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A BILATERAL GYNANDROMORPH OF THE WESTERN HARVESTER ANT, *POGONOMYRMEX OCCIDENTALIS* (HYMENOPTERA: FORMICIDAE)

Occasionally an individual with both male and female characteristics is found in an otherwise normally dioecious population of animals, and different terms are used to identify such anomalies. Gynandromorphs are individuals displaying mosaicism for the sex-determining chromosomes, hermaphrodites are individuals with reproductive organs of both sexes, and intersexes are individuals with intermediate phenotypes (White, 1973). Ants have a haplodiploid sex determining mechanism, and the favored hypotheses to explain gynandromorphism are gene dosage effects (homozygosity at some loci) and chromosomal non-disjunction during early embryogenesis. Ant gynandromorphs have been described from 42 species in 22 genera (Jones and Phillips, 1985; and citations therein). Berndt and Kremer (1982) were able to induce the condition in *Monomorium pharaonis* (L.) by heat shocking experimental colonies maintained in the laboratory.

Gynandromorphs have been reported from only two of the 27 species of North American *Pogonomyrmex* harvester ants (Cole, 1968). A specimen of *Pogonomyrmex salinus* Olsen, primarily with a male phenotype, but with a partially feminized head, female coloration on the thorax, and a female petiole was collected in Ely, Nevada. Several specimens of *Pogonomyrmex californicus* (Buckley) from Claremont, California, possessed both male and worker characters (=ergatandromorphs). Herein we describe the first known bilateral gynandromorph of the genus *Pogonomyrmex*.

The unusual specimen of *Pogonomyrmex occidentalis* (Cresson), was collected by the authors on 1 July 1985, 17.6 km west of the junction of U.S. highway 180 and New Mexico highway 78, Grant Co., New Mexico. The abnormal individual was collected from a large, gravelly mound typical of the species, along with 18 workers, 17 males, and 5 females, none of which showed any aberrations. The gynandromorph and its normal nestmates are deposited in the entomological collection at Texas Tech University (Cat. No. 6834).

Female *Pogonomyrmex occidentalis* are concolorous orange, and are sparsely covered with short white setae. The male is densely covered with long, white silky hairs, and is brown except for the gaster, which is orange like that of a female. The left side of the gynandromorph is yellow (not fully sclerotized) and primarily female, and the right side is brown and predominantly male. The head is asymmetric, and has two patches of brown coloration on the female side: one patch extends from the left occiput, passes beneath the compound eye, and terminates at the mandibular insertion; the other patch surrounds the lateral ocellus. On the frontal area the bilateral distinctiveness breaks down: both scapes are male-like in shape and are densely pubescent. The right funiculus is male-like and has partially fused distal segments. The left funiculus has a normal female configuration. The mandibles resemble those of a male: there are five teeth on the right side, and six (the normal male number) on the left. The offset ultimate mandibular tooth, a diagnostic character found on all castes of this species, is lacking in the gynandromorph. Frontal views of a normal female, male, and the gynandromorph are illustrated in Fig. 1, A-C.

Dorsally, the pronotum, scutum, and scutellum are nearly bisected into male and female components. A rectangular patch of light coloration and sparse setation crosses the midline of the scutum anterolaterally and terminates on the right side at the Mayrian furrow (Fig. 1, D and E). The right mesothoracic epimeron displays coloration of both sexes. Faint traces of male

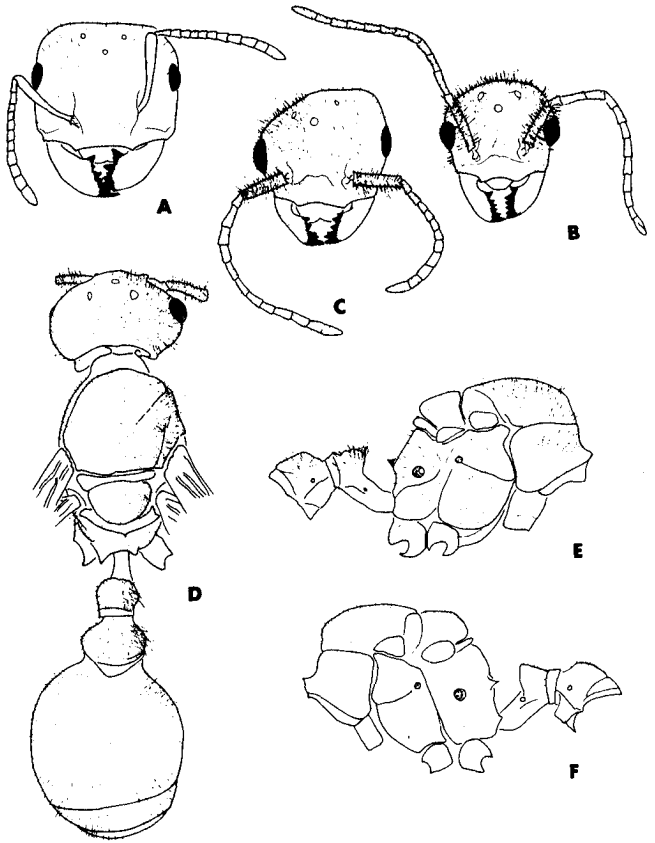

FIG. 1—Harvester ants, *Pogonomyrmex occidentalis* (Cresson), from Grant Co., New Mexico. A = Frontal view of female. B = Frontal view of male. C = Frontal view of gynandromorph. D = Dorsal view of gynandromorph (wings, legs and antennae omitted). E = Right alitrunk of gynandromorph, predominantly male. F = Left alitrunk of gynandromorph, predominantly female.

coloration are found on the left mesothoracic epimeron (Fig. 1, F), and dorsally on the same side of the pronotum. The propodeum is largely female, pale and with sparse setae; only a small submedian patch adjacent to the propodeal denticle exhibits male coloration (Fig. 1, D). The middle and hind femora on the right side are longitudinally divided into dark (prolateral) and light (retrolateral) sections, the coxae are uniformly light in color. A distal light patch is found on the femur of the right foreleg. The legs of the left side are those of a normal female. There is no sexual dimorphism in wing morphology in this species, and no differences were noted between the right and left sides of the gynandromorph. Approximate bilateral distinctness in color and vestiture is maintained in the pedicel and the ventral surface of the first gastric segment. The posterior border of the second gastric segment is darkened slightly on the left side. A vestigial sclerotized structure at the tip of the reduced gaster protrudes from the right side. Dissection revealed well-developed ovaries containing eggs on the left side, and no gonads could be discerned on the right side.

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