

## A Revision of the Honey Ants, Genus *Myrmecocystus*, First Supplement (Hymenoptera: Formicidae)

Roy R. Snelling

*Abstract.*—A revision of the honey ants, genus *Myrmecocystus*, first supplement (Hymenoptera: Formicidae) by Roy R. Snelling, *Bull. Southern California Acad. Sci.*, 81(2):69-86, 1982. New distribution data are given for ten western species. Two new species are described: *M. (Eremnocystus) arenarius* is described from all castes; the type locality is Blow Sand Mts., Churchill Co., Nevada. *M. (M.) christineae* is described from all castes from the Ivanpah Mts., San Bernardino Co., California. New keys to the species of subgenera *Eremnocystus* and *Myrmecocystus* s. str. are provided and the two new species are appropriately illustrated.

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### Introduction

My revision of the honey ant genus *Myrmecocystus* was published in 1976. Since then, I have acquired interesting new distribution records for some species. Enough material of two undescribed species, then known from only a few specimens, is now available that these can be added to the known species.

The descriptive format is the same as that of my revision and figures in parentheses are those appropriate to the holotype or allotype, respectively.

### New Records

All records, except as otherwise noted, are based on specimens in LACM. Specimens were collected by the author (RRS) or the author and C. D. George (CDG) unless otherwise noted.

#### *Myrmecocystus (Endiodioctes) intonsus* Snelling

Mexico, *Baja California Sur*: 51 km W La Paz, 274 m elev., 26 Aug. 1977 (RRS, No. 77-54); Estacion Microondas "Ligui," 425 m. elev., 48 km S Loreto, 25 Aug. 1977 (RRS, No. 77-50).

#### *Myrmecocystus (Endiodioctes) mendax* Wheeler

U.S.A., *California, Imperial Co.*: Black Mtn. Rd., 1000' elev., 4 rd mi SE Hwy. 78, 5 May 1978 (RRS & CDG, No. 78-24). *Inyo Co.*: Willow Cr., 2400' elev., Inyo Mts., 17 Mar. 1976 (D. Giuliani); south Saline Range, 2500' elev., 22 Apr. 1974 (D. Giuliani). *Riverside Co.*: Hidden Spgs., 2100' elev., 24.5 rd mi WSW Wiley's Well, 25 Oct. 1978 (RRS, No. 78-135). *San Bernardino Co.*: Morningstar Mine Rd., 4200'-4260' elev., Ivanpah Mts., 9.5 mi NNE Cima, 14 Apr. 1977 (RRS & CDG, No. 77-12).

*Myrmecocystus (Myrmecocystus) christineae* new species

Figures 7–12, 14, 16, 20, 22, 24

## Diagnosis

*Worker*.—Erect hairs absent from malar area, scape tibiae and mesosomal dorsum; upper margin of eye little below occipital corner; basal face of propodeum flat or slightly rounded in profile. Female: Fifth segment of maxillary palp broadest in middle; OOD  $1.8\text{--}2.5 \times$  OD; scape, except at apex, with fine, appressed pubescence only; tibial hairs decumbent, sparse; mesoscutum, between parapsides, with sparse, fine punctures and scattered coarse punctures, center nearly impunctate. Male: Scape with appressed pubescence only, except at tip; tibiae with very short decumbent hairs; forewing with fringe hairs along apical margin, hindwing with fringe hairs along apical and posterior margins; forewing without discoidal cell; HL less than 0.8 mm.

## Description

*Worker*.—Measurements: HL 0.77–1.13 (1.12); HW 0.63–1.03 (1.02); SL 0.97–1.33 (1.33); WL 1.03–1.63 (1.63); PW 0.43–0.72 (0.70) mm.

Head: Longer than broad, CI 75–94 (91), a little shorter than scape, SI 113–130 (119). In frontal view, sides of head nearly parallel in small workers, slightly convex in largest workers and widest at about midpoint of malar area. Occiput, in frontal view, flat, sides convex, not at all angulate. Eye large, EL 1.4–1.7 (1.5)  $\times$  first flagellomere; OMD 0.75–1.04 (1.00)  $\times$  EL; upper margin nearly coincident with occipital corner. Mandible with seven or eight teeth.

Thorax: Moderately robust to robust, PW 0.43–0.72 (0.70)  $\times$  WL. Basal face of propodeum, in profile, flat or slightly rounded, broadly rounded into longer posterior face.

Petiole: Elongate-cuneate in profile, summit narrowly rounded; crest, from behind, weakly notched; from above about twice wider than long.

Vestiture: Clypeus with a few erect hairs; two pair of very short erect hairs on margins of frontal lobes and a pair on vertex. Thorax without erect hairs. Crest of petiole without erect hairs. First two gastric terga without erect hairs on disc; remaining terga with scattered suberect discal hairs. Scape and outer tibial faces without visible hairs of any declination.

Pubescence fine, sparse and short on head and mesosomal dorsum; longer and a little denser on mesosomal side and on gastric terga; everywhere appressed, but with some suberect pubescence on basal area of first tergum.

Integument: Moderately shiny over most areas, clypeus polished, with scattered fine punctures; malar area somewhat shagreened, with sparse, elongate punctures; frontal lobes closely, sharply and finely punctate; frons and vertex similar but punctures a little finer.

Color: Light brownish yellow; occiput sometimes brownish; appendages paler.

*Female*.—Measurements: HL 1.67–1.73; HW 1.67–1.77; SL 1.57–1.67; EL 0.53–0.57; WL 3.5–3.7; PW 2.0–2.2 mm.

Head: As broad as, or a little broader than long, CI 100–104; longer than, or as long as, scape, SI 92–100. In frontal view, broadest below eyes, sides weakly convex. Occiput, in frontal view, flat, corners broadly rounded. Eye large, EL 1.3–1.5  $\times$  first flagellomere; OMD 1.0–1.6  $\times$  EL; IOD 2.2–2.9  $\times$  OD; OOD 1.8–

2.5 × OD. Mandible variable, usually with five conspicuous, widely spaced teeth (in addition to apical tooth) and with two to four smaller denticles between these. Fifth segment of maxillary palp broad over much of its length, narrowed at base and apex.

Thorax: Robust, PW 0.54–0.63 × WL. In profile, posterior two-thirds of mesoscutum flattened. Scutellum slightly convex, strongly sloping and forming continuous plane with metanotum and base of propodeum.

Petiole: Compressed in profile, crest narrowly rounded; distinctly notched in frontal view; from above, about three times wider than long.

Vestiture: Head with sparse, short, suberect hairs across occiput and with scattered longer hairs (about 0.5 × MOD); frontal lobes with sparse short, suberect to erect hairs; clypeus with numerous short and long suberect to erect hairs on disc; malar area with 3–6 short, decumbent to suberect hairs. Mesoscutum with scattered short and long, suberect to erect hairs; scutellum with 4–6 long, erect hairs and a few short, erect hairs; side of thorax with widely scattered, short, erect hairs; propodeum without erect hairs over base, disc and sides; terga with scattered, short, suberect to erect hairs on discs which are progressively longer on succeeding segments. Inner face of profemur without erect hairs, though 15+ present along lower margin; meso- and metatibia with numerous fine, decumbent hairs.

Forewing with fringe hairs along apical margin; hindwing with fringe hairs along apical and posterior margins.

Pubescence appressed, general, abundant only on malar area, sides of thorax, propodeum, scape and first four terga.

Integument: Clypeus and supraclypeal area smooth or lightly shagreened between sparse, coarse punctures; frontal lobes moderately shiny between close micropunctures and sparse coarse punctures; occiput dull and shagreened between close micropunctures and sparse coarse punctures; malar area dull and shagreened between close, coarse, elongate punctures.

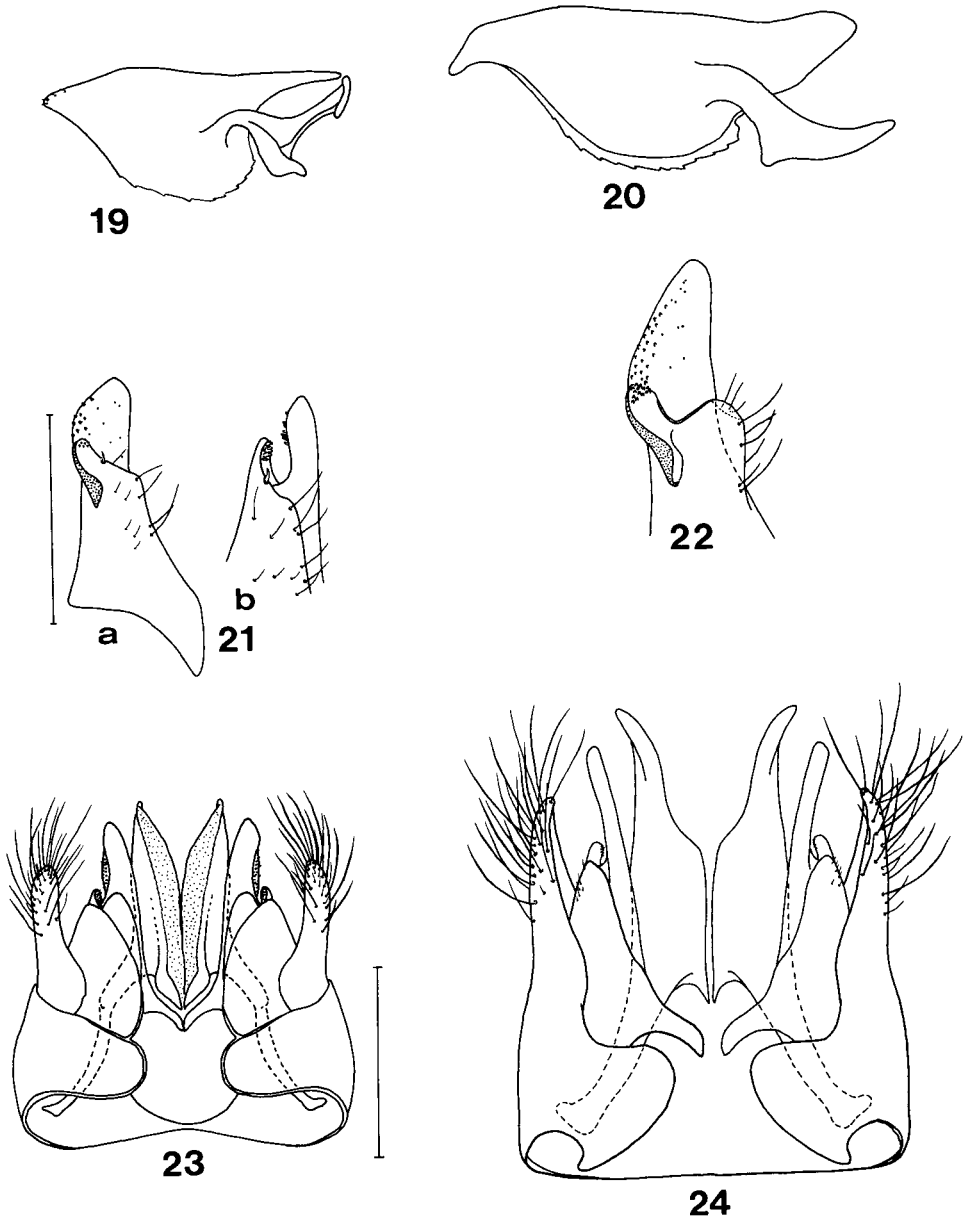
Pronotum moderately shiny, sides and dorsal margin closely micropunctate, neck with punctures very obscure. Parapsis shiny, with close micropunctures and sparse coarse punctures; mesoscutal disc shiny, with sparse micropunctures, nearly impunctate in middle. Scutellum shiny, with scattered micropunctures and a few coarse punctures (from which the long hairs arise). Anepisternum and katepisternum moderately shiny between close micropunctures and sparse coarse, piliferous punctures. Propodeum dull, densely shagreened and closely micropunctate.

First three terga shiny between close micropunctures and scattered coarse punctures, punctures a little more separated and less distinct on second segment.

Color: Yellow, frontal area of head light brown; appendages paler yellow. Wings clear, veins and stigma light to medium brown.

*Male*.—Measurements: HL 0.62–0.70 (0.66); HW 0.53–0.60 (0.57); SL 0.66–0.73 (0.66); EL 0.28–0.30 (0.30); OMD 0.10–0.15 (0.13); WL 1.23–1.40 (1.30); PW 0.70–0.80 (0.77) mm.

Head: Margins slightly convergent toward mandibular insertions; distinctly longer than broad, CI 79–88 (85); a little shorter than, to a little longer than, scape, SI 95–114 (100); OMD 0.33–0.50 (0.44) × EL; anterior ocellus little smaller than lateral ocelli; IOD 2.50–3.50 (3.00) × OD; OOD 1.00 × OD. Mandible without preapical teeth, preapical notch weak or absent. Clypeus usually with transverse preapical depression.



Figs. 19–24. *Myrmecocystus* spp., male terminalia, 19–20, aedeagus in profile: 19, *M. arenarius* and 20, *M. christineae*; same scale as 23–24. 21–22, inner view of volsella (and ventral view, 21): 21, *M. arenarius* and 22, *M. christineae*; scale = 0.125 mm. 23, 24, genital capsule, ventral view: 23, *M. arenarius* and 24, *M. christineae*; scale = 0.25 mm.

Thorax: Stout, PW 0.52–0.59 (0.59) × WL. Propodeum, in profile, without defined basal face.

Petiole: Sharply cuneate in profile; in frontal view, crest weakly notched; in dorsal view about twice wider than long.

Vestiture: Erect hairs short and sparse on clypeus, absent from frontal lobes; a single pair, short and suberect, in ocellar area; absent from mesoscutum; four to six short, suberect hairs on scutellum; first three terga without erect hairs, but with sparse, decumbent hairs; remaining terga and the sterna with moderately long, suberect to erect sparse hairs. Hairs of tibiae short, fine and decumbent to appressed. Scape with appressed pubescence only. Wings as in female.

Integument: Moderately shiny on most areas, shiny between notaulices, with sparse piligerous micropunctures: scattered coarse punctures on mesokatepisternum.

Color: Uniformly brownish; appendages pale yellowish. Wings clear, veins and stigma light brown.

Terminalia: Figures 20, 22, 24.

#### Type Material

Holotype worker, Morningstar Mine Rd., elev. 4200'–4260', 9.5 mi NNE Cima, San Bernardino Co., CALIF., 14 Apr. 1977 (C. D. George and R. R. Snelling; RRS No. 77-9); allotype male, same data but RRS No. 77-10; holotype and allotype in LACM. Paratypes: 16 females, 724 workers, 68 males, same data, RRS No. 77-9, 10, 16. Paratypes in AMNH, GCW, LACM, MCZ, USNM.

#### Etymology

This species is dedicated to Christine D. George who materially assisted in collecting and studying this new species and who is currently investigating *Myrmecocystus* ecology in the Mojave Desert.

#### Distribution

At present known only from the Ivanpah Mountains of the Mojave Desert. The species probably occurs in suitable habitats of adjacent ranges in California and Nevada.

#### Discussion

In my revision of *Myrmecocystus* the nominate subgenus was divided into the *mexicanus*, *pyramicus* and *testaceus* species groups. The present species appears to be annectant between the *mexicanus* group and the *pyramicus* group. The mesosomal profile of the worker is very similar to that of *mexicanus* group species, as is the number of mandibular teeth of the female and worker. The displacement of the eyes of the worker toward the occipital margin is about as in the *pyramicus* group, although this is shared with *navajo* in the *mexicanus* group. The great reduction in erect body hairs in both female and worker accords with the *pyramicus* group.

Following is a revised key to the species of *Myrmecocystus* s. str. to include *M. christineae*.

#### Key to Species of *Myrmecocystus* S. Str.

##### Workers

1. Dorsal surface of propodeum strongly, angularly projected upward over posterior two-thirds; erect hairs very sparse, with few or none on outer face of hind tibia; upper eye margin little below upper margin of head . . . 2

- Dorsal surface of propodeum either flat or evenly convex; body often abundantly hairy; upper eye margin usually well below upper margin of head ..... 3
- 2. With at least two erect pronotal hairs as long as apical breadth of scape; first tergum with a few erect hairs on disc; hind tibia with a few erect hairs on outer face beyond basal third ..... *ewarti* Snelling
- Erect pronotal hairs, when present, shorter than apical breadth of scape; first tergum without erect discal hairs; hind tibia without erect hairs on outer face beyond basal third ..... *pyramicus* M. Smith
- 3. Fully erect hairs conspicuous on thoracic dorsum, discs of first and second terga and on scape and tibiae ..... 4
- No erect hairs on thoracic dorsum, discs of first and second terga, scape or tibiae ..... *christineae* n. sp.
- 4. Head, pronotum and gaster with abundant appressed pubescence; mid and hind tibiae usually with numerous erect hairs along apical half of outer face; upper eye margin often distinctly below occipital corner; if metanotal suture impressed, HL exceeds 1.3 mm ..... 5
- Head, pronotum and gaster shiny, with little or no appressed pubescence; mid and hind tibiae with not more than 3 or 4 erect hairs beyond basal third of outer face, usually none; upper eye margin coincident with occipital corner; metanotal suture deeply impressed and dorsal face of propodeum convex ..... *navajo* Wheeler
- 5. Large, highly polymorphic species, HL 1.0–2.0 mm or more, usually in excess of 1.3 mm; metanotal suture usually impressed and propodeum as long as high or longer, juncture of dorsal and posterior faces broadly rounded ..... 6
- Smaller, moderately polymorphic species, HL 0.8–1.4 mm; metanotal suture not impressed; propodeum higher than long, juncture of dorsal and posterior faces abruptly rounded, often subangulate ..... *testaceus* Emery
- 6. Eye with numerous erect hairs which are longer than diameter of ocular facets; mandible with 8 or 9 teeth; color uniformly brownish, gaster a little darker ..... *melanoticus* Wheeler
- Eye with erect hairs, when present, very diffuse, length less than diameter of ocular facets; mandible with 9 or 10 teeth; color usually distinctly yellow, but may be extensively brownish in southern populations ..... *mexicanus* Wesmael

#### Females

1. Fifth segment of maxillary palp broadest in middle, narrowed basally and apically; hind femur without erect hairs on dorsal surface; hind tibia with hairs decumbent, never fully erect ..... 2
- Fifth segment of maxillary palp broadest well basad of middle, gradually narrowed toward apex or parallel sided; hind femur with erect hairs on dorsal surface; hind tibia with abundant fully erect and suberect hairs .... 5
2. Antennal scape with decumbent or appressed hairs only except a few erect hairs at tip; ocelli normal, OD less than 0.12 mm ..... 3

- Antennal scape with conspicuous coarse erect and suberect hairs; ocelli large, OD greater than 0.15 mm ..... *navajo* Wheeler
- 3. Fourth segment of maxillary palp gradually widened from base to apex; fine punctures of parapsis abundant and uniformly spaced (Figs. 17, 18); side of frontal lobe shiny between close, fine punctures ..... 4
- Fourth segment of maxillary palp distinctly clavate (Fig. 9); fine punctures of parapsis very irregularly spaced (Fig. 16); side of frontal lobe dull and roughened between fine punctures which are at least partially obscured ..... *christineae* n. sp.
- 4. Fine punctures of parapsis conspicuously coarser than those of disc of mesoscutum (Fig. 17); first tergum with fewer than 6 erect hairs on disc, often none; interocellar distance about equal to ocellocular distance .... *pyramicus* M. Smith
- Fine punctures of parapsis not obviously coarser than those of disc of mesoscutum (Fig. 18); first tergum with at least 12 erect to suberect hairs on disc; interocellar distance less than ocellocular distance .. *ewarti* Snelling
- 5. Thorax and gaster brown, legs usually yellowish; HW usually less than 1.85 mm; penultimate segment of maxillary palp slender, parallel-sided ..... *testaceus* Emery
- Thorax and gaster light brownish yellow to yellow, legs concolorous with thorax; HW 1.90 mm or more; usually more than 2.0 mm; penultimate segment of maxillary palp distinctly broadest basad ... *mexicanus* Wesmael

Males

- 1. Scape and tibia without conspicuous standing hairs; hind wing with fringe hairs on posterior margin ..... 2
- Scape always and tibia usually with conspicuous standing hairs; posterior margin of hind wing variable ..... 4
- 2. Forewing with conspicuous fringe hairs along apical margin; HL less than 0.80 mm ..... 3
- Forewing without fringe hairs along apical margin; HL in excess of 0.90 mm ..... *pyramicus* M. Smith
- 3. Mesopleuron shiny, indistinctly, or not at all, shagreened; forewing usually with discoidal cell ..... *ewarti* Snelling
- Mesopleuron slightly shiny, distinctly shagreened; forewing without discoidal cell ..... *christineae* n. sp.
- 4. Occipital hairs shorter than maximum diameter of lateral ocellus; posterior and/or apical margins of hind wing with at least a few long fringe hairs .. 5
- Many occipital hairs longer than maximum diameter of lateral ocellus; hind wing without fringe hairs ..... *testaceus* Emery
- 5. Small species, HW less than 0.8 mm; scape with scattered erect hairs, tibia with numerous decumbent hairs; apical margin of forewing without fringe hairs ..... *navajo* Wheeler
- Large species, HW greater than 0.9 mm; scape and tibia usually with abundant erect or suberect hairs; if erect hairs reduced or absent, apical margin of forewing with at least vestiges of fringe ..... *mexicanus* Wesmael and *melanoticus* Wheeler

## Literature Cited

Snelling, Roy R. 1976. A revision of the honey ants, genus *Myrmecocystus* (Hymenoptera: Formicidae). Nat. Hist. Mus. Los Angeles Co. Bull., 24:1-163.

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*Natural History Museum of Los Angeles County, 900 Exposition Blvd., Los Angeles, California 90007.*