

A LIST OF THE SPECIES OF *POLYAMIA* (HOMOPTERA:
CICADELLIDAE) KNOWN TO OCCUR IN MEXICO,
WITH DESCRIPTIONS OF NEW SPECIES^{1, 2}

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ABSTRACT

Seventeen species of *Polyamia* are treated, 16 of which are known to occur in Mexico. Seven previously described species, *P. arachnion* Kramer, *P. gangamon* Kramer, *P. tolteca* Kramer, *P. delongi* (Kramer), *P. reticulata* (Linnavuori), *P. satur* (Ball), and *P. incerta* Beamer and Tuthill are listed and illustrated. Ten species, *P. duella* n. sp., *P. acura* n. sp., *P. dualis* n. sp., *P. bradshawi* n. sp., *P. scina* n. sp., *P. randa* n. sp., *P. frustrara* n. sp., *P. triplehorni* n. sp., *P. nidula* n. sp. and *P. tulara* n. sp. are described as new.

INTRODUCTION

The Genus *Polyamia* DeLong, when erected in 1926 (p. 46), was based primarily upon the reticulate venation of the forewings of certain deltocephaline leafhoppers. More recent studies, especially of Central and South American material, have indicated that genitalic and other characteristics must be given consideration in assigning species to this genus. The forewings of Mexican specimens of *P. satur* (Ball), for instance, may vary from distinct reticulations to no reticulations, whereas the genitalic structures of the same specimens show no variation. Probably similar male genitalic structures in some cases may be a better criterion for species relationship than the detailed venation of the forewings.

Polyamia is characterized by having a head as wide as the pronotum, which is subangular, and a short pronotum with very short lateral margins. The forewings normally have extra cross-veins, especially in the clavus and often in the costa. The central anteapical cell is constricted and divided. The forewings may be macropterous or brachypterous. The connective is linear and fused with the aedeagus.

The study of *Polyamia* is based upon some 800 specimens, most of which were collected between 1939 and 1954 by the senior author and his field associates. Several specimens were collected prior to and during this period by Alfons Dampf and J. Parra, both employees of the Mexican government.

Five species of *Polyamia*, *P. arachnion* Kramer, *P. gangamon* Kramer, *P. tolteca* Kramer, *P. delongi* (Kramer), and *P. reticulata* (Linnavuori) have been described previously from Mexico. *Polyamia satur* (Ball), a species which apparently has a wide distribution in Mexico and in the United States, has not been recorded previously for Mexico. *Polyamia incerta* Beamer and Tuthill has not been recorded for Mexico, but a new closely related species, *P. duella* is described here from Mexican material. Ten additional species are being described at this time. All types are in the DeLong collection, The Ohio State University.

ACKNOWLEDGMENTS

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tion is also expressed to Dr. Peter D. Ashlock for the loan of *Polyamia* types from the Kansas University collection, and to Dr. James P. Kramer for the opportunity of examining types from the U. S. National Museum.

Polyamia satur (Ball)

(figs. 1-6)

Deltocephalus satur Ball p. 309, 1899

Described from Colorado specimens, *P. satur* is apparently rather widely distributed in North America and has been collected in abundance in Mexico. The Mexican specimens vary greatly in color, from those with distinct dark markings on the crown to pale-yellow specimens with no markings. The aedeagus, as indicated by the illustrations, is medium both in length and width.

Polyamia incerta Beamer and Tuthill

(figs. 7-11)

Polyamia incerta Beamer and Tuthill p. 13, 1934

Described from Arizona specimens, *P. incerta* has not been collected in Mexico. The plates are rounded at the apices, and the aedeagus is short and has a v-shaped notch at the apex. Illustrations of the male genital structures drawn from the type are included for comparison with *P. duella* n. sp., a closely related species.

Polyamia duella n. sp.

(figs. 12-16)

Length: male—2.5 mm, female—2.8 mm. Crown bluntly angled, length of crown equalling width between eyes at base; forewing short, not covering tip of abdomen. Color: variable, crown with a broken brown band between eyes, near anterior margin, with a curved portion extending basad half way to base, each side of middle line. A brown spot each side near, and lateral to, ocellus. Infuscation from face visible from above, each side of apex. Brown markings of pronotum irregular. Forewings with claval cells and cells of apical two-thirds of wings margined with dark brown.

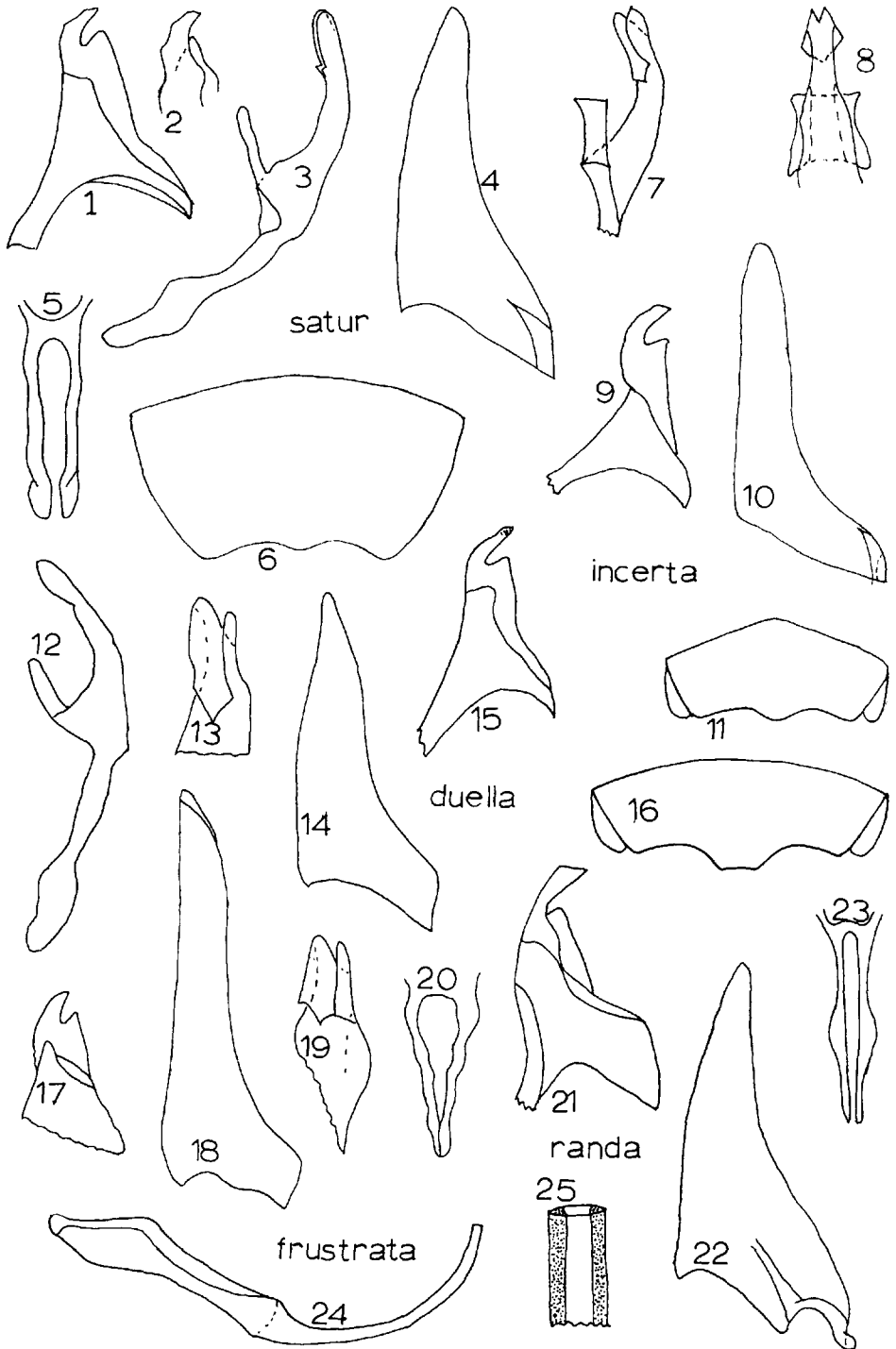
Male genitalia with plates more than twice as long as wide, apical two-thirds narrowed, apex rounded. Style as wide as long, apex concavely notched on outer margin, forming a narrow apically produced process on inner margin which is blunt at apex. Aedeagus with shaft broadened near base, then gradually narrowed to apical portion, which bears a pointed tooth on dorsal margin. Apex sharply angled.

Female genitalia with lateral margins of seventh sternum sloping to posterior margin, which is almost truncate, with a slightly produced median lobe.

Holotype male Jiutepec, Morelos, Mexico VI-6-39 (DeLong & Plummer). Allotype female same data as holotype. Paratypes: 20♂, 11♀ same data as holotype; 2♂ Zamora, Mich. Mexico X-2-1941 (DeLong, Good, Caldwell, Plummer); 6♀, 4♂ Cuernavaca, Morelos, Mexico IX-25-45 (DeLong, Hershberger, Elliott); 1♂ Valles, S.L.P., Mexico, XI-7-42 (DeLong, Good, Caldwell); 1♂ Mazatlan, Gro., Mexico X-3-45 (Balock, DeLong, Hershberger); 4♂, 6♀ Mexico City, D. F., Mexico (W-18-km) IX-1-39 (DeLong); 1♂ same except S-49-km, IX-5-39; 2♂ Mexico City, D. F. (A. Dampf) V-4-24; 1♂, 3♀ same except X-22-45 (DeLong, Hershberger,

EXPLANATION OF FIGS. 1-25

FIGS. 1-25. FIGS. 1-6 *Polyamia satur* (Ball). 1. style, ventrally; 2. apex of style, laterally, (enlarged); 3. aedeagus, laterally; 4. plate, ventrally; 5. connective, ventrally; 6. female seventh sternum. FIGS. 7-11 *P. incerta* Beamer and Tuthill. 7. aedeagus, laterally; 8. aedeagus, ventrally; 9. style, ventrally; 10. plate, ventrally; 11. female seventh sternum. FIGS. 12-16 *P. duella* n. sp. 12. aedeagus, laterally; 13. apex of aedeagus, laterally (enlarged); 14. plate, ventrally; 15. style, ventrally; 16. female seventh sternum. FIGS. 17-20 *P. frustrata* n. sp. 17. style, ventrally; 18. plate, ventrally; 19. apex of aedeagus, dorsolaterally (enlarged); 20. connective, ventrally. FIGS. 21-25 *P. randa* n. sp. 21. style, ventrally; 22. plate, ventrally; 23. connective, ventrally; 24. aedeagus, laterally; 25. apex of aedeagus, dorsally (enlarged).



FIGURES 1-25

Elliott); 1 ♂, Jacala, Hgo., Mexico, IX—26—41 (DeLong, Good, Caldwell, Plummer); 4 ♂, 1 ♀ Taxco, Gro., Mexico IX—9—39 (DeLong, Plummer).

This species is closely related to *Polyamia incerta* Beamer & Tuthill, but differs in the male genital structures, as indicated by the illustrations of each species, and the produced median lobe of the female seventh sternum of *P. duella*.

***Polyamia frustrata* n. sp.**

(figs. 17—20)

Length: male—3 mm, female—unknown. Crown bluntly angled, length at middle equalling width at base between the eyes. Color: crown white tinged with yellow, a large brown spot proximal to each ocellus, a pale-orange spot each side of middle at apex. An irregular broad, pale-brown transverse band between anterior margins of eyes. Pronotum with basal portion yellow, posterior two-thirds pale brown; a pair of small round median brown spots near base, an elongate transverse brown spot behind inner margin of each eye. Forewings pale-brown, veins mostly pale-yellow margined with brown, without distinct darker markings.

Male genitalia with long, slender plates which are bluntly pointed. Style with a short thick pointed apical process. Aedeagus similar to that of *incerta*.

Holotype male Jalapa Rd. Vera. Mexico K—241 X—13—45 (Shaw, DeLong, Hershberger).

This species can be distinguished from all related species by the long plates which are three times the length of the style.

***Polyamia randa* n. sp.**

(figs. 21—25)

Length: male—3.2 mm, female—unknown. Crown produced and sharply angled, length equalling basal width between eyes. Color: crown pale-yellow, pale-buff between eyes, with four brown spots just above margin between ocelli. Pronotum pale-buff with white longitudinal stripes. Scutellum yellow. Forewings yellow subhyaline, veins paler yellow with brown margins. A brown spot on disc on middle of costa, and first and second apical cells brown. Face yellow with dark-brown arcs.

Male genitalia with plates more than twice as long as broad, concavely rounded on outer margins, apices bluntly pointed. Style longer than broad, apical portion narrow, curved laterad, apex truncate. Aedeagal shaft long and narrow, blunt at apex.

Holotype male from Cordoba, Vera. Mexico X—8—1941. (DeLong, Good, Caldwell and Plummer) in the DeLong collection.

Polyamia randa is related to *triplehorni*, but can be separated by the narrow tube-like apex of the aedeagus of *randa*.

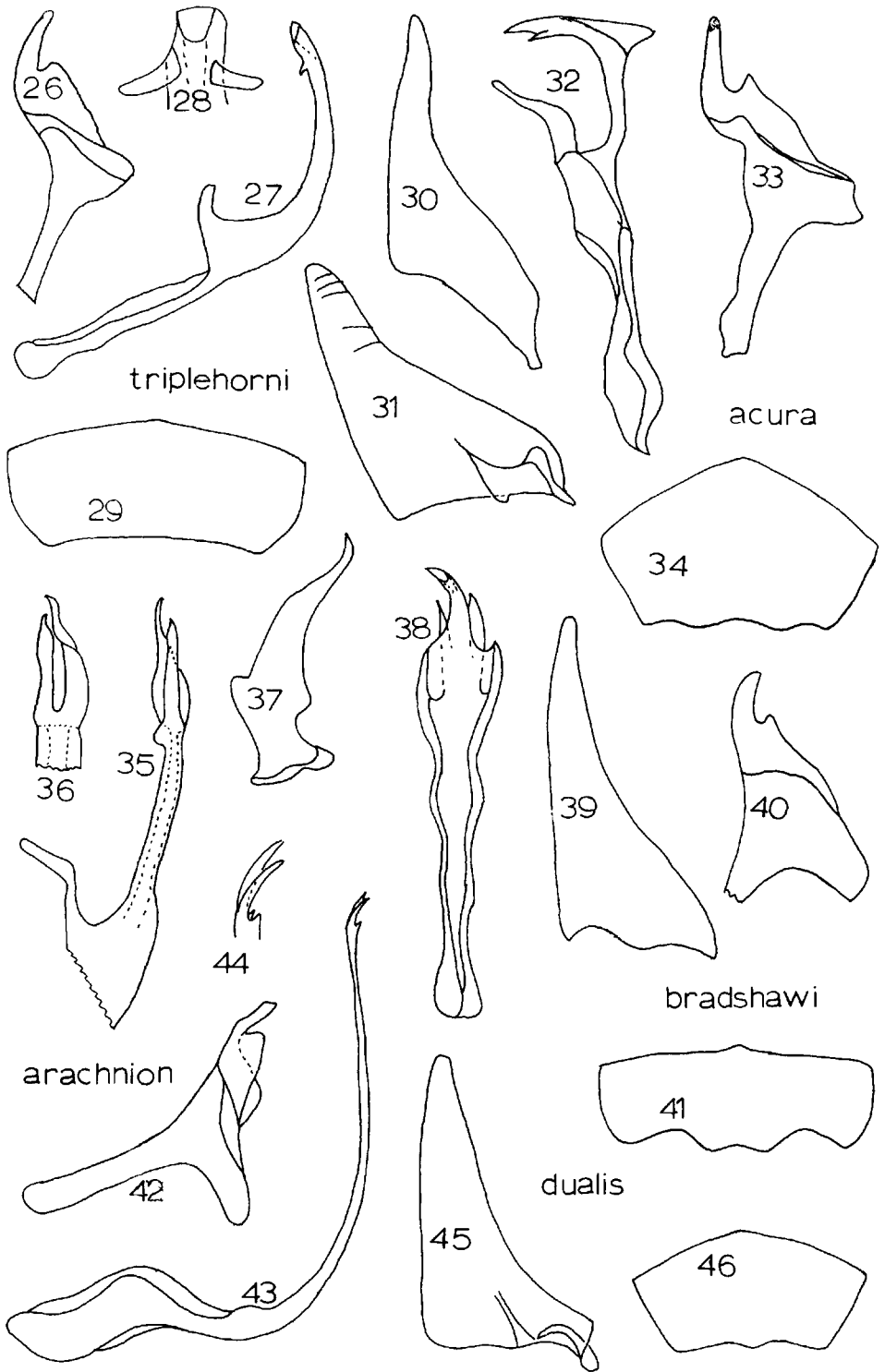
***Polyamia triplehorni* n. sp.**

(figs. 26—30)

Length: male—3.5 mm, female—3.7 mm. Crown blunt at apex, rounded, wider between eyes at base than median length. Color: crown white, ocelli red, a pair of orange spots just above apex, a small brown spot next to each ocellus. Pronotum pale-brown with five longitudinal white stripes; irregular brown markings along anterior margin, a brown transverse spot posterior to inner portion of each eye. Scutellum white with a dark-brown spot in each basal angle. Forewings gray, subhyaline, veins white except at base of wing.

EXPLANATION OF FIGS. 26—46.

FIGS. 26—30 *P. triplehorni* n. sp. 26. style, ventrally; 27. aedeagus, laterally; 28. apex of aedeagus, dorsally (enlarged); 29. female seventh sternum; 30. plate, ventrally. FIGS. 31—34 *P. acura* n. sp. 31. plate, ventrally; 32. aedeagus, laterally; 33. style, ventrally; 34. female seventh sternum. FIGS. 35—37 *P. arachnion* Kramer. 35. aedeagus, laterally; 36. apex of aedeagus, dorsally (enlarged); 37. style, laterally. FIGS. 38—41 *P. bradshawi* n. sp. 38. aedeagus, dorsally; 39. plate, ventrally; 40. style, ventrally; 41. female seventh sternum. FIGS. 42—46 *P. dualis* n. sp. 42. style, ventrally; 43. aedeagus, laterally; 44. apex of aedeagus, laterally (enlarged); 45. plate, ventrally; 46. female seventh sternum. (FIGS. 35, 36, and 37 after Kramer).



Male genitalia with plates twice as long as broad, apical portion slender, apices bluntly pointed. Style notched near apex on outer margin, producing a long slender finger-like process which curves outwardly. Aedeagal shaft long, narrowed at apex, with a pair of short lateral subapical processes. Female genitalia with lateral angles of seventh sternite rounded to posterior truncate margin.

Holotype male Finca Vergel, Chiapis, Mexico V-1-35 (M. F. 4123) (Dampf). Allotype female same data as holotype.

This species is named in honor of Dr. Charles A. Triplehorn, curator of insect collections at The Ohio State University and an ardent field worker, who has collected many interesting leaf-hoppers in both North and South America.

Polyamia triplehorni is related to *randa*, but can be separated by the pair of subapical finger-like processes on the aedeagus of *triplehorni*.

***Polyamia acura* n. sp.**

(figs. 31-34)

Length: male—3 mm, female—3 mm. Crown sharply angled, one-fourth longer at middle than basal width between eyes. Wings long, apical cells normal. Color: Crown white with four brown spots in a row above margin and between ocelli; with an interrupted dark-brown band, broadest at middle, between anterior margins of eyes. Pronotum pale-brown with four brown spots along anterior margin, a pair of small spots at middle, and a larger, elongate spot behind inner portion of each eye. Scutellum white with brown spots in basal angles. Forewings pale-brown with white veins, some cells more heavily embrowned.

Male genitalia with plates one and one-half times as long as broad, apical third narrow, apex bluntly pointed. Style three times as long as broad, apical fifth narrowed, forming a finger-like process with a rounded apex. Aedeagal shaft with base broad, then abruptly narrowed with apical portion foot-like. The ventral portion of "foot" resembles a pointed "heel", the dorsal portion is pointed, forming the "toe".

Female genitalia with lateral angles of seventh sternum rounded to truncate posterior margin.

Holotype male from Tamazunchale S.L.P., Mexico, IX-14-39 (DeLong). Allotype female same data as holotype. Paratypes: 26♂, 25♀ same as holotype except VIII-29-39; 4♂ same as holotype except XI-2-45 (DeLong, Hershberger, Elliott); 2♂ Valles, S.L.P. Mexico, IX-24-41, Mexico (DeLong, Good, Caldwell); 5♂ same except XI-3-45 (DeLong, Hershberger, Elliott); 6♂, 1♀ Cuernavaca, Mor. IX-25-45 (Balock, DeLong, Hershberger); 1♀ Jalapa, Hgo., 12 mi. S., IX-26-41 (DeLong, Good, Caldwell, Plummer); 5♂, 6♀ Santa Engrasia, Mexico (Caldwell), XI-2-38, XI-3-38, XI-4-38, XI-9-38.

Polyamia acura can be distinguished from all species of the genus by the enlarged transverse apex of the aedeagus.

***Polyamia arachnion* Kramer**

(figs. 35-37)

Polyamia arachnion Kramer p. 37, 1963

This species can easily be separated from all others of the genus by the lateral and ventral views of the terminal portion of the aedeagus, as illustrated by the accompanying figures.

***Polyamia bradshawi* n. sp.**

(figs. 38-41)

Length: male—3.5 mm, female—4 mm. Crown bluntly angled, slightly longer at middle than basal width between eyes. Forewings long and narrow. Color: crown white, mostly tinted with yellow, with two dark-brown proximal spots on apex, and brown markings surrounding each ocellus. Black coloration from face extending on to margin each side of apex, visible from above. Pronotum pale-brown with five narrow longitudinal white lines. Scutellum yellow. Forewings with white to pale-yellow veins margined with brown. A brown spot at middle of clavus and first apical cell brown. Face black.

Male genitalia with plates more than twice as long as broad. Style longer than broad, slightly notched on outer margin near apex, forming an apical process, curved laterad, tapered

to narrow blunt apex. Aedeagus broadened on apical half with two pair of lateral processes, both extending caudad; more basal pair, arising at three-fourths length of shaft, are more laterad; more apical pair, arising each side of narrowed pointed apical tip of shaft, exceed more laterad processes in length.

Female genitalia with lateral angles of seventh sternum scarcely produced, rounded. Posterior margin of segment sloping cephalad each side of a median, slightly produced, rounded, embrowned median lobe, one third width of segment.

Holotype male from Iguala G'ro. Mexico IX-11-39 (DeLong). Allotype female same as holotype. Paratypes 2 ♂ Toloso Oax., Mexico, XII-30-31 (J. Parra).

This species is named in honor of Dr. A. S. Bradshaw, the junior author's biological advisor and secretary of the Ohio Academy of Science.

Polyamia bradshawi is related to *arachnion*, but can easily be separated by the apical portion of the aedeagus, as illustrated by Figures 36 and 38.

***Polyamia dualis* n. sp.**

(figs. 42-46)

Length: male—3.5 mm, female—4 mm. Crown sharply angled, as long at middle as basal width between eyes. Forewings long, apical cells normal. Color: crown white tinged with yellow, with four brown spots just above margin, between ocelli; two spots at apex are triangular, two near ocelli are ovate. Pronotum brownish-yellow with five white longitudinal stripes. Scutellum white, basal angles brownish-yellow. Forewings pale-brown, veins white, a dark-brown spot on disc, one on center of costa, and one on first apical cell.

Male genitalia with plates almost twice as long as broad, apex narrow, rounded. Style long and narrow, abruptly narrowed near apex, with inner portion produced as a finger-like process which is blunt at tip. Aedeagal shaft elongate, slender, with a pair of short, pointed, spine-like processes at apex. Female genitalia with lateral angles of seventh sternum sloping to posterior margin, which is broadly, concavely rounded and margined with dark-brown.

Holotype male from Cordoba, Vera., Mexico XII-15-1924 (A. Dampf). Allotype female, Finca Victoria, S.L.P., VI-28-35 (A. Dampf). Paratypes: 1 ♂, 4 ♀ Finca Vergel, Mexico V-16-35 (A. Dampf); 2 ♂ same except V-18-35; 2 ♀, Terra Blanca, Vera., Mexico VII-29-32; 1 ♀ Frontera, Tabasco, Mexico, VI-2-28; 1 ♀ Loma Bonita, Oax., Mexico, VI-8-37; 1 ♀ Esmeralda Chiap. Mexico XI-18-30 (A. Dampf); 1 ♀ Mescala Gro., Mexico, XII-13-29; 1 ♀ Cuicatlan, Oax., 11-20-32; 1 ♀, Vergel, Chiap. Mexico (M. F. 4269) V-22-35 (A. Dampf); 6 ♀ same data except V-21-35, VI-1-35, VI-4-35, VII-4-35, V-30-35.

Polyamia dualis is related to *frustrata*, but can be separated from it by the two apical finger-like processes at the tip of the aedeagus in *dualis*.

***Polyamia gangamon* Kramer**

(figs. 47-50)

Polyamia gangamon Kramer p. 39, 1963

This species can be distinguished from related forms only by the different male genital structures. The aedeagus is long and narrow, with a preapical dorsal tooth. In ventral view, the apex is deeply forked.

***Polyamia reticulata* (Linnavuori)**

(figs. 51-53)

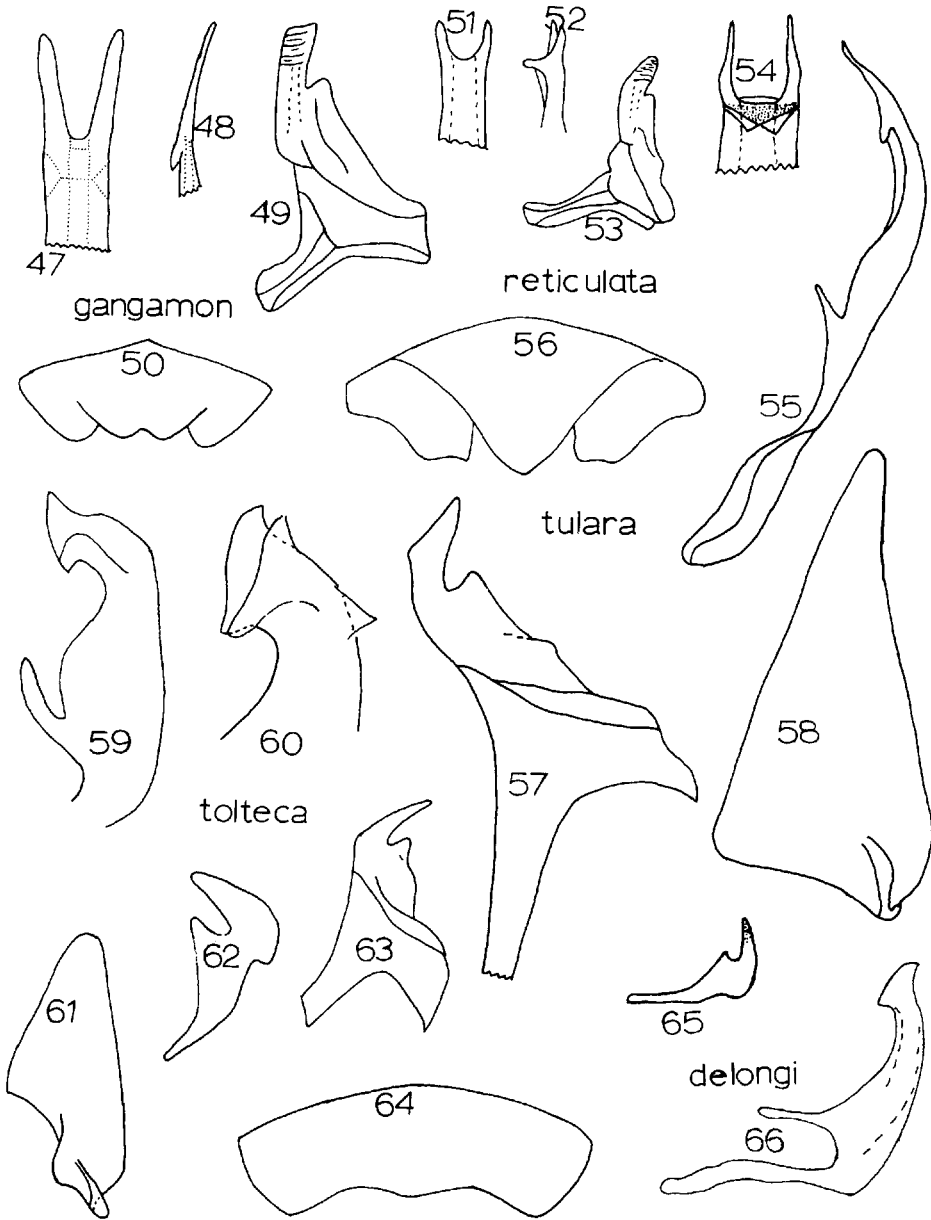
***Maricaona reticulata* Linnavuori** p. 98, 1959

Polyamia reticulata is apparently related to *gangamon*, but can readily be separated from it by the blunt projection near apex of aedeagus on the dorsal margin and the broadly, rather deeply forked apex of the aedeagus of *reticulata*.

***Polyamia tulara* n. sp.**

(figs. 54-58)

Length: male—3 mm, female—3.5 mm. Crown bluntly angled, broader between eyes at base than median length. Forewings short and broad, apical cells short. Color: crown yellow, a black spot on margin each side of apex extending from face coloration and visible from above;



EXPLANATION OF FIGS. 47-66.

FIGS. 47-50 *P. gangamon* Kramer. 47. apex of aedeagus, dorsally (enlarged); 48. apex of aedeagus, laterally; 49. style, ventrally; 50. female seventh sternum. FIGS. 51-53 *P. reticulata* (Linnavuori). 51. apex of aedeagus, dorsally (enlarged); 52. apex of aedeagus, laterally; 53. style, ventrally. FIGS. 54-58 *P. tolteca* n. sp. 54. apex of aedeagus, dorsally, (enlarged); 55. aedeagus, laterally; 56. female seventh sternum; 57. style, ventrally; 58. plate, ventrally. FIGS. 59-64 *P. tolteca* Kramer. 59. aedeagus, laterally; 60. apex of aedeagus laterally (enlarged); 61. plate, ventrally; 62. apex of style, laterally; 63. style, ventrally; 64. female seventh sternum. FIGS. 65-66 *P. delongi* (Kramer). 65. apex of style; 66. aedeagus, laterally. FIGS. 47, 48, 49, 51, 52, 53, 59, 61, 62, 65, and 66 after Kramer).

a brown line extending from just above margin from each ocellus to proximal side of apex. A large brown spot each side between anterior margins of eyes. Pronotum yellow, posterior discal area pale-brown. A large dark-brown spot behind inner portion of each eye. Scutellum pale-yellow. Forewings pale-gray, veins pale-yellow, an elongate brown spot on anterior portion of clavus proximal to claval suture and a brown spot at apex of clavus.

Male genitalia with plates more than twice as long as broad, apices narrow, blunt, rounded. Style one third longer than broad, roundedly notched on outer margin near apex so as to form an apical produced tip, which is bent laterad and pointed. Aedeagus enlarged near base (lateral view), then narrowed just basad to a dorsal spur one fourth distance from apex. Apical fourth composed of two slender pointed spine-like processes widely separated and rounded laterally at base.

Female genitalia with lateral angles of seventh sternum sloping caudally to posterior margin, which is interrupted on median third by the posterior margin bending cephalad each side of a median lobe, lobe as long as posterior margin. The central triangular portion bearing the apical lobe is more than half the width of segment and appears to arise at base of seventh sternum.

Holotype male Mexico City, D.F. Mexico IX-26-45 (DeLong). Allotype female same data as holotype. Paratypes: 9♂ and 19♀ same as holotype; 2♂, 1♀ same as holotype except X-22-45, (DeLong, Hershberger, Elliott); 1♂, 1♀ Jalapa Rd. Vera., K-241, X-12-45 (DeLong, Hershberger, Elliott); 1♂ same data except K-207, X-13-42 (Shaw, DeLong, Hershberger).

Polyamia tulara is related to *gangamon* and *reticulata*. It can be distinguished from both by the deep U-shaped apical notch of the aedeagus of *tulara* and the position of the dorsal protrusion on the style, as shown in Figures 48, 52, and 55.

Polyamia tolteca Kramer

(figs. 59-64)

Polyamia tolteca Kramer p. 29, 1965

Polyamia tolteca is a small, well-marked species, with a short broad aedeagus which is curved dorsally at apex; the apex is forked. Under high magnification, a pair of triangular preapical teeth are visible on the ventral margin. In general collecting, it is one of the most widely distributed species of *Polyamia* in Mexico.

Polyamia delongi (Kramer) **new combination**

(figs. 65-66)

Deltocephalus delongi Kramer p. 41, 1963

Although described in *Deltocephalus*, this species is apparently a very close relative of *P. tolteca*. The female allotype has a reticulated clavus. The color pattern of the crown is similar in the two species. *Polyamia delongi* is slightly larger and a little more robust than *tolteca*.

Polyamia scina n. sp.

(figs. 67-70)

Length of male—3.5 mm, female—unknown. Crown bluntly angled, length equalling basal width between eyes. Forewings short, broad. Color: crown pale-yellow with faint brown markings. Brown arcs from face extending on to margin each side of apex, visible from above. Pronotum yellow with irregular darker markings. Scutellum yellow. Forewings mottled, yellow to pale-brown. Veins mostly white or yellow, margined with brown.

Male genitalia. Plates one third longer than broad. Style one third longer than broad, apical fourth narrowed, rounded at apex. Aedeagal shaft long, narrow, terminating with a pair of proximal, long, slender processes which are tapered to pointed tips.

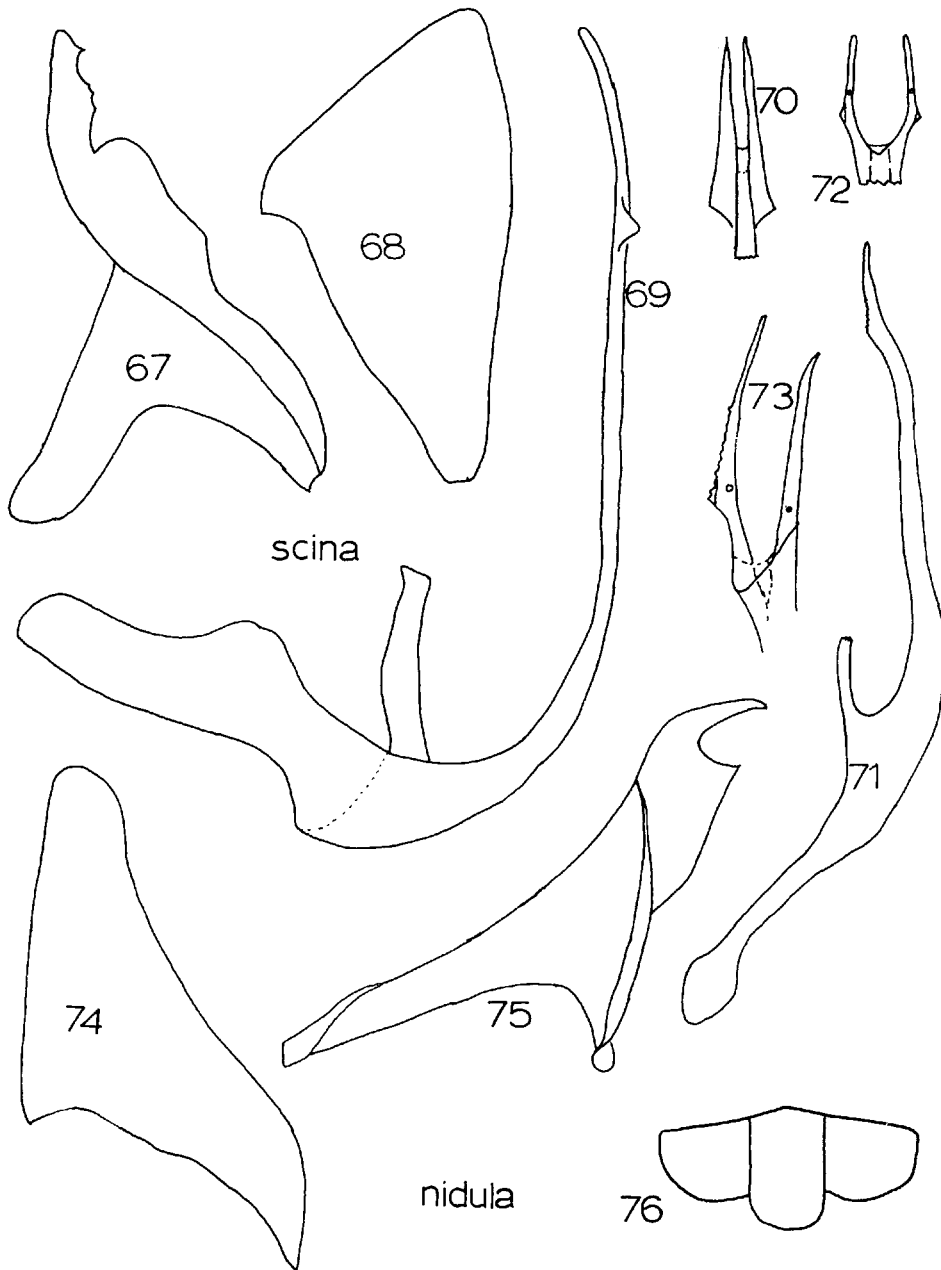
Holotype male from Zacapu, Mich., Mexico X-4-44, (DeLong, Good, Caldwell, Plummer).

Polyamia scina is related to *nidula*, and can be separated from it by the narrow median apical notch of the aedeagus in *scina*.

Polyamia nidula n. sp.

(figs. 71-76)

Length: male—4 mm, female—4.2 mm. Crown sharply angled, wider between eyes at base than median length. Forewings long, apical cells normal in size. Color: crown pale-brown with



EXPLANATION OF FIGS. 67-76.

FIGS. 67-70 *P. scina* n. sp. 67. style, ventrally; 68. plate, ventrally; 69. aedeagus, laterally; 70. apex of aedeagus, dorsally (enlarged). FIGS. 71-76 *P. nidula* n. sp. 71. aedeagus, laterally; 72. apex of aedeagus, dorsally (enlarged); 73. apex of aedeagus, dorsolaterally (enlarged); 74. plate, ventrally; 75. style, ventrally; 76. female seventh sternum.

darker brown mottling. A black band between anterior margins of eyes, broadest at middle and slender at eyes, interrupted at median line. Pronotum sordid yellow with pale-brownish mottling. Scutellum yellow, basal angles pale-brown. Forewings pale-gray and subhyaline; veins white partially margined with brown.

Male genitalia with plates as long as wide, apices blunt, rounded. Style as long as wide, apex curved laterad, tapered and sharp pointed. Aedeagus long, narrow, terminating in two separated, pointed, apical processes.

Female genitalia with lateral angles of seventh sternum rounded to posterior margin, which slopes a little cephalad each side of a median spatulate process. This process, which appears arising near base of segment, extends beyond length of lateral angles. Spatulate portion is about one-fourth width of segment and is truncate at apex.

Holotype male from Jalapa S.L.P., K-814, IX-22-45 (DeLong, Hershberger, Elliott). Allotype female Jalapa Rd. Vera. K-241, X-13-45 (DeLong, Hershberger, Elliott). Paratypes: 1 ♂ same data as allotype; 2 ♂, 1 ♀ Carapan, Mich., Mexico X-2-41, Km 432, (DeLong, Good, Caldwell, Plummer).

Polyamia nidula is related to *scina*, but can be separated from it by the broad U-shaped median apical notch of the aedeagus and the subapical enlargement of the style of *nidula*.

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