Technical Report 31

HALEAKALA NATIONAL PARK CRATER DISTRICT
RESOURCES BASIC INVENTORY: INSECTS

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ABSTRACT

The insect fauna of the Crater District of Haleakala National Park was surveyed during the summers of 1975-77. During this period 389 species were collected of which 235 are endemic (60.4%). Eighty-three species are unique to Haleakalā. Two species, the Argentine ant and a ground-nesting yellowjacket, present serious resource management problems. Their eradication is recommended. However, the most beneficial management action for the insect fauna would be the elimination of the feral goat and pig from the area.
RECOMMENDATIONS

1. The feral herbivorous mammals (i.e., goats and pigs) are a continuing threat to the unusual insect fauna of Haleakalā. These mammals should be excluded from all areas of the Park.

2. The Argentine ant is a serious threat to the native insect fauna of the Crater District. Its distribution should be monitored, and further spread of this species should be contained. Hikers should be encouraged to ensure that their packs are free of ants, and materials packed into the crater on horses or flown in by helicopter should also be checked. A very probable mode of infestation would be the fuel boxes, particularly if they are stored in the Park prior to transportation into the field. The current ant population should be destroyed when a suitable agent has been recommended by Western Region.

3. The ground-nesting yellowjacket is a potential threat to the endemic butterflies and moths of the Crater District. The sting is very uncomfortable and a health hazard to humans allergic to their toxins. Nests should be searched for and destroyed.

4. The insect fauna of the alpine cinder desert is extremely sensitive to disturbance. Visitors should be encouraged to remain on the trails and requested not to disturb the rocks.
TABLE OF CONTENTS

ABSTRACT ........................................... i
RECOMMENDATIONS ................................... ii
LIST OF TABLES ...................................... iv
LIST OF FIGURES ...................................... iv
INTRODUCTION ....................................... 1
METHODS AND MATERIALS ............................... 2
STATUS OF THE INSECT FAUNA ......................... 2
ACKNOWLEDGMENTS .................................... 5
REFERENCES .......................................... 6
APPENDIX I ........................................... 7

CATALOG OF THE INSECT ORDERS
OF THE CRATER DISTRICT OF HALEAKALA NATIONAL PARK .... 11

Collembola (Springtails) ......................... 11
Odonata (Dragonflies & Damselflies) ............ 12
Orthoptera (Crickets & Cockroaches) .......... 13
Isoptera (Termites) ............................... 14
Dermaptera (Earwigs) .............................. 15
Thysanoptera (Thrips) ............................ 16
Hemiptera (Bugs) ................................ 17
Homoptera (Cicadas, Hoppers, Psyllids,
Whiteflies, Aphids, & Scale Insects) ........... 21
Coleoptera (Beetles) .............................. 25
Neuroptera (Lacewings) ........................... 29
Lepidoptera (Butterflies & Moths) ............... 30
Hymenoptera (Ants, Wasps, & Bees) ............. 35
Diptera (Flies) ................................... 42
LIST OF TABLES

Tables

1. Summary of the number of insects introduced, endemic, and endemic to Haleakalā represented in each order in the fauna of the Crater District . . 4

LIST OF FIGURES

Figures

1. Map of the Crater District of Haleakalā National Park, Maui, showing locations of the 55 sample sites surveyed during the Resources Basic Inventory-related field work. . . . . 3
INTRODUCTION

The attached Catalog of the Insect Orders of the Crater District of Haleakala National Park is based primarily upon collections made during the summers of 1975-77, during the Resources Basic Inventory (RBI) of the study area. Also listed are certain species collected in the Park before 1975 by the author and others although they were not collected during the RBI. Initial attempts to include all insects previously collected from the area were abandoned because the recorded localities were either too general or very obscure. Some collectors used "Haleakala" on labels of collections from many different areas on the mountain; other collectors used it to refer to the crater on some occasions but not on other occasions. The resolution of these difficulties by reference to field notebooks, etc., was beyond the scope of this project. Species recorded from specific localities definitely within Haleakala National Park, even if not collected during the RBI survey, have been included in the list.

The Catalog is still relatively incomplete. Specimens belonging to certain taxonomic groups have not yet been identified. In other groups, many identifications are still incomplete due to the unavailability of specialists in these groups, or to an inadequate present state of taxonomic knowledge concerning the groups. Relatively complete listings of species have been possible for groups with which the author is most familiar (e.g., the insect orders Homoptera, Hemiptera, and Hymenoptera). As additional identifications are made, or are received from collaborators, this Catalog will be expanded.

The collections made during the 1975-77 RBI study, as well as those which the writer has made in Haleakala National Park prior to the RBI study, are largely from the relatively dry higher elevations of the Park, that is, above 6000 feet elevation. The majority of the species which occur in these areas probably are represented in our collections. However, many important elements of the endemic insect fauna of the Hawaiian Islands are confined to rain forest environments below 6000 feet elevation. These elements are poorly represented in our collections, although a few are present in collections from the Paliku area of the Crater. It is anticipated that collections from rain forest environments within the Park, such as Kīpahulu Valley, will ultimately result in the addition of a great many species to this Catalog.

The arrangement of orders and families follows that used by Zimmerman in the "Insects of Hawaii" series, as far as published. An asterisk before the word Endemic in the last column indicates that, so far as is known, the species is endemic and occurs only on Haleakalā.
METHODS AND MATERIALS

The survey used standard procedures for collecting insects (i.e., light traps, malaise traps, nets, beating vegetation, pit traps, collecting under rocks and in leaf litter). Berlese funnels were not used due to the difficulty of operating this equipment in the field. The omission of this technique is not thought to detract from the completeness of this survey because in the dry summit area leaf litter is not present in significant quantities. The insects were collected principally in the study sites established in the RBI program (Fig. 1) though collections were also made in areas of particular interest to specialists.

STATUS OF THE INSECT FAUNA

Three hundred and eighty-nine species of insects were collected in the Crater District. Two hundred and thirty-five species are endemic to the Hawaiian Islands (Table 1) of which 83 are endemic only to Haleakalā. Thus, 21% of the insects found in the present survey are unique to Haleakalā. The fauna is characterized by many unusual, precintive (very localized) endemic species including a number of flightless carabid beetles, lacewings, moths, and flies. The high degree of local endemism is quite unusual and illustrates the biological isolation and special character of the area. Therefore, the summit area of this mountain constitutes a very important biological resource which should be protected from disruptive, exotic organisms.

Haleakalā has been surveyed by a number of prominent entomologists. It is not known whether any specimens were collected by the Wilkes Expedition. The Reverend Thomas Blackburn collected beetles and some other insects on Haleakalā 100 years ago; however, the first general collection was made around the turn of the century by R. C. L. Perkins. O. H. Swezey published several papers on Haleakalā insects in the Proceedings of the Hawaiian Entomological Society, and E. C. Zimmerman, originator of the "Insects of Hawaii" series, has worked extensively with Haleakalā insects, particularly with the flightless lacewings. D. E. Hardy has also collected extensively on Haleakalā and has described many species of Diptera (flies) from the area. The insect fauna of Haleakalā is, therefore, fairly well-known and some groups, e.g., beetles, flies, lacewings, moths, etc., have been studied extensively.

The current status of the insect fauna of the area is not very satisfactory. The continued activity of feral goats and pigs is a serious problem. All insects dependent on plants for their food, shelter, etc., are significantly affected by the continuing disruption of the plant communities. The degradation of the plant communities leads to a decrease in the number of plant-feeding insects in the area. These insects are themselves
FIGURE 1. Map of the Crater District of Haleakala National Park, Maui, showing locations of the 55 sample sites surveyed during the Resources Basic Inventory-related field work.
<table>
<thead>
<tr>
<th>Order</th>
<th>Introduced</th>
<th>Endemic</th>
<th>Endemic to Haleakalā</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collembola</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Odonata</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Orthoptera</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Isoptera</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dermaptera</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Thysanoptera</td>
<td>7</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Hemiptera</td>
<td>8</td>
<td>33</td>
<td>6</td>
</tr>
<tr>
<td>Homoptera</td>
<td>20</td>
<td>25</td>
<td>9</td>
</tr>
<tr>
<td>Coleoptera</td>
<td>16</td>
<td>22</td>
<td>12</td>
</tr>
<tr>
<td>Neuroptera</td>
<td>2</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Lepidoptera</td>
<td>16</td>
<td>33</td>
<td>7</td>
</tr>
<tr>
<td>Hymenoptera</td>
<td>41</td>
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<td>0</td>
</tr>
<tr>
<td>Diptera</td>
<td>33</td>
<td>81</td>
<td>45</td>
</tr>
</tbody>
</table>

TOTAL: 154 (40%), 235 (60%), 83 (21%)
the food of predacious and parasitic species. The endemic entomo-
phagous forms (predators and parasites) are mostly specialized
types, largely dependent for their survival upon endemic phyto-
phagous (plant eating) species with which they have coevolved.
Destruction of plant communities therefore results not only in
the loss of associated plant-feeding arthropods, but also the
specialized endemic predators and parasites which prey upon them.

Competition from exotic species which are often more aggres-
sive than the native species can also severely deplete popula-
tions. The presence of the ground-nesting yellowjackets, Vespula
vulgaris at Hosmer Grove and V. pennsylvanica just outside the
Park, are a potential problem. They could outcompete the endemic
species of Odynerus (potter wasps) since both are predacious on
lepidopteran larvae. The impact of the yellowjackets on the
endemic lepidopterans not previously exposed to such an aggres-
sive predator could be disastrous. Both species of yellowjacket
are also a potential hazard to visitors and staff in the Park.

The Argentine ant (Iridomyrmex humilis) is another serious
threat to the native insect fauna in the Park. A copy of a
letter from Dr. J. W. Beardsley to the Superintendent of Hale-
akala National Park outlining the problem is appended to this
report.

ACKNOWLEDGMENTS

The author greatly appreciates the field assistance of
R. Burkhart, A. Hara, R. Rice, and G. Teves, and the manuscript
preparation by J. Saito. Particular thanks are due to D. E.
Hardy and K. Sakimura for many identifications of Diptera and
Thysanoptera, respectively. The research reported herein was
funded by the National Park Service through the Cooperative
National Park Resources Studies Unit at the University of Hawaii
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REFERENCES


APPENDIX I

A copy of a letter from Dr. J. W. Beardsley to the Superintendent of Haleakala National Park outlining the Argentine ant problem.

November 14, 1978

Mr. Hugo Huntzinger, Superintendent
Haleakala National Park
P. O. Box 537
Makawao, Hawaii 96768

Dear Mr. Huntzinger:

Cliff Smith has informed me that he has outlined the problem of the Argentine ant at Haleakala N. P. for you, and has asked me to send you my assessment of the situation and what might be done about it.

The Argentine ant, Iridomyrmex humilis Mayr, is a species which is well adapted to the warmer areas of the temperate climate zones, but does not survive well in the humid tropics. For this reason it is found in Hawaii mostly in areas above 1500 - 2000 feet elevation. The population in the Hosmer's Grove area is at the highest elevation which the species is known to occur in Hawaii. These ants apparently can withstand occasional frosts, but probably will not survive permanently in areas where temperatures remain near or below freezing for prolonged periods. Thus, it seems unlikely to become established at the summit of Haleakala, although at present I do not know how far up the mountain it may extend its range.

The Argentine ant is likely to have a profound effect upon the native biota, particularly insects and other terrestrial arthropods, in those areas in which it becomes permanently established. Like many other dominant and widely distributed ant species, the Argentine ant is omnivorous, but derives a large part of its diet from insect prey. Insects such as the many pensive, flightless endemic forms which occur on Haleakala are particularly vulnerable to ant predation because of their relatively small, isolated populations and their inability to escape. These endemic species evolved in an environment completely devoid of ants and thus have never developed the means
to cope with ant predation. The British entomologist R.C.L. Perkins, who made the extensive collections which formed the basis for the Fauna Hawaiensiis, was of the opinion that the big-headed ant *Pheidole megacephala* Fabricius, was largely responsible for the disappearance of many groups of endemic insects from certain lowland areas of Hawaii below elevations of 1500 - 2000 feet. *P. megacephala* is an aggressive predator, like the Argentine ant, but is a tropical species, rarely found above 2,000 feet in Hawaii. I am concerned that similar extinction of endemic insects may occur on Haleakala due to the activities of the Argentine ant. The Argentine ant also is an aggressive tender of such honeydew producing homopterous insects as aphids, mealybugs and scale insects. We often see large increases in population levels of such insects where Argentine ants are present. Where abundant, such homopterous pests may cause serious damage to their plant hosts. Thus, the presence of Argentine ants in Haleakala could also have an adverse effect upon the endemic flora by causing the buildup of aphids, mealybugs and scale insects.

I believe that research on the ecology of the Argentine ant in Haleakala and its impact on other organisms should be a high priority. We need to delimit the present range of this ant on Haleakala. We should also determine whether it is expanding its range, and if so, how rapidly. It is quite possible that the range of this ant may somehow be limited to areas in close proximity to human habitation, but this remains to be determined. Also we need to assess the populations of endemic arthropods within the area occupied by the Argentine ant, as compared to adjacent areas where the ant is absent, in order to evaluate the impact of the ant on the endemic fauna.

I would also like to take this opportunity to call your attention to another potentially serious ant problem in Haleakala National Park. This involves another ant species, the so called long-legged ant, *Anaplolepis longipes* (Jerdon), which recently has become extremely abundant in lowland areas of East Maui. Dr. Elmo Hardy of this department, has reported that this ant has virtually exterminated many of the native stream associated insects which were formerly common on the lower portion of Kipahulu Stream. The long-legged ant is a tropical species partial to rocky ground. It has become a serious nuisance problem in East Maui and parts of Hawaii since its accidental introduction a few years ago. Its food habits are similar to those of the Argentine ant, and therefore it must be considered a threat to endemic arthropods in those areas which it successfully establishes. The range and impact of this ant in the Kipahulu area should be evaluated.

For the past several years I have been engaged in research aimed at developing environmentally acceptable methods to control ants in Hawaiian pineapple fields. We are attempting to develop materials and application methods to replace the mirex bait and heptachlor spray applications which have been used up until now,
but which are being phased out due to EPA cancellation actions. We have developed field methods for monitoring ant distribution and numbers which should be applicable to the study of ant populations at Haleakala. We would be happy to assist in any way we can with any ant research and/or control program which may be undertaken at Haleakala.

With very best wishes.

Yours sincerely,

John W. Beardsley
Entomologist & Professor

JWB:ku
CATALOG OF THE INSECT ORDERS
OF THE CRATER DISTRICT OF HALEAKALA NATIONAL PARK

ORDER COLLEMBOLA
(Springtails)

FAMILY ENTOMOBRYIDAE

Entomobrya atrocincta Schoett
Scavenger
Kaupō trail 5000 ft.

Entomobrya clitellaria Guthrie
Scavenger
Hosmer Grove, Halemau'u trailhead 8000 ft.

Entomobrya nivalis (L.)
Scavenger
Hosmer Grove, Palikū.

Entomobryoides purpurascens (Packard)
Scavenger
Ainahou in Ko'olau Gap.

FAMILY TOMOCERIDAE

Tomocerus minor (Lubbock)
Scavenger
Waikau, Halemau'u trail 6700 ft.
ORDER ODONATA
(Dragonflies & Damselflies)

FAMILY AESHNIDAE (Darners)

*Anax j uninus* (Drury)  
Predacious  
Halemau'u trailhead 8000 ft.  

FAMILY COENAGRIONIIDAE (Narrow-winged damselflies)

*Megalagrion blackburni* (McLachlan)  
Predacious  
Kalapawili 7500 ft.  

*Megalagrion calliphya* (McLachlan)  
Predacious  
Hosmer Grove, Palikū.  

*Megalagrion hawaiensis* (McLachlan)  
Predacious  
Hosmer Grove.
ORDER ORTHOPTERA
(Crickets & Cockroaches)

FAMILY GRYLLIDAE (Crickets)

Metioche vittaticollis (Stal)
Kaupō trail 5000 ft.

FAMILY BLATTIDAE (Cockroaches)

Allacta similis (Saussure)
Kaupō Gap 5300 ft.
ORDER ISOPTERA
(Termites)

FAMILY KALOTERMITIDAE (Damp-wood termites)

Neotermes connexus Snyder
(forest dampwood termite)
Kaupō Gap 5000 ft. Introduced
ORDER DERMAPTERA  
(Earwigs)

FAMILY FORFICULIDAE

*Forficula auricularia* L.  
(common European earwig)  
Scavenger  
Hosmer Grove.

FAMILY LABIDURIDAE

*Euborellia annulipes* (Lucas)  
(ring-legged earwig)  
Scavenger  
Hosmer Grove.
ORDER THYSANOPTERA
(Thrips)
(Determined by K. Sakimura)

FAMILY AEOLOTHRIPIDAE (Broad-winged or banded thrips)

_Aeolothrips nasturtii_ Jones
Plantaed feeder
Kaupō Gap 4800 ft.

FAMILY THRIPIDAE (Common thrips)

_Ceratothrips frici_ (Uzel)
Plantaed feeder
Hosmer Grove.

_Chirothrips patruelis_ Hood
Plantaed feeder
Hosmer Grove, Kaupō Gap 4800 ft.

_Neurisothrips antennatus_ (Moulton)
Plantaed feeder, on 'ōhi'a flowers
Palikū, Kaupō Gap, Hosmer Grove.

_Thrips hawaiensis_ (Morgan)
Plantaed feeder
Kaupō Gap 4800 ft.

_Thrips (Isoneurothrips) australis_ (Bagnell)
Plantaed feeder
Hosmer Grove.

FAMILY PHLAEOTHRIPIDAE

_Apterygothrips remotus_ (Bianchi)
*Endemic
Plantaed feeder
Crater rim 10,000 ft.

_Haplothrips niger_ (Osborn)
Plantaed feeder
Hosmer Grove, Hōlua.
ORDER HEMIPTERA
(Bugs)

FAMILY PENTATOMIDAE (Stink bugs)

Nezara viridula (L.)
(southern green stink bug)
Kaupō Gap 5100 ft.

Oechalia pacifica (Stal)
Predacious
Hosmer Grove, Halemau'u trailhead 8000 ft,
White Hill, Waikau, Palikū,
trail to Kuiki 6400 ft.

FAMILY ALYDNIDAE

Ithmar hawaiensis Kirkaldy
Endemic
Found on pūkiawe
Hosmer Grove, Halemau'u trailhead 8000 ft,
White Hill.

FAMILY LYGAEIDAE (Seed bugs)

Geocoris pallens Stal
Predacious
White Hill, Palikū.

Metrarga sp. near swezevii Usinger & Ashlock
Kaupō trail 5000 ft.

Neseis maviensis maviensis (Blackburn)
Endemic
Found on mountain pilo and Morinda
Trail to Kuiki 6400 ft.

Neseis ochriasig baldwini Usinger
Endemic
Found on mamane
Hosmer Grove, Kaupō trail 5000-5800 ft,
Palikū.

Neseis pallassatus Ashlock
*Endemic
Found on Lobelia
Kaupō Gap 6200 ft.

Nesomartis psammophila Kirkaldy
Endemic
Found on bunchgrass
Trail to Kuiki 6400 ft, Kapalaoa.

Nysius beardslevi Ashlock
Endemic
Found on 'a'ali'i
Halemau'u trailhead 8000 ft,
Kaupō trail 4600-5700 ft.
**Nysius coenosulus** Stal
Found on *kupaoa*
White Hill.

**Nysius communis** Usinger
Found on *kupaoa*
Hosmer Grove, Halema'u trailhead 7000-8000 ft,
White Hill, Kaupō trail 5000 ft.

**Nysius delectus** White
Hosmer Grove.

**Nysius kinbergi** Usinger
Found on *kupaoa*
White Hill, Waikau Cabin.

**Nysius lichencola** Kirkaldy
Found on Deschampsia and *pūkiawe*
Halema'u trailhead 8000 ft, Waikau,
Paliku, trail to Kuiki 6400 ft.

**Nysius nemoriyagus** White
Found on *kupaoa*
White Hill.

**Nysius rubescens** White
Found on 'ōhelo
Hosmer Grove, Waikau, Paliku, trail to Kuiki
6400 ft, Kaupō trail 5000 ft.

**Nysius terrestris** Usinger
Found on *pūkiawe* and *Chenopodium*
Halema'u trailhead 8000 ft,
Kaupō trail 5000 ft.

**Nysius sp. near abnormis** Usinger
Found on *pūkiawe*
Halema'u trailhead 8000 ft,
Kaupō trail 5000-6000 ft.

**Oceanides montivaqus** Kirkaldy
Found on 'ōhi'a
Halema'u trailhead 8000 ft, Paliku,
Kaupō trail 5000 ft.

FAMILY NABIDAE (Damsel bugs)

**Nabis blackburni** White
Predacious
Hosmer Grove, White Hill, Paliku,
Kaupō trail 5800 ft.
Nabis capsiformis Germar
Predacious
Hosmer Grove, Halemau'u trailhead 8000 ft,
White Hill, Palikū, Kaupō trail 5000 ft.

Nabis kahavalu (Kirkaldy)
Predacious
Kaupō Gap.

Nabis sp. near nubicola (Kirkaldy)
Predacious
Hosmer Grove, Kalahaku lookout, Palikū.

Nabis n. sp, nubicola group
Predacious
Hosmer Grove, Halemau'u trailhead 8000 ft.

FAMILY MIRIDAE (Plant or leaf bugs)

Cyrtopeltis hawaiiensis Kirkaldy
Found on Kupaoa
White Hill.

Hyalopeplus pelucidus (Stal)
Found on 'a'ali'i
White Hill, Kaupō trail 5800 ft.

Orthotylus perkinsi Kirkaldy
Found on māmāne
Hosmer Grove, Halemau'u trailhead 8000 ft,
Palikū, Kaupō trail 5000 ft.

Orthotylus spp.
Found on mountain pilo and 'ōhi'a
Hosmer Grove, Halemau'u trailhead 8000 ft,
Palikū.

Psallus sp.
Found on sandalwood
Halemau'u trailhead 8000 ft.

Psallus sp.
Found on 'a'ali'i
Hosmer Grove, Halemau'u trailhead 8000 ft,
Kaupō trail 5000 ft.

Psallus sp.
Found on māmāne
Kaupō trail 5000 ft.

Pseudoclerada sp.
Predacious
Palikū.
Rhinacloa forticornis Reuter
White Hill.

*Sarona n. sp.*
Found on kūpaoa
Kalahaku lookout, White Hill.

*Sarona n. sp.*
Found on *Myrsine*
Kaupō trail 5000 ft.

*Trigonotylus usingeri* Carvallo
Found on *Deschampsia*
Waikau, trail to Kuiki 6400 ft,
Kaupō trail 5000 ft, Kapalaoa.

FAMILY VELIIDAE (Broad-shouldered water striders)

*Microvelia vagans* White
Aquatic, predacious
Hosmer Grove.

FAMILY TINGIDIDAE (Lace bugs)

*Leptobursa decora* Drake
Found on lantana
Kaupō Gap 4800 ft.

*Teleonemia scrupulosa* Stal
Found on lantana
Kaupō Gap 4800-5700 ft.
ORDER HOMOPTERA
(Cicadas, Hoppers, Psyllids, Whiteflies, Aphids & Scale Insects)

FAMILY CICADELLIDAE (Leafhoppers)

**Balclutha spp.**
Found on puʻikiawe and Deschampsia Waikau, Palikū, trail to Kuiki 6400 ft.

**Carneocephala saggitifera** (Uhler)
Found on grasses
Kaupō Gap 4500-5700 ft.

**Deltococephalus sonorus** Ball
Found on grasses
Kaupō Gap 4500-5500 ft.

**Draeculacephala minerva** Ball
Found on grasses
Palikū.

**Exitianus exitiosus** (Uhler)
Found on grasses
Hōlua, Kaupō Gap 4800 ft.

**Nesophrosyne haleakala** Kirkaldy
Found on mountain pilo
Halemau'u trailhead 8000 ft.

**Nesophrosyne nuenue** Kirkaldy
Found on 'a'ali'i
Halemau'u trailhead 8000 ft.

**Nesophrosyne spp.** (Unidentified)
Various endemic plants
Trail to Kuiki 6400 ft.

FAMILY DELPHACIDAE (Planthoppers)

**Chloriona kolophron** (Kirkaldy)
Found on grasses
White Hill.

**Leialoha mauiensis** (Muir)
Found on 'ohi'a
Palikū.

**Nesosydne amaumau** (Muir)
Found on 'ama'uma'u (Sadleria)
Hosmer Grove.

**Nesosydne argyroxyiphii** Kirkaldy
Found on silversword
Crater near Bubble Cave.

*Endemic

Introduced

*Endemic

Introduced

*Endemic

Introduced

*Endemic
Nesosydne geranii (Muir)
Found on 'āhinahina
Halema'u trailhead 8000 ft.

*NEndemic

Nesosydne monticola Kirkaldy
Found on mountain pilo
Halema'u trailhead 8000 ft.

*NEndemic

Nesosydne nigronervus (Muir)
Found on pūkiawe
Halema'u trailhead 8000 ft.

*NEndemic

Nesosydne osborni Muir
Found on kūpaoa
Kalahaku lookout, White Hill.

*NEndemic

Nesosydne raillardicola (Muir)
Found on kūpaoa
Hosmer Grove, trail to Kuiki 6400 ft.

*NEndemic

Nesosydne tetramolopii (Muir)
Found on Tetramolopium
White Hill.

Nesosydne spp. (Unidentified)
Various endemic plants
Waikau, Palikū.

FAMILY CIXIIDAE (Cixiid planthoppers)

Oliaris spp.
Waikau, Palikū, Kaupō trail 5000 ft.

*Endemic

FAMILY PSYLLIDAE (Psyllids or jumping plantlice)

Hevaheva swezeyi Crawford
Found on mokihana (Pelea)

Endemic

Kuwayama sp.
Found on 'ōhi'a
Palikū.

Endemic

Psylla uncatooides (Ferris & Klyver)
Found on koa
Kaupō trail 5000 ft.

Introduced

Trioza ohiacola Crawford?
Found on 'ōhi'a
Hosmer Grove.

*Endemic
FAMILY APHIDIDAE (Aphids or plantlice)

*Aphis citricola* van der Goot

Found on *'ūlei*
Near Hōlua 7200 ft.

*Aphis helichrysis* Kaltenback

Found on *kūpāoa*
White Hill.

*Aphis oestlundi* Gillette

Found on evening primrose
Hosmer Grove.

*Cinera atlantica* (Wilson)

Found on *Pinus* sp.
Hosmer Grove.

*Erisoma lanigera* (Hausmann)

(wooly apple aphid)
Found on *'ūlei*
Near Hōlua 7200 ft.

*Illinoia azaleae* (Mason)

Found on *'ōhelo*
White Hill.

*Sitobion miscanthi* (Takahashi)

Found on grasses
Hosmer Grove, Halemau'u trail
6700-8000 ft, Palikū, Kaupō trail
5000-5800 ft, 'Ō'ilipu'u, Kaluanui Crater.

*Tuberolachnus salignus* (Gmelin)

Found on *'ūlei*
Near Hōlua 7200 ft.

*Uroleucon pseudambrosia* (Olive)

Found on gosmore
Hosmer Grove.

*Wahlgreniella nervata* (Gillette)

Found on *'ōhelo*
Halemau'u trailhead 8000 ft, White Hill.

FAMILY ORTHEZIIDAE (Ensign coccids)

*Arctorthezia occidentalis* Douglas

Found on bunchgrass
Halemau'u trailhead 8000 ft.
FAMILY PSEUDOCOCCIDAE (Mealybugs)

Chlorococcus chloris (Beardsley)
Found on māmane
Kaupō trail 5000 ft.
Endemic

Phenacoccus solani Ferris
Found on Silene
Near bottomless pit 7300 ft.
Introduced

Pseudococcus longispinus (Targioni-Tozzetti)
(long-tailed mealybug)
Found on pūkiawe
Hosmer Grove.
Introduced

Pseudococcus nudus Ferris
Found on kūpaoa, 'ōhelo, and pūkiawe
White Hill, Halemau'u trailhead 8000 ft.
Endemic

Pseudococcus n. sp.
Found on sandalwood
Halemau'u trailhead 8000 ft.
Endemic

Pseudococcus n. sp.
Found on mountain pilo
Kapalaoa.
Endemic

Tomentocera haleakalā Beardsley
Found on mountain pilo
Kapalaoa.
Endemic

Trionymus insularis Ehrhorn
Found on Deschampsia
Halemau'u trailhead 8000 ft.
Endemic

FAMILY COCCIDAE (Scale insects)

Saissetia oleae (Olivier)
(black scale)
Found on kūpaoa and 'ōhelo
Hosmer Grove, Park Headquarters, and Waikau.
Introduced
ORDER COLEOPTERA
(Beetles)

FAMILY CARABIDAE (Ground beetles)

*Barypristus rupicola* (Blackburn)  *Endemic*
Predacious
Halema'u trailhead 8000 ft, Kalahaku lookout.

*Bembidion molokaiense* (Sharp)  *Endemic*
Predacious
Trail to Kuiki 6400 ft.

*Mauna frigida* (Blackburn)  *Endemic*
Predacious
Halema'u trailhead 8000 ft, Hōlua, Palikū, trail to Kuiki 6400 ft.

*Mecyclothorax micans* (Blackburn)  *Endemic*
Halema'u trailhead 8000 ft, Kalahaku lookout, Palikū, trail to Kuiki 6400 ft.

*Mecyclothorax montivagus* (Blackburn)  *Endemic*
Halema'u trailhead 8000 ft, White Hill, Palikū.

*Mecyclothorax ovipennis* Sharp  *Endemic*
Trail to Kuiki 6400 ft.

*Mecyclothorax perstriatus* Sharp  *Endemic*
Halema'u trailhead 8000 ft, Waikau.

*Mecyclothorax n. sp. near perkinsi* Sharp  *Endemic*
Trail to Kuiki 6400 ft.

*Mecyclothorax spp.* (Unidentified)  *Endemic*
Hosmer Grove, Halema'u trailhead 8000 ft, Palikū, trail to Kuiki 6400 ft.

FAMILY DYTISCIDAE (Predaceous diving beetles)

*Rhantus pacificus* (Boisduval)  *Endemic*
Aquatic, predacious
Palikū.

FAMILY CERAMBYCIDAE (Long-horned beetles)

*Plagithmysus railliardicola* (Perkins)  *Endemic*
Found on kupaoa
White Hill.
**Plagithmysus** (Aeschrithmysus) **dubautianus**
Gressitt & Davis
Found on Kūpaoa
7200 ft (W), White Hill.

**Plagithmysus** (A.) **swezeyanus** Gress.
Summit.

**Plagithmysus** (A.) **terryi** Perkins
Found on silversword
Crater.

**Plagithmysus** (A.?) **yoshimotoi** Gr. & D.
Host uncertain
Crater: 'O'ilipu'u 6000 ft.

**Plagithmysus** (Neoclytarlus) **modestus** (Sharp)
3600-4500 ft ?

**Plagithmysus** (N.) **pennatus** (Sh.)
4500-5400 ft ?

**Plagithmysus** (N.) **railliardiae** (Perk.)
Found on kūpaoa
Summit.

**Plagithmysus** (Plagithmysus) **cheirodendri** Gr. & D.
Host uncertain
Palikū (also upper Waiho'i Valley).

**Plagithmysus** (P.) **funebris** Sharp
Found on māmane
4500-7200 ft, Hosmer Grove,
Halemau'u trailhead 8000 ft, Palikū.

**Plagithmysus** (P.) **geranii** (Perk.)
Found on hinahina
5400-7200 ft (W).

**Plagithmysus** sp.
Kaupō trail 5000 ft.

**FAMILY CHRYSOMOLIDAE** (Leaf beetles)

**Diachus auratus** Le Conte
Kaupō Gap 4800 ft.

**Epitrix hirtipennis** (Melsheimer)
White Hill.

*Endemic

Introduced
FAMILY STAPHYLINIDAE (Rove beetles)

**Creophilus maxillosus** L. Kapalaoa. Introduced

(Unidentified genus & sp.) Kaupō trail 5000 ft. Endemic?

FAMILY ANOBIIDAE (Anobiid beetles)

**Xyletobius** sp. Wood borer Endemic

FAMILY CIIDAE (Minute tree-fungus beetles)

**Cis** sp. Fungus feeder Kaupō trail 5000 ft. Endemic

FAMILY COCCINELLIDAE (Ladybird beetles)

**Coccinella septempunctata bruchii** Mulsant Predacious on aphids Hosmer Grove, Halema'u trailhead 8000 ft, White Hill, Palikū, Kaupō trail 5800 ft. Introduced

**Coelophora inaequalis** (Fabricius) Predacious on aphids Kaupō Gap 5300 ft. Introduced

**Cryptolaemus montrouzieri** Mulsant Predacious on mealybugs and soft scales Halema'u trailhead 8000 ft. Introduced

**Hippodemia convergens** Guerin Predacious on aphids Halema'u trailhead 8000 ft, Kaupō trail 5800 ft. Introduced

**Hyperaspis jocosa** Mulsant Predacious on mealybugs Halema'u trailhead 8000 ft, Kalahaku lookout. Introduced

**Lindorus lophanthae** (Blaisdale) Predacious on aphids Halema'u trailhead 8000 ft. Introduced

**Olla abdominalis** (Say) Predacious on aphids Western rim 9500 ft. Introduced
Rhizobius ventralis (Erichson)
Predacious on aphids
Halema'u trailhead 8000 ft,
Kaupō trail 5800 ft.

Scymnus loewii Mulsant
Predacious on aphids and mealybugs
Halema'u trailhead 8000 ft.

Scymnus notescens (Blaisdale)
Predacious on aphids
White Hill.

Stethorus ? sp.
Predacious on mites ?
White Hill.

FAMILY HISTERIDAE (Hister beetles)

Saprinus lugens Erichson
Kapalaoa.

FAMILY NITIDULIDAE (Sap beetles)

Nesopeplus sp.
Waikau, Palikū.

Nesoptinus spp. (2)
Palikū.

FAMILY CURCULIONIDAE (Snout beetles)

Apion ulicis Forster
Found on gorse and perhaps kūpaoa
Halema'u trailhead 8000 ft.

Oodemus borrei Blackburn
Found on Deschampsia
Halema'u trailhead 8000 ft.

Pantomorus cervinus (Boheman)
Found on various plants
Waikau.

FAMILY PROTERINIDAE

Proterhinus spp. (several)
Found on various endemic plants
White Hill, Palikū, Kaupō trail 5000-5800 ft.
ORDER NEUROPTERA
(Lacewings)

FAMILY CHRYSPIDAE (Common or green lacewings)

**Anomalochrysa fulvescens** Perkins
Predacious
White Hill.

**Anomalochrysa hepatica** McLachlan
Predacious
Kaupō trail 5000 ft.

**Anomalochrysa soror** Perkins
Predacious
Kaupō trail 5000 ft.

**Chrysopa basalis** Walker
Predacious
White Hill.

FAMILY HEMEROBIIDAE (Brown lacewings)

**Hemerobius pacificus** Banks
Predacious
Hosmer Grove, Waikau, Kaupō trail 5000 ft.

**Nesomicromus bellulus** Perkins
Predacious
Palikū.

**Nesomicromus haleakalae** Perkins
Predacious
Palikū.

**Nesomicromus minimus** Perkins
Predacious
Hōlua.

**Nesomicromus rubinervus** Perkins
Predacious
Kaupō Gap 5300 ft.

**Nesomicromus vagus** Perkins
Predacious
Hosmer Grove, Halema'u trailhead 8000 ft, Waikau, Palikū, Kaupō trail 5000 ft.

**Pseudospectra cookeorum** Zimmerman
Predacious
Western rim 9700 ft.

**Pseudospectra lobipennis** Perkins
Predacious
Palikū.
ORDER LEPIDOPTERA
(Butterflies & Moths)

FAMILY GEOMETRIDAE (Measuring worms)

Eupithecia craterias (Meyrick)  
Larvae predacious  
Palikū, Kaupō trail 5000 ft.  
Endemic

Eupithecia monticolans Butler  
Larvae predacious  
Hosmer Grove, Halemau'u trailhead 8000 ft, Waikau, Palikū, Kaupō trail 5800 ft.  
Endemic

Eupithecia scoriodes (Meyrick)  
Larvae predacious  
Hosmer Grove, Halemau'u trailhead 8000 ft, Waikau, Palikū, trail to Kuiki 6400 ft.  
*Endemic

Fletcheriana insularis (Butler)  
Caught in light trap  
Endemic

Megalotica aphoristis (Meyrick)  
Day-flying  
Palikū.  
Endemic

Megalotica holombra (Meyrick)  
Day-flying  
Hosmer Grove, Waikau, Palikū.  
*Endemic

Scotorythra sp.  
Caught in light trap  
Hosmer Grove, Halemau'u trailhead 8000 ft.  
Endemic

Scotorythra sp.  
Caught in light trap  
Palikū.  
Endemic

FAMILY NOCTUIDAE (Noctuid moths)

Achaea janata (L.)  
Caught in light trap  
Palikū.  
Introduced

Agrotis aulacias Mayrick  
Caught in light trap  
Halemau'u trailhead 8000 ft.  
Endemic

Agrotis baliopa Meyrick  
Caught in light trap  
Hosmer Grove, Halemau'u trailhead 8000 ft.  
Endemic
Agrotis epicremna Meyrick  
Caught in light trap  
Halema'u trailhead 8000 ft, White Hill.

Agrotis epsilon (Hufnagel)  
Caught in light trap  
Hosmer Grove, Halema'u trailhead 8000 ft.

Agrotis xiphias Meyrick  
Caught in light trap  
Halema'u trailhead 8000 ft, White Hill.

Agrotis spp. (Unidentified)  
Caught in light trap  
Halema'u trailhead 8000 ft, White Hill.

Catabena esula Druce  
Caught in light trap  
Paliku.

Elydna nonagrica (Walker)  
Caught in light trap  
Paliku.

Haliophyile anthracias (Meyrick)  
Caught in light trap  
Western rim 9000 ft.

Haliophyile ferruginea (Swezey)  
Caught in light trap  
Kaupō trail 5000 ft.

Haliophyile flavistigma (Warren)  
Caught in light trap  
Paliku.

Heliothis zea (Boddie)  
Caught in light trap  
Paliku.

Hypena strigata Fabricius  
Caught in light trap  
Paliku.

Leucania striata Leech  
Caught in light trap  
Paliku.

Melipotis indomita Walker  
Caught in light trap  
Halema'u trailhead 8000 ft.

Peridroma albiorbis (Warren)  
Caught in light trap  
Halema'u trailhead 8000 ft.
**Peridroma cinctipennis** (Warren)  
Caught in light trap  
Halemau‘u trailhead 8000 ft.  
Endemic

**Peridroma coniotis** (Hampson)  
Caught in light trap  
Halemau‘u trailhead 8000 ft.  
Endemic

**Peridroma saucia** (Huebner)  
Caught in light trap  
Hosmer Grove, Halemau‘u trailhead 8000 ft.  
Introduced

**Peridroma selenias** (Meyrick)  
Caught in light trap  
Halemau‘u trailhead 8000 ft.  
Endemic

**Plusia biloba** (Stevens)  
Caught in light trap  
Hosmer Grove, Halemau‘u trailhead 8000 ft.  
Introduced

**Pseudaletia dasuta** (Hampson)  
Caught in light trap  
Hosmer Grove, Halemau‘u trailhead 8000 ft.  
Endemic

**Pseudaletia unipuncta** (Haworth)  
Caught in light trap  
Hosmer Grove, Halemau‘u trailhead 8000 ft.  
Introduced

**Pseudaletia n. sp.**  
Caught in light trap  
Halemau‘u trailhead 8000 ft.  
Endemic

**Schrankia altivolans** (Butler)  
Caught in light trap  
Palikü.  
Endemic

**Family SpHINGIDAE** (Hawk moths)

**Aqrius cingulatus** (Fabricius)  
Caught in light trap  
Halemau‘u trailhead 8000 ft.  
Introduced

**Hylas lineata** (Fabricius)  
Caught in light trap  
Larvae feeding on Oenothera  
Palikü, Hōlua.  
Introduced

**Family NYMPHALIDAE** (Brush-footed butterflies)

**Vanessa virginiensis** (Drury)  
Kuiki 7500 ft.  
Introduced
FAMILY LYCAENIDAE (Gossamer-winged butterflies)

**Vaga blackburni** (Tuley)
Larvae on koa and 'a'ali'i
Hosmer Grove, Waikau, Palikū,
trail to Kuiki 6400 ft,
Kuupō trail 5000-5800 ft.

**FAMILY PYRALIDAE (Snout moths)**

**Oebia heterodoxa** (Meyrick)
Caught in light trap
Waikau, Palikū.

**Oebia liopsis** (Meyrick)
Caught in light trap
Hosmer Grove, Waikau, Palikū.

**Oebia n. sp.**
Caught in light trap
Palikū.

**Rhynchephestia rhabdotis** Hampson
Found on silversword
Western crater.

**Scoparia** spp.
Caught in light trap
Palikū.

**Uresiphita polygonalis** (Dennis & Shiffermueller)
Found on māmāne
Hosmer Grove, Halema'ū trailhead 8000 ft,
Palikū.

**FAMILY PTEROPHORIDAE (Plume moths)**

**Stenoptilodes littoralis rynchophora** (Meyrick)
Found on 'ōhelo
Hosmer Grove, Halema'ū trailhead 8000 ft,
trail to Kuiki 6400 ft.

**FAMILY CARPOSINIDAE (Carposinid moths)**

**Heterocrossa** sp.
Hosmer Grove, Waikau, Palikū.
FAMILY XYLORICTIDAE (Stemonid moths)

*Endemic

_Hodegia apatella_ Walsingham
Halema'u'u trailhead 8000 ft, Kalahaku lookout,
Sliding sands trail.

_Endemic

_Thyrocoopa_ sp.
Paliku, Kaupō trail 5800 ft.

_Endemic
ORDER HYMENOPTERA
(Ants, Wasps, & Bees)

FAMILY ICHNEUMONIDAE (Ichneumons)

*Algathia rubicunda* (Cresson)  
Parasite of Lepidoptera larvae  
Halemau'u trailhead 8000 ft, Palikū.  
Introduced

*Barichneumon californicum* (Heinrick)  
*Kaupō* Gap 5500 ft.  
Introduced

*Coccygomimus punicipes* (Cresson)  
Parasite of Lepidoptera larvae  
Halemau'u trail 7000 ft, Palikū.  
Introduced

*Diadegma blackburni* (Cameron)  
Parasite of Lepidoptera larvae  
Halemau'u trail 7000 ft, Palikū, Kaupō trail 5800 ft.  
Introduced

*Diplazon laetatorius* (Fabricius)  
Parasite of aphidophagous syrphid larvae  
Halemau'u trail 7000 ft, Palikū.  
Introduced

*Enicospilus (Enicospilus) castaneus* Ashmead  
Parasite of Lepidoptera larvae  
Palikū.  
Endemic

*Enicospilus (E.) longicornis* Ashmead  
Parasite of Lepidoptera larvae  
Palikū.  
Endemic

*Enicospilus (E.) molokaiensis* Ashmead  
*Kaupō* Gap 5400 ft.  
Endemic

*Enicospilus (Eremotyloides) orbitalis* (Ashmead)  
Parasite of Lepidoptera larvae  
*Kaupō* trail 5800 ft.  
Endemic

*Enicospilus (Pleuroneurophion) ferrugineus* (Perkins)  
Parasite of Lepidoptera larvae  
White Hill.  
Endemic

*Gambrus ultimus* (Cresson)  
Parasite of filth-inhabiting syrphid larvae  
Palikū, Kaupō trail 5800 ft.  
Introduced

*Gelis tenellus* (Say)  
Parasite of *Chrysopa* larvae  
Halemau'u trail.  
Introduced
**Family Braconidae (Braconids)**

*Hyposoter exiguae* Viereck  
Parasite of Lepidoptera larvae  
Waikū, Palikū.  
*Introduced*

*Pristomerus hawaiiensis* Perkins  
Parasite of Lepidoptera larvae  
Hosmer Grove, Halemau'u trailhead 8000 ft, Palikū.  
*Introduced*

*Pristomerus pacificus applachianus* Viereck  
Parasite of Lepidoptera larvae  
Palikū.  
*Introduced*

*Pseudamblyteles kobelei* Swezey  
Parasite of Lepidoptera larvae  
Halemau'u trailhead 8000 ft, Kaupō trail 5800 ft.  
*Introduced*

*Pterocormus cupitus* (Cresson)  
Parasite of Lepidoptera larvae  
Palikū, trail to Kuiki 6400 ft, Kaupō trail 5800 ft.  
*Introduced*

*Pterocormus purpuripennis* Cresson?  
Parasite of Lepidoptera larvae  
Palikū, trail to Kuiki 6400 ft.  
*Introduced*

*Spolas spp.*  
Parasites of Lepidoptera larvae  
Trail to Kuiki 6400 ft, Kaupō trail 5800 ft.  
*Endemic*

*Aphidius obscuripes* Ashmead  
Aphid parasite  
Hosmer Grove, Palikū, Kaupō trail from 5000-5800 ft.  
*Introduced*
Aspilota konae (Ashmead)
Parasite of fly larvae
Kaupō Gap 4800 ft.

Bracon omiodivorum (Terry)
Parasite of Lepidoptera larvae
Hōlua.

Bracon terryi (Bridwell)
Parasite of tephritid fly larvae
Kalahaku lookout, Paliku,
Kaupō trail from 5000-5800 ft.

Chelonus insularis Cresson
Parasite of Lepidoptera larvae
Western rim 10,000 ft.

Doryctes syagrii (Pemberton)
Parasite of introduced fern weevil larvae
Paliku.

Horismus sp.
Parasite of ?
Hōlua Aug. 1962.

Meteorus laphygmae Vieoreck
Parasite of Lepidoptera larvae
Kaupō Gap from 4500-5500 ft.

Perilitus coccinellae (Schrank)
Parasite of adult coccinellid beetle adults
'O'ilipu'u.

FAMILY ENCYRTIDAE (Encyrtids)

Anagyrus (Nesoanagyrus) spp.
Parasites of endemic Pseudococcidae
Hosmer Grove, Halemau'u trailhead 8000 ft,
Paliku, Kaupō trail 5800 ft.

Metaphycus lounsburyi (Howard)
Parasite of Saissetia scales
Halemau'u trailhead 8000 ft.

FAMILY EUPELMIDAE (Eupelmids)

Eupelmus spp.
Parasites of various endemic insects
Hosmer Grove.
FAMILY EULOPHIDAE (Eulophids)

**Euderus metalicus** (Ashmead)  
Parasite of leafmining larvae  
Hosmer Grove, Halema'u trailhead 8000 ft,  
Kalahaku lookout, Waikau Cabin, trail to  
Kuiki 6400 ft, Kaupō trail from 5000-5800 ft.

**Sympiesis** sp.  
Parasite of leafmining larvae  
Kalahaku lookout, Kaupō trail 5800 ft.

FAMILY PTEROMALIDAE (Pteromalids)

** Cyrtogaster fuscitarsus** Ashmead  
Hosmer Grove, Halema'u trailhead 8000 ft,  
Kaupō trail 5800 ft.

**Habrocytus** sp.  
Halema'u trailhead 8000 ft.

**Pachyneuron syrphi** Ashmead  
Parasite of aphidophagous syrphid larvae  
Halema'u trailhead 8000 ft.

**Toxeuma** sp.  
Hosmer Grove.

FAMILY MYMARIDAE (Fairy flies)

**Polynema** spp.  
Egg parasites of leafhoppers and planthoppers  
Hosmer Grove, Halema'u trailhead 8000 ft,  
Paliku, trail to Kuiki 6400 ft.

FAMILY CERAPHRONIDAE (Ceraphronids)

**Lygocerus** sp.  
Hyperparasite in aphids  
Halema'u trailhead 8000 ft.

FAMILY SCELIONIDAE (Scelionids)

**Telenomus** sp.  
Egg parasites  
Halema'u trailhead 8000 ft.
FAMILY CYNIPIDAE (Gall wasps)

**Charips brassicae** (Ashmead)  
Hyperparasite in aphids  
Hosmer Grove, Halema' u trailhead 8000 ft.  
(Introduced)

(Identified genus & species  
in the subfamily Eucoilinae)  
Parasite in fly puparia.

**Phanacis taraxaci** (Ashmead)  
Stem galls in *Hypocharis radicata*  
Hosmer Grove, Halema' u trailhead 8000 ft.  
(Introduced)

FAMILY BETHYLIDAE (Bethylids)

**Seriola spp.**  
Parasites on various endemic insect larvae  
Hosmer Grove, Halema' u trailhead 8000 ft,  
Kalahaku lookout, Waikau, Palikū,  
Kaupō trail 5000 ft.  
(Endemic)

FAMILY VESPIDAE (Paper wasps, potter wasps, yellowjackets)

**Chelodynerus chelifer** Perkins  
Hōlua, Pu' u Maile.  
(Endemic)

**Odynerus nivicola** Perkins  
Predacious on Lepidoptera larvae  
Palikū.  
(Endemic)

**Odynerus nubicola** Perkins  
Predacious on Lepidoptera larvae  
Halema' u trailhead 8000 ft, Waikau, Palikū.  
(Endemic)

**Odynerus sociabilis** Perkins  
Predacious on Lepidoptera larvae  
Hosmer Grove, Halema' u trailhead 8000 ft,  
Waikau, Palikū, trail to Kuiki 6400 ft.  
(Endemic)

**Polistes fuscatus aurifer** (Saussure)  
Predacious on Lepidoptera larvae  
Palikū.  
(Introduced)

**Vespula pennsylvanica** (Saussure)  
(predacious yellowjacket)  
This species responsible for recent attacks  
on people camping or visiting Hosmer Grove.  
Hosmer Grove.  
(Introduced)

**Vespula vulgaris** (L.)  
(predacious yellowjacket)  
Hosmer Grove.  
(Introduced)
FAMILY POMPILIDAE (Spider wasps)

*Pompilus luctuosus* Cresson
Predacious on spiders
Halemau'u trail from 7000-8000 ft, Palikū.

FAMILY SPHECIDAE (CRABRONINAE) (Sphecid wasps)

*Ectemnius* (Oreocrabro) *mandibularis* (Smith)
Predacious on flies
Palikū.

*Ectemnius* (O.) *molokaiensis* (Perkins)
Predacious on flies
Hosmer Grove, Halemau'u trailhead 8000 ft, Kalahaku lookout, Palikū, trail to Kuiki 6400 ft.

*Ectemnius* (O.) *nesiotes* (Pate)
Predacious on flies
Halemau'u trailhead 8000 ft, Palikū.

*Ectemnius* (O.) *tumidoventris* (Perkins)
Predacious on flies
Palikū.

FAMILY APIDAE (Honey bees, etc.)

*Apis mellifera* L.
(honey bee)
Palikū.

FAMILY HYLAEIDAE (PROSOPIDINAE) (Plasterer & yellow-faced bees)

*Nesoprosopis nivalis* Perkins
Pollen and nectar
Hosmer Grove, Halemau'u trailhead 8000 ft, Kalahaku lookout, White Hill, Waikau, Palikū, Kaupō trail 5800 ft.

*Nesoprosopis volcanica* Perkins
Pollen and nectar
Halemau'u trailhead 8000 ft, Kalahaku lookout, Palikū, trail to Kuiki 6400 ft, Kaupō trail from 5000-5800 ft.

*Nesoprosopis* sp. near *volatilis* (Smith)
Kleptoparasite on other *Nesoprosopis*
Hosmer Grove, Halemau'u trailhead 8000 ft, Kalahaku lookout, White Hill, Waikau, Palikū.
FAMILY FORMICIDAE (Ants)

_Hypoponera opaciceps_ (Mayr)  
Predacious  
Hosmer Grove, Kuiki 7500 ft.  

_Iridomyrmex humilis_ (Mayr)  
(Argentine ant)  
Predator/scavenger  
Hosmer Grove.
ORDER DIPTERA
(Flies)

SUBORDER NEMATOCERA (Long-horned flies)

FAMILY CECIDOMYIIDAE (Gall midges)

**Lestremia palikuensis** Hardy
Paliku. *Endemic

FAMILY CERATOPOGONIDAE (Biting midges)

**Forcipomyia (Proforcipomyia) palikuensis** Hardy
Paliku. *Endemic

FAMILY CHIRONOMIDAE (Midges)

**Calopsectra bryanti** Hardy
Crater 7000 ft. *Endemic

**Orthocladius (Smittia) mauliensis** Hardy
Halemau'u trail 8000 ft. Endemic

FAMILY MYCETOPHILIDAE (Fungus gnats)

**Orfelia (Tylparua) cratericola** Hardy
Paliku. *Endemic

FAMILY TIPULIDAE (Crane flies)

**Limonia perkinsi** Grimshaw
Hosmer Grove, Paliku, Kaupō 6200 ft. Endemic

**Limonia grishawii** (Alexander)
Hosmer Grove, Kapalaoa. Endemic

SUBORDER BRACHYCERA (Short-horned flies)

FAMILY DOLICHOPODIDAE (Long-legged flies)

**Campsicnemus brunnescens** Hardy & Kohn
Crater. *Endemic

**Campsicnemus diamphidius** Hardy & Kohn
Paliku. *Endemic

**Campsicnemus medioflococcus** Hardy & Kohn
Paliku, Kaupō 5000 ft. *Endemic
Eurynogaster vittata Hardy & Kohn
Hōlua, Palikū.

Chrysotus parthenus Hardy & Kohn
Hosmer Grove, Hōlua, Palikū.

FAMILY STRATIOMYIDAE (Soldier flies)

Neoexaireta spanigera (Wiedemann)
Palikū.

SUBORDER CYCLORRHAPHA (Circular-seamed flies)

FAMILY ANTHOMYZIDAE (Anthomyzid flies)

Hylemya platura (Meigen)
Hosmer Grove, Palikū.

FAMILY ASTEIIDAE (Asteiid flies)

Asteia palikuensis Hardy & Delfinado
Palikū, Kaupō Gap.

FAMILY CALLIPHORIDAE (Blow flies)

Calliphora vomitoria (L.)
Hosmer Grove, Palikū.

Dyscritomyia grimshawi James (ms.)
Hosmer Grove, Palikū.

Dyscritomyia hawaiiensis Grimshaw
Palikū.

Eucalliphora lilaea (Walker)
Palikū, Kaupō 6100 ft.

Orthellia vividis (Wiedemann)
Hosmer Grove, Palikū.

Phormia regina (Meigen)
Palikū.

FAMILY CHAMAEMYIIDAE (Aphid flies)

Leucopis albipunctata Zetterstet
Aphid predator
Hosmer Grove, Palikū, Kaupō 6100 ft.
FAMILY DROSOPHILIDAE (Vinegar flies)

<table>
<thead>
<tr>
<th>Species</th>
<th>Location</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antopocerus orthopterus</strong> Hardy Palikū.</td>
<td></td>
<td>*Endemic</td>
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<tr>
<td><strong>Drosophila acrostichalis</strong> Hardy Palikū.</td>
<td></td>
<td>*Endemic</td>
</tr>
<tr>
<td><strong>Drosophila araiochiria</strong> Hardy Palikū.</td>
<td></td>
<td>Endemic</td>
</tr>
<tr>
<td><strong>Drosophila artigena</strong> Hardy Palikū.</td>
<td></td>
<td>*Endemic</td>
</tr>
<tr>
<td><strong>Drosophila asketosoma</strong> Hardy West rim 8600 ft.</td>
<td></td>
<td>*Endemic</td>
</tr>
<tr>
<td><strong>Drosophila crassifemur</strong> Grimshaw Halema'u' trail 8000 ft, Palikū, Kaupō 6100 ft.</td>
<td></td>
<td>Endemic</td>
</tr>
<tr>
<td><strong>Drosophila curvitibia</strong> Hardy Palikū.</td>
<td></td>
<td>*Endemic</td>
</tr>
<tr>
<td><strong>Drosophila hirticosa</strong> Hardy Palikū.</td>
<td></td>
<td>*Endemic</td>
</tr>
<tr>
<td><strong>Drosophila joycei</strong> Hardy Palikū.</td>
<td></td>
<td>*Endemic</td>
</tr>
<tr>
<td><strong>Drosophila lemniscata</strong> Hardy Palikū.</td>
<td></td>
<td>*Endemic</td>
</tr>
<tr>
<td><strong>Drosophila melanoloma</strong> Hardy Palikū.</td>
<td></td>
<td>Endemic</td>
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<tr>
<td><strong>Drosophila prodita</strong> Hardy Palikū.</td>
<td></td>
<td>Endemic</td>
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<tr>
<td><strong>Drosophila scolostoma</strong> Hardy Palikū.</td>
<td></td>
<td>*Endemic</td>
</tr>
<tr>
<td><strong>Drosophila seorsa</strong> Hardy Palikū.</td>
<td></td>
<td>*Endemic</td>
</tr>
<tr>
<td><strong>Drosophila stenoptera</strong> Hardy Palikū.</td>
<td></td>
<td>*Endemic</td>
</tr>
<tr>
<td><strong>Drosophila taeniata</strong> Hardy Palikū.</td>
<td></td>
<td>*Endemic</td>
</tr>
<tr>
<td><strong>Drosophila xuthoptera</strong> Hardy Palikū.</td>
<td></td>
<td>Endemic</td>
</tr>
<tr>
<td><strong>Drosophila (Trichotobregma) petalopeza</strong> Hardy Palikū.</td>
<td></td>
<td>*Endemic</td>
</tr>
</tbody>
</table>
Idiomyia obscuripes Grimshaw
   Paliku.

Idiomyia picta Grimshaw
   Paliku.

Scaptomyza (Alloscaptomyza) buccata Hackman
   "Crater."

Scaptomyza (A.) mutica Hardy
   Hosmer Grove ?, Paliku.

Scaptomyza (A.) semiflava Hardy
   Holoa.

Scaptomyza (Bunostoma) bryanti Hackman
   Kaupo Gap from 5200-6200 ft.

Scaptomyza (B.) anomala Hardy
   Hosmer Grove, Kaupo Gap 6000 ft.

Scaptomyza (Engisscaptomyza) nasalis (Grimshaw)
   Pu'u Kukui 7500 ft.

Scaptomyza (Rosenwaldia) abrupta Hackman
   Paliku, Kaupo Gap 6600 ft.

Scaptomyza (R.) mitchelli Hackman
   Paliku.

Scaptomyza (Troqloscaptomyza) affinicuspida Hardy
   Paliku.

Scaptomyza (T.) concinna Hardy
   Paliku.

Scaptomyza (T.) ctenophora Hardy
   Paliku.

Scaptomyza (T.) cuspidata Hardy
   Paliku.

Scaptomyza (T.) decepta
   Kaupo Gap from 6000-6300 ft.

Scaptomyza (T.) devexa Hardy
   Paliku.

Scaptomyza (T.) dubautiae Hardy
   Pu'u Nianiau.

Scaptomyza (T.) eurystylata Hardy
   Paliku.

Scaptomyza (T.) isopedon Hardy
   Paliku.

*Endemic

Endemic
*Scaptomyza* (T.) *latitergum* Hardy
Crater 8000 ft, Palikū.

*Scaptomyza* (T.) *longipecten*
subsp. *griseonigra* Hardy
Hōlua, Palikū.

*Scaptomyza* (T.) *ostensa* Hardy
Palikū.

*Scaptomyza* (T.) *retusa* Hardy
Palikū.

*Scaptomyza* (T.) *robusta* Hardy
Ko'olau Gap 7100 ft, Palikū.

*Scaptomyza* (T.) *setosiloba* Hardy
Palikū.

*Scaptomyza* (T.) *spilota* Hardy
Hōlua.

*Scaptomyza* (T.) *villosa* Hardy
Palikū.

*Scaptomyza* (T.) *palifrons* Hackman
Kaupō Gap 6000 ft.

*Scaptomyza* (T.) *brachycera* Hardy
Hosmer Grove, Palikū.

*Scaptomyza* (T.) *articulata* Hardy
Kaupō Gap 6100 ft.

**FAMILY EPHYDRIDAE** (Shore flies)

*Neoscatella hawaiiensis* (Grimshaw)
Palikū, Kaupō 6100 ft.

**FAMILY LONGCHOPTERIDAE** (Spear-winged flies)

*Longchoptera furcata* (Fallen)
Hosmer Grove, West rim 7000 ft, Palikū,
Kaupō Gap 6100 ft.

**FAMILY MUSCIDAE** (Miscid flies)

*Fannia canicularis* (L.)
Palikū.

*Gymnodia arcuata* Stein
Paliku.
Hydrotaea houghi Mallock Hosmer Grove.

*Introduced*

**Lispe metatarsalis** Thomson Hosmer Grove, Palikū, Kaupō 6100 ft.

*Introduced*

**Lispeocephala argentifrons** Hardy (ms.) Palikū.

*Endemic*

**Lispeocephala confluens** Mallock Palikū.

*Endemic*

**Lispeocephala dentata** Hardy (ms.) Kaupō 6100 ft.

*Endemic*

**Lispeocephala indecisa** Hardy (ms.) Kaupō 5200 ft.

*Endemic*

**Lispeocephala ocellata** Hardy (ms.) Paliku, Kaupō 6100 ft.

*Endemic*

**Lispeocephala parilis** Hardy (ms.) Palikū, Kaupō 6100 ft.

*Endemic*

**Lispeocephala silvicola** Hardy (ms.) Palikū.

*Endemic*

**FAMILY PIPUNCULIDAE** (Big-headed flies)

**Pipunculus haleakalae** (Hardy) Paliku.

*Endemic*

**Pipunculus juvator melanopodis** (Hardy) Hosmer Grove, Palikū.

*Endemic*

**Pipunculus meqamenus** Hardy Western rim 8400 ft, Palikū, Kaupō 6100 ft.

*Endemic*

**Pipunculus uluhe** (Hardy) Paliku.

*Endemic*

**FAMILY SARCOPHAGIDAE** (Flesh flies)

**Chaetoravinia anandra** Dodge Paliku.

*Introduced*

**Helicobia morionella** (Aldrich) Hōlua.

*Introduced*

**Hystricocnema plinthopyga** (Wiedemann) Crater.

*Introduced*

**Ravania ihermineri** (Robineau-Desvoidy) Kapalāoa, Palikū, Kaupō Gap.

*Introduced*
FAMILY SEPSIDAE (Black scavenger flies)

**Sepsis thoracica** (Robineau-Desvoidy)
Hosmer Grove, Kaupo Gap from 5000-6200 ft.

FAMILY SPHAEROCERIDAE (Small dung flies)

**Copromyza equina** Fallen
Hosmer Grove.

**Leptocera abdominiseta** Duda
Paliku.

FAMILY SYRPHIDAE (Syrphid or flower flies)

**Allograpta exotica** (Wiedemann)
Paliku, Kaupo 5500 ft.

**Allograpta obliqua** (Say)
West rim 7600 ft, Paliku, Kaupo 5500 ft.

**Eristalis tenax** L.
Pu'ulu Maile.

**Ischiodon grandicornis** (Macquart)
Hosmer Grove, Paliku.

**Mesograpta marginata** (Say)
Paliku, Kaupo 5200 ft.

FAMILY TACHINIDAE (Tachinid flies)

**Archytas cirphis** Curren
Paliku.

**Chaetogaedia monticola** (Bigot)
Kapalaoa, Paliku, Kaupo Gap from 5000-6200 ft.

**Eucelatoria armigera** (Coquillet)
Paliku, Kaupo Gap from 5000-5400 ft.

**Gonia longipulvilli** Tothill
Ho'ola, Kapalaoa, Paliku, Kaupo Gap 5400 ft.

**Lespesia archippivora** Riley
Kaupo 5400 ft.

**Leucostoma simplex** (Fallen)
Hosmer Grove, Paliku, Kaupo Gap 5400 ft.
FAMILY TETHINIDAE (Tethinid flies)

_Tethinia variseta_ (Melander)
Halema'ū trail 8000 ft.

FAMILY TEPHRITIDAE (Fruit flies)

_Neotephritis nigropilosa_ Hardy
Hōlua 6500 ft.

_Procecidochares utilis_ Stone
Hōlua, Kaupō Gap from 5200-6400 ft.

_Trupanea artemisae_ Hardy
Near Hōlua 7000 ft, Kaupō 6000 ft.

_Trupanea beardsleyi_ Hardy
Kukui ridge 7500 ft, Kaupō 5800 ft.

_Trupanea crassipes_ (Thompson)
Western rim 7800 ft, Pu'u Maile, Paliku, Kaupō Gap 5800 ft.

_Trupanea cratericola_ (Grimshaw)
Hosmer Grove, West rim 10,000 ft, Paliku, Kaupō Gap 5200 ft.

_Trupanea denotata_ Hardy
West rim 10,000 ft.

_Trupanea limpidapex_ (Grimshaw)
West rim from 8000-10,000 ft, Hōlua.

_Trupanea pantosticta_ Hardy
Paliku.