

WEB STRUCTURE AND BURROW LOCATION OF *SPHODROS NIGER* (HENTZ) (ARANEAE, ATYPIDAE)

The purse-web spider *Sphodros niger* (Hentz) has long been regarded as one of the rarer North American mygalomorphs. In their recent revision, Gertsch and Platnick (1980 Amer. Museum Novitates, 2704:1-39) list only 47 specimens examined by them, though others doubtless are to be found scattered in various collections.

The spider's apparent rarity may be due principally to the fact that its habitat is unknown. Whereas other atypids, such as *Sphodros rufipes* (Latreille) and *Sphodros abbotii* Walckenaer build tubular webs attached to the bases of trees, *S. niger* is not known to do so, and its burrow has rarely been found. Of the 47 specimens listed by Gertsch and Platnick (op. cit.) only 6 were females. The males were captured mostly in pitfalls, or when they were seen wandering about on the ground. Of the six females, one was taken from the stomach of a frog, no information on web or burrow is given for four others, and one was taken from a "tube in leaf mould." The latter appears to be the only existing clue to the location of this species' burrows.

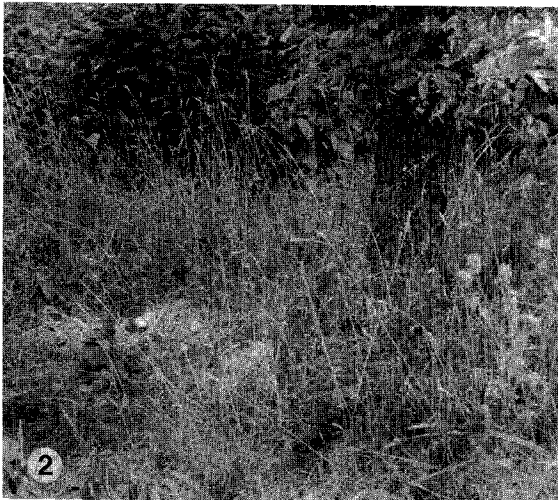
Recently it has been suspected (Gertsch and Platnick, op. cit.) that *S. niger* lays the above-ground portion of its tube flat on or near the ground as the European species of *Atypus* and the American *Atypus snetsingeri* Sarno are known or believed to do. This suspicion has been confirmed by my discovery in 1981 of the tubes and burrows of *S. niger* on Gibraltar Island, Lake Erie, Ottawa Co., Ohio.

The first web found, that of a tiny juvenile, was standing erect and attached to a grass blade in the lawn near the northeast end of the island, at the site shown in Figure 1. This tube was about 20mm high and 1.5mm in diameter. Further search of the area disclosed 15-20 more tubes, all but one or two of which lay flat on the ground, concealed by the grass. All of these tubes occurred in an area measuring about 5 by 20 feet.

As is usual with atypids, the tubes were partially covered externally with particles of soil and local debris, bits of grass blades in this case. There were few very small tubes, no more than 2-3 were found in any one summer. The size distribution of the tubes was otherwise made up of about equal numbers of tubes of each size class. Almost all were judged as being made by individuals ranging from about half-grown to adult.

During the next two summers (I have not visited the island more recently) additional specimens were found at the same spot, though few were collected. Searching in other parts of the island has revealed a few tubes in widely scattered areas, but no more concentrations such as occur at the original site. One of these other areas is shown in Figure 2, and a large, but somewhat worn (perhaps abandoned?) tube found there is illustrated in Figure 3. This web was left undisturbed. The next year no tube could be found in this spot.

Considering the habitats of *S. abbotii* and *S. rufipes*, the placement of the *S. niger* burrows is surprising. The soil on Gibraltar Island is, in most places, hard and rocky, and often quite dry. The subterranean portions of the *S. niger* tubes sometimes twist tortuously around and between buried rocks. In very dry weather the "aerial" portions of the tubes are often completely packed with soil,



Figs. 1-3.—1. Location of original find and only dense colony of *S. niger* on Gibraltar Island, Lake Erie, Ottawa Co., Ohio. The limits of the colony lie between the edge of the rocks and arrow tips. (Photo by courtesy of Craig Holman, and the Columbus Dispatch.) 2. Another location where a few burrows were found. 3. A large tube found at the location shown in Fig. 2. Arrows indicate ends of the somewhat damaged tube.

presumably by the spider. One adult female was taken from the burrow beneath the only one of these filled tubes I have excavated.

The exposed sites of the burrows may not be the preferred habitat of these spiders. In the wooded sections of Gibraltar Island the soil is thin, more rocks are present, and the bedrock is sometimes quite close to the surface. The open

areas may be the only places where the spiders can burrow successfully to a sufficient depth.

Up to now the number of collected specimens of *S. niger* from Gibraltar Island is only five: a male taken on the ground surface in 1978 by the late Michael Glorioso, and an immature and three females all taken by me at the site of the initial discovery of the webs. The total number of webs observed from 1981-1983 has been about 40-50, however.

It is unclear from the discussion by Gertsch and Platnick just how many *Sphodros* species do extend their webs up tree trunks. Only two, *S. abbotii* and *S. rufipes*, are unequivocally indicated as doing so. Coyle (personal comm.) states that *Sphodros atlanticus* Gertsch and Platnick and *Sphodros coylei* Gertsch and Platnick build vertical tubes attached to tree stumps or grasses, and that *S. atlanticus* has also been found in semi-horizontal tubes. *Sphodros fitchi* Gertsch and Platnick has apparently been found in a burrow only once (Fitch H.S. 1963. Univ. Kansas Mus. Nat. Hist., Misc. Pub., 33:1-202). The description of the tube was brief, but implied that the tube was vertical. In southern Illinois, where *S. atlanticus*, *S. niger* and *S. rufipes* have all been collected (rarely), the only webs found on tree trunks have either been empty or have contained *S. rufipes*.

I wish to thank Craig Holman and the Columbus (Ohio) Dispatch for permission to use the photograph designated Figure 1. Mr. David Thrush kindly made the other photographs for me. Michael Glorioso found the male *S. niger*, recognized it, and presented it to me when I arrived on the island that summer. Dr. Fred Coyle provided information on *S. atlanticus* and *S. coylei* habits. I am grateful to all for their assistance.

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