

The Great Lakes Entomologist

Volume 28
Numbers 3 & 4 -- Fall/Winter 1995 *Numbers 3 &
4 -- Fall/Winter 1995*

Article 4

January 1995

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A. G. Wheeler Jr.
Pennsylvania Department of Agriculture

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Recommended Citation

Wheeler, A. G. Jr. 1995. "*Slaterobius Insignis* (Heteroptera: Lygaeidae): Association With Granite Ledges and Outcrops in Minnesota," *The Great Lakes Entomologist*, vol 28 (3)
DOI: <https://doi.org/10.22543/0090-0222.1884>
Available at: <https://scholar.valpo.edu/tgle/vol28/iss3/4>

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SLATEROBIUS INSIGNIS (HETEROPTERA: LYGAEIDAE): ASSOCIATION WITH GRANITE LEDGES AND OUTCROPS IN MINNESOTAA. G. Wheeler, Jr.¹

ABSTRACT

Adults and late-instar nymphs of the wide-ranging myrmecomorphic lygaeid *Slaterobius insignis* were collected in northern Minnesota from cracks of granite outcrops and ledges, a habitat differing somewhat from that reported elsewhere. At two of the four sites, *S. insignis* was observed in plant- and litter-filled cracks with nymphs of the lygaeid *Trapezonotus arenarius*. All adults of the polymorphic *S. insignis* observed on granite were brachypters that belonged to the dark color morph of the species. Individuals occurred on rock surfaces with a black ant, *Formica subsericea*, which they resembled in appearance and behavior.

The myrmecomorphic lygaeid *Slaterobius insignis* (Uhler) belongs to the large subfamily Rhyparochrominae, tribe Myodochini. Formerly placed in the genus *Sphaerobius* (see Harrington 1980), this wide-ranging species is known from Newfoundland and Nova Scotia west to British Columbia, Alaska, the Northwest Territories, and the Yukon Territory south to New York, Iowa, Colorado, California, Texas, and Mexico (Slater 1964, Ashlock & Slater 1988, Scudder 1993, Slater et al. 1993). Its occurrence in the Northeast is thought to represent range expansion from western North America (Sweet 1964, Slater et al. 1993).

Habitat preferences are known only for a portion of this seed bug's extensive range. In Connecticut and the Adirondacks of New York it occurs among clumps of little bluestem (*Schizachrium scoparium*) in open, xeric sites, including railroad rights-of-way and roadsides. In these hot, barren areas this bivoltine lygaeid is associated with ants and feeds on fallen seeds of little bluestem and other grasses (Sweet 1964).

The habitat reported for Nova Scotia is similar—a south-facing sandy slope (Scudder 1993)—but the habitat in Newfoundland differs by being wetter: open, swampy ground harboring colonies of *Carex* and *Sphagnum* (Lindberg 1958). In the Midwest, *S. insignis* inhabits climax prairie dominated by *Andropogon* (or *Schizachrium*) and *Stipa* (Hendrickson 1930). In western Canada it occurs in "Mixed Prairie, Tallgrass prairie, and Fescue Grasslands" of the Prairie Provinces; in British Columbia it has been collected in the Pacific Northwest Bunchgrass ecosystem. Habitats in the Yukon include south-facing slopes characterized by *Festuca* grasslands and *Artemisia* (Scudder 1993).

Sweet (1964) noted that fieldwork throughout the range of *S. insignis* was needed. Herein, I describe the sites where this lygaeid was observed in Minnesota, an area from which habitat preferences remain unrecorded. Notes are given on wing condition and color forms of this polymorphic species.

¹Bureau of Plant Industry, Pennsylvania Department of Agriculture, Harrisburg, PA 17110.

COLLECTION SITES AND OBSERVATIONS

All collections were made by the author in northern Minnesota during 25–27 June 1995.

1. Lake of the Woods Co., granite ledges (Fig.1) above Rapid River, east edge of Clementson; 4 adults and 2 late-instar nymphs in crevices with a thin layer of pine needles (*Pinus strobus*) and white pine “flowers” (microsporangiate strobili).

2. Koochiching Co., Wayside Rest, Rt. 11, 3 mi. W. of Indus; 1 adult from granite outcrop near Rainy River; in crack filled with moss, lichens, and grasses.

3. Koochiching Co., Tilsen Bay, Rainy Lake; 5 adults, 1 fifth-instar nymph from grass-filled crevices of granite outcrop.

4. Lake Co., Bayside Park, Silver Bay; 9 adults, 1 fifth instar on granite cliffs along shore of Lake Superior; in cracks dominated by *Potentilla tridentata* (Fig.2) with occasional grass tufts.

DISCUSSION

The habitats of *S. insignis* observed in Minnesota—cracks and crevices of extensive granite outcrops and ledges—have not been reported in other areas of its range. Collection sites are somewhat similar, though, to many of those Sweet (1964) reported for New England—that is, open and xeric.



Figure 1. Granite ledges in Lake of the Woods Co., Minn., where *S. insignis* was found under white pine needles.



Figure 2. Granite outcrop in Nova Scotia with *Potentilla tridentata*. Habitat is similar to that in Minnesota where *S. insignis* occurred in cracks colonized by the same plant species.

Individuals of *S. insignis* were occasionally seen running over the granite surface near plant-and litter-filled cracks, where they resembled coexisting black ants in their appearance and behavior. But the lygaeid was typically detected only by scratching accumulated litter, which caused the bugs to leave the cracks and run onto the rock. The ant species observed at the Lake County site (no. 4) was *Formica subsericea* Say. At sites 1 and 3, late-instar nymphs of another rhyparochromine co-occurred with *S. insignis*; this gonianotine appears to be *Trapezonotus arenarius* (L.), a Holarctic species that in New England is found mainly among sparse vegetation in dry, open areas of slopes (Sweet 1964).

Slaterobius insignis was not encountered in cracks of smaller granite outcrops along roadsides. Associated with these less expansive outcrops were adults and a few late instars of another myodochine, *Ligyrocoris sylvestris* (L.). This species was observed in litter at the edge of these outcrops, rather than in rock cracks and crevices. Further sampling in Minnesota is needed to determine if habitats occupied by these two lygaeids are consistently distinct.

All 19 adults of *S. insignis* (7 males, 12 females) collected from granite outcrops in Minnesota were of the nearly black (dark) morph. In some areas, large populations of *S. insignis* consist of nearly equal numbers of the dark and of the bright tan or orange-red morph (Sweet 1964, Slater et al. 1993). Two brachypterous adults of the light-colored morph were collected from a different habitat in Minnesota at about the same time (21 June 1995); they were

swept by T. J. Henry from weeds in a gravel pit near Erhard, Otter Tail Co. All adults observed on granite outcrops were brachypterous. New England populations studied by Sweet (1964) were chiefly brachypterous with only about 20% macropterous. He remarked that it "would be interesting to see whether north midwestern populations in presumably widespread permanent habitats exhibit a lower frequency of macroptery." Although limited fieldwork in Minnesota did not yield any macropterous adults of *S. insignis* on granite outcrops, more extensive observations are needed to compare and contrast color and wing polymorphism of populations in this region with those in New England and other parts of its range.

Further study is also needed to determine whether *S. insignis* feeds mainly on seeds of grasses, as it does in New England (Sweet 1964). It is possible that on rock outcrops the bugs are opportunists, feeding on seeds of grasses, *Potentilla tridentata*, and other plant seeds that fall or accumulate in cracks of the substrate.

ACKNOWLEDGMENTS

I thank T. J. Henry (Systematic Entomology Laboratory, USDA, c/o National Museum of Natural History, Smithsonian Institution, Washington, DC) for companionship in the field, for identifying adults of *L. sylvestris* and *S. insignis*, and the photograph used in Fig. 1; J. A. Slater (Department of Ecology & Evolutionary Biology, University of Connecticut, Storrs) for identifying nymphs of *T. arenarius*; W. L. Brown, Jr. (Department of Entomology, Cornell University, Ithaca, NY) for identifying the ant *F. subsericea*; and E. R. Hoebeke (Department of Entomology, Cornell University) for the photograph used in Fig. 2.

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