propinqualis* Guenée, male
- 7, *Epizeuxis americalis* (Guenée), female
- 8, *E. aemula* (Hübner), female
- 9, *Chytolita petrealis* Grote, male
- 10, *Philometra metonalis* (Walker), male
- 11, *Palthis angulalis* Hübner, male



Plate 25

- 1, *Ichthyura apicalis* Walker, male
- 2, *I. albosigma* (Fitch), male
- 3, *Notodonta stragula* Grote, male
- 4, *Phoesia rimosa* Packard, male
- 5, *Nadata gibbosa* (J. E. Smith), male
- 6, *Lophodonta ferruginea* Packard, male
- 7, *Dasychira vagans* (Barnes & McDunnough), female
- 8, *Schizura unicornis* (J. E. Smith), male
- 9, *Gluphisia septentrionalis* Walker, male
- 10, *Leucoma salicis* (Linnaeus), male
- 11, *Orgyia antiqua nova* Fitch, male
- 12, *O. a. nova*, female
- 13, *O. leucostigma* (J. E. Smith), male
- 14, *Dasychira vagans* (Barnes & McDunnough), male
- 15, *Schizura ipomoeae* Doubleday, male
- 16, *Gynaephora rossii* (Curtis), male
- 17, *Dasychira plagiata* (Walker), female

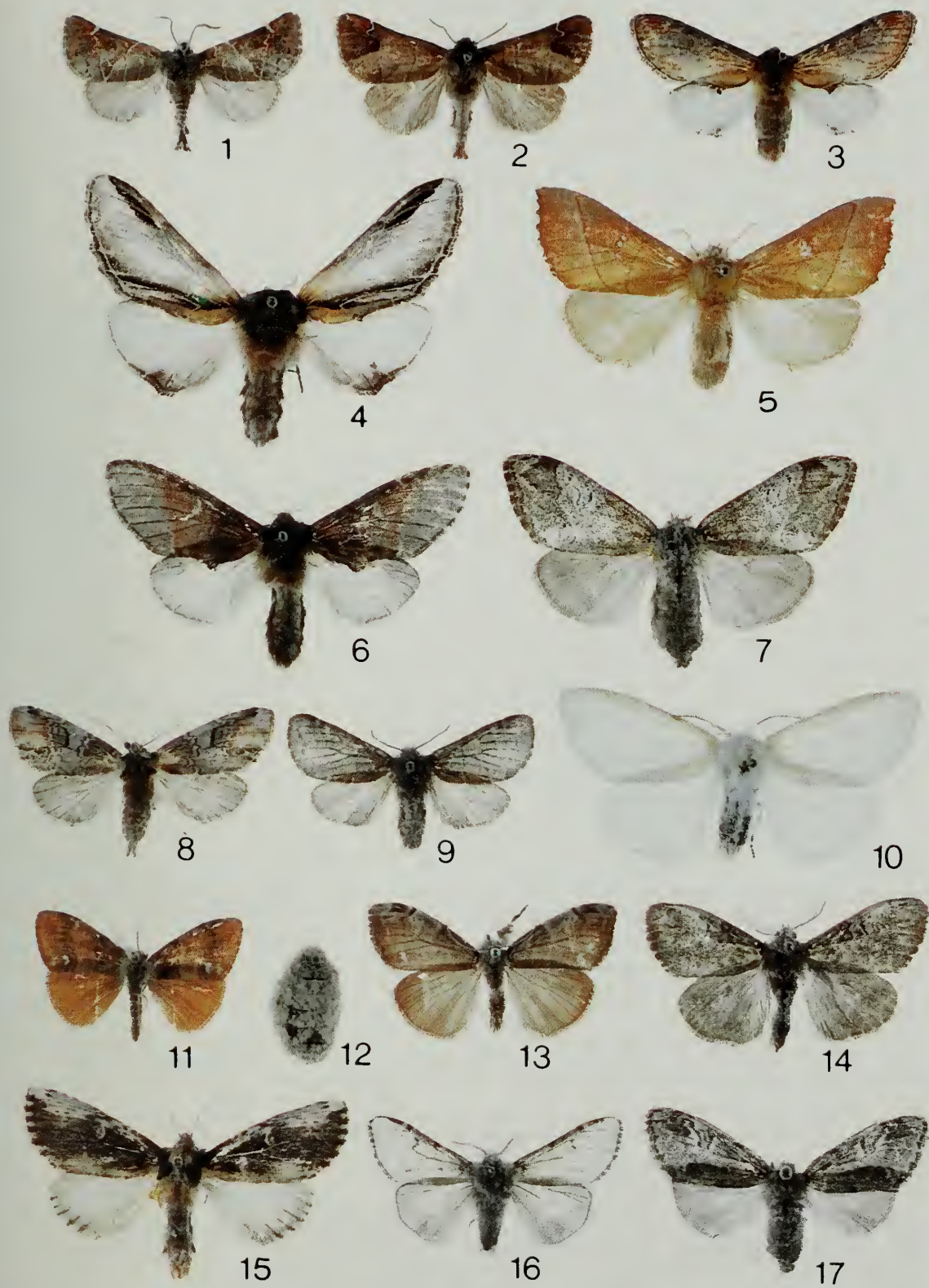


Plate 26

- 1, *Malacosoma americanum* (Fabricius), male
- 2, *M. americanum*, female
- 3, *M. disstria* Hübner, female
- 4, *M. disstria*, male
- 5, *Habrosyne scripta* Gosse, male
- 6, *Pseudothyatira expultrix* Grote, male
- 7, *Euthyatira pudens* (Guenée), male
- 8, *Eudeilinia herminiata* (Guenée), female
- 9, *Oreta rosea* (Walker), male
- 10, *O. r. americana* (Herrich-Schäffer), male
- 11, *Drepana arcuata* Walker, male
- 12, *D. bilineata* (Packard), male
- 13, *Archiearis infans* (Möschler), male
- 14, *Synchlora liquoraria albolineata* (Packard), male
- 15, *Leucobrephos brephoides* (Walker), male
- 16, *Mesothea incertata* (Walker), male
- 17, *M. incertata*, male
- 18, *Scopula junctaria* (Walker), male
- 19, *S. frigidaria* (Möschler), male
- 20, *S. inductata* (Guenée), male
- 21, *Holarctias sentinaria* Geyer, male
- 22, *Cyclophora pendulinaria* (Guenée), male
- 23, *Carsia sororiata thaxteri* Swett, male

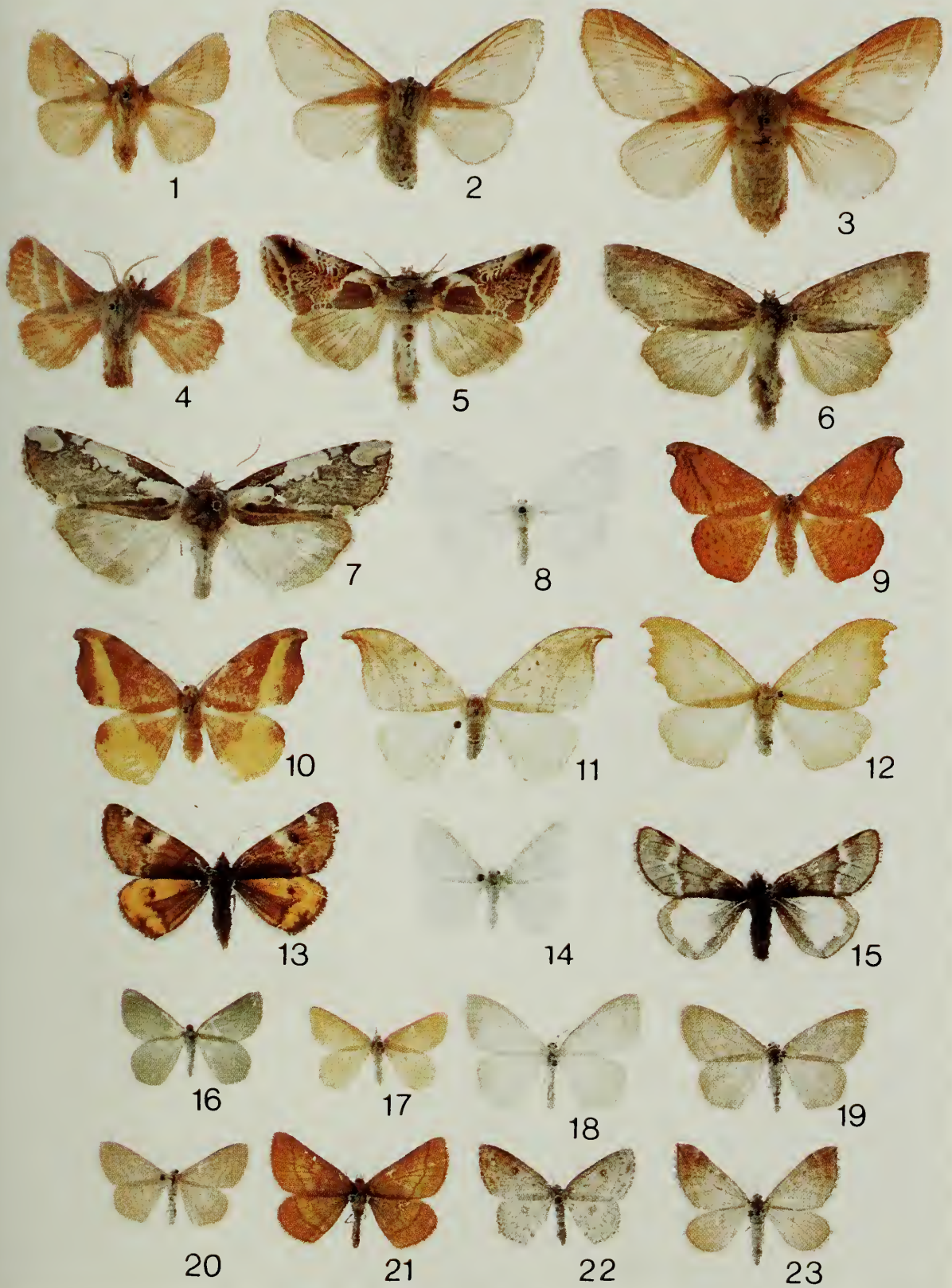


Plate 27

- 1, *Carsia sororiata labradorensis* (Sommer), male
- 2, *Acasis viridata* (Packard), female
- 3, *Cladara limitaria* (Walker), male
- 4, *C. atroliturata* (Walker), male
- 5, *Lobophora nivigerata* Walker, female
- 6, *Trichodezia albovittata* (Guenée), female
- 7, *Operophtera bruceata* (Hulst), male
- 8, *O. brumata* (Linnaeus), male
- 9, *Epirrita autumnata henshawi* (Swett), male
- 10, *Triphosa haesitata affirmaria* (Walker), male
- 11, *Hydria undulata* (Linnaeus), female
- 12, *Eupithecia misturata frostiata* Swett, female
- 13, *E. subfuscata* (Haworth), male
- 14, *E. tripunctaria* (Herrich-Schäffer), female
- 15, *E. fletcherata* Taylor, female
- 16, *E. luteata* Packard, male
- 17, *E. palpata* Packard, male
- 18, *E. transcanadata* MacKay, male
- 19, *E. satyrata fumata* Taylor, female
- 20, *E. gibsonata* Taylor, male
- 21, *E. russeliata* Swett, female
- 22, *E. strattonata* Packard, male
- 23, *E. grata* Taylor, male
- 24, *E. fumosa* (Hulst), female
- 25, *E. coagulata* Guenée, female
- 26, *E. nimbicolor* (Hulst), female
- 27, *E. gelidata* Möschler, female
- 28, *E. perfusca youngata* Taylor, female
- 29, *E. filmata* Pearsall, female
- 30, *E. albicapitata* Packard, female
- 31, *E. mutata* Pearsall, male
- 32, *E. anticaria* Walker, female
- 33, *Horisme intestinata* (Guenée), male
- 34, *Eustroma semiatrata* (Hulst), female
- 35, *E. semiatrata*, male

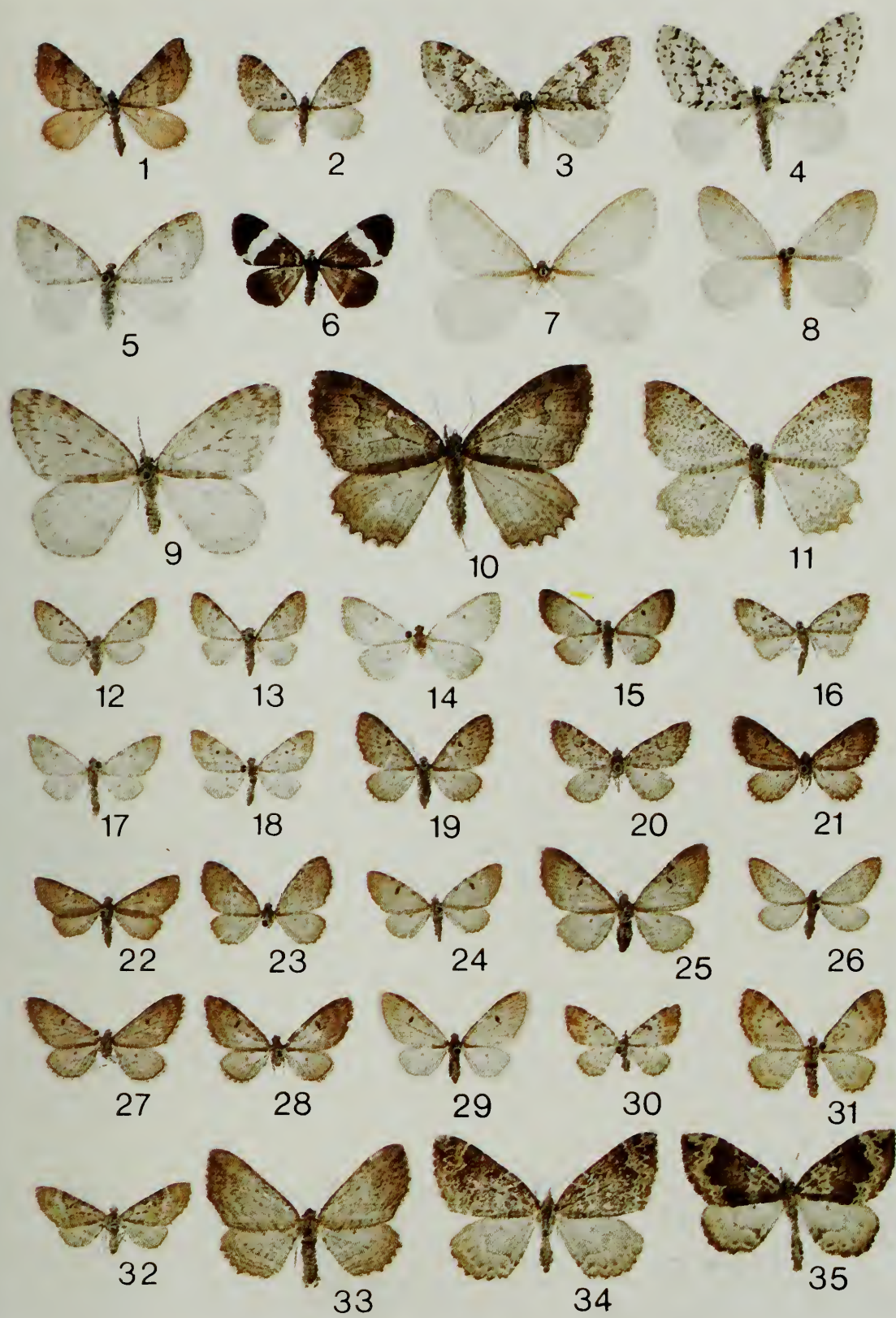
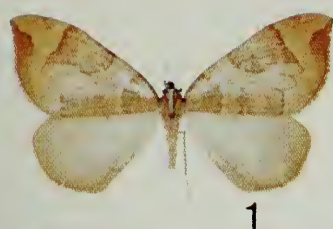


Plate 28

- 1, *Eulithis propulsata* (Walker), male
- 2, *E. testata* (Linnaeus), male
- 3, *E. destinata* (Möschler), male
- 4, *E. flavibrunneata* (McDunnough), male
- 5, *E. explanata* (Walker), male
- 6, *E. serrataria* (Barnes & McDunnough), male
- 7, *Diactinia silaceata* (Denis & Schiffermüller), male
- 8, *Plemyria georgii* Hulst, male
- 9, *Dysstroma walkerata* (Pearsall), male
- 10, *D. walkerata*, male
- 11, *D. mackieata* Cassino & Swett, male
- 12, *D. citrata* (Linnaeus), female
- 13, *D. brunneata* (Packard), female
- 14, *D. hersiliata* (Guenée), male
- 15, *D. h. cervinifascia* (Walker), female
- 16, *Thera contractata* (Packard), male
- 17, *T. otisi* (Dyar), female
- 18, *Hydriomena furcata* (Thunberg), male
- 19, *H. furcata*, male
- 20, *H. divisaria frigidata* (Walker), male
- 21, *H. renunciata* (Walker), male



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Plate 29

- 1, *Hydriomena ruberata* (Freyer), male
- 2, *Xanthorhoe lacustrata* (Guenée), female
- 3, *X. labradorensis* (Packard), female
- 4, *X. munitata* (Hübner), male
- 5, *X. ferrugata* (Clerck), male
- 6, *X. ramaria* Swett & Cassino, female
- 7, *X. baffinensis* McDunnough, male
- 8, *X. algidata* (Möschler), male
- 9, *X. iduata* (Guenée), male
- 10, *X. abrasaria congregata* (Walker), male
- 11, *Dasyuris polata punctipes* (Curtis), male
- 12, *D. p. bradorata* Munroe, female
- 13, *Orthonama obstipata* (Fabricius), male
- 14, *O. obstipata*, female
- 15, *O. evansi* McDunnough, male
- 16, *Entephria aurata* (Packard), male
- 17, *Mesoleuca ruficillata* (Guenée), female
- 18, *Epirrhoe alternata* (Müller), male
- 19, *Spargania magnoliata* Guenée, female
- 20, *S. luctuata obductata* (Möschler), male
- 21, *Euphyia unangulata* (Haworth), male
- 22, *Rheumaptera hastata* (Linnaeus), female
- 23, *R. h. gothicata* (Guenée), female
- 24, *R. subhastata* (Nolcken), male
- 25, *Perizoma basaliata* (Walker), male
- 26, *P. alchemillata* (Linnaeus), female
- 27, *Anticlea vasiliata* (Guenée), male
- 28, *A. multiferata* (Walker), male
- 29, *Venusia cambrica* Curtis, male
- 30, *V. comptaria* (Walker), male
- 31, *Hydrelia lucata* (Guenée), male
- 32, *H. inornata* (Hulst), male

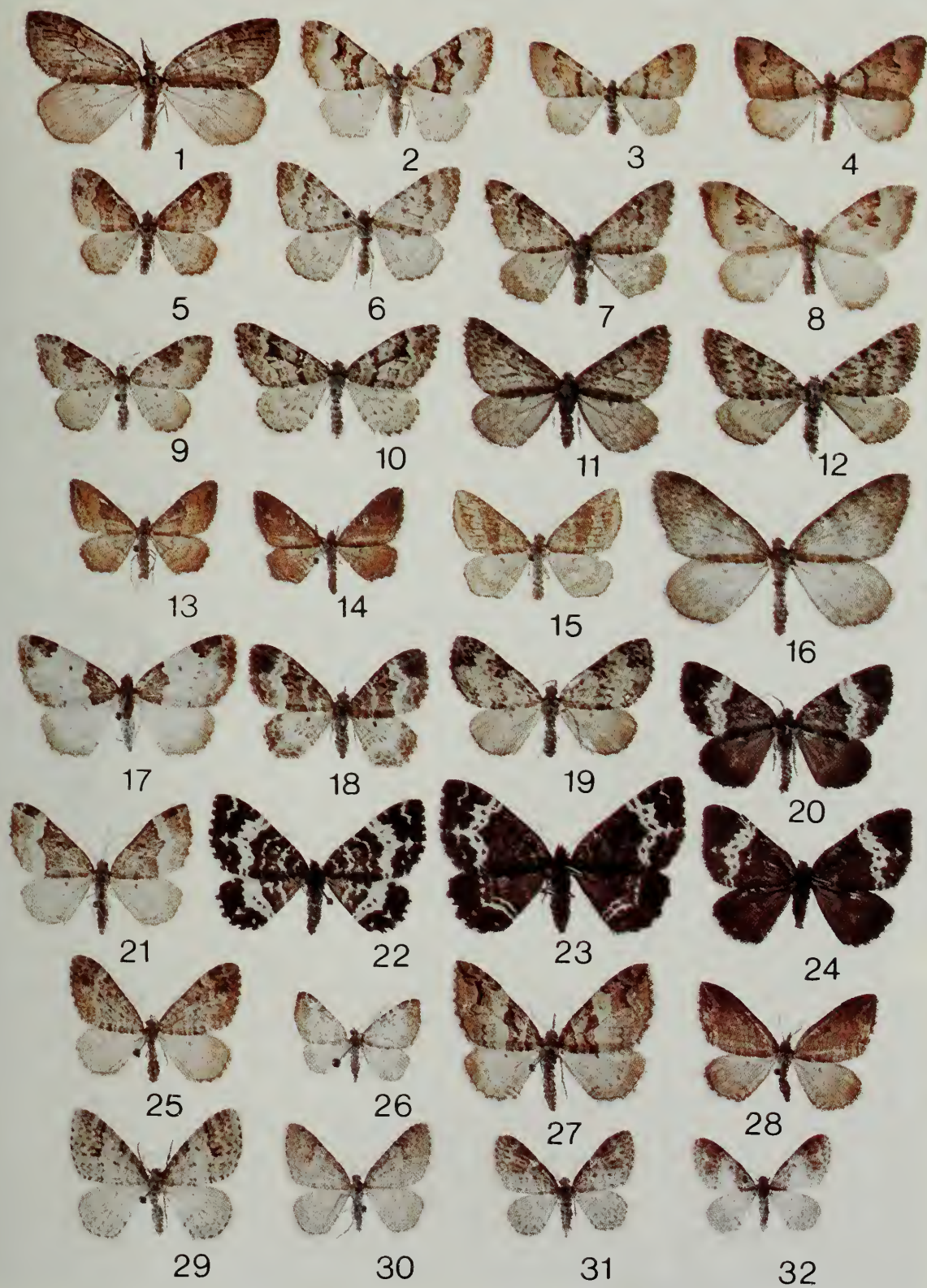


Plate 30

- 1, *Hydrelia albifera* (Walker), female
- 2, *H. terraenovae* Krogerus, female
- 3, *Lomographa semiclarata* (Walker), male
- 4, *L. vestaliata* (Guenée), male
- 5, *L. glomeraria* (Grote), male
- 6, *L. glomeraria* ab. *merricki* (Cassino & Swett), male
- 7, *Cabera borealis* (Hulst), male
- 8, *C. borealis*, female
- 9, *C. variolaria* Guenée, male
- 10, *C. erythemaria* Guenée, female
- 11, *Isturgia truncataria* (Walker), female
- 12, *Semiothisa bisignata* (Walker), female
- 13, *S. signaria dispuncta* (Walker), female
- 14, *S. submarmorata* (Walker), male
- 15, *S. oweni* (Swett), female
- 16, *S. sexmaculata* (Packard), male
- 17, *S. neptaria* (Guenée), male
- 18, *S. neptaria*, male
- 19, *S. hebetata* (Hulst), male
- 20, *Itame pustularia* (Guenée), male
- 21, *I. argillacearia* (Packard), male
- 22, *I. andersoni* (Swett), male
- 23, *I. sulphurea* (Packard), female
- 24, *I. sulphurea*, male
- 25, *I. subcessaria* (Walker), male
- 26, *I. brunneata* (Thunberg), female
- 27, *I. brunneata*, male
- 28, *I. anataria* (Swett), male
- 29, *I. exauspicata* (Walker), male
- 30, *I. bitactata* (Walker), male
- 31, *I. loricaria* (Eversmann), female
- 32, *I. loricaria*, male
- 33, *Eufidonia convergaria* (Walker), male

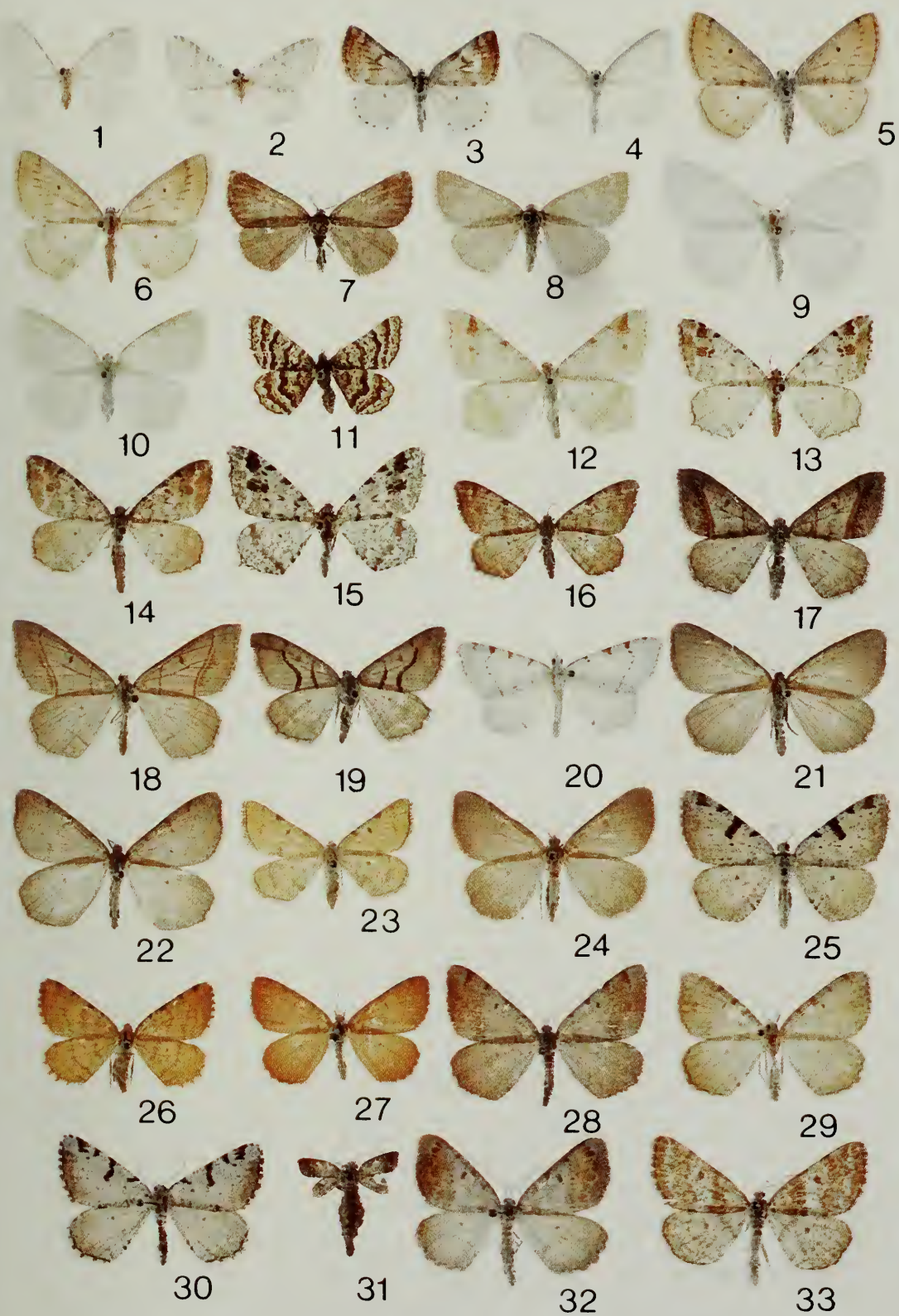


Plate 31

- 1, *Eufidonia discospilata* (Walker), male
- 2, *Hypagyrtis piniata* (Packard), male
- 3, *Protoboarmia porcelaria* (Guenée), male
- 4, *Anavitrinella pampinaria* (Guenée), male
- 5, *Iridopsis larvaria* (Guenée), female
- 6, *Anacamptodes vellivolata* (Hulst), male
- 7, *Ectropis crepuscularia* (Denis & Schiffermüller), female
- 8, *E. c. f. abraxaria* (Walker), male
- 9, *Erannis tiliaria* (Harris), male
- 10, *Biston betularia cognataria* (Guenée), male
- 11, *Aspilates conspersarius* Staudinger, male
- 12, *A. conspersarius*, female
- 13, *Campaea perlata* (Guenée), female
- 14, *Homochlodes fritillaria* (Guenée), male
- 15, *Plagodis phlogosaria iris* Rupert, male
- 16, *P. p. iris*, female
- 17, *Anagoga occiduaria* (Walker), male
- 18, *Hyperetis amicarica* f. *nyssaria* (Guenée), female
- 19, *H. nepiasaria* (Guenée), female

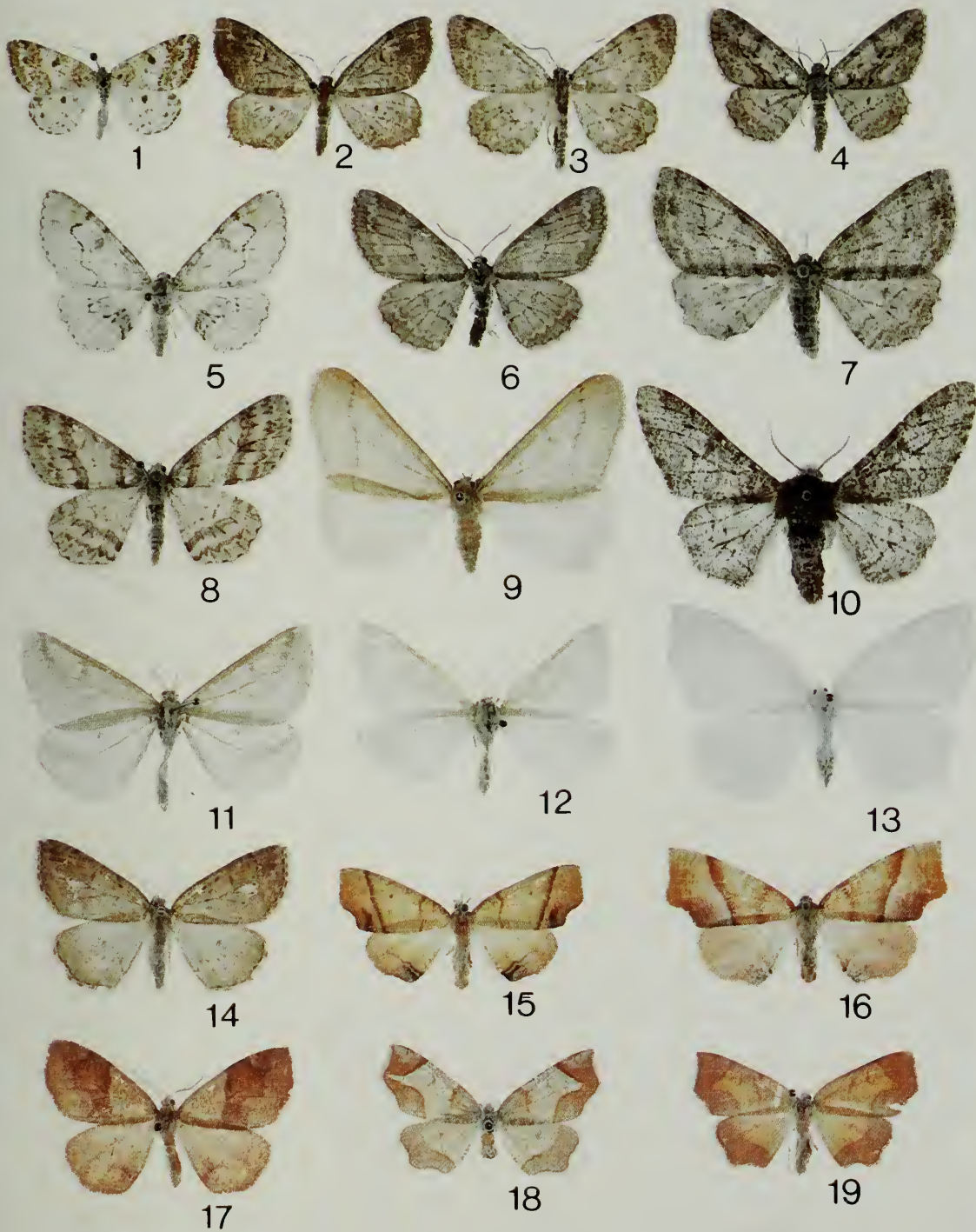


Plate 32

- 1, *Metarranthis duaria* (Guenée), male
- 2, *M. d. septentrionaria* Barnes & McDunnough, female
- 3, *Metanema inatomaria* Guenée, male
- 4, *M. determinata* Walker, male
- 5, *Selenia alciphearia* Walker, male
- 6, *Pero honestaria* (Walker), male
- 7, *P. morrisonaria* (Henry Edwards), male
- 8, *Nepytia canosaria* (Walker), female
- 9, *Caripeta divisata* Walker, female
- 10, *C. d. ab. nigraria* Forbes, male
- 11, *C. piniata* (Packard), male
- 12, *C. angustiorata* Walker, male
- 13, *Besma quercivoraria* (Guenée), female
- 14, *Lambdina fiscellaria* (Guenée), male
- 15, *Sicya macularia* (Harris), male
- 16, *S. macularia*, female
- 17, *Prochoerodes transversata* (Drury), male
- 18, *P. transversata*, female



Plate 33

- 1, *Hypocoena rufostrigata* (Packard), male
- 2, *Platyperigea multifera* (Walker), male
- 3, *Estigmene acrea* (Drury), male
- 4, *Plusia aereoides* Grote, male
- 5, *Chrysaspidia venusta* (Walker), male
- 6, *Euxoa detersa* (Walker), male
- 7, *E. sinelinea* Hardwick, female
- 8, *Chersotis juncta* (Grote), male
- 9, *Amathes collaris* (Grote & Robinson), male
- 10, *Lacinipolia lustralis* (Grote), female
- 11, *Protorthodes oviduca* (Guenée), female
- 12, *Euxoa scandens* (Riley), male
- 13, *Polia adjuncta* (Boisduval), male
- 14, *Bombycia algens* (Grote), male
- 15, *Xylena curvimacula* (Morrison), female
- 16, *Aethalura anticaria* (Walker), male
- 17, *Eupithecia bradorata* McDunnough, male
- 18, *E. pusillata interruptofasciata* Packard, female
- 19, *E. columbiata erpata* Pearsall, female
- 20, *Nycteola cinereana* Neumoegen & Dyar, male

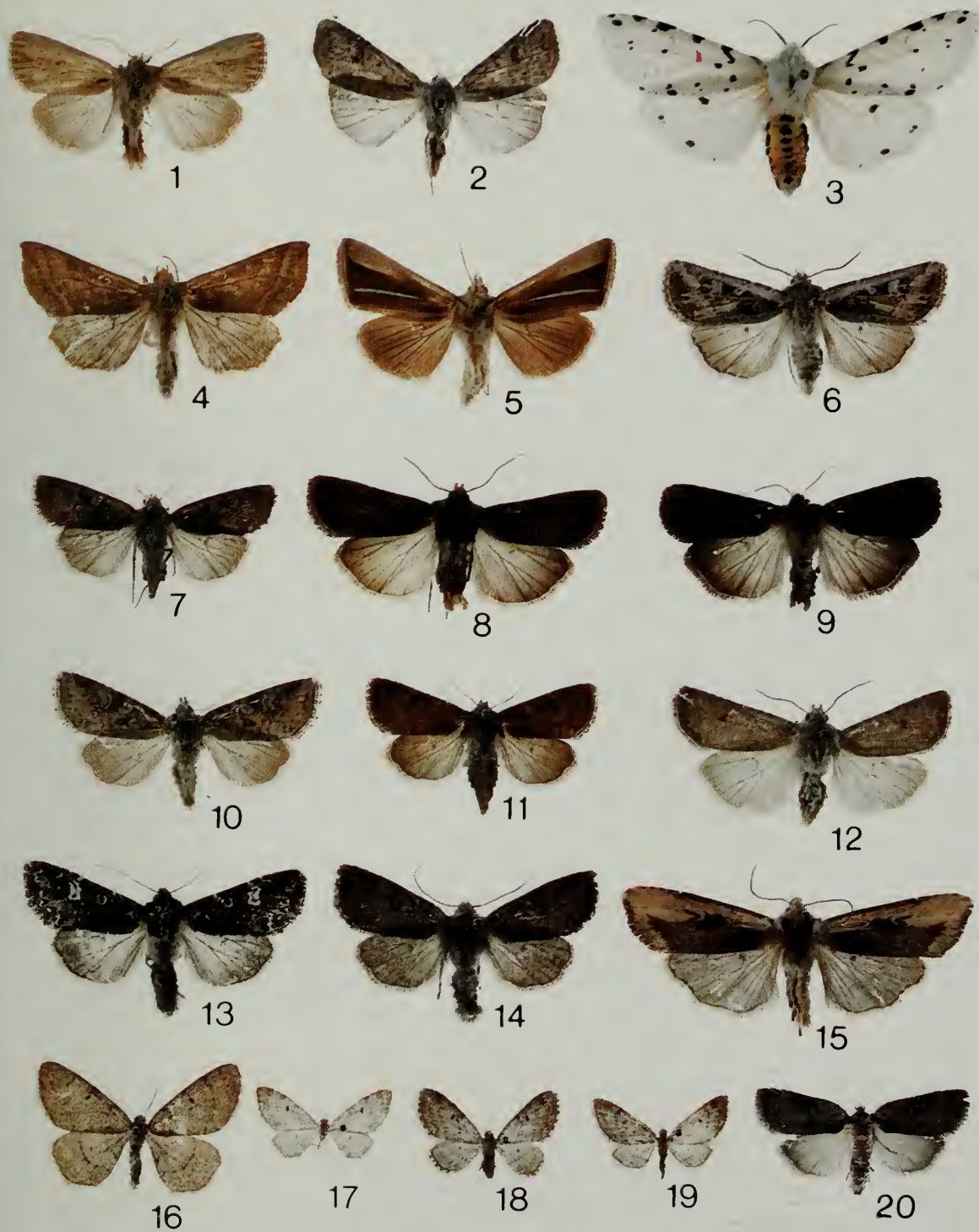


Plate 34

- 1, *Thymelicus lineola* Ochsenheimer, male
- 2, *Euxoa pleuritica* (Grote), male
- 3, *Metalepsis fishii* (Grote), male
- 4, *Anomogyna sincera* (Herrich-Schäffer), male
- 5, *Polia nimbose* Guenée, male
- 6, *P. tacoma* (Strecker), male
- 7, *Parastichtis discivaria* (Walker), female
- 8, *Oligia modica* (Guenée), male
- 9, *Enargia infumata* (Grote), male
- 10, *Notodonta simplaria* Graef, male
- 11, *Agrochola lota* (Clerck), female
- 12, *Acrionicta auricoma* Fabricius, female
- 13, *Chloroclystis rectangulata* f. *nigrosericeata* (Haworth), male
- 14, *Ennomos subsignaria* (Hübner), male
- 15, *Apicia confusaria* Hübner, male



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Glossary

- adfrontals** In lepidopterous larva, a pair of narrow oblique plates separating the frons from the epicranium.
- anal plate** A triangular sclerite covering the anal opening; present in many insects.
- bifid** Cleft or divided nearly to middle line; forked.
- caudal process** Small projection at the anal end of an insect body.
- cervical shield** The sclerite on the prothorax of caterpillars just behind the head; prothoracic shield.
- clypeus** A sclerite on the lower part of an insect head, to which the labrum is attached.
- cremaster** The terminal spine or spines of the abdomen that help a subterranean pupa work its way out of the earth; the anal hooks by which many pupae suspend themselves.
- crepuscular** Active or flying at dusk.
- distal** That part of a segment or appendage farthest from the body.
- diurnal** Active or habitually flying by day only.
- dorsal** Of or belonging to the upper surface.
- epicranium** The region between and behind the eyes in an insect head.
- filiform** Threadlike.
- free-living** Living without the confines of a self-made protective environment.
- frenulum** A spine, simple in males, compound in females, arising from the base of the hindwings in many Lepidoptera, projecting beneath the forewing to unite the wings in flight.
- frons** The upper anterior portion of the head capsule.
- fusiform** Spindle-shaped; broad at the middle and narrowing toward the ends.
- granules** Minute grainlike elevations on the skin.
- hibernaculum** A tent or sheath made of a leaf or other material in which a larva hibernates.
- instar** The stage of an insect between molts. The first instar is the stage between hatching and the first molt.
- lunule** Small crescent or moon-shaped marking on the wing.
- mesothorax** The middle segment of the thoracic region of insects.
- metathorax** The third segment of the thoracic region.

nocturnal Active at night.

occiput The whole posterior surface of the head.

palp A mouth feeler.

papilla Minute soft projection on the body.

pectinate Comblike, especially applied to antennae with even processes like the teeth of a comb.

plumose Feathered; like a plume; used to describe antennae that have long ciliated processes on each side of each joint.

prothorax The first of the three thoracic segments.

pubescent Clothed with soft, short, fine, closely set hair.

quadrifid Deeply cleft into four parts.

reticulate Covered with a network of lines, which may be raised.

sclerite A hardened, chitinous plate on the body wall; part of the exoskeleton; any piece of the body wall bounded by sutures.

serrate Sawlike; with notched edges like the teeth of a saw.

seta Slender, hairlike appendage; a hollow structure, developed extension of the epidermal layer.

spiracle A breathing pore.

tubercle A small solid pimple or button on the skin; a granular prominence on the skin.

ventral Of or relating to the under surface.

vertex The top of the head between the eyes, frons, and occiput.

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