CHAPTER 4

# The Ant Genus *Leptogenys* (Hymenoptera: Formicidae, Ponerinae) in the United States

*James C. Trager and Clifford Johnson*

## Introduction

One of the few New World ponerine ant genera remaining unpublished among the multipartite revisionary studies of ponerine ants by W. L. Brown is *Leptogenys*. In the Neotropics, it is a diverse group with 48 available names (Kempf 1972). Some of these taxa are undoubtedly synonyms and many species remain to be described. Revisionary efforts have been hampered until recently by scanty material of most taxa, by the great similarity between workers of related species, and not the least of all by benign neglect. Dr. Brown is now preparing a revision of the New World forms (pers. comm.). The African species have been revised by Bolton (1975).

*Leptogenys* spp. span a broad range of organizational levels in their predatory activity, ranging from solitary hunters of leaf litter isopods to highly concerted group raiders of termites or large arthropods. Careful revision of the Neotropical and tropical Asian species in this group could aid substantially in planning of comparative studies of these and other behaviors, such as have been begun by Maschwitz and Muhlenberg (1975 and included references).

This paper is a small contribution toward revision of the New World *Leptogenys*, particularly the 2 species occurring in the United States. These 2 forms have previously been considered subspecies of *L. elongata*. We elevate these two taxa to species and present information on their natural history.

## *Leptogenys* Roger 1861

Worker and queen Leptogenys are easily recognized among Nearctic Ponerinae by their relatively large size (total length about 7mm.); their slender form and correspondingly long and slender limbs, including elongate, shining, edentate mandibles, and scapes conspicuously longer than the head (at least 1.25X head length). The strongly

medially carinate clypeus projecting forward to an acuminate tip between the mandibles may provide a third point of contact for gripping large, slippery prey. The tarsal claws are distinctly pectinate. Males can also be recognized from other ponerines by this latter character, and by their long slightly tapering antennae and lack of a pygidial spine. We follow Bolton's (1975) placement of the subgenus *Lobopelta* in synonymy under *Leptogenys*.

### Key to U.S. *Leptogenys*

#### Workers and Queens

1a Surface of head and thorax dull, with coarse punctation; color deep yellowish red to brownish red; western Louisiana, Texas, northeastern Mexico ..... *elongata*

1b Surface of head and thorax shiny between the small punctures; color red to deep red, darker specimens often with faint bluish or purplish iridescence; Florida ..... *manni*

#### Males

1a Ocelli large, distance between lateral and median ocelli slightly to notably less than maximum diameter of lateral ocelli; caudal end of aedeagus with rounded inferior corner in side view (Fig. 3) .. ..... *elongata*

1b Ocelli smaller, distance between lateral and median ocelli about equal to or exceeding maximum diameter of lateral ocelli; inferior caudal corner of aedeagus bearing a forked process (Fig. 6) ..... ..... *manni*

*Leptogenys elongata* (Buckley)

*Ponera elongata* Buckley, 1866. Proc. Entomol. Soc. Phila. 6:170. W
*Lobopelta septentrionalis* Mayr, 1866. Verh. Zool.-Bot. Gesell. Wien 36:438. W.

*Leptogenys (Lobopelta) elongata*: Creighton, 1950. Bull. Mus. Comp. Zool. 104:51. W. (q.v. for full synonymy through 1950).

This locally abundant species is a characteristic element of the ant fauna of southeastern Texas, and is also found in northeastern Mexico (Tamaulipas) and western Louisiana. It is most easily collected from March to May, when, after winter or night time chill colonies gather under rocks, logs or even roadside trash.

Wheeler (1904) reported this ant preyed on isopods of the genera *Armadillidium* and *Oniscus*. JCT has observed *L. elongata* both in the field and the laboratory, and it readily takes *Armadillidium* in both situations. *Oniscus* apparently does not occur within the range of *Leptogenys*. Both isopod genera are native to the Old World, and though *Armadillidium* is now cosmopolitan, *Oniscus* occurs only in the cooler temperate regions of Eastern North America (Van Name 1936).



*L. elongata* has also been observed transporting a wolf spider of the genus *Pardosa* in the field, presumably as prey. In the laboratory, colonies survived for several months on worker *Reticulitermes* and occasional *Armadillidium* but did not rear through adults under the rearing conditions (approx. 25° C, r.h. 40-60%).

Isopod remains from *L. elongata* nests have not, to our knowledge, been identified. An isopod superficially much like *Oniscus* in appearance, *Porcellionides virgatus* (Budde-Lund), abounds in Texas and may be the the isopod Wheeler called *Oniscus*. On the other hand, it is possible that the acceptability of *Armadillidium* as prey has contributed to the abundance of *L. elongata* in disturbed habitats such as highway right-of-ways.

Mating behavior of this species has not been observed. Data on Malaise-trapped specimens indicate the dispersal of males occurs at night or at dawn. Males seen in this study were collected in May, June, and October.

*Leptogenys manni* Wheeler, stat. nov.

*Leptogenys (Lobopelta) elongata manni* Wheeler, 1923. Amer. Mus. Novitates 90:14. W (incorrectly cited as Amer. Mus. Novitates #69 in Creighton, 1950)

In view of the structural differences pointed out in the keys and in Figs.1-6, and their disjunct ranges (see worker key), we believe *L. elongata* and *L. manni* are distinct species, and *L. manni* must be added to the growing list of Florida's endemic ants (Deyrup and Trager 1986). It appears that the 2 forms are closely related, perhaps sister species.

Though this slender, deep red *Leptogenys* is widely distributed in Florida, workers are rarely encountered other than in the spring months when colonies gather under logs and rocks as do those of *L. elongata*. In general, *L. manni* seems more cryptic. This may be because rocks are uncommon in Florida, and because this ant usually nests less superficially than *L. elongata*.

In south Florida, *L. manni* may be entirely subterranean. Deyrup (unpublished) has collected extensively in the southern third of Florida for several years yet has failed to find a nest. *L. manni* may be limited to relatively undisturbed, mesic woodlands on sites where limestone occurs on or near the surface.

This ant was observed by Drummond (1965) during a study of terrestrial isopods in Florida. His examination of midden piles in 2 *L. manni* nests revealed remains of *Porcellionides virgatus*, but not of *Armadillidium*. We have encountered other middens of *L. manni*, including one containing only remains of *Armadillidium*. Based on these few observations, it seems that *L. manni* generally prefers the native isopod. We regard Whitcomb, *et al.* (1972) report of *L. manni* feeding on centipedes as needing confirmation.

In contrast to the workers, males of *L. manni* are relatively well collected. They have been Malaise-trapped throughout Florida from Leon and Gadsden Counties in the north to Dade County in the south. *L. manni* is not known from outside Florida, and is not known to occur on the Florida keys, to which it might have migrated during a period of lower sea levels.

Collection dates of males span the months of May to October. Workers are generally collected in the spring months. A recognizable ergatoid queen such as occurs in *L. elongata* also occurs in *L. manni*, and differs from the worker in similar fashion, namely a bulkier gaster and lower, subtriangular petiolar profile.

In the laboratory, *L. manni* larvae are placed directly upon dead *Porcellionides* or *Armadillidium* to feed themselves. Adults capture the former without hesitation when they are placed in the rearing containers. *Armadillidium* is killed only after considerable antennation, and then only hesitantly. Brood matures but is cannibalized shortly after pupation. Colonies languish after about a month in captivity.

## Discussion

The striking genitalic differences between males of *L. elongata* and *L. manni* indicate the importance that study of genitalia may have in future revisionary work on *Leptogenys*. We suggest that methods be developed for the successful rearing of these ants in order to obtain males that can definitely be associated with particular females. It is also noteworthy that the conspicuous middens found near the nests of *Leptogenys* spp. can be a valuable source of information on prey preferences.

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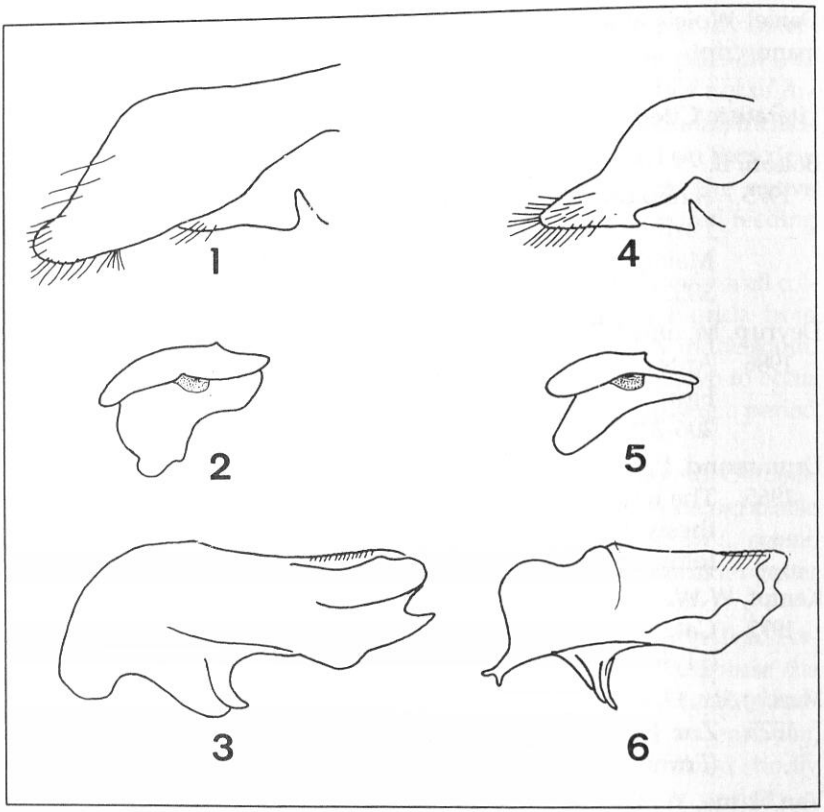


Figs. 1-6: Genitalia of Nearctic *Leptogenys* spp. *L. elongata* on left, *L. manni* on right. 1,4 parameres; 2,5 volsellae; 3,6 aedeagi.