

REDISCOVERY OF *LIGYROCORIS SLOSSONI* (HEMIPTERA: LYGAEOIDEA: RHYPAROCHROMIDAE), A RARELY COLLECTED SEED BUG CONSIDERED PRECINCTIVE IN FLORIDA

A. G. WHEELER, JR.

Department of Entomology, Clemson University, Clemson, SC 29634

Since its original description nearly 90 years ago, *Ligyrocoris slossoni* Barber has remained a rarely collected lygaeoid bug whose habits are unknown. Only the unique holotype and three additional specimens have been recorded (Sweet 1986; Slater & Baranowski 1990), and information on its habitat is limited to Blatchley's (1926) comment that he collected a female at Dunedin, Florida, "by beating dead leaves of oak near the bay beach."

Barber (1914) described *L. slossoni* from a male taken at Lake Worth, Florida, but in his revision of *Ligyrocoris*, he omitted *slossoni* from his keys, noting that his description of this now "doubtful species" had been based on a damaged and apparently teneral specimen (Barber 1921). When a fully sclerotized specimen became available for study (the female from Dunedin), Barber (1924) was able to reinstate *L. slossoni* as a valid species and to redescribe it.

Barber subsequently identified this seed bug from other southeastern states and as far north as southern Illinois (Sweet 1986). In a list of the Lygaeidae of Iowa and Illinois, Slater (1952) recorded it from Washington County, Illinois, based on Barber's determination. Sweet (1986), however, found that material identified as *L. slossoni* actually represented two species, with nearly all specimens proving to be an undescribed species that he named *L. barberi*. Sweet (1986) also reported two additional specimens of true *L. slossoni*; both were from Alachua County, Florida, with one labeled as taken at Gainesville.

The Illinois record of *L. slossoni* (Slater 1952), although retained (as *L. slossonae*; see discussion of nomenclature below) in the most recent catalog of North American lygaeoids (Ashlock & A. Slater 1988), evidently is based on a misidentification. Sweet's (1986) type series of *L. barberi* included a specimen from Dubois [Washington Co.], Illinois, which likely is the one on which the Illinois record of *L. slossoni* had been based.

Both *L. barberi* and *L. slossoni* have a transverse dark fascia on the corium (Sweet 1986). *Ligyrocoris slossoni* can be distinguished by the characters given by Sweet (1986) in his key to eastern species of the genus and by his illustrations of the head, pronotum, hemelytra, abdomen, and fore femur. Characters that facilitate recognition of *L. slossoni* include the head unicolorous dark red (dark brown in *L. barberi*), pronotum with only a few scattered hairs (densely hairy in *L. barberi*),

pronotal collar with distinct groove (collar not set off by distinct groove in *L. barberi*), metapleuron shiny (pruinose in *L. barberi*), femora and tibiae reddish and contrasting with the yellow tarsi (legs pale yellow, except distal 2/3 of femora light reddish brown, in *L. barberi*), and fore femur with one major spine (two in *L. barberi*) (Sweet 1986).

On the basis of recent field work in Florida, I here provide additional records of this rarely collected rhyparochromid (see Henry [1997] for current classification of lygaeoid families) and notes on its habits and the habitats in which it was taken. Voucher specimens have been deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C.

In his original description of *L. slossoni*, Barber (1914) stated that the holotype was from the collection of Mrs. Annie T. Slosson, implying (but not explicitly stating) that he was naming the species for her. Assuming that Barber intended to dedicate the species to her, his latinization was incorrect. Barber's name, however, cannot be considered an incorrect original spelling, and the emendation *L. slossonae* (Ashlock & A. Slater 1988) should be regarded as an incorrect subsequent spelling under Article 32.5 of the International Code of Zoological Nomenclature (International Commission on Zoological Nomenclature 1999). It might be argued that the use of *L. slossonae* by Slater and Baranowski (1990), the only literature reference to this species subsequent to Ashlock and A. Slater's (1988) emendation, represents prevailing usage under Article 33.3.1 of the Code. Because of Article 32.5 of the Code and lack of an explicit statement by Barber (1914) regarding use of the name *slossoni*, I am retaining Barber's original spelling.

Material examined (all collections by the author; roman numerals = nymphal instars): FLORIDA: Hamilton Co., jct. Rt. 129 & SW 79 Terrace, 0.3 km N of Suwannee River, 2 km NE of Suwannee, 30°23.8'N, 82°56.0'W, 1♀, ex crown of *Andropogon tenuispathus* (Nash) Nash (Poaceae), 27 May 2000; Lake Co., Rt. 27, 8.5 km S of jct. Rt. 50, SSE of Clermont, 28°28.7'N, 81°43.0'W, 21♂, 14♀, 1 III, 2 IV, 4 V, ex crowns of *Eragrostis curvula* (Schrad.) Nees (Poaceae), and 4♂, 1♀, 1 V, ex basal rosettes of *Heterotheca subaxillaris* (Lamarck) Britton & Rusby = *H. latifolia* Buckl. (Asteraceae), 20-22 Mar. 2002; 2 V, ex crowns of *E. curvula*, 3 Nov. 2002; 2♂, 1♀, 2 III, 4 IV, 3 V, ex crowns of *E. curvula*, 21 Nov. 2002.

Of the 115 lygaeoid species recorded from Florida, 10 are known only from that state (Baranowski 1995) and are considered precinctive—that is, confined to that area (see Frank & McCoy 1990). *Ligyrocoris slossoni* is one of those lygaeoids known only from Florida (Slater & Baranowski 1990), yet its recent collection in Hamilton County, which borders on Georgia, suggests that it also might be found in southern Georgia. Its distribution, though, apparently is more restricted than that of the widespread and morphologically similar *L. barberi* (Sweet 1986).

I collected *L. slossoni* in the eastern panhandle of Florida (Hamilton Co.) in a ruderal site along Rt. 129 in an area of mesic flatwoods (see Wheeler [2001] for more information on the habitat). Collections in Lake County also were made in a field-type habitat (*sensu* Sweet 1964) along Rt. 27 and about 10 meters inside a fence on adjoining property of Lake Louisa State Park. This disturbed site near the northern end of the Lake Wales Ridge has scattered weeping lovegrass plants, prickly pear (*Opuntia humifusa* [Raf.] Raf.; Cactaceae), plus camphorweed (*H. subaxillaris*), ragweed (*Ambrosia artemisiifolia* L.; Asteraceae), and other rank forbs. Myodochine rhyparochromids beaten from crowns of grasses with *L. slossoni* at both sites were *Paromius longulus* (Dallas) and *Perigenes similis* Barber. The presence of *L. slossoni* in ruderal habitats contrasts with those of *L. barberi* in Texas: prairies rather than roadsides and early successional stages (Sweet 1986).

My experience with *L. slossoni* in Hamilton County is consistent with that of all previous collectors—that is, only a single adult was found. At this site on 2-3 June and 29 November 2000, I was unable to collect additional adults from crowns of broomsedge or to sweep adults from several species of Asteraceae.

In southeastern Lake County, I collected 40 adults in late March 2002; 35 were beaten from crowns of weeping lovegrass, mainly from dead plants or those with some dead stems. At the same time, seven mid- to late instars of presumably *L. slossoni* were beaten from lovegrass crowns and one fifth instar was beaten from vegetative growth of camphorweed. In further observations at this site on 13 April 2002, 10 adults, three late instars, and an apparent cast skin of *L. slossoni* were beaten from weeping lovegrass; 10 adults, two late instars, and a cast skin were beaten from camphorweed. The adults and nymphs observed on 13 April were replaced on plants and are not listed above under material examined. My sampling of camphorweed and weeping lovegrass at the Lake County site on 2 June and 10 August 2002 did not yield additional nymphs or adults of *L. slossoni*. I did not sample the litter layer where this seed bug, like *L. difusus* Uhler and many other ground-inhabiting

rhyparochromids (Sweet 1964), might feed more on fallen seeds than on the seed heads of plants. At this same site in early and late November 2002, third through fifth instars and adults again were found in crowns of weeping lovegrass.

The mid- to late instars and adults collected in late March and observed in mid-April in Lake County likely are those of a first generation. It is not known if *L. slossoni* overwinters as diapausing eggs, as does *L. barberi* in Texas (Sweet 1986). If eggs of *L. slossoni* overwinter, then the adult collected by Blatchley at Dunedin in mid-February also would be that of a first generation. The nymphs and adults found in November likely are those of at least a second generation. Populations of *L. slossoni* might be only bivoltine, as are those of *L. barberi* in Texas despite the long, warm season (Sweet 1986).

It is unknown if nymphs of *L. slossoni* develop mainly on a particular plant species. Sweet (1986) determined that *L. barberi* feeds on ripe seeds of the composite *Rudbeckia hirta* L. and that the bug's seasonality closely parallels host phenology. Even though nymphs and an apparent exuviae of *L. slossoni* were beaten from lovegrass, nymphs are unlikely to complete development on this plant. During the day, adults and nymphs might use crowns of weeping lovegrass for shelter or to conserve water under xeric conditions and at night forage in the litter layer for seeds of composites. Nymphs might also feed on seeds of other plants that lodge or accumulate in the extensive crowns of this African bunchgrass (see Wheeler 1999). The collection of smaller numbers of adults, a late instar, and a cast skin from *H. subaxillaris* suggests an association with this composite, but its role in the bug's population dynamics remains unknown. Nymphs fed on ripe seeds of *H. subaxillaris* in the laboratory.

The collections of *L. slossoni* reported here appear to be the first for this species since at least the 1940s. Only one of the four previously known specimens bears a label giving year of collection (1923, Alachua Co.). In addition to the holotype (Barber 1914), the adult that Blatchley (1926) collected in February at Dunedin must have been taken between 1913 and 1926 (see Blatchley 1930). The specimen from Gainesville labeled "JRW 5413" likely was collected by J. R. Watson. He joined the Department of Entomology at the University of Florida, Gainesville, in 1911, was a thysanopterist and avid collector of other insect groups, and died in 1946 (Tissot 1946).

The rediscovery of this myodochine rhyparochromid in Florida, though increasing the number of known museum specimens from four to 51 (including four reared from fifth instars), does not explain its rarity in collections. Is this seed bug restricted to certain habitats because of competition with other rhyparochromid seed predators? Is its life cycle closely associated with seed pro-

duction of one or a few host plants? Data that might help answer these and other questions about its bionomics must await field and laboratory studies comparable to those on *L. barberi* in Texas (Sweet 1986) or on *L. diffusus* and other rhyparochromids in Connecticut (Sweet 1964).

I thank T. J. Henry (Systematic Entomology Laboratory, USDA, c/o National Museum of Natural History, Washington, DC) for confirming my identification of *L. slossoni* and for offering suggestions that improved the manuscript; G. J. Steck (Florida Department of Agriculture and Consumer Services, Gainesville) and the Division of Recreation and Parks, Florida Department of Environmental Protection, Tallahassee, for the permit authorizing the collection of insects in Lake Louisa State Park; J. Brambila (Florida Department of Agriculture and Consumer Services, Gainesville) for checking the Florida State Collection of Arthropods for recently collected specimens of *L. slossoni*; and P. H. Adler (Department of Entomology, Clemson University) for providing useful comments on the manuscript.

SUMMARY

Described in 1914 and apparently not collected since at least the 1940s, *Ligyrocoris slossoni* was found recently at two sites in Florida. In Lake County, 38 adults and 18 mid- to late instars were beaten from crowns of weeping lovegrass (*Eragrostis curvula*; Poaceae) in March and November 2002; at the same site, five adults and a fifth instar were taken on camphorweed (*Heterotheca subaxillaris*; Asteraceae). One adult was beaten from the crown of a broomsedge (*Andropogon tenuispathus*; Poaceae) in Hamilton County. These collections increase the number of known museum specimens from four to 51 (including four reared from fifth instars).

REFERENCES CITED

- ASHLOCK, P. D., AND A. SLATER. 1988. Family Lygaeidae Schilling, 1829. The seed bugs and chinch bugs. Pp. 167-245 in T. J. Henry and R. C. Froeschner [eds.], Catalog of the Heteroptera, or True Bugs, of Canada and the Continental United States. E.J. Brill, Leiden. 958 p.
- BARANOWSKI, R. M. 1995. Seed bugs (Hemiptera: Lygaeidae). P. 28 in J. H. Frank and E. D. McCoy [eds.], Precinctive insect species in Florida. Florida Entomol. 78: 21-35.
- BARBER, H. G. 1914. Insects of Florida. II. Hemiptera. Bull. American Mus. Nat. Hist. 33: 495-535.
- BARBER, H. G. 1921. Revision of the genus *Ligyrocoris* Stål (Hemiptera, Lygaeidae). J. New York Entomol. Soc. 29: 100-114.
- BARBER, H. G. 1924. Corrections and comments: Hemiptera-Heteroptera. J. New York Entomol. Soc. 32: 133-137.
- BLATCHLEY, W. S. 1926. Heteroptera or True Bugs of Eastern North America, with Especial Reference to the Faunas of Indiana and Florida. Nature Publishing Co., Indianapolis, IN. 1116 p.
- BLATCHLEY, W. S. 1930. Blatchleyana: A list of the published writings of W. S. Blatchley, A.B., A.M., LL.D. of Indianapolis, Indiana and Dunedin, Florida. Together with a chronology of his life: the fixation of types of new genera and species described by him, etc., etc. Nature Publishing Co., Indianapolis, IN. 77 p.
- FRANK, J. H., AND E. D. MCCOY. 1990. Introduction to attack and defense: behavioral ecology of predators and their prey. Endemics and epidemics of shibboleths and other things causing chaos. Florida Entomol. 73: 1-9.
- HENRY, T. J. 1997. Phylogenetic analysis of family groups within the infraorder Pentatomomorpha (Hemiptera: Heteroptera), with emphasis on the Lygaeoidea. Ann. Entomol. Soc. America 90: 275-301.
- INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE. 1999. International Code of Zoological Nomenclature, 4th ed. International Trust for Zoological Nomenclature, London. 306 p.
- SLATER, J. A. 1952. An annotated list of the Lygaeidae of Iowa and Illinois (Hemiptera: Heteroptera). Proc. Iowa Acad. Sci. 59: 521-540.
- SLATER, J. A., AND R. M. BARANOWSKI. 1990. Lygaeidae of Florida (Hemiptera: Heteroptera). Arthropods of Florida and Neighboring Land Areas. Vol. 14. Florida Dep. Agric. Consum. Serv. Div. Plant Ind., Gainesville. 211 p.
- SWEET, M. H. 1964. The biology and ecology of the Rhyparochrominae of New England (Heteroptera: Lygaeidae). Pts. I, II. Entomol. Americana 43: 1-124, 44: 1-201.
- SWEET, M. H. 1986. *Ligyrocoris barberi* (Heteroptera: Lygaeidae), a new seedbug from the southeastern United States with a discussion of its ecology, life cycle, and reproductive isolation. J. New York Entomol. Soc. 94: 281-290.
- TISSOT, A. N. 1946. Joseph R. Watson. Florida Entomol. 28: 57-59.
- WHEELER, A. G., JR 1999. *Oncozygia clavicornis* Stål and *Allopodops mississippiensis* Harris and Johnston: association of rarely collected Nearctic turtle bugs (Heteroptera: Pentatomidae: Podopinae) with an introduced African grass. Proc. Entomol. Soc. Washington 101: 714-721.
- WHEELER, A. G., JR 2001. *Perigenes similis* (Hemiptera: Lygaeoidea: Rhyparochromidae) in Florida: notes on habits and habitats. Florida Entomol. 84: 724-726.