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A COLLECTION OF LEPIDOPTERA FROM WHITE-
FISH POINT, MICHIGAN

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INTRODUCTION

Hardly a more interesting part of the state could have been selected for investigation than the Whitefish Point region; its northern location together with its sand dune topography and the isolation of the area to a certain degree are factors which naturally arouse curiosity as to the probable plant and animal associations.

As a member of the Shiras Expedition to Whitefish Point, from July 21 to August 1, 1914, the writer's time was devoted principally to the study and collection of the Lepidoptera. The expedition was sent out by the Museum of Zoology of the University of Michigan in a further continuation of the biological survey begun in 1912, and was supported by Hon. George Shiras 3rd. The work was done under the general direction of Dr. A. G. Ruthven, director of the Museum.

A small collection of Lepidoptera and notes on the group were made during the early part of July, 1913, by Mr. A. W.

Andrews, coleopterist of the expedition. This material together with the results of the writer's work in the following season form the basis of this report.

LOCATION AND GENERAL FEATURES OF THE REGION

Whitefish Point extends into the southern end of Lake Superior, its tip lying some thirty-four miles northeast of Sault Sainte Marie. Its base is rather indefinite but for purposes of this work may be arbitrarily fixed as extending from Vermillion on the north beach to the Shelldrake River and down this river to the village of Shelldrake.

All of the Whitefish Point country is low, and of comparatively recent development through combined wave, current and wind action; it is made up entirely of sandy ridges or old dunes and extensive swamp areas. It is only in the swamps or just bordering them that humus of any depth has accumulated. Reference to the accompanying sketch map will best explain general features of the more recently developed portions where practically all of the collections were made.

The low sand and sand-gravel ridges are more prominent and higher near the base of the Point than elsewhere and usually parallel the beach. They have elevations of from ten to thirty feet, while the extensive swampy and marshy tracts are but little above lake level. According to Leverett (*Surface Geology of the Northern Peninsula, Geological Survey of Michigan, Pub. 7, 1911*), many of these low sandy ridges were developed at the time of the Nipissing Great Lakes, the last of the old glacial lakes.

Since the last change in lake level considerable altering of shore line has occurred. This is evident on the north shore where rather high sand banks have been cut into in places, and that it is even progressing rapidly at the present time is

shown by the filling in and building up of wide beaches in places along the east and north shores and in the formation of sand bars near the end of the Point.

This country is fairly well timbered except for the open marshy tract although the timber, of which the jack pine predominates, is small and becomes more scattered and scrubby near the end of the Point.

Rather extensive areas were burned over several years ago, particularly along the east beach, and these support young scattered trees, mostly aspen, birch and jack pine. Other areas have been burned over recently, the one shaded on the map was burned at the time we were in the field. Near the base of the Point, near the Shelldrake River, the timber is better with white and Norway pine on the ridges although much of this forest has been lumbered.

Proceeding south and west from the base of the Point there is a gradual rise to sandy till moraines which run approximately north and south and which join the large moraine belt extending from about Point Iroquois in a northwesterly direction to Grand Marais. These morainal belts, which support dense hardwood forests, thus isolate in a partial degree the Whitefish Point country with its sand dunes and its predominating conifer forest from the country to the south.

Our field headquarters were located at the Whitefish Point Post Office, about three miles from the end of the Point and near the north beach. In going there we went first to Sault Sainte Marie, took the Shelldrake Lumber Company's tug to Shelldrake, and from there drove about seven miles by mail stage to the Post Office. This is the most comfortable way to go, although one may save a little time by taking the mail stage from Eckerman on the Sault Sainte Marie R. R. through Emerson and Shelldrake—about a thirty-five mile drive over

rather rough corduroy and sand roads. The party came back by the latter route.

As would be expected there are but few settlers at the Point and these depend mainly upon other resources than agriculture for a living. Fishing, lumbering, blueberry picking and hunting are the chief pursuits, although some cultivation of small patches of ground enriched by mixing the sand with muck from the low areas is accomplished. Wild hay for cattle and horses is to be obtained in the open marshes. A few settlers make quite an income from the cranberry marshes.

Near the end of the Point and near the east beach is a fishing station belonging to the Booth Fishing Company, and at the Point is the government light house. At Vermillion near the base of the Point on the north beach is a life saving station and mail is delivered daily between Vermillion, Whitefish Point Post Office, Shelldrake and Eckerman.

Shelldrake is a typical small lumbering town, owned principally by the Shelldrake Lumber Company. A narrow gauge lumber railroad runs westerly from town for several miles.

HABITATS

As the time was limited to about ten days in the field extensive investigations as to the habitats or life histories of the insects taken could not be expected, although every effort was made to obtain and record as much data as possible regarding each specimen collected. Lures and traps were necessarily resorted to thus enabling one to make a fairly representative collection from the Point.

Wash up on Beach: A number of specimens were found in the wash up, and a few species were not taken elsewhere. Practically all were found on the north beach within two or three miles of the Post Office. The prevailing winds at the

Point are from the northwest, usually rather cool breezes. Preceding a storm by a day or so the wind would shift to the south with a rise in temperature; it would then suddenly shift back again to the northwest with the accompanying storm. It was just after such storms that insects of all sorts were found on the beach, and as they were usually alive though badly battered when just washed up it would seem that all came from the Point or the near vicinity. Many insects would fly out or would be blown out over the water with the warm south wind and would naturally be beaten down with the north wind and the storm. They were then washed on shore, probably with the aid of currents. The shore birds had a great feast at this time, and the collector had to act quickly if he would get ahead of them.

Two live specimens of *Thecla edwardsii* and the upper wings and head of *Catopsilia cubule* were found in the wash up. Neither were taken elsewhere, and this is apparently the only record for *Catopsilia cubule* for Michigan.

Lower Beach: A few butterflies were attracted to the damp sand or by decayed fish, insects, etc. *Grapta j-album* and *Limenitis arthemis* were noticed in particular.

Wide Upper Beach: This part of the beach is dry throughout the summer and is only touched by the lake during some of the severe fall storms. The vegetation consists of coarse dune grass, beach pea and occasional clumps of scrubby willow. This seems to be the habitat for a few grass moths and occasionally a butterfly was seen. The upper limits of the upper beach are rather indefinite but would include such sand dunes as have similar vegetation. Near the mouth of the outlet to Cranberry Lake close to the Post Office is such a low sand dune area, and, in addition to beach grass, etc., a kind of spiraea grows in clumps and attracts numbers of butterflies.

It was, as a rule, rather breezy in this habitat, and the butterflies were attracted to the spiraea that was somewhat protected from the wind usually by a small dune or hillock. Such butterflies as *Argynnis atlantis*, *Colias interior*, *Limenitis arthemis* and *Grapta j-album* were particularly abundant and *Pieris napi*, *Terias lisa* and others were occasionally seen. Mr. Andrews found *Junonia cænia* and *Colias philodice* quite frequently at the spiraea blossoms during the early part of July, 1913, although they were not noticed the following year.

Swamp Areas, (a) Open Grassy Meadows: These meadows occur east of Cranberry Lake and eastwardly from Long Marsh Lake. The vegetation besides marsh grass consists of occasional clumps of flowering plants and shrubs such as spiraea, ninebark and willow. A few moths and butterflies frequent this habitat. The writer noticed among the latter *Brenthis myrina*, *Brenthis bellona*, *Phycoides tharos*, *Argynnis atlantis* and *Colias interior*. But few butterflies were seen in the grassy marshes near Long Marsh Lake probably because the situation was a little too windswept. The low sparsely timbered sand ridges between the marshes and north beach did not afford sufficient protection from the prevailing westerly winds. The writer expected to find some species of Hesperidæ in this habitat but was disappointed.

(b) *Cranberry Marshes:* Along the northwestern end of Cranberry Lake is a cultivated cranberry marsh owned by Mr. House. There is also a small marsh just east of Clarke Pond and adjoining it is a grassy marsh. Also small wild cranberry marshes occur along the southwestern edge of Cranberry Lake and along the western end of Doe Lake, in connection with typical spruce, tamarack, and sphagnum bogs.

In the marsh near Clarke Pond a few specimens of *Chrysophanus epixanthe* as well as several other species of butterflies

were found. *Colias interior* and *Argynnis atlantis* were attracted by a small orchid and other flowers. Among the butterflies *Colias interior*, *Chrysophanus epixanthe* and such moths as *Diastictis brunneata* and *D. sulphurea* were frequently found in the wild cranberry marshes and sphagnum bogs along Cranberry and Doe Lakes.

(c) *Tamarack Swamps*: Extensive tamarack swamps occur as shown on the accompanying map. A variety of small shrubs and plants which sometimes form dense thickets occur in this habitat. Little collecting was done here.

Sandy Ridges or Old Sand Dunes, (a) *Open Mixed Woodland*: In this habitat the jack pine predominates with scattering mixed stands of hard maple, white pine, aspen, birch and a little black oak, while spruce and tamarack sometimes occur on the lower portions adjacent to swamp areas. A varied ground cover of blueberry, many allied plants and brake fern usually occur, although in some places reindeer moss and xerophytic grasses form the ground cover. Many sandy ridges at the Point would fall under this habitat, especially those along the mail road from Whitefish Point Post Office to the schoolhouse and from the Post Office towards Vermillion for about two or three miles.

Such butterflies as *Limenitis arthemis* and *Grapta j-album* were quite common along the roadside, while *Colias interior* and *Argynnis atlantis* were frequently seen. Such Geometridæ as *Deilinia variolaria*, *Metrocampa perlata*, *Sciagraphia granitata*, *Xanthotype crotaria* and others were frequently flushed up from the underbrush. Among the microlepidoptera many species of the Tortricidæ were beaten from shrubs along the roadside. A number of species of Geometridæ were found on the trunks of trees where they had taken refuge for the day.

One specimen of *Grapta gracilis* was found along the roadside to Vermillion about two miles from the Post Office. This seems to be the first record for the species for Michigan.

Dewberry bushes and spiraea which grew along the road to Vermillion about a mile from the Post Office also attracted insects.

(b) *Jack Pine Ridges*: Where the jack pines grow close together there is practically no ground cover but pine needles. A few jack pine ridges occur easterly from the Post Office, and but few insects are found in this habitat.

(c) *Old Burned-over Areas*: These areas are sometimes almost bare and but sparsely covered with xerophytic grasses, though usually a wild profusion of brake ferns, blueberries and allied plants grow with an occasional jack pine, aspen or birch. Such areas occur along the mail road from a little north of Shelldrake approximately to the schoolhouse east of the Post Office. Dewberry and spiraea grow in some places and attract butterflies and moths.

The butterflies common to the open mixed woodland were also frequently seen here, but moths were scarce.

One fresh specimen of *Euptoieta claudia* was found on a small sand ridge which was covered with short xerophitic grasses, etc., just across a narrow marsh strip southwest of Clarke's. It was very warm on these dry sandy ridges where they were protected from the winds.

(d) *Cultivated Gardens and Meadows*: As before noted the few settlers usually have small garden patches and meadows on the lower ground adjacent to swamp areas. Such a garden patch and meadow lay just southwest from the Post Office and near Cranberry Lake. Mr. Clarke and Mr. Yeoman also had gardens near their homes and these were visited. Such flowers as milfoil, white clover, wild parsnip with

various grasses, timothy, etc., grew in the meadows and some spiraea and dewberry occurred along the ditches, while in the gardens were numerous cultivated plants.

Such butterflies as *Pamphila peckius* and *P. cernes* were frequently found in the meadows on white clover and numbers of others were attracted to the spiraea and dewberry. Many Microlepidoptera, especially Pyralidæ, were flushed up from the grasses, *Nomophila noctulla* was common as usual. In the garden at Yeoman's several specimens of *Pieris napi* and *P. rapæ* were found.

Sugar Lures: Sugar lures were put out every evening in the mixed woodland near the Post Office. Among the Geometridæ, *Alcis sulphuraria*, *Eustroma cunigerata*, and *Diastictis inceptaria*, and among the Noctuidæ, *Epizeuxis americanis*, *Catacola unijuga* and *C. brieseis*, *Mamestra imbrifera*, *M. purpurissata*, and *M. lorea*, *Peridroma occulta*, *Hadena arctica*, *H. devastatrix*, *H. verbascoides*, *Diphthera fallax*, *Scoliopteryx libatrix*, *Trigonophora periculosa* and *Noctua haruspica* and also *Pseudothyatira cymatophorides* were frequently seen. Most of the species captured were probably residents of the open mixed woodland habitat.

During the daytime the sugar on the trees attracted a few Grapta butterflies.

Light Lure: At night a lantern was set up in an opening near the Post Office. A few moths were attracted but the results were rather disappointing. Several moths were attracted to the lights in the windows of the Post Office. Among these the Arctiidæ, *Eubaphe aurantiaca* and *Apantesis williamsii* were common.

BIBLIOGRAPHY AND DISCUSSION

It is always interesting in looking over a list of insects from such a locality to make a comparative study with other lists from different sections of the country and especially from the state in which the locality is situated. Few such local lists have been published in Michigan and the adjoining territory, although considerable collecting has been done. The following Michigan lists are known to the writer.

Adams, C. C. An Ecological Survey of Isle Royale, Lake Superior. Report of the Geological Survey of Michigan for 1908, pp. 267-277.

Agassiz, Louis. Lake Superior, its Physical Character, Vegetation and Animals. Boston, 1850.

Newcomb, W. W. Check-list of Michigan Lepidoptera: I. Rhopalocera (Butterflies). Fourteenth Rept. Mich. Acad. Sci., pp. 226-230.

II. Sphingidæ (Hawk Moths). Fifteenth Rept. Mich. Acad. Sci., pp. 213-214.

Pettit, R. H. Insect and Animal Life on the Upper Peninsula Experiment Station. Mich. State Agr. College, Exp. Sta. Bull., 186, pp. 28-42.

Ruthven, A. G. Spiders and Insects from the Porcupine Mountains and Isle Royale, Michigan. Rept. of the Geological Survey of Mich., 1905, pp. 100-106.

Wolcott, R. H. The Butterflies of Grand Rapids, Michigan. Can. Ent., 25, pp. 98-107.

Welch, P. S. The Lepidoptera of the Douglas Lake Region, Northern Michigan. Ent. News., 26, pp. 115-119.

Since the collections were made at the Point in 1914 the writer has had an opportunity to collect Lepidoptera in the Upper Peninsula (near Manistique in 1915, and near Mar-

quette in 1916) and in the Lower Peninsula (near Benton Harbor in 1917, in connection with the biological survey of the state) reports of which will be published at a later date, and has also seen collections made by Dr. W. W. Newcomb at Eckerman, Chippewa County, in 1915 and in Dickinson County in 1909.

In looking over the list of Whitefish Point butterflies the most striking features seem to be the presence of several rather southern species which one would hardly expect to find so far north, the small numbers of true boreal species, the dominance as regards species of the usual forms found in the northeastern temperate region of the United States, that is the New England states, New York, Ohio and Lower Peninsula of Michigan, and the presence of a few western forms.

The occurrence of such butterflies as *Junonia cania*, *Euptoicta claudia*, *Terias lisa* and *Catopsilia eubule* and the hawk moth *Aellopos tantalus*, although the latter is not common, certainly makes one believe that the Whitefish Point country is at least somewhat attractive to those southern butterflies which have any inclination at all to migrate, and it is very possible that some of the species listed bred at the Point. On the dry sandy ridges it is very warm as a rule, and undoubtedly the vegetation in some places corresponds well to certain sand dune regions along the Lake Michigan shore. At Whitefish Point and along the coast, killing frosts do not occur as a rule until October, while back from the coast a short distance and in the interior such frosts occur a month or two earlier.

From the collections and lists it appears that the most probable route of migration for these southern forms is along the lake shores, that is along both east and west shores of Lake

Michigan to the vicinity of the Straits of Mackinac and from there along the St. Mary's River to Lake Superior and thence to Whitefish Point. A few local lists along the Michigan shores would assist in testing this hypothesis. It is a well known fact that these southern species are found at least along southern parts of both the east and west shores of Lake Michigan.

Such butterflies as *Colias interior*, *Argynnis atlantis* and *Grapta gracilis* are of distinct northern range and are found also in the White Mountains of New Hampshire, while *Chrysophanus epixanthe*, *Limenitis arthemis* and *Grapta j-album* are also rather northern in their affinities. These species, with the exception of *Grapta gracilis*, were the only common butterflies at the Point during the period of investigation. This would seem to indicate that conditions at the Point, though attractive to temperate and even more southern species, are in reality most favorable to the boreal species of the fauna, probably because of the severe winters.

A western element in the butterfly fauna is represented by *Chrysophanus helloides* and perhaps *Colias eurytheme*. Regarding the moths of the Point the opinion of specialists in various families is very interesting.

Mr. F. H. Wolley Dod writes that the Noctuidæ indicate the fauna of Ontario and Quebec generally. Among the rarer species listed are *Diphthera fallax*, *Mamestra rubefacta* and *M. nevada*, *Hadena indocilis* and *H. verbascoides* and *Hormisa bivittata*.

Mr. Louis W. Swett says of the Geometridæ that outside of a few species it is a typically New England lot, neither southern nor northern. *Petrophora abasaria* and *P. convallaria* and *Diastictis bicolorata* are strictly northern species while *Diastictis wauaria* is rather northern, and all are rare. The

western fauna is indicated in *Petrophora convallaria*, *Eois persimilis* and *Alcis sulphuraria* which are also as a rule rare species; the last two named being found very rarely in the east. Among the other more interesting forms are *Caripeta criminosa* and *C. angustiorata*. Another interesting species is *Diastictis inceptaria*. There seems to be some confusion regarding this species and possibly some of the specimens are *Diastictis evagaria*.

Miss Annette F. Brown says of the Microlepidoptera that a number of the species are western and northern.

Another factor which may influence the Whitefish Point fauna to a certain degree is the hardwood belt extending approximately from Point Iroquois to Grand Marais. This belt serves somewhat as a barrier to migration, for certain species at least, as it cuts off direct communication between the central sandy plains region and the Whitefish Point dune areas. Several species of butterflies were seen and captured along the Eckerman-Whitefish Point road between Eckerman and the hardwood belt which were not taken at the Point and which one would naturally expect to find there. To the casual observer the Whitefish Point area seems to support much of the vegetation of the central sandy plains region, which takes in the Manistique River basin and extends towards Eckerman to the hardwood belt, and in addition has the sand dune vegetation. This would lead one to expect to find most of the species common to the central sandy plains region and in addition the southern forms. But from such collections as have been made it is evident that a number of species common on the sandy plains region are not found at Whitefish Point.

Mention may be made here of three butterflies taken on the trip which are new records for Michigan, namely, *Grapta*

gracilis, *Pamphila comma* (taken at Eckerman), and *Catopsilia eubule*. Dr. W. W. Newcomb in his check-list of Michigan butterflies records 101 species. *Catopsilia eubule* is included in his list as reported but not taken.

ACKNOWLEDGMENTS

The value of any local list of Lepidoptera depends much upon accuracy in identification. For this reason determinations involving the slightest doubt have been indicated. The writer wishes to express indebtedness to several specialists and general lepidopterists for their kind assistance as follows: to Dr. W. W. Newcomb, of Detroit, for aid in identification of many specimens and for the use of his private collection and library; to Mr. L. W. Swett of West Somerville, Massachusetts, for identification of the difficult Geometridæ; to Mr. F. H. Wolley Dod, of Mednapore, Alberta, for identification of the difficult Noctuidæ; to Miss Annette F. Brown, of Cincinnati, for identification of a number of Microlepidoptera; and to Mr. Alexander Kwiat, of Chicago, for identification of several specimens. Acknowledgments are also due to Mr. A. W. Andrews who made collections in 1913 as previously stated, and to both Mr. and Mrs. Andrews, Mr. Fenton Combs, and Mr. House and family, who kindly assisted in the field and collected many specimens that would not have been obtained otherwise.

LIST OF SPECIES

The following annotated list includes all the Lepidoptera collected on Whitefish Point save the Microlepidoptera. Of the latter, only the more readily determined species are listed, so that much unidentified material remains in the collection awaiting further work.

The arabic numerals under each species refer to the date in July, 1914, but when followed by 1913 indicate the day of the same month of the preceding year. The species are numbered separately under the Rhopalocera and Heterocera for ease of reference. The nomenclature of the Heterocera follows Dyar's check-list.

RHOPALOCERA

NYMPHALIDÆ

1. *Euptoieta claudia* (Cram.).—Old burned area on low sandy ridge extending into a grassy marsh southeast from Clarke's. The single specimen was perfect. The species probably breeds at the Point.

2. *Argynnis aphrodite* (Fabr.).—Attached to flowers of spiraea in meadow near Post Office, 26.

3. *Argynnis atlantis* (Edw.).—A common butterfly on the Point, along paths in open mixed woodland attracted to flowers of spiraea in cultivated areas and near the Post Office. Also found in open grassy meadows and in cranberry marshes, 21-29.

4. *Argynnis myrina* (Cram.).—Open grassy meadows near Long Marsh Lake, 28; cranberry marshes, 6; on clover in cultivated lands, 1913.

5. *Argynnis bellona* (Fabr.).—Open grassy meadows, near Long Marsh Lake, 28.

6. *Phyciodes tharos* (Dru.).—Open grassy meadows near Cranberry Lake and Long Marsh Lake; cranberry marshes near former; along road through open mixed woodland, 24-26.

7. *Grapta comma* var. *dryas* Edw.—Taken by Mr. Andrews in July, 1913.

8. *Grapta faunus* (Edw.).—Washed up on beach, 23. A single specimen from Emerson.

9. *Grapta gracilis* (Gr. & Rob.).—Open mixed woodland along road to Vermillion about two miles from Post Office, 23.

10. *Grapta j-album* (Bd. & Lec.).—Open mixed woodland along road near Post Office, 21-31; rarely on lower beach.

11. *Vanessa antiopa* (Linn.).—Along road near Post Office in open mixed woodland, 21, 29.

12. *Vanessa milberti* (Godt.).—Taken by Mr. Andrews in 1913.

13. *Pyrameis atalanta* (Linn.).—Cranberry marshes; attracted to flowers of spiraea in open grassy meadows, 26.

14. *Pyrameis huntera* (Fabr.).—Near Post Office in cultivated land, 31.

15. *Pyrameis cardui* (Linn.).—Attracted to flowers of spiraea in open grassy meadows, 26.

16. *Junonia cænia* (Hüb.).—Taken by Mr. Andrews, July 4, 1913, on spiraea flowers on wide upper beach near Post Office.

17. *Limenitis arthemis* (Dru.).—Open mixed woodland near Post Office, 24-27. A number of specimens were seen, most of which were in poor condition.

18. *Limenitis archippus* (Cram.).—Reported by Mr. Andrews.

19. *Debis portlandia* (Fabr.).—Along path in open mixed woodland, 21.

20. *Satyrus alope* (Fabr.).—Several specimens seen about a mile south of Shelldrake along roadside, August 1, 1914. None were collected.

LYCÆNIDÆ

21. *Thecla edwardsii* (Saund.).—Washed up on beach, 23.

22. *Chrysophanus helloides* (Bdv.).—On clover in cultivated land, 6, 1913.

23. *Chrysophanus epixanthe* (Bd. & Lec.).—Cranberry marsh west of Cranberry Lake, at Doe Lake and near Clarke's, 24-30.

24. *Chrysophanus hypophleas* (Bdv.).—Open mixed woodland on raspberries, 4, 1913; one specimen taken at Emerson, August 1, 1914.

PAPILIONIDÆ

25. *Pieris protodice* (Bd. & Lec.).—Washed up on beach, 23.

26. *Pieris napi* var. *oleracea-hiemalis* (Harr.).—In Yeoman's garden, 21, 30; near Shelldrake River in open grassy marshes, 26.

27. *Pieris rapæ* (Linn.).—Open mixed woodland on dewberry flowers, 21, 24; in Yeoman's garden, 26.

28. *Catopsilia eubule* (Linn.).—The upper wings and head of a specimen were washed up on the beach July 24.

29. *Colias eurytheme* (Bdv.).—On clover in cultivated land, 4, 1913; no specimens seen in 1914.

30. *Colias philodice* (Godt.).—Taken by Mr. Andrews early in July, 1913.

31. *Colias philodice* var. *luteitincta* (Wolcott).—Data as last.

32. *Colias interior* (Scudd.).—A common species in nearly all habitats during the season.

33. *Terias lisa* (Bdv.).—On flowers of spiraea on wide upper beach near outlet of Cranberry Lake, 26; in same locality, 8, 1913; on clover in cultivated fields, 4, 1913.

34. *Papilio glaucus* (Linn.).—A specimen was seen by Mr. Andrews in a small collection made at Vermillion.

HESPERIDÆ

35. *Pamphila hobomok* (Harr.).—On clover in cultivated land, 6, 1913.

36. *Pamphila peckius* (Kirby).—Meadow near northwest end of Cranberry Lake, 24.

37. *Pamphila cernes* (Bd. & Lec.).—On clover and dew-berry flowers in meadow west of Post Office, 21, 23; at same place, 6, 1913.

38. *Nisoniades persius* (Scudd.).—Open mixed woodland along road to Vermillion, 12, 1913.

The following species were found along the road between Emerson and Eckerman. It would seem as if some of the species must occur on the Point.

Danais plexippus (Linn.).—A single specimen was taken on flowers of iron weed three miles north of Eckerman, August 1, 1914.

Argynnis cybele (Fabr.).—Two specimens seen three miles north of Eckerman along the road, August 1, 1914.

Feniseca tarquinius (Fabr.).—Along road in hardwood forest four miles north of Eckerman, August 1, 1914.

Pamphila comma (Linn.).—A pair in copulo were taken just out of Eckerman, August 1, 1914.

Pamphila metacommet (Harr.).—Several specimens seen along road three miles south of Eckerman, August 1, 1914.

HETEROCERA

SPHINGIDÆ

1. *Hemaris diffinis* (Boisd.).—Open mixed woodland on raspberry flowers, 6, 1913.

2. *Hemaris thysbe* (Fabr.).—Open grassy meadows on flowers of spiraea at Long Marsh Lake, 28; open mixed woodland on flowering shrub, 6, 1913.

3. *Aellopos tantalus* (Linn.).—Wash up on beach, picked up alive, 10.

4. *Celerio intermedia* (Kir.).—Wide upper beach on log, 10, 1913.

5. *Ceratonia undulosa* (Wlk.).—Lower beach on log, 10, 1913.

SATURNIIDÆ

6. *Telca polyphemus* (Cr.).—No specimens were taken, but Mr. Andrews saw one in a small collection at Vermillion.

ARCTIIDÆ

7. *Eubaphe aurantiaca* (var. *ferruginosa* and var. *brevicornis*).—Light lures, 21-22; open grassy meadow near Clarke's, 29; open mixed woodland east of Post Office, 27.

8. *Hyphoraia parthenos* (Harris).—Open grassy meadow along Shelldrake River about three miles from Shelldrake, 26; wash up on beach, 10, 1913.

9. *Apantesis virguncula* (Kir.).—Wash up on beach, 12, 1913.

10. *Apantesis williamsii* (var. *determinata*) (Neu.).—Light lures, 21-27.

NOCTUIDÆ

11. *Acronycta innotata* (Guen.).—Sugar lures, 8, 1913; 30; open mixed woodland, 31.

12. *Acronycta radcliffei* (Harv.).—Open mixed woodland, 23.

13. *Acronycta superans* (Guen.).—Sugar lures, 24.

14. *Acronycta fragilis* (Guen.).—Open mixed woodland on trunk of jack pine, 6-7, 1913.

15. *Diphthera fallax* (Herr. & Sch.).—Sugar lures, 21-26, open mixed woodland, 26.

16. *Caradrina miranda* (Gr.).—Light lures, 21.
17. *Hadena indocilis* (Wlk.).—Sugar lures, 28.
18. *Hadena lateritia* (Hüb.).—Sugar lures, 26; 8, 1913.
19. *Hadena dubitans* (Wlk.).—Sugar lures, 26-29.
20. *Hadena impulsiva* (Guen.).—Sugar lures, 22.
21. *Hadena devastatrix* (Brace.).—Sugar lures, 23-30; 6, 1913.
22. *Hadena arctica* (Bsvl.).—Sugar lures, 27.
23. *Hadena verbascoides* (Guen.).—Sugar lures, 23-29.
24. *Hyppa xylinoides* (Guen.).—Sugar lures, 27; 12, 1913; wash up on beach, 23.
25. *Helotropha reniformis* (Gr.).—Sugar lures, 23-27.
26. *Adelphagrotis prasina* (Fabr.).—Log on upper beach, 8, 1913.
27. *Platagrotis pressa* (Gr.).—Sugar lures, 27.
28. *Agrotis ypsilon* (Rott'bg).—Sugar lures, 25-30.
29. *Peridroma occulta* (Linn.).—Sugar lures, 30; stone on upper beach, 8, 1913.
30. *Peridroma astricta* (Morrison).—Sugar lures, 25-30.
31. *Noctua smithii* (Snell.).—Sugar lures, 27.
32. *Noctua normaniana* (Gr.).—Sugar lure, 30.
33. *Noctua fennica* (Faus.).—Stone on upper beach, 8-12, 1913; sugar lure, 12, 1913.
34. *Noctua haruspica* (Gr.).—Sugar lures, 22-30; stone on lower beach, 8, 1913.
35. *Euxoa scandans* (Riley).—Sugar lures, 22-30; 7, 1913.
36. *Euxoa divergens* (Wlk.).—Light lures, 31; lower beach, under board, 12, 1913.
37. *Mamestra imbrifera* (Guen.).—Sugar lures, 25-30.
38. *Mamestra purpurissata* (Gr.).—Sugar lures, 22-30.
39. *Mamestra detracta* (Wlk.).—Sugar lures, 22; 8, 1913.

40. *Mamestra nevadae* (Gr.).—Wide upper beach, on log, 8, 1913.
41. *Mamestra rubefacta* (Morr.).—Sugar lures, 6, 1913.
42. *Mamestra lorea* (Guen.).—Sugar lures, 22, 30; 8, 1913; light lures, 21, 22; beaten from bushes in open mixed woodland.
43. *Barathra curialis* (Sm.).—1913.
44. *Orthodes cynica* (Guen.).—Cranberry marshes, 26.
45. *Cucullia asteroides* (Guen.).—Sugar lures, 21.
46. *Pyrrhia umbra* (Hüf.).—Sugar lures, 11, 1913; open mixed woodland on trunk of tree, 7, 1913.
47. *Trigonophora periculosa* (Guen.).—Sugar lures, 27-28.
48. *Scoliopteryx libatrix* (Linn.).—Sugar lures, 21-30.
49. *Parastichtis discivaria* (Wlk.).—Light lures, 31.
50. *Autographa rectangula* (Kir.).—Open mixed woodland, 17, 21, 24, 28; wash up on beach, 21; sugar lures, 7, 1913.
51. *Autographa epigæa* (Gr.).—Cranberry marsh at Doe Lake, 28.
52. *Autographa ampla* (Wlk.).—Wash up on beach, 24.
53. *Autographa simplex* var. *falcigera* (Kir.).—Meadow on cultivated ridge near Post Office.
54. *Eustrotia albidula* (Guen.).—Cranberry marsh at Cranberry Lake, 18, 22; light lures, 26; cultivated meadow near Post Office, 26.
55. *Eustrotia carneola* (Guen.).—Sugar lure, 27; on trunk of jack pine in open mixed woodland, 8, 1913.
56. *Lithacodia bellicula* (Hüb.).—Cranberry marsh at Cranberry Lake, 24; marsh near Clarke's, 30.
57. *Pangrapta decoralis* (Hüb.).—Sugar lure, 21.
58. *Drasteria erectea* (Cra.).—Cranberry marsh at Doe Lake, 28.
59. *Catacola unijuga* (Wlk.).—Sugar lure, 25-30.

60. *Catacola briseis* (Edw.).—Sugar lures, 25-30.
 61. *Epizeuxis americalis* (Guen.).—Sugar lures, 22-30.
 62. *Epizeuxis æmula* (Hüb.).—Sugar lures, 25.
 63. *Zanclognatha marcidilinea* (Gr.).—Sugar lures, 30.
 64. *Hormisa bivittata* (Gr.).—Cranberry marsh at Cranberry Lake, 24.
 65. *Chytolita petrealis* (Gr.).—Cranberry marsh at Cranberry Lake, 24.
 66. *Bleptina caradrinalis* (Guen.).—Sugar lures, 24.
 67. *Palthis angulalis* (Hüb.).—Open mixed woodland along road to Vermillion, 23.

THYATIRIDÆ

68. *Habrosyne scripta* (Gosse).—Sugar lures, 8, 1913.
 69. *Pseudothyatira cymatophoroides* (Guen.). — Sugar lures, 23-28; 8, 1913.

LASIOCAMPIDÆ

70. *Malacosma disstria* (Hüb.).—On shrub in open mixed woodland on road to Vermillion about three miles from Post Office, 23.

GEOMETRIDÆ

71. *Venusia cambrica* (Curtis).—Open mixed woodland, 27; 12, 1913.
 72. *Hydria undulata* (Linn.).—Open mixed woodland, 25-27; light lures, 8, 1913.
 73. *Eustroma cunigerata* (Wlk.).—Sugar lures, 21-30; open mixed woodland, 27.
 74. *Mesoleuca ruficillata* (Guen.).—Open mixed woodland, 7, 1913.
 75. *Mesoleuca lacustrata* (Guen.).—Open mixed woodland, 27; 8, 1913; sugar lures, 22 (poor condition).

76. *Hydriomena autumnalis* (Stro.).—Open mixed woodland, 25.
77. *Gypsochroa emendata* (Pears.).—Open mixed woodland, 27.
78. *Petrophora abrasaria* (Herr. and Sch.).—Open mixed woodland, 7, 1913.
79. *Petrophora convallaria* (Guen.).—Sugar lures, 22.
80. *Eois persimilis* (Hulst.).—Light lures, 21; 8, 1913.
81. *Eois inductata* (Guen.)?—Light lures, 21.
82. *Synchlora crata* (Fab.).—Open mixed woodland, 2-3.
83. *Epelis faxonii* (Minot).—Cranberry marsh, 30.
84. *Eufidonia notataria* (Wlk.).—Cranberry marsh, 24; wash up on beach, 24; light lures, 21.
85. *Deilimia variolaria* (Guen.).—Cranberry marshes, 24; sugar lures, 22; open mixed woodland, 25-26.
86. *Sciagraphia granitata* (Guen.).—Sugar lures, 8, 1913.
87. *Diastictis sulphuria* (Pack.).—Cranberry marshes, 24-30.
88. *Diastictis brunneata* (Thun.).—Light lures, 21; cranberry marshes, 24-30; open mixed woodland, 23-27.
89. *Diastictis inceptaria* (Wlk.).—There is some question regarding all the specimens according to Mr. Swett. A few are typical as usually understood, that is without markings and of a bluish gray color. The original description by Walker calls for markings on the wings and most of the specimens answer fairly well to his description. It is possible some may be *D. evagaria* (Hulst.) or even males of *D. sulphuria*. Light lures, 21-22; open mixed woodland, 23-27; cranberry marsh, 24-30; sugar lures, 21.
90. *Diastictis wauaria* (Linn.).—Sugar lures, 21.
91. *Diastictis bicolorata* (Fab.).—A little doubtful. Sugar lure, 29.

92. *Homochlodes fritillaria* (Guen.).—Open mixed woodland, 24.
93. *Caripeta angustiorata* (Wlk.).—On trunk of jack pine in open mixed woodland, 8, 1913.
94. *Caripeta criminosa* (Swett).—Open mixed woodland, 8, 1913.
95. *Alcis sulphuraria* (Pkd.).—Sugar lures, 22-23; open mixed woodland, 27; light lures, 22.
96. *Ectropis crepuscularia* (D. and S.).—Open mixed woodland, 27.
97. *Anagoga pulveraria* Linn.—Sugar lures, 21.
98. *Metrocampa perlata* (Guen.).—Open mixed woodland, 24-25.
99. *Xanthotype crocataria* (Fab.).—Sugar lures, 21-29.
100. *Euchlæna obtusaria* (Hüb.).—Sugar lures, 22; light lures, 27.

COSSIDÆ

101. *Prionoxystus macmurtrei* (G. and M.).—Wash up on beach, 12, 1913.

SESIIDÆ

102. *Albuna pyramidalis* var. *coloradensis* (Edw.) and var. *montana* (Edw.).—Specimens correspond well to descriptions. On flowers of dewberry along road to Vermillion about two miles from Post Office in open mixed woodland, 24; lower beach on log, 8, 1913.
103. *Evergestis straminealis* (Hüb.).—In cultivated meadow near Post Office, 26.
104. *Nomophila noctuella* (D. and S.).—Cultivated meadow near Post Office, 26; open mixed woodland, 24; cranberry marsh at Cranberry Lake, 24.

105. *Loxostege stricticalis* (Linn.).—Cultivated land near Post Office, 31.

106. *Nymphula icciusalis* (Wlk.).—Cranberry marsh at Cranberry Lake, 24; open mixed woodland, 23.

107. *Nymphula maculalis* (Clem.).—On leaves of water lilies at Cranberry Lake, 12, 1913.

108. *Scoparia centuriella* (D. and S.).—Open mixed woodland along road to Vermillion, 25.

109. *Schænobius forficellus* (Thumb.).—Light lures, 21.

110. *Schænobius sordidellus* (Zinck).—Light lures, 27.

111. *Crambus præfectellus* (Zinck).—Light lures, 21.

112. *Crambus hortellus* (Hbr.).—Cranberry marsh near Cranberry Lake, 24.

113. *Crambus perlellus* (Scop.).—Cultivated meadow near Post Office, 26.

PTEROPHORIDÆ

114. *Oxyptilus periscelidactylus* (Fitch).—Open mixed woodland along road to Vermillion, 26.

115. *Platyptilia marginidactyla* (Fitch).—Light lures, 21.

TORTRICIDÆ

116. *Olethreutes hartmanniana* (Linn.). — Cranberry marsh near Cranberry Lake, 24; sugar lures, 25; on bush in open mixed woodland along road to Vermillion, 23.

117. *Olethreutes hemidesma* (Zell.).—Cultivated meadow near Post Office, 26.

118. *Olethreutes instrutana* (Clem.).—Light lures, 21-30; beaten from bushes in open woodland along road to Vermillion, 23.

119. *Olethreutes bipartitana* (Clem.).—Open mixed woodland along road to Vermillion, 28.

120. *Ancylis subæquana* (Zell.).—Beaten from bushes in open mixed woodland along road to Vermillion, 23.

121. *Alceris minuta* (Rib.).—Cranberry marsh near Cranberry Lake, 24; beaten from bush in open mixed woodland along road to Vermillion, 23.

122. *Epagoge sulphureana* (Clem.).—Light lures, 21-30; beaten from bush in open mixed woodland along road to Vermillion about three miles from Post Office.

123. *Cenopis reticulatana* (Clem.).—Light lures, 30-31.

124. *Archips purpurana* (Clem.).—Light lure, 30.

125. *Archips argyrosbila* (Wlk.).—Light lure, 14.

126. *Archips persicana* (Fitch).—Cranberry marsh near Cranberry Lake, 24; beaten from bush in open mixed woodland along road to Vermillion, 23.

127. *Pandemis limitata* (Rob.).—Beaten from bush in open mixed woodland along road to Vermillion, 23.

128. *Tortrix bergmanniana* (Linn.).—Light lures, 21-22; beaten from bush in open mixed woodland along road to Vermillion, 23; open mixed woodland near Post Office, 24, 27.

129. *Phalonia angulatana* (Rob.).—Sugar lure, 24.

TINEIDÆ

130. *Argyresthia goedertella* (Linn.).—Beaten from bush in open mixed woodland on roadside to Vermillion, 23.

131. *Tinea biflavimaculella* (Clem.).—Light lure, 22.

132. *Borkhausenia ascriptella* (Busck).—Open mixed woodland near Post Office, 31.

HEPIALIDÆ

133. *Hepialus gracilis* (Gr.).—Light lures, 22. The specimen corresponds well to descriptions.

