

POGONOMYRMEX



HARVESTER ANTS

*A Study of the Genus
in North America*

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Pogonomyrmex bicolor

Essentially similar to the worker, but with the usual female characters. Cephalic and scutal rugae rather fine, closely spaced. Scutellum smooth, very shining, longitudinal striae weak or absent. Epinotal spines short, prominent, robust, sharp. Dorsum of petiolar node rugose, the rugae not forming reticulations. Body color light to deep ferruginous red.

MALE. HL 1.60-2.09 mm, HW 2.09-2.36 mm, CI 112.9-130.6, SL 0.84-0.87 mm, SI 35.5-41.6, EL 0.61-0.61 mm, EW 0.42-0.46 mm, OI 29.2-29.2, WL 3.46-3.57 mm, PNL 0.49-0.53 mm, PNW 0.84-0.99 mm, PPL 0.57-0.65 mm, PPW 1.10-1.18 mm.

Mandible as shown in Pl. VIII, Fig. 11. Outer surface of base of antennal scape strongly flattened or broadly concave. Paramere as illustrated in Pl. X, Fig. 10 and Pl. XI, Fig. 11; inner dorsal border with a deep, rather broad emargination which strongly separates the terminal lobe from the base. Body generally a concolorous clear yellow.

For a discussion of *barbatus*, see *rugosus* (*vide infra*).

Pogonomyrmex (P.) bicolor n. sp.

Holotype, worker (Cole Coll. AZ-516).

HL 1.82 mm, HW 1.99 mm, CI 109.3, SL 1.29 mm, SI 64.3, EL 0.39 mm, EW 0.29 mm, OI 21.4, WL 2.11 mm, PNL 0.43 mm, PNW 0.43 mm, PPL 0.43 mm, PPW 0.58 mm.

Mandible as shown in Pl. III, Fig. 15; dentition similar to that of *desertorum*; apical and subapical teeth often fused except at extreme tips; first, second, third, penultimate, and ultimate basal teeth subequal in length. Base of antennal scape as illustrated in Pl. IV, Fig. 17; similar to that of *desertorum*, but basal enlargement somewhat better developed and its inferior lobe stronger, basal flange wider and more strongly protuberant, shaft along strongest part of bend more compressed and thinner; impression on lateral surface of basal enlargement small and shallow, the longitudinal peripheral carina bordering it very narrow. Cephalic rugae subparallel, very fine and dense, closely spaced, producing a silky luster; those on vertex and occiput more widely spaced, the median ones slightly divergent; interrugal spaces, except those on vertex and occiput, with minute, dense punctures, those on vertex and occiput smooth and shining; frontal area smooth, shining, with a promi-

ment, median, longitudinal carina; scape smooth, shining, faintly shagreened; occipital corners shining, with sparse, faint, irregular striae; mandible with rather coarse, widely spaced, longitudinal rugae, the interspaces shining.

Contour of thorax, petiole, and postpetiole, in lateral view, as in Pl. V, Fig. 4; epinotal spines well developed, long, slender, notably attenuated from base to apex, the tips sharp; venter of petiolar peduncle bearing 5 prominent, clavate, straight, erect, ventrally directed hairs and a broadly triangular lobe that continues posteriorly as a distinct carina. Thoracic rugae fine, dense, closely spaced, transverse except on sides of pronotum and metasternal areas where they are longitudinal; infraspinal facet of epinotum smooth and strongly shining. Contours of petiolar and postpetiolar nodes as shown in Pl. VII, Fig. 21. Anterior and anteriolateral surfaces of petiolar node densely and finely punctate; dorsum and posteriolateral surfaces irregularly rugose, the rugae with a transverse trend, the interspaces densely and finely punctate. Postpetiole densely and finely punctate, subopaque; the node with a few, fine, irregular, transverse rugulae on posterior half. Gaster smooth and shining, densely and finely shagreened.

Body bicolored; head, thorax, petiole, postpetiole, and appendages bright ferruginous red, eyes and gaster brownish black.

Paratype, female (Cole Coll. No. AZ-528).

HL 2.20 mm, HW 2.55 mm, CI 115.9, SL 1.50 mm, SI 58.8,
EL 0.49 mm, EW 0.34 mm, OI 22.3, WL 3.42 mm, PNL 0.57 mm,
PNW 0.72 mm, PPL 0.57 mm, PPW 1.04 mm.

Conformation of mandible and base of antennal scape similar to that of the worker. Head provided with dense, fine, closely spaced, longitudinal rugae which are even finer laterad of the midregion; midoccipital region with a distinct but rather weak, median, longitudinal carinula which is elevated above adjoining rugae that diverge slightly toward occipital corners; interrugal spaces smooth, rather shining, faintly shagreened; posterior corners of head with faint striae which fade out at the smooth and strongly shining extreme corners; frontal area shining, with a strong, median, longitudinal carina.

In lateral view, anterior declivity of pronotum steep, meeting anterior declivity of scutum without an interruption of contour; scutum very broadly convex, scutellum broadly and evenly convex,

Pogonomyrmex bicolor

rising only slightly above level of scutellum; epinotum armed with a pair of strong, rather sharp denticles, its basal and declivous faces subequal in length. Thorax mostly with fine, dense, closely spaced rugae, longitudinal on all surfaces except pronotum, metanotum, and epinotum where they are transverse; rugae on basal surface of epinotum notably coarser, more irregular, and more widely spaced than elsewhere; interrugal spaces smooth, shining, faintly shagreened; scutum with numerous, large, piligerous punctures.

Petiolar peduncle, in lateral view, thick, its venter with a prominent, elongate, broadly subtriangular lobe and 12 moderately long, rather slender, erect, pointed, silvery hairs. In profile view, anterior declivity of petiolar lobe meeting dorsum of petiolar peduncle at a smooth, broadly rounded, obtuse angle, the two forming an even concavity; posterior declivity slightly, very broadly convex; petiolar node subtriangular, its apex sharp. Apex of postpetiolar node, in lateral view, nearly flat, meeting the anterior and posterior declivities at distinct, rounded angles; ventral process of postpetiole absent. Petiolar node, viewed from above, notably broader than long, the apex rather blunt; provided with sparse, rather weak, widely spaced, transverse, wavy, broken rugae; interrugal spaces shining, densely and very finely punctate. Postpetiolar node, viewed from above, with weak, transverse, wavy rugae; interrugal spaces shining, very finely punctate.

Head, thorax, and appendages medium ferruginous red; scutum, metanotum, and scutellum with brown splotches; petiolar and postpetiolar nodes darker ferruginous red; first segment of gaster and posterior portion of remaining segments black, other portions deep ferruginous red; gaster strongly shining, covered with a very delicate shagreening scarcely visible at a magnification of 45X.

Paratype, male (Cole Coll. No. AZ-528).

HL 1.60 mm, HW 2.0 mm, CI 125.6, SL 0.91 mm, SI 45.3, EL 0.65 mm, EW 0.42 mm, OI 40.6, WL 3.27 mm, PNL 0.49 mm, PNW 0.84 mm, PPL 0.68 mm, PPW 1.04 mm.

Mandible as shown in Pl. VIII, Fig. 14; blade considerably broader basally and especially mesally than distally; the apical margin straight for about two-thirds its length, then curved terminally and forming part of the very broad but rather acute apical tooth; masticatory margin strongly oblique, broadly concave, bearing a single short tooth near but well separated from the apical tooth,

and meeting the basal mandibular margin at a pronounced and rather sharp angle. Cephalic rugae dense, fine, subparallel, rather closely spaced, slightly divergent occipitally, fading out behind the eyes; interrugal spaces smooth and shining; area around eye with a few elongate foveae; midoccipital region with a short, low, narrow, longitudinal carina; mandibles with moderately coarse, wavy, irregular, longitudinal rugae.

Anterior portion of scutum with a few, irregular, weak striae having a longitudinal trend and with scattered, small, piligerous punctures; remainder of scutum with numerous, longitudinal, fine rugulae; interrugal spaces strongly shining. Scutellum with numerous, irregular, longitudinal striae. Base and declivity of epinotum mostly smooth and shining, with very sparse, faint, irregular, longitudinal striae; epinotum unarmed, base meeting declivity at a smooth, broadly rounded angle. Sides of thorax, except epinotum, bearing fine, dense, irregular striae with a longitudinal trend; sides of epinotum subopaque, with fine, dense, irregular, transverse striae. Petiolar node mostly smooth and shining, bearing a few, fine, transverse striae on its lateral and posteriodorsal surfaces. Postpetiolar ventral process moderately well developed, subtriangular, apex rather acute; postpetiolar node smooth and shining. Gaster very smooth, highly polished, without shagreening; paramere as shown in Pl. X, Fig. 14 and Pl. XI, Fig. 15, the apex convex, the inner longitudinal margin of parameral base deeply and broadly concave.

Hairs on head, thorax, legs, petiole, and postpetiole long, dense, delicate, flexuous, pointed, pale golden yellow; somewhat shorter on scape and pedicel, shorter yet on flagellum and becoming increasingly so on proximal half, distal half of flagellum chiefly without hairs, mostly densely pubescent; hairs on gastric dorsum rather sparse and scattered.

Body and appendages, except flagellum and extremities of legs, concolorous, deep brownish black under magnification, appearing jet black to unaided eye; flagellum and leg extremities brown.

TYPE LOCALITY. Desert base of Madera Canyon, Santa Rita Mountains, 2.5 miles E. of Continental, Arizona, 3,200 ft. elevation; Cole Coll. Nos. AZ-515, 516, 528, 529, and 530, and AR-419 and 420. Males and alate females were taken from nest AZ-528 on July 26, 1961.

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OTHER LOCALITIES. United States—Arizona: Quijotoa, 2,400 ft., Pima Co.; Forestry Cabin, Baboquiviri Mts., 3,500 ft. (Creighton leg.). Mexico—Sonora: Imuris, 2,700 ft. (Cole leg.); 6 mi. S. of Imuris, 2,650 ft. (Creighton leg.); 2 mi. N. of Magdalena, 2,500 ft., Santa Ana, 2,300 ft., 51 mi. S. of Hermosillo, 250 ft., 15 mi. N. of Guaymas, 200 ft., 8 mi. N. of Guaymas, 100 ft., 9 mi. N. of Navajoa, 200 ft., 5 mi. N. of Navajoa, 200 ft. (Cole leg.); Sinaloa: 5 mi. S. of Guamuchil, 245 ft. (Cole leg.).

DISPOSITION OF TYPE MATERIAL. All specimens collected by the writer have been examined critically and are herewith designated as types. The holotype and series of paratypes from each of the stations listed above are in the writer's collection. Series of paratypes will be deposited in the U. S. National Museum, Museum of Comparative Zoology, American Museum of Natural History, and Los Angeles County Museum as well as in the collection of W. S. Creighton.

VARIATION IN TYPE MATERIAL. The following ranges of measurements apply to the workers: HL 1.71–2.09 mm, HW 1.82–2.28 mm, CI 106.4–109.3, SL 1.22–1.37 mm, SI 60.1–67.0, EL 0.38–0.46 mm, EW 0.23–0.29 mm, OI 21.4–22.2, WL 1.98–2.36 mm, PNL 0.38–0.49 mm, PNW 0.42–0.49 mm, PPL 0.42–0.49 mm, PPW 0.53–0.65 mm. Sculptural features show only slight variation. In some workers from Mexico the base of the dorsum of the first gastric segment is ferruginous red, and a few workers from the Guamuchil, Sinaloa, series are nearly a concolorous medium ferruginous red. Ranges of measurements of the females are as follows: HL 2.17–2.20 mm, HW 2.55–2.62 mm, CI 115.9–120.7, SL 1.50–1.67 mm, SI 57.3–65.5 mm, EL 0.49–0.53 mm, EW 0.34–0.38 mm, OI 22.3–24.1, WL 3.42–3.50 mm, PNL 0.53–0.57 mm, PNW 0.72–0.80 mm, PPL 0.53–0.57 mm, PPW 1.03–1.04 mm. The following ranges of measurements are those of the males: HL 1.60–1.63 mm, HW 1.90–2.01 mm, CI 116.5–125.6, SL 0.87–0.91 mm, SI 43.9–45.3, EL 0.53–0.65 mm, EW 0.38–0.42 mm, OI 32.5–40.6, WL 3.04–3.27 mm, PNL 0.42–0.49 mm, PNW 0.66–0.84 mm, PPL 0.61–0.68 mm, PPW 0.95–1.04 mm.

HABITS. At the type locality, the nests were in unshaded, sandy-gravelly soil between widely spaced desert shrubs and cacti. Each nest was surmounted by a low mound of sand, about 3 feet in diameter, bearing a single, nearly central entrance to a gallery that extended to a depth of 12 to 18 inches. Some lateral tunnels radiated from the

central gallery, at depths of 3 to 4 inches, for a distance of approximately 20 inches. The workers foraged rather slowly in files. They made no attempt to bite or sting when the nest was disturbed. Instead, they would cease locomotion and strike a menacing pose by elevating the forepart of the body, opening the mandibles widely, and waving the antennae briskly.

Nest architecture at the stations in Mexico was for the most part similar to that at the type locality. Some mounds, however, were very shallow affairs of sand and gravel or clay and gravel and were frequently encircled by a layer of dense chaff, whereas others were circular craters of sand and pebbles, about 10 inches in diameter and 4 inches in height. When the nests were opened, workers climbed to the tips of adjacent grasses and assumed and maintained the stance described above for as long as fifteen minutes. Workers of *bicolor* apparently do not clear the plants from the nest periphery. Near Navajoa, on August 9, 1959, I found a number of incipient nests, each containing only a queen. Apparently mating had taken place only a short time previously. No males or females were found in any of the established nests in Mexico. At numerous stations *bicolor* was sympatric with *rugosus*. Indeed, the nests were sometimes only a few feet apart.

AFFINITIES. This striking red and black species seems to be most closely related to *desertorum* Wheeler which, in the worker caste, it resembles in the delicate sculpture, the usually shining posterior corners of the head, the mandibular dentition, and the general conformation of the base of the antennal scape. The male of *bicolor*, like that of *apache* Wheeler, is a glossy, concolorous, jet black. Of the known *Pogonomyrmex* males, only those of these two species are similar in this respect. But the resemblance largely ends here.

Pogonomyrmex (P.) desertorum Wheeler

P. desertorum Wheeler, Psyche, 9 (1902) 387, ♀; Emery, Genera Insect., Fasc. 174 (1921) Pl. 1, Fig. 8, ♀; Olsen, Bull. Mus. Comp. Zool., 77 (1934) 496, Pl. 3, Fig. 2, ♀; Creighton, *ibid.*, 104 (1950) 124; Smith, U.S.D.A. Agr. Monog. No. 2 (1951) 793; Cook, Ants of Calif. (1953) 90, ♀; Cole, J. Tenn. Acad. Sci., 29 (1954) 119.

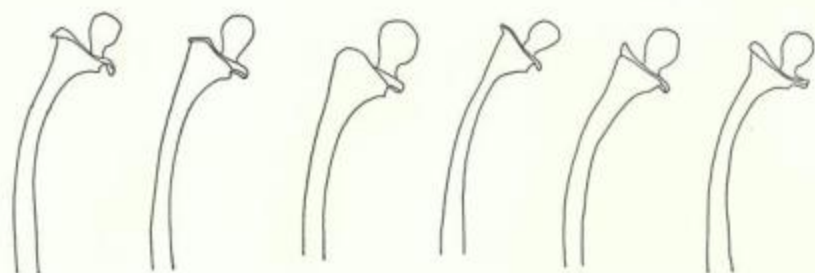
P. deserotorum: Cook, Ants of Calif. (1953) 90 (*lapsus*).

PLATE III Right mandible of worker.

- Fig. 1. *P. (P.) occidentalis* (Cresson), Pueblo, Colo.
Fig. 2. *P. (P.) occidentalis* (Cresson), variant No. 1, Portal, Ariz.
Fig. 3. *P. (P.) occidentalis* (Cresson) × *P. (P.) maricopa* Wheeler
(= *occidentalis utahensis* Olsen), Springdale, Utah.
Fig. 4. *P. (P.) owyheeii* Cole, Twin Falls, Idaho.
Fig. 5. *P. (P.) salinus* Olsen, 16 mi. NE. of Lovelock, Nev.
Fig. 6. *P. (P.) subdentatus* Mayr, 8 mi. N. of Weed, Calif.
Fig. 7. *P. (P.) subnitidus* Emery, Carlsbad, San Diego Co., Calif.
Fig. 8. *P. (P.) brevispinosus* n. sp., paratype, 20 mi. N. of Bakersfield, Calif.
Fig. 9. *P. (P.) californicus* (Buckley), Los Angeles, Calif.
Fig. 10. *P. (P.) maricopa* Wheeler, Bowie, Ariz.
Fig. 11. *P. (P.) comanche* Wheeler, Refugio, Tex.
Fig. 12. *P. (P.) magnacanthus* n. sp., paratype, Palm Springs, Calif.
Fig. 13. *P. (P.) anzensis* n. sp., paratype, Anza Desert State Park, Calif.
Fig. 14. *P. (P.) desertorum* Wheeler, Ciudad Camargo, Chihuahua, Mex.
Fig. 15. *P. (P.) bicolor* n. sp., paratype, 2.5 mi. E. of Continental, Ariz.
Fig. 16. *P. (P.) wheeleri* Olsen, 23 mi. SE. of Mazatlan, Sinaloa, Mex.
Fig. 17. *P. (P.) barbatus* (F. Smith), Dallas, Tex.
Fig. 18. *P. (P.) tenuispina* Forel, Isla Espiritu Santo, Baja Calif., Mex.
Fig. 19. *P. (P.) badius* (Latreille), minor, Gulfport, Miss.
Fig. 20. *P. (E.) pima* Wheeler, Tucson, Ariz.
Fig. 21. *P. (E.) imberbicus* Wheeler, Piote, Tex.
Fig. 22. *P. (E.) huachucanus* Wheeler, 16 mi. W. of Socorro, N. Mex.

PLATE IV Base of right antennal scape of worker
in outer lateral view.

- Fig. 1. *P. (P.) occidentalis* (Cresson), Ludlow, Colorado.
Fig. 2. *P. (P.) owyheei* Cole, Twin Falls, Idaho.
Fig. 3. *P. (P.) salinus* Olsen, 16 mi. NE. of Lovelock, Nev.
Fig. 4. *P. (P.) subdentatus* Mayr, Applegate, Ore.
Fig. 5. *P. (P.) subnitidus* Emery, Laguna, Calif.
Fig. 6. *P. (P.) brevispinosus* n. sp., paratype, 20 mi. N. of Bakersfield, Calif.
Fig. 7. *P. (P.) maricopa* Wheeler, Continental, Ariz.
Fig. 8. *P. (P.) comanche* Wheeler, Stockdale, Tex.
Fig. 9. *P. (P.) californicus* (Buckley), 5 mi. E. of Needles, Calif.
Fig. 10. *P. (P.) magnacanthus* n. sp., paratype, Palm Springs, Calif.
Fig. 11. *P. (P.) anzensis* n. sp., paratype, Anza Desert State Park, Calif.
Fig. 12. *P. (P.) occidentalis* × *maricopa* (= *occidentalis utahensis* Olsen), Zion National Park, Utah.
Fig. 13. *P. (P.) wheeleri* Olsen, Mazatlan, Sinaloa, Mex.
Fig. 14. *P. (P.) tenuispina* Forel, Isla Espiritu Santo, Baja Calif., Mex.
Fig. 15. *P. (P.) rugosus* Emery, 25 mi. N. of Durango, Mex.
Fig. 16. *P. (P.) desertorum* Wheeler, 37 mi. S. of Alpine, Tex.
Fig. 17. *P. (P.) bicolor* n. sp., paratype, 2.5 mi. E. of Continental, Ariz.
Fig. 18. *P. (P.) apache* Wheeler, Ft. Davis, Tex.



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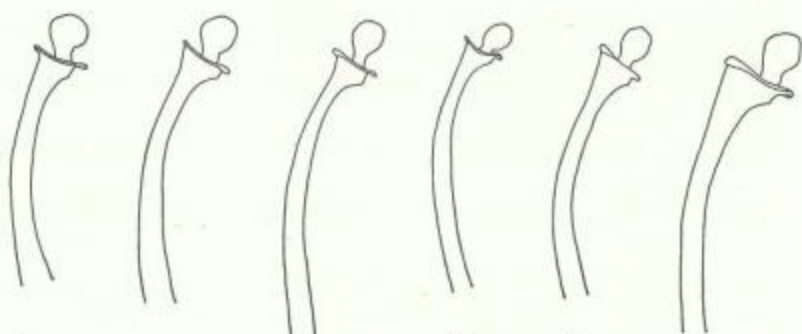
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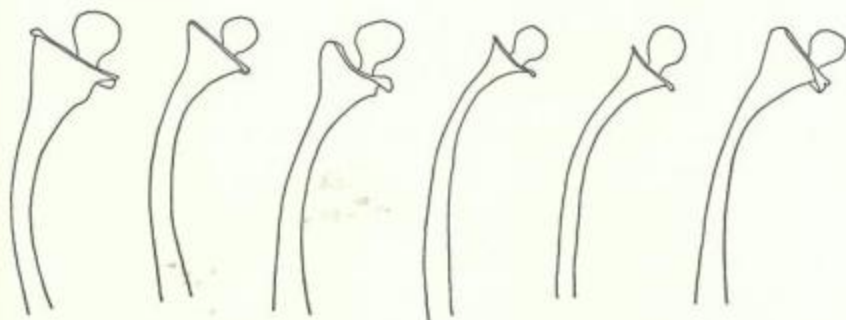
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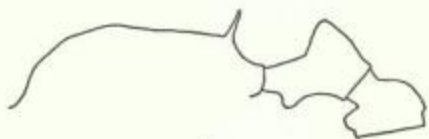
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PLATE V Contours of thorax, petiole, and postpetiole
of worker, in lateral view.

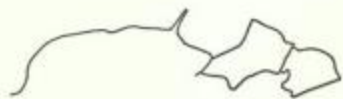
- Fig. 1. *P. (P.) barbatus* (F. Smith), Dallas, Tex.
Fig. 2. *P. (P.) apache* Wheeler, Cloudcroft, N. Mex.
Fig. 3. *P. (P.) desertorum* Wheeler, Van Horn, Tex.
Fig. 4. *P. (P.) bicolor* n. sp., paratype, 2.5 mi. E. of Continental,
Ariz.
Fig. 5. *P. (P.) wheeleri* Olsen, 23 mi. SE. of Mazatlan, Sinaloa,
Mex.
Fig. 6. *P. (P.) tenuispina* Forel, Isla Espiritu Santo, Baja Calif.,
Mex.
Fig. 7. *P. (P.) rugosus* Emery, San Jacinto, Calif.
Fig. 8. *P. (P.) badius* (Latreille), minor, Gulfport, Miss.
Fig. 9. *P. (E.) pima* Wheeler, Tucson, Ariz.
Fig. 10. *P. (E.) imberbicus* Wheeler, Ft. Davis, Tex.
Fig. 11. *P. (E.) huachucanus* Wheeler, 16 mi. W. of Socorro, N.
Mex.



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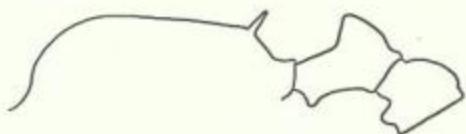
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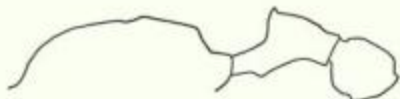
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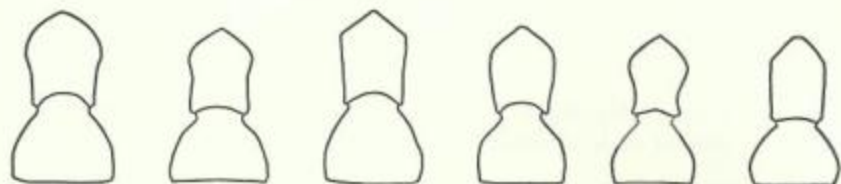
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PLATE VII Petiole and postpetiole of worker, dorsal view.

- Fig. 1. *P. (P.) occidentalis* (Cresson), Murray, Utah.
Fig. 2. *P. (P.) owyheei* Cole, Hammett, Idaho.
Fig. 3. *P. (P.) salinus* Olsen, 27 mi. NE. of Lovelock, Nev.
Fig. 4. *P. (P.) subdentatus* Mayr, Applegate, Ore.
Fig. 5. *P. (P.) subnitidus* Emery, San Diego Co., Calif.
Fig. 6. *P. (P.) brevispinosus* n. sp., paratype, 20 mi. N. of Bakersfield, Calif.
Fig. 7. *P. (P.) maricopa* Wheeler, Tucson, Ariz.
Fig. 8. *P. (P.) maricopa* (= *californicus barnesi* M. R. Smith), El Centro, Calif.
Fig. 9. *P. (P.) maricopa* (= *hindleyi* sensu Creighton), Odessa, Tex.
Fig. 10. *P. (P.) maricopa* (= *sinaloanus* Olsen), Guamuchil, Sinaloa, Mex.
Fig. 11. *P. (P.) occidentalis* × *maricopa* (= *occidentalis utahensis* Olsen), Rochester, Utah.
Fig. 12. *P. (P.) californicus* (Buckley), Laguna Beach, Calif.
Fig. 13. *P. (P.) californicus* (Buckley), Needles, Calif.
Fig. 14. *P. (P.) comanche* Wheeler, 8 mi. E. of Shamrock, Tex.
Fig. 15. *P. (P.) anzensis* n. sp., paratype, Split Mt., Anza Desert State Park, Calif.
Fig. 16. *P. (P.) magnacanthus* n. sp., paratype, Palm Springs, Calif.
Fig. 17. *P. (P.) barbatus* (F. Smith), Dallas, Tex.
Fig. 18. *P. (P.) rugosus* Emery, San Jacinto, Calif.
Fig. 19. *P. (P.) apache* Wheeler, Sheffield, Tex.
Fig. 20. *P. (P.) wheeleri* Olsen, Mazatlan, Sinaloa, Mex.
Fig. 21. *P. (P.) bicolor* n. sp., 6 mi. S. of Imuris, Sonora, Mex.
Fig. 22. *P. (P.) desertorum* Wheeler, 37 mi. S. of Alpine, Tex.
Fig. 23. *P. (P.) tenuispina* Forel, Isla Espiritu Santo, Baja Calif., Mex.
Fig. 24. *P. (P.) badius* (Latreille), minor, Gulfport, Miss.
Fig. 25. *P. (E.) huachucanus* Wheeler, 16 mi. W. of Socorro, N. Mex.
Fig. 26. *P. (E.) pima* Wheeler, Tucson, Ariz.
Fig. 27. *P. (E.) imberbicus* Wheeler, Ft. Davis, Tex.



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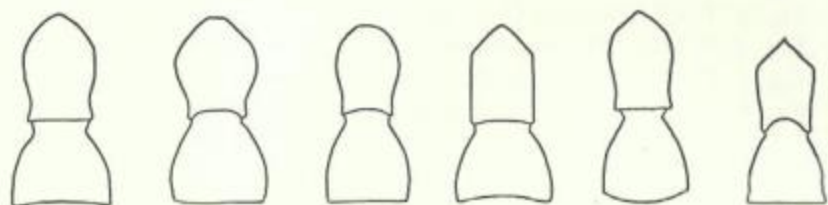
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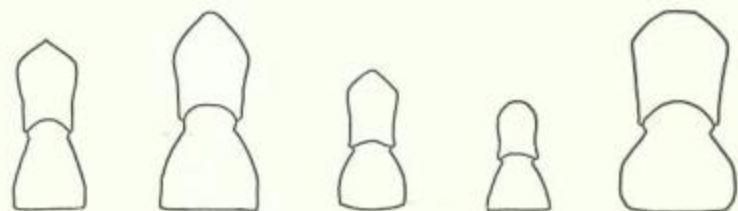
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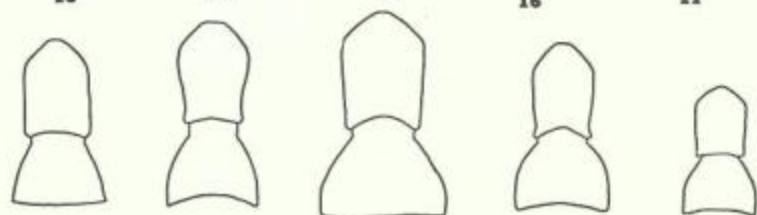
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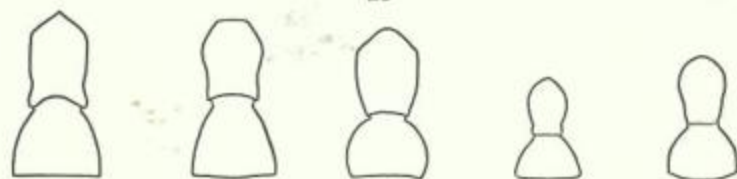
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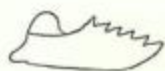
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PLATE VIII Right mandible of male (Figs. 1-19). Mandibles of male in relaxed position (Figs. 20-23).

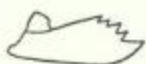
- Fig. 1. *P. (P.) salinus* Olsen, 27 mi. NE. of Lovelock, Nev.
Fig. 2. *P. (P.) occidentalis* (Cresson), Murray, Utah.
Fig. 3. *P. (P.) owyheei* Cole, Bend, Ore.
Fig. 4. *P. (P.) subdentatus* Mayr, 8 mi. N. of Weed, Calif.
Fig. 5. *P. (P.) subnitidus* Emery, Carlsbad, San Diego Co., Calif.
Fig. 6. *P. (P.) brevispinosus* n. sp., paratype, 20 mi. N. of Bakersfield, Calif.
Fig. 7. *P. (P.) maricopa* Wheeler, Bowie, Ariz.
Fig. 8. *P. (P.) californicus* (Buckley), Las Cruces, N. Mex.
Fig. 9. *P. (P.) comanche* Wheeler, 10 mi. NW. of Clarendon, Tex.
Fig. 10. *P. (P.) magnacanthus* n. sp., paratype, Palm Springs, Calif.
Fig. 11. *P. (P.) barbatus* (F. Smith), 6 mi. E. of Lordsburg, N. Mex.
Fig. 12. *P. (P.) apache* Wheeler, Nogales, Ariz.
Fig. 13. *P. (P.) desertorum* Wheeler, 37 mi. S. of Alpine, Tex.
Fig. 14. *P. (P.) bicolor* n. sp., paratype, 2.5 mi. E. of Continental, Ariz.
Fig. 15. *P. (P.) anergismus* Cole, paratype, 15 mi. E. of Silver City, N. Mex.
Fig. 16. *P. (P.) badius* (Latreille), Aiken, S. C.
Fig. 17. *P. (E.) huachucanus* Wheeler, 16 mi. W. of Socorro, N. Mex.
Fig. 18. *P. (E.) imberbicus* Wheeler, Ft. Davis, Tex.
Fig. 19. *P. (E.) pima* Wheeler, Douglas, Ariz.
Fig. 20. *P. (P.) comanche* Wheeler, Montopolis, Tex.
Fig. 21. *P. (P.) occidentalis* (Cresson), Murray, Utah.
Fig. 22. *P. (P.) rugosus* Emery, Tucson, Ariz.
Fig. 23. *P. (P.) badius* (Latreille), Gulfport, Miss.



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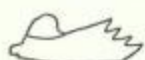
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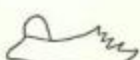
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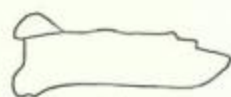
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PLATE X Male genitalia. Right paramere in dorsal view (Figs. 1-16); genitalia in dorsal view (Fig. 17); aedeagus (Figs. 18-20).

- Fig. 1. *P. (P.) occidentalis* (Cresson), Tooele, Utah.
Fig. 2. *P. (P.) owyheeii* Cole, Twin Falls, Idaho.
Fig. 3. *P. (P.) salinus* Olsen, Lee Canyon, Charleston Mts., Nev.
Fig. 4. *P. (P.) subdentatus* Mayr, 8 mi. N. of Weed, Calif.
Fig. 5. *P. (P.) brevispinosus* n. sp., paratype, 20 mi. N. of Bakersfield, Calif.
Fig. 6. *P. (P.) subnitidus* Emery, Carlsbad, San Diego Co., Calif.
Fig. 7. *P. (P.) californicus* (Buckley), Temecula, Calif.
Fig. 8. *P. (P.) maricopa* Wheeler, Bowie, Ariz.
Fig. 9. *P. (P.) comanche* Wheeler, 10 mi. NW. of Clarendon, Tex.
Fig. 10. *P. (P.) barbatus* (F. Smith), Dallas, Tex.
Fig. 11. *P. (P.) rugosus* Emery, Tucson, Ariz.
Fig. 12. *P. (P.) apache* Wheeler, Nogales, Ariz.
Fig. 13. *P. (P.) desertorum* Wheeler, 37 mi. S. of Alpine, Tex.
Fig. 14. *P. (P.) bicolor* n. sp., paratype, 2.5 mi. E. of Continental, Ariz.
Fig. 15. *P. (P.) badius* (Latreille), Gulfport, Miss.
Fig. 16. *P. (E.) imberbicus* Wheeler, Ft. Davis, Tex.
Fig. 17. *P. (E.) huachucanus* Wheeler, 16 mi. W. of Socorro, N. Mex.
Fig. 18. *P. (E.) huachucanus* Wheeler, 16 mi. W. of Socorro, N. Mex.
Fig. 19. *P. (E.) imberbicus* Wheeler, Ft. Davis, Tex.
Fig. 20. *P. (P.) barbatus* (F. Smith), Big Bend National Park, Tex.



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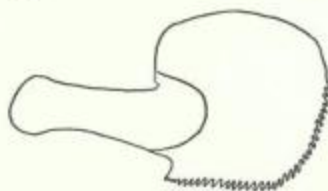
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PLATE XI Male genitalia. Terminal lobe of left paramere in inner lateral view (Figs. 1-18); left volsella in full ventral view (Figs. 19-21).

- Fig. 1. *P. (P.) occidentalis* (Cresson), 78 mi. W. of Delta, Utah.
Fig. 2. *P. (P.) owyheei* Cole, Twin Falls, Idaho.
Fig. 3. *P. (P.) salinus* Olsen, 27 mi. NE. of Lovelock, Nev.
Fig. 4. *P. (P.) subdentatus* Mayr, 8 mi. N. of Weed, Calif.
Fig. 5. *P. (P.) brevispinosus* n. sp., paratype, 20 mi. N. of Bakersfield, Calif.
Fig. 6. *P. (P.) subnitidus* Emery, Carlsbad, San Diego Co., Calif.
Fig. 7. *P. (P.) californicus* (Buckley), Los Angeles, Calif.
Fig. 8. *P. (P.) maricopa* Wheeler, Bowie, Ariz.
Fig. 9. *P. (P.) comanche* Wheeler, 10 mi. NW. of Clarendon, Tex.
Fig. 10. *P. (P.) magnacanthus* n. sp., paratype, Palm Springs, Calif.
Fig. 11. *P. (P.) barbatus* (F. Smith), Portal, Ariz.
Fig. 12. *P. (P.) rugosus* Emery, Tucson, Ariz.
Fig. 13. *P. (P.) apache* Wheeler, Nogales, Ariz.
Fig. 14. *P. (P.) desertorum* Wheeler, 37 mi. S. of Alpine, Tex.
Fig. 15. *P. (P.) bicolor* n. sp., paratype, 2.5 mi. E. of Continental, Ariz.
Fig. 16. *P. (P.) badius* (Latreille), Gulfport, Miss.
Fig. 17. *P. (E.) huachucanus* Wheeler, 16 mi. W. of Socorro, N. Mex.
Fig. 18. *P. (E.) imberbicus* Wheeler, Ft. Davis, Tex.
Fig. 19. *P. (P.) barbatus* (F. Smith), Big Bend National Park, Tex.
Fig. 20. *P. (P.) occidentalis* (Cresson), Ludlow, Colorado.
Fig. 21. *P. (P.) badius* (Latreille), Aiken, S. C.



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