BioOne COMPLETE

OCCURRENCE OF LARRA BICOLOR (HYMENOPTERA: SPHECIDAE), ECTOPARASITE OF MOLE CRICKETS (SCAPTERISCUS SPP.), IN COASTAL MISSISSIPPI

Author: Held, David W.

Source: Florida Entomologist, 88(3) : 327-328

Published By: Florida Entomological Society

URL: https://doi.org/10.1653/0015-4040(2005)088[0327:OOLBHS]2.0.CO;2

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

OCCURRENCE OF *LARRA BICOLOR* (HYMENOPTERA: SPHECIDAE), ECTOPARASITE OF MOLE CRICKETS (*SCAPTERISCUS* SPP.), IN COASTAL MISSISSIPPI

DAVID W. HELD
Mississippi State University, Coastal Research & Extension Ctr., 1815 Popps Ferry Road, Biloxi, MS 39532

Larra bicolor Fabricius (Hymenoptera: Sphecidae) is an immigrant species native to South America but introduced into Florida, Hawaii, and Puerto Rico for control of pest mole crickets (Frank et al. 1995; Frank & Sourakov 2002). *Larra* wasps are black with wings that are brown to blue with light-colored markings on the head. *Larra analis* Fabricius, which has a black abdomen with red typically at the tip, is native to Mississippi and the Gulf Coast region. *Larra bicolor*, in contrast, has a solid red abdomen (Frank & Sourakov 2002). The biology and ecology of this species has been reviewed recently (Frank et al. 199; Frank & Sourakov 2002) and will not be discussed here.

The first successful relocation of *L. bicolor* into North America was made between 1981-1983, when wasps were collected from Puerto Rico and released into five sites in Florida. From these releases, only wasps at the southernmost release site (Ft. Lauderdale) became established (Frank et al. 1995). Subsequent releases were made between 1988-1989 when presumably three species of wasps, *Larra bicolor*, *L. praedatrix*, and *L. godmani*, were collected from Bolivia and released along with parasitized hosts in three sites near Gainesville (Frank et al. 1995). There was no evidence that these releases were successful until *L. bicolor* was observed feeding on *Spermacoce verticillata* on the UF-Gainesville campus in 1993. Based on morphological characteristics of these wasps, they were presumably of Bolivian origin (Frank et al. 1995).

Larra bicolor has been released in Tifton GA and near Baton Rouge LA. Of these releases, only those released in GA have become established (W. Hudson & H. Frank, personal communication). Apart from these sites, Florida, Puerto Rico, and South America are the only other sources of *Larra bicolor*. This paper represents the first record of the natural expansion of *L. bicolor* outside of Florida, and the first record of this species in Mississippi.

On 29-IX-2004, hybrid bermudagrass (*C. dactylon* × *C. transvaalensis* 'Tifway') plots were being evaluated for mole cricket damage at Great Southern Golf Course, Gulfport, Harrison County, MS when a digger wasp resembling *Larra* was observed. This individual was not collected but its presence prompted a subsequent survey of damaged grass on that golf course. Three areas at Great Southern with fresh mole cricket damage were surveyed. Surveys were conducted by walking across mole cricket damaged areas of grass while looking for wasps resting on the turf. A soap solution, 30 ml of dishwashing soap per liter of water, was prepared in a 900-ml spray bottle with a trigger and used to collect wasps. When at rest on the turf, a wasp was shot with the soap solution repeatedly until dead, at which time it was collected and preserved in alcohol. Two digger wasps, *L. analis* and *L. bicolor*, were collected that day using this method. The University of Florida Insect Taxonomy Laboratory confirmed the identities of both species, and these were deposited as voucher specimens in the Mississippi Entomological Museum at Mississippi State University.

The same three damaged sites at Great Southern Golf Course were surveyed again on 1-X-2004. When a wasp was spotted, it was collected with the soap solution as before. Two *L. bicolor* were collected; of which one was exiting a mole cricket burrow. Two mole crickets also were observed moving across the grass. This is consistent with the previously described hunting behavior of *Larra* spp. (Frank & Sourakov 2002).

Because this was a first record of this species in Mississippi, it seemed important to determine whether *L. bicolor* was present on other golf courses in coastal Mississippi. On 11-X-2004, three additional courses in Harrison County were surveyed. The first, Bay Breeze Golf Course, also is located on the Mississippi Sound in Biloxi. Hybrid bermudagrass 'Tifway' tees, greens, and fairways that had fresh damage from mole crickets were surveyed for *L. bicolor* as previously described. Five wasps were observed on four different holes, but only three, all *L. bicolor*, were collected.

The second course surveyed that day was the President-Broadwater Golf Course in Biloxi. This course had abundant damage from mole crickets, but no wasps were observed or collected. Unlike Bay Breeze and Great Southern, this course had no naturalized areas where blooming wildflowers were present, nor were there any plantings of blooming woody or herbaceous ornamentals. The last course in Harrison County, Sunkist Country Club, had only one area with mole cricket damage and no *Larra* were observed or collected.

On 12-X-2004, the Bridges Golf Course at the Casino Magic resort in Bay St. Louis, Hancock County, MS was surveyed. This course was chosen because it borders the Mississippi Sound and has

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

abundant naturalized areas of wildflowers. Areas, primarily greens and tees, on each hole had some mole cricket damage. No *Larra* were observed or collected.

The last site surveyed was St. Andrews Golf Course, Ocean Springs, Jackson County, MS on 18-X-2004. This course is located on the Mississippi Sound and has a perennial mole cricket population. The three areas surveyed were on close roughs of Bermuda grass near tees or greens, and all had extensive damage caused by mole crickets. One *L. bicolor* was collected from this course.

The results of these surveys indicate that while *L. bicolor* is present in coastal Mississippi, it is not abundant. Only those courses that were adjacent to the Mississippi Sound had *L. bicolor*. Perhaps these sites, being buffered by the coastal waters, provide a suitable microclimate where this wasp can successfully over winter.

I thank the staff of Great Southern Golf Course, Sunkist Country Club, Bay Breeze Golf Club, President Golf Course, St. Andrews Golf Course, and The Bridges at Casino Magic for cooperation with the survey. I thank Lionel Stange, Lyle Buss, and Howard Frank for identification of collected specimens. Richard Brown, Linda Andrews, and Jianzhong Sun (MS State University) provided helpful comments on an earlier draft of this manuscript. This paper is No. J10668 of the Mississippi State Agricultural Experiment Station.

Summary

Larra bicolor (Hymenoptera: Sphecidae) is an ectoparasite of exotic mole crickets (*Scapteriscus* spp., Orthoptera: Gryllotalpidae). This wasp was introduced into Florida as a biological control agent, but natural spread of this insect has not been reported outside of that state. In 2004, specimens of *Larra bicolor* were collected from three golf course sites in coastal Mississippi. This find is the first record of this species in Mississippi and represents the first record of natural movement of this wasp outside of Florida.

References Cited

Frank, J. H., and A. Sourakov. 2002. Larra wasps; mole cricket hunters. University of Florida pub. No. EENY-268. http://creatures.ifas.ufl.edu/beneficial/Larra_wasps.htm

Frank, J. H., J. P. Parkman, and F. D. Bennett. 1995. *Larra bicolor* (Hymenoptera: Sphecidae), a biological control agent of *Scapteriscus* mole crickets (Orthoptera: Gryllotalpidae), established in Northern Florida. Florida Entomol. 78: 619-623.

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use