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# A List of the Insect Fauna of Nantucket, Massachusetts

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## With a List of the Spiders

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Nantucket, Massachusetts
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# INSECT FAUNA OF NANTUCKET, MASSACHUSETTS

## INTRODUCTION

Nantucket County, Massachusetts, comprises the islands of Nantucket, Tuckernuck, and Muskeget. The principal island, Nantucket, is fifteen miles in length, with an average width of about four miles. It lies about twenty-four miles south of the mainland and twelve miles east of Marthas Vineyard.

To understand better some of the problems bearing on the distribution of insects on Nantucket there are many things to be considered. Botanists in studying the distribution of certain of the more southern plants that occur in Newfoundland, have come to the conclusion that this peculiar distribution could only have come about by the presence of a post-glacial land-bridge connecting New Jersey with Newfoundland,[1] the presence of these plants so far north and on Sable Island and in favorable places in Nova Scotia, representing only remnants of the flora of a large post-glacial coastal plain. Over parts of this coastal plain the ice sheet advanced, ending with a terminal moraine as far south as Nantucket and Marthas Vineyard. As the ice receded and the water rose the islands formed the last foot hold for the plants and insects of the region. A conservative estimate of the rise of the ocean due to the melting of the great ice sheet is from 25 to 45 fathoms.[2] The submerged plain is now represented by a number of banks including the Georges extending 200 miles east of Nantucket, and the Nantucket Shoals stretching nearly 100 miles south.

While there are many plants that can be cited in showing their probable distribution in post-glacial times north-eastward from Cape Cod, these small plants are of little importance as

[1] A Botanical Expedition to Newfoundland and southern Labrador. By M. L. Fernald. Rhodora, vol. 13, p. 149. 1911.

[2] Pleistocene Glaciation and the Coral Reef Problem. By Reginald A. Daly. Amer. Journ. Science, vol. 30, (ser. 4) p. 300, 1910.

factors in insect distribution. Most of the austral species of insects that now extend far beyond Cape Cod are those that frequent the marshes and sand-areas of the immediate coast line, where the ocean modifies to a great extent the extremes in temperature.[3]

The relation of insects to plants presents many problems as to the effect that civilization has had on the fauna and flora.

To what extent Nantucket was originally wooded is a subject of some discussion. Tradition has it that the island was well wooded when the first settlers came in 1659. Houses are still standing which are said to have been built with native wood.

Stumps as large as a man's thigh were found when clearing swamps in Polpis.[4] That there were large trees near the town and elsewhere is suggested by names like Grove Lane and "The Grove", and that trees will grow under favorable conditions is evident by the "Hidden Forest," near Polpis, and by the large trees now in the town that were planted after the "Great Fire" in 1846.[5] That trees of a large size were always limited is evident by the way they grow at the present time. If trees were abundant near the town it does not seem possible that the inhabitants would have been obliged to go to Coskata as early as 1779 for their fuel. In a petition to Sir Henry Clinton dated July 9, 1780, the people represented themselves as being "wholly destitute of firewood."

To what extent fires have destroyed the flora and likewise the fauna is difficult to estimate. Fires have been more or less local and their effect on the island as a whole can only be surmised. A fire on the moors or "commons" does comparatively little damage. It is only when it reaches the lowlands and swamps in a very, or even in a comparatively dry season, that both the flora and fauna are destroyed. In referring to some of the more destructive fires Sara Winthrop Smith[6] says: "In the midst of Gibbs Swamp, on the published map of Nantucket, there is a spot marked "Okowaw's Garden." This is a glacial garden, since the knoll on which it lies is a glacial hummock and the little island is surrounded by what remains of the waters of an

[3] Biol. Survey of Mount Desert. The Insect Fauna. By C. W. Johnson, Pt. 1, p. 12, 1927.
[4] A Catalogue of Plants growing without cultivation in the county of Nantucket, Mass. By Maria L. Owen, 1888.
[5] The Island of Nantucket. By Edward K. Godfrey, 1882.
[6] Nantucket, a Brief Sketch of its Physiography and Botany, p. 23, 1901.

ancient glacial lake. In August, 1900, as in August, 1894, this entire region was devastated by fires on the commons. Between Gibbs Pond and Tom Nevers the fire burned for weeks, converting the lovely swamp-land into a great scar, blackened and forbidding. The dense thickets of Tom Nevers Swamp will never reappear, for the springy sphagnum and peat upon which they flourished were then consumed. The equally dense thickets of Gibbs Swamp were also destroyed by the fire of 1900, rendering hopeless further chance of saving its ample water supply. This is one of the most attractive spots on the island and these fires accomplished in a few days what decades at least would not have done: they have opened the way for the slow but sure egress of the waters from the beautiful pond and have hastened by years the limit of its existence."

Another factor that has affected the flora and fauna, but to less extent no doubt then the fires, was the extensive raising of sheep in former times. Wm. T. M. Forbes[7] in referring to conditions that have affected the insect fauna of the off shore islands says: "these [conditions] have reached an extreme on Nantucket whose indigenous Lepidoptera have now largely disappeared because of sheep pasturing." This is an interesting statement, but how is one going to prove it. Even if there were from 10,000 to 15,000 sheep roaming over the island for years it would seem to be almost impossible for them to cover the entire island. Sheep love the open, are gregarious and timid. They avoid dense thickets of brambles and wet places where they are apt to mire. Their habits alone would therefore bar them from many large areas.

Nature soon restores many apparent losses if only left undisturbed. Botanists are still finding a rich and varied flora, while the number of insects obtained the past four seasons is somewhat surprising. It is thus evident that we must draw our conclusions from present and not from past conditions. Does the study of the insect fauna throw any light on the former condition of the forest? If the Island was as heavily wooded in former times as traditions would indicate, there are still enough trees of the various species left to furnish food for a much larger number of forest loving insects than now apparently exist. Of

[7] **The Lepidoptera** of New York and neighboring States, Cornell Univ. Agr. Exper. Station, Memoir, no. 68, p. 17, June, 1923.

the long-horned wood-boring beetles (Cerambycidae) only 13 species have been taken and of the flat-headed borers (Buprestidae) only the small species belonging to the genera Agrilus and Brachys.

With pine so abundant I wondered for some time why I did not find the pine boring beetles that are so common on the pines along the Atlantic coast from Florida to Massachusetts and in some cases even to Maine, as for example: *Monochamus titillator, M. carolinensis, Rhagium lineatum, Chalcophora virginiensis, Hylobius pales, Ips calligraphus,* etc. Later I read that Nantucket was a pineless island, and that the pines (*Pinus rigida*) all came from seeds planted by Joshua Sturges and others in 1847 and following years. These beetles have evidently not been able to reach the Island. On the other hand the Pine Tip Moth (*Retinia frustrana*) reached the Island (or was first reported) as early as 1876. They appear to be more destructive on the Island than on the mainland, probably due to the absence or diminution at certain times of their parasites. It is also interesting to note the presence of other pine loving insects. The Pine horntail (*Sirex edwardsi*) is abundant on the dying pines destroyed by the Pine Tip Moth. The two pine spittle bugs, *Aphrophora parallela* and *A. saratogensis* are quite common on the pine. These were probably brought to the island on the young pine trees that have been planted here.

Certain introduced moths are now among the most injurious insects on the Island. The eggs of the Gipsy Moth were brought from the mainland on cordwood. The Leopard Moth, first recorded in 1917, was probably introduced either in wood or in the limbs of trees that have been planted, as it is doubtful if the female would be able to fly that distance. This is one of the most injurious insects to shade trees. That the European corn-borer should reach the Island as early as 1923 would indicate that it was introduced either in green corn or in one of the many plants that the larvae infest. Many others have undoubtedly been introduced by commerce.

In studying the distribution of the insects found in Nantucket the position of the Island in relation to life zones should be fully considered. Situated in the northeastern part of the so-called Upper Austral Zone, it is the species that frequent the

Austral Zone as a whole, and show a rather continuous distribution, that deserve special consideration. However, to do justice to the subject, an intensive study should also be made of the insects of Marthas Vineyard and Cape Cod, thus showing more fully the number of true austral species of this region. Of the three places Nantucket would naturally contain the fewer species owing to its smaller size, isolation and less vegetation.

In making such a study the relation of insects to plants should perhaps be considered first. There are on the Island many true austral plants and insects that are found in association throughout their entire range from Nantucket to Florida. On the scrub oak for instance, were found *Matachroma quercatum, Attelabus analis, Euginamptus collaris* and *Pterocolus ovata,* and on the sumac, *Blepharida rhois, Attelabus nigripes.* On small plants along the marshes were found *Oedionychis gibbitarsa* and *Oedionychis miniata,* both having a range extending south to Texas. Many others that could be mentioned are also recorded in the list of species. The common and widely distributed species are of little value in defining life zones, and the same can be said of certain strong flying dragon flies like *Tramea abdominalis* and such butterflies and moths as the Cloudless Sulphur butterfly, (*Callidryas eubule*) flights of which occasionally reach Nantucket, or of the Cotton Moth, (*Alabama argillacea*) which in September (7-9), 1926, swarmed over the entire island.

The Orthoptera present several species supporting the theory of the greater coastal plain or land bridge as a medium for former distribution. These are included among the following species: Pygmy Mole Cricket (*Tridactylus apicialis*), Mole Cricket (*Gryllotalpa hexadactylus*), Spotted Cave Cricket (*Centophilus maculatus*), Carinate Florida Katydid (*Amblycorypha floridana carinata*) and the Wingless Prairie Grasshopper (*Conocephalus saltans*). Among the Hemiptera are a number of interesting austral species: *Podisus fretus, Lygaeus hicrucis, Phymata vicina, Fitchia aptera, Microvelia albonotata, Pelocoris femorata* and *Ochterus americanus.* There is no positive evidence of any of the Cicadas on Nantucket. Has this any bearing on the absence of a forest in the past?

The Hymenoptera as a whole present some peculiar features in distribution. The Carpenter Bee (*Xylocopa virginica*), often

quite common on Marthas Vineyard, is absent on Nantucket. This suggests a lack of forests in the past for it seems possible that the species could live there now. There are six species of bumblebees on the Island, but evidently its parasite Psithyrus is absent. On the other hand the other bees have their usual number of parasitic species. The large number of Braconidae and Ichneumonidae, usually parasitic on moths and butterflies, would indicate a much larger number of Lepidoptera than is recorded in the list. Resorting to sugaring and a trap lantern, as is done by many lepidopterists, would no doubt have yielded many more species of moths. Many species of the parasitic Hymenoptera collected remain unnamed, and a number are still undescribed. The Diptera contain several interesting species. Two Crane flies, *Tipula maritima* Alex. and *Tricyphona johnsoni* Alex., are new to science, while *Pentacricia aldrichi, Limnia shannoni* and *Tephrites furcata* have not before been recorded from New England. Many of the species have a range extending from Florida and Georgia to Nantucket. A study of the list will show interesting problems bearing on the coastal plain species.

Early history bearing on the insect fauna of the Island is very meager. Men were after larger game, while those scientifically inclined studied the stars and planets. The first insect recorded from Nantucket is the sea shore tiger beetle, *Cicindela dorsalis*. Harris in his manuscript catalogue, No. 943, says: "Nantucket and Marthas Vineyard, Aug. and Sept. 1832."

Samuel H. Scudder spent a number of seasons on the island and as early as 1876 made a study of the Pine Tip Moth, an account of which he published in 1883.[8] In his Butterflies of New England (1889) he refers to the abundance of the Regal Fritillary (*Argynnis idalia*), west and southwest of Gibbs Pond, the Little Sulphur (*Eurema euterpe*) and other butterflies. Mr. Samuel Henshaw in September, 1892, made a collection mostly of Coleoptera and Hemiptera and reported a flight of the Cloudless Sulphur butterfly (*Callidryas eubule*), Psyche, vol. 6, p. 366. A small collection of Nantucket insects made by Miss Mariana Hussy is in the collection of the Maria Mitchell Association.

[8] Mass. Society for the Protection of Agriculture 1883. Reprinted in Fifth Report, N. S. Entom. Commission. Insects Injurious to Forest and Shade Trees. By A. S. Packard, pp. 745-764, pl. 7. 1890.

Mr. A. P. Morse collected on the island in 1900 confining his work largely to the Orthoptera, and finding at Maxcys Pond the little Pigmy mole-cricket. He again collected on the Island in 1913. Dr. Joseph A. Cushman, while geologizing and botanizing on the Island at various times from 1904 to 1911, made an interesting and valuable collection. In 1909 he collected on Tuckernuck. Dr. G. M. Allen in 1910, while making a study of mammals, also collected some insects. Dr. H. T. Fernald spent several seasons (1907-1911) on the Island, collecting a large number of insects. A number of the Hemiptera collected by him have been recorded by Howard M. Parshley in his list of New England Hemiptera (Occasional Papers, Boston Society of Natural History, 1917). Mr. W. S. Brooks while studying the birds of Muskeget (1916) and in preparing his list of the birds of Nantucket (1924-1926) collected a great many interesting insects, as is indicated in the list. Dr. R. H. Howe, Jr., in 1917 made a collection of the dragon-flies (Odonata) and published a list of 21 species. The writer made a collection in August, 1918.

Early in 1926 Mrs. Alice Albertson Shurrocks, Curator and Director, and Mr. S. N. F. Sanford, a member of the Natural Science Committee of the Maria Mitchell Association, considered it very desirable to obtain a better knowledge of the insect fauna of Nantucket. The matter was taken up with Dr. Edward Wigglesworth, Director of the Boston Society of Natural History, and the Society agreed to coöperate with the Maria Mitchell Association in doing the work, the two institutions to share equally in the expense for the field work, dividing the material collected. Owing to the time involved in determining the material and preparing the manuscript the Boston Society were to have the first series of specimens, the Maria Mitchell to have the second series and to publish the report.

The field work for 1926 was started June 23, with four days in the field, and a corresponding period in July (14-17), August (18-21), and September (13-16). In 1927 Mr. James H. Emerton accompanied me, and in his work of sifting and beating for spiders added many insects to the collection. The time spent in the field included parts of June (6-9 and 21-24), July (18-21), August (15-18), and September (13-16). In 1928 Mr. Emerton was again with me, collecting in June (21-26), July (24-27),

August (15-18), and September (11-14). Mr. Emerton also visited the Island in May and collected one day at Coskata. Mr. C. A. Frost was with us in September and collected a number of beetles. Mr. Sanford made a number of collecting trips to the Island and collected among other species the female of the horntail (*Sirex edwardsii*). In 1929 in company with Mr. Emerton I again collected in June (21-25), August (6-9), and September (7-11), this closing the field work on the Island. On many of these trips we were assisted by Mrs. Shurrocks, who also collected a number of other insects at various times. At Wannacomet Pond Mr. William H. Winslow collected a number of insects that came to the light. Through the kindness of Mr. O. D. Ingall we had a very pleasant and profitable day (June 23, '27) at his place at Shawkemo.

In collecting one soon discovers that certain species are often extremely local, especially is this true of the more austral species. Careful records were therefore kept of the exact place where each lot of insects was taken. Where only a few specimens of a species were collected, the exact locality and date of capture are given. Unless otherwise stated the species or specimen was taken by the writer. Polpis applies chiefly to the "Hidden Forest," a unique place, containing many trees and plants not found elsewhere and consequently yielding many interesting insects. At the Coleman Bird Sanctuary, most of the collecting was done in "The Woods" south of the camp. The swamp at Taupaushaw in the midst of the dry moor is like an oasis in a desert, and has yielded many interesting austral forms. Sacacha Pond refers only to its southwestern shore and immediate vicinity where I have collected. At Madeket collecting was confined to the shore and dunes east of the Life Saving Station and the marsh along Hither Creek. The locality Hummock Pond refers only to Upper Hummock Pond, otherwise the "woods east of Hummock Pond" in the locality mentioned. Surfside includes "Weeweder Pond," a similar depression to the west, and the adjacent pine woods. The woods near the head of Miacomet Pond is an interesting collecting ground. The Scotch pine and European larch planted there by Henry Coffin in 1876 are thriving, and to date no insects seem to be feeding on them. "The Creeks" applies to the marshes and shores at the southern part of the town.

The number of species and varieties recorded in each order:

| | |
|---|---|
| Orthoptera: Crickets, grasshoppers and locusts | 39 |
| Isoptera: Termites | 1 |
| Neuroptera: Lace wings, dobsons, etc. | 7 |
| Odonata: Dragon flies, damsel flies | 24 |
| Corrodentia: Psocids, book lice | 9 |
| Mallophaga: Biting Bird lice | 72 |
| Anoplura: Lice | 2 |
| Hemiptera: True bugs | 134 |
| Homoptera: Leaf hoppers, plant lice, etc. | 129 |
| Coleoptera: Beetles and weevils | 535 |
| Mecoptera: Scorpion flies | 1 |
| Trichoptera: Caddice flies | 11 |
| Lepidoptera: Butterflies and moths | 273 |
| Hymenoptera: Sawflies, wasps, bees, etc. | 494 |
| Siphonaptera: Fleas | 2 |
| Diptera: Flies, mosquitoes, and midges | 634 |
| | 2,317 |

With the exception of the Biting Bird-lice (*Mallophaga*) and the Bird-flies (*Hippoboscidae*), all of the records are based on species actually taken on the islands. To acquire actual records of the Mallophaga would necessitate the shooting of a large number of birds, the loss of which would not compensate for the little knowledge gained. As about 80 percent of the birds are infested by these parasites, a list of the species frequenting the more common birds of the islands, would represent the approximate number of species.

The number of species recorded gives a good general idea of the insect fauna. The list is really larger than I anticipated at the close of the first season's work. There are however many groups yet to be studied. If all the species could be determined and intensive collecting continued for several years possibly another thousand species could be obtained. It is like the making of books—To the collecting of insects there is no end.

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**E. longicorne** Piaget. On the double-crested cormorant.
**E. mergiserrati** DeG. On the red-breasted merganser.

## Order ANOPLURA

### Family PEDICULIDAE, Lice

#### **Pediculus** Linnaeus

**P. humanus** Linn. The louse of man.

### Family HAEMATOPINIDAE

#### **Polyplax** Enderlein

**P.** sp. Muskeget, June 18, 1926 (*F. Harper*). On the Muskeget mouse (*Microtus breweri*).

## Order HEMIPTERA, Bugs

### Family SCUTELLERIDAE

#### **Eurygaster** Laporte

**E. alternatus** Say. July 12 (*Morse*). Aug. 19 (*Cushman*).

### Family CYDNIDAE

#### **Galgupha** Amyot and Serville (*Thyreocoris* Schrank)

**G. unicolor** Pal. de Beauv. (*atra* Am. & Serv.). Common, June 22-Sept. 13.
**G. nitiduloides** Wolff. July 11 (*Morse*).

#### **Corimelaena** White

**C. lateralis** Fab. Maxcys Pond, June 25. Sacacha Pond, Aug. 16-19.
**C. pulicaria** Germ. Hummock Pond, Aug. 8.

#### **Amnestus** Dallas

**A. pallidus** Zimm. Fair grounds, June 23. Maxcys Pond, July 24.
**A. spinifrons** Say. June 2, 1926 (*Brooks*).

#### **Sehirus** Amyot and Serville

**S. cinctus** Pal. de Beauv. Grove Lane, July 20, on mint.

Family PENTATOMIDAE

**Podops** Palisot de Beauvois

**P. cinctipes** Say. July 11 (*Morse*). Sept. 15 (*Emerton*).

**Peribalus** Mulsant and Rey

**P. limbolarus** Stål. Coskata, May 17 (*Emerton*). July 11 (*Morse*). Sept., 1892 (*Henshaw*).

**Trichopepla** Stål

**T. semivittata** Say. July 4 (*Cushman*). Polpis, Aug. 6. Maxcys Pond, Sept. 13.

**Chlorochroa** Stål

**C. persimilis** Horv. (*uhleri* auct.). Sept. 17 (*Henshaw*).

**Mormidea** Amyot and Serville

**M. lugens** Fab. Common, July 11-Aug. 20.

**Euschistus** Dallas

**E. euschistoides** Voll. Common, June 23-Sept. 14. Tuckernuck, Aug. 6 (*Cushman*).

**E. tristigmus** Say. July 3 (*Cushman*).

**E. ictericus** Linn. Sept. 20 (*Adkins*). Tuckernuck, July 6 (*Cushman*).

**Coenus** Dallas

**C. delius** Say. July 4 (*Cushman*). The Creeks, Aug. 21.

**Acrosternum** Fieber (*Nezara* auct.)

**A. hilaris** Say. Polpis, Aug. 6, 1929.

**Banasa** Stål

**B. dimidiata** Say. Common, May 17-Sept. 14.

**Mineus** Stål

**M. strigipes** H.-S. Sept. 18, 1892 (*Henshaw*).

**Apateticus** Dallas

**A. bracteatus** Fitch. Common, Aug. 7-Sept. 13.

**Podisus** Herrick-Schaeffer

**P. maculiventris** Say. Common, June 8-Sept. 4.
**P. fretus** Ols. Wood on road to Taupaushaw, Aug. 17.

Family COREIDAE

**Merocoris** Perty

**M. distinctus** Dall. Sacacha Pond, Aug. 16, and Polpis, Aug. 17, 1929 (*Sanford*).

**Euthochtha Mayr**

**E. galeator** Fab. Common July 17-Sept. 11.

**Anasa** Amyot and Serville

**A. tristis** DeG., Squash Bug. Sept. 14, 1927.

**Protenor** Haglund

**P. belfragei** Hagl. Grove Lane, Aug. 9. Maxcys Pond, Aug. 18.

**Coriscus** Schrank (*Alydus* **Fab.**)

**C. eurinus** Say. Fair grounds, Aug. 8.
**C. pilosulus** H.-S. Common, July 4-Sept. 20.

**Harmostes** Burmeister

**H. reflexulus** Say. Common, June 24-Aug. 20. Tuckernuck, Aug. 5 (*Cushman*).

**Corizus** Fallén

**C. crassicornis** Linn. Maxcys Pond, Sept. 8.
**C. lateralis** Say. Common, July 12-Sept. 29.
**C. hirtus** Bno. Aug. 19, 1909 (*Cushman*).

Family NEIDIDAE

**Jalysus** Stål

**J. spinosus** Say. Common, July 11-Sept. 11, on Willow herb.

Family LYGAEIDAE

**Lygaeus** Fabricius

**L. kalmii** Stål var. **angustomarginatus** Parsh. Maxcys Pond, July 21. Hummock Pond, Aug. 8.
**L. bicrucis** Say. Woods near Surfside, July 23.

### Nysius Dallas

**N. ericae** Schill., False chinch Bug. Common, June 23-Aug. 8.

### Ischnorhynchus Fieber

**I. resedae** Panz. (*geminatus* Say). Aug. 16 (*Fernald*). Maxcys Pond, Sept. 8. Tuckernuck, Aug. 8 (*Cushman*).

### Cymus Hahn

**C. luridus** Stål. Common, June 23-Aug. 21. Tuckernuck, Aug. 5 (*Cushman*).

**C. angustatus** Stål. Grove Lane, June 21-Aug. 19 (*Cushman*).

**C. discors** Horv. Madeket, July 16. July 25 (*Cushman*).

### Ischnodemus Fieber

**I. falicus** Say. Common on salt marshes, June 24-Aug. 16. Tuckernuck, Aug. 6 (*Cushman*).

### Blissus Burmeister

**B. leucopterus** Say, Chinch Bug. June 25. Sept. 9 (*Fernald*).

### Geocoris Fullén

**G. bullatus** Say. July 11 (*Morse*). Hummock Pond, Aug. 8.

**G. uliginosus** Say. Fair grounds, June 23.

**G. uliginosus** var. **limbatus** Stål. Sept. 9 (*Fernald*).

### Phlegyas Stål

**P. abbreviatus** Uhl. Fair grounds, June 23. July 11 (*Fernald*).

### Ligyrocoris Stål

**L. diffusus** Uhl. Common, June 21-Sept. 9.

### Cnemodus Herrick-Schaeffer

**C. mavortius** Say. Woods on way to Taupaushaw, Sept. 29 (*Sanford*).

### Ozophora Uhler

**O. picturata** Uhl. Coskata, May 17 (*Emerton*). Polpis, June 25.

### Peritrechus Fieber

**P. fraternus** Uhl. Coskata, May 17, and The Creeks, May 19 (*Emerton*). Sacacha Pond, June 24. Aug. 19 (*Cushman*).

**Emblethis** Fieber

**E. vicarius** Horv. Maxcys Pond, June 21 (*Emerton*).

**Eremocoris** Fieber

**E. ferus** Say. Fair grounds, July 17.

Family TINGITIDAE

**Corythucha** Stål

**C. ciliata** Say. Aug. 19 (*Cushman*).
**C. pergandei** Heid. Tuckernuck, Aug. 5 (*Cushman*).
**C. juglandis** Fitch. Tuckernuck, Aug. 5 (*Cushman*).

**Melanorhopala** Stål.

**M. clavata** Stål. Grove Lane, July 20, 1927.

Family PHYMATIDAE

**Phymata** Latreille, Ambush Bugs

**P. erosa wolffi** Stål. Common, Aug. 6-Sept. 8.
**P. vicina** Handl. July 4, 1905 (*Cushman*).

Family REDUVIIDAE, Assasin Bugs

**Empicoris** Wolff (*Ploiariola* Reuter)

**E. vagabunda** var. **pilosa** Fieb. (*hirtipes* Banks). Aug. 21 (*Fernald*).

**Metapterus** Costa

**M. uhleri** Banks. July 11 (*Morse*).

**Zelus** Fabricius

**Z. exsanguis** Stål. Nymph. Taupaushaw, Aug. 17.

**Sinea** Amyot and Serville

**S. diadema** Fab. Common, Aug. 16-Sept. 20.

**Fitchia** Stål

**F. aptera** Stål (*nigrovittata*). Maxcys Pond (*Royal E. Robbins*).

Family NABIDAE

**Nabis** Latreille

**N. propinquus** Reut. Cupaum Pond, Aug. 17 (*Sanford*). Maxcys Pond, Sept. 8. Tuckernuck, Aug. 6 (*Cushman*).

**N. ferus** Linn. June 23-Aug. 8. Tuckernuck, Aug. 6 (*Cushman*).
**N. roseipennis** Reut. Oct. 8, 1925 (*Brooks*).
**N. rufusculus** Reut. Coskata, May 17 (*Emerton*). Polpis and Maxcys Pond, Sept. 13.

### Family CIMICIDAE

#### **Cimex** Linnaeus

**C. lectularius** Linn., The Bedbug.

### Family ANTHOCORIDAE

#### **Orius** Wolff (*Triphleps* Fieber)

**O. insidiosus** Say. Maxcys Pond, June 25. Hummock Pond, Aug. 8. Taupaushaw, Aug. 17.

### Family MIRIDAE, Leaf Bugs

#### **Chlamydatus** Curtis

**C. associatus** Uhl. Aug. 22 (*Fernald*).

#### **Microphylellus** Reuter

**M. longirostris** Kngt. Sacacha Pond, July 19.

#### **Plagiognathus** Fieber

**P. chrysanthemi** Wolff. Maxcys Pond, July 16, 1926.

#### **Psallus** Fieber

**P. morrisoni** Kngt. Taupaushaw, Aug. 17, 1927.

#### **Rhinocapsus** Uhler

**R. rubricans** Prov. Sacacha Pond, Aug. 19, 1926.

#### **Lopus** Hahn

**L. decolor** Fall. Common, June 23-July 14.

#### **Orectoderus** Uhler

**O. obliquus** Uhl. July 11 (*Morse*).

#### **Coquillettia** Uhler

**C. mimetica** Osborn. July 11 (*Morse*), Surfside, July 25. Taupaushaw, Aug. 17 (*Emerton*).

**Hyaliodes** Reuter

**H. vitripennis** Say. Polpis, Aug. 6 and Sept. 13.

**Cyrtorhinus** Fieber

**C. vagus** Kngt. Aug. 6 (*Cushman*).
**C. caricis** Kngt. Aug. 6 (*Cushman*).

**Diaphnidia** Uhler

**D. pellucida** Uhl. Taupaushaw, Aug. 7, 1929.

**Pilophorus** Westwood

**P. amoenus** Uhl. Fair grounds, Aug. 8, 1918.
**P. vanduzeei** Kngt. Woods on road to Taupaushaw, on pine. Aug. 17 (*Emerton*). Surfside, Aug. 8, 1929.

**Pithanus** Fieber

**P. maerkelii** H.-S. Polpis, on grass, July 27.

**Collaria** Provancher

**C. oculata** Reut. July 11 (*Morse*).

**Miris** Fabricius

**M. dolabratus** Linn. Common, June 23-July 11.

**Trigonotylus** Fieber

**T. uhleri** Reut. Polpis, July 27. The Creek marshes, July 21.
**T. ruficornis** Geoff. July 4 (*Cushman*). July 11 (*Morse*).

**Mesomiris** Reuter

**M. curtulus** Reut. On tall grass, Sacacha Pond, Aug. 19.

**Stenoderma** Laporte

**S. trispinosum** Reut. June 24.
**S. vicinum** Prov. Maxcys Pond, Aug. 18.

**Platytylellus** Reuter

**P. circumcinctus** Say. Taupaushaw, July 25-Aug. 17.

**Capsus** Fabricius

**C. ater** Linn. Polpis, July 27.
**C. ater** var. **tyrannus** Fab. Fair grounds. June 23. Hidden forest, July 27.
**C. ater** var. **semiflavus** Linn. One specimen, Polpis, July 27.

### Lygus Hahn

**L. pratensis** L. var. **oblineatus** Say, Tarnish Plant-bug. Common, July 27-Aug. 19.
**L. pratensis** var. **rubrosignatus** Kngt. July 14-Aug. 9. Tuckernuck, Aug. 5 (*Cushman*).
**L. pratensis** var. **strigulatus** Walk. July 20.
**L. pabulinus** Linn. July 11 (*Morse*).
**L. apicalis** Fieb. Polpis, Aug. 6. Sacacha Pond, Aug. 16.
**L. (Neolygus) belfragii** Reut. Maxcys Pond, July 14.
**L. (Neolygus) communis** Kngt. Madaket, July 16.
**L. (Neolygus) hirticulus** VanD. Polpis, Aug. 6.

### Polymerus Hahn

**P. basalis** Reut. Common, June 23-July 11.

### Poecilocapsus Reuter

**P. lineatus** Fab. Common, July 16-21.

### Adelphocoris Reuter

**A. rapidus** Say. Common, July 20-Aug. 16. Tuckernuck, Aug. 5 (*Cushman*).

### Calocoris Fieber

**C. norvegicus** Gmel. Common, The Creek and Grove Lane, June 23 and July 20.

### Paracalocoris Distant

**P. colon** Say. Taupaushaw, Aug. 17, 1927.

### Neurocolpus Reuter

**N. nubilus** Say. Common, July 4-Aug. 18.

### Phytocoris Fallén

**P. eximius** Reut. Polpis, Aug. 6 and Sept. 13.
**P. pallidicornis** Reut. Taupaushaw, Aug. 17, Aug. 19, 1909 (*Cushman*).
**P. antennalis** Reut. The Creeks, Aug. 21, 1926.

## Family GERRIDAE

### Gerris Fabricius, Water-striders

**G. marginatus** Say. Tom Nevers Pond, June 22. Sacacha Pond, June 24.
**G. buenoi** Kirk. No Bottom Pond, June 21, 1927.

Family VELIIDAE

**Microvelia** Westwood, Small Water-striders

**M. albonotata** Champ. Shawkemo Creek, June 18, 1929 (*Emerton*).

Family SALDIDAE

**Pentacora** Reuter

**P. sphacelata** Uhl. The Creek, June 23. Muskeget, July 11 (*Brooks*).

**Salda** Linnaeus

**S. ceriacea** Uhl. The Creek, marshes, June 22-24 (*Emerton*).

**Saldula** Van Duzee

**S. major** Prov. Sacacha Pond, June 24, 1926.

**S. interstitialis** Say. Common on the shores of ponds, July 16-Sept. 10.

**S. separata** Uhl. July 12 (*Morse*).

**Micracanthia** Reuter

**M. humilis** Say. Marshes of The Creek, June 23 (*Emerton*). Muskeget, July 11 (*Brooks*). Maxcys Pond, July 26.

Family NOTONECTIDAE

**Notonecta** Linnaeus, Back Swimmers

**N. variabilis** Fieb. Maxcys Pond, June 7. No bottom Pond, Sept. 8.

**N. undulata** Say. Tom Nevers Pond, June 22. Maxcys Pond, Sept. 8.

**Buenoa** Kirkaldy

**B. elegans** Fied. Maxcys Pond, Aug. 18, 1926.

Family NAUCORIDAE

**Pelocoris** Stål

**P. femoratus** Pal. de Beauv. Common, Maxcys Pond, June 6-Sept. 8, nymphs and adults.

Family NEPIDAE

**Nepa** Linnaeus

**N. apiculata** Uhl., Water Scorpion. Nantucket (*Henshaw*). Nymph, Capaum Pond, Aug. 17, 1929 (*Sanford*).

Family BELOSTOMATIDAE

**Belostoma** Latreille

**B. flumineum** Say. Maxcys Pond, June 7. Upper Hummock Pond, June 25, male with eggs on its back. Tom Nevers Pond, Aug. 26 (*Sanford*). Sacacha Pond, Sept. 12 (*Emerton*).

Family OCHTERIDAE

**Ochterus** Latreille

**O. americanus** Uhl. Shawkemo Creek, June 18, 1929 (*Emerton*). Nymphs.

Family CORIXIDAE, Water Boatman

**Arctocorixa** Wallgren

**A. interrupta** Say. Maxcys Pond, Sept. 8.
**A. kennicottii** Uhl. Maxcys Pond, Sept. 8.
**A. seriata** Abb. Maxcys Pond, July 14.
**A. macropala** Hgfd. Maxcys Pond, July 14.

**Palmacorixa** Abbott

**P. buenoi** Abb. Maxcys Pond, June 17.

Order HOMOPTERA, Leaf Hoppers

Family CERCOPIDAE

**Monecophora** Amyot and Serville

**M. bicincta** var. **ignipecta** Fitch. Polpis, Aug. 6.

**Aphrophora** Germar

**A. quadrinotata** Say. July 11 (*Morse*). Aug. 16-Sept. 13.
**A. parallela** Say, Pine Spittle Bug. Common, Aug. 17-Sept. 8.
**A. saratogensis** Fitch. July 11 (*Morse*). Aug. 9-Sept. 14. On pine.

**Lepyronia** Amyot and Serville

**L. quadrangularis** Say. Polpis, Aug. 6.

**Philaronia** Ball

**P. bilineata** Say. July 4, July 11 (*Morse*). Sacacha Pond, Aug. 16.

**Philaenus** Stål

P. lineatus Linn., "Grass Spittle Bug". Common, July 4-Sept. 17.

**Clastoptera Germar**

C. **proteus** Fitch. July 11 (*Morse*).
C. **proteus** var. **saint-cyri** Prov. Sacacha Pond, Aug. 19.
C. **proteus** var. **hyperici** Mcatee. Sacacha Pond, July 19-Aug. 19.

Family MEMBRACIDAE

**Ceresa** Amyot and Serville

C. **diceros** Say. Polpis, Aug. 6. Sacacha Pond, Aug. 19.
C. **bubalus** Fab., Buffalo Tree-hopper. Sacacha Pond, Aug. 19. Taupaushaw, Sept. 7.

**Stictocephala** Stål

S. **lutea** Walk. Common, June 23-July 11. On oak.

**Telamona** Fitch

T. **extrema** Ball. Maxcys Pond, Taupaushaw and Polpis, Aug. 7-Sept. 13. On oak.

**Archasia** Stål

A. **galeata** Fab. Taupaushaw and Polpis, July 25-Sept. 13. On oak.

**Cyrtolobus** Goding

C. **puritanus** Woodf. July 11 (*Morse*). Taupaushaw and Polpis, July 27-Aug. 17. On oak.

**Ophiderma** Fairmaire

O. **flavicephala** Goding. Polpis, Aug. 6. On oak.

**Campylenchia** Stål

C. **latipes** Say (*curvata* Stål.). Common, July 4-Aug. 19.

Family CICADELLIDAE

**Agallia** Curtis

A. **novella** Say. Sacacha Pond, July 19.
A. **quadripunctata** Prov. Polpis, June 25. July 11 (*Morse*).
A. **sanguinolenta** Prov. May 10 (*Brooks*). Polpis, Aug. 5.

**Idiocerus** Lewis

I. **provancheri** Van D. Taupaushaw, Aug. 17-Sept. 14.

**Oncopsis** Burmeister

O. **nigrinasi** Fitch. Polpis, Aug. 6, 1929.

**Cicadella** Latreille

**C. gothica** Sign. Polpis, Sept. 13.

**Helochara** Fitch

**H. communis** Fitch. Common, June 22-Sept. 8.

**Graphocephala** Van Duzee

**G. coccinea** Forst. Polpis, July 27-Aug. 16.
**G. coccinea** var. **teliformis** Walk. Polpis, Aug. 6.

**Draeculacephala** Ball

**D. mollipes** Say. Sacacha Pond, July 11-Aug. 19.
**D. minor** Walk. July 12 (*Morse*).

**Penthimia** Germar

**P. americana** Fitch. Common, June 15-25. July (*Morse*).

**Gypona** Germar

**G. octolineata** var. **striata** Burm. Common, Aug. 19. Sept. 14, 1892 (*Henshaw*).

**Acucephalus** Germar

**A. nervosus** Schrank. Common, Aug. 6-Sept. 13.
**A. albifrons** Linn. Maxcys Pond, June 21, Aug. 9. Polpis, July 27.

**Xestocephalus** Van Duzee

**X. brunneus** Van D. Tom Nevers, June 22. Polpis, July 27.

**Hecalus** Stål

**H. lineatus** Uhl. Common in salt marshes. Aug. 6-19.

**Scaphoideus** Uhler

**S. auronitens** Prov. Hummock Pond, Sept. 9-13.
**S. immistus** Say. Polpis, Aug. 6. Hummock Pond, Aug. 8.
**S.** sp. Hummock Pond, Aug. 8.

**Platymetopius** Burmeister

**P. acutus** Say. Common, June 23-Sept. 13.
**P. angustatus** Osb. Polpis, Aug. 6. Woods on the way to Taupaushaw, Aug. 17.
**P. fulvus** Osb. Polpis, Aug. 6. Taupaushaw, Sept. 14.
**P. magdalensis** Prov. Polpis, Aug. 6.

**Deltocephalus** Burmeister

**D. inimicus** Say. Maxcys Pond, July 16.
**D. obtectus** O. and B. Grove Lane, June 21. July 16 (*Brooks*). Polpis, Aug. 6.
**D. sandersi** Osb. July 11 (*Morse*). Polpis, Aug. 6.
**D. littoralis** Ball. The Creeks, June 22, 23.

**Euscelis** Brullé

**E. anthracinus** Van D. Sacacha and Maxcys Ponds, July 19 and 26.
**E. arctostaphyli** Ball. Common, July 4-Aug. 17.
**E. deceptus** S. and DeL. July 4 (*Cushman*).
**E. extrusus** Van D. July 11 (*Morse*).
**E. vaccinii** Van D. Common, July 4-Sept. 14.
**E. relativus** G. and B. July 12 (*Morse*).

**Ophiola** Edwards

**O. osborni** Ball. July 12 (*Morse*). Taupaushaw, Aug. 17.
**O. striatula** Fall. Taupaushaw, Aug. 17.

**Eutettix** Van Duzee

**E. cinctus** O. and B. Taupaushaw, Sept. 14.

**Phlepsius** Fieber

**P. fuscipennis** Van D. July 30.
**P. irroratus** Say. July 12 (*Morse*). Taupaushaw, Aug. 7.

**Thamnotettix** Zetterstedt

**T. nigrifrons** Forbes. Maxcys and Sacacha Ponds, June 22 and July 19.
**T. brittoni** Osb. Small var. Fair grounds, July 17.
**T. smithi** Van D. Tom Nevers, June 22.

**Chlorotettix** Van Duzee

**C. unicolor** Fitch. Fair grounds, Aug. 8. Sacacha Pond, Aug. 19.

**Cicadula** Zetterstedt

**C. sexnotata** Fall. Common, June 23-Aug. 21.
**C. divisa** Uhl. Taupaushaw, Aug. 7.

**Balclutha** Kirkaldy

**B. impicta** Van D. Fair grounds, June 23.
**B. osborni** Van D. Polpis, Aug. 6.

**Empoasca** Walsh

**E. fabae** Harr. Taupaushaw, Aug. 17.
**E. obtusa** Walsh. Taupaushaw, Aug. 17.
**E. flavescens** Fab. Fair grounds, July 17.

**Typhlocyba** Germar

**T.** sp. Taupaushaw, July 25.

**Empoa** Fitch

**E. rosae** Linn., Rose Leaf-hopper. Polpis, Aug. 6.
**E. commisuralis** Stål. Polpis, Sept. 11.

**Erythroneura** Fitch

**E. comes** Say., Grape Leaf-hopper. Maxcys Pond, Sept. 13.
**E. trifasciata** Say. Polpis, Sept. 11.
**E. tecta** McAtee. Polpis, Sept. 11.

Family **FULGORIDAE**

**Cixius** Latreille

**C. basalis** Van D. Sacacha Pond, July 19.

**Oliarus** Stål

**O. franciscanus** Stål. Taupaushaw, July 25, Aug. 5.

**Kelisia** Fieber

**K. crocea** Van D. Maxcys Pond, July 24. Sacacha Pond, Aug. 19.

**Megamelanus** Ball

**M. terminalis** Metc. The Creeks, Aug. 21, 26.

**Prokelisia** Osborn

**P. marginata** Van D. The Creeks, July 19.
**P. setigera** Osb. The Creeks, Aug. 21, 26.

**Pissonotus** Van Duzee

**P. pallipes** Van D. Tom Nevers, July 22, 1929.

**Delphacodes** Fieber (*Liburnia* Stål)

**D. campestris** Van D. Common, June 24-Aug. 8.
**D. lateralis** Van D. Polpis, July 27 (*Emerton*).
**D. basivitta** Van D. July 11 (*Morse*).
**D. lineatipes** Van D. Maxcys Pond, July 21.
**D. puella** Van D. Shawkemo, June 24.

Family CHERMIDAE (*Psyllidae*), Jumping Plant-lice

**Livia** Latreille

**L. maculipennis** Fitch. June 25-July 19. The nymphs develop in a gall formed on rush (*Juncus*).

**Trioza** Foerster

**T. tripunctata** Fitch., Blackberry Louse. The nymph lives on the under side of the terminal leaves of the blackberry, causing them to curl and form rosette-like bunches.

**Psylla** Geoffroy (*Psyllia* Kirkaldy)

**P. quadrilineata** Fitch. June 25-Sept. 13.

**Arytaina** Foerster

**A. genistae** Latr. Woods on road to Taupaushaw, June 26, 1928.

Family APHIIDAE, Plant-lice

**Eriosoma** Leach

**E. americanum** Riley, The Elm Leaf-curl Aphid. On elms in the town.

**Pemphigus** Hartig

**P. populicaulis** Fitch., Basal Leaf-gall. On poplar, Taupaushaw.

Family PHYLLOXERIDAE

**Adelges** Linnaeus

**A. abietis** Linn., Spruce-gall Aphid. On spruce in the yard of Mr. Sidney Chase.

Family COCCIDAE, Scale Insects

**Lecanium** Burmeister

**L. nigrofasciatum** Perg., Terrapin Scale. Taupaushaw, Aug. 17.

**Aulacaspis** Cockerell

**A. rosae** Bouché, Rose Scale. On rambler rose at Library, Sept. 9.

**Lepidosaphes** Shimer

**L. ulmi** Linn., Oyster-shell Scale. On various trees and shrubs.

## Order COLEOPTERA, Beetles

### Family CICINDELIDAE, Tiger beetles

#### **Cicindela** Linnaeus

**C. purpurea** Oliv. May 7 (*Brooks*). June 23-Sept. 19.
**C. repanda** Dej. Common, June 24-Oct. 8.
**C. hirticollis** Say. Surfside, Sept. 12 (*Frost*).
**C. hirticollis** var. **rhodensis** Cald. Surfside, Sept. 9 and 12 (*Frost*).
**C. tranquebarica** Hbst. (*vulgaris* Say). Aug. 9, Sept. 11-12 (*Frost*).
**C. scutellaris** var. **rugifrons** Dej. June 1 (*Brooks*). Maxcys Pond, Sept. 8. Surfside, Sept. 11 (*Frost*).
**C. sexguttata** Fabr. Fair grounds, June 23.
**C. punctulata** Oliv. Common, July 20-Sept. 11.
**C. dorsalis** Say. Aug. and Sept. 1832 (*Harris*). July 20 (*Cushman*). Surfside, Aug. 20, 1926. Wauwinet (*Royal E. Robbins*).

### Family CARABIDAE, Ground Beetles

#### **Scaphinotus** Dejean

**S. elevatus** Fab. Wannacomet Pond, Aug. 7, 1929 (*Helen L. Winslow*).

#### **Carabus** Linnaeus

**C. serratus** Say. Maxcys Pond, July 24.
**C. nemoralis** Linn. On Pearl St., Sept. 8, 1929.
**C. sylvosus** Say. Maxcys Pond, Sept. 15, 1929 (*Emerton*).

#### **Calosoma** Weber

**C. scrutator** Fab. "Nantucket" (*Dr. W. S. Bigelow*).
**C. willcoxi** Lec. "Nantucket" (*Dr. W. S. Bigelow*).
**C. calidum** Fab. May 8, 1926 (*Brooks*). The Creeks, June 23-Aug. 6.
**C. sycophanta** Linn. Surfside (*Royal E. Robbins*).

#### **Scarites** Fabricius

**S. subterraneus** Fab. Common, June 7-July 21.

#### **Bembidion** Latreille

**B. tetracolum** Lec. "Nantucket" (*Dimmock*). Grove Lane, June 22.

## ERRATA

Page 49. **Enoclerus** Gohan should read **Enoclerus** Gahan.
Page 55. **Brachycantha** Chevrolat should read **Brachyacantha** Chevrolat.
Page 63. **Disconycha** Chevrolat should read **Disonycha** Chevrolat
Page 69. **Palenomus** Thomson should read **Pelenomus** Thomson
Page 70. **Agrypina** Curtis should read **Agrypnia** Curtis.
Page 77. **Canarsai** Hulst should read **Canarsia** Hulst.
Page 79. **Vitrinelle** McDunnough should read **Vitrinella** McDunnough.
Page 123. **M. perturbans** Walk should read **T. perturbans** Walk.
Page 127. Family TABINIDAE should read Family TABANIDAE.
Page 151. **Themia** R.-Desvoidy should read **Themira** R.-Desvoidy

## ADDENDUM

Order HEMIPTERA

Family REDUVIIDAE

**Pygolampis** Germar

**P. pectoralis** Say, Maxcys Pond, June 20, 1930, (*Emerton*).