

The Current Status of the Names of Hawaiian Aphids (Homoptera: Aphididae)

JOHN W. BEARDSLEY, JR.^{1,2}

UNIVERSITY OF HAWAII, HONOLULU, HAWAII

Zimmerman's (1948) treatment of Hawaiian aphids has provided an extremely useful reference for workers concerned with this important group of insects. During the 30 years since the publication of that work, more than 20 additional species of aphids have been reported from Hawaii, and the generally accepted names for many of the species treated by Zimmerman have been altered due to subsequently published synonymy and changes in generic concepts which have been accepted by most present-day students of aphid taxonomy. The recent appearance of a world catalog of the Aphididae (Eastop and Hille Ris Lambers, 1976) has confirmed the need for a review of the status of the names of the known Hawaiian aphids. A perusal of that work revealed that more than one-half of the names of species which occur in Hawaii, as recognized by Eastop and Hille Ris Lambers, differ from those appearing in Hawaiian literature. However, it should be mentioned that not all aphid taxonomists are in agreement with all of the synonymies and generic concepts which have been proposed by these authors. The name of the spotted alfalfa aphid, a pest species recently discovered here, is an example. Most American workers apparently have not accepted the proposed demotion of *Theriophis maculata* (Buckton) to the status of a "form" of *T. trifolii* (Monell), and have continued to recognize *T. maculata* as a distinct species.

Table 1 lists all of the aphids treated by Zimmerman (1948), plus those which have been subsequently reported from the Hawaiian Islands. In the left hand column the names are presented as recorded by Zimmerman or, for species discovered since 1948, as first recorded in the Proc. Hawaii. Entomol. Soc. In the right column the names for these species are listed as they appear in Eastop and Hille Ris Lambers. In cases where misidentification or other confusion has occurred, explanatory footnotes are provided. In table 2, the species which are believed to be present in Hawaii are listed alphabetically, following Eastop and Hille Ris Lambers, with their known island distributions and, for those species not treated by Zimmerman, hosts.

In addition to the aphids listed, a single species of the aphidoid family Adelgidae, *Pineus pini* Koch, was found established in Hawaii during 1970 (Funasaki, 1971, Proc. Hawaii. Entomol. Soc. 21(1): 14) and is presently known to occur on the islands of Kauai, Oahu, Molokai, Maui, and Hawaii. With the inclusion of this species, there appear to be presently 68 species of Aphidoidea which are known to be established, or presumed established, in the Hawaiian Islands.

¹Published with the approval of the Director of the Hawaii Agricultural Experiment Station as Journal Series No. 2207.

²I wish to thank Dr. Manya B. Stoetzel, U.S.D.A., S.E.A. Insect Identification Laboratory, Beltsville, Maryland, for her help in providing needed information, and in reviewing the manuscript.

TABLE 1. List of Aphids Reported from Hawaii.

Names published in Zimmerman (1948) or subsequently in Proc. Hawaii. Entomol. Soc.	Names accepted by Eastop and Hille Ris Lambers (1976)
<i>Acyrtosiphon pelargonii</i> (Kaltenbach) (1976, P.H.E.S. 22(2):171)	<i>Acyrtosiphon malvae</i> (Mosley)
<i>Amphorophora sonchi</i> (Oestlund)	<i>Hyperomyza lactucae</i> (L.)
<i>Amphorophora vaccinii</i> (Mason)	<i>Illinoia azaleae</i> (Mason)
¹ <i>Aphis avenae</i> Fabricius	<i>Sitobion avenae</i> (Fabricius)
<i>Aphis bambusae</i> Fullaway	<i>Melanaphis bambusae</i> (Fullaway)
<i>Aphis citricidus</i> (Kirkaldy)	<i>Toxoptera citricidus</i> (Kirkaldy)
<i>Aphis craccivora</i> Koch (P.H.E.S. 18(2):205)	<i>Aphis craccivora</i> Koch
<i>Aphis fabae</i> Scopoli (1956, P.H.E.S. 16(1):5)	<i>Aphis fabae</i> Scopoli
<i>Aphis ferruginea-striata</i> Essig	<i>Dysaphis apiifolia</i> (Theobald)
<i>Aphis gossypii</i> Glover	<i>Aphis gossypii</i> Glover
<i>Aphis helichrysi</i> Kaltenbach	<i>Brachycaudus helichrysi</i> (Kaltenbach)
<i>Aphis maidis</i> Fitch	<i>Rhopalosiphum maidis</i> (Fitch)
² <i>Aphis medicaginis</i> Koch	<i>Aphis medicaginis</i> Koch
<i>Aphis middletonii</i> Thomas	<i>Aphis middletoni</i> Thomas
<i>Aphis nerii</i> Boyer de Fonscolombe (1966, P.H.E.S. 19(2):123)	<i>Aphis nerii</i> Boyer de Fonscolombe
<i>Aphis oenotherae</i> Oestlund (1965, P.H.E.S. 19(1):31)	<i>Aphis oenotherae</i> Oestlund
<i>Aphis oestlundii</i> Gillette (1972, P.H.E.S. 21(1):19)	<i>Aphis oestlundii</i> Gillette
³ <i>Aphis rumicis</i> Linnaeus	<i>Aphis rumicis</i> Linnaeus
⁴ <i>Aphis sacchari</i> Zehntner	<i>Melanaphis sacchari</i> (Zehntner)
<i>Aphis spiraeicola</i> Patch (1966, P.H.E.S. 19(2):143)	<i>Aphis citricola</i> van der Goot
<i>Brachycolus heraclei</i> Takahashi	<i>Semiaphis heraclei</i> (Takahashi)
<i>Brevicoryne brassicae</i> (Linnaeus)	<i>Brevicoryne brassicae</i> (Linnaeus)
<i>Capitophorus braggii</i> (Gillette)	<i>Capitophorus elaeagni</i> (del Guercio)
<i>Capitophorus chrysanthemi</i> Theobald	<i>Pleotrichophorus chrysanthemi</i> (Theobald)
<i>Caviariella aegopodii</i> (Scopoli)	<i>Caviariella aegopodii</i> (Scopoli)
⁵ <i>Cerataphis lataniae</i> (Boisduval)	<i>Cerataphis lataniae</i> (Boisduval)
<i>Cerataphis orchidearum</i> (Westwood) (1967, P.H.E.S. 19(3):343)	<i>Cerataphis orchidearum</i> (Westwood)
<i>Cerataphis palmae</i> (Ghesquire) (P.H.E.S. 23(2):in press)	<i>Cerataphis palmae</i> (Ghesquire)
<i>Cerosipha subterranea</i> (Mason)	<i>Rhopalosiphum rufiabdominalis</i> (Sasaki)
<i>Cinara carolina</i> Tissot	<i>Cinara atlantica</i> (Wilson)
<i>Coloradoa rufomaculata</i> (Wilson)	<i>Coloradoa rufomaculata</i> (Wilson)
<i>Cupressobium maui</i> Bradley	<i>Cinara fresai</i> Blanchard
<i>Dactynotus pseudambrosiae</i> (Olive) 1975, P.H.E.S. 22(1):19	<i>Uroleucon pseudambrosiae</i> (Olive)
<i>Dactynotus sonchi</i> (Geoffroy) (P.H.E.S. 22(3):406)	<i>Uroleucon sonchi</i> (Linnaeus)
<i>Dysaphis tulipae</i> (Boyer de Fonscolombe) (1972, P.H.E.S. 21(1):7) (a misspelling for <i>Dysaphis tulipae</i>)	<i>Dysaphis tulipae</i> (Boyer de Fonscolombe)
<i>Erisoma lanigera</i> (Hausmann)	<i>Erisoma lanigera</i> (Hausmann)
<i>Eulachnus</i> sp. (1975, P.H.E.S. 22(1):22)	

TABLE I (Continued). List of Aphids Reported from Hawaii.

Names published in Zimmerman (1948) or subsequently in Proc. Hawaii. Entomol. Soc.	Names accepted by Eastop and Hille Ris Lambers (1976)
<i>Hysteroneura setariae</i> (Thomas) (1962, P.H.E.S. 18(1):21)	<i>Hysteroneura setariae</i> (Thomas)
<i>Idiopterus nephrolepidis</i> Davis	<i>Idiopterus nephrolepidis</i> Davis
<i>Lachnus tujafilinus</i> (del Guercio)	<i>Cinara tujafilina</i> (del Guercio)
⁶ <i>Macrosiphum granarium</i> (Kirby)	<i>Sitobion avenae</i> (Fabricius)
<i>Macrosiphum granarium</i> subsp. <i>miscanthi</i> Takahashi (1960, P.H.E.S. 17(2):163)	<i>Sitobion miscanthi</i> (Takahashi)
<i>Macrosiphum ibarae</i> Matsumura (1960, P.H.E.S. 17(2):163)	<i>Sitobion ibarae</i> (Matsumura)
<i>Macrosiphum luteum</i> (Buckton) (1949, P.H.E.S. 13(3):325)	<i>Sitobion luteum</i> (Buckton)
<i>Macrosiphum pisi</i> (Harris) (1959, P.H.E.S. 17(1):28)	<i>Acyrtosiphon pisum</i> (Harris)
⁷ <i>Macrosiphum rosae</i> (Linnaeus)	<i>Macrosiphum rosae</i> (Linnaeus)
<i>Macrosiphum rosaefolium</i> Theobald	<i>Rhodobium porosum</i> (Sanderson)
<i>Macrosiphum sanborni</i> Gillette	<i>Macrosiphoniella sanborni</i> (Gillette)
<i>Macrosiphum solanifolii</i> (Ashmead)	<i>Macrosiphum euphorbiae</i> (Thomas)
<i>Masonaphis azaleae</i> (Mason) (1967, P.H.E.S. 19(3):332)	<i>Illinoia azaleae</i> (Mason)
<i>Micromyzus formosanus</i> (Takahashi)	<i>Neotoxoptera formosana</i> (Takahashi)
<i>Micromyzus violae</i> (Pergande)	<i>Neotoxoptera violae</i> (Pergande)
<i>Myzocallis kahawaluokalani</i> Kirkaldy	<i>Sarucallis kahawaluokalani</i> (Kirkaldy)
<i>Myzus circumflexus</i> (Buckton)	<i>Aulacorthum (Neomyzus) circumflexum</i> (Buckton)
⁸ <i>Myzus convolvuli</i> (Kaltenbach)	<i>Myzus (Nectarosiphon) persicae</i> (Sulzer)
<i>Myzus ornatus</i> Laing	<i>Myzus ornatus</i> Laing
<i>Myzus persicae</i> (Sulzer)	<i>Myzus (Nectarosiphon) persicae</i> (Sulzer)
<i>Nasonovia ribisnigri</i> (Mosley) (1972, P.H.E.S. 21(1):6)	<i>Nasonovia ribisnigri</i> (Mosley)
<i>Neophyllaphis araucariae</i> Takahashi	<i>Neophyllaphis araucariae</i> Takahashi
<i>Pemphigus</i> sp. (1973, P.H.E.S. 21(2):147)	
<i>Pentalonia nigronervosa</i> Coquerel	<i>Pentalonia nigronervosa</i> Coquerel
⁹ <i>Phorodon menthae</i> (Buckton)	<i>Aulacorthum solani</i> (Kaltenbach)
<i>Rhopalosiphoninus latysiphon</i> (Davidson) (1949, P.H.E.S. 13(3):326)	<i>Rhopalosiphoninus latysiphon</i> (Davidson)
<i>Rhopalosiphum nymphaeae</i> (Linnaeus)	<i>Rhopalosiphum nymphaeae</i> (Linnaeus)
<i>Rhopalosiphum prunifoliae</i> (Fitch)	<i>Rhopalosiphum padi</i> (Linnaeus)
<i>Rhopalosiphum pseudobrassicae</i> (Davis)	<i>Lipaphis erysimi</i> (Kaltenbach)
<i>Therioaphis maculata</i> (Buckton) (1977, P.H.E.S. 22(3):405)	<i>Therioaphis trifolii</i> (Monell), forma <i>maculata</i> (Buckton)
<i>Thoracaphis fici</i> (Takahashi)	<i>Reticulaphis distylii</i> (van der Goot) subsp. <i>fici</i> (Takahashi)
<i>Toxoptera aurantii</i> (Boyer de Fonscolombe)	<i>Toxoptera aurantii</i> (Boyer de Fonscolombe)
<i>Toxoptera cyperi</i> van der Goot	<i>Schizaphis cyperi</i> (van der Goot)
<i>Tuberolachnus salignus</i> (Gmelin)	<i>Tuberolachnus salignus</i> (Gmelin)
<i>Vesiculaphis caricis</i> (Fullaway)	<i>Vesiculaphis caricis</i> (Fullaway)
<i>Wahlgreniella nervata</i> (Gillette) (1977, P.H.E.S. 22(3):405)	<i>Wahlgreniella nervata</i> (Gillette)

Footnotes to Table 1.

¹Eastop and Hille Ris Lambers recognize *Aphis avenae* Fabricius as a valid species in the genus *Sitobion* Mordvilko. *Macrosiphum granarium* (Kirby), also listed by Zimmerman from Hawaii, is considered to be a synonym of *S. avenae* (Fabricius). The species illustrated under the name *A. avenae* in Zimmerman (fig. 31, p. 71) obviously is not the same as that illustrated under the name *Macrosiphum granarium* (Kirby) (fig. 66, p. 108). Zimmerman listed *Yamataphis oryzae* Matsumura as a synonym of *A. avenae*. However, *Y. oryzae* is considered to be a synonym of *Rhopalosiphum rufiabdominalis* (Sasaki) by Eastop and Hille Ris Lambers. This, and the fact that the original Hawaiian record of *A. avenae* was, according to Zimmerman, based on a specimen which proved to be *Cerosiphia subterranea* (Mason) (another synonym of *R. rufiabdominalis*), are strong evidence that the Hawaiian record of *A. avenae* represents a misidentification of *R. rufiabdominalis*. The identity of the species illustrated in Zimmerman's figure 31 is not known, but presumably this figure was not based upon Hawaiian specimens.

²Although *Aphis medicaginis* Koch is still recognized as a valid name, use of the name prior to 1962, in reference to Hawaiian specimens, involved misidentifications of *A. craccivora* (see Beardsley, 1963, P.H.E.S. 18(2):205). True *A. medicaginis* is not known from Hawaii.

³Although Eastop and Hille Ris Lambers recognize *Aphis rumicis* Linnaeus as a valid species, they indicate that prior to 1930 this name was being incorrectly applied to the species now accepted to be *A. fabae* Scopoli. Hardy (1956, P.H.E.S. 16(1):5) indicated that specimens from Hawaii had been determined as *A. fabae* by Louise M. Russell, and that the species had been misidentified here earlier as *A. rumicis*. There appears to be no valid evidence that true *A. rumicis* is present in Hawaii.

⁴This species also appears in literature under the name *Longiunguis sacchari* (Zehntner). *Longiunguis* van der Goot is considered to be a synonym of *Melanaphis* van der Goot by Eastop and Hille Ris Lambers.

⁵It appears that two, or possibly three, species of *Cerataphis* were included under this name by Zimmerman. Subsequent to his treatment of the Hawaiian aphids, it has been shown that three species of the genus are present here.

⁶Hawaiian records of *Macrosiphum granarium* are believed to be based on misidentifications of *Sitobion miscanthi* (Takahashi) (see Hardy, 1960, P.H.E.S. 17:163).

⁷Hawaiian records of *Macrosiphum rosae* are believed to be based on misidentifications of *Sitobion ibarae* (Matsumura) (see Hardy, 1960, P.H.E.S. 17:163).

⁸Eastop and Hille Ris Lambers list *Myzus convolvuli* (Kaltenbach) as a synonym of *M. persicae* (Sulzer). The presently accepted name for the foxglove aphid, illustrated by Zimmerman in his figure 72, is *Aulacorthum solani* (Kaltenbach).

⁹Eastop and Hille Ris Lambers list *Siphonophora menthae* Buckton as a synonym of *Aulacorthum solani* (Kaltenbach), a species which Zimmerman treated under the name *Myzus convolvuli* (Kaltenbach) (see footnote 8). The currently accepted name for the mint aphid illustrated by Zimmerman (fig. 75) is *Ovatus crataegarius* (Walker). The status of this species in Hawaii appears to be uncertain as no Hawaiian specimens were found in local collections. The only record of this species in the state is that of Swezey (1946, P.H.E.S. 13:20) which was based on specimens collected by C.J. Davis at Paio, Hawaii, and identified by Professor E.O. Essig. The present whereabouts of these specimens, if they still exist, is unknown.

TABLE 2. Presently Accepted Names¹ and Island Distributions of Known Hawaiian Aphids.

Species Name	Island Distribution ²						Hosts ³
	K	O	Mo	Ma	L	H	
<i>Acyrtosiphon malvae</i> (Mosley)						X	<i>Erodium cicutarium</i>
<i>Acyrtosiphon pisum</i> (Harris)	X	X	X	X		X	Alfalfa, <i>Medicago denticulata</i>
<i>Aphis citricola</i> van der Goot				X		X	Apple, citrus, <i>Osteomeles anthyllidifolia</i>
<i>Aphis craccivora</i> Koch	X	X	X	X	X	X	
<i>Aphis fabae</i> Scopoli	X	X				X	
<i>Aphis gossypii</i> Glover	X	X	X	X	X	X	
<i>Aphis middletoni</i> Thomas	X	X	X	X		X	
<i>Aphis nerii</i> Boyer de Fonscolombe	X	X		X		X	<i>Gomphocarpus physocarpus</i> , <i>Nerium oleander</i>
<i>Aphis oenotherae</i> Oestlund				?		X	<i>Raimannia odorata</i> , <i>Oenothera striata</i>
<i>Aphis oestlundii</i> Gillette				X			<i>Oenothera</i> sp.
<i>Aulacorthum circumflexum</i> (Buckton)		X		X		X	
<i>Aulacorthum solani</i> (Kaltenbach)		X	X			X	
<i>Brachycaudus helichrysi</i> (Kaltenbach)	X	X		X		X	
<i>Brevicoryne brassicae</i> (L.)	X	X		X	X	X	
<i>Capitophorus elaeagni</i> (del Guercio)	X			X		X	
<i>Cavariella aegopodii</i> (Scopoli)				X		X	
<i>Cerataphis lataniae</i> (Boisduval)		?				X	
<i>Cerataphis orchidearum</i> (Westwood)	X			X			<i>Cattleya</i> orchid
<i>Cerataphis palmae</i> (Ghesquiere)	X						Coconut, <i>Strelitzia reginae</i>
<i>Cinara atlantica</i> (Wilson)	X		X	X	X		<i>Pinus</i> spp., see P.H.E.S. 18:212
<i>Cinara fresai</i> Blanchard				X		X	<i>Cryptomeria japonica</i>
<i>Cinara tuajafiana</i> (del Guercio)		X				X	<i>Cupressus</i> sp.
<i>Coloradoa rufomaculata</i> (Wilson)		X					
<i>Dysaphis apiifolia</i> (Theobald)	X	X				X	
<i>Dysaphis tulipae</i> (Boyer de Fonscolombe)						X	Carrot
<i>Erisoma lanigera</i> (Hausmann)				X		X	
<i>Eulachnus</i> sp.		X					<i>Pinus thunbergii</i>
<i>Hyperomyza lactucae</i> (L.)	X	X	X	X		X	
<i>Hysteroneura setariae</i> (Thomas)		X	X				Bermuda grass, coconut, <i>Elusine indica</i> , sugarcane
<i>Idiopterus nephrolepidis</i> Davis		X		X		X	
<i>Illinoia azaleae</i> (Mason)				X		X	<i>Vaccinium</i> sp.
<i>Lipaphis erysimi</i> (Kaltenbach)	X	X				X	
<i>Macrosiphoniella sanborni</i> (Gillette)	X						
<i>Macrosiphum euphorbiae</i> (Thomas)	X	X		X		X	
<i>Melanaphis bambusae</i> (Fullaway)		X					
<i>Melanaphis sacchari</i> (Zehnter)	X	X	X	X		X	
<i>Myzus ornatus</i> Laing		X		X		X	
<i>Myzus persicae</i> (Sulzer)	X	X	X	X	X	X	
<i>Nasonovia ribisnigri</i> (Mosley)						X	<i>Crepis japonica</i>

¹According to Eastop and Hille Ris Lambers, 1976.

²K (Kauai), O (Oahu), Mo (Molokai), Ma (Maui), L (Lanai), H (Hawaii).

³Includes only new Hawaiian host records published since 1948, in Proc. Hawaii. Entomol. Soc. and/or Hawaii Coop. Econ. Pest Report.

TABLE 2 (Cont.)

Species Name	Island Distribution					Hosts
	K	O	Mo	Ma	L	
<i>Neophyllaphis araucariae</i> (Takahashi)	X	X	X	X		X
<i>Neotoxoptera formosana</i> (Takahashi)	X	X		X		X
<i>Neotoxoptera violae</i> (Pergande)		X				
<i>Ovatus crataegarius</i> (Walker)						X
<i>Pemphigus</i> sp.						X
<i>Pentalonia nigronervosa</i> Coquerel	X	X				X
<i>Plectrichophorus chrysanthemi</i> (Theobald)		X				
<i>Reticulaphis distylii fici</i> (Takahashi)	X	X				
<i>Rhodobium porosum</i> (Sanderson)	X	X				
<i>Rhopalosiphoninus latysiphon</i> (Davidson)				X	X	<i>Metrosideros collina</i>
<i>Rhopalosiphum maidis</i> (Fitch)	X	X	X	X	X	X
<i>Rhopalosiphum nymphaeae</i> (L.)	X	X		X		X
<i>Rhopalosiphum padi</i> (L.)						X
<i>Rhopalosiphum rufiabdominalis</i> (Sasaki)		X				X
<i>Sarucallis kahawaluokalani</i> (Kirkaldy)		X				
<i>Schizaphis cyperi</i> (van der Goot)		X		X		
<i>Semiaphis heraclei</i> (Takahashi)		X		X		X
<i>Sitobion ibarae</i> (Matsumura)		X		X		X
<i>Sitobion luteum</i> (Buckton)	X	X		X		X
<i>Sitobion miscanthi</i> (Takahashi)				X		X
<i>Therioaphis trifolii</i> (Monell)		X				
						<i>Medicago denticulata</i> , <i>M. lupulina</i> , <i>Melilotis alba</i>
<i>Toxoptera aurantii</i> (Boyer de Fonscolombe)	X	X	X	X		X
<i>Toxoptera citricidus</i> (Kirkaldy)	X	X	X			X
<i>Tuberolachnus salignus</i> (Gmelin)				X		X
<i>Uroleucon pseudambrosiae</i> (Olive)				X		
<i>Uroleucon sonchi</i> (L.)		X				
<i>Vesiculaphis caricis</i> (Fullaway)		X				
<i>Wahlgreniella nervata</i> (Gillette)				X	X	<i>Vaccinium</i> sp.

REFERENCES CITED

- Eastop, V. F. and D. Hille Ris Lambers. 1976. Survey of the World's Aphids. Dr. W. Junk b.v., Publishers, The Hague. 573pp.
- Zimmerman, E. C. 1948. Insects of Hawaii, vol. 5, Homoptera: Sternorhyncha. Univ. of Hawaii Press, Honolulu. vi + 464pp.