

INSECTS OF MICRONESIA

Hymenoptera: Trichogrammatidae and Mymaridae

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INTRODUCTION

The smallest of the Hymenoptera, if not indeed the smallest of all insects, are found in the chalcidoid families Mymaridae and Trichogrammatidae. The combined length of three, sometimes even as many as four, individuals may not equal one millimeter. Both families are of cosmopolitan distribution and, so far as is known, all species develop as parasites within the eggs of other insects. However, the similarity ceases at this point, for the families are morphologically very distinct groups and must have evolved from quite different ancestral stocks. The trichogrammatids show affinities with the family Eulophidae, but the mymarids have presented more of a problem to systematists, who have shunted them from the Proctotrupeoidea to the Chalcidoidea. Some extremists have suggested that the Mymaridae represent an entirely separate superfamily.

Including synonymous forms, 105 genera and more than 500 species have been described in the Trichogrammatidae; and 97 genera with more than 1,100 species are cataloged in the Mymaridae. In 1905 Perkins wrote about the Mymaridae as follows:

Of the species hitherto described, in comparatively few cases are the hosts known, and it is safe to say that all the species hitherto collected by Entomologists do not amount to one in hundreds, that exist. Some of the larger species may be obtained in numbers with the sweeping net by anyone with good eyesight, and others are frequently seen in plenty running on glass windows, especially those of hot-houses in cold countries, as the English collectors observed three-quarters of a century ago. The majority of the species that exist, however, are not likely to be met with, except by breeding them, for many are so minute, that except by chance they cannot be collected in the field. Some of the species do not exceed one-third of a millimeter in length and others are said to be even smaller, while the pallid color of many of the minute species renders them almost invisible to the naked eye.

The truth of Perkins' statement has not diminished in the last 50 years, and it applies not only to the Mymaridae but to the Trichogrammatidae as well. Many of the trichogrammatids discussed in this paper are from rather incidental collections made on the Mariana Islands of Saipan and Alamagan by random sweeping of low vegetation. If the results of this casual collecting can be used as a criterion, a purposeful and intensive search for this group in Micronesia will reveal a rich and extensive fauna of Trichogrammatidae. The collections were made on three brief occasions only, and those on Saipan were taken during the rainy season, which would seem to be the least promising time of year to find trichogrammatids in abundance. Yet the six genera which were taken in a small locality make an impressive total when compared with the three genera recorded from the entire state of California in the recent synoptic Catalogue of Hymenoptera of America north of Mexico (Muesebeck, *et al.*, 1951, U. S. Dept. Agric., Monogr. 2). However, about nine genera are known to occur in California and 19 in the Nearctic Region. The distribution of Micronesian Trichogrammatidae and Mymaridae is shown in tables 1 and 2.

Types of the new species are to be deposited in the United States National Museum (US).

The United States Office of Naval Research, the Pacific Science Board (National Research Council), the National Science Foundation, and Bishop Museum have made the survey and the publication of the results possible.

FAMILY TRICHOGRAMMATIDAE

The family Trichogrammatidae is normally segregated into genera on the basis of differences in wing and antennal structures. As this system has inherent weaknesses, the systematic concept of the trichogrammatids is badly in need of revision. The manner in which many of the forms intergrade makes initial placement at the generic level difficult, and this is perhaps even more exaggerated at the species level. Accordingly, a conservative policy has been followed in this paper, and many species have been placed in genera on an admittedly provisional basis.

I am most grateful to Mr. B. D. Burks of the United States Department of Agriculture, Insect Identification and Parasite Introduction Section, for his generous assistance in examining many of the trichogrammatid specimens and for his valued opinions on their placement.

Table 1.—Distribution of Micronesian *Trichogrammatidae*

	MICRONESIAN ISLAND GROUPS								Other Localities
	Alamagan	Saipan	Guam	Caroline					
				Palau	Yap	Ulithi	Truk	Ponape	
1. <i>Oligosita hilaris</i>						×			Oahu; Thursday Island, Torres Strait
2. <i>Oligosita oceanica</i>		×							
3. <i>Oligosita utilis</i>			×						New Hebrides, Fiji, Futuna
4. <i>Oligosita kusaiensis</i>								×	
5. <i>Abella mira</i>		×			×				Queensland
6. <i>Trichogramma chilonis</i>		×		×					Philippines, Japan, Formosa
7. <i>Trichogramma minutum</i>			×						U. S., Oahu, Canada, Mexico, Queensland
8. <i>Trichogramma nanum</i>			×						Java, Queensland
9. <i>Trichogramma</i> sp.			×						
10. <i>Trichogrammatomyia tortricis</i>	×								Penn., U. S.; Ontario, Canada
11. <i>Aphelinoidea oceanica</i>		×							Wake, Hawaii
12. <i>Aphelinoidea mariana</i>	×								
13. <i>Lathromeris pacifica</i>		×		×					
14. <i>Haeckeliana brontispae</i>		?							Java, Rota (?)

KEY TO MICRONESIAN GENERA OF TRICHOGRAMMATIDAE (FEMALES)

1. Antennal funicle present..... 2
Antennal funicle absent..... 5
- 2(1). Funicle two-segmented 3
Funicle one-segmented; club three-segmented, apical segment with spinelike projection; wing disk very sparsely ciliated..... **Oligosita**
- 3(2). Club solid 4
Club three-segmented **Abella**
- 4(3). Forewing with short marginal cilia, discal cilia in distinct lines; mandibles with three large equal teeth and a smaller posterior tooth; venation arched..... **Trichogramma**
Forewing with marginal cilia equal to one-third wing width, marginal vein straight, few regular lines of discal cilia; mandibles with two acute teeth and an inner oblique truncation..... **Trichogrammatomyia**
- 5(1). Antennal club two-segmented, partial third..... **Aphelinoidea**
Antennal club four-segmented..... **Lathromeris**
Antennal club five-segmented..... **Haeckeliana**

1. *Oligosita hilaris* (Perkins). (Figures 1, a; 2, b.)

Westwoodella hilaris Perkins, 1910, Fauna Hawaiiensis 2 (6): 658-659.

This species was first known in 1910 from a single female collected on Oahu, Territory of Hawaii. Later two females were taken by Girault in the town on Thursday Island, Torres Strait. If the present identification is correct, this species is indeed widespread, for I took two females of this species on Saipan. One was captured on July 26, 1948, and the other on November 11,

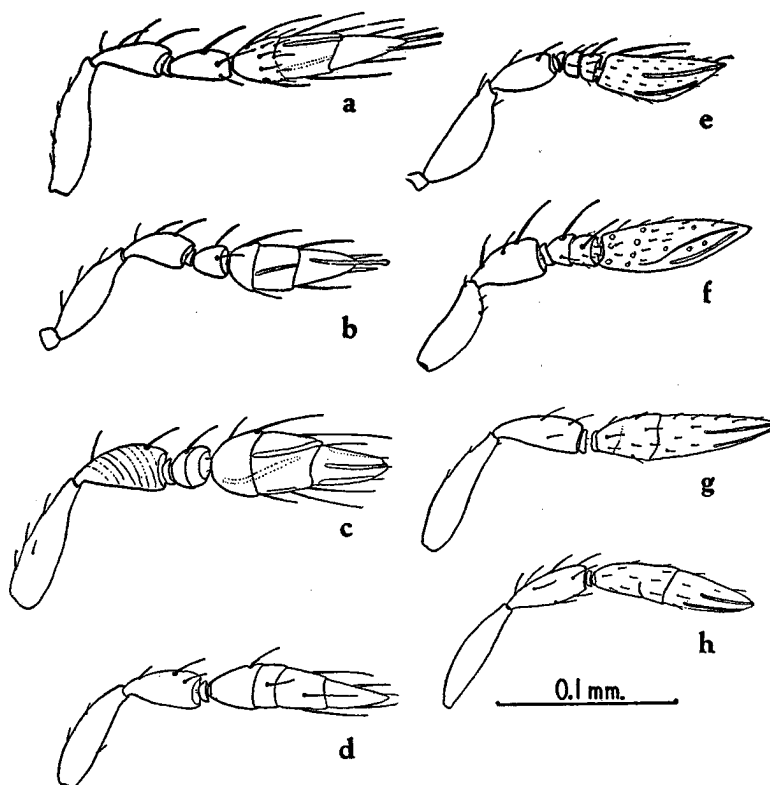


FIGURE 1.—Antenna: a, *Oligosita hilaris*; b, *O. oceanica*; c, *Abbella mira*; d, *Lathromeris pacifica*; e, *Trichogrammatomyia tortricis*; f, *Trichogramma chilonis*; g, *Aphelinoidea oceanica*; h, *A. mariana*.

1948, while I was sweeping low vegetation. The distribution of the species also includes the western Caroline Islands, for a specimen was taken by N. L. H. Krauss on Fassarai, Ulithi Atoll, October 7, 1952. The antennal structure of *O. hilaris* is illustrated in figure 1, a; the forewing, in figure 2, b.

DISTRIBUTION: Hawaii, Torres Strait, western Micronesia.

S. MARIANA IS. SAIPAN: July, Nov. 1948, Doutt.

CAROLINE ATOLLS. ULITHI: Fassarai I., Oct. 1952, Krauss.

2. *Oligosita oceanica* Doutt, n. sp. (figs. 1, *b*; 2, *a*).

Female: Body golden yellow, nearly uniform except slightly darker near apex of abdomen and vertex of head. Eyes and ocelli black. Pleural wing processes dark brown. Antennae and legs uniformly light brown. Wings hyaline except for slight substigmatal spot.

Head, frontal view, longer than wide. Eyes large, somewhat reniform, cheeks relatively short. Antennae (fig. 1, *b*) inserted above imaginary line connecting lower margins of eyes. Funicle segment shorter than apical club segment, subequal to second club segment, longer than basal club segment. Antennal structure differs from *O. hilaris*, as shown by a comparison of figure 1, *a* and *b*.

Wings (fig. 2, *a*) differ in color and discal ciliation from *O. hilaris* (fig. 2, *b*).

This species was collected by me on Saipan as follows: Four females, November 9, 1948; one female, November 11, 1948. Holotype (US) female.

DISTRIBUTION: Southern Mariana Is. (Saipan).

3. *Oligosita utilis* Kowalski.

Swezey (1946, B. P. Bishop Mus., Bull. 189: 211-219) reports two species of *Oligosita* on Guam. One is undetermined and the other is apparently close to *O. cratitia* (Waterston), which is a synonym of *O. utilis*. *O. utilis* occurs in the New Hebrides, Fiji, Futuna, and Guam.

4. *Oligosita kusaiensis* Doutt, n. sp. (fig. 3, *b*).

Female: General body color dark brown. Antennae pallid, fore legs light brown, middle and hind legs darker, about like body. Wings smoky beneath venation and in wing areas lacking discal cilia. Substigmatal spot brown, distinct.

Antennae inserted about middle of face, above imaginary line drawn connecting lower eye margins. Vertex with about 10 long bristle-like setae. Abdomen longer than head and thorax combined. Ovipositor long, originating at base of abdomen, but not exerted.

Legs normal, basal tarsal segments all longer than either of subsequent segments.

Antennal pedicel long, at least two-thirds length of club. Funicle segment long and slender. Antenna with long setae arranged in whorls on funicle and club.

Forewings as in figure 3, *b*. Wing spatulate, unusually broad for genus and also with more discal cilia than is normal. Stigma enlarged, stigmal spot distinct.

Hind wings very narrow. Wing blade barely wider than stigma of forewing.

Male: Unknown.

This species is very unlike the other species of *Oligosita* now known from Micronesia. It is distinguished by the combination of broad, heavily ciliated forewings; narrow hind wings; long ovipositor; and long, narrow funicle segment.

Described from a single female collected by J. F. G. Clarke in a light trap at Wakap, Kusaie, at 490 meters, on March 27, 1953. Holotype (US).

DISTRIBUTION: Eastern Caroline Is. (Kusaie).

5. *Abbella mira* Girault (figs. 1, c; 2, f).

Abbella mira Girault, 1913, Queensland Mus., Mem. 2: 102.

This species, illustrated in figures 1, c and 2, f, was originally described from Queensland. Its presence in Micronesia thus greatly extends its range in the Pacific area. A series of this species was collected by me on Saipan as follows: One male, July 26, 1948; one female, July 30, 1948; eight females, November 11, 1948. A single female was taken on Yap, August 3, 1950, by R. J. Goss.

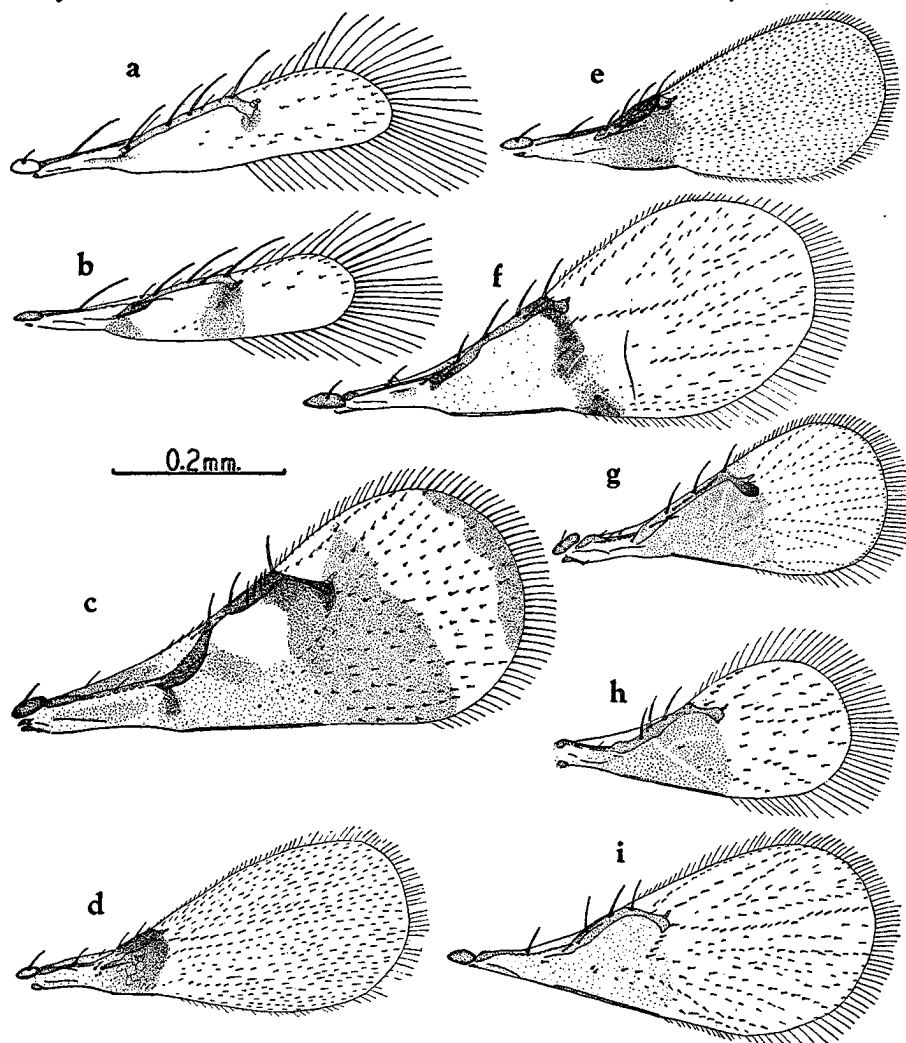


FIGURE 2.—Wing: a, *Oligosita oceanica*; b, *O. hilaris*; c, *Haeckeliana brontispæ*; d, *Aphelinoidea oceanica*; e, *A. mariana*; f, *Abbella mira*; g, *Lathromeris pacifica*; h, *Trichogrammatomyia tortricis*; i, *Trichogramma chilonis*.

6. *Trichogramma chilonis* Ishii (figs. 1, f; 2, i).

Trichogramma chilonis Ishii, 1941, *Kontyû* 14 (5-6): 173-175.

Of all the genera in the Trichogrammatidae, certainly the one most familiar to entomologists is the genus *Trichogramma*. This genus is rather well represented in Micronesia, and at least one species has been purposely introduced for pest control. This is *T. chilonis* which Esaki (1952, Ninth Int. Congr. Ent., Amsterdam, Trans. 1: 817) reported as being introduced into Micronesia from Japan in 1935 by the Nanyo Kohatsu Company for the control of the stem borer of sugar cane, *Eucosma schistaceana* Snellen.

I took a small series of what appears to be *T. chilonis* by sweeping grass on Saipan on November 11, 1948. A large series of females of apparently the same species was reared by J. W. Beardsley who found them gregarious in the eggs of *Hippotion celerio* on taro collected at Koror, Palau Islands, January 12, 1954.

It would appear from these records that *T. chilonis* is well established in Micronesia and now a part of the insular fauna. The antenna of this species is shown in figure 1, f; the wing, in figure 2, i.

DISTRIBUTION: Philippines, Japan, western Micronesia.

S. MARIANA IS. SAIPAN: Nov. 1948, Doutt.

PALAU. KOROR: Jan. 1954, Beardsley.

HOST: *Hippotion celerio*.

7. *Trichogramma minutum* Riley (fig. 3, a).

Trichogramma minutum Riley, 1871, Missouri State Bd. Agric., Ann. Rept. 6: 157.

Swezey (1946, B. P. Bishop Mus., Bull. 189: 211-219) records this species as having been collected on Guam. A series of specimens which closely resemble *T. minutum* was also collected on Guam on July 6, 1945, by J. R. Stuntz. He reared them from "reticulated purple eggs (probably reduviid eggs) on underside of leaf." A specimen from this series (fig. 3, a) illustrates the general habitus of a trichogrammatid.

8. *Trichogramma nanum* (Zehntner).**9. *Trichogramma* sp.**

Swezey (1946) also records *T. nanum* and *Trichogramma* sp. from Guam. It is perhaps notable that the species of *Trichogramma* have been taken on only the larger islands, and ones where sugar cane was grown fairly extensively. It may be that all the *Trichogramma* species in Micronesia are immigrants, for *T. chilonis* was certainly introduced, *T. nanum* occurs on sugar cane in Java and Queensland, and *T. minutum* is a North American species

which has been carried at least to Hawaii and could easily have been transported to Guam.

DISTRIBUTION: North America; widely introduced, including Guam.
S. MARIANA IS. GUAM: 1936, Swezey; July 1945, Stuntz.

HOSTS: Eggs of various insects.

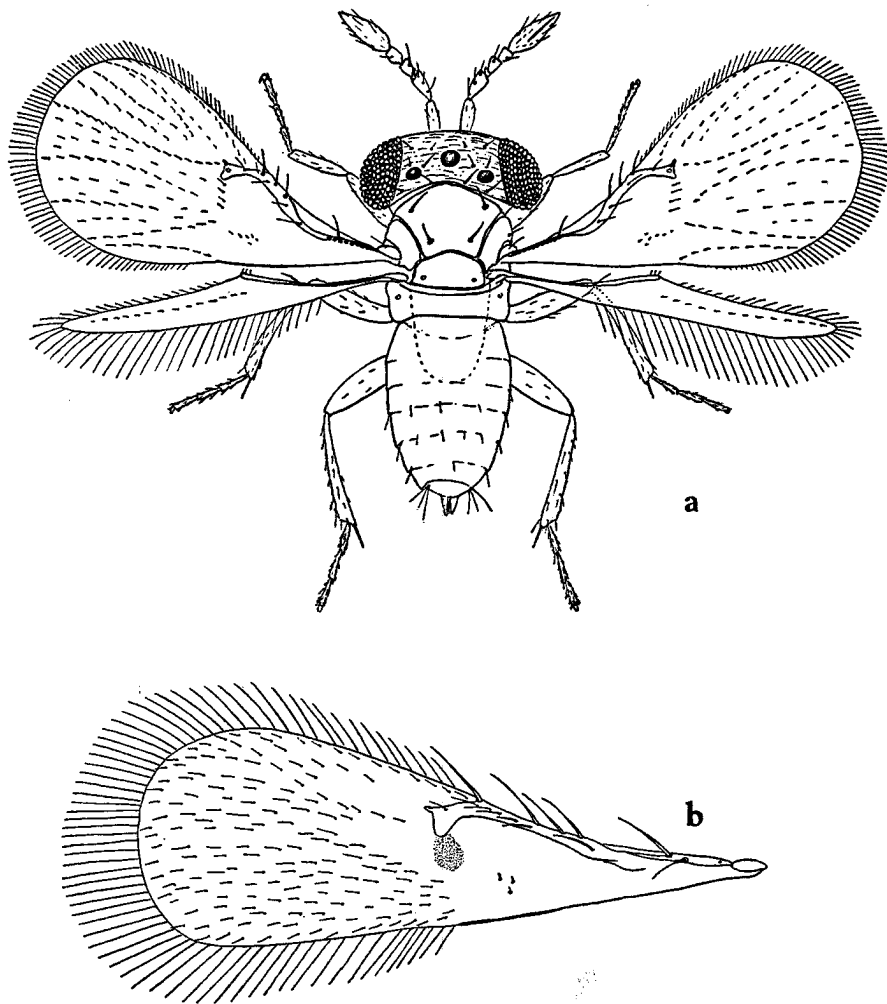


FIGURE 3.—a, Dorsal view of *Trichogramma* nr. *minutum*; b, wing of *Oligosita kusaiensis*.

10. *Trichogrammatomyia tortricis* Girault (figs. 1, *e*; 2, *h*).

Trichogrammatomyia tortricis Girault, 1916, Canadian Ent. 48: 268.

I took a single female, kindly identified as this species by B. D. Burks, on Alamagan on August 3, 1948. This is a remarkable record, for this monobasic genus was first described from a series taken from the eggs of *Tortrix cerasivorana* at Guelph, Ontario, Canada. Later collections extend its range into New Brunswick and New York. The forewing is shown in figure 2, *h* and the antenna, in figure 1, *e*. Another specimen was taken by me on Saipan on November 11, 1948.

DISTRIBUTION: North America, Mariana Is.

N. MARIANA IS. ALAMAGAN: Aug. 1948, Doutt.

S. MARIANA IS. SAIPAN: Nov. 1948, Doutt.

11. *Aphelinoidea oceanica* Timberlake (figs. 1, *g*; 2, *d*).

Aphelinoidea oceanica Timberlake, 1926, B. P. Bishop Mus., Bull. 31: 41.

A series of specimens similar to *A. oceanica* was collected on Saipan on November 11, 1948, by sweeping grass. These specimens are considerably darker than the type series described by Timberlake (1926) from Wake Island and may actually represent a new species instead of a melanic form of *A. oceanica*. Structurally, they appear too closely related to *A. oceanica* to be differentiated rather arbitrarily at the species level on the basis of color alone. The antennal club illustrated by Timberlake (1926) is broader than that illustrated in figure 1, *g*. The wing of the Saipan form is shown in figure 2, *d*.

DISTRIBUTION: Southern Mariana Is., Wake Atoll.

S. MARIANA IS. SAIPAN: Nov. 1948, Doutt.

WAKE ATOLL. WAKE I.: July, Aug. 1923, Bryan.

12. *Aphelinoidea mariana* Doutt, n. sp. (figs. 1, *h*; 2, *e*).

Female: Head light brown, posterior surface beneath occiput darker; eyes brick red. Thorax light yellowish brown; abdomen darker. Fore and middle legs pale; hind legs differently colored with coxæ, trochanters, femora dark brown, tibiae and tarsi pale. Wings infuscated beneath marginal venation only, basal portion beneath submarginal vein as well as wing disk beyond stigmal vein hyaline. Face trapezoidal, broadest between lower eye margins. Antennae (fig. 1, *h*) inserted beneath imaginary line connecting lower eye margins. Forewings as in figure 2, *e*; marginal vein distinctly swollen, with reticulated sculpturing. Abdomen longer than thorax. Ovipositor markedly exserted, exserted length approximately three-eighths length of abdomen.

Male: Color similar to female, thorax slightly darker. Posterior ocelli distant from compound eyes one and one-half times their diameter. Head with slightly broader proportions than female. Wings similar to female, marginal vein swollen, with reticulated sculpturing.

Described from one female, holotype (US), and two males collected by me on August 3, 1948, on Alamagan.

DISTRIBUTION: Northern Mariana Is. (Alamagan).

This species is readily differentiated from *A. oceanica* on the basis of the long ovipositor and swollen marginal vein.

13. *Lathromeris pacifica* Doult, n. sp. (figs. 1, *d*; 2, *g*).

Female: Thorax, abdomen light brown suffused with yellow; head golden brown; eyes and ocelli deep crimson; antennae yellowish; all coxae and femora light brown, each tibia brown at base, becoming very light yellowish at apex; tarsi light yellowish. Forewings with distinct light brown band across wing in area of venation; wing disk hyaline beyond apex of venation, venation brown. Hind wings similarly colored.

Head, frontal aspect, very slightly wider than long. Eyes reaching just below middle of face, cheeks well developed, face deeply impressed. Mandibles well developed, tridentate; two anterior teeth strong, equal, posterior tooth smaller. Vertex with short stout setae. Antennae (fig. 1, *d*) inserted above an imaginary line connecting lower margins of eyes. Scape normal; pedicel with suggestion of fine ridges on dorsal surface; first annellus conspicuous, second small, cryptic, closely appressed to basal segment of club. No true funicle segments; club four-segmented. Club seems narrow for genus, not much wider than pedicel.

Mesoscutum longer than wide, longitudinally striate, bearing four conspicuous setae. Scutellum broad, sculpturing same as mesoscutum. Forewings as illustrated in figure 2, *g*. Marginal vein with median row of five stout setae on dorsal surface. Hind wings with median row of discal cilia; fumated band beneath marginal venation. Fore coxa long, three-fourths length of femur; fore trochanters large, broad. Fore trochanter length equal to apical tarsal segment. Fore femora longer than fore tibiae. Middle coxae comparatively short; middle femora shorter than tibiae; length of middle tibia subequal to combined length of tarsal segments. Hind coxae very large, longer and wider than hind femora. Ovipositor appreciably exerted.

Male: Unknown.

Described from a single female, holotype (US), which I collected by sweeping low vegetation on Saipan on November 9, 1948.

DISTRIBUTION: Southern Mariana Is. (Saipan).

Lathromeris pacifica may be differentiated from the genotype *L. scutellaris* Foerster by distinct color differences, a narrower club, and shorter marginal fringes on the forewings. It differs from *L. inflaticornis* Nowicki in antennal structure and wing shape. It differs from *L. johnstoni* Waterston in having lighter coloration, narrower antennal club, and a distinctly longer marginal vein.

Species in this genus occur in the eastern United States, Austria, France, Holland, Turkey, Russia, and the British Sudan. The species described as *Chaetostricha mukerjii* by Mani in India (1935, Indian Mus., Rec. 37: 337) may also belong in this genus. From these records it would appear that *Lathromeris pacifica* is the first representative of this genus to be taken in the entire Pacific basin.

14. *Haeckeliana brontispae* Ferrière (fig. 2, *c*).

Haeckeliana brontispae Ferrière, 1931, Bull. Ent. Res. 22: 293.

Although this introduced species was not recovered in the colonization sites [Doult, 1950, Hawaiian Ent. Soc., Proc. 14 (1): 55-58], exit holes were found in several host eggs, and eventually it may be found to be established on Saipan or Rota. It seems worth while to include it in this paper, and in order

that it may be recognized easily in the future the forewing is illustrated (fig. 2, c).

DISTRIBUTION: Indonesia, southern Mariana Is. (?)

FAMILY MYMARIDAE

Species of Mymaridae were purposely introduced into Hawaii for control of the sugar-cane leafhopper [Perkins, 1905, Hawaiian Sugar Planters' Assoc. Exper. Sta., Ent. Bull. 1 (6) : 187-205]. One of these mymarids, *Paranagrus optabilis* Perkins, is reported by Swezey (1946, B. P. Bishop Mus., Bull. 189 : 211-219) to be present on Guam and is undoubtedly an introduction to Micronesia.

The genera of Mymaridae now known to exist in Micronesia are presented in the following key.

KEY TO MICRONESIAN GENERA OF MYMARIDAE

1.	Abdomen sessile or subsessile	2
	Abdomen distinctly petiolate	7
2(1).	Tarsi with four segments	3
	Tarsi with five segments	5
3(2).	Funicle 1 much shorter than 2	4
	Funicle 1 not much shorter than 2 but subequal or equal	Paranagrus
4(3).	Marginal vein very long	Nesetaerus
	Marginal vein short	Anagrus
5(2).	Funicle of eight segments	Lymaenon
	Funicle of five or six segments	6
6(5).	Funicle of six segments, endophragma extending well into abdomen; small species	Alaptus
	Funicle of five segments	Arescon
7(1).	Hind wings with unusually long pedicel; blade represented by single long hair-like process	Mymarilla
	Hind wings normal	8
8(7).	Scape distinctly asperate; funicle 1 very long	Stephanodes
	Scape smooth; funicle 1 short	Polynema

Three genera which were taken by Swezey (1946) on Guam have not appeared in the collections made elsewhere in Micronesia. These are *Paranagrus* Perkins, *Alaptus* Haliday, and *Mymarilla* Westwood (*Mymar* of American authors).

1. *Paranagrus optabilis* Perkins.

The eggs of *Perkinsiella thompsoni* Muir in sugar-cane leaves served as hosts for *Paranagrus optabilis*, which Swezey collected at Piti, Guam, on April 30, 1936.

2. *Alaptus caecilii* Girault.

Swezey reared *A. caecilii* from eggs of *Caecilius analis* on sugar cane, Su-may Road, Guam, October 7, 1936.

3. *Mymarilla tyndalli* (Girault).

Swezey (1946) records *M. tyndalli* (*Mymar* of American authors) as having been taken at Piti, Guam, by sweeping lawn grass on November 5, 1936.

4. *Anagrus flaveolus* Waterhouse.

This species was reared by Swezey from the eggs of *Peregrinus maidis* (Ashmead) in corn leaves, Dededo, Guam, November 13, 1936. I collected a species of *Anagrus*, presumably *flaveolus*, on Saipan. Three females were collected from grass on November 11, 1948, and a single female was taken on July 26, 1948, all near the village of Chalan Kanoa.

Table 2.—Distribution of Micronesian Mymaridae

	MICRONESIAN ISLAND GROUPS									Other Localities
	Alamagan	Saipan	Guam	Caroline						
				Palau	Yap	Ulithi	Truk	Ponape	Kusaie	
1. <i>Paranagrus optabilis</i>			×							Queensland, Java
2. <i>Alaptus caecilii</i>			×							U. S.
3. <i>Mymarilla tyndalli</i>			×							Queensland
4. <i>Anagrus flaveolus</i>		×	×							Trinidad, Haiti
5. <i>Nesetaerus gressitti</i>							×			
6. <i>Lymaenon saipanensis</i>		×								
7. <i>Lymaenon</i> sp. (male)			×							
8. <i>Lymaenon</i> sp. (male)				×						
9. <i>Arescon clarkei</i>								?	×	
10. <i>Stephanodes similis</i>		×								Germany, England
11. <i>Polynema</i> sp.					×					

Genus *Nesetaerus* Doult, new genus

Female: Antenna as in figure 4, *a*. Funicle six-segmented; first funicle segment small, subglobular; funicle segments 2 to 5 of equal width, segment 6 wider. Club of moderate width, tapering sharply with an upwardly directed curve at the tip. Radicle longer than first funicle segment; scape slender, pedicel of length equal to any of distal funicle segments.

Forewings moderately broad, marginal cilia numerous, discal cilia moderately long. Venation very elongate for the Mymaridae, extending over half length of wing blade. Submarginal and marginal veins of nearly equal length.

Coxae and femora, particularly of fore and hind legs, broadly expanded. Tarsi four-segmented.

Abdomen sub sessile, phragma not projecting into abdomen. Combined length of abdomen and extended ovipositor two and one-half times length of thorax. Ovipositor exerted for length equaling that of thorax.

Male: Unknown.

A single specimen collected on Truk by J. L. Gressitt appears to represent an undescribed genus of Mymaridae. Although it has characters which resemble some features found in the genera *Arescon* and *Litus*, it is so remarkably distinct from either of these genera as to justify placement in a separate category. The venation is similar to that of *Arescon*, but the presence of six funicle segments and four tarsal segments together with the antennal insertions being low on the face indicate that it cannot be *Arescon*. It is separated from *Litus* by the much longer venation, the broader wings, expanded coxae and femora, and by the structure of the ovipositor.

5. *Nesetaerus gressitti* Doutt, n. sp. (fig. 4).

Female: Length of thorax 0.27 mm., abdomen 0.45 mm., not including ovipositor, which extends beyond abdomen 0.28 mm. Forewing disk 0.85 mm. long, 0.24 mm. wide.

Head, thorax, abdomen dark brown; antennae and femora light brown; coxae and trochanters pallid, tibiae and tarsi yellowish; wings smoky with distinct cloud beneath venation.

Head somewhat distorted in type specimen, eyes large, cheeks short, antennae inserted low on face near lower, inner margins of eyes.

Thorax as in figure 4, *c*. Coxae and femora of all legs large, expanded, particularly the hind coxae and femora (fig. 4, *d*). Tibiae normal, Tarsi four-segmented; fore tarsi with well-developed strigil on basal segment, segments 2 and 3 short, segment 4 the broadest segment. Middle and hind tarsi with segment 3 shortest, other segments nearly equal in length.

Forewings (fig. 4, *b*) long, moderately broad, with dense marginal cilia, and rather long discal cilia. One distinct row of discal cilia extending from center of wing blade obliquely and distally toward posterior margin. Venation long, extending over half length of wing, submarginal and marginal vein of nearly equal length. Hind wings with discal cilia arranged in single row near wing margins, cilia absent in center of wing blade.

Abdomen elongate, much longer than thorax and head combined. Ovipositor originates at base of abdomen and extends beyond abdominal apex for distance equal to length of thorax, as shown in figure 4, *e*.

Male: Unknown.

This species is described from a single female, holotype (US), collected by J. L. Gressitt on Mount Unibot, at an altitude of 390 meters, Tol [Ton] Island, Truk, February 4, 1953.

DISTRIBUTION: Central Caroline Is. (Truk).

6. *Lymaenon saipanensis* Doutt, n. sp.

Female: Length 0.9 mm., forewing 0.9 mm. \times 0.21 mm. General body color yellowish with brown maculations on thorax and abdomen, distinct brown patches on anterior portion of mesoscutum, parapsides, scutellum. Funicle and club dusky, scape and pedicel lighter. Eyes dark. Wings hyaline.

Radicle long, about half length of club, exceeding length of pedicel or any funicle segment, width equal to that of second funicle segment. First funicle segment slightly swollen, wider but shorter than segment 2; second funicle segment narrow, equal in length to seg-

ment 3. Segments 4, 5, 6 slightly longer than wide. Funicle segments 7 and 8 widest funicle segments, longer than either 4, 5, or 6 but not as long as 3; segments 7 and 8 bear longitudinal sensorial ridges, apparently lacking on preceding segments. Club elongate, wider than funicle and exceeding combined length of funicle segments 6, 7, and 8.

Thorax longer than abdomen; forewings long, moderately narrow for genus, about 18 lines of discal cilia at widest part of wing blade; marginal cilia moderately long. Basitarsal segment of fore, middle, and hind legs longer than subsequent segments; tarsal segments 2, 3, 4 on fore and middle legs small. Abdomen conical-ovate; ovipositor exerted for distance equal to one-fifth abdominal length.

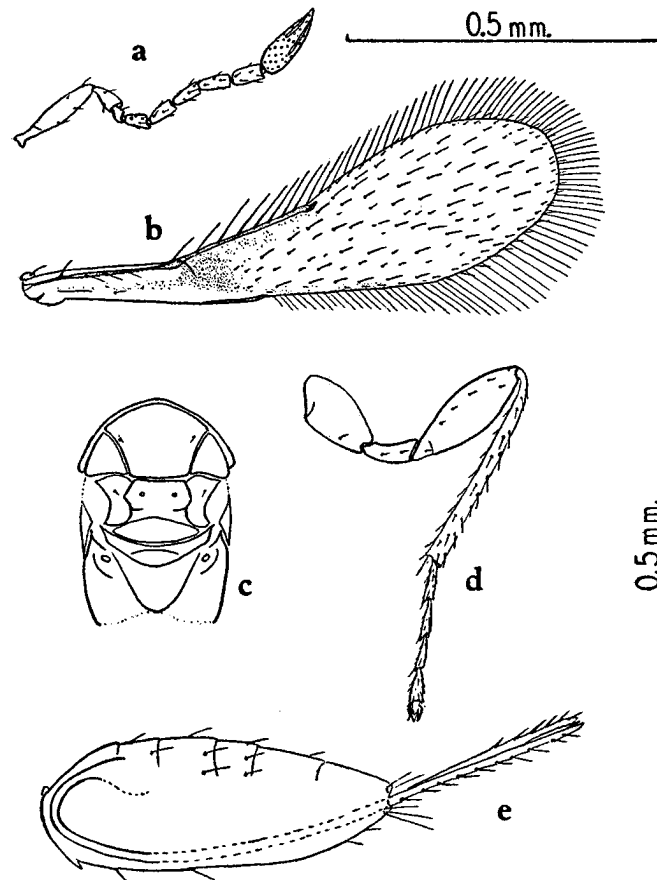


FIGURE 4.—*Nesetaerus gressitti*: a, antenna; b, forewing; c, thorax; d, hind leg; e, abdomen.

Male: Color tends to be darker than female, particularly in thoracic area; abdomen with at least two distinct dark bands. Antenna with scape, pedicel, 10 funicle segments, and the apical club. Wings, body size, and relative proportion of tarsal segments similar to female.

This species is described from my collection of three females and three males (holotype, female, US) taken by sweeping grass on Saipan, November

11, 1948. Also a series of three males was collected in the same manner on July 26, 1948, on Saipan.

DISTRIBUTION: Southern Mariana Is. (Saipan).

The exerted ovipositor would tend to place this species in keys with the Australian species *L. spinozai* (Girault), but it is easily differentiated by having narrower wings and elongate second and third funicle segments.

7. *Lymaenon* sp.

Additional specimens of *Lymaenon* have been collected in Micronesia as follows: Two male *Lymaenon* sp. collected at light, Point Oca, Guam, June 12, 1945, United States Naval Medical Research Unit No. 2, G. E. Bohart and Gressitt.

8. *Lymaenon* sp.

One male *Lymaenon* sp. was collected in the course of the Pacific Science Board Entomological Survey of Micronesia by H. S. Dybas at Ngerehelang, Babelthuap, Palau Islands on December 18, 1947.

One female, presumably *Lymaenon* (antennae missing) was collected by N. L. H. Krauss on Ulebsehel (Auluptagel, Aurapushekaru), Palau Islands, September 1952.

It is not possible with our present knowledge of this genus to identify random male *Lymaenon* to species unless they can be definitely associated with female specimens. The males from Guam are a different species from that collected in the Palaus, and both are unlike *L. saipanensis*.

9. *Arescon clarkei* Doutt, n. sp.

Female: Thorax and abdomen light brown; legs, antennae, and wing venation all light yellowish brown.

Antenna with radicle nearly length of pedicel. Scape and club about equal length. Funicle 1 very short, less than one-half length of pedicel. Funicles 2, 3, and 4 about equal length, funicle 5 shorter. Antenna as in figure 5, *a*.

Forewings normal for genus, marginal vein very long, venation extending three-fourths length of forewing. Wing blade with about 11 cilia beneath venation. Cluster of additional cilia near wing apex.

Ovipositor originates at base of abdomen, and exerted for length about equal to funicle 5.

Male: Not definitely known.

Described from a single female taken in trash from the forest floor, "Hill 1575," at 330 meters, Kusaie, on February 26, 1953. The collector is J. F. Gates Clarke, for whom the species is named.

A male *Arescon*, very similar to the above species, was taken by Gressitt in Berlese funnel material, Mount Temwetemwensekir, 180 meters, Ponape, on January 12, 1953. This may quite possibly be the same species, but it is not designated as such until a better association can be made. The male from Ponape is illustrated in figure 5, *b*.

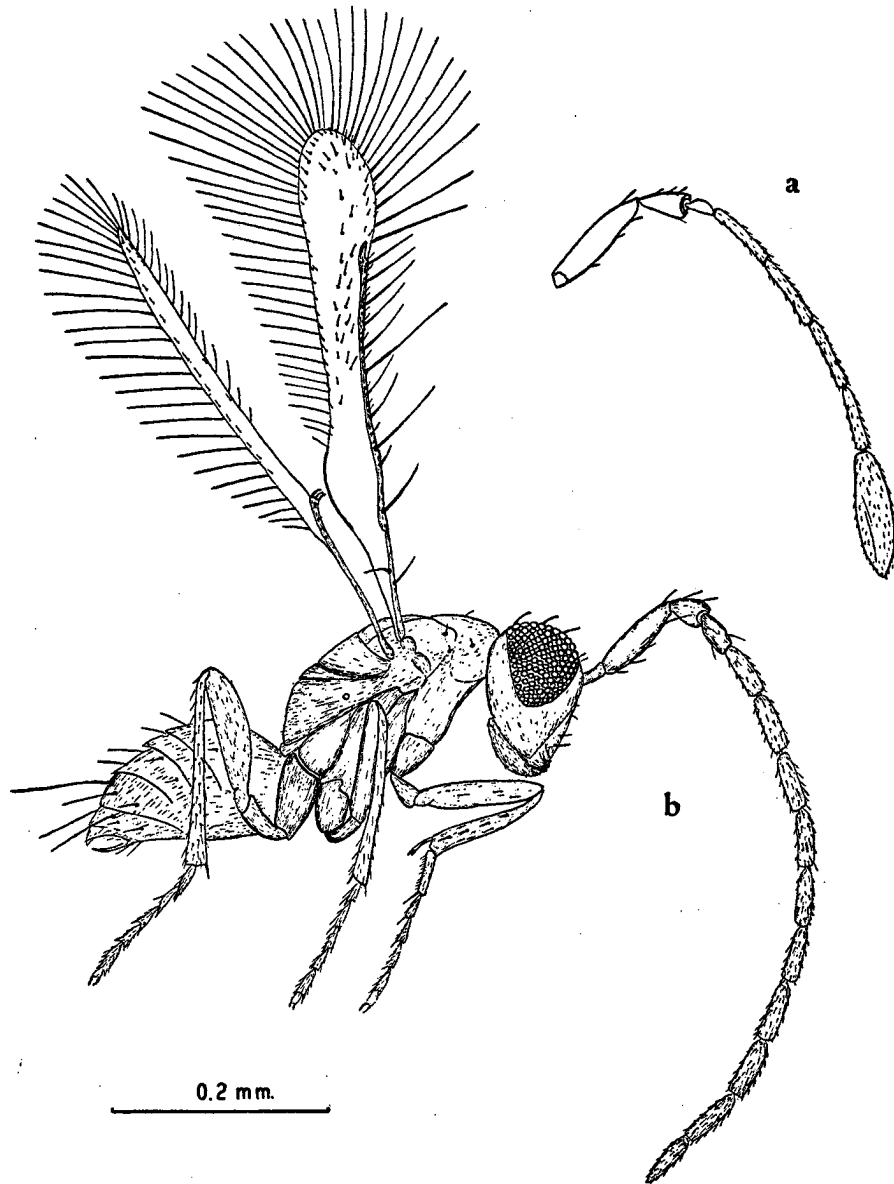


FIGURE 5.—*Arescon*: a, antenna of female; b, profile of male.

DISTRIBUTION: Eastern Caroline Is. (Kusaie and Ponape).

A. clarkei can be immediately separated from *A. rufula* (Foerster) by the longer funicle segments and the sparsely ciliated forewings.

10. ***Stephanodes similis*** (Foerster).

The genus *Stephanodes* occurs on Saipan, where I collected a series of 19 females on November 11, 1948, by sweeping low vegetation near the village of Chalan Kanoa. The species appears to be *S. similis* (Foerster) or very closely allied to it. This is apparently the first record of the genus in the Pacific area.

11. ***Polynema*** sp.

A single male specimen of *Polynema* was collected on Rumung Island, Yap, on October 22, 1952, by Krauss. I am unable to identify this species.

SUMMARY

The family Trichogrammatidae is well represented in Micronesia. The genera already known from the Pacific area are present, and two additional genera, *Lathromeris* and *Trichogrammatomyia*, are recorded for the first time from the Pacific basin. Four new species of trichogrammatids are described. These are *Lathromeris pacifica*, *Aphelinoidea mariana*, *Oligosita kusaiensis*, and *O. oceanica*.

A new genus has been added to the Mymaridae by the finding on Truk of *Nesetaerus gressitti*. In addition, two new mymarid species, *Lymaenon saipanensis* and *Arescon clarkei*, are described from the Micronesian material.

