

*Myrmecocystus (Eremnocystus) creightoni* Snelling

Figures 212–220, 259–262

*Myrmecocystus lugubris*, Wheeler and Wheeler 1968, Entomol. Soc. Amer. Ann. 61:213 (larva (*misidentification*)).

*Myrmecocystus creightoni* Snelling 1971, Contr. Sci., L.A. Co. Mus., 214:6–11. ♀♀♂; Wheeler and Wheeler 1973, Ants of Deep Canyon, 120.

**Diagnosis.** *Worker*: Antennal scape with numerous fine, reclinate hairs, standing hairs absent or confined to apical one-sixth; dorsal face of propodeum without erect hairs; pronotum with two or no erect hairs. *Female*: Mesoscutum finely, uniformly densely punctate; wings without marginal fringe hairs. *Male*: Tibiae and scape without erect hairs; wings with marginal fringe hairs.

**WORKER.** *Measurements.* HL 0.73–1.03 (0.90); HW 0.60–0.93 (0.80); SL 0.80–1.13 (1.00); WL 0.96–1.50 (1.30); PW 0.40–0.63 (0.56).

**Head:** Sides straight (slightly convex in largest workers), converging slightly toward mandibular insertion, longer than broad in all sizes, CI 78–93 (88); somewhat shorter than scape, SI 108–138 (125). Occiput broadly flattened in frontal view, with poorly indicated lateral corners. Eye small, about as long as first flagellomere; OMD 1.36–2.00 (1.45) × EL. Mandible with seven teeth on cutting margin, rarely with a minute intercalary denticle between basal and penultimate teeth.

**Thorax:** Slender to moderately robust, PW 0.36–0.50 × WL (0.41). In larger workers rear of mesonotum dropping sharply to metanotum. Basal face of propodeum as long as posterior face or slightly shorter, juncture of two faces distinctly rounded.

**Petiole:** Erect, in profile about twice higher than thick, not at all cuneate, summit rounded; crest flat in frontal view, not, or barely, impressed in middle; in dorsal view about twice as wide as thick.

**Vestiture:** Pubescence scattered on malar area, frons and occiput, nowhere concealing surface, longer than OD; longer and denser on thorax, especially on side of propodeum, longer and denser on gaster, but usually not concealing surface, sparse at sides of terga.

Hairs on scape abundant, reclinate (rarely fully erect); occipital hairs shorter than maximum thickness of hind femur; thoracic dorsum usually lacking erect hairs, but three or four inconspicuous ones may be present toward sides; petiolar crest without conspicuous erect hairs; first tergum with erect discal hairs shorter than minimum thickness of hind femur; inner face of fore femur without erect hairs; outer face of middle and hind tibiae with few or no erect hairs.

**Integument:** Polished on clypeus, malar area and frons, duller on occiput, with scattered fine piligerous punctures on frons, clypeus and malar area, those on malar area often coarse and elongate. Thorax less shiny than head, densely shagreened, especially on

sides of propodeum; gaster moderately shiny, densely and finely shagreened.

**Color:** Uniformly medium to dark brownish, legs lighter; mandibles and lateral clypeal lobes lighter, often yellowish.

**FEMALE.** *Measurements.* HL 1.40; HW 1.43–1.46; SL 1.33; EL 0.40–0.43; OMD 0.50; WL 2.7–2.9; PW 1.8–1.9.

**Head:** In full face view with margins straight, converging slightly toward mandibular insertions, broad, CI 102–104; a little longer than scape, SI 90–93. Occiput, in frontal view, broad, flat, with rounded lateral angles. Eye small, barely longer than first flagellomere; OMD 1.15–1.25 × EL. IOD 3 × OD; OOD 3.5 × OD. Mandible with seven teeth.

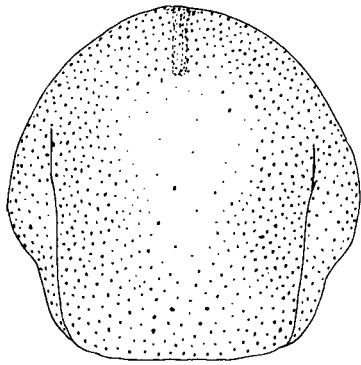
**Thorax:** Robust, PW 0.65–0.66 × WL. In profile, posterior two-thirds of mesoscutum slightly convex, more flattened caudad, posterior margin below anterior margin of scutellum; scutellum, in profile, broadly convex; metanotum not protruding.

**Petiole:** In profile, compressed, about twice as high as thick at level of spiracle, crest thin; in frontal view, deeply notched; from above about 3.5 × wider than thick.

**Vestiture:** Cephalic pubescence yellowish, as long or longer than an ocellar diameter, much of it reclinate rather than appressed; scattered, not obscuring surface except on malar area above mandibular insertions. Thoracic and gastric pubescence white, appressed to reclinate; long, not concealing surface, but quite dense on gaster.

Scape hairs reclinate; malar area with a few long erect hairs in frontal view; thoracic dorsum with numerous erect yellowish hairs, longest on scutellum; erect hairs on disc of first tergum no longer than basal thickness of hind tibia; petiolar scale with a few short erect hairs on crest; fore femur without erect hairs on inner face; middle and hind tibiae with abundant suberect hairs on outer face. Wings without marginal fringe, but membrane with abundant short, erect hairs.

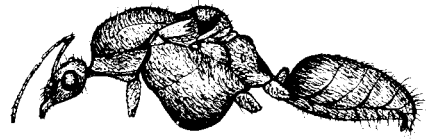
**Integument:** Head shiny, with coarse setigerous punctures on clypeus and upper half of malar area; frons and occiput with fine, well separated piligerous punctures; frontal lobes with dense, fine, punctures. Pronotum finely and densely punctate; mesopleura moderately shiny, densely shagreened, with fine punctures peripherally and scattered coarse, setigerous punctures; metapleura duller, densely shagreened, abundantly punctate, punctures finer than those in middle of mesopleura; mesoscutum densely, finely punctate, except for sparsely punctate area along midline, punctures of parapsis sparser than those of disc; mesoscutellar punctures equal to those of mesoscutum, sparser in middle; metanotum dull, closely shagreened and micropunctate; propodeum slightly shiny, roughened and closely shagreened. Gaster moderately shiny, with fine, dense piligerous punctures.



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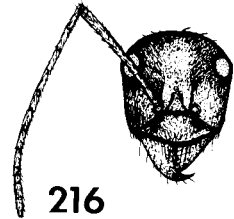
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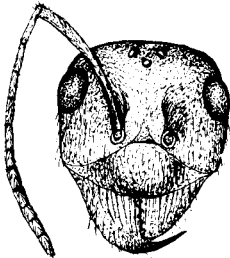
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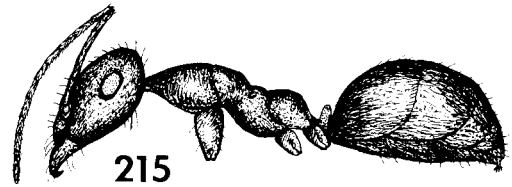
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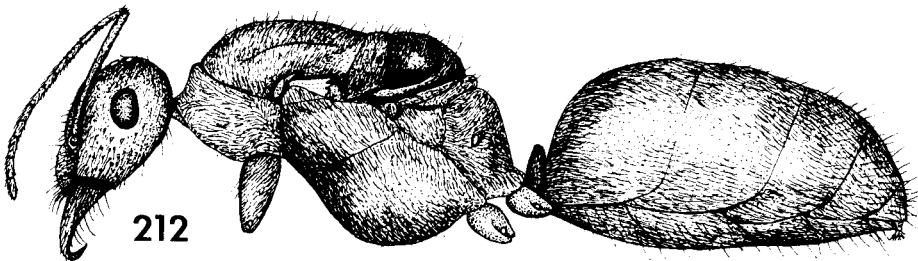
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FIGURES 212–220. *M. creightoni*. 212, female, lateral view; 213, head of female, frontal view; 214, mesoscutum of female, distribution of punctures; 215, major worker, lateral view; 216, head of major worker, frontal view; 217, head of minor worker, frontal view; 218, petiole of major worker, lateral (left) and posterior (right) views; 219, male, lateral view; 220, head of male, frontal view.

*Color:* Uniformly light brownish except for yellowish mandible, lateral clypeal lobes and lower half, or less, of gena. Wings hyaline, veins and stigma light brownish.

*MALE. Measurements.* HL 0.63–0.71; HW 0.60–0.63; SL 0.70–0.73; EL 0.23–0.25; OMD 0.13–0.15; WL 1.53–1.66; PW 0.93–1.00.

*Head:* In full face view, sides strongly convergent toward mandibular insertions, margins straight; head a little longer than broad, CI 90–94; distinctly shorter than scape, SI 114–115; OMD  $0.56\text{--}0.60 \times \text{EL}$ ; ocelli subequal to one another; IOD  $3.5\text{--}4.0 \times \text{OD}$ ; OOD  $2.5\text{--}3.0 \times \text{OD}$ . Mandibular margin simple, with preapical notch and two small denticulae basad, apical tooth as broad at base as long. Clypeus usually without preapical transverse depression.

*Petiole:* Scale in profile higher than long, evenly thick from base to near summit where it is narrowly rounded to slightly angulate; crest, seen from front, angulate at sides, broadly and rather deeply emarginate; in dorsal view, about  $2.25 \times$  wider than long.

*Vesiture:* White, appressed pubescence long, sparse on head and thoracic dorsum; more abundant on thoracic pleura, particularly on propodeum; longest on gaster, but nowhere concealing surface.

Erect hairs sparse, short on head and thorax, yellowish. Middle of first tergum, in profile, with abundant very short, suberect whitish hairs; terga with scattered long to very long yellowish hairs, especially caudad and ventrally. Fore and hind wings fringed along apical and hind margins.

*Integument:* Head shiny, with scattered fine punctures. Mesoscutum shiny with sparse, fine punctures; propodeum, meso- and metapleura duller, densely shagreened, with scattered fine punctures; scutellum with a few very fine punctures. Gaster shiny, finely piligerously punctate.

*Color:* Uniformly light to very dark brownish, appendages and mandibles lighter. Wings hyaline, veins and stigma light brownish.

*Terminalia:* Figures 260–262.

*Type Material.* Holotype, allotype, and numerous paratypes of all castes, 2 mi S Pearblossom, 3500', Los Angeles Co., CALIF., 12 Feb. 1967 (R. R. Snelling). Holotype, allotype, most paratypes in LACM; paratypes in AMNH, GCW, MCZ, MNHG, REG, USNM.

*Distribution.* Known only from California, low elevations in the mountain ranges along western fringes of Mojave and Colorado deserts (Fig. 368).

*Localities. UNITED STATES. California: Kern Co.:* Short Cyn., 3500', 3 Nov. 1967 (R. R. Snelling, No. 67–270; LACM); Freeman, 3100', 3 May 1952 (W. S. Creighton; AMNH, LACM). *Los Angeles Co.:* 2 mi S Pearblossom, 3500', 12 Feb. 1967 (R. R. Snelling; LACM; type series of *creightoni*); same locality, 20 Mar. 1966 (R. R. Snelling; LACM); 4 mi SE Pearblossom, 4300', 20 Mar. 1966 (R. R.

Snelling; LACM); 6 mi SE Pearblossom, 3500', 16 Mar. 1972 (R. R. Snelling, No. 72–8; LACM). *San Bernardino Co.:* 7 mi SE Joshua Tree, 7 Sept. 1967 (R. J. Hamton; LACM, RJH). *Riverside Co.:* Dos Palmas, 3700', 8 Mar. 1970 (G. C. and J. Wheeler, Nos. Calif. 854, 857; GCW); Black Hill, 3000', 9, 11, Mar. 1970 (G. C. and J. Wheeler; Nos. Calif. 863, 868, 871; GCW); Riverside, May 1973 (B. Pullen; LACM); 8.6 mi E Temecula, 7 Mar. 1973 (R. Duffield; LACM).

*Ecology.* This species has been found in areas ranging from Juniper-Sagebrush Desert to Coastal Sagebrush. Elevation extends from about 850' to 4300'. Nest sites vary from compact clayey soil to coarse sand and are marked by a low crater. Those which are located on slopes and in heavy soil usually are not more than about three feet deep and repletes are present in the lower chambers. Nests situated in the deep sand of stream beds may exceed depths of four feet.

Foraging by this species is both matinal and crepuscular. Workers emerge shortly before sunrise and continue to be active until the surface temperature reaches about 75–80°F. In the afternoon, activity is resumed about 30–45 minutes prior to sunset, sometimes as much as 90 minutes before sunset if the soil surface is cool enough. Aphids on low vegetation are solicited for honeydew and nectar is gathered directly from plants. Large quantities of arthropod fragments are brought back to the nest.

Mating flights are known to take place in early spring after a light rain. The time of day at which the flight occurs is not known. The seasonal presence of sexuals is noted in Table 6.

*Discussion.* This species appears to be most closely allied to *yuma*. Workers differ from those of that species in lacking erect hairs on the dorsum of the propodeum. In addition, workers of *yuma* possess six-eight erect hairs each on the pronotum and mesonotum; rarely a pair of very short, fine hairs may be present on the pronotum of *creightoni*, but the mesonotum seems always to lack erect hairs. Although *lugubris* workers also lack erect hairs on the pronotum and mesonotum, the petiolar scale is much more compressed than in *creightoni*.

The female of *creightoni* has the mesoscutum uniformly closely and finely punctate, without a defined median impunctate area. In this respect it agrees with the females of *colei*, but the mid and hind femora of *colei* have abundant erect hairs on all surfaces. The shape of the fourth and fifth segments of the maxillary palpus is as in *yuma*. The punctures of the upper half of the head are coarser and much sparser than in that species.

Males are poorly known in this subgenus. Those of *hammettensis* and *colei* lack fringe hairs on the apical margin of the forewing, present in *creightoni*. Males are not known for *lugubris*, *perimeces*, *tenuinodis* and *yuma*.

The larva has been described, as *lugubris*, by Wheeler and Wheeler (1968). The description was based on material from the type nest originally misidentified by me.

*Myrmecocystus (Eremnocystus) hammettensis* Cole

Figures 221–229, 263–266

*Myrmecocystus yuma*, Cole 1934. Psyche 41:225. ♀ (misidentification).

*Myrmecocystus hammettensis* Cole 1938. Amer. Midl. Nat. 19:678–681. ♀ ♀♂; Creighton 1950. Bull. Mus. Comp. Zool. 104:443.

**Diagnosis. Worker:** Scape, malar area and propodeum with abundant erect hairs; petiolar scale erect but not compressed; erect pronotal hairs abundant, acuminate; hind femur with abundant erect hairs on inner face. **Female:** Mesoscutum polished, with scattered coarse, piligerous punctures; occiput shiny, with scattered fine punctures; mid and hind femora with abundant erect hairs on all faces; forewing with abundant fine, erect, very short hairs on membrane. **Male:** Forewing with fringe hairs along costal margin to vein A; hindwing with fringe on posterior margin; membrane with inconspicuous erect hairs or none; scape, hind femur and tibia with erect hairs; petiolar crest with broad, shallow median emargination.

**WORKER. Measurements.** HL 0.66–1.10 (1.08); HW 0.60–1.10 (1.07); SL 0.73–1.16 (1.13); WL 0.80–1.43 (1.33); PW 0.40–0.70 (0.70).

**Head:** Varying from distinctly longer than wide in smallest workers to as long as wide in largest, CI 85–100 (99); in full face view, sides nearly straight and slightly convergent toward mandibular base in smallest, gently convex in largest; occiput flat, broadly rounded at sides; shorter than scape, SI 103–117 (105). Eye small, only slightly longer than first flagellomere; OMD 1.43–1.88 (1.73) × EL. Mandible septendentate, sometimes with intercalary denticle between basal and penultimate basal teeth.

**Thorax:** Moderately robust, PW 0.44–0.53 (0.53) × WL. Mesonotum, in profile, gently and evenly convex from front to back. Basal face of propodeum distinct, juncture with posterior face subangulate to narrowly rounded.

**Petiole:** Scale, in profile, erect, about twice higher than thick, somewhat compressed above; crest narrowed above in frontal view, without median emargination or with shallow, broad one; from above about twice wider than thick.

**Vestiture:** Pubescence sparse on head, a little denser on occiput than elsewhere; long and dense, but not concealing surface, on thorax; dense on first two terga, sparse on third and following segments, except in some large workers which may possess a dilute sheen on third.

Erect hairs numerous on all head surfaces, with 10+ on malar area; scape and all surfaces of femora and tibiae with abundant erect hairs; promesonotum with abundant erect hairs, metanotum with few or none; propodeum with abundant erect hairs on summit of declivity and usually a few along sides of declivity. Petiolar scale with erect hairs along sides and on crest. Terga with numerous discal hairs, becoming progressively longer on succeeding segments.

**Integument:** Clypeus shiny, with scattered coarse and fine piligerous punctures; remainder of head less shiny, very lightly and irregularly shagreened, with scattered piligerous punctures; frontal lobes without conspicuous dense, fine punctures. Thorax slightly shiny, with obvious, dense shagreening. Gaster slightly shiny, with fine, often obscure shagreening.

**Color:** Light brownish to blackish brown, appendages lighter; mandibles, sides of clypeus and adjacent portion of malar area yellowish, mandibular teeth dark.

**FEMALE. Measurements.** HL 1.30; HW 1.43; SL 1.26; EL 0.36; OMD 0.53; WL 2.90; PW 1.56.

**Head:** Broader than long, CI 110; in full face view sides very slightly convex and slightly narrowed toward mandibular bases; occiput flat in frontal view, broadly rounded at sides; slightly longer than scape, SI 98. EL 1.57 × length of first flagellomere; OMD 1.45 × EL. Lateral ocelli slightly smaller than anterior ocellus; IOD and OOD 3.0 × OD. Mandible septendentate. Penultimate maxillary palpal segment nearly parallel sided, but margins slightly convergent in apical fourth; fourth segment evenly broadened from base, broadest preapically, narrowed toward apex, greatest width about twice basal width.

**Thorax:** Robust, PW 0.68 × WL. Posterior half of mesoscutum flattened and continuous with scutellum, forming an even plane, abruptly rounded toward metanotum along posterior margin. Basal portion of propodeum sloping and broadly rounded onto declivitous face.

**Petiole:** In profile, somewhat compressed above, crest narrowly rounded; in frontal view, sides a little convergent above; median emargination angulate, deep, broad; from above about 3 times wider than long.

**Vestiture:** Pubescence sparse, decumbent on head and most of thorax, dense, long, appressed on propodeum, first three terga with pubescence sparse, but sufficiently dense to impart a feeble sheen, virtually absent from following segments.

Scape, femora and tibiae with abundant erect hairs on all surfaces. Malar area with numerous erect and suberect hairs in frontal view; short, erect hairs present on all remaining head surfaces, occipital hairs longest, at least a few as much as 0.5 × MOD. Scutum with scattered erect hairs, longest less than 0.5 × MOD; scutellum with scattered erect hairs, some more than twice longer than longest scutal hairs; pleura with scattered erect hairs; propodeum with erect hairs on base