

# On the occurrence of *Polynema* Haliday (*Dorypolynema* Hayat and Anis) and *Palaeoneura* Waterhouse (Hymenoptera: Mymaridae) in the New World, with description of two new species

Triapitsyn, Serguei V.<sup>1</sup>; Aquino, Daniel A.<sup>2</sup>

<sup>1</sup> Entomology Research Museum, Department of Entomology, University of California, Riverside, California 92521, EE.UU.

<sup>2</sup> Museo de La Plata, División Entomología, Paseo del Bosque s/n, 1900, La Plata, Buenos Aires, Argentina. Corresponding author. Email: aquinodaniel81@hotmail.com

► **Resumen** — Una nueva especie del subgénero *Dorypolynema* Hayat y Anis perteneciente al género *Polynema* Haliday (Hymenoptera: Mymaridae), es descrita para la Argentina, Brasil, Costa Rica, Ecuador y Perú. Se cita al género *Palaeoneura* Waterhouse para la región Neártica y se registran nuevas localidades para la especie *Palaeoneura mymaripennis* (Dozier) comb. n. en Guatemala, Honduras y Panamá. Se redescrive la hembra y se describe el macho. Una nueva especie de *Palaeoneura*, se cita para Guatemala y E.E.U.U. (Florida). *Chaetomymar tayalum* Taguchi de Taiwan (China) es transferida al género *Palaeoneura* como *P. tayalum* (Taguchi) comb. n.; *P. clotho* (Debauche) comb. n. y *P. oreades* (Debauche) comb. n. (ambas distribuidas en la República Democrática del Congo) son transferidas del género *Polynema* a *Palaeoneura*.

**Palabras Clave:** Mymaridae, *Polynema*, *Dorypolynema*, *Palaeoneura*, taxonomía, Neotrópico.

► **Abstract** — A new species of the subgenus *Dorypolynema* Hayat and Anis of the fairyfly genus *Polynema* Haliday (Hymenoptera: Mymaridae), is described from Argentina, Brazil, Costa Rica, Ecuador, and Peru. The genus *Palaeoneura* Waterhouse is recorded from the Nearctic region. *Palaeoneura mymaripennis* (Dozier) comb. n. from *Polynema*, previously known only from the USA, is also recorded from the Neotropical region (Guatemala, Honduras, and Panama). Its female is redescribed and the male is described. A new species of *Palaeoneura* is described from Guatemala and USA (Florida). *Chaetomymar tayalum* Taguchi from Taiwan (China) is transferred to *Palaeoneura* as *P. tayalum* (Taguchi) comb. n.; *P. clotho* (Debauche) comb. n. and *P. oreades* (Debauche) comb. n. (both from Democratic Republic of the Congo) are transferred to *Palaeoneura* from *Polynema*.

**Keywords:** Mymaridae, fairyfly, *Polynema*, *Dorypolynema*, *Palaeoneura*, taxonomy, Neotropics.

## INTRODUCTION

Hayat and Anis (1999) described the subgenus *Dorypolynema* Hayat and Anis of the fairyfly genus *Polynema* Haliday (Hymenoptera: Mymaridae) for the single species, *Polynema (Dorypolynema) mendeli* Girault, with Australasian and Oriental distribution. More recently, Triapitsyn and Fidalgo (2006) indicated that *P. (Dorypolynema)* is actually more speciose and common in the Afrotropical region where it remains to be revised, and also occurs, although it is rare, in the New World. Here we confirm New

World records of *P. (Dorypolynema)* only from the Neotropical region, describe a new species based on material from Argentina (Formosa Province), Brazil, Costa Rica, Ecuador, and Peru, and compare it to *P. (Dorypolynema) mendeli*.

The genus *Palaeoneura* Waterhouse was redescribed and discussed recently by Triapitsyn and Berezovskiy (2007) who indicated its presence in the Neotropical region, mentioning occurrence of several undescribed species there. Since we found it to occur also in the Nearctic region, with a single named representative, *Palaeoneura mymaripennis* (Dozier), comb. n. from *Polynema*, and also one undetermined (and appar-

ently unintentionally introduced) species in California, USA. *Palaeoneura mymaripennis* was previously known only from Delaware, USA, but it is also recorded from the Neotropical region (Guatemala, Honduras, and Panama). We redescribe its female and newly describe the male (based on a single specimen from Panama). In addition, we describe a new species from Guatemala and USA (Florida). Several other species of *Palaeoneura* from the Neotropical region (Brazil, Costa Rica, Dominican Republic, Ecuador, Panama, Venezuela) await description.

#### MATERIALS AND METHODS

Most of the newly collected specimens were captured in Malaise traps, dried from ethanol using a critical point drier, and point-mounted. Selected specimens were dissected and slide-mounted in Canada balsam.

Terms for morphological features follow Gibson (1997). We also use the abbreviation F for a funicular segment of the female antenna or a flagellar segment of the male antenna. Unless indicated otherwise, measurements are given in micrometers ( $\mu\text{m}$ ) as length or, where appropriate (e.g., for the wings), as length:width ratios.

Abbreviations for depositories of specimens are as follows: BMNH, The Natural History Museum, London, England, UK; CNCI, Canadian National Collection of Insects, Ottawa, Ontario, Canada; MLPA, Museo de La Plata, La Plata, Buenos Aires, Argentina; OSUC, C.A. Triplehorn Insect Collection, Museum of Biological Diversity, The Ohio State University, Columbus, Ohio, USA; TAMU, Insect Collection, Texas A&M University, College Station, Texas, USA; UCDC, The R.M. Bohart Museum of Entomology, University of California, Davis, California, USA; UCRC, Entomology Research Museum, University of California, Riverside, California, USA; USNM, National Museum of Natural History, Washington, District of Columbia, USA.

#### RESULTS AND DISCUSSION

##### *Polynema* (subgenus *Dorypolynema* Hayat and Anis, 1999)

*Dorypolynema* Hayat and Anis, 1999: 318 (as subgenus of *Polynema*). Type species: *Polynema mendeli* Girault, by original designation.

*Polynema* (*Dorypolynema*): Triapitsyn and Fidalgo 2006: 57 (key to subgenera of *Polynema*), 60–60 (distribution, comments); Triapitsyn and Berezhovskiy 2007: 63 (key to Australian *Polynema*-group genera).

*Diagnosis*.— Forewing with marginal + stigmal veins elongate, disc bare or almost bare behind and just beyond venation (at most with a short row of setae behind apex of submarginal vein and just behind marginal+stigmal veins). Male: head and mandible larger than in female; eye somewhat reduced and smaller than in female; scape more or less flattened and expanded, with modified setae on inner surface.

*Systematic considerations*.— Triapitsyn and Fidalgo (2006) indicated that *P.* (*Dorypolynema*) could be just a species group within *P.* (*Polynema*) because the differences between the two subgenera may be not significant, but that remains to be demonstrated. For instance, the basal expansion of the petiole in the species of *P.* (*Dorypolynema*) is definitely not a subgeneric (and not even a species-group) character because all three presently recognized subgenera of *Polynema* [the third is *P.* (*Doriclytus*) Foerster] (Triapitsyn and Fidalgo 2006) include species with a basally expanded petiole and a long ovipositor, indicating an apparent association between these two features. The diverse Afrotropical fauna of *Polynema* s.l. (i.e., in the broad sense) remains to be revised, particularly the ten species described by Debauche (1949) from Democratic Republic of the Congo (formerly Belgian Congo) and one from Rwanda (all originally in the synonymized genus *Maidliella* Soyka) – it is possible that one of them could be a member of *P.* (*Dorypolynema*). At least two of these (both species from Democratic Republic of the

Congo), however, do not belong in *Polynema*, based on the original descriptions and illustrations of Debauche (1949), and are transferred here to *Palaeoneura* as *P. clotho* (Debauche), comb. n. and *P. oreades* (Debauche), comb. n.

*Distribution.*— Afrotropical (including Madagascar [new record]), Australasian, Oriental, and Neotropical regions.

*Hosts.*— *Polynema (Dorypolynema) mendeli* Girault was reared in Malaysia from eggs of a tettigoniid (Orthoptera: Tettigoniidae) on rice (Subba Rao 1970) [as *Polynema oophaga* Subba Rao].

*Comments.*— It is likely that the enlarged head and mandibles in the males of *P. (Dorypolynema)* species is a sexual dimorphism associated with their habit as parasitoids of tettigoniid eggs (assuming that other species of this subgenus have similar host associations as *P. (Dorypolynema) mendeli*). For instance, species belonging to the *benefica* group of the trichogrammatid genus *Burksiella* De Santis (Hymenoptera: Trichogrammatidae) in the New World, which also parasitize eggs of Tettigoniidae, have highly dimorphic sexes as well, with megacephalic males (Dozier 1932 [as *Ufens beneficus* Dozier, reared in Haiti from eggs of an orthopterous insect, presumably a small katydid]; Pinto 2006). Numerous specimens of an undescribed species from this group were reared by S.N. Myartseva on 20-IX-1998, in Ejido La Purísima, Llera de Canales, Tamaulipas, Mexico, from eggs of the greater angle-wing katydid, *Microcentrum rhombifolium* (Saunders) (Tettigoniidae), on lemon leaf (material in UCRC). Its males, like the species of *P. (Dorypolynema)*, have enlarged mandibles, with which they (those who emerge first) chew holes in the hard chorion of the host katydid eggs (usually one, occasionally two holes per egg). Then the much more numerous females (who have normal-size mandibles, possibly unsuitable for chewing through such a hard chorion of the host egg, although that is a mere speculation without

having any experimental data) use the exit hole(s) made by their brother(s) to emerge from the same egg (S.N. Myartseva, S.V. Triapitsyn, unpublished data). From this, it would be logical to conclude that *P. (Dorypolynema) mendeli* and likely other members of *P. (Dorypolynema)* could be gregarious parasitoids as well. It is also interesting to note that the males of this undescribed trichogrammatid species from Mexico have the antennal scape somewhat expanded and with modified setae on the inner surface, like in the males of *P. (Dorypolynema)* species. Probably these play some kind of a sensory role when a male chews an exit hole from inside of the host egg.

*Polynema (Dorypolynema) gaucho*  
Triapitsyn and Aquino, sp. n. (Figs 1–7)

*Etymology.*— The species name is a noun in apposition referring to cowboys (gauchos) in Argentina, and also more generally to residents of the pampas and chaco in some parts of southern South America.

*Type material.*— Holotype female [MLPA] on slide labeled: “ARGENTINA: Formosa Estancia Guaycolec 25 km N of Formosa, 185 m 25° 59' S, 58° 12' W, 26-II-10-III-1999, (MT) S. L. Heydon, J. Ledford. UCDC Mounted at UCR/ERM by V. V. Berezovskiy 2008 in Canada balsam”. Paratypes: ARGENTINA, Formosa, Estancia Guaycolec (25 km N of Formosa), 25° 59' S 58° 12' W, 185 m: 14-II-1999, E. Fernández-Duque [1 male on slide, UCRC]; 26-II-10-III-1999, S. L. Heydon, J. Ledford [1 female on point, UCRC; 1 male on slide and 1 male on point, UCDC]. BRAZIL, Goiás, Campinaçu, 13° 51.5' S 48° 23.5' W, Serra da Mesa Survey, 20-21-II-1996 (cerrado) [1 female on point, UCRC]. COSTA RICA: Heredia: Braulio Carrillo National Park, Carrillo Headquarters, 250–500 m, 10-IV-1985, H. Goulet, rainforest, photoelector [1 male on slide, CNCI]. La Selva Biological Station, 10.43° N 84.02° W, 1-VIII-1995, ALAS [1 female on slide, UCRC]; 13-15-II-2002, B. V. Brown, L. González, K. Walker [1 female on slide, UCRC]. ECUADOR, Sucumbíos, Sacha Lodge

(at Napo River), 0° 30' S 76° 30' W, 23-VI-3-VII-1994, P. Hibbs [1 female on slide, CNCI]. PERU, Huánuco, Tambello Chico (13 km S of Tingo María), 24-VI-1982, M. Wasbauer, J. Slansky [1 female on slide, UCRC].

*Diagnosis.*— In addition to the characters mentioned in the key, the female of *P. (Dorypolynema) gaucho* sp. n. differs from that of the Old World species *P. (Dorypolynema) mendeli* Girault in having a shorter pronotum and a relatively much shorter ovipositor (the ovipositor is exerted beyond apex of the gaster by about 0.5 x own length (or a

little less) in *P. (Dorypolynema) mendeli*); and F1 of the male antenna has 1 or 2 longitudinal sensilla in *P. (Dorypolynema) gaucho* whereas it lacks longitudinal sensilla in *P. (Dorypolynema) mendeli*.

*Description.*— FEMALE (holotype and paratypes). Body length 900–1052 (dry-mounted paratype from Argentina and slide-mounted holotype, respectively). Body mostly dark brown except petiole yellowish and basal gastral terga brown; scape, pedicel and F1 light brown, remainder of antennal segments brown to dark brown. Legs yellow-



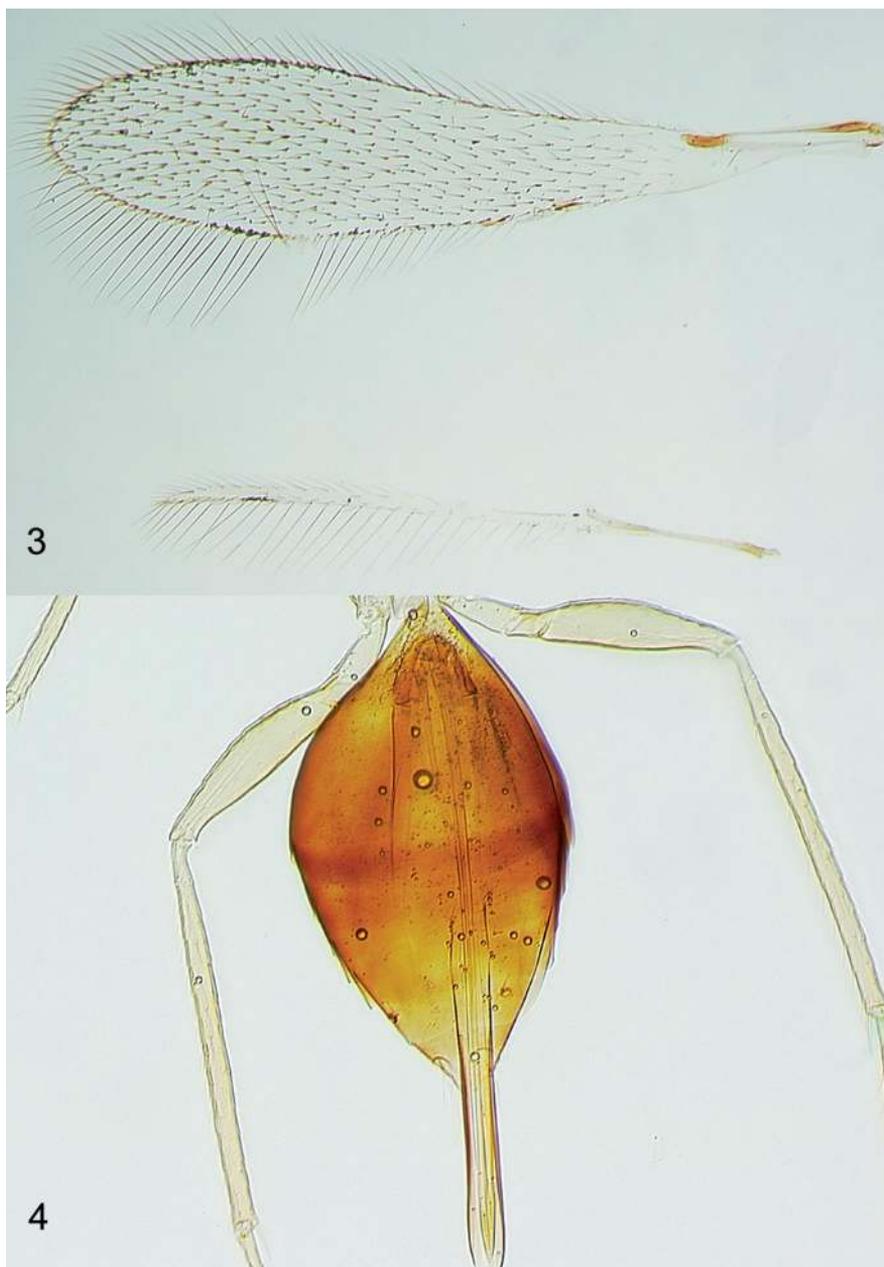
**Figs 1, 2.** *Polynema (Dorypolynema) gaucho* sp. n., female (holotype). [1] Antenna; [2] head, mesosoma, and petiole.

ish or light brown except distal tarsal segments brown.

Head usually a little wider than mesosoma, smooth. Antenna (Fig. 1) with scape plus radicle about 3.8 x as long as wide and smooth; pedicel longer than F1; F2 the longest funicle segment, notably longer than F3; F3 a little longer than following funicle seg-

ments, F4–F6 more or less subequal in length; F1–F5 without longitudinal sensilla, F6 with 1 such sensillum; clava about 3.6 x as long as wide, a little shorter than combined length of three preceding segments, with 7 longitudinal sensilla.

Mesosoma (Fig. 2) with pronotum short, divided mediolongitudinally; mesoscutum



Figs 3, 4. *Polynema (Dorypolynema) gaucho* sp. n., female (holotype). (3) Wings; (4) gaster.

with conspicuous transverse sculpture in basal half or so and faint sculpture in apical half or so; scutellum smooth. Mesoscutum wider than long; axillar seta short and weak; scutellum about as long as wide, scutellar placoid sensilla about half way between anterior margin of scutellum and row of frenal foveae; propodeum with conspicuous lateral carinae and an almost complete median carina (extending almost to anterior margin of propodeum but not connecting to it).

Wings (Fig. 3). Forewing 4.8–4.9 x as long as wide; marginal vein elongate, with 2 dorsal macrochaetae; disc almost hyaline (at most with a very slight brownish tinge

throughout), almost bare behind venation except for a few setae behind marginal vein and apex of submarginal vein, densely setose beyond venation; the longest marginal seta 0.75–0.79 x greatest width of disc. Hind wing very narrow, 35–36 x as long as wide; disc almost hyaline or with a slight brownish tinge (more conspicuous apically), with a complete row of setae along each margin (not counting long and short marginal setae) and several scattered setae in apical half; the longest marginal seta 5.0–5.5 x greatest width of disc.

Legs. Coxae smooth, metacoxa a little shorter than petiole.



**Figs 5, 6.** *Polynema (Dorypolynema) gauchoi* sp. n., male (paratype, Argentina). [5] Head and bases of antennae; [6] forewing.

Metasoma. Petiole 1.7–2.2 x as long as wide, markedly expanded in basal half or so. Ovipositor occupying almost entire length of gaster (Fig. 4), strongly exerted beyond gastral apex (by 0.27–0.3 x own length); ovipositor length:metatibia length ratio 1.6:1.

Measurements (holotype). Body: 1052; head: 173; mesosoma: 336; petiole: 112; gaster: 461; ovipositor: 594. Antenna: scape: 115; pedicel: 61; F1: 42; F2: 91; F3: 73; F4: 58; F5: 64; F6: 61; clava: 164. Forewing: 1144:236; longest marginal seta: 175. Hind wing: 843:24; longest marginal seta: 121.

MALE (paratypes). Body length 860–1070. Similar to female except for the normal sexually dimorphic features and the following. Antenna with scape minus radicle 1.6–1.7 x as long as wide, with modified setae on inner surface (Fig. 5) as characteristic for *P. (Dorypolynema)* species; F1 a little shorter than pedicel and with 1 or 2 longitudinal sensilla, following flagellomeres longer than pedicel (F2 the longest flagellar segment) and each with several (more than 2) longitudinal sensilla. Pronotum similar to that in female, short, not enlarged, ratio of pronotum width to its median length about

9:1. Forewing (Fig. 6) 4.8–4.9 x as long as wide, the longest marginal seta about 0.8 x greatest forewing width; discs of forewing and hind wing slightly infumate (more so in the paratype specimen from Costa Rica). Genitalia as in Fig. 7.

*Distribution.*— Argentina (Formosa), Brazil, Costa Rica, Ecuador, and Peru.

*Hosts.*— Unknown.

KEY TO THE DESCRIBED SPECIES  
OF *POLYNEMA (DORYPOLYNEMA)*  
IN THE WORLD, BOTH SEXES

- 1 Antenna clavate, with flagellum 7-segmented (female) ..... 2
- 2 Antenna filiform, with flagellum 11-segmented (male) ..... 3
- 2 (1) Head dark brown, contrasting with light brown mesosoma; forewing disc completely bare behind marginal vein ..... *P. (Dorypolynema) mendeli* Girault
- Head dark brown, concolorous with mesosoma (Fig. 2); forewing disc with a short row of several setae behind apex of submarginal vein and just behind marginal+stigmatal veins (Fig. 3) ..... *P. (Dorypolynema) gaucho* Triapitsyn and Aquino, sp. n.

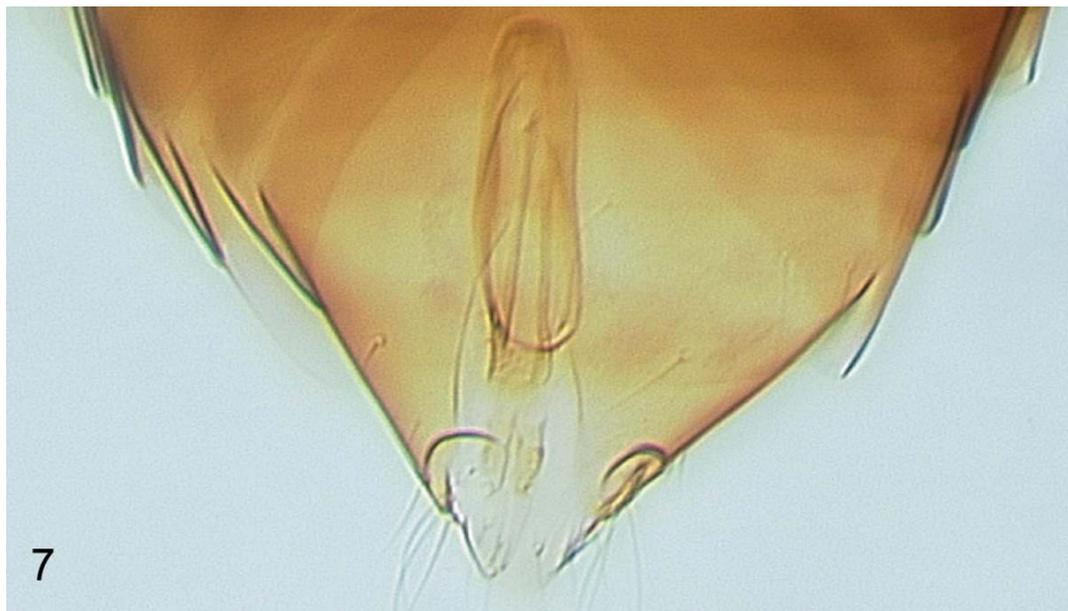


Fig. 7. *Polynema (Dorypolynema) gaucho* sp. n., male (paratype, Argentina). Genitalia.

- 3 (1) Pronotum enlarged (ratio of pronotum width to its median length about 2.5:1) .....  
 ..... *P. (Dorypolynema) mendeli* Girault  
 Pronotum normal, not enlarged (ratio of pronotum width to its median length about 9:1) .....  
 ..... *P. (Dorypolynema) gaucho*  
 Triapitsyn and Aquino, sp. n.

### *Palaeoneura* Waterhouse, 1915

*Palaeoneura* Waterhouse 1915: 537–538. Type species: *P. interrupta* Waterhouse, designated by Gahan and Fagan 1923: 103. Subsequent reference: Triapitsyn and Berezovskiy 2007: 38–44 (synonymy, redescription, diagnosis, distribution, checklist of species, definition of species groups, comments, etc.), 63 (key to Australian *Polynema*-group genera).

*Chaetomyrmar* Ogloblin 1946: 277. Type species: *C. kusnezovi* Ogloblin, by original designation. Synonymized under *Palaeoneura* by Triapitsyn and Berezovskiy 2007: 38.

*Acanthomyrmar* Subba Rao 1970: 667–668. Type species: *A. nigrum* Subba Rao, by original designation. Synonymized under *Polynema* Haliday by Huber 2003: 80 and under *Palaeoneura* by Triapitsyn and Berezovskiy 2007: 38.

**Diagnosis.**— Superficially, *Palaeoneura* is most likely to be confused with the nominate subgenus of *Polynema*. But *Palaeoneura* has the propleura abutting anteriorly, with the prosternum thus closed anteriorly (the propleura are not abutting anteriorly in *P. (Polynema)*, so the prosternum is thus open anteriorly), a relatively long marginal vein on the forewing (relatively short in *P. (Polynema)*), and the propodeum without a median carina (usually with either incom-

plete or complete median carina in *P. (Polynema)*) (Triapitsyn and Berezovskiy 2007).

**Distribution.**— Afrotropical (including Madagascar [new record]), Australasian (including New Zealand and Oceania), Oriental, eastern and southern (Arabian Peninsula) Palaearctic, Neotropical (Triapitsyn and Berezovskiy 2007), and Nearctic [new record] regions; Hawaiian Islands (Hawaii, USA) (Huber 2003).

**Hosts.**— Reliable host records of several species of *Palaeoneura*, formerly placed in the synonymized genus *Chaetomyrmar* Ogloblin, are from eggs of Cicadellidae (Hemiptera) (Huber 2003).

**Comments.**— One female (in UCRC) of *Palaeoneura* sp. from the first (unnamed), informal species group, which includes the taxa formerly placed in the synonymized genus *Chaetomyrmar* (Triapitsyn and Berezovskiy 2007), was collected on avocado by M. S. Hoddle in USA, California, San Diego Co., San Marcos, Deer Springs Ranch, 33° 11.309' N 117° 07.887' W, 1390 ft., 15-III-2006. It is almost certainly of exotic origin (apparently accidentally introduced from the Old World), as species from this group do not occur naturally in the New World [Yoshimoto (1990) mistakenly indicated presence of *Chaetomyrmar* in Argentina, Brazil, Canada, and USA (J. T. Huber, personal

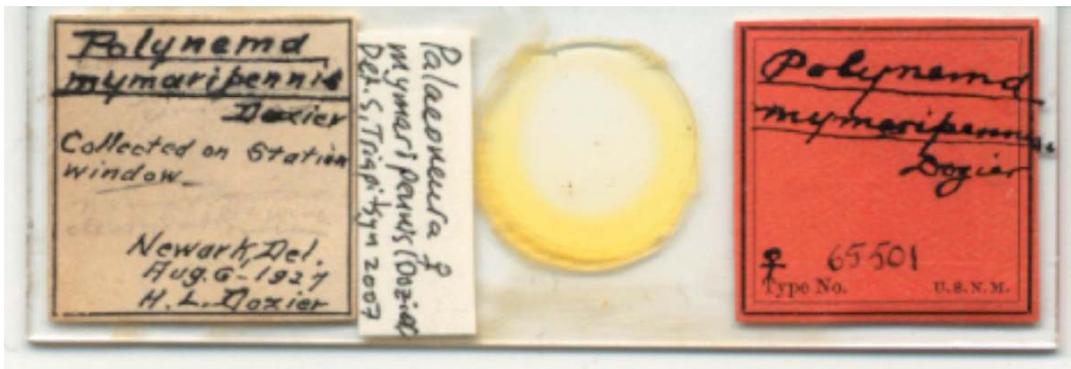


Fig. 8. *Palaeoneura mymaripennis*. Holotype slide.

communication)]. It keys to the Oriental and eastern Palaearctic species *Palaeoneura hishimoni* (Taguchi) in Huber (2003), but likely is an undescribed species because it has a longer ovipositor than *P. hishimoni*. Several more undetermined (almost certainly new, undescribed) species of *Palaeoneura* from the Neotropical region are known to the first author (material in CNCI, OSUC, TAMU, and UCRC).

*Palaeoneura mymaripennis*  
(Dozier, 1933), comb. n. (Figs 8–18)

*Polynema mymaripennis* Dozier 1933: 96–97. Holotype female ([University of Delaware Agricultural] Experiment Station, Newark, New Castle Co., Delaware, USA), examined. Subsequent references: Peck 1951: 417 (catalog); Peck 1963: 47 (catalog).

*Polynema mymaripenne* Dozier: Burks 1979: 1033 (unjustified emendation, catalog); Yoshimoto 1990: 83 (list).

*Type material examined.*— Holotype female [USNM] on slide (Fig. 8) labeled (original labels): 1. “*Polynema mymaripennis* Dozier Collected on Station window. Newark, Del. Aug. 6 – 1927 H. L. Dozier”; 2. [red]

“*Polynema mymaripennis* Dozier • Type No. 65501 U.S.N.M.”. The specimen is in fair condition, although it is insufficiently cleared; the head (with both antennae attached) is detached from the body.

*New material examined.*— GUATEMALA, Sacatepéquez, Sumpango, Durwest Farm, 14° 40.292' N 90° 43.195' W, 5985 ft.: 21-30-XI-2006, M. S. Hoddle [2 females, UCRC]; 1-13-XII-2007, M. S. Hoddle [1 female, UCRC]. HONDURAS, Olancho, La Muralla National Park, 15° 05' 49" N 86° 44' 17" W, 1480 m, 4-7-VII-2002, D. Yanega [1 female, UCRC]. PANAMA, Chiriquí, Lagunas del Volcán (5 km SW of Volcán), 8° 45' 52" N 82° 40' 33" W, 30-VII-4-VIII-1999, A. Gillogly, J. B. Woolley, Malaise trap [1 female, TAMU; 1 male, UCRC].

*Diagnosis.*— *Palaeoneura mymaripennis* is the only known species of the genus with only 5 longitudinal sensilla on the clava of the female antenna. It has shorter funicle segments of the female antenna and a notably narrower female forewing (with relatively much longer marginal setae) than *P. durwest* sp. n.

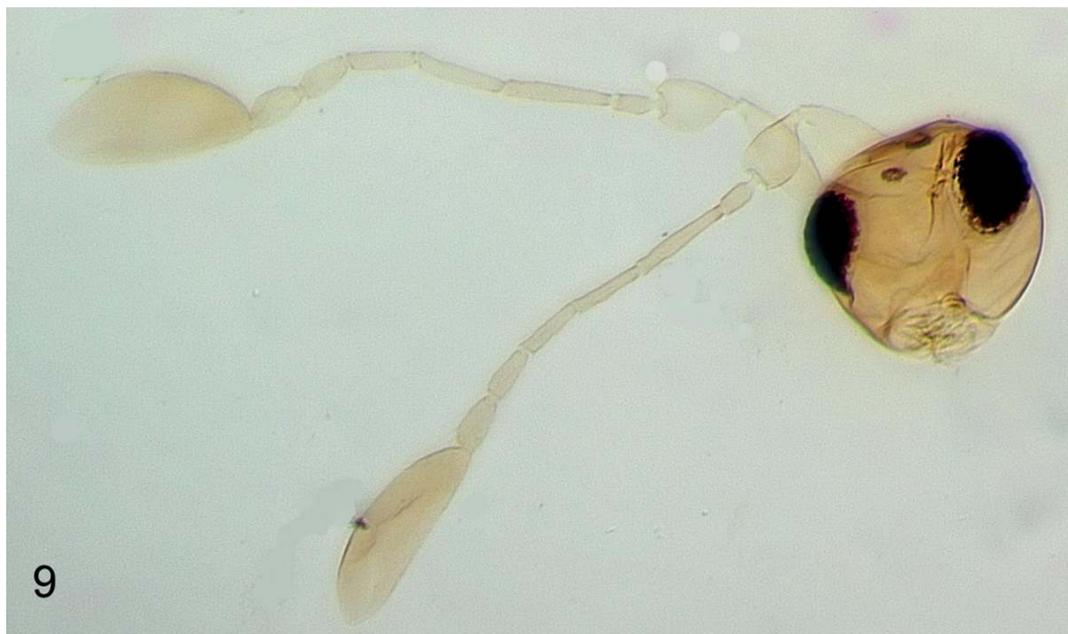


Fig. 9. *Palaeoneura mymaripennis*, female (holotype). Head and antennae.

This species does not fit well in any of the four unnamed, informal species groups mentioned by Triapitsyn and Berezovskiy (2007) and thus probably belongs to a separate, the *mymaripennis*, species group of *Palaeoneura*.

*Redescription (holotype and non-type material).*— FEMALE. Body length 600–630. Head, metanotum, propodeum, and a little more than distal half of gaster brown; flagellum, mesoscutum, scutellum, and a little less than apical half of gaster light brown; scape, pedicel, pronotum, and petiole yellowish; legs yellowish to light brown.

Head (Figs 9, 11) slightly wider than mesosoma, smooth. Antenna (Figs 9, 12) with scape plus radicle 3.0–3.2 x as long as

wide and smooth; pedicel much longer than F1 (the shortest funicle segment, about 0.5 x length of pedicel or just slightly longer), F2 the longest funicle segment; F3 longer than F4, F5 and F6 subequal in length and each a little shorter than F4; all funicle segments without longitudinal sensilla; clava 2.3–2.7 x as long as wide, at least a little (usually notably) longer than combined length of three preceding segments, with 5 longitudinal sensilla (4 of them at apex).

Mesosoma (Figs 10, 13) with pronotum very short, divided mediolongitudinally; mesoscutum with faint sculpture; scutellum smooth. Mesoscutum wider than long, occasionally with a very short median groove at posterior margin only (Fig. 13), notauli as wide grooves; axillar seta short; scutellum



Fig. 10. *Palaeoneura mymaripennis*, female (holotype). Body without head and antennae.

slightly longer than wide, scutellar placoid sensilla close to each other and a little closer to anterior margin of scutellum than to its posterior margin, frenal line with a few foveae; propodeum smooth, propodeal setae (one pair) short, weak, wide apart (posterolateral).

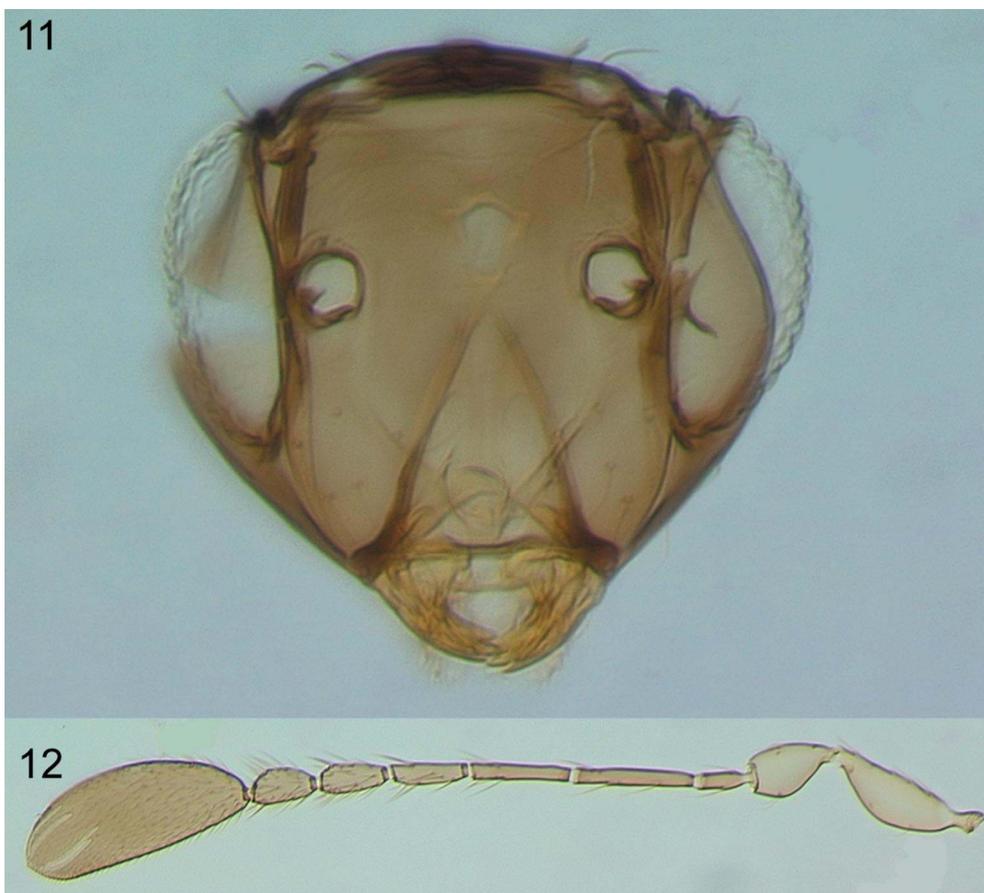
Forewing of peculiar shape (Figs 10, 15), 4.9–5.3 x as long as wide; marginal vein elongate, with 2 short dorsal macrochaetae and 1 short seta; disc slightly narrowing just beyond venation before expanding apically, with a notable brownish tinge, bare behind venation and also just beyond venation (except for 2 or 3 setae), densely setose elsewhere; the longest marginal seta 1.7–2.0 x greatest width of disc. Hind wing (Figs 10, 16) 28–33 x as long as wide; disc with a

notable brownish tinge and 2 rows of setae; the longest marginal seta 7.5–8.5 x greatest width of disc.

Legs. Coxae smooth, metacoxa a little longer than petiole.

Metasoma (Fig. 14) longer than mesosoma. Petiole 2.1–2.3 x as long as wide, expanded basally and medially. Ovipositor occupying almost entire (at least 0.9 x) length of gaster, exerted beyond gastral apex by about 0.1 x own length; ovipositor length:metatibia length ratio 1.2–1.3:1.

Measurements (holotype). Body: [459 including ovipositor according to Dozier (1933) but that is certainly wrong because the actual body length without the head (length of which is impossible to measure) is 480; most likely, the entire body length is



**Figs 11, 12.** *Palaeoneura mymaripennis*, female (Guatemala). [11] Head, frontal view; [12] antenna.

approximately 600]; mesosoma: 200; petiole: 58; gaster: 273; ovipositor: 270. Antenna: scape plus radicle: 100; pedicel: 52; F1: 27; F2: 66; F3: 58; F4: 42; F5: 33; F6: 34; clava: 135. Forewing: 625:117; longest marginal seta: 233. Hind wing: 427:15; longest marginal seta: 112.

*Description (non-type specimen from Panama).*— MALE (previously unknown). Body length 630. Similar to female except for the normal sexually dimorphic features and the following. Antenna with scape plus radicle 2.3 x as long as wide; F1 slightly longer than scape. Forewing (Fig. 17) 4.6 x as long as



Figs 13, 14. *Palaeoneura mymaripennis*, female (Guatemala). [13] Mesosoma; [14] metasoma.

wide. Gaster shorter than mesosoma. Genitalia as in Fig. 18.

*Distribution*.— Guatemala [new record], Honduras [new record], Panama [new record], and USA (Delaware).

*Hosts*.— Unknown.

*Palaeoneura durwest* Triapitsyn, sp. n.  
(Figs 19–21)

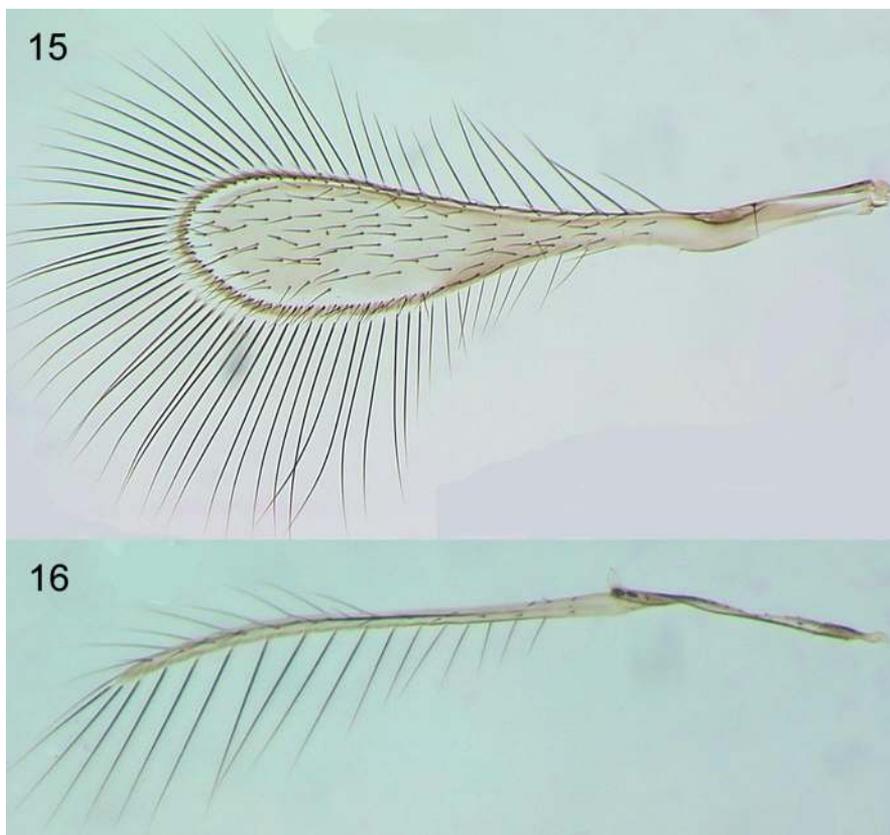
*Etymology*.— The specific name is a noun in apposition referring to the Durwest Farm in Guatemala (the type locality of the species), where Mark S. Hoddle collected many interesting insects with the kind permission of the owners, Richard and Eugenia West.

*Type material*.— Holotype female [UCRC ENT 016298] on slide labeled: “GUATEMALA: Sacatepéquez, Sumpango, Durwest Farm,

14° 40.292' N, 90° 43.195' W, 5985 ft., 24-30-XII-2006, M. Hoddle, MT. Mounted at UCR/ERM by V. V. Berezovskiy 2008 in Canada balsam”. Paratype: USA, Florida, Broward Co., Holywood, 22-XII-1982, W. A. Gregory [1 female on slide, CNCI].

*Diagnosis*.— *Palaeoneura durwest* sp. n. differs from all other described species of the second (unnamed), informal, intuitive species group of *Palaeoneura* mentioned by Triapitsyn and Berezovskiy (2007) (where it seems to fit, more or less) in having 6 longitudinal sensilla on the clava of the female antenna, while other known species of *Palaeoneura* (except *P. mymaripennis*, which has 5) have 7 to 9 such sensilla (Triapitsyn and Berezovskiy 2007).

*Description (holotype and paratype)*.— FEMALE. Body length 793–840. Body dark

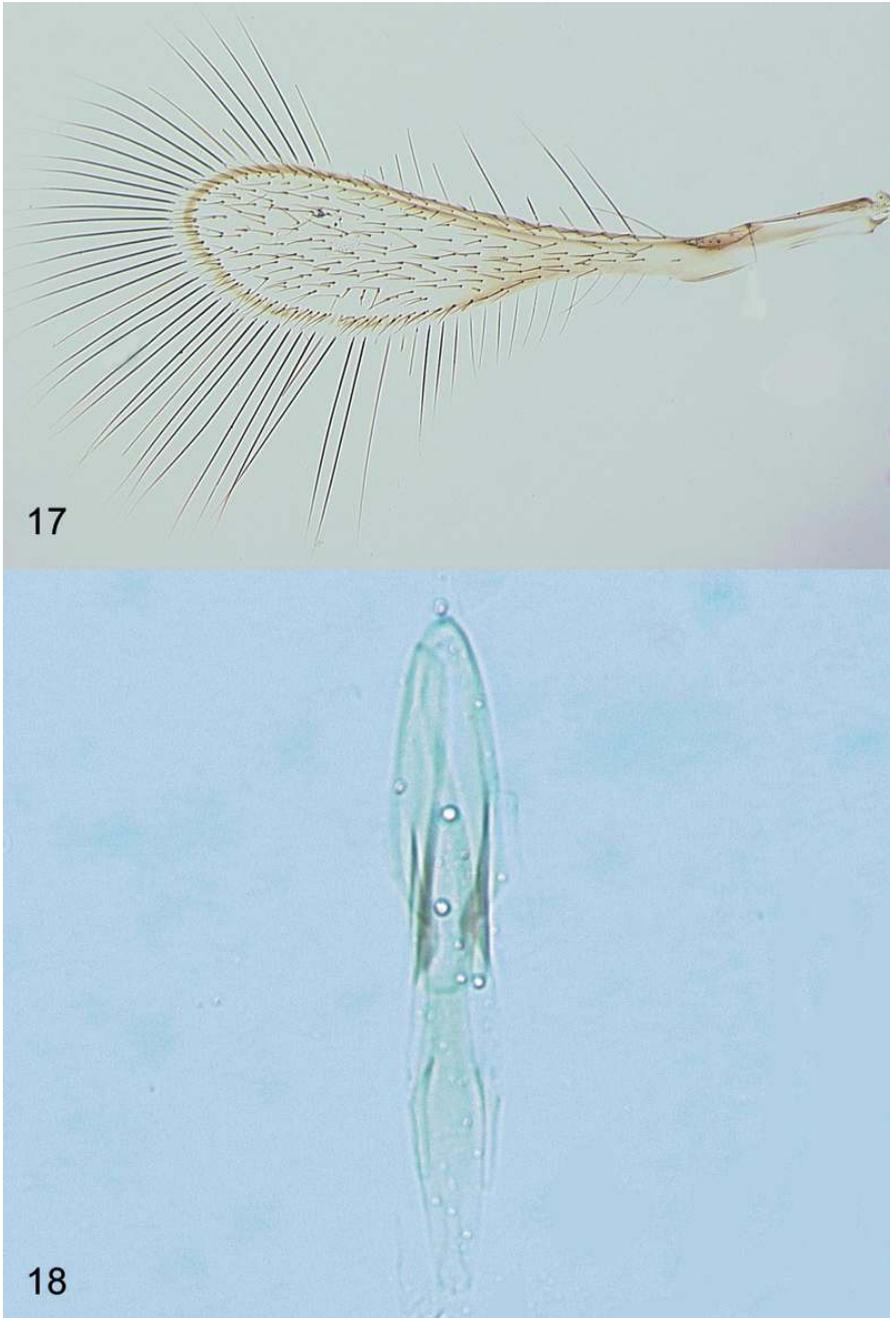


Figs 15, 16. *Palaeoneura mymaripennis*, female (Guatemala). (15) Forewing; (16) hind wing.

brown to black except petiole light brown; scape mostly brown except apex light brown, pedicel and F1 light brown, F2–F6 brown (F5 and F6 a little darker than F2–F4), clava dark brown; legs mostly brown or dark brown except metacoxa, metatrochant-

er, all metatibiae basally, and tarsomeres 1–3 of all legs light brown.

Head about as wide as mesosoma, smooth. Antenna (Fig. 19) with scape plus radicle 3.0 x as long as wide and smooth; pedicel about as long as F1, F2 the longest



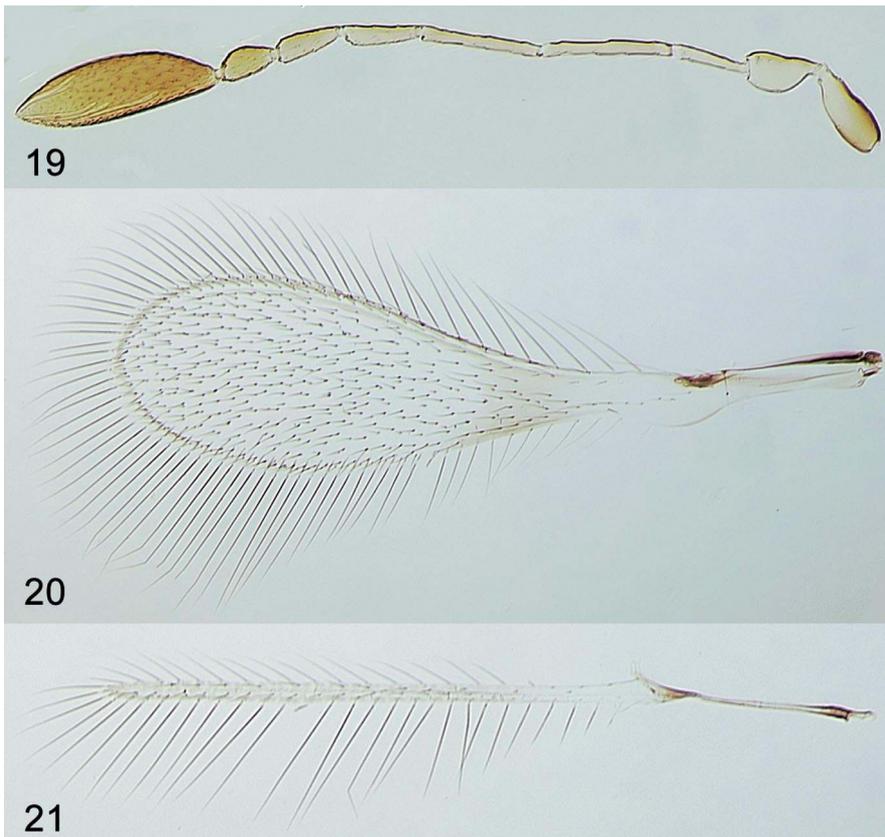
Figs 17, 18. *Palaeoneura mymaripennis*, male (Panama). (17) Forewing; (18) genitalia.

funicle segment; F3 slightly shorter than F2 and much longer than F4, F5 a little shorter than (or about as long as) F4 and a little longer than F6; all funicle segments without longitudinal sensilla; clava 2.8–3.3 x as long as wide, about as long as combined length of three preceding segments (or a little longer), with 6 longitudinal sensilla.

Mesosoma smooth, with pronotum divided mediolongitudinally; mesoscutum wider than long, its midlobe without setae, notauli as wide grooves; axillar seta long (almost 0.5 x length of scutellum) and blunt; scutellar placoid sensilla close to each other and a little closer to anterior margin of scutellum than to its posterior margin, frenal line without foveae; propodeum with 2 pairs of setae, one at anterior margin of propodeum (submedian, very close to each other), and

the other near posterior margin of propodeum (short, weak, wide apart from each other).

Forewing (Fig. 20), about 4.0 x as long as wide; marginal vein elongate, with 2 short dorsal macrochaetae and 2 short setae; disc slightly narrowing just beyond venation before expanding apically, with a notable brownish tinge and a slightly darker, narrow, transverse band beyond venation, bare behind and also just beyond venation (except for a row of setae just behind and beyond marginal vein), densely setose elsewhere; the longest marginal seta 0.9–1.0 x greatest width of disc. Hind wing (Fig. 21) 32–33 x as long as wide; disc with a notable brownish tinge (more so apically) and 2 rows of setae; the longest marginal seta 6.4–6.5 x greatest width of disc.



**Figs 19-21.** *Palaeoneura durwest* sp. n., female (holotype). (19) Antenna; (20) forewing; (21) hind wing.

Legs. Coxae smooth, metacoxa a little longer than petiole.

Metasoma longer than mesosoma. Petiole about 2.5 x as long as wide, a little expanded basally and medially. Ovipositor occupying almost entire (at least 0.9 x) length of gaster, exerted beyond gastral apex by about 0.1 x own length; ovipositor length:metatibia length ratio 1.1–1.2:1.

Measurements (holotype). Body (taken from dry-mounted specimen before slide-mounting): 793; head (taken from dry-mounted specimen before slide-mounting): 137; mesosoma: 327; petiole: 84; gaster: 355; ovipositor: 361. Antenna: scape plus radicle: 91; pedicel: 53; F1: 55; F2: 103; F3: 97; F4: 63; F5: 58; F6: 50; clava: 170. Forewing: 935:236; longest marginal seta: 221. Hind wing: 781:24; longest marginal seta: 155.

MALE. Unknown.

*Distribution*.— Guatemala, and USA (Florida).

*Hosts*.— Unknown.

KEY TO THE DESCRIBED SPECIES  
OF *PALAEONEURA* IN THE NEW WORLD,  
FEMALES

- 1 F1 about 0.5 x length of pedicel (or just slightly longer) (Figs 9, 12) .....  
..... *P. mymaripennis* (Dozier), comb. n.  
F1 about as long as pedicel (Fig. 19) .....  
..... *P. durwest* Triapitsyn, sp. n.

*Palaeoneura tayalum*  
(Taguchi, 1975), comb. n.

*Chaetomyar tayalum* Taguchi 1975: 113–114. Holotype female (Fenchihu, Chia Hsien, Taiwan [China]), not examined: current depository unknown, apparently lost.

*Comments*.— This Oriental species was accidentally omitted by Triapitsyn and Berezovskiy (2007) from the checklist of *Palaeoneura* species. Therefore a new combination is formally proposed here.

ACKNOWLEDGEMENTS

We thank Mark S. Hoddle (Department of Entomology, University of California, Riverside, California, USA) for collecting and donating interesting material from Guatemala and USA, Vladimir V. Berezovskiy (UCRC) for mounting the specimens, and Michael W. Gates (USNM), Steven L. Heydon (UCDC), John T. Huber (CNCI), Norman F. Johnson (OSUC), John S. Noyes (BMNH), and James B. Woolley (TAMU) for arranging the loans of specimens from the respective collections.

LITERATURE CITED

- Burks, B. D. 1979. Family Mymaridae. In: K. V. Krombein, P. D. Hurd, Jr., D. R. Smith and B. D. Burks (eds.), *Catalog of Hymenoptera in America North of Mexico. Volume 1, Symphyta and Apocrita (Parasitica)*. Smithsonian Institution Press, Washington, D. C., pp. 1022–1033.
- Debauche, H. R. 1949. Mymaridae (Hymenoptera Chalcidoidea). *Exploration du Parc National Albert, Mission G. F. de Witte (1933–1935)*, 49: 1–105 [+ plates I–VII on unnumbered pages].
- Dozier, H. L. 1932. Descriptions of new trichogrammatid (Hymenoptera) egg parasites from the West Indies. *Proceedings of the Entomological Society of Washington*, 34(3): 29–37.
- Dozier, H. L. 1933. Miscellaneous notes and descriptions of chalcidoid parasites (Hymenoptera). *Proceedings of the Entomological Society of Washington*, 35(6): 85–100.
- Gahan, A. B. and Fagan, M. M. 1923. The type species of the genera of Chalcidoidea or Chalcidflies. *Bulletin of the US National Museum*, 124: 1–173.
- Gibson, G. A. P. 1997. Chapter 2. Morphology and terminology. In: G. A. P. Gibson, J. T. Huber and J. B. Woolley (eds.), *Annotated Keys to the Genera of Nearctic Chalcidoidea (Hymenoptera)*. NRC Research Press, Ottawa, Ontario, Canada, pp. 16–44.
- Hayat, M. and Anis, S. B. 1999. The Indian species of *Polynema* with notes on *Stephanodes reduviali* (Hymenoptera: Mymaridae). *Oriental Insects*, 33: 315–331.
- Huber, J. T. 2003. Review of *Chaetomyar* Ogloblin, with description of a new species in the Hawaiian Islands (Hymenoptera: Mymaridae). *Journal of Hymenoptera Research*, 12(1): 77–101.
- Ogloblin, A. A. 1946. Description of new genera and species of Mymaridae (Hymenoptera: Chalcidoidea). *Iowa State College Journal of Science*, 20(3): 277–295.

- Peck, O. 1951. Superfamily Chalcidoidea. In: C. F. W. Muesebeck, K. V. Krombein and H. K. Townes (eds.), Hymenoptera of America North of Mexico – Synoptic Catalog. United States Department of Agriculture, Agriculture Monograph No. 2, Washington, D. C., pp. 410-594.
- Peck, O. 1963. A catalogue of the Nearctic Chalcidoidea (Insecta: Hymenoptera). The Canadian Entomologist, Supplement, 30: 1-1092.
- Pinto, J. D. 2006. A review of the New World genera of Trichogrammatidae (Hymenoptera). Journal of Hymenoptera Research, 15(1): 38-163.
- Subba Rao, B. R. 1970(1968). Descriptions of the genera and species of Mymaridae (Hymenoptera) from the Far East and the Ethiopian region. Bulletin of Entomological Research, 59: 659-670.
- Taguchi, H. 1975. Two new *Chaetomymar* species from Japan and Taiwan (Hymenoptera: Mymaridae). Transactions of the Shikoku Entomological Society, 12(3-4): 111-114.
- Triapitsyn, S. V. and Berezovskiy, V. V. 2007. Review of the Oriental and Australasian species of *Acromopolynema*, with taxonomic notes on *Palaeoneura* and *Xenopolynema* stat. rev. and description of a new genus (Hymenoptera: Mymaridae). Zootaxa, 1455: 1-68.
- Triapitsyn, S. V. and Fidalgo, P. 2006. Definition of *Doriclytus*, stat. rev. as a subgenus of *Polynema* and redescription of its type species, *P. (Doriclytus) vitripenne* (Hymenoptera: Mymaridae). Zootaxa, 1362: 55-68.
- Waterhouse, C. O. 1915. XX. Descriptions of two new genera, and new species of Mymaridae from Tasmania [with illustrations from photographs by F. Enock]. Transactions of the Entomological Society of London, III and IV: 536-539.
- Yoshimoto, C. M. 1990. A review of the genera of New World Mymaridae (Hymenoptera: Chalcidoidea). Flora and Fauna Handbook No. 7. Sandhill Crane Inc. Press, Gainesville, Florida, 166 pp.