

**Myrmecomorphic Miridae (Hemiptera) on Mistletoe:
Phoradendrepulus myrmecomorphus, n. gen., n. sp., and a
Redescription of *Pilophoropsis brachypterus* Poppius**

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Recent collections in Arizona have revealed a diverse and bizarre array of Miridae inhabiting desert mistletoe (*Phoradendron californicum*). Several myrmecomorphic forms are present, including a new genus and a species that has previously been described under two different names for the different sexes. In this paper, *Phoradendrepulus myrmecomorphus*, n. gen., n. sp. is described, *Pilophoropsis balli* Knight is placed as a junior synonym of *Pilophoropsis brachypterus* Poppius, and the female of *Pilophoropsis brachypterus* is redescribed.

All specimens treated herein are held in the Polhemus collection (JTP) unless otherwise noted.

***Phoradendrepulus*, NEW GENUS**

Description.—Head broad, short, triangular as viewed from above; antennae long, slender, apical segments slightly thickened. Pronotum large, raised, quadrate; collar well defined; calli indistinct. Mesoscutum well exposed; scutellum sharply elevated, conical. Hemelytra short, brachypterous, coriaceous, barely attaining base of abdomen, posterior margins raised, rounded, clavus and cuneus indistinguishable. Abdomen constricted basally, globose posteriorly with conspicuous pleural fold. Legs long, slender; coxae and femora stout; length of tarsal segment 3 subequal to lengths of basal two combined; claws small, parempodia hair-like, pulvilli minute. Rostrum long, extending past hind coxae. Male genitalia of phylline-type; right clasper small, leaf-shaped (Fig. 1b); left clasper larger, cup-shaped (Fig. 1a). Overall body ant-like in form; both sexes brachypterous and very similar in general facies.

Discussion.—On the basis of pretarsal structure and form of the genitalia, *Phoradendrepulus*, n. gen. belongs in the subfamily Phyllinae. It appears most closely allied to *Cyrtopeltocoris*, in particular the head shape, conical scutellum, and ant-like habitus are extremely reminiscent of *Cyrtopeltocoris* females. *Phoradendrepulus*, n. gen. may be separated immediately from other North American phyllines by its unique ant-like form and brachypterous condition in both sexes, and by its large, quadrate pronotum.

Etymology.—The name *Phoradendrepulus* (m.) is derived from *Phoradendron*, the host plant genus, and *epulo*, Latin for feaster, alluding to the association of these bugs with mistletoe.

***Phoradendrepulus myrmecomorphus*, NEW SPECIES**

Description.—*Brachypterous male*: Small, ant-like; length 2.48 mm; width across pronotum 0.76 mm; width across abdomen 1.12 mm.

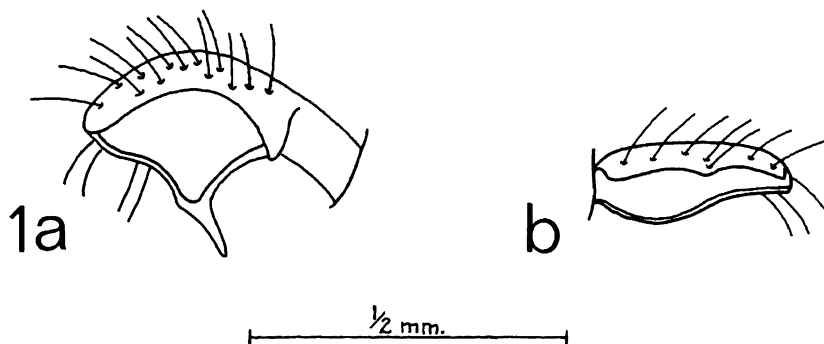


Figure 1. *Phoradendrepulus myrmecomorphus*, n. gen., n. sp., male genitalia. a. Left paramere. b. Right paramere.

Head dark brown, rugose; frons with transverse striae; a pair of stout setae present anteriorly between eyes; clypeus thickly set with fine gold hairs; vertex two times dorsal width of an eye, set with four stout dark setae; eyes reddish brown, anterior margins well separated from antennal sockets. Antennae brown; segment I short, stout, bearing three stout setae; segments II and III longer, slender; all segments clothed with short recumbent golden pubescence; lengths of segments I–IV (in mm): 0.24; 0.80; 0.64; missing.

Pronotum orange brown, raised, quadrate, posterior angles infuscated in some specimens; surface rugose, covered with very fine, short, upright, golden pubescence; calli indistinct. Mesoscutum broadly exposed, sloping downward posteriorly to scutellum; scutellum raised, conical, covered with fine gold hairs; a long seta present on each side of conical apex. Hemelytra orange brown, brachypterous, a small pallid area present centrally in some specimens; posterior margins upturned, smoothly rounded, barely attaining base of abdomen; surface with fine, recumbent gold hairs; several long setae present distad along hemelytral commissure.

Abdomen black, polished, shining, globose, basal segments constricted; dorsal surface with fine, recumbent gold hairs, intermixed with longer upright gold setae; pleural fold prominent basally.

Ventral surface orange brown; rostrum light brown, set with very fine, erect, short hairs; length 1.52 mm, reaching beyond hind coxae. Legs orange brown; fore coxae red, pallid basally, middle and hind coxae pallid; femora and tibiae clothed with fine recumbent gold hairs; tibiae set with stout spines; middle tibiae with a row of evenly spaced, fine, erect hairs on inner face; tarsal segment 3 as long as basal two segments combined. Venter of abdomen black, polished, set with numerous short, recumbent gold hairs and scattered long, upright hairs.

Male genitalia of phyline-type (see Fig. 1a, b); right clasper small, trough-shaped; left clasper larger, cup-shaped, with two spinose projections.

Brachypterous female: Generally similar to male in color and structure (see Fig. 2); stridulatory apparatus present. Length 2.88 mm; width across pronotum 0.80 mm; width across abdomen 1.28 mm. Lengths of antennal segments I–IV (in mm): 0.28; 0.84; 0.56; 0.48. Hind femora with sclerotized ridge (plectrum) on inside face of basal half, positioned to rub against microserate costal margin of

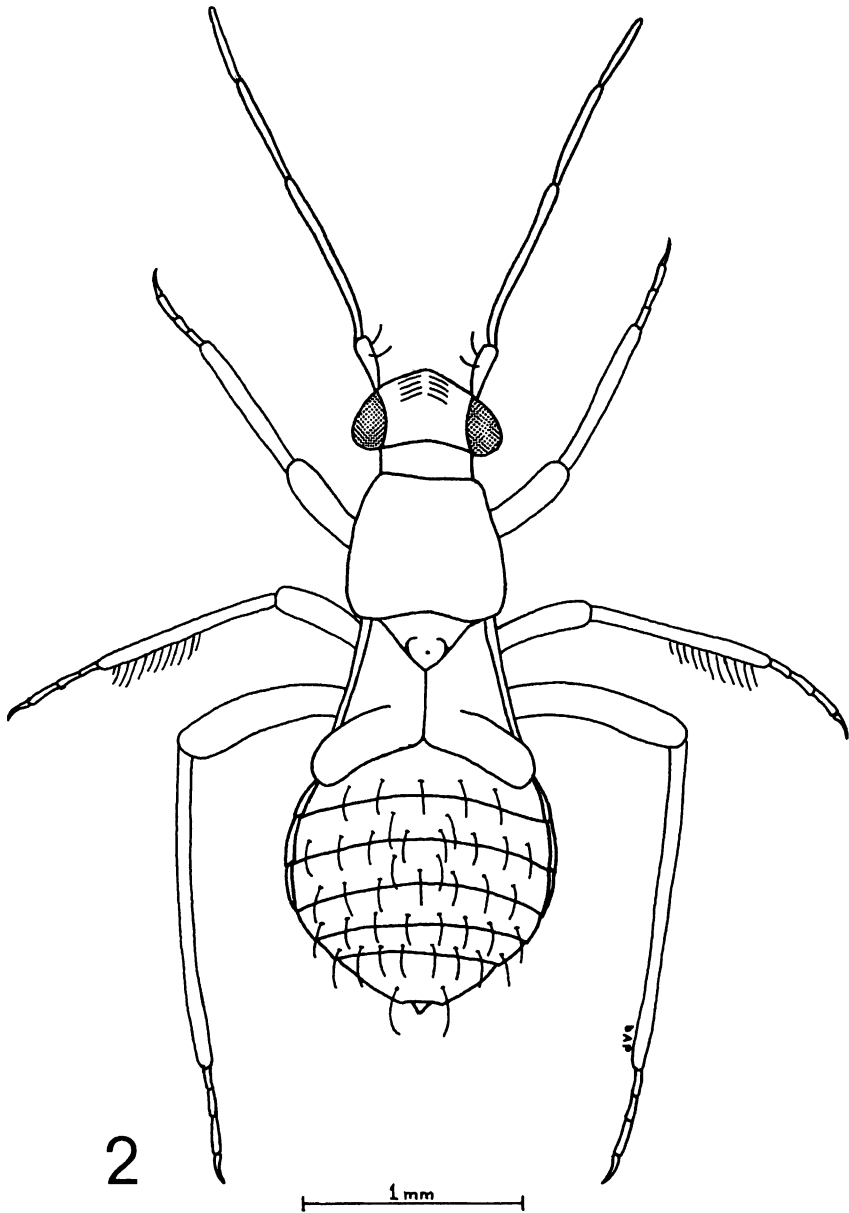


Figure 2. *Phoradendrepulus myrmecomorphus*, n. gen., n. sp., adult female, dorsal view.

hemelytra (strigil). Ovipositor sheath long, extending caudad two-thirds length of abdomen to base of sternite 8.

Discussion.—*Phoradendrepulus myrmecomorphus*, n. sp. inhabits mistletoes (*Phoradendron californicum*) parasitizing mesquite (*Prosopis juliflora*). The insects are invariably taken in the company of myrmicine ants (*Crematogaster* sp.), and this, along with an exceptional ant-like habitus that makes the insects quite difficult to distinguish from ants in the field, suggests that the species is myrme-

cophilic. Another notable feature of this unusual mirid is a stridulatory mechanism consisting of a raised ridge located basally on the hind femur (plectrum) positioned to contact a striate costal margin on the hemelytra (strigil). The striations of the costal margin are very fine and difficult to see, and appear to be present only on the distal portion in the male.

The antennal proportions given in the description were taken from specimens having four segments on each side, however an unusually high percentage (25%) of the specimens in our small sample exhibit antennal oligomery. The antennal proportions of the specimens exhibiting oligomery are as follows:

Sex	Date collected		Antennal segment			
			I	II	III	IV
♀	X-13-82	L & R	1.2	3.8	2.9	—
♀	VIII-10-82	L	1.2	5.8	—	—
		R	1.1	4.0	missing	—

In the associated series of *Pilophoropsis brachypterus* collected from the same trees, only one specimen of 17 exhibited unilateral oligomery. Antennal oligomery is not an unusual phenomenon in Heteroptera (Leston, 1952), however the unusually high occurrence in *Phoradendrepulus myrmecomorphus* leads us to speculate that the extremely restricted habitat and mobility of these flightless insects has led to extensive inbreeding and further that this extensive inbreeding is the causal factor in the oligomery. The less frequent occurrence in *Pilophoropsis brachypterus* would consequently be explained by the greater interdeme gene flow permitted by the mobility of the macropterous males of the latter species. Of the dozens of mesquite trees sampled, only a few large trees had populations of these two species of myrmecomorphic bugs, and these were in general separated by a mile or more of harsh desert. Given the apparently restricted vagility of *Phoradendrepulus myrmecomorphus* individuals, gene exchange between local populations of this species is undoubtedly very infrequent.

Etymology.—Derived from the greek *myrmex*, ant, alluding to the ant-like habitus.

Material examined.—Holotype, ♂, and allotype, ♀: ARIZONA, Maricopa Co.: Ariz. Hwy. 87 at Verde River, Ft. McDowell Indian Res., VIII-10-82, J. T. Polhemus (JTP). Paratypes: 2 ♀, same data as type; 2 ♀, same locality as types, V-24-82; 1 ♂, 1 ♀, same locality as types, X-13-82 (all JTP).

Pilophoropsis brachypterus Poppius

Pilophoropsis brachypterus Poppius, 1914, Ann. Soc. Entomol. Belg., 58:249 (n. gen., p. 249; n. sp., p. 250).

Pilophoropsis balli Knight, 1968, Brig. Young Univ. Sci. Bull., 9:176. New synonymy.

Pilophoropsis brachypterus was originally described by Poppius from a brachypterous female specimen taken at "Hot Springs," Arizona. Knight, over 50 years later, examined several macropterous males from various localities in Arizona and described them under the name *Pilophoropsis balli*. One of us (JTP) has studied the types of both species at the USNM. A long series taken from

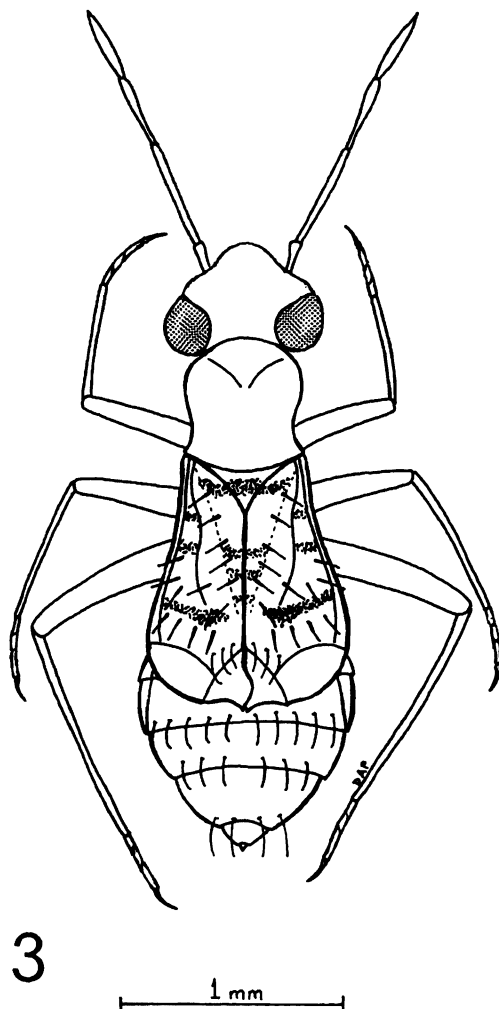


Figure 3. *Pilophoropsis brachypterus* Poppius, adult female, dorsal view.

mistletoe, *Phoradendron californicum*, at Ft. McDowell, Arizona, near Phoenix, now reveals that the two species are synonymous, with *P. balli* the junior synonym of *P. brachypterus*. Knight's 1968 description of the male, along with a figure of its bizarre genitalia, need not be repeated here, but a redescription of the female, in English, is provided to facilitate future identification of this unusual species. The insect is apparently confined to the Sonoran desert; to date no macropterous females have been found.

Brachypterosus female: Small, ant-like (see Fig. 3); length 2.96 mm; width across pronotum 0.56 mm; width across abdomen 1.00 mm.

Head brown, shining, concave along posterior margin; width 0.76 mm; eyes small, not protrusive; vertex wide, equal to two times the dorsal width of an eye; frons smooth, set with fine gold setae; lora prominent, expanded. Antennae brown, segment I paler; segment I with a pair of stout setae; segments II-IV thickly set

with short, stiff setae; segments III and IV thicker than segment II, subequal in thickness to segment I; lengths of segments I–IV (in mm): 0.20; 0.56; 0.36; 0.36.

Pronotum dark brown, shining, weakly campanulate, convex in side view; calli large, tumid, glabrous, with broad longitudinal sulcus between; surface covered with fine, short golden hairs. Scutellum dark brown, shining; anterior lobe upturned, almost vertical; posterior lobe flat, with a band of silvery, scale-like hairs running transversely across middle.

Hemelytra short, brachypterous, reaching only to posterior margin of tergite 4; dorsal surface brown, mostly dull, finely rugose, sparsely set with long, erect, bristle-like black setae; a transverse band of silvery, scale-like hairs across base of clavus joins a similar band on scutellum; two small patches of silvery hairs present anteriorly between costal and radial veins; another transverse band of silvery hairs present distad on corium near apex of clavus, broadly interrupted across clavus; clavus with three transverse bands of silvery hairs on apical half; cuneus dark brown, polished, with a patch of fine gold hairs present on posterior margin; membrane greatly reduced, dark brown, polished, inner margin rugulose.

Abdomen black, shining, rounded, sparsely set with fine, erect gold hairs; pleural fold present basally.

Ventral surface dark brown; rostrum length 1.12 mm, reaching between middle coxae; abdomen with fine recumbent gold hairs intermixed with longer, upright gold hairs; ovipositor sheath extending posteriorly three-quarters the length of segment 7. Legs brown; coxae, trochanters, and bases of femora pallid; set with short golden hairs, femora with a few longer hairs on posterior faces; tibiae with stout dark spines; terminal tarsal segment longer than preceding two taken together.

Records.—ARIZONA, Pima Co.: Tucson, IX-22-20, 1 ♂, E. D. Ball (USNM); Rincon Mountains, 1056 m (3300'), IX-2-38, 1 ♂, A. A. Nichol (USNM); Catalina Springs, IV-15, 1 ♂, E. A. Schwarz (USNM). Maricopa Co.: Ft. McDowell Ind. Res., Ariz. Hwy. 87 at Verde River, CL 1632, VI-2-81, 2 ♂, 1 nymph; VIII-10-82, 2 ♂, 4 ♀, 1 nymph; X-13-82, 1 ♂, 8 ♀; all J. T. Polhemus (JTP).

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