

## NOTES ON ELACHISTA WITH DESCRIPTIONS OF NEW SPECIES (MICROLEPIDOPTERA.)

ANNETTE F. BRAUN.

In the present paper, five new species of *Elachista* are described, four of which were reared from mines. The life histories of two other species are here recorded for the first time. As the life histories of so few of the previously described species are known, a revision of the genus as a whole will better be delayed until the life histories of more of these species and of a number of new species represented by captured specimens in the writer's collection are worked out.

Of the new species described below, all except *E. argentosa* agree in venation with the figure given by Meyrick, Handbook of British Lepidoptera, p. 664. In *E. argentosa* veins 2, 3 and 4 of the fore wing arise opposite the space between veins 9 and 10, as in *E. madarella* Clemens, to which it is closely allied in all other respects. The venation of the hind wing is the same as that of the other species described.

Most of the species of the genus are single-brooded. A search for mines from March to May on leaves of grasses and sedges is sure to result in interesting discoveries. Many larvæ which feed on the basal overwintering leaves begin to mine in the autumn, completing their growth early in the spring. Some species are strictly confined to one species of grass as a food plant, and in some instances to certain parts of the plant.

The pupæ present very reliable specific characters. Two species with quite similar imagoes may have strikingly different pupæ. There are two general types of pupæ in the genus, the extremes of which are quite sharply distinguished from one another. In one of these, represented by *E. pralineata* Braun, which is figured by Miss Mosher,\* the body is stout, and from the dorsal view ovate in general outline with the lateral margins of the abdomen curving posteriorly to the anal end. In this type the cuticle is shining throughout. Examples among the species below are *E. orestella*, *E. albicapitella*, and *E. argentosa*.

---

\* A Classification of the Lepidoptera based on Characters of the Pupa, Bull. Ill. State Lab. Nat. Hist., Vol. XII, Art. II, 1916, Plate XXVI, Fig. 100.

In the other type of pupa, the body is slender with the dorsum of the first three abdominal segments depressed and the median ridge here low. From the dorsal view, the abdomen is elongate and gradually tapering with its lateral margins almost straight, and lateral ridges more prominent. In this type, the pupa is dull, pale, of opaque appearance, sometimes shining chitinous toward head. Examples are *E. leucofrons*, *E. sylvestris* and *E. irrorata*. The tubercles which reach an extreme development in *E. praelineata*, are usually minute or absent on the wings, smaller on the head, and only very prominent on the sides of the mesothorax. There are in certain species pointed projections from the lateral ridges of the abdomen. In general, the tubercles are most conspicuous in the first type of pupa. As is apparent from the descriptions of the imagoes below, a grouping of the species on imaginal characters would not coincide with a separation on pupal characters.

The types of the new species described below are at present in the writer's collection.

***Elachista argentosa* n. sp.**

Face and head silvery gray, with a bluish metallic luster, palpi silvery gray inwardly, fuscous beneath and outwardly; antennæ deep blackish brown throughout. Thorax deep golden brown, shading to metallic gray behind. Fore wings almost black with faint golden brown reflections in some lights; markings bluish metallic silvery. Base of wing bluish metallic silvery; a fascia just before middle produced a little toward tornus on dorsum; opposite costal and dorsal streaks at two-thirds, the costal curving outwardly in the middle of the wing and sometimes slightly dilated at its tip before apex, and rarely met by the dorsal streak; cilia dark brown. Hind wings broad, grayish brown, becoming bluish along costa near base. Legs silvery gray, middle tibiæ and all the tarsi dark brown, with tips of segments silvery. Abdomen shining fuscous. Expanse: 7-7.5 mm.

Type (♂) and two paratypes, both males, reared from larvæ mining a narrow-leaved *Carex*, Clermont County, Ohio, imagoes June 1-3; two captured specimens, male and female, Cincinnati, Ohio, June 7 and 23.

The mined leaves of *Carex* were collected May 3. The mine extends from the tip of the leaf downward, lying nearer the upper epidermis, and the parenchyma is mostly consumed. The epidermis of the mine near the point of exit, which always lies over the midrib, is slightly wrinkled. Earlier portions of the mine often extend beyond this point toward the base of the leaf, but

the epidermis is nowhere else wrinkled. The pupa is surrounded by a very open irregular network. It belongs to the stout ovate shining chitinous type. There are rows of minute tubercles on dorsum of mesothorax, prominent tubercles on sides of mesothorax, faint lines of tubercles on the wings, and prominent tubercles on front of head.

Allied to *E. madarella* Clem. with which it agrees exactly in venation and breadth of hind wing. The dilated portion of the costal streak before the apex almost corresponds in position with the pale golden spot "in the middle of the wing before the tip" in that species.

***Elachista sylvestris* n. sp.**

Face and head silvery gray, with a slight yellowish tinge, shading to golden brown behind; palpi silvery, with the lower and outer surface of second segment blackish, third segment toward apex with a little black outwardly. Antennæ blackish brown, apical fifth whitish in both sexes. Thorax and fore wings blackish brown with a faint golden brown luster; the tips of tegulæ and tip of mesothorax silvery; a silvery patch at base of wing broadest on dorsum; a nearly straight almost perpendicular slightly irregular silvery fascia just before middle; a silvery tornal spot reaching middle of wing and a costal silvery spot a little beyond it reaching to or slightly beyond the middle of the wing and curving a little outwardly in the middle of the wing; cilia dark brown. Hind wings and cilia dark brown. Legs dark brown, tips of segments silvery and a silvery band around basal third of hind tibiæ. Abdomen dark brown above, silvery beneath. Expanse: 8-8.5 mm.

Type (♂) and twenty-two paratypes (7 ♂'s and 15 ♀'s), reared from larvæ mining leaves of *Poa sylvestris*, Cincinnati and vicinity, imagoes May 30 to June 6.

The mines are found upon the stem leaves of the grass in May. The early inconspicuous mine,  $1\frac{1}{2}$  to 2 inches long, lies along the margin of the leaf. The larva leaves this mine, and enters a leaf at its tip, making a white mine about three inches long extending entirely across the leaf, in which the parenchyma is entirely consumed. As no empty egg-shells were found on any of the mined leaves, the moth soon after emerging presumably deposits the eggs at the base of the plant, and the young larvæ do not hatch until the following spring, when they crawl up the flowering stems. Larva entirely pale yellow. Pupa without cocoon, of the slender elongate type, pale yellow, opaque, shining chitinous only toward head; with irregular projecting tubercles on mesothorax.

***Elachista albicapitella*** Engel.

In the latter half of March, overwintering leaves near the base of the stems of tufts of *Poa sylvestris* were found mined by larvæ of this species. At this time most of the larvæ were full grown and preparing to pupate. In the early part of the mine, the parenchyma is partially consumed, later the leaf blade becomes rather inflated and almost all the parenchyma is eaten. The larva often mines down into the sheath leaving it to enter another leaf. The leaves attacked are those nearest the base of the stem and are usually reddish. The larva doubtless begins mining in the preceding autumn.

Larva pale yellowish, first thoracic segment with two rather broad dorsal stripes sometimes nearly confluent, becoming darker posteriorly and each ending in a black spot, the spots sometimes confluent on the posterior border of the segment; mid-dorsal line whitish. A slight silken cocoon is spun of threads placed transversely to the pupa, which is of the stout ovate type, with prominent rounded tubercles on the sides of the mesothorax.

The moths appear in May following a warm early spring or in June if the season is less advanced. In this species the wing markings, although shining white, lack the silvery luster of *E. sylvestris*.

***Elachista leucofrons*** n. sp.

Head blackish, slightly irrorated, with a creamy white patch across the face below base of antennæ, sometimes covering the whole face below the antennæ; palpi black below and at extreme apex, white above, the white completely encircling the base of the third segment; antennæ fuscous annulate with gray. Thorax blackish, with tips of tegulæ white; fore wings blackish, slightly irrorated, the irroration sometimes forming faint whitish lines of which two, one below and one above the fold and parallel with it, are most often discernible. Wing from extreme base of costa across to dorsum narrowly white; an irregular narrow white fascia at one-third, oblique in its costal half, nearly perpendicular in its dorsal half; an erect narrow white spot at tornus, and nearer apex, a similar costal spot, in one specimen nearly obsolete; a distinct row of black atoms forming a line at base of the grayish black cilia. Hind wings and cilia dark blackish brown. Legs except femora blackish, with tips of all segments and basal half of hind tibiæ, whitish. Abdomen blackish brown above, entire body silvery beneath. Expanse: 9-10 mm.

Type (♂) and five paratypes reared from larvæ mining leaves of *Hystrix patula*, Cincinnati, Ohio; imagoes May 3-12; one captured specimen May 23.

The larvæ mine the basal overwintering leaves from October or November until April of the succeeding spring. The following description is made from mines collected in the latter part of March, when the larvæ were nearly full grown. The mine is grayish, extending from the tip of the leaf-blade downward and broadening somewhat below. At about the middle of the mine the true upper epidermis of the leaf, which in this grass faces downward, due to a twisting of the leaf, is wrinkled, drawing the leaf into a fold. When the winter leaves have been frozen, new mines are made in the spring. Larva grayish, first thoracic segment with two indistinct brownish dorsal stripes, each ending in a black spot at the posterior margin of that segment. Pupa not enclosed in a cocoon, but attached flat to the leaf, with head upward; of the slender, elongate type, yellowish gray, not shining chitinous; with low rounded tubercles on the sides of the mesothorax, and small, rounded tubercles on the front of the head.

This species in its early stages may be distinguished from *E. orestella* Bsk. which makes a similar mine on the same grass, by the grayish color of the mine and larva and by the different character of the pupa. The imagoes are separated from *E. albicapitella* Engel by the absence of white on the crown, the peculiar markings of the palpi and the duller white of the wing markings.

***Elachista irrorata* n. sp.**

Head dark gray, densely speckled with black; palpi black beneath, gray above; antennæ black. Thorax and fore wings dark gray, so densely speckled with black that the general aspect is nearly black; a narrow irregularly indented white fascia just beyond one-third the wing length; just beyond apical third, an oblique white streak reaching the middle of the wing, and opposite it a small white dorsal spot. Cilia dark gray, almost black, with a black line of scales at the base. Hind wings gray, densely and evenly irrorated with black; cilia grayish black. Legs blackish with the tips of segments and a rather broad band near the base of the hind tibiæ white. Abdomen dark gray above, becoming pale gray toward median line beneath. Expanse 8.2 mm.

Type (♀) reared from a larva mining a leaf of *Agrostis perennans*, Hazelwood, Ohio; imago July 22. Most of the parenchyma in the leaf-blade was consumed, leaving it yellowish and curled. Pupa attached to leaf with a few irregularly placed strands of silk, of the slender elongate type, very similar

to that of *E. leucofrons*, but with slight differences in the mesothoracic tubercles.

The dark head and palpi, lusterless white markings, and dark apex and cilia separate this species from other similarly marked species.

***Elachista cana* n. sp.**

Head white; palpi white, shaded with fuscous beneath; antennæ whitish at base, becoming dark fuscous toward tip. Thorax and fore wings dull whitish. Base of costa fuscous; wing slightly dusted with pale ochereous fuscous-tipped scales, which, when not too sparse, are seen to be arranged in three lines, one below costa from basal third and running into the cilia at apical third, a second along middle of fold and passing upward and outward nearly to apex, a third below the fold and running into it near the margin. Apex of the wing sometimes faintly ochereous tinged and with a few microscopic black specks in the extreme apex. Hind wings pale gray, cilia darker. Legs white, tarsi fuscous. Abdomen fuscous above, white beneath. Expanse: 8.5-9.5 mm.

Type (♂) and two paratypes, males, Tolland, Colorado, 9,000 feet, August 10 (E. Lucy Braun, collector).

***Elachista orestella* Busck.**

The larva of this species mines the basal overwintering leaves of *Hystrix patula*, from October or November to May of the following spring. The mine at first lies near the upper epidermis (in *Hystrix* facing downward), which is drawn together, bending the leaf into a fold. Along this fold, 3 or 4 cm. in length, the parenchyma is not consumed, except when the larva nears maturity. Later the mine broadens out, and becomes several inches long. The larva occasionally makes a new mine, entering the leaf at the tip and mining downward. Larva pale yellowish, first thoracic segment with two rather broad dorsal stripes, becoming darker posteriorly and each ending in a black spot; mid-dorsal line of body whitish. Pupa suspended in a very slight cocoon, of the stout ovate type, four mesothoracic tubercles rather prominent.

Cincinnati, Ohio.