

Notes on Some Forest Insects of Molokai.

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One of the regions of the Hawaiian group which has received but little attention since it was collected in by Dr. R. C. L. Perkins, thirty years ago, is the mountainous interior of east Molokai. During the week preceding Christmas, 1925, the two authors made a field trip for the Bishop Museum into the western end of these mountains. They were kindly assisted in this undertaking by Mr. George Cooke, manager of the Molokai Ranch, who allowed them to use the McVeigh cabin, and provided transportation through Mr. Fred Conant.

The McVeigh cabin is located in a grove of Eucalyptus trees on the upper south slope, at an elevation of 3,370 feet. About three-quarters of a mile to the eastward one comes to the brink of Waikolu valley, which drops abruptly two thousand feet to the valley bottom, which extends to the north coast. The upper slope or plateau is fairly flat, ranging in elevation from 3,000 to 4,000 feet, but its surface is cut by numerous deep gulches. The region is accessible over a rough road, which continues past the cabin for a mile or more, and formerly extended to Puu o Kaeha.

The region was originally covered by heavy forest, but this has been killed off, largely by cattle roaming through it. For the past several years cattle have been excluded from the region, and the forest is beginning to recover. At present it is covered by an open scrub, consisting of small lehua trees, Wikstroemia, ferns, grass and herbs, with occasional stunted Byronia, Gouldia, Suttonia and Raillardia trees, and Sadleria and Cibotium tree ferns.

Just south of the house lies a deep fork of the Kaunakakai Gulch, which we called "Kamiloloa, 3,200 feet," as it occupies the head of Kamiloloa district. The bottom of this gulch, having been inaccessible to cattle, contains a good growth of native and other vegetation. This includes Coprosma, Pipturus,

Straussia, Dubautia, Dodonaea, Cyathodes, Sadleria, staghorn fern, sedges and several grasses.

A pipe-line trail crosses this gulch and continues southeast across three other gulches to a small plateau, the highest point of which is Puu o Kaeha, 3,731 feet. This region we called "Kawela, 3,700 feet," as it lies at the head of Kawela gulch and district. To the east and northeast of here rises the high, swampy interior of the Molokai mountains.

During three of the five days spent in this region, practically all collecting was prevented by heavy downpours of rain, driven before a Kona wind. Also, during the two clear days, the dampness made collecting relatively poor. Nevertheless, a good quantity of material, including several new species, was secured, which demonstrates the desirability of more extensive collecting in these mountains at an early date. On this trip the collecting was done mainly in the vicinity of the McVeigh cabin, in Kamiloloa gulch, on the way to and from Kawela, and along the brink of Waikolu valley. The specimens listed as "Kaunakakai, 2,400 feet" were secured along the road between the McVeigh cabin and the water tanks at 2,385 feet elevation. The specimens are in the Bishop Museum.

HYMENOPTERA

Ichneumonidae

- Amblyteles kochelei* (Swezey), 1 Kawela.
Echthromorpha fuscator (Fabricius), 1 Kamiloloa, 1 Kawela.
Pimpla hawaiiensis Cameron, 1 Kamiloloa, 1 Kawela, 1 Waikolu.
Eremotylus orbitalis Ashmead, 1 Waikolu.
Enicospilus bellator Perkins, 3 Kawela, about Metrosideros.
Enicospilus maucicola Ashmead, 1 Kamiloloa, 1 Kawela.
Enicospilus molokaiensis Ashmead, 2 Kawela.
Atrometus sp., 1 Waikolu.
Limmerium blackburni Cameron, 1 Waikolu.
Pristomerus hawaiiensis Perkins, 6 Kawela, 1 Waikolu.
Cremastus hymeniac Viereck, 2 Kawela.

Alysiidae

- Aspilota konae* Ashmead, 1 Kawela, 1 Kamiloloa.

Braconidae

- Chelonus blackburni* Cameron, 1 Kamiloloa, 1 Kawela, 1 Waikolu.
Ischiogonus palliatus (Cameron), 5 Kamiloloa, ex *Plagithmysus molokaiensis* in dead Pipturus.

Bethyridae

- Sclerodermus* n. sp. 12 Kamiloloa, ex *Xyletobius proteus* Perk. in dead Coprosma.
Sclerodermus sp. 1 Kamiloloa, in dead Pipturus.
Sierola spp. 4 or 5 species; 7 Kamiloloa, 2 Kawela, 1 Kaunakakai; on Coprosma, Metrosideros, Pipturus, and Dodonaea.

Dryinidae

- Pseudogonatopus perkinsi* (Ashmead), 1 Waikolu, 1 Kamiloloa, on Metrosideros.

Diapriidae

- Phenopria hawaiiensis* Ashmead, 1 Kawela.

Scelionidae

- Telenomus* sp. near *despiciendus* Perkins, 1 Kawela, on ferns.

Figitidae

- Hypodiranchis* spp., probably 3 or 4 species; 4 Kamiloloa, on Coprosma, 1 Waikolu, 3 Kawela.

Chalcididae

- Chalcis obscurata* Walker, 2 Kawela.

Encyrtidae

- Eupelmus* spp., 4 species; 3 Waikolu, 4 Kamiloloa.
Anagyrus spp., probably 4 or 5 species; 2 Kamiloloa, on Coprosma and Pipturus, 3 Kawela, on Metrosideros.
Pseudaphycus utilis Timberlake, 9 Kaunakakai, 2,000 feet, ex *Pseudococcus nipa* on guava.
Habrolepoides sp. (?), 1 Kawela.

Pteromalidae

- Pteromalid, 3 Kamiloloa, on Coprosma.

Eulophidae

- Secodella metallica* (Ashmead), 8 Kamiloloa, on Pipturus, Coprosma; 10 Kawela, on Metrosideros.

Eulophids (?), 3 species; 5 Kamiloloa, on Pipturus and Coprosma, 1 bred from Gracilaria in Raillardia leaves; 3 Kawela, on ferns; 1 Waikolu.

Euplectrus platyhypenae Howard, 1 caterpillar of *Cirphis unipuncta* with a bunch of larvae on its back which failed to rear out, Waikolu.

Mymaridae

Polynema terrestris Perkins, 2 Kawela, on ferns.

Formicidae

Ponera perkinsi Forel, 3 Kawela, under log.

Prenolepis bourbonica Forel, 1 Kaunakakai, 2,400 feet, on *Metrosideros*.

Eumenidae

Odynerus instabilis Perkins, 2 Kawela.

Larridae

Dolichurus stantoni Ashmead, 1 Kawela.

Vespidae

Polistes aurifer Saussure, 1 McVeigh's, on window.

Apidae

Apis mellifera Linn., 1 Waikolu.

DIPTERA

Tipulidae

Craneflies of several species were sent to Prof. Charles P. Alexander for determination. They were found on window at McVeigh cabin, and on ferns at Kawela.

Chironomidae

Ceratopogon n. sp. 14 Kawela.

Mycetophilidae

Neosciara molokaiensis (Grimshaw), 1 Kawela, on *Metrosideros*, 1 Kamiloloa about Pipturus.

Dolichopodidae

Four or five new species of *Campsicnemis* or allied genera; 27 Kawela, 2 Kamiloloa, 3 Kaunakakai.

Lonchopteridae

Lonchoptera sp. 15 Kamiloloa, in Bermuda grass on bank of stream.

Syrphidae

Simosyrphus grandicornis (Macquart), 3 Kawela.

Allograpta obliqua (Say), 1 Kamiloloa, 1 Waikolu.

Calliphoridae

Dyscritomyia sp. near *terryi* Bryan (MS), 1 Kawela, 1 Kamiloloa, 1 Waikolu.

Calliphora vomitoria (Linn.), 1 Kaunakakai, 2,400 feet, 2 Kawela, 2 McVeigh's cabin.

Sarcophagidae

Sarcophaga pallinervis Thomson, 1 Waikolu.

Muscidae

Stomoxys calcitrans (Linn.), 1 McVeigh's cabin, on window.

Synthesiomyia nudiseta van der Wulp, Kaunakakai, 2,000 feet.

Anthomyiidae

Linnophora arcuata Stein, 1 Kawela.

Lispocephala sp. (formerly known as *Coenosia*), 5 Kawela, 4 Waikolu.

Sapromyzidae

Sapromyza sp. 1 Kamiloloa, 1 Waikolu, 1 McVeigh's cabin.

Trypetidae

Tephritis sp. near *crassipes* Thomson, 1 Kawela.

Drosophilidae

Drosophila spp. 2 or 3 probably new; 6 Kamiloloa, about Poke-weed, 9 Kawela, 5 Waikolu.

Agromyzidae

Agromyza sp. 3 Waikolu, on Wikstroemia, the leaves of which are mined by the larvae.

COLEOPTERA

Carabidae

Chalcomenus molokaiensis Sharp, 3 Kawela, under stones.

Mecyclothorax sp. 1 Kawela, under stone.

Metrothorax curtipes Sharp, 10 Kamiloloa, 10 Kawela, 1 Waikolu; ex dead Pisonia, roots of sedge, and under stones.
Bembidium molokaiense Sharp, 3 Kawela, under stones.

Staphylinidae

Philonthus turbidus Er., 1 Kamiloloa.
Philonthus nigrutilus (Grav.), 2 Kamiloloa.
Oligota sp., 1 Kawela.
Atheta coriaria (Kr.), 1 McVeigh's cabin.
Osorius rufipes Mots., 1 Kawela

Coccinellidae

Scymnus notescens Blackburn, 1 Kawela on *Lythrum*.
Cryptolaemus montrouzieri Muls., 5 Kaunakakai, 2,400 feet, on *Dodonaea viscosa*, 1 Kawela.

Cucujidae

Cryptamorpha desjardinsi (Guer.), 1 Kawela.

Nitidulidae

Gonioryctus sp., 1 Kamiloloa, on *Pipturus*.
Euptinus curtus Scott, 3 Kawela, on *Metrosideros*, 3 Waikolu.

Anobiidae

Xyletobius proteus Perkins, 30 Kamiloloa, in dead *Coprosma*.
Mirosternus sp., 1 Kamiloloa.

Cioidae

Cis signatus Perkins, 1 Kawela.
Apterocis ephistemoides (Sharp), 4 Kamiloloa, in dead *Pipturus*.

Cerambycidae

Plagithmysus molokaiensis Perkins, 26 Kamiloloa, bred from dead *Pipturus*.

Bruchidae

Bruchus prosopis Leconte, 1 Kaunakakai, 2,400 feet; Kawela, resting on *Metrosideros*.

Tenebrionidae

Gonocephalum seriatum (Boisduval), 1 Kawela, on *Metrosideros*.

Anthribidae

Araccerus fasciculatus (De Geer), 1 Kamiloloa.

Curculionidae

- Pantomorus godmani* (Crotch), 2 Kamiloloa, 1 Kawela, 1 Waikolu.
Dryophthorus squalidus Sharp, 16 Kamiloloa, ex dead *Pisonia*.
Oodemas brunneum Perkins, 7 Kamiloloa, ex dead *Pipturus*, 1 Waikolu.

Proterhinidae

- Proterhinus hystrix* Sharp, 9 Kawela; 19 Waikolu, in dead frond stems of *Cibotium menziesii*.
Proterhinus subangularis Perkins, 5 Kawela, ex dead *Straussia*.
Proterhinus convexiusculus Perkins, 3 Kamiloloa, on *Coprosma*.
Proterhinus sp. Kaunakakai 2,400 feet, on *Metrosideros*.

LEPIDOPTERA

Caradrinidae

- Eriopygodes euclidias* (Meyrick). Caterpillars were found on various ferns, but none reared.
Cirphis pyrriasis (Meyrick), Kamiloloa, 1 full-grown caterpillar found hiding in rocky bank near sedge. Died just before issuing from pupa.
Cirphis unipuncta (Haw.), 1 Kawela, reared from pupa found under log.
Agrotis cinctipennis (Butler), Kawela, 2 caterpillars found on *Lythrum*; 1 reared to maturity.
Agrotis chersotoides (Butler), Kawela, caterpillars numerous on pokeweed; 11 reared to maturity.
Euxoa wikstroemiae Swezey, Waikolu, 1 reared from caterpillar on *Wikstroemia*.

Plusiadae

- Nesamiptis obsoleta* (Butler), 1 Kawela.

Hydriomenidae

- Eucymatoge monticolans* (Butler), Kawela, 2 reared from green larvae on *Cyathodes*.

Selidosemidae

- Scotorythra trapezias* Meyrick, Kawela 3 green and 1 reddish caterpillars on *Dodonaea*. Failed to rear, but probably this species.

Sphingidae

Celerio calida (Butler), Kawela, 1 caterpillar on Coprosma, reared to adult.

Nymphalidae

Vanessa tammeamea Eschscholtz, Kamiloloa and Waikolu, adults; larvae on Pipturus, none reared.

Lycaenidae

Lycaena blackburni (Tuely), 2 Kawela, 1 reared from larva on Dodonaea.

Pyraustidae

Omiodes anastrepta Meyrick, 1 Kawela.

Omiodes localis (Butler), Kamiloloa, 1 reared from larva on native Panicum grass.

Omiodes monogramma Meyrick, Kamiloloa, 2 reared from larvae on Dianella.

Omiodes scotaea (Hampson), Waikolu, 4 reared from larvae on Astelia.

Phlyctaenia stellata (Butler), Kamiloloa, larvae on Pipturus; failed to rear through.

Phlyctaenia endopyra Meyrick, Kawela, 1 reared from larva on native Rubus. Larvae were quite numerous.

Phlyctaenia pyranthes Meyrick, Waikolu, larvae common on Vaccinium, 3 reared.

Pyrausta constricta (Butler), Waikolu, 1 reared from larva on Scaevola.

Mestolobes ombrias Meyrick, 1 Kawela.

Pterophoridae

Platyptilia rhynchophora Meyrick, 1 Kawela, 2 Waikolu, 1 reared from larva on Vaccinium.

Gelechiidae

Aristotelia notata Walsingham, 1 Kawela, 2 Waikolu on Gouldia. Probably leafminer, though none reared.

Hyponomeutidae

Hypsmocoma lupella suffusella Walsingham, Kamiloloa, larval cases in dead Pipturus wood, 1 reared.

Hypsmocoma sp. Apparently an undescribed species; too much rubbed for description. Kamiloloa, 1 reared from very long larval case among dead leaves at base of tuft of grass.

Hyposmocoma saccophora Walsingham, Kawela, larval case only, on rocks.

Hyposmocoma chilonella triocellata Walsingham, Kamiloloa, 2 reared from dead wood of *Pipturus*.

Diplosara lignivora (Butler), Kamiloloa, larval cases under bark of dead *Pisonia*, none reared.

Tortricidae

Eccoptocera foetorivorans (Butler), Waikolu, on *Metrosideros*.

Archips postwittanus Walker, 4 Waikolu, reared from *Wikstroemia* and *Vaccinium*.

Archips sp. near *leopardellus* Walsingham, Waikolu, 2 reared from *Suttonia*.

Carposinidae

Heterocrossa sp. Larvae in terminal buds of *Metrosideros*, none reared.

Tineidae

Philodoria auromagnifica Walsingham, Kawela, 1 reared from leaf-mine of *Suttonia*.

Philodoria floscula Walsingham, 5 Kamiloloa, collected on *Pipturus* (leaf-miner).

Philodoria n. sp. Kawela, 2 reared from leaf-mines of *Lysimachia*.

Gracilaria neraudicola Swezey, 3 Kamiloloa, reared from leaf-mines of *Pipturus*.

Gracilaria sp. near *epibathra* and *dubautiella*, but specimens too poor for determination. Kamiloloa, 5 reared from leaf-mines of *Raillardia*.

Bedellia n. sp., Kamiloloa, 2 reared from leaf-mines of *Panicum nephelophilum*.

Cyane terpsichorella Busck, 1 Kamiloloa.

Hicroxestis omoscopa Meyrick, 1 Kamiloloa, larvae in rotten wood everywhere.

HEMIPTERA

Saldidae

Acanthia procellaris Kirkaldy, 1 Kawela.

Miridae

Tichorhinus sp., 1 Kawela, 1 Kamiloloa on *Pipturus*.

Tichorhinus sp., 8 Kamiloloa, on *Coprosma*.

Mirid (?), 1 Kamiloloa, on Pipturus.

Mirid (?), 1 Kawela, host not recorded.

Hyalopeplus pellucidus (Stal), 1 Kawela, 2 Kamiloloa, on Pipturus and Coprosma.

Nabidae

Reduviolus capsiformis (Germ.), 2 Kamiloloa, on Bermuda grass.

Reduviolus lusciosus (White), 1 Kawela, 2 Kamiloloa, on Pipturus.

Reduviolus blackburni (White), 11 Kawela, on Lythrum and ferns.

Reduviolus subrufus (White), 1 Waikolu.

Reduviidae

Ploiaria sp., 1 in McVeigh cabin.

Myodochidae

Orthoeta nigriceps (Dallas), 1 Kamiloloa, on Coprosma; 1 Waikolu; 7 Kawela, on Lythrum.

Nesocymus calvus (White), 2 Kawela; 1 Kamiloloa, on Pipturus.

Nysius sp., Kawela, 6 on Lythrum.

Nysius sp., Kawela, 5 on Lythrum.

Nysius sp., Kawela, 1 on Metrosideros.

Nysius sp., 4 species, 9 specimens, host not recorded; Kawela and Waikolu.

Pentatomidae

Oechalia grisea (Burm.), 3 Kawela, 1 Kamiloloa, 2 Waikolu on ferns.

Scutelleridae

Coleotichus blackburniae (White), Kaunakakai, 2,500 feet, 6 adults and many larvae on *Dodonaea viscosa*.

HOMOPTERA

Cicadellidae

Phrynomorphus hospes (Kirkaldy), 9 Kamiloloa, on Bermuda grass.

Nesophrosyne ponapona Kirkaldy, 40 Kamiloloa, on Pipturus, 1 Kaunakakai, 2,000 feet.

Nesophrosyne sp., 1 Kaunakakai 2,400 feet, on *Dodonaea*.

Nesophrosyne sp., 11 Kamiloloa, on Coprosma, 1 Kawela.

- Nesophrosyne* sp., 2 Kamiloloa, 1 pair on Coprosma.
Nesophrosyne sp., 6 Kawela, on Sadleria and other ferns.
Nesophrosyne sp., 1 Kamiloloa, host not recorded.
Nesophrosyne sp., 3 Waikolu, host not recorded.
Nesophrosyne sp., 2 Kawela, host not recorded.

Flatidae

Siphanta acuta (Walker), common everywhere on most trees and shrubs.

Cixiidae

- Oliarus kahavalu* Kirkaldy, 2 Kamiloloa, 1 on *Metrosideros*, 1 at light.
Oliarus euphorbiae Giffard (or near it), 1 Kawela.
Oliarus n. sp. near *kaonohi*, 32 Kawela, on ferns, 2 Waikolu, on ferns.

Delphacidae

- Leialoha* probably *mauiensis* Muir, 3 Kamiloloa, on *Metrosideros*, 3 Waikolu, 4 Kawela.
Leialoha sp., 5 Kamiloloa, on Coprosma.
Ilburnia ipomoeicola (Kirkaldy), 12 Kawela, on *Lythrum*.
Ilburnia n. sp. (?), 30 Kamiloloa, on *Pipturus*.
Ilburnia n. sp. (?), 11 Kawela, on ferns.
Ilburnia sp. 2 Waikolu, on *Gouldia*.
Ilburnia sp. (nymph only), 1 Waikolu, on *Astelia*.

Psyllidae (see page 423)

- Trioza molokaiensis* Crawford, 20 Kamiloloa, on Coprosma (?), 2 Kawela, on *Metrosideros*.
Trioza lanaiensis Crawford, 3 Kawela, on *Metrosideros*.
Kuwayama nigricapita Crawford, 1 Kawela, on *Metrosideros*.
Kuwayama gracilis Crawford, 3 Kawela, on *Metrosideros*; 5 Kamiloloa, on Coprosma and *Pipturus* (probably only accidentally). One had abnormal venation of right wing.
Paurocephala sp., 1 Kamiloloa, on pokeweed.

Aphididae

- Aphis, 3 undetermined specimens, Kawela and Waikolu, 1 on *Metrosideros*.
Aphis, observed on *Lysimachia*, Kawela, but not collected.

Coccidae

- Nesococcus pipturi* Ehrhorn, 1 Kamiloloa, on *Pipturus*.

CORRODENTIA

Psocidae

- Psocus distinguendus* Perkins, 1 Kamiloloa, on Coprosma.
Elipsocus inconstans Perkins, 1 Waikolu, 2 Kawela.

ODONATA

Libellulidae

- Nesogonia blackburni* McLachlan, 1 Kawela.

Agrionidae

- Agrion blackburni* (McLachlan), 2 Kawela.
Agrion sp., 3 Kawela.

NEUROPTERA

Hemerobiidae

- Nesomicromus brunnescens* Perkins, 3 Kawela, 1 Waikolu.

ORTHOPTERA

Blattidae

- Allacta similis* (Sauss.), 7 Waikolu, 6 Kawela, 1 McVeigh's cabin.
Blatella germanica (Linn.), 1 McVeigh's cabin.

Tettigoniidae

- Elimaea punctifera* (Walker), 1 Kaunakakai, 2,500 feet.
Conocephalus saltator (Sauss.), 2 Kamiloloa; abundant in grass.
Banza molokaiensis Perkins (?), 2 nymphs, Kawela and Waikolu.

Gryllidae

- Paratrigonidium atroferrugineum* Brunner, 16 Kawela, on *Metrosideros*, 2 Waikolu.
Paratrigonidium molokaiense Perkins (?), 2 Kawela, on ferns, 1 Waikolu.
Gryllus oceanicus Le Guillou, 1 Kawela.

DERMAPTERA

Labiduridae

- Euborellia annulipes* (Lucas), 2 McVeigh's cabin, 2 Kawela.

SIPHONAPTERA

- Ctenocephalus felis* (Bouché), 1 on rat at McVeigh's cabin.