

## CATALOG OF ACARI IN THE HAWAIIAN ISLANDS

### I. Mesostigmata (or Gamasida) (Acari)

JoAnn M. Tenorio,<sup>1</sup> H.A. Denmark,<sup>2</sup> and Sabina F. Swift<sup>1</sup>

*Abstract.* This work catalogs 132 species of the mite suborder Mesostigmata recorded from the Hawaiian Archipelago, listing for each species distribution within the islands and pertinent literature references. Nineteen new archipelago and 12 new island records are given. For the Phytoseiidae, 6 new combinations are provided; *Amblyseius rhabdus* is considered a junior synonym of *Amblyseius obtusus*.

In the first catalog of Hawaiian Acarina, Garrett & Haramoto (1967) reported a total of 210 species of Acari for the Hawaiian Islands. Interest in mites in Hawai'i has intensified in the last 17 years and many new records have appeared in the literature. The 1967 catalog, while still useful, is now outdated. A revision incorporating all mites currently recorded in Hawai'i should be useful to present and future workers, both as an index to species known and as a guide to distributional and faunal gaps that might be filled by additional collecting and study. This catalog is the first in a series, each treating a suborder of Acari. We hope that this series will help call attention to species reported from Hawai'i so that Hawaiian material may be included in revisionary studies.

The Mesostigmata is probably the best studied major group of Acari in the Hawaiian Islands but, except for the ticks, may prove to be the smallest once all groups are well reported. Forty-four species belonging to the Mesostigmata were listed by Garrett & Haramoto (1967); the present catalog lists 133 species; 3 of these represent species probably not established in Hawai'i. Nineteen new archipelago records, as well as 12 new island records, are given. It is evident that many additional species remain undiscovered, particularly in the faunally rich soil and litter environs and on the relatively poorly collected islands, i.e., those other than Hawai'i and O'ahu.

Eighteen of the 132 species listed here have been reported only from the Hawaiian Islands; most of these (13) are phytoseiids. An additional 17 taxa are undescribed or not yet identified to species. The mesostigmatate fauna shows little evidence at this

---

1. J. Linsley Gressitt Center for Research in Entomology, Department of Entomology, Bishop Museum, P.O. Box 19000-A, Honolulu, Hawai'i 96817, USA.

2. Chief, Bureau of Entomology, Division of Plant Industry, Florida Department of Agriculture and Consumer Services, P.O. Box 1269, Gainesville, Florida 32602, USA. Contribution No. 604.

time of having a significant endemic component, even in the high elevation native forests surveyed on the Big Island of Hawai'i. Moreover, at least some species now known only from the Hawaiian Islands are likely to be found elsewhere as collection and identification proceed apace in other parts of the world.

The second author (H.A.D.) has recently identified several species of Phytoseiidae new to Hawai'i, primarily from the Bishop Museum collection; these are included herein. In addition to the new records, we also provide the following **new combinations** within the Phytoseiidae: *Typhlodromus haramotoi* Prasad, 1968, *Typhlodromus neobakeri* Prasad, 1968, and *Typhlodromus rhenoides* Athias-Henriot, 1960, are transferred to *Amblydromella* Muma; *Amblyseius haramotoi* Prasad, 1968, to *Euseius* Wainstein; *Amblyseius mauiensis* Prasad, 1968, to *Proprioiseiopsis* Muma; and *Amblyseius schusterellus* Athias-Henriot, 1976, to *Chelaseius* Muma & Denmark. *Amblyseius rhabdus* Denmark, 1965 is listed as a **new synonym** of *A. obtusus* (Koch, 1839). Generic concepts used within the Phytoseiidae are those of H.A.D.

Nomenclature for the Hypoaspidinae is that used by Tenorio (1982) for the Hawaiian species, which is essentially that of Karg (1978, 1979).

Information given herein for each species includes the currently accepted name, original genus, distribution, literature references for Hawaiian material, and data for any new collection records. Families are listed alphabetically, with genera and species listed in alphabetical order under their higher categories. Names follow the latest authoritative source found. Species reported in the literature as "sp.," "n. sp.," "sp. A," etc., are lumped as "sp." Distribution includes the type-locality; extra-Hawaiian distribution if any, excluding type-locality; and distribution within the Hawaiian Islands; "HI" [Hawai'i] is listed only when no definite island distribution is known. Numbers given in parentheses following the distribution correspond to document numbers for references in the "Literature Cited" section; references pertain to Hawaiian distribution only. When more than one reference is listed, an asterisk (\*) indicates the first report for that species in Hawai'i. Names of species that are not considered established or whose reports are doubtful are preceded by a dagger (†). The identifier for newly recorded species is given if other than the present authors. Depositories for specimens constituting new records are given if other than Bishop Museum (*UH* refers to the University of Hawaii, Honolulu). Comments or clarification are offered for some records.

The literature search for this catalog was completed in November 1984.

## MESOSTIGMATA

### Family AMEROSEIIDAE

*Afrocypholaelaps africana* (Evans, 1963) as *Neocypholaelaps*

DISTRIB.: Angola; Australia, Africa; Hawai'i (13.0)

*Neocypholaelaps lindquisti* Prasad, 1968

DISTRIB.: Mānoa, O'ahu; O'ahu (14.0, 45.0\*)

## Family ASCIDAE

*Asca aphidioides* (Linnaeus, 1758) as *Acarus*

DISTRIB.: Europe; Europe, N America, New Zealand; Hawai'i, O'ahu (19.0, 35.0\*, 55.0)

*Asca duosetosa* Fox, 1946

DISTRIB.: Puerto Rico; Florida, Guadaloupe, Trinidad; Nihoa

NEW ARCHIPELAGO RECORD: Nihoa I: 5♀, 2♂, 3N, Miller Val, 1983 (S. Conant) (ID by M.L. Goff) (UH collection).

*Asca garmani* Hurlbutt, 1963

DISTRIB.: USA, Connecticut; Caribbean, N & C America, Oceania; Hawai'i, O'ahu (19.0, 35.0\*)

*Asca pineta* De Leon, 1967

DISTRIB.: Guyana; Hawai'i, Kure (26.0, 55.0\*)

*Asca quinquesetosa* Wharton, 1941

DISTRIB.: Clipperton I; Niue I; O'ahu, Kure (19.0, 29.0, 35.0\*)

*Asca spicata* Hurlbutt, 1963

DISTRIB.: Hawai'i I, Hawai'i Volcanoes National Park; Hawai'i, O'ahu (19.0, 32.0, 35.0\*)

*Blattisocius dentriticus* (Berlese, 1918) as *Lasioseius*

DISTRIB.: Italy; Ambon, Europe, Israel, Japan, N America, Sri Lanka; O'ahu (19.0\*, 59.0)

*Blattisocius heegani* Fox, 1947

DISTRIB.: Puerto Rico; cosmopol.; O'ahu (19.0\*, 45.0)

*Blattisocius tarsalis* (Berlese, 1918) as *Lasioseius*

DISTRIB.: Italy; Australia, Europe, Israel, N Africa, N America; Hawai'i (19.0)

*Cheiroseius serratus* (Halbert, 1915) as *Paraseius*

DISTRIB.: Ireland, Clare I; Europe; Kaua'i (27.0)

*Cheiroseius* sp. nr *necorniger*

DISTRIB.: Hawai'i (32.0)

*Cheiroseius* sp.

DISTRIB.: Hawai'i (32.0)

*Gamasellodes bicolor* complex

DISTRIB.: Hawai'i (55.0)

*Iphidozercon californicus* Chant, 1963

DISTRIB.: USA, California; Hawai'i

NEW ARCHIPELAGO RECORD: Hawai'i I: 1♀, E slope of Mauna Loa, 1220 m, 5-7.VI.1972, pitfall trap in *Metrosideros* litter (J. Jacobi) (ID by E.E. Lindquist); 1♀, Kīpuka Kī Weather Station, 1220 m, 19-21.II.1973, pitfall beneath *Metrosideros* and koa (J. Jacobi).

*Lasioseius subterraneus* Chant, 1963

DISTRIB.: Mexico; O'ahu

NEW ARCHIPELAGO RECORD: O'ahu I: 8♀, Honolulu, University of Hawaii, associated with thrips in insectary, 25.IX.1983 (ID by E.E. Lindquist) (UH collection).

*Lasioseius sugawarai* Ehara, 1964

DISTRIB.: Japan; Hawai'i (55.0)

*Proctolaelaps bickleyi* (Bram, 1956) as *Garmania*

DISTRIB.: USA, Maryland; prob. cosmopol.; HI (9.0\*, 19.0)

*Proctolaelaps lobatus* De Leon, 1963

DISTRIB.: USA, Florida; O'ahu (45.0)

*Proctolaelaps pygmaeus* (Müller, 1859) as *Gamasus*

DISTRIB.: Europe; cosmopol.; Hawai'i, O'ahu (19.0)

***Protogamasellus* sp. nr *massula***

DISTRIB.: Hawai'i, Kaua'i, Kure (28.0, 29.0, 32.0\*)

NEW ISLAND RECORD: Hawai'i I: 1♀, Hawai'i Volcanoes National Park, Steaming Bluff Trail, 3.VI.1971, berlese (M.L. Goff) (ID by E.E. Lindquist).

## Family DERMANYSSIDAE

***Dermanyssus gallinae* (De Geer, 1778) as *Acarus***

DISTRIB.: England; cosmopol.; HI (1.0, 3.0\*, 19.0, 43.0)

## Family DIPLOGYNIIDAE

**Unidentified sp.**

DISTRIB.: Kaua'i (28.0)

## Family HALARACHNIDAE

***Halarachne laysanae* Furman & Dailey, 1980**

DISTRIB.: Laysan I; Laysan (18.0)

***Pneumonyssoides caninum* (Chandler & Ruhe, 1940) as *Pneumonyssus***

DISTRIB.: USA, Michigan; cosmopol.; O'ahu (5.0\*, 19.0)

## Family LAELAPIDAE

***Androlaelaps casalis* (Berlese, 1887) as *Iphis***

DISTRIB.: Italy; cosmopol.; Hawai'i, O'ahu (10.0\*, 19.0)

***Androlaelaps hermaphrodita* (Berlese, 1887) as *Laelaps***

DISTRIB.: Italy; cosmopol.; Hawai'i, Kaho'olawe, O'ahu, Midway (19.0\*, 31.0, 37.0, 41.0, 65.0)

***Echinonyssus butantanensis* (Fonseca, 1932) as *Ichoronyssus***

DISTRIB.: Brazil; cosmopol.; Hawai'i (19.0\*, 57.0, 65.0)

***Eulaelaps stabularis* (Koch, 1836) as *Gamasus***

DISTRIB.: C Europe; cosmopol.; Hawai'i (19.0\*, 65.0)

***Hypoaspis (Geolaelaps) aculeifer* (Canestrini, 1884) as *Laelaps***

DISTRIB.: Italy; cosmopol.; Hawai'i, Pearl &amp; Hermes (55.0\*, 64.0)

***Hypoaspis (Laelaspis) austriaca* (Sellnick, 1935) as *Laelaspis***

DISTRIB.: Europe; Europe, N America; Hawai'i (64.0)

**†*Hypoaspis (Cosmolaelaps) diversichaetatus* (Grokhovskaya & Nguen-Huan-Hoe, 1961) as *Cosmolaelaps***

DISTRIB.: Vietnam; O'ahu (19.0)

REMARKS: Reported by Garrett &amp; Haramoto (19.0) from specimens in Bishop Museum; however, no specimens of this species have been found in that collection. Presence in Hawai'i doubtful.

***Hypoaspis (Cosmolaelaps) miles* (Berlese, 1892) as *Laelaps***

DISTRIB.: Italy; cosmopol.; Hawai'i, O'ahu, Kure (19.0, 41.0\*, 64.0, 65.0)

***Hypoaspis (Geolaelaps) queenslandica* (Womersley, 1956) as *Androlaelaps***

DISTRIB.: Australia; Israel, South Africa; Hawai'i, Pearl &amp; Hermes, Midway (32.0\*, 55.0, 64.0)

***Hypoaspis (Alloparasitus) sardoa* (Berlese, 1911) as *Laelaps***

DISTRIB.: Sardinia; Europe, Israel, USSR; Hawai'i (56.0, 57.0\*, 64.0, 65.0)

***Hypoaspis (Cosmolaelaps) scimita* (Womersley, 1956) as *Cosmolaelaps***

DISTRIB.: Irian Jaya, "Sansapore"; Australia, New Guinea; Hawai'i, Maui, Midway, Kure (64.0)

***Hypoaspis (Geolaelaps) sp. nr *glabrosimilis* Hirschmann, 1969***

DISTRIB.: Hawai'i, Maui (64.0)

***Laelaps echidninus* Berlese, 1887**

DISTRIB.: Italy; cosmopol.; Hawai'i, Maui, O'ahu, Kaua'i, Midway, Kure (11.0, 19.0, 20.0, 25.0, 41.0, 42.0, 43.0\*, 56.0, 57.0, 62.0, 65.0)

*Laelaps nuttalli* Hirst, 1915

DISTRIB.: Ceylon; widespread in tropical and warm-temperate areas; Hawai'i, Maui, O'ahu, Kure (4.0, 11.0, 17.0\*, 19.0, 25.0, 41.0, 42.0, 43.0, 56.0, 57.0, 62.0, 65.0)

*Pseudoparasitus (Gymnolaelaps) annectans* (Womersley, 1955) as *Gymnolaelaps*

DISTRIB.: Tasmania, Fisher I; Australia, Europe, Kermadecs, New Zealand, S America; Hawai'i (53.0\*, 57.0, 64.0, 65.0)

*Pseudoparasitus (Pseudoparasitus) stigmaticus* (Fox, 1946) as *Myzolaelaps*

DISTRIB.: Puerto Rico; pantropical; Hawai'i, Maui (55.0\*, 64.0)

*Pseudoparasitus (Ololaelaps) tasmanicus* (Womersley, 1956) as *Pristolaelaps*

DISTRIB.: Tasmania (on plants imported to Australia); Australia; Hawai'i, Pearl & Hermes (64.0)

*Pseudoparasitus (Pseudoparasitus) trincisus* Hunter, 1966

DISTRIB.: Off plants intercepted at Brownsville, Texas and Hawai'i from several tropical areas (Guatemala, Costa Rica, Colombia, Philippines); prob. pantropical; Hawai'i, O'ahu (55.0\*, 64.0)

*Pseudoparasitus (Gymnolaelaps) vitzthumi* (Womersley, 1956) as *Gymnolaelaps*

DISTRIB.: Australia; N America; Pearl & Hermes (64.0)

## Family MACROCHELIDAE

*Glyphtholaspis americana* (Berlese, 1888) as *Holostaspis*

DISTRIB.: S America; cosmopol.; Hawai'i, O'ahu (19.0)

NEW ISLAND RECORD: Hawai'i I: 2♀, "Kahuela" [prob. Kamuela], 4.VI.1984, ex dung beetle (T. Yamamoto) (ID by G.W. Krantz) (UH collection).

*Holostaspella* sp. undescribed

DISTRIB.: Midway

NEW ARCHIPELAGO RECORD: Midway Is: 23♀, 3♂, 1N, Sand I, Areas 2-6, and nr school (ID by G.W. Krantz) (UH collection).

*Macrocheles mammifer* Berlese, 1918

DISTRIB.: Argentina; cosmopol.; Hawai'i

NEW ARCHIPELAGO RECORD: Hawai'i I: 1♀, "Kahuela" [prob. Kamuela], 4.VI.1984, ex dung beetle (T. Yamamoto) (UH collection); 1♀, Kukuihaele, 488 m, 13.XII.1963, ex nest of *Mus musculus* (G.E. Haas) (ID's by G.W. Krantz). O'ahu I: 1♂, 18.IX.1983, ex leaf litter (J. Petcharat) (ID by D.E. Walter).

*Macrocheles muscaedomesticae* (Scopoli, 1772) as *Acarus*

DISTRIB.: Europe; cosmopol.; O'ahu (19.0, 38.0\*)

*Macrocheles peniculatus* Berlese, 1918

DISTRIB.: S America; cosmopol.; Hawai'i, O'ahu

NEW ARCHIPELAGO RECORD: Hawai'i I: 11♀, Kilauea Forest Reserve, 1646 m, 9.VIII-29.X.1971, pitfall in koa-*Metrosideros* duff (J. Jacobi); 1♀, same locality, 18.XII.1971, ex *Rattus rattus* (F.J. Radovsky, Q.P. Tomich et al.). O'ahu I: Ka'ala, 20.VI.1967, ex pig nest (N. Wilson) (most ID's by G.W. Krantz).

*Macrocheles robustulus* (Berlese, 1904) as *Holostaspis*

DISTRIB.: Italy; cosmopol.; O'ahu

NEW ARCHIPELAGO RECORD: O'ahu I: 2♀, University of Hawaii, 22.IV.1961, Napier grass litter (F. Haramoto) (ID by D.E. Walter).

*Macrocheles similis* Krantz & Filipponi, 1964

DISTRIB.: Australia; O'ahu, Midway

NEW ARCHIPELAGO RECORD: O'ahu I: 5♀, University of Hawaii, 7.III.1983, ex banana corm (A. Gettman). Midway Is: 6♀, Sand I, Area 1, 6, 7, and nr school (ID's by G.W. Krantz).

*Macrocheles subbadius* (Berlese, 1904) as *Holostaspis*

DISTRIB.: Italy; Europe, N America; O'ahu (54.0)

*Macrocheles* sp. *glaber* grp.

DISTRIB.: Hawai'i (55.0)

## Family MACRONYSSIDAE

†*Ophionyssus natricis* (Gervais, 1844) as *Dermanyssus*

DISTRIB.: Europe; cosmopol.; O'ahu (51.0)

REMARKS: Taken as quarantine interceptions only.

*Ornithonyssus bacoti* (Hirst, 1913) as *Leiognathus*

DISTRIB.: Egypt; cosmopol.; Hawai'i, Kaho'olawe, O'ahu, Midway (4.0, 11.0\*, 19.0, 20.0, 31.1, 41.0, 57.0, 65.0)

*Ornithonyssus bursa* (Berlese, 1888) as *Leiognathus*

DISTRIB.: "Buenos Ayres"; cosmopol.; Hawai'i, O'ahu (1.0, 2.0, 4.0, 16.0, 19.0, 21.0, 33.0, 43.0, 44.0, 62.0, 72.0\*)

REMARKS: Though previous authors in Hawai'i referred to bird mites biting man, Zimmerman (72.0) appears to be the first reporting a correct species identification.

*Ornithonyssus sylviarum* (Canestrini & Fanzago, 1878) as *Dermanyssus*

DISTRIB.: Italy; cosmopol.; Hawai'i, O'ahu (19.0\*, 21.0, 30.0, 52.0)

*Steatonyssus (Steatonyssella) furmani* Tipton & Boese, 1958

DISTRIB.: USA, Indiana; Hawai'i (19.0\*, 40.0)

## Family OLOGAMASIDAE

*Gamasiphis* sp.

DISTRIB.: Hawai'i, Kaua'i, Laysan (6.0, 19.0, 28.0, 32.0\*, 55.0)

## Family OTOPHEIDOMENIDAE

*Dicrocheles phalaenodectes* (Treat, 1954) as *Myrmonyssus*

DISTRIB.: USA, Massachusetts; cosmopol.; Kaua'i (19.0, 67.0\*)

*Otopheidomenis ascalaphae* Syed & Goff, 1983

DISTRIB.: O'ahu I, Lanikai; O'ahu (63.0)

*Otopheidomenis treati* (Prasad, 1968) as *Noctuseius*

DISTRIB.: O'ahu I, Mānoa; Oceania; O'ahu (49.0\*, 50.0, 63.0)

## Family PARASITIDAE

*Pergamasus* sp. *crassipes* grp.

DISTRIB.: Hawai'i (32.0\*, 55.0)

## Family PARHOLASPIDAE

*Gamasholaspis gamasoides* (Berlese, 1904) as *Holostaspis*

DISTRIB.: Italy; Argentina, Europe; Hawai'i, Kaua'i (28.0, 55.0, 66.0\*)

*Holaspulus tenuipes* (Berlese, 1904) as *Holostaspis*

DISTRIB.: Italy; Europe; Hawai'i, O'ahu, Kaua'i (19.0\*, 28.0, 32.0, 55.0, 66.0)

*Parholaspulus (Parholaspidellus) maunaloaensis* Tenorio & Marshall, 1977

DISTRIB.: Hawai'i I, Mauna Loa; Hawai'i, O'ahu (55.0, 66.0\*)

NEW ISLAND RECORD: O'ahu I: 2♀, Mt Tantalus, 16.VII.1965, moss (D.M. Tsuda).

## Family PHYTOSEIIDAE

*Amblydromella bakeri* (Garman, 1948) as *Seiulus*

DISTRIB.: USA, Connecticut; Great Britain, USA; O'ahu (19.0)

*Amblydromella haramotoi* (Prasad, 1968), **new combination**; as *Typhlodromus*

DISTRIB.: O'ahu I, Waimānalo; O'ahu (47.0)

*Amblydromella neobakeri* (Prasad, 1968), **new combination**; as *Typhlodromus*

DISTRIB.: O'ahu I, Waimānalo; Hawai'i, Maui, Moloka'i, O'ahu, Kaua'i (32.0, 47.0\*)

*Amblydromella rhenanoides* (Athias-Henriot, 1960), **new combination**; as *Typhlodromus*

DISTRIB.: Algeria; Italy, California (USA); Kaua'i (47.0)

*Amblyseius caudatus* Berlese, 1914

DISTRIB.: Java; Poland, Mauritius, Kenya; HI (8.0\*, 19.0, 48.0)

REMARKS: Because of problems in identifying this species, Prasad (48.0) did not recognize this species from Hawai'i.

*Amblyseius haleakalus* Prasad, 1968

DISTRIB.: Hawai'i I, Mountain View; Hawai'i, Maui, Kaua'i (48.0)

*Amblyseius herbicolus* (Chant, 1959) as *Typhlodromus*

DISTRIB.: Off plants imported from Portugal at Boston, Massachusetts; cosmopol.; O'ahu

NEW ARCHIPELAGO RECORD: O'ahu I: 219, Honolulu, 8.III.1983, *Coffea liberica* (USDA, Albany collection).

*Amblyseius largoensis* (Muma, 1955) as *Amblyseiopsis*

DISTRIB.: USA, Florida; prob. cosmopol.; Hawai'i, Maui, Lāna'i, Moloka'i, O'ahu, Kaua'i, Ni'ihau, Nihoa, Laysan, Kure (6.0, 7.0\*, 19.0, 24.0, 48.0, 68.0)

*Amblyseius obtusus* (Koch, 1839) as *Zercon*

DISTRIB.: Germany?; prob. cosmopol.; Hawai'i, O'ahu (19.0\*, 48.0)

REMARKS: The report by Garrett & Haramoto (19.0) of *Amblyseius orientalis* Ehara, 1959 (= *Amblyseius rhabdus* Denmark, **new synonymy**) was a misidentification of *A. obtusus* (Koch, 1839).

*Amblyseius paucisetis* Wainstein, 1983

DISTRIB.: Hawai'i I, Mauna Loa; Hawai'i (68.0)

*Amblyseius volcanus* Prasad, 1968

DISTRIB.: Hawai'i I, Volcano; Hawai'i (48.0)

*Chelaseius floridanus* (Muma, 1955) as *Amblyseius*

DISTRIB.: USA, Florida; N America; Hawai'i

NEW ARCHIPELAGO RECORD: Hawai'i I: 279, 36, 1N, E slope of Mauna Loa, 1220–1586 m, I–XI.1972–1973, berlese & pitfall (J. Jacobi, T. Parman) (ID by B.A. Wainstein).

*Chelaseius schusterellus* (Athias-Henriot, 1976), **new combination**; as *Amblyseius*

DISTRIB.: Austria; S America; Hawai'i

NEW ARCHIPELAGO RECORD: Hawai'i I: 19, Hawai'i Volcanoes National Park, Crater Rim Rd, crossroad from Bird Park, 1220 m, 16.VI.1970 (M.L. Goff, F.J. Radovsky).

*Clavidromus transvaalensis* (Nesbitt, 1951) as *Kampimodromus*

DISTRIB.: Transvaal; pantropical; Hawai'i, O'ahu (47.0\*, 59.0)

NEW ISLAND RECORD: Hawai'i I: 19, Kilauea Forest Reserve, 1646 m, 29–31.VII.1973, berlese (T. Parman) (ID by B.A. Wainstein); 19, E slope of Mauna Loa, 1890 m, 2.III.1972, berlese (J. Jacobi) (ID by E.E. Lindquist).

*Euseius haramotoi* (Prasad, 1968), **new combination**; as *Amblyseius*

DISTRIB.: O'ahu I, 'Aiea; Hawai'i, Maui, O'ahu, Kaua'i (48.0)

*Euseius ovalis* (Evans, 1953) as *Typhlodromus*

DISTRIB.: Malaya; cosmopol.; Maui, Moloka'i, O'ahu, Kaua'i (8.0\*, 19.0, 48.0)

*Iphiseius degenerans* (Berlese, 1889) as *Seius*

DISTRIB.: Italy; Africa, Europe, Middle East; O'ahu (34.0)

REMARKS: Introduced into Hawai'i for biological control, June 1978.

*Iphiseius mumai* Prasad, 1968

DISTRIB.: Hawai'i I, Saddle Road, 32 km outside Hilo; Hawai'i (46.0)

**Mesoseiulus longipes** (Evans, 1958) as *Phytoseiulus*

DISTRIB.: Zimbabwe; Chile; O'ahu (34.0)

REMARKS: Introduced into Hawai'i for biological control, March 1978.

**Neoseiulus aurescens** (Athias-Henriot, 1961) as *Amblyseius*

DISTRIB.: Algeria; USA; Hawai'i

NEW ARCHIPELAGO RECORD: Hawai'i I: 3♀, Hawai'i Volcanoes National Park, Mauna Loa Strip Rd, 1340–1860 m, berlese (M.L. Goff, F.J. Radovsky).

**Neoseiulus californicus** (McGregor, 1954) as *Amblyseius*

DISTRIB.: USA, California; Hawai'i, O'ahu (34.0)

**Neoseiulus comitatus** (De Leon, 1962) as *Cydnodromus*

DISTRIB.: USA, Florida; Lāna'i (48.0)

**Neoseiulus longispinosus** (Evans, 1952) as *Typhlodromus*

DISTRIB.: Indonesia, Bogor; Japan, Philippines, Tasmania; Moloka'i, Maui, O'ahu (19.0\*, 48.0)

NEW ISLAND RECORD: Maui I: 1♀, Kīhei, 26.X.1984, ex watermelon leaves (P. Conant) (ID by M.L. Goff) (UH collection).

**Neoseiulus mumai** (Denmark, 1965) as *Cydnodromus*

DISTRIB.: USA, Florida; Australia, USA; O'ahu (48.0)

**Neoseiulus oahuensis** (Prasad, 1968) as *Amblyseius*

DISTRIB.: O'ahu I, Mānoa; Hawai'i, Kaho'olawe, O'ahu, Nihoa, Pearl &amp; Hermes (48.0)

NEW ISLAND RECORDS: Hawai'i I: 1♀, Hawai'i Volcanoes National Park (HVNP), Mauna Loa Strip Rd, 1660 m, 22.II.1971, berlese (F.J. Radovsky); 1♀, 1N, HVNP, Halema'uma'u Lookout, 1060 m, 21.X.1970 (M.L. Goff). Kaho'olawe I: 1♀, Smuggler's Cove, 9.XI.1979 (M.L. Goff). Nihoa I: 3♀, Miller Val, 1983 (S. Conant) (ID by M.L. Goff) (UH collection). Pearl &amp; Hermes: 6♀, SE Island, 15.XII.1970, berlese (J.L. Gressitt).

**Neoseiulus setulus** (Fox, 1947) as *Borinquolaelaps*

DISTRIB.: Puerto Rico; USA, Mexico; Hawai'i

NEW ARCHIPELAGO RECORD: Hawai'i I: 6♀, Mauna Kea, māmane forest below tree line, 2438–2590 m, litter (J. Jacobi).

**Phytoseiulus macropilis** (Banks, 1905) as *Laelaps*

DISTRIB.: USA, Florida; pantropical; Hawai'i, Maui, Lāna'i, Moloka'i, O'ahu, Kaua'i (8.0\*, 12.0, 19.0, 46.0)

**Phytoseiulus hawaiiensis** Prasad, 1968

DISTRIB.: O'ahu I, Mānoa; Australia, Mauritius, Tahiti, Thailand; Hawai'i, Maui, Moloka'i, O'ahu, Kaua'i (22.0, 46.0\*, 58.0)

**Phytoseiulus macropilis** (Banks, 1909) as *Sejus*

DISTRIB.: Canada, Ontario; Australia, Holarctic Region, India, West Indies; Hawai'i, Moloka'i, O'ahu (12.0\*, 15.0, 19.0, 48.0)

REMARKS: The initial report of this species by Cunliffe & Baker (12.0) from "Hawaii" was based on a misidentification and on an erroneous distribution (Denmark, 15.0). However, Garrett & Haramoto (19.0) reported *macropilis* subsequently.**Phytoseiulus woodburyi** De Leon, 1965

DISTRIB.: Puerto Rico; Caribbean, Florida (USA); Hawai'i, Kaua'i (46.0)

NEW ISLAND RECORD: Hawai'i I: 1♀, exotic forest, 0–305 m, 22.I.1974, litter (J. Jacobi).

**Proprioseiopsis amplus** (Wainstein, 1983) as *Amblyseius*

DISTRIB.: Hawai'i I, Mauna Loa; Hawai'i (68.0)

**Proprioseiopsis asetus** (Chant, 1959) as *Typhlodromus*

DISTRIB.: USA, West Virginia; N &amp; S America; Hawai'i (68.0)

**Proprioseiopsis coniferus** (Prasad, 1968) as *Amblyseius*

DISTRIB.: Lāna'i I, Lāna'i City; Hawai'i, Maui, Lāna'i (48.0)

NEW ISLAND RECORD: Hawai'i I: 2♀, 1♂, Hawai'i Volcanoes National Park, Mauna Loa Rd Trail, 2040 m, 16.VI.1970 (M.L. Goff, F.J. Radovsky); 1♀, Mauna Kea, Pu'u Huluhulu, 1890 m, 10.XII.1974, litter (J. Jacobi).



***Proprioseiopsis dorsatus*** (Muma, 1961) as *Amblyseius*

DISTRIB.: USA, Louisiana; tropical; Hawai'i

NEW ARCHIPELAGO RECORD: Hawai'i I: 1♀, Mauna Kea, Pu'u Huluhulu, 1890 m, 4.IX.1974, pitfall (J. Jacobi).

***Proprioseiopsis hawaiiensis*** (Wainstein, 1983) as *Amblyseius*

DISTRIB.: Hawai'i I, Mauna Loa; Hawai'i (68.0)

***Proprioseiopsis mauiensis*** (Prasad, 1968), **new combination**; as *Amblyseius*

DISTRIB.: Maui I, Upper Kula Church; Hawai'i, Maui, Kaua'i (28.0, 48.0\*)

NEW ISLAND RECORD: Hawai'i I: 1♀, Hawai'i Volcanoes National Park, Mauna Loa Rd, 1340 m, 16.VI.1970, grasses &amp; litter (M.L. Goff, F.J. Radovsky).

***Proprioseiopsis mexicanus*** (Garman, 1958) as *Amblyseius*

DISTRIB.: Off plants intercepted at Brownsville, Texas, from Mexico; pantropical; Hawai'i, Maui, Lāna'i, O'ahu, Kaua'i (32.0, 48.0\*)

***Proprioseiopsis ovatus*** (Garman, 1958) as *Amblyseius*

DISTRIB.: Intercepted at Brownsville, Texas, from Ecuador; S America; Hawai'i, Maui, Kaho'olawe, Lāna'i, Moloka'i, O'ahu, Kaua'i (48.0)

NEW ISLAND RECORD: Kaho'olawe I: 1♀, Beck's Cove, 3 m, 12.II.1980, ex *Mus musculus* (M.L. Goff) (ID by M.L. Goff).***Proprioseiopsis rotundus*** (Muma, 1961) as *Amblyseius*

DISTRIB.: USA, Oregon; USA; Hawai'i (68.0)

***Proprioseiopsis* sp. nr *mexicanus***

DISTRIB.: Hawai'i

NEW ARCHIPELAGO RECORD: Hawai'i I: 2♀, Wailuku Riv, 28.II.1971, *Loxops virens wilsoni* nest (C. Van Riper).***Typhlodromalus limonicus*** (Garman & McGregor, 1956) as *Amblyseius*

DISTRIB.: USA, California; Caribbean, C &amp; S America, USA; Hawai'i, Maui (48.0)

***Typhlodromalus peregrinus*** (Muma, 1955) as *Typhlodromus*

DISTRIB.: USA, Florida; Caribbean, C America, Mexico, USA; Hawai'i, O'ahu (48.0)

***Typhlodromina pini*** (Chant, 1955) as *Typhlodromus*

DISTRIB.: Canada, British Columbia; Canada, Mexico, USA; Maui (47.0)

***Typhlodromips eucalypterus*** (Prasad, 1968) as *Amblyseius*

DISTRIB.: Maui I, Haleakalā Rd; Maui (48.0)

***Typhlodromus* sp.**

DISTRIB.: O'ahu (69.0)

## Family PODOCINIDAE

***Podocinum pacificum*** Berlese, 1896

DISTRIB.: Italy; widespread except Australasia; Hawai'i, O'ahu (19.0\*, 55.0)

***Podocinum sagax*** (Berlese, 1882) as *Laelaps*

DISTRIB.: Italy; widespread except Australasia; Hawai'i, Kaua'i (27.0, 32.0\*, 55.0)

## Family POLYASPIDIDAE

***Trachytes* sp.**

DISTRIB.: Kaua'i (27.0)

## Family RHINONYSSIDAE

***Larinyssus orbicularis*** Strandtmann, 1948

DISTRIB.: USA, Texas &amp; New York; prob. cosmopol.; O'ahu

NEW ARCHIPELAGO RECORD: O'ahu I: 1♀, Moku Manu Islet, 2.IV.1962, ex *Sterna fuscata* (N. Wilson) (ID by N. Wilson).

***Neonyssus melloi* Castro, 1948**

DISTRIB.: Brazil; Rwanda, Transvaal; O'ahu

NEW ARCHIPELAGO RECORD: O'ahu I: 1♀, Honolulu Zoo, 16.XI.1967, ex pigeon (F.H. Haramoto) (ID by Haramoto) (UH collection).

***Mesonyssus geopeliae* Fain, 1964**

DISTRIB.: Malaya/Belgium; Oriental Region; O'ahu (19.0, 71.0\*)

***Paraneonyssus* sp.**

DISTRIB.: Hawai'i (21.0)

***Ptilonyssus astridae* Fain, 1956**

DISTRIB.: Rwanda; Africa, Australia; Hawai'i

NEW ARCHIPELAGO RECORD: Hawai'i I: 2♀, 1♂, 1N, Honoka'a, 27.XII.1961, ex *Lonchura punctulata* (N. Wilson) (ID by N. Wilson).***Ptilonyssus hirsti* (Castro & Pereira, 1947) as *Neonyssus***

DISTRIB.: Brazil; prob. cosmopol.; Hawai'i (19.0, 21.0, 70.0\*)

***Ptilonyssus sairae* Castro, 1948**

DISTRIB.: Brazil; N America; O'ahu

NEW ARCHIPELAGO RECORD: O'ahu I: 3♀, 2♂, Honolulu, 20.III.1963, ex Red-crested Cardinal (R.W. Strandtmann) (ID by N. Wilson).

***Ptilonyssus* sp.**

DISTRIB.: Hawai'i, O'ahu (21.0, 61.0)

***Rhinonyssus coniventris* Trouessart, 1894**

DISTRIB.: Europe; prob. cosmopol.; O'ahu (19.0, 70.0\*)

***Sternostoma tracheacolum* Lawrence, 1948**

DISTRIB.: South Africa; cosmopol.; O'ahu (60.0\*, 61.0)

## Family RHODACARIDAE

***Athiasella* sp. undescr.**

DISTRIB.: Hawai'i (55.0)

***Rhodacarus* sp.**

DISTRIB.: Hawai'i, Kure (26.0)

NEW ISLAND RECORD: Hawai'i I: 9♀, 1♂, 1DN, E slope of Mauna Loa, 1206–2440 m, 4.X.1971–6.II.1974, berlese (J. Jacobi, T. Parman); 1♀, Kilauea Forest Reserve, 1645 m, 28–30.VI.1973, berlese (T. Parman).

## Family SEJIDAE

***Sejus armatus* (Fox, 1947) as *Lirioaspis***

DISTRIB.: Puerto Rico; N America; Hawai'i (19.0)

## Family UROPODIDAE

***Uropoda* sp.**

DISTRIB.: O'ahu (19.0, 39.0\*)

## Family VEIGAIIDAE

***Veigaia exigua* (Berlese, 1916) as *Cyrtolaelaps***

DISTRIB.: Italy; Europe, Africa; Hawai'i (36.0, 55.0\*)

***Veigaia nemorensis* (Koch, 1839) as *Gamasus***

DISTRIB.: Germany; Algeria, N America, Palearctic Region; Hawai'i (19.0)

***Veigaiia planicola*** (Berlese, 1892) as *Cyrtolaelaps*

DISTRIB.: Italy; Holarctic Region, India, Kenya; Hawai'i (23.0, 36.0\*)

***Veigaiia uncata*** Farrier, 1957

DISTRIB.: USA, North Carolina; quarantine interceptions at Texas and Florida from Mexico, C America, USSR, Africa, Madagascar; Hawai'i, Kaua'i (23.0\*, 28.0)

*Acknowledgments.* Dr M. Lee Goff, Acarology Laboratory, University of Hawaii at Manoa, added considerably to the value of this catalog by allowing us to list unreported species housed in the University collection. R.W. Pemberton and C.E. Turner, USDA, Albany, CA, also kindly allowed us to report the specimens of *Amblyseius herbicolus* from their collections. We appreciate the assistance of the following individuals in providing identifications of rhinonyssids, ascids, macrochelids, and veigaiids, respectively: Dr Nixon Wilson, University of Northern Iowa, Cedar Falls; Dr E.E. Lindquist, Department of Agriculture, Ottawa; Dr G.W. Krantz and Dr D.E. Walter, Oregon State University, Corvallis; and Dr Henry W. Hurlbutt, West Virginia University.

## LITERATURE CITED

- 1.0. Alicata, J.E. 1947. Parasites and parasitic diseases of domestic animals in the Hawaiian Islands. *Pac. Sci.* 1: 69-84.
- 2.0. Arnold, H.L., Jr & H.L. Arnold, Sr. 1943. The diagnosis and management of bird-mite bites. *Proc. Staff Meetings of the Clinic, Honolulu* 9: 41-44.
- 3.0. Bice, C.M. 1932. Poultry diseases common in Hawaii. *Hawaii. Agric. Exp. Stn. Circ.* 5. 39 p.
- 4.0. Bonnet, D.D. 1948. Certain aspects of medical entomology in Hawaii. *Proc. Hawaii. Entomol. Soc.* 13: 225-33.
- 5.0. 1952. Notes and exhibitions: *Pneumonyssus caninum* Chandler & Ruhe. *Proc. Hawaii. Entomol. Soc.* 14: 359.
- 6.0. Butler, G.D., Jr & R.L. Usinger. 1963. Insects and other invertebrates from Laysan Island. *Atoll Res. Bull.* 98. 30 p.
- 7.0. 1963. Insects and other arthropods from Kure Island. *Proc. Hawaii. Entomol. Soc.* 18: 237-44.
- 8.0. Chant, D.A. 1959. Phytoseiid mites (Acarina: Phytoseiidae). Part II. A taxonomic review of the family Phytoseiidae, with descriptions of 38 new species. *Can. Entomol. Suppl.* 12: 45-166.
- 9.0. 1963. The subfamily Blattisocinae Garman (=Aceosejinae Evans) (Acarina: Blattisocidae Garman) (=Aceosejidae Baker & Wharton) in North America, with descriptions of new species. *Can. J. Zool.* 41: 243-305.
- 10.0. Chilson, L.M. 1954. Notes and exhibitions: *Haemolaelaps megaventralis* (Strandtmann). *Proc. Hawaii. Entomol. Soc.* 15: 285-86.
- 11.0. Cole, L.C. & J.A. Koepke. 1947. *A study of rodent ectoparasites in Honolulu*. U.S. Public Health Rep. Suppl. 202. p. 25-41.
- 12.0. Cunliffe, F. & E.W. Baker. 1953. *A guide to the predatory phytoseiid mites of the United States*. Pinellas Biol. Lab., Inc. Publ. 1. 28 p.
- 13.0. Daly, H.V. & R.E. Coville. 1982. *Hylaeus pubescens* and associated arthropods at Kilauea, Hawaii Volcanoes National Park (Hymenoptera: Apoidea and Chalcidoidea; Mesostigmata: Ameroseiidae). *Proc. Hawaii. Entomol. Soc.* 24: 75-82.
- 14.0. Delfinado-Baker, M. & E.W. Baker. 1983. A new species of *Neocypholaelaps* (Acari: Ameroseiidae) from brood combs of the Indian honey bee. *Apidologie* 14: 1-7.
- 15.0. Denmark, H.A. 1966. Revision of the genus *Phytoseius* Ribaga, 1904 (Acarina: Phytoseiidae). *Fla. Dep. Agric. Bull.* 6. 105 p.
- 16.0. Erhorn, E.M. 1931. Notes and exhibitions: *Ornithonyssus bursa* (Berlese). *Proc. Hawaii. Entomol. Soc.* 7: 380.
- 17.0. Ewing, H.E. 1924. Ectoparasites of some Polynesian and Malaysian rats of the genus *Rattus*. *B.P. Bishop Mus. Bull.* 14: 7-11.
- 18.0. Furman, D.P. & M.D. Dailey. 1980. The genus *Halarachne* (Acari: Halarachnidae), with the description of a new species from the Hawaiian Monk Seal. *J. Med. Entomol.* 17: 352-59.

- 19.0. **Garrett, L.E. & F.H. Haramoto.** 1967. A catalog of Hawaiian Acarina. *Proc. Hawaii. Entomol. Soc.* **19:** 381-414.
- 20.0. **Goff, M.L.** 1975. A new species of chigger (Acarina: Trombiculidae) from the Midway Islands. *J. Med. Entomol.* **12:** 52-54.
- 21.0. 1980. *Mites (Chelicerata: Acari) parasitic on birds in Hawaii Volcanoes National Park.* Cooperative National Park Resources Studies Unit, Univ. Hawaii at Manoa, Dept. of Botany. Technical Report **29.** 13 p.
- 22.0. 1982. Notes and exhibitions: Mites from stem galls. *Proc. Hawaii. Entomol. Soc.* **24:** 18.
- 23.0. 1983. Notes and exhibitions: *Veigaia uncata* Farrier & *V. planicola* (Berlese). *Proc. Hawaii. Entomol. Soc.* **24:** 164.
- 24.0. 1983. Notes and exhibitions: Mites from Nihoa Island. *Proc. Hawaii. Entomol. Soc.* **24:** 170.
- 25.0. 1983. Notes and exhibitions: Ectoparasites from *Rattus exulans* on Kure Atoll. *Proc. Hawaii. Entomol. Soc.* **24:** 170-71.
- 26.0. 1983. Notes and exhibitions: Acari records from Kure Atoll. *Proc. Hawaii. Entomol. Soc.* **24:** 172-73.
- 27.0. 1983. Notes and exhibitions: Acari records from soil and litter on Kauai. *Proc. Hawaii. Entomol. Soc.* **24:** 175-76.
- 28.0. 1983. Notes and exhibitions: New Acari records on Kauai. *Proc. Hawaii. Entomol. Soc.* **24:** 177-79.
- 29.0. 1983. Notes and exhibitions: Mites from Kure Atoll. *Proc. Hawaii. Entomol. Soc.* **24:** 186-87.
- 30.0. 1983. Notes and exhibitions: *Ornithonyssus sylviarum* in nest of Elepaio. *Proc. Hawaii. Entomol. Soc.* **24:** 193.
- 30.1. 1985. Notes and exhibitions: Bird ectoparasites. *Proc. Hawaii. Entomol. Soc.* **25:** 5.
- 30.2. **Goff, M.L. & J. Need.** 1985. Notes and exhibitions: Rat parasites from Kure. *Proc. Hawaii. Entomol. Soc.* **25:** 2.
- 31.0. **Goff, M.L., C. Sengbusch & M. Wooster.** 1982. Notes and exhibitions: Mice ectoparasites from Kahoolawe. *Proc. Hawaii. Entomol. Soc.* **24:** 19.
- 31.1. **Goff, M.L., H. Megens, R.W. Strandtmann & W.A. Steffan.** 1982. Notes and exhibitions: Manana Island ectoparasites. *Proc. Hawaii. Entomol. Soc.* **24:** 13.
- 32.0. **Goff, M.L., J.M. Tenorio & F.J. Radovsky.** 1979. Mesostigmata (Acari) associated with a fumerole in Hawaii Volcanoes National Park. *Pac. Insects* **21:** 83-89.
- 34.0. **Higa, S.** 1981. Notes and exhibitions: Biological control program. *Proc. Hawaii. Entomol. Soc.* **23:** 330-31.
- 35.0. **Hurlbutt, H.W.** 1963. The genus *Asca* Von Heyden (Acarina: Mesostigmata) in North America, Hawaii, and Europe. *Acarologia* **5:** 480-518.
- 36.0. 1983. The systematics and geographic distribution of East African Veigaiidae (Acarina: Mesostigmata). *Acarologia* **24:** 129-43.
- 37.0. **Joyce, C.R.** 1962. Notes and exhibitions: *Androlaelaps setosus* Fox. *Proc. Hawaii. Entomol. Soc.* **18:** 4.
- 37.1. **Karg, W.** 1978. Die Gattung *Pseudoparasitus* Oudemans, 1902. *Mitt. Zool. Mus. Berlin* **54:** 203-12.
- 37.2. 1979. Die Gattung *Hypoaspis* Canestrini, 1884 (Acarina, Parasitiformes). *Zool. Jahrb. Syst.* **106:** 65-104.
- 38.0. **Kim, J.** 1962. Notes and exhibitions: *Macrocheles muscaedomesticae* (Scopoli). *Proc. Hawaii. Entomol. Soc.* **18:** 7.
- 39.0. **Krauss, N.L.H.** 1947. Notes and exhibitions: *Uropoda* sp. *Proc. Hawaii. Entomol. Soc.* **13:** 23.
- 40.0. **McDaniel, B. & J.M. Tenorio.** 1979. *Olabidocarpus americanus* (Acari: Lirophoroidea: Chirodricidae) from the Hawaiian Hoary Bat, *Lasiurus cinereus semotus*, with description of the male. *J. Med. Entomol.* **15:** 180-82.
- 41.0. **Mitchell, C.J.** 1964. Ectoparasitic and commensal arthropods occurring on the rats of Manoa Valley, Oahu (Acarina, Anoplura, and Siphonaptera). *Proc. Hawaii. Entomol. Soc.* **18:** 413-15.
- 42.0. 1964. Population structure and dynamics of *Laelaps nuttalli* Hirst and *L. echidninus* Berlese (Acarina: Laelaptidae) on *Rattus rattus* and *R. exulans* in Hawaii. *J. Med. Entomol.* **1:** 151-53.
- 43.0. **Pemberton, C.E.** 1943. Insects and other arthropods of medical interest in Hawaii. *Hawaii Med. J.* **2:** 191-94.
- 44.0. 1945. Notes and exhibitions: *Liponyssus bursa* (Berlese). *Proc. Hawaii. Entomol. Soc.* **12:** 221.
- 45.0. **Prasad, V.** 1968. Three moth mites (Acarina: Mesostigmata) from Hawaii, with description of a new species. *Ann. Entomol. Soc. Am.* **61:** 129-32.

- 46.0. 1968. Some phytoseiid mites from Hawaii. *Ann. Entomol. Soc. Am.* **61**: 1459-62.
- 47.0. 1968. Some *Typhlodromus* mites from Hawaii. *Ann. Entomol. Soc. Am.* **61**: 1369-72.
- 48.0. 1968. *Amblyseius* mites from Hawaii. *Ann. Entomol. Soc. Am.* **61**: 1514-21.
- 49.0. 1968. *Noctuisseius treati*, a new genus and species of moth mite from Hawaii and Easter Island. *Ann. Entomol. Soc. Am.* **61**: 411-13.
- 50.0. 1969. Description of immature stages of *Noctuisseius treati* Prasad (Acarina: Phytoseiidae). *Proc. Entomol. Soc. Wash.* **71**: 151-53.
- 51.0. Radovsky, F.J. 1971. Notes and exhibitions: *Ophionyssus natricis* (Gervais). *Proc. Hawaii. Entomol. Soc.* **21**: 13-14.
- 52.0. 1975. Notes and exhibitions: *Ornithonyssus sylviarum* (Canestrini & Fanzago). *Proc. Hawaii. Entomol. Soc.* **22**: 17.
- 53.0. Radovsky, F.J. & J.M. Tenorio. 1974. Notes and exhibitions: *Hypoaspis nidicorva* Evans & Till. *Proc. Hawaii. Entomol. Soc.* **21**: 306.
- 54.0. 1976. Notes and exhibitions: Mites associated with horn fly cultures. *Proc. Hawaii. Entomol. Soc.* **22**: 174-75.
- 55.0. 1981. Soil arthropods, p. 156-65. In: Mueller-Dombois, D., K.W. Bridges & H.L. Carson, eds., *Island ecosystems. Biological organization in selected Hawaiian communities*. US/IBP Synthesis Series 15. Hutchinson Ross Publ. Co.
- 56.0. 1981. Ectoparasites of rodents, p. 110-17. In: Mueller-Dombois, D., K.W. Bridges & H.L. Carson, eds., *Island ecosystems. Biological organization in selected Hawaiian communities*. US/IBP Synthesis Series 15. Hutchinson Ross Publ. Co.
- 57.0. Radovsky, F.J., J.M. Tenorio, P.Q. Tomich & J.D. Jacobi. 1979. Acari on murine rodents along an altitudinal transect on Mauna Loa, Hawaii, p. 327-33. In: *Proc. 4th Int. Congr. Acarol. Akademiai Kiado, Budapest*.
- 58.0. Schicha, E. 1980. Three new species (Acari: Phytoseiidae) from Australia and collection records of two first described from Madagascar and Hawaii. *Int. J. Acarol.* **6**: 245-53.
- 59.0. Sharp, J.L. & F.H. Haramoto. 1970. *Dermatophagoides pteronyssinus* (Trouessart) and other Acarina in house dust in Hawaii. *Proc. Hawaii. Entomol. Soc.* **22**: 583-89.
- 60.0. Smith, H.E. 1973. A rhinonyssid mite in atypical loci of estrildine finches in Hawaii. *J. Parasitol.* **59**: 1148.
- 61.0. Smith, H.E. & S.J. Guest. 1974. *A survey of internal parasites of birds on the western slopes of Diamond Head, Oahu, Hawaii, 1972-1973*. Island Ecosystems IRP, US/IBP Tech. Report **37**. 18 p.
- 62.0. Strandmann, R.W. & G.W. Wharton. 1958. *A manual of mesostigmatid mites parasitic on vertebrates*. Inst. Acarol., Dep. Zool. Univ. Maryland, College Park. 330 p.
- 63.0. Syed, R.A. & M.L. Goff. 1983. A new species of *Otopheidomenis* (Acari: Otopheidomenidae) ectoparasitic on *Ascalapha odorata* (Lepidoptera: Noctuidae) in the Hawaiian Islands, with a key to the species in the genus. *Int. J. Entomol.* **25**: 316-20.
- 64.0. Tenorio, J.M. 1982. Hypoaspidinae (Acari: Gamasida: Laelapidae) of the Hawaiian Islands. *Pac. Insects* **24**: 259-74.
- 65.0. Tenorio, J.M. & M.L. Goff. 1980. *Ectoparasites of Hawaiian rodents*. Bishop Mus. Spec. Publ. **32** p.
- 66.0. Tenorio, J.M. & V.G. Marshall. 1977. Parholaspidae (Acari: Mesostigmata) from the Hawaiian Islands, with description of a new species of *Parholaspulus*. *Pac. Insects* **17**: 319-38.
- 67.0. Treat, A.E. 1955. Distribution of the moth ear mite (*Myrmonyssus phalaenodectes*). *Lepid. Newsl.* **9**: 55-58.
- 68.0. Wainstein, B.A. 1983. Predaceous mites of the family Phytoseiidae (Parasitiformes) of Hawaii. (In Russian.) *Entomol. Obozr.* **62**: 193-98. (English translation, *Entomol. Rev.* **62**: 181-86.)
- 69.0. Weber, P.W. 1953. Recent liberations of beneficial insects in Hawaii. II. *Proc. Hawaii. Entomol. Soc.* **15**: 127-30.
- 70.0. Wilson, N. 1964. New records and descriptions of Rhinonyssidae, mostly from New Guinea (Acarina: Mesostigmata). *Pac. Insects* **6**: 357-88.
- 71.0. 1966. New records and a new species of *Mesonyssus* (Mesostigmata: Rhinonyssidae) from pigeons and doves (Columbiformes: Columbidae). *J. Parasitol.* **52**: 1210-13.
- 72.0. Zimmerman, E.C. 1944. A case of bovine auricular myiasis and some ectoparasites new to Hawaii. *Proc. Hawaii. Entomol. Soc.* **12**: 199-200.