

TABLE 3
Activity of Reproductives of:

Locality	Date	Activity
<i>M. mimicus</i> Wheeler		
N.MEX., Jornada Exp. Range	26-27 Feb. 1972	♂♂, ♀♀ in nest
N.MEX., Jornada Exp. Range	26 July 1972	♂♂, ♀♀ mating flight
N.MEX., 0.6 mi S Cuervo	21 Aug. 1967	♀♀ in nest
ARIZ., 7 mi E Robles Jct.	24 Feb. 1968	♂♂, ♀♀ in nest
ARIZ., Texas Cyn.	11 Aug. 1967	♂♂ in nest
CALIF., 8.6 mi E Temecula	7 Mar. 1973	♂♂, ♀♀ in nest
CALIF., 5.8 mi W Kettleman City	25 Mar. 1967	♂♂, ♀♀ in nest
CALIF., 1 mi N Warner Spgs.	28 Mar. 1963	♀♀ in nest
CALIF., 9 mi E Temecula	3 May 1969	♂♂, ♀♀ in nest
CALIF., 1 mi N Warner Spgs.	3 May 1969	♀♀ in nest
B. CALIF., 5 mi S Rosarito	14 May 1952	♀♀ in nest
<i>M. kennedyi</i> Cole		
IDA., Indian Cove	12 Apr. 1932	♂♂, ♀♀ in nest
IDA., 1.6 mi W Hammett	19 June 1967	♀♀ in nest
ORE., Alkali Lake	9 June 1967	♂♂ in nest
NEV., near Fallon	25 Mar. 1956	♂♂, ♀♀ in nest
NEV., Riverside	2 Apr. 1970	♂♂, ♀♀ in nest
NEV., 3 mi E Fallon	29 Apr. 1965	♂♂ in nest
NEV., Nevada Dominion Mine	8 May 1951	♂♂, ♀♀ in nest
CALIF., 5 mi E Thousand Palms	16 Feb. 1963	mating flight after rain
CALIF., Twentynine Palms	6 Nov. 1967	♂♂, ♀♀ in nest

have an average EL of 0.244 mm, those from southern California average 0.267 mm and those from the Punta Peñasco area of Sonora average 0.247 mm. The similar, and closely related *nequazcatl* has an average EL of 0.267 mm. The apparently reversed cline of *kennedyi* may be an example of "character displacement". However, until sympatric populations of the two species, if such exist, can be studied this phenomenon, as described by Brown and Wilson (1956) is not definitely demonstrated.

Myrmecocystus (Endioidictes) nequazcatl
new species

Figures 109-116, 162, 174, 186, 194

Diagnosis. Worker: Malar area with fewer than three erect hairs in frontal view; head polished, sparsely punctate, especially on vertex; promesonotal hairs long, some equal to EL; third tergum usually closely pubescent; CI less than 90 in more than 90% of specimens. *Female.* Mesoscutal disc polished, with scattered punctures; parapsis with punctures of two sizes, sparse except near parapsidal line; penultimate segment of maxillary palp slender, broadest near middle, more strongly tapering apicad; mesoscutal hairs long. *Male.* Terga polished and shiny, sparsely pubescent; mesoscutal hairs long; lobe of aedeagus convex below, finely dentate.

WORKER. Measurements. HL 0.98-1.34 (1.34); HW 0.83-1.23 (1.23); SL 1.20-1.50 (1.50); WL 1.6-2.3 (2.3); PW 0.6-1.0 (1.0).

Head: Longer than broad, CI 83-93 (93) (89 or less in over 90% of specimens), shorter than scape, SI 108-124 (112); sides in frontal view, straight or slightly convex, slightly convergent toward mandibular base. Occiput, in frontal view, flat or slightly convex, without perceptible lateral angles. Eye small, 1.0-1.1 × first flagellomere; OMD 1.50-2.00 (1.80) × EL. Mandible with seven teeth.

Thorax: Slender, PW 0.38-0.45 (0.44) × WL. Mesonotal profile even. In profile, basal face of propodeum flat, meeting posterior face in narrowly rounded angulation of about 130°.

Petiole: Node, in profile, with anterior and posterior face parallel below, anterior face sloping back in upper half to broadly rounded summit; in frontal view, crest flat or gently convex, without median notch.

Vestiture: Pubescence sparse on head, abundant on thorax and first two or three terga.

Cephalic hairs abundant on frons and occiput, slender, flexuous on latter, some occipital hairs about equal to EL; malar area with one or two hairs near mandibular base. Promesonotum with numerous long, slender, flexuous hairs, some about as long as MOD; base and side of propodeum with shorter flexuous hairs. Side and crest of petiole with flexuous hairs about equal to those of propodeum. Terga with numerous long hairs,

longest on disc of second segment more than $0.5 \times$ MOD; longer on apical segments and on sterna. Scape, femora and tibiae with abundant, short, suberect to erect hairs.

Integument: Head moderately shiny, lightly shagreened, with scattered fine punctures in malar area and on face below vertex, vertex virtually impunctate; frontal lobes with abundant very fine punctures. Thorax slightly shiny, lightly shagreened and closely micropunctate. First two terga slightly shiny, lightly shagreened and densely micropunctate; third tergum either (a) shinier and more lightly shagreened, closely micropunctate or (b) subpolished, hardly shagreened and with scattered micropunctures.

Color: Head, thorax, petiole and appendages bright ferruginous; gaster blackish, often with base of first tergum lighter.

FEMALE. Measurements. HL 1.9; HW 1.9; SL 1.8; EL 0.4; OMD 0.7; WL 4.2; PW 2.9.

Head: As broad as long, CI 100, slightly longer than scape; SI 92.5. In frontal view, margins straight, convergent below. Occiput broadly, evenly convex. Eye small, about $1.4 \times$ length of first flagellomere; OMD $1.6 \times$ EL. IOD $3.1 \times$ OD; OOD $4.3 \times$ OD. Penultimate segment of maxillary palp regularly spindle-shaped, slightly narrower at apex than at base.

Thorax: Stout, PW $0.45 \times$ WL. In profile, posterior half of mesoscutum gently convex, apical margin on same plane as anterior margin of flattened scutellum. Metanotal profile separated from that of scutellum.

Petiole: In profile compressed-cuneate; crest sharp; distinctly notched; from above about 2.5 times wider than long.

Vestiture: Erect hairs present on all parts of face, least abundant on malar area, with fewer than eight on each side between eye and mandible (excluding exceptionally long hairs from gular area which may be visible), and in area between eye and ocelli; occipital hairs variable in length, but with several which are longer than EL; hairs on frons and clypeus equally variable, but shorter, the longest about equal to MOD. Erect thoracic hairs moderately abundant, some on mesoscutum and many on pleura at least as long as EL; propodeal, petiolar and gastric hairs as described for *wheeleri*. Fore femur with sparse short, fine erect hairs on inner face. All tibiae with numerous suberect hairs which are about as long as minimum thickness of hind tibia. Scape with abundant short erect hair on outer and lower faces. Fore and hind wing without marginal fringe.

Pubescence much as described for *wheeleri*, dense on first four terga.

Integument: Head moderately shiny, surface microreticulate; frontal lobes with close, fine punctures of variable size, separated by a puncture diameter or less; clypeus duller, with scattered coarse, piligerous punctures; malar area more sparsely and coarsely punctate

than frontal lobes. Mesoscutum shiny, impunctate in center, laterally with scattered coarse, piligerous punctures; parapsis with close fine punctures and scattered coarser punctures near parapsides and sparse coarse punctures elsewhere. Scutellum with narrow impunctate median line, otherwise uniformly punctate, punctures fine, round, separated by $1.5-2.0$ puncture diameters; mesopleura slightly shiny, with fine punctures separated by one-fourth to one-half puncture diameter, those of anepisternum coarser than of katepisternum; metapleura and propodeum densely shagreened and roughened, with sparse microscopic and scattered coarser punctures. First four terga densely, finely piligerously punctate, without areas of sparse punctation on first or second segments.

Color. Head brownish ferruginous; thorax and gaster blackish brown; antennae and legs brown. Wings clear, slightly yellowish, subcostal vein dark brownish, remaining veins and stigma yellowish brown.

MALE. Measurements. HL $0.83-0.87$ (0.87); HW $0.83-0.87$ (0.83); SL $0.90-1.00$ (0.97); WL $2.0-2.2$ (2.1); PW $1.2-1.3$ (1.3).

Head: Slightly longer than broad to slightly broader than long, CI 96-102 (96), shorter than scape, SI 106-120 (111); in frontal view, sides straight, evenly convergent toward mandibular bases; occiput, in frontal view, subangulate in middle to evenly convex from side to side, without perceptible lateral angles. OMD $0.78-1.00$ (0.89) \times EL; OOD $2.50-3.25 \times$ OD; IOD $3.50-4.00 \times$ OD. Mandible without preapical notch or basal denticles.

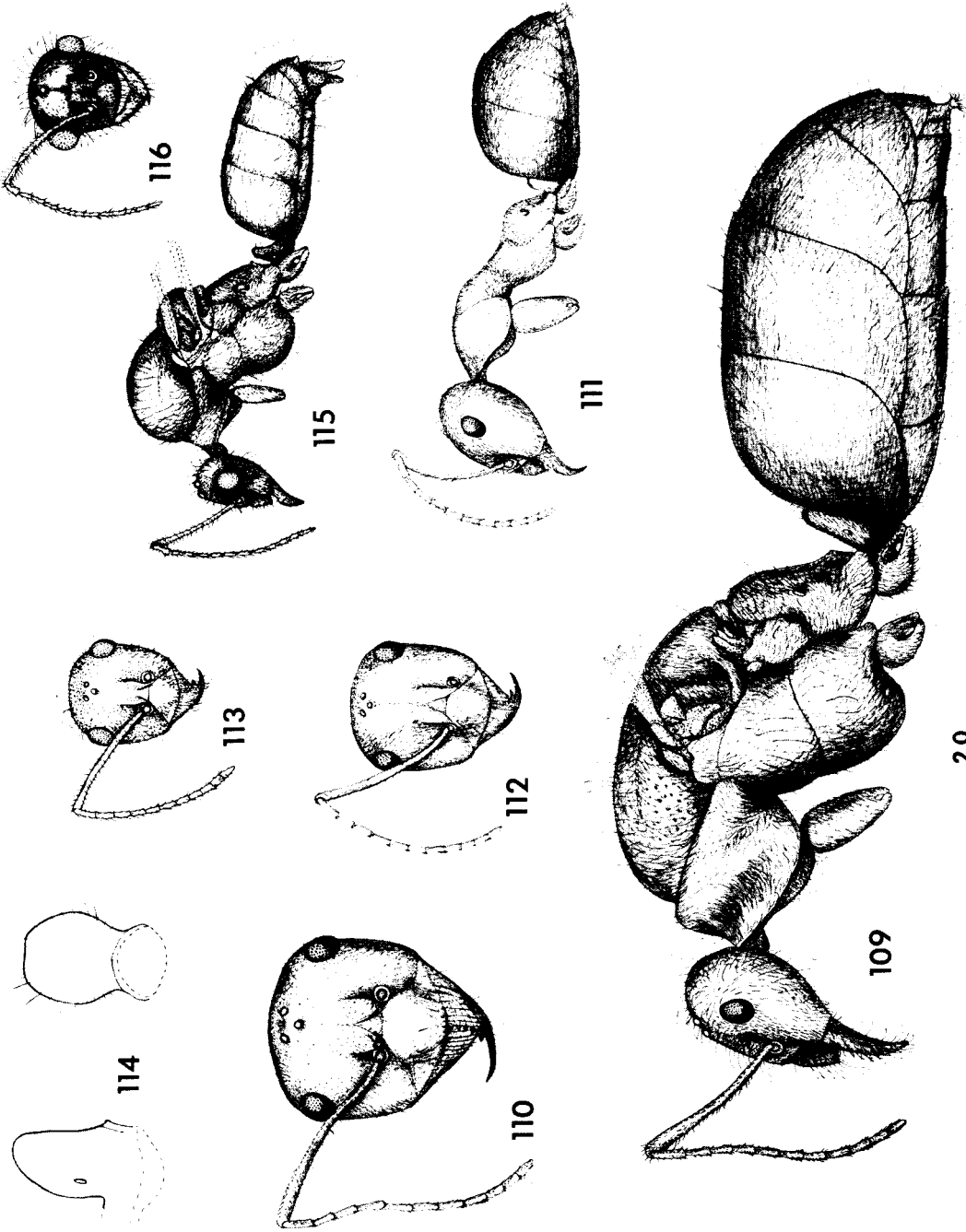
Thorax: Robust, PW $0.59-0.68$ (0.62) \times WL. Propodeum with weakly indicated basal face.

Petiole: In profile, cuneate, summit narrowly rounded; crest, in frontal view, weakly to distinctly notched.

Vestiture: Pubescence everywhere sparse, a little denser on pleura and propodeum.

Pilosity short on frons, longer on malar area and behind eye, longest on occiput, longer occipital hairs about equal to MOD. Mesonotum with numerous long, stiff hairs, longest about equal to MOD; some hairs on scutellum longer, about equal to EL; pleura with numerous long, flexuous hairs, some equal to, or slightly exceeding EL; side of propodeum with numerous long, flexuous hairs, basal face with a few shorter hairs. Petiole with short, erect hairs on sides and crest. Gaster with long, slender, flexuous hairs, longer and more abundant caudad and ventrally. Scape, femora and tibiae with abundant suberect to erect short, stiff, acuminate hairs. Wings without fringe hairs on apical or posterior margins.

Integument: Head moderately shiny, lightly shagreened, more closely so on malar area and behind eye; with scattered piligerous punctures. Discs of scutum and scutellum polished and shiny, parapsis moderately shiny and lightly shagreened. Pronotum,



FIGURES 109-116. *M. nequazzatali*. 109, female, lateral view; 110, head of female, frontal view; 111, major worker, lateral view; 112, head of major worker, frontal view; 113, head of minor worker, frontal view; 114, petiole of major worker, lateral view; 115, male, lateral view; 116, head of male, frontal view.

pleura and propodeum moderately shiny, distinctly shagreened. Terga polished and shiny, with scattered piligerous punctures; sterna very lightly shagreened, a little duller than terga.

Color. Blackish brown; mandibles, antennae and legs light brown. Wings clear, veins and stigma pale yellowish.

Terminalia: Figures 174, 186, 194.

Type Material. Holotype worker, allotype male; 1 female, 12 male, 25 worker paratypes: 1 mi W Desemboque de los Seris, Sonora, MEXICO, 5 Feb. 1972 (E. M. Fisher), in LACM. Additional paratypes: 17 workers, 5 mi S Puerto Libertad, Sonora, MEXICO, 6 Feb. 1972 (E. M. Fisher; LACM); 200 workers, Puerto Libertad, Sonora, MEXICO, 16–17 Apr. 1957 (W. S. Creighton, Nos. 233, 342; LACM). One male, five worker paratypes to AMNH, GCW, MCZ, and USNM.

Etymology. Nequazcatl, the Aztec (Nahuatl) name for the honey ants.

Distribution. Known only from the State of Sonora, Mexico, chiefly from the coast of the Gulf of California, but inland to Hermosillo (Fig. 363).

Additional Localities. MEXICO. Sonora: Hermosillo, 780', 12 Mar. 1969 (R. R. Snelling, No. 69–92; LACM); 10 mi N Hermosillo, 800', 15 June 1951 (W. S. Creighton; LACM); 10 mi S Hermosillo, 700', 10 Nov. 1952 (W. S. Creighton; LACM); 6 mi S Peón, 0', 11 Nov. 1952 (W. S. Creighton; LACM).

Ecology. Habitats for *nequazcatl* include Palo Verde Cactus shrub and coastal sand dune desert. Workers were found foraging at mid-day at Hermosillo. Here, nests were in coarse-grain sandy clay and tumuli up to 25 cm in diameter were composed of coarse sand particles. At Puerto Libertad Creighton found nests situated in deep sand. His notes indicate that the ants construct “. . . a beautiful crater with steep sides and a diameter of about one foot when full-sized.” His notes also indicate that he took a “colytid” (colydiid?) beetle from one nest. This beetle has not been located, but may have been a tenebrionid of the genus *Araeoschizus*.

Alates of both sexes were found on Feb. 5 near Desemboque de los Seris. It may be assumed that the mating flight occurs following spring rains. In all probability there are mating flights in the autumn, coinciding with the rains in October or November.

Discussion. This species most closely resembles such species as *kennedyi*, *kathjuli* and *wheeleri*. From all of these, the worker is separable by the exceptionally long, slender, flexuous pronotal hairs. Larger workers commonly possess abundant appressed pubescence on the third tergum, while smaller workers do not, but this is not consistent. The vertex, particularly between the eye and the ocelli is polished and impunctate in *nequazcatl*. In the other species of this group it is

mostly lightly shagreened and with distinct punctures, especially in *kennedyi*.

In the female, the very sparsely punctate vertex will distinguish that caste from those of the other species. The parapsidal line is shiny and sparsely punctate, except near the parapsidal line, as in *kennedyi*. The closely micro-punctate first tergum will further separate this caste from the female of *kathjuli*; the much longer mesoscutal hairs will distinguish it from *kennedyi* and the black gaster will separate it from *wheeleri*.

The polished, impunctate gastric terga will readily separate the male from those of *kathjuli* and *wheeleri*. From the latter it is further distinguished by the ventrally convex aedeagus which has minute teeth. The minute aedeagal teeth will also serve to distinguish *nequazcatl* from *kathjuli*. The much longer erect mesoscutal hairs will further separate *nequazcatl* from *kennedyi*.

Myrmecocystus (Endiodioctes) wheeleri Snelling

Figures 117–126, 163, 175, 195, 196

Myrmecocystus melliger semirufus var. *testaceus*, Wheeler 1908. Bull. Amer. Nat. Hist. 24:355–356 (in part, misidentification); Wheeler 1912. Psyche 19:174, 176 (misidentification); Cole 1934. Ann. Entomol. Soc. Amer. 27:402 (misidentification); Mallis 1940. Bull. So. Calif. Acad. Sci. 40:81 (in part, misidentification).

Myrmecocystus semirufa, Creighton 1950. Bull. Mus. Comp. Zool. 104:449 (in part, misidentification).

Myrmecocystus melliger semirufus testaceus (sic!), Cook 1953. Ants of California, 345–346 (in part, misidentification).

Myrmecocystus wheeleri Snelling 1971. Contr. Sci., L.A. Co. Mus. 214:11–15. ♀♂; Wheeler & Wheeler 1973. Ants of Deep Canyon, 127.

Diagnosis. Worker: Uniformly orange-ferruginous, rarely legs and gastric apex brownish; longest occipital hairs about equal to EL, longest pronotal hairs about 0.5 × MOD; third tergum densely pubescent; tibial hairs mostly decumbent. Female: penultimate segment of maxillary palp more than twice as wide in basal third as at apex; thorax and gaster extensively ferruginous. Male: ventral lobe of aedeagus concave in profile, coarsely serrate.

WORKER. *Measurements:* HL 0.93–1.26 (1.26); HW 0.83–1.10 (1.10); SL 1.16–1.60 (1.60); WL 1.6–2.0 (2.0); PW 0.60–0.83 (0.83).

Head: A little longer than broad, CI 81–96 (86), distinctly shorter than scape; SI 130–153 (145). In frontal view, head broadest at, or a little below, the eyes, sides straight or slightly, evenly convex, narrowed slightly toward mandibular insertions. Occiput in frontal view broadly rounded laterally, summit slightly convex or flattened. Eye small, barely longer than first flagellomere; OMD 1.5–2.1 (2.1) × EL. Mandible usually with seven teeth.

Thorax: Slender, PW 0.36–0.43 (0.41) × WL. Basal face of propodeum broadly rounded into posterior face.