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A Revision of the Parasitic Fly Genus *Polistiopsis* Townsend (Diptera, Tachinidae)

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INTRODUCTION

The genus *Polistiopsis* was proposed by Townsend in 1915 for a remarkable wasplike tachinid from Tehuantepec, Mexico. He considered it to have been collected by Sumichrast in the 1860's. Aside from this type specimen, I have had the opportunity to study three specimens of *Polistiopsis* in North American collections. These represent two species. The purpose of the present paper is to redescribe, and to illustrate for the first time, the type species, from Mexican specimens, and to describe and compare a second species, from Paraguay. Unfortunately the insect hosts of this parasitic genus are presently unknown.

ACKNOWLEDGMENTS

The preparation of this paper, in great part, was undertaken while I was holding a year's appointment as Research Fellow at the American Museum of Natural History. I wish to acknowledge my thanks to the authorities of the American Museum and to Drs. Jerome G. Rozen, Jr., and Pedro Wygodzinsky for facilities and advice. Mr. Thomas W. Hayden kindly contributed figures 15 and 16. I am also indebted to Mrs. Marjorie Favreau for all other drawings and for the development and

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the printing of the negatives of photographs taken by me. This paper was completed at the California Academy of Sciences.

SYSTEMATICS

GENUS *POLISTIOPSIS* TOWNSEND

Polistiopsis TOWNSEND, 1915, pp. 43–44; 1927, p. 228 (in key to genera of American humid tropics); 1936, pp. 68, 71 (comments on rarity, distribution, Mexico, Brazil, and Peru; in key to tribe Cyndromyiini, family Gymnosomatidae); 1938, pp. 163–165 (generic description). MALLOCH, 1929, p. 290 (as *Polistiops* [sic]; considered “doubtfully distinct from *Cylindromyia*”). CURRAN, 1934, p. 454 (in key). NEAVE, 1940, p. 846 (not preoccupied). ARNAUD, 1958, p. 33 (listed).

TYPE SPECIES: *Polistiopsis mima* Townsend, by original designation.

DISCUSSION: Townsend (1938, pp. 163–165) has provided a detailed generic redescription of *Polistiopsis*; consequently it is not repeated here. Details of the postabdomen not considered by Townsend may be found in the descriptions of species.

KEY TO SPECIES OF *Polistiopsis* TOWNSEND

Body coloration reddish brown; wings with extensive yellow and brown coloration on more than anterior half; antennal segments on inner surfaces and bases of aristaе unicolorous yellow-orange; male postabdomen with tips of inner forceps broad and thin, only short haired (Mexico, Peru) *mima* Townsend
 Body coloration blackish; wings with extensive black markings basally changing to brownish apically; antennae with second segments yellow-brown and third segments and aristaе blackish; male postabdomen with tips of inner forceps narrowed and thick, with subapical group of long hairs (Paraguay) . . . *williamsi*, new species

Polistiopsis mima Townsend

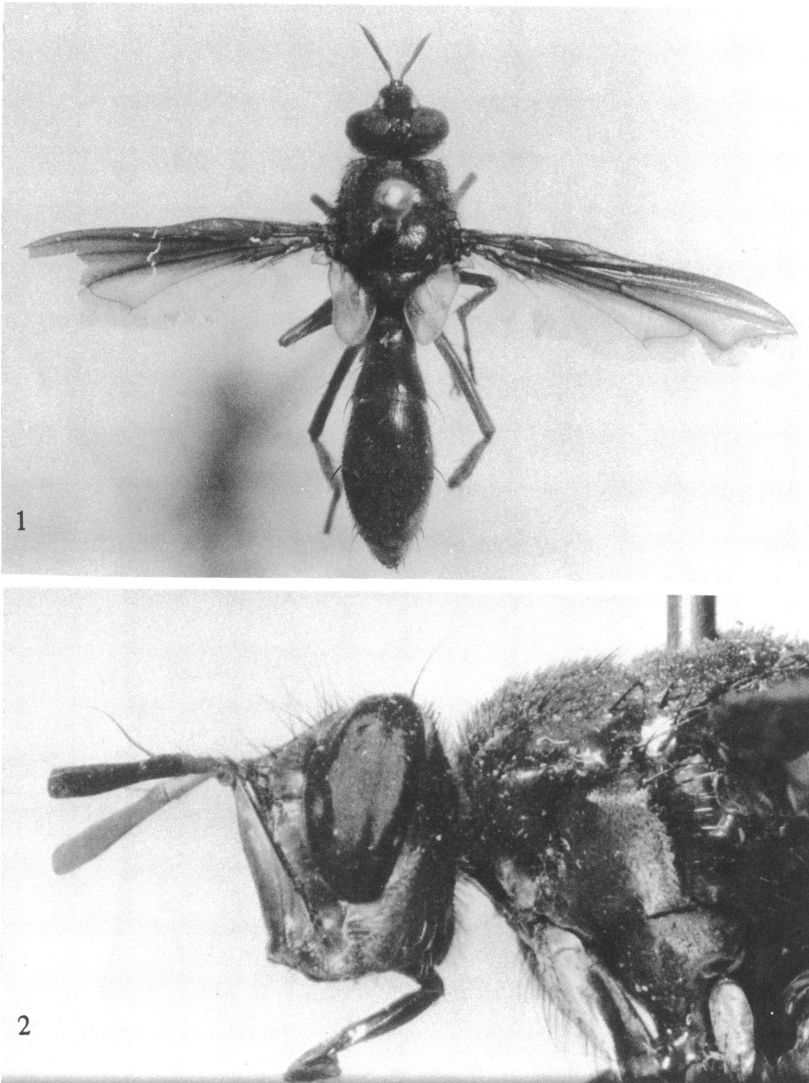
Figures 1–3, 7, 9–11, 15, 16

Polistiopsis mima TOWNSEND, 1915, pp. 43–44 (cited as type of genus; description of holotype male from Tehuantepec); 1928, p. 84 (rarity of species; known only from type); 1931, p. 87 (brief description, listing of specimens in European museums); 1936, p. 7 (listed as type of genus); 1938, p. 163 (listed as type of genus). ARNAUD, 1958, p. 52 (listed).

DIAGNOSIS: Elongate, wasplike in form, reddish brown; thorax with pair of black vittae on anterior half of prescutum; legs brown; wing membrane with extensive yellow and brown markings on more than anterior half; abdomen of male with two silvery bands, the second band conspicuous on posterior margin of segment I+II and on anterior margin of segment III.

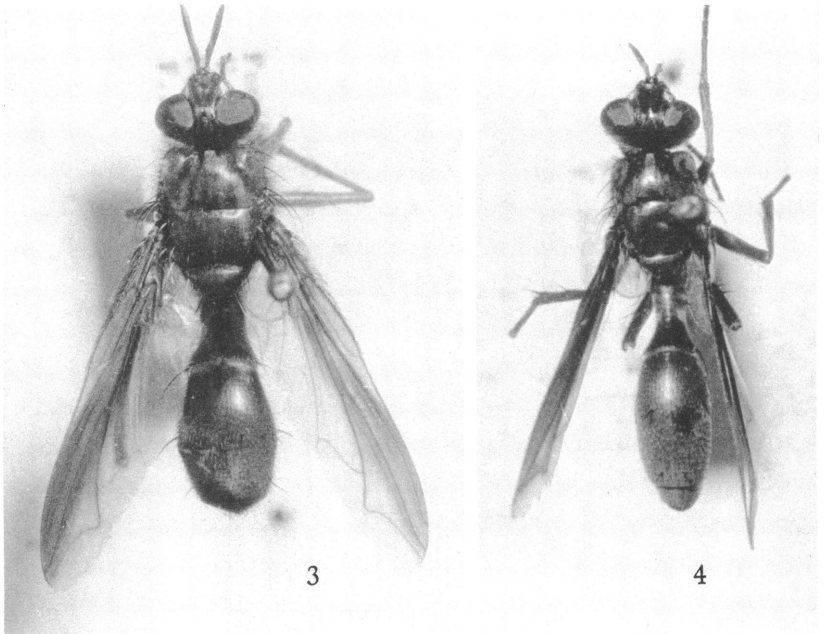
MALE: Length, 18–19 mm.

Head (figs. 1, 2) with front at vertex 0.207 of head width; brown to



FIGS. 1, 2. *Polistiopsis mima* Townsend, holotype male. 1. Dorsal view. 2. Left lateral view.

blackish in ground color; parafacials and parafrontals silvery yellow pollinose; frontalia broad, nearly obliterating parafrontals posteriorly; 14-15 frontals, lower fine, with five to six below bases of antennae; occipi-



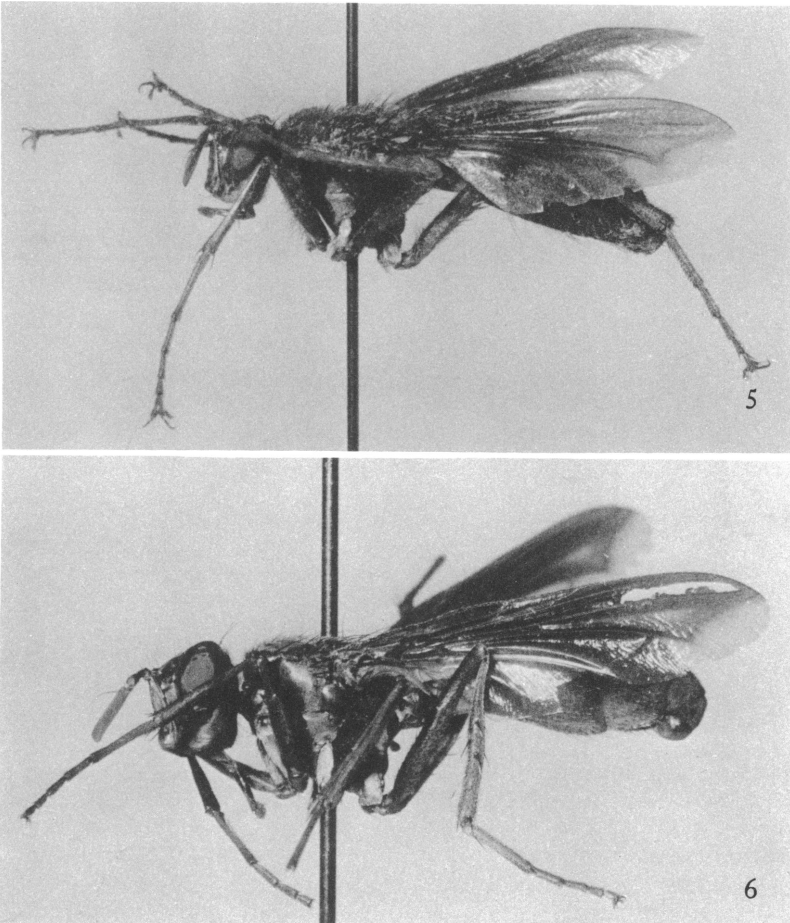
FIGS. 3, 4. *Polistiopsis* species, dorsal views. 3. *P. mima* Townsend, male. 4. *P. williamsi*, new species, female allotype.

tal fringe black, occipital hairs pale; antennae elongate, narrow, antennal segments on inner surfaces and bases of aristae yellow-orange, with blackish tinge to outer antennal surfaces and to tips of aristae; latter bare; cheek pale haired, one-third of eye height; proboscis with haustellum longer than cheek height, brownish black.

Thorax yellow-brown, darkening on lower pleural areas, faintly silvery pollinose, black bristled and haired, with pair of black vittae on anterior half of prescutum delimiting a median silvery pollinose vitta.

Legs elongate, brown, with elongate claws longer than last tarsal segment; fore tibia with two posteroventral bristles; mid femur with one mid anterior bristle, two or three posterior bristles near knee; mid tibia with one small anterodorsal bristle, two anteroventral, one posterior, and three posteroventral bristles; hind femur with two anterodorsal, four to five anteroventral, two posterodorsal, and four to five posteroventral bristles; hind tibia with two anterodorsal, two anteroventral, two posterodorsal, and two posteroventral bristles.

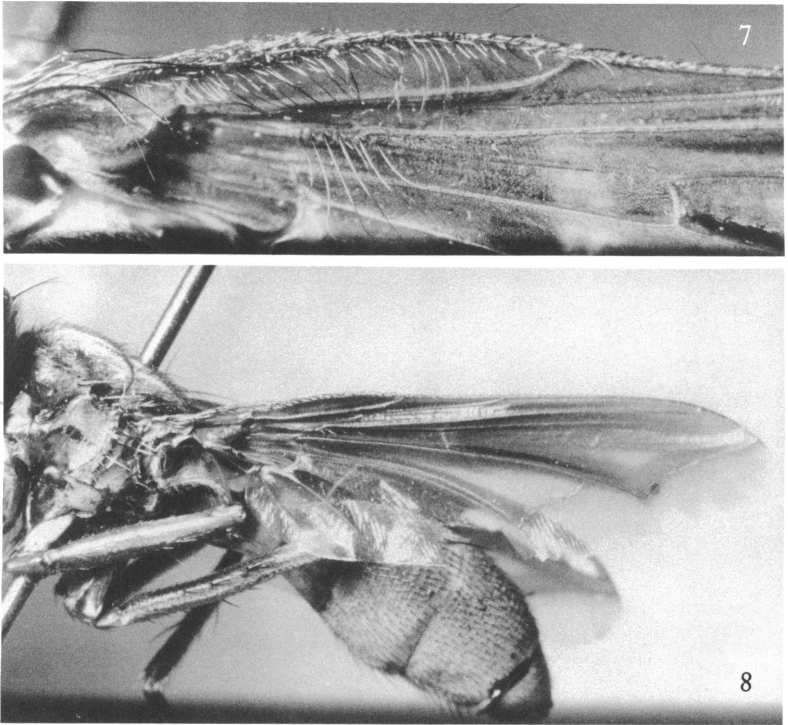
Wing (fig. 3), 15 mm. in length, 4.5 mm. in width; veins brown, membrane with extensive yellow and brown coloration on more than



FIGS. 5, 6. *Polistiopsis williamsi*, new species, left lateral views. 5. Male, holotype. 6. Female, allotype.

anterior half; 5R open before wing tip; prestigma (fig. 7) bowed, with long, dense, costal hairs covering ventral surface; base of second subcosta ventrally with six long bristles; costal spine undeveloped; divisions of costa: costigium 20, prestigma 35, stigma 22, poststigma 46, radio-costa 10, and disticosta 4; venation as illustrated; epaulet blackish brown, subepaulet brown; squamae vitreous, with yellowish border; halter with stalk and knob yellow, but stalk brown at very base.

Abdomen yellow-brown, faintly silvery pollinose under certain lights, with silver band on basal fourth of segment I + II and conspicuous silver



FIGS. 7, 8. *Polistiopsis* species, wings, ventral surfaces. 7. *P. mima* Townsend, male. 8. *P. williamsi*, new species, female allotype.

band on posterior margin of segment I + II and on anterior margin of segment III. This band continues ventrally on anterior margin of segment III.

Postabdomen (figs. 9–11) with basal segments elongate, exposed, yellow-orange; basal segments bristled and haired, fused, with two pairs of spiracles at posterior lateral edges, 1.5 mm. long, 1.1 mm. wide; anal membrane elongate; inner forceps partly shielded by outer forceps and their accessory lobes, in posterior view about 0.67 mm. long, fused, tip curved, broad (0.24 mm.), and thin; hairs on inner forceps pale colored, with a few darker hairs at base, stopping before apex, only short haired; outer forceps concave in lateral view, narrowed and rounded at apices, apices directed outward, without bristles or large hairs, projecting below margin of processes of accessory lobes; latter at greatest width 1 mm. and terminating in small membranous lobes, separated by less than one-third of width of apex of inner forceps; paired gonapophyses

stout, 1.08 mm. long, inner ventral surface beyond basal third with two pairs of hairs, ventrally curved, terminating in very broad, grooved apices; aedeagus short, about 0.42 mm. long, projecting anteroventrally, tip bifid; aedeagal apodeme elongate, strongly curved, 1.50 mm. long; ejaculatory apodeme 0.37 mm. long.

Fifth sternite broad, medially short and laterally elongate, with very broad, deep, U-shaped emargination, black bristled and haired, damaged in dissection.

FEMALE: Unknown.

TYPE DATA: Holotype, male; Tehuantepec, [Mexico], (Sumichrast); deposited in the collection of the United States National Museum of the Smithsonian Institution.

DISTRIBUTION: Mexico: Fortin de las Flores, Vera Cruz, September 14–21, 1954 (F. X. Williams), one male; in collection of the California Academy of Sciences.

Townsend (1931, p. 87) reported two males in the collection in "Berlin," one labeled only "Mexico: Deppe, 3570" and the second "Peru: Chanchamayo; M. Freymann G."

***Polistiopsis williamsi*, new species**

Figures 4–6, 8, 12–14, 17–20

Polistiopsis ?new species, TOWNSEND, 1931, p. 87 (reference to specimen in British Museum "one labeled South America being much darker in color and apparently a distinct species").

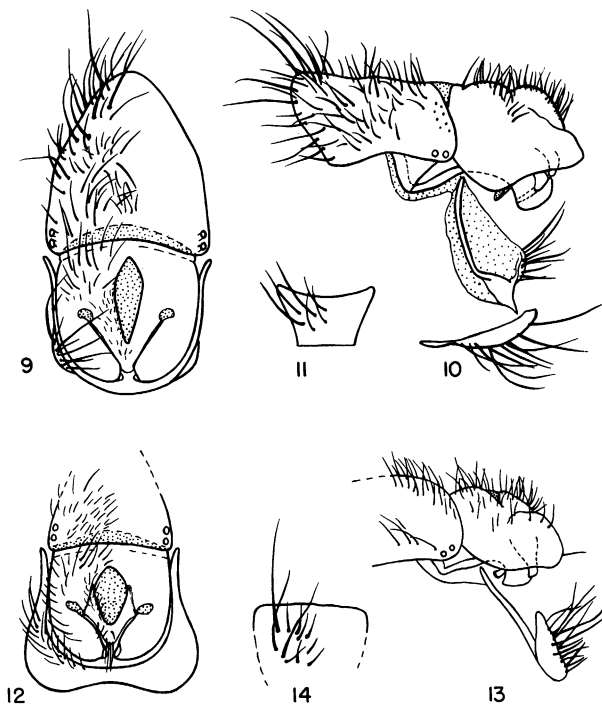
DIAGNOSIS: Elongate, wasplike in form, black; prescutum non-vittate; legs black; wing membrane with extensive black coloration on basal anterior half; abdomen of male with only faint silvery bands, the second only on anterior margin of segment III.

MALE (HOLOTYPE): Length, 18 mm.

Head (figs. 17,18) with front at vertex 0.24 of head width; black, but brownish at bases of antennae; parafacials and parafrontals faintly silvery pollinose; frontalia broad, nearly obliterating parafrontals posteriorly; 12 frontals, with three below bases of antennae; occipital fringe black, occipital hairs dark, pale around occipital ring; antennae elongate, narrow, first segments black above, brown below, second segments yellow-brown, third segments and aristae blackish; latter bare; cheek black haired, one-third of eye height; proboscis with haustellum longer than cheek height, black.

Thorax black, faintly silvery pollinose, black bristled and haired, non-vittate.

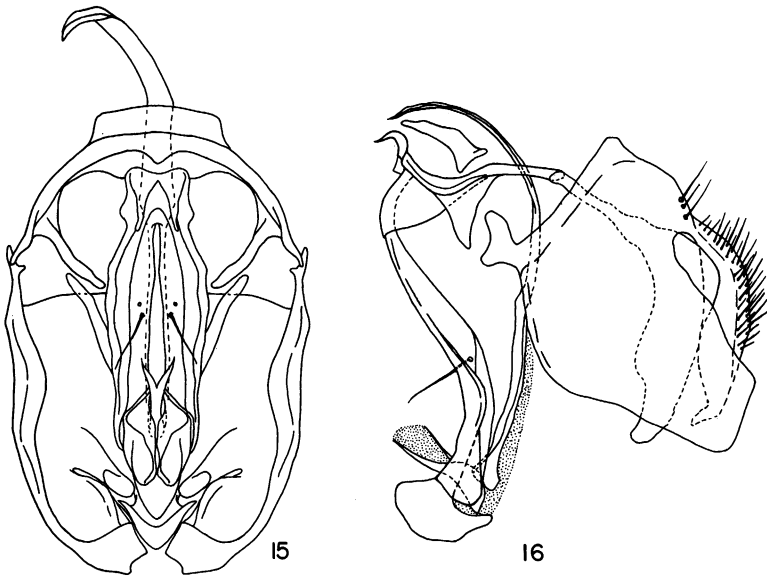
Legs elongate, femora black, tibia, tarsi, claws, and pulvilli brown to



FIGS. 9-14. *Polistiopsis* species, males. 9-11. *P. mima*. 12-14. *P. williamsi*, new species. Posterior (9, 12) and left lateral (10, 13) views of postabdomens and fourth and fifth sternites. Fourth sternites (11, 14), ventral views. Bristles and hairs omitted from right halves of figures 9, 11, 12, and 14.

black, with elongate claws longer than last tarsal segment; fore tibia with two posterodorsal bristles; mid femur with one mid anterior and three posterior bristles near knee; mid tibia with one small anterodorsal bristle, one anteroventral bristle, one to two posterior bristles, three posteroventral bristles; hind femur with three anterodorsal, five anteroventral, two to three posterodorsal, and two to five posteroventral bristles; hind tibia with two anterodorsal, four anteroventral, three posterodorsal and two posteroventral bristles.

Wing (fig. 5), 15 mm. in length, 4.5 mm. in width; veins mostly black, membrane with extensive black coloration, heaviest on basal anterior half; 5R open before wing tip; prestigma bowed with long, dense, costal hairs covering ventral surface; base of second subcosta ventrally with 12 to 15 long bristles; costal spine undeveloped; divisions of costa: costigium 20, prestigma 35, stigma 23, poststigma 45, radiocosta 11.5, and disti-

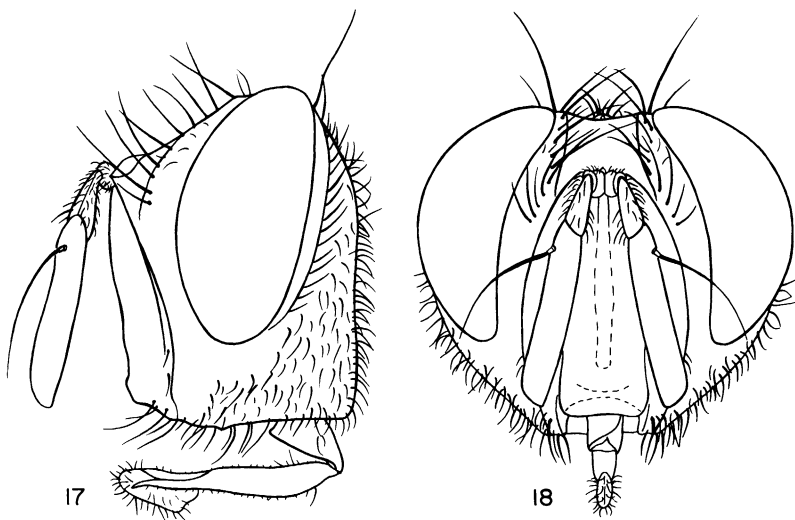


FIGS. 15, 16. *Polistiopsis mimia*, male, postabdomen. 15. Ventral view. 16. Lateral view.

costa 4; venation as illustrated; epaulet black, subepaulet dark brown; squamae vitreous, with yellowish border; halter with stalk brown and knob mostly black.

Abdomen black, with two very faint silvery bands, the first on segment I+II about one-fourth from base, the second a very narrow band on anterior margin of segment III.

Postabdomen (figs. 12-16) with basal segments elongate, exposed, terminally conical, black; basal segments bristled and haired, fused, with two pairs of spiracles at posterior lateral edges, damaged, but probably more than 1 mm. long, 1 mm. wide; anal membrane broad; inner forceps partly shielded by outer forceps and their accessory lobes, strongly curved apically, fused, apex narrowed (about 0.13 mm.) and thick, haired from base almost to tip, with subapical group of long hairs, in posterior view about 0.50 mm. long; outer forceps about 0.50 mm. long, concave in lateral view, narrowed and rounded at apices, apices directed outward, without bristles or large hairs, projecting below margin of large, rounded, convex processes of accessory lobes; latter at greatest width 0.93 mm. and terminating in large inner membranous lobes, separated by width of apex of inner forceps; paired gonapophyses stout, 0.70 mm. long, inner ventral surface beyond basal third with five



FIGS. 17, 18. *Polistiopsis williamsi*, holotype male, head. 17. Left lateral view. 18. Front view.

pairs of hairs, ventrally curved, terminating in very broad, grooved apices; latter in profile 0.17 mm. wide; aedeagus short, about 0.30 mm. long, projecting anteroventrally, tip bifid; aedeagal apodeme elongate, curved, 1 mm. long; ejaculatory apodeme 0.33 mm. long.

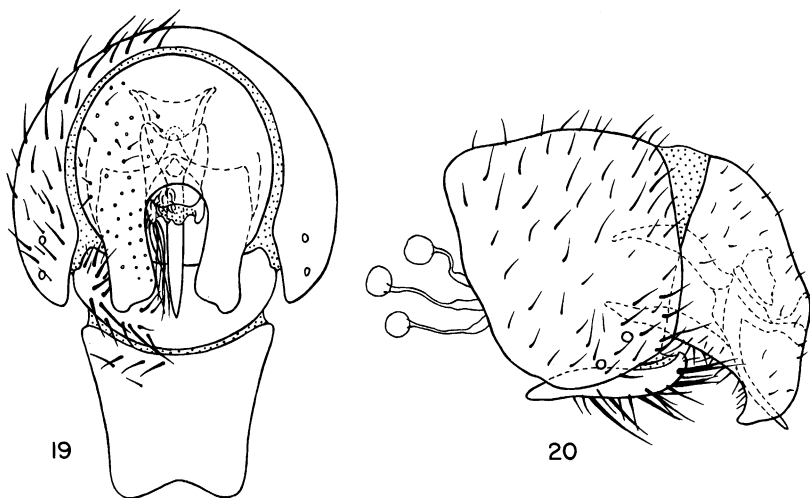
Fifth sternite broad, 1.5 mm. wide, medially short (0.12 mm.) and laterally elongate, bristled and haired except medially, with very broad, deep, U-shaped emargination.

FEMALE (ALLOTYPE): Length, 17 mm. (figs. 4, 6, 8).

Similar to holotype male, but with sexual dimorphism, in part, as here enumerated.

Head with front at vertex 0.28 of head width. Mesonotum with dense median silvery band anteriorly; thorax and abdomen (fig. 8) with shorter, sparser hairs. Legs with apical tarsal segments and claws short. Wing (fig. 8), 13 mm. in length, 3.5 mm. in width, with short costal hairs and only short bristles at base of second subcosta on ventral surface.

Abdomen with greater constriction of segments I + II, with yellow lateral markings visible from above; silver bands on basal fourth of segment I + II and posterior margin of same segment and on anterior margin of segment III; fourth sternite broad, 0.80 mm. long, a few bristles near posterior border; fifth sternite broad, with stout bristles on



FIGS. 19, 20. *Polistiopsis williamsi*, allotype female, postabdomen. 19. Posterior view. 20. Left lateral view.

two posterior convex projections, with slight mid emargination, overlying and concealing sternite bearing deep emargination as groove for piercer.

Postabdomen (figs. 19, 20) exposed, brownish black; basal segments fused, 1.12 mm. long, two pairs of spiracles midlaterally, haired, with stoutest bristles posterolaterally; third segment profile deeply notched, tipped with two symmetrical claws; piercer needle-like, brownish, up-turned, 0.65 mm. long; three spermathecae, circular, approximately equal in size, about 0.17 mm. in diameter.

TYPE DATA: Holotype male: Paso Yobay, Paraguay, December, 1940 (F. Schade); deposited in the collection of the American Museum of Natural History. The male postabdomen is stored in glycerine in a microvial. Allotype female: Villarica, Paraguay, January, 1939 (F. Schade); deposited in the collection of the American Museum of Natural History. The female postabdomen is stored in glycerine in a microvial.

REMARKS: This species is readily separable from *P. mima* on the basis of the black coloration of the body, legs, and wings and of details of the male postabdomen.

It is a pleasure to dedicate this species to Dr. Francis X. Williams, Research Associate in Entomology at the California Academy of Sciences, an acute entomological observer, who has contributed many of

his entomological specimens to the Academy for a period of more than 60 years. My interest in this genus was first kindled when I discovered the specimen of *P. mima* that he had collected at Fortin de las Flores, in Mexico.

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