



First Report of the Eastern Ant Cricket, *Myrmecophilus pergandei* Bruner, (Orthoptera: Myrmecophilidae), Collected from an Imported Fire Ant Colony, *Solenopsis invicta* × *richteri* (Hymenoptera: Formicidae)

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First report of the eastern ant cricket, *Myrmecophilus pergandei* Bruner, (Orthoptera: Mymecophilidae), collected from an imported fire ant colony, *Solenopsis invicta* × *richteri* (Hymenoptera: Formicidae)

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Species in the family Myrmecophilidae (Orthoptera) are small, apterous, inquiline inhabitants of ant nests, and a number of species are known to strigilate and engage in trophallaxis with their ant hosts (Wheeler 1900, Schimmer 1909, Carter 1939, Henderson & Akre 1986). Several studies indicate that the ant hosts are typically aggressive toward the crickets, but that the crickets mimicked the mutual grooming and trophalactic behavior of their hosts thereby getting close to them, and usually avoided attack by using their superb jumping ability (Wheeler 1900, Henderson & Akre 1986).

Four species are known from the United States; however, only the eastern ant cricket (*Myrmecophilus pergandei* Bruner), occurs in the southeastern United States (Blatchley 1920, Hebard, 1920, Capinera *et al.* 2004, MacGown & Hill 2006). *Myrmecophilus pergandei* has been recorded as an inquiline from numerous species of native ants including *Aphaenogaster treatae* Forel, *Camponotus castaneus* (Latreille), *C. chromaiodes* Bolton, *C. herculeanus* (L.), *C. pennsylvanicus* (DeGeer), *C. novaeboracensis* (Fitch), *Crematogaster lineolata* (Say), *Formica fusca* L., *F. obscuriventris* Mayr., *F. pallidefulva* Latreille, *F. subsericea* Say, *F. truncorum* Fab., *Lasius umbratus* (Nylander), and *Paratrechina parvula* (Mayr) (Hebard 1920, Carter 1939). It has also been successfully kept with captive ant colonies, including *Crematogaster lineolata*, *C. missouriensis* Emery, *Neivamyrmex nigrescens* (Cresson) and *Pheidole dentata* Mayr (Carter 1939).

Though *M. pergandei* has been reported to inhabit colonies of *Solenopsis geminata*, a purported exotic ant species in North America, it has not been recorded from colonies of *Solenopsis xyloni* McCook, another purported exotic species, or colonies of the imported fire ants, *Solenopsis invicta* Buren, *S. richteri* Forel, or their hybrid *S. invicta* × *richteri* (Travis 1941). Carter (1939) introduced several *M. pergandei* into a laboratory colony of *S. xyloni* and found that the crickets were met with aggressive behavior and were unable to approach the ants for feeding. In most cases the *Solenopsis* captured and devoured the crickets within 24 h of their introduction into the nest.

However, on 9 September 2008, several individuals of *M. pergandei* were observed within a colony of the hybrid imported fire ant, *Solenopsis invicta* × *richteri*. This colony was not the typical mound in an open area for which imported fire ants are well known, but instead the colony was nesting in a rotting log in an open bottomland hardwood forest in the Noxubee National Wildlife Refuge (lat 33° 16' 17"N, long 88° 47' 17"W). Also found in the colony was

an individual of *Myrmecosaurus ferrugineus* Bruch (Staphylinidae), a beetle that is native to South America and associated with imported fire ant colonies. Voucher specimens of *M. pergandei* and *S. invicta* × *richteri* are both pinned and stored in alcohol. The specimen of *M. ferrugineus* is pinned. All specimens are deposited in the Mississippi Entomological Museum.

This finding represents a new host record for *M. pergandei*, and it is the first report of it occurring with an ant truly known to be exotic. It is interesting that *M. pergandei* has not yet been documented as occurring in colonies of the imported fire ant, given the amount of research conducted on these exotics since their introduction to North America in the early part of the 20th century. However, it is not overly surprising that *M. pergandei* finds imported fire ants a suitable host, as a related species, *Myrmecophila nebrascensis* Bruner, has been reported to occur in the colonies of *Solenopsis xyloni* McCook and *S. invicta* Buren (Neece & Barteli 1981, 1982).

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References

- Blatchley W.S. 1920. Orthoptera of Northeastern America. Nature Publishing Company, Indianapolis.
- Capinera J.L., Scott R.D., Walker T.J. 2004. Field Guide to Grasshoppers, Katydid, and Crickets of the United States. Cornell University Press, Ithaca, NY.
- Carter W.M. 1939. Some Observations of *Myrmecophila* in Mississippi. Unpub. M.Sc. Thesis, Mississippi State University.
- Hebard M. 1920. A revision of the North American species of the genus *Myrmecophila*. Transactions American Entomological Society 46: 91-111.
- Henderson G., Akre R.D. 1986. Biology of the myrmecophilous cricket, *Myrmecophila manni*, (Orthoptera: Gryllidae). Journal Kansas Entomological Society 59: 454-467.
- MacGown J.A., Hill J.G. 2006. The eastern ant cricket, *Myrmecophilus pergandei* Bruner (Orthoptera: Myrmecophilidae), reported from Mississippi, U.S.A. Journal Mississippi Academy of Science 51: 180-182.
- Neece K.C., Barteli D.P. 1981. Insects associated with *Solenopsis* spp. in southeastern Texas. Southwestern Entomologist 6: 307-311.
- Neece K.C., Barteli D.P. 1982. A faunistic survey of the organisms associated with ants of western Texas. Graduate Studies. Texas Tech. University Press. 36 pp.

- Schimmer F. 1909. Beitrag zu einer Monographie der Gryllodeengattung *Myrmecophila* Latr. Zeitschrift Wissenschaftliche Zoologie. 93: 409-534.
- Travis B.V. 1941. Notes on the biology of the fire ant *Solenopsis geminata* (F.) in Florida and Georgia. Florida Entomologist 24: 15-22.
- Wheeler W.M. 1900. The habits of *Myrmecophila nebracensis* Bruner. Psyche 9: 111-115.