

## Notes on Hawaiian Lepidoptera, with Descriptions of New Species

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Notes are herewith presented on a few of the Hawaiian moths whose food habits have recently been discovered, or had not been previously recorded. Some of these moths are new species and are here described. Holotypes in the collection of the Hawaiian Entomological Society; paratypes, where available, in the Bishop Museum.

### Family CARADRINIDAE

*Aletia ferruginea* n. sp. Plate 13, Fig. 1.

Male. 48 mm. Nearly uniformly ferruginous throughout, head, palpi and thorax darker; antennae ochreous, feebly serrate. Prothoracic crest slightly tipped with whitish. Thorax clothed mostly with hair and hairlike scales. Forewings elongate-triangular, costa nearly straight, termen oblique, nearly straight, tornus evenly rounded; ferruginous, with a large triangular patch with fuscous suffusion occupying a large proportion of disc, its base a little internal from mid  $3/5$  of costa and apex, approaching dorsum near middle; this triangular area bordered by a suffusion of white scales. An oblique wide bar of white suffusion in cell at discocellulars with a slight narrow extension basally at dorsal end. Terminal fourth of wing with some fuscous suffusion traversed by a subterminal line of white scales parallel to the termen; along termen a slight suffusion of white scales. Cilia yellowish ferruginous. Hindwings light ferruginous with a sprinkling of fuscous scales, a fuscous discal spot and postmedian fuscous line; cilia yellowish-ferruginous; under surface of both wings ferruginous tinged, the fuscous markings showing through. Thorax beneath with light ferruginous hair; legs ferruginous, the femora hairy. Abdomen uniformly light ferruginous, apical tufts the same color.

The wing markings are strikingly different from any related Hawaiian species. The venation of forewing is peculiar in that 10 arises from angle of cell; 7, 8 and 9 are stalked, arising from 10 not far from its origin, and there is no areole.

Hab.: MAUI, Olinda (Swezey). One specimen collected on the Kula pipe-line trail, June 18, 1927.

**Euxoa giffardi** n. sp. Plate 13, Fig. 2.

Male. 42 mm. Head, palpi and antennae pale brownish fuscous. Antennae slightly serrate, the serrations with fascicles of cilia. Thorax brownish fuscous, paler on the front of prothoracic crest. Forewings fuscous of various shades. Costa dark fuscous with 2 white spots before middle, and 5 beyond middle. An interrupted angulated white sub-basal line from first costal white spot; a similar line from the second costal white spot. A dentate postmedial line indicated by small groups of dark fuscous scales and a few white scales at the outer angulations. Orbicular and reniform large, outlined with dark fuscous scales. Claviform dark fuscous, wide, evenly rounded outwardly. Cilia fuscous and white mixed. Hindwings pale brown, a little darker terminally, and a slight discal bar; cilia concolorous. Legs greyish fuscous, with pale apical annulations on the tarsi. Abdomen pale brown; oval tufts ochreous.

Hab.: HAWAII, Kilauea. Collected in the dry forest, August, 1920 (Giffard).

#### Family PHYCITIDAE

**Rhynchephestia rhabdotis** Hampson, Plate 13, Fig. 4.

Hampson, Ann. Mag. Nat. Hist. (10), V, p. 52, 1930.

This moth and the work of its caterpillars have been known for a long time. Dr. Perkins collected hundreds of the caterpillars from the silversword (*Argyroxiphium sandwicense macrocephalum*) in Haleakala Crater, Maui, in 1896, which, when brought to Honolulu, failed to produce more than one or two moths. The writer collected a few of the larvae in July, 1907. Again, only one or two moths were produced, and rather indifferent specimens. In 1931 a specimen of the silversword plant from Haleakala Crater was sent in by National Park Superintendent Mr. E. P. Leavitt, and among other insects found on the plant were quite a number of caterpillars, and from these two more moths were reared. Finally Mr. Owen Bryant, of Banff, Canada, while on vacation here, spent some time collecting on Haleakala. From caterpillars collected and sent down by him, 9 moths were obtained in fairly good condition. The description by Hampson was from 2 male specimens ascribed to Terry as collector, the locality being merely "Maui," no date, and the "larva on *Argyroxiphium*." We are not fully aware of the circumstances of the collection of these specimens or how they reached the British Museum. Presumably they were from Haleakala Crater, as the moth is not yet known from anywhere else, or from any other plant except the silversword, and

this plant is very restricted in distribution. Besides the Haleakala station, it was formerly known on Mauna Kea, Hawaii, but is now extinct there. Of recent years it has been found on Mauna Loa, Hawaii, but there is no report of the moth or larvae infesting the plants there.

The larvae feed in the flower heads, destroying the seeds. In the seasons when there are no flowers they feed in the stem and among or at the bases of the leaves which are densely crowded together. The larvae are subject to a fungus which kills a large proportion of them. That is the main reason why so very few moths have been obtained from the larvae that have been brought down for rearing.

**Homoeosoma amphibola** Meyrick.

Meyrick, Fauna Hawaiiensis, I, p. 197, Pl. V, Fig. 12, 1899.

This moth was originally collected on the high plateau of Kauai above Waimea and at Kaholuamano by Perkins. Later collections were made by Kusche in 1919 and 1920 at Kokee, Kaholuamano and Waialeale. The food plant and habits were not known until the writer discovered in 1925 that it was attached to *Wilkesia gymnoxiphium*, which is an endemic shrub related to the silver-sword, and occurring only on Kauai, where the writer has observed it to be common in several localities, on dry slopes in the forested region at Kokee, Halemanu, Nualolo and Milolii, also in one place in the scrub near the road only a little above the upper cane fields of Kekaha Sugar Company. This plant blooms in June and July, producing a large panicle of flower heads; after ripening the seeds the whole plant dies. The larvae of *amphibola* feed on the flowers but do not injure the seeds. The larvae are so numerous that nearly every flower head is attacked. When there are no more flowers to feed on, the nearly grown larvae bore into the stem and feed on the pith, which occupies a considerable portion of the stem. The cocoons are formed within the hollowed-out stem. Some of the larvae shortly transform to pupae and then adult moths; but others remain as larvae for a long time within the cocoon and probably are able thus to carry over till the next blossoming season. None of the plants that have not reached the blossoming stage has been found attacked, nor has any other kind of plant been found attacked by this moth.

Many of the larvae die from fungus. Quite a number are parasitized by a species of *Sierola*.

### Family XYLORYCTIDAE

***Thyrocopa peleana* n. sp.** Plate 13, Fig. 3.

Male, female. 25-41 mm. Head and palpi white; antennae white at base, infuscated outwardly. Thorax white. Forewings nearly pure white with scattered fuscous scales, a few of which are clustered irregularly in two spots obliquely placed in cell, and two spots vertically placed at end of cell; in one male these spots are more conspicuous and the costa is black at the base. Underside suffused with light brown, cilia white. Hindwings and cilia white. Legs white, anterior femora and tibia infuscated. Abdomen white, apical tufts of male slightly ochreous tinged.

Very similar to *T. sapindiella* Sw., but twice as large.

Hab.: OAHU, Waipio ridge. 3 males and 3 females reared from caterpillars in burrows of *Nesithmysus bridwelli* Perkins, in Pelea trees, October 9, 1927 (Swezey). The larvae feed on decaying wood in the burrows, and also on the bark around the entrance, spinning a sheet of web to cover the place where feeding has taken place.

### Family DIPLOSARIDAE

***Aphthonetus sideroxylo*n** n. sp. Plate 13, Fig. 7.

Male and female. 20-23 mm. Antennae ochreous, basal segment brownish. Palpi ochreous, brownish externally. Head ochreous in front, sprinkled with brownish on vertex. Thorax brown, apex ochreous, patagia tipped with ochreous. Forewings mostly dark brown, with a whitish ochreous streak all along dorsum, this streak wider at base and expanding on termen to near apex, the boundary between brown and ochreous areas irregular. Basal half of costa and apical third has ochreous scales mixed with the brown. Near middle of wing an ill-defined circular spot with brown center; beyond this two similar semicircular spots with paler centers and a dark brown spot between them. Several raised tufts of brown scales. Cilia whitish ochreous, with a few brownish scales mixed in upper part of terminal cilia. Hindwings and cilia whitish ochreous. Abdomen whitish ochreous. Fore and mid legs with tibia and tarsi dark brown, femora paler and apex of tarsal joints pale. Hind legs whitish ochreous.

Related to *A. fluctuosa* Walsm., but the latter does not have the dorsum pale throughout.

Hab.: OAHU. Described from 9 specimens reared from larvae on leaves of *Sideroxylon sandwicense*, collected May 28, 1929, on ridge above Puu Peahinaia, Koolau Mts. The larvae fed on the under surface of the leaf protected by a frass-covered web.

**Hyposmocoma latiflua** Meyrick. Plate 13, Fig. 6.

Meyrick, Exotic Microlepidoptera, I, p. 344, 1915.

This species was described from a single specimen collected by Perkins in the Koolau Mts., Oahu, about 1900 or 1901. It was not rediscovered until 26 specimens were reared from larvae found by the writer feeding on leaves of *Pittosporum cauliflorum* on the ridge leading up to Puu Kalena, Waianae Mts., Oahu, December 29, 1929. The larvae were feeding singly on the under surface of the leaves beneath a frass-covered web. The upper surface of the epidermis was left intact and showed as a dead spot in the leaf. Pupation took place in a cocoon in the same place where larva fed. The pupa is brown, about 5 mm. long; the wing and antenna sheaths extend to apex of 7th abdominal segment; cremaster rounded obtuse, with 8 erect hooked bristles on dorsal part.

#### Family HYPONOMEUTIDAE

**Mapsidius charpentierii** n. sp. Plate 13, Fig. 5.

Female. 21 to 24 mm. Antennae cinereous, basal joint white. Palpi white. Head and thorax white with a sprinkling of black scales. Forewings white with numerous angulated black spots and a sprinkling of black scales; cilia at apex and termen white, brownish gray on dorsum. Hindwings brownish gray, cilia concolorous except at apex where they are tipped with white. Abdomen brownish gray with apical margins of segments white; white ventrally. Legs white, tibia and tarsi banded with black.

Male similar to female but hind wings and abdomen darker.

Similar to *auspicata* Walsm., but of larger size, and the black marks on the forewings (as shown by the figure) are more distinct and angulated. The cocoon is different, also. It is elongate spindle-shaped, densely made of white silk, placed on underside of leaf and beneath a thin lacework of silk which has several large circular meshes. This is similar to the way the cocoon of *M. quadridentata* is constructed, whereas the cocoon of *auspicata* is broad spindle-shaped beneath a closely-woven layer of white silk.

Pupa 10 mm., dark brown, lighter on the wing sheaths, which extend as far as the apex of 6th abdominal segment. Apical margin of abdominal segments with a raised rim. Spiracles of abdominal segments raised. Cremaster obtuse.

Hab.: OAHU. Described from three specimens reared from caterpillars and cocoons collected on leaves of *Charpentiera obovata*, in Mohiakea Valley, Waianae Mts., January 3, 1932, and one from Haleauau Valley, April 19, 1931.

## Family TORTRICIDAE

**Panaphelix asteliana** n. sp. Plate 13, Fig. 8.

Male and female. 24-29 mm. Nearly uniformly light fuscous brown. Head and thorax pale brown to ochreous, palpi pale brown; antennae ochreous, the pectinations of antennae in male pale brown. Thorax with two parallel longitudinal ochreous lines, patagia ochreous. Forewings fuscous brown with ochreous lines on the veins, a roundish dark fuscous spot at end of cell; cilia ochreous, mixed with brown at base. Hindwings pale brownish ochreous, more brownish at apex and termen; cilia ochreous, mixed with brown at base. Legs ochreous, fore and mid tibiae and tarsi fuscous brown. Abdomen pale fuscous brown, apical tufts of male ochreous.

Distinct by its brownish coloration, and the lines of ochreous on the veins of forewings.

Hab.: Waianae Mts., OAHU. One male and one female reared from *Astelia veratroides*, January 22, 1929, one female February 9, 1930, all on the ridge leading up to the summit of Mt. Kaala at about 3,200 feet elevation (Swezey); one male captured at same place September 14, 1930 (Williams); two males captured near summit of Puu Kalena, April 19, 1931 (Swezey). Larvae have been brought in at other times from these places, but failed to mature.

The larva is greenish with some fuscous marks on head and cervical shield. It feeds beneath web on apical part of the *Astelia* leaf. The leaf is partially eaten on a transverse line on lower side about 6 inches to a foot from the apex. The apical portion then bends down and is the part on which the larva feeds, eating off the under surface and leaving the extreme apical portion rolled and spun together for a retreat which eventually becomes filled with the frass.

The pupa is brown, about 15 mm. in length. The wing and leg sheaths reach the apex of the 3rd abdominal segment; the abdominal segments have two dorsal transverse rows of short spines; near the base of each abdominal segment 1 to 7 is a pair of circular dorsal pits wide apart; cremaster somewhat extended, bluntly conical with 8 hooked bristles, 4 on apical margin and 2 on each side.

## Explanation of Plate 13

(All slightly enlarged)

FIG. 1. *Aletia ferruginea*.

FIG. 2. *Euxoa giffardi*.

FIG. 3. *Thyrocopa peleana*.

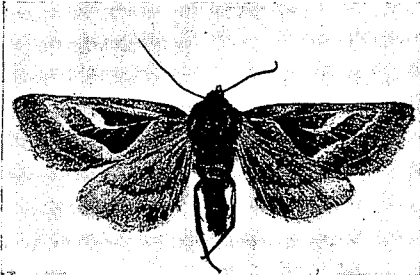
FIG. 4. *Rhynchephestia rhabdotis*.

FIG. 5. *Mapsidius charpentierii*.

FIG. 6. *Hyposmocoma latiflua*.

FIG. 7. *Aphthonetus sideroxylovi*.

FIG. 8. *Panaphelix asteliana*.



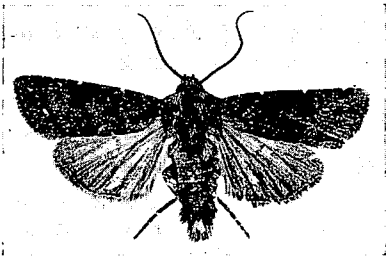
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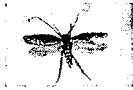
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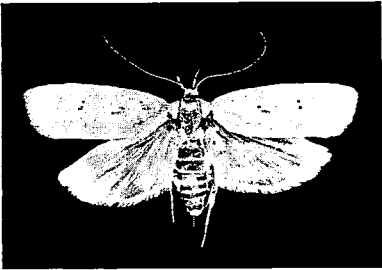
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