

**A NEW SPECIES OF
AMBRYsus STÅL FROM ASH MEADOWS, NEVADA
(HETEROPTERA: NAUCORIDAE)**

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Abstract.—*Ambrysus relictus*, n. sp. is described from thermal springs in Ash Meadows, Nevada, and compared to *Ambrysus amargosus* La Rivers, another thermally endemic species occurring in the same area. The warm spring habitat of the species is discussed, and figures are provided of the dorsal habitus, male abdominal terminalia, and female subgenital plate.

The biota of Ash Meadows, a spring fed desert oasis lying in the Amargosa River basin approximately 90 miles northwest of Las Vegas, Nevada, has long been noted for its high concentration of endemic plants, fishes, snails and aquatic insects. The thirty thermal seeps and springs that emerge in this area harbor the most diverse local assemblage of endemic species found anywhere in the continental United States, including the naucorid *Ambrysus amargosus* La Rivers, which is confined to Point of Rock Springs (La Rivers, 1953), near the southern end of the oasis. In early 1991 it was brought to our attention by Doug Threlloff, the biologist for the Ash Meadows National Wildlife Refuge, that a second population of naucorids was present in a group of springs further to the north. These insects proved to be a new species, and are described herein as *Ambrysus relictus*. The discovery of this taxon brings the number of thermally endemic *Ambrysus* known to occur in the Amargosa River system to three, including the aforementioned *A. amargosus*, plus *A. funebris* La Rivers, which is found in thermal outflows near Furnace Creek, in Death Valley.

In the description below all measurements given are in millimeters. Specimen repositories are given in the acknowledgments.

***Ambrysus relictus*, new species**

Figs. 1-3

Description.—Small, ovate, brachypterous, shape as in Figure 1. Length, male 5.34 mm (mean, N = 10; min. 5.16, max. 5.66), female 5.44 mm (mean, N = 10; min. 5.22, max. 5.72); width, male 3.30 mm (mean, N = 10; min. 3.11, max. 3.50), female 3.44 mm (mean, N = 10; min. 3.22, max. 3.88), widest across embolium.

Ground color yellowish, with strongly contrasting dark markings on dorsum; faintly shining, head and pronotum shallowly rugulose, pronotum punctate; scutellum and hemelytra thickly set with white punctations; head medially and posteriorly brown; pronotum broadly yellowish to luteous on lateral margins and entire posterior margin;

scutellum dark medially; hemelytra with embolium light on anterior $\frac{2}{3}$ to $\frac{3}{4}$, light wedge-shaped mark present on inner corium at junction of membrane and outer corium, scattered light markings present on corium and clavus. Venter yellowish, tinged with brown; legs yellowish, spines brown.

Head narrow, deeply set into pronotum, produced anteriorly for $\frac{1}{4}$ of eye length, anteclypeal margin almost straight; vertex very slightly domed medially, produced behind eyes for $\frac{1}{2}$ of eye length, with numerous short setae laterally along and ahead of eyes; length 1.00, width through eyes 1.44. Eyes with many ommatidia, twice as long as wide, with narrow lateral flange; embraced posteriorly by pronotum; length 0.55, width 0.28, posterior/anterior interocular space 0.69/0.89. Eyes not raised, almost flat dorsally, forming smooth transition to head; labrum broad, rounded; maxillary plates not prominent.

Pronotum slightly domed, lateral margins slightly convex, smooth, set with long silky setae (often appressed); posterior margin broadly demarcated by weak sulcus; humeral angles obtuse, not sharp; maximum length 1.66, length on midline 0.94, width 2.89. Scutellum triangular, not raised, roughly twice as wide as long, length 0.72, width 1.55. Hemelytra long, fully developed, reaching almost to posterior margin of abdomen; embolium weakly expanded, not sinuate posteriorly. Hind wings reduced, costal cell present. Connexival margins of tergites II–III (first two visible) smooth, IV–VI weakly serrate; posterolateral angles weakly spinose.

Ventral surface sparsely set with short appressed setae; propleura not contiguous with prosternum; propleura touching medially, separated there from mesosternum.

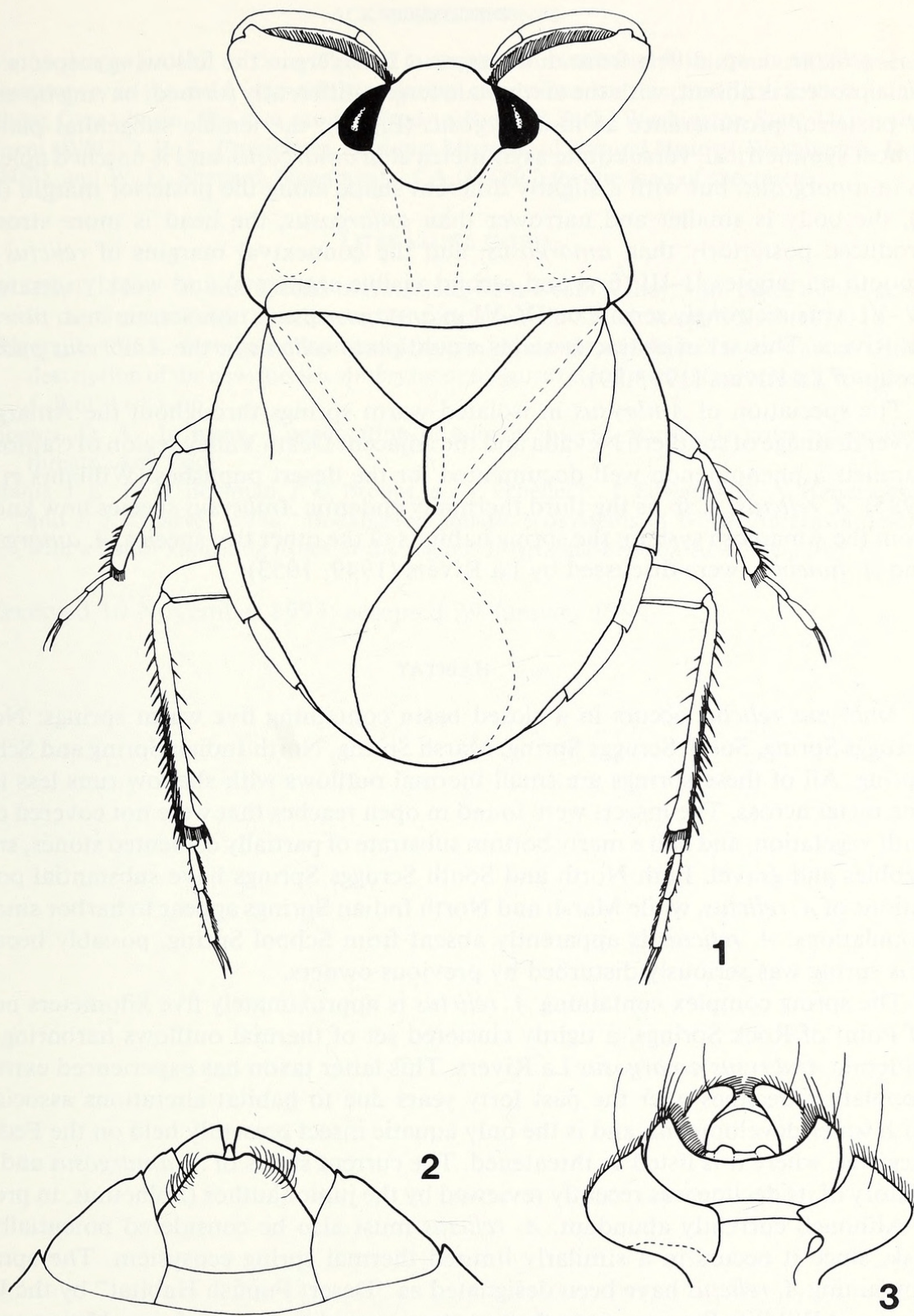
Fore femur broad, length/width = 1.28/0.89; tarsi reaching to adjacent proximal part of femur. Middle and hind femora slender, each with two closely set rows of small yellowish spines on posterior surface, one row each at dorsal and ventral edges; middle and posterior tibia with numerous stout spines, distally with two transverse rows of smaller spines.

Male and female abdominal terminalia and genitalia as in Figures 2 and 3.

Holotype, brachypterous male: NEVADA, Nye Co., South Scruggs Spring, Ash Meadows NWR, 710 m, water temp. 33°C, CL 2715, 22 July 1992, J. T. and D. A. Polhemus (USNM).

Paratypes, all brachypterous, all from NEVADA, Nye Co., collected by J. T. and D. A. Polhemus unless otherwise noted: 7 males, 10 females, 3 nymphs, same data as holotype (USNM, JTPC); 9 males, 4 females, North Scruggs Spring, Ash Meadows NWR, 710 m, water temp. 33°C, CL 2714, 22 July 1992; 4 males, 1 female, Marsh Spring, Ash Meadows NWR, 710 m, water temp. 31°C, CL 2716, 22 July 1992; 1 male, 1 female, North Indian Spring, Ash Meadows NWR, 710 m, water temp. 31°C, CL 2717, 22 July 1992 (all JTPC, USNM); 9 males, 8 females, Scruggs Ranch, B. Y.U.-A.E.C. (Mercury, Nevada N.T.S.), collector unknown, 15 March 1962 (USNM); 7 males, 8 females, North Scruggs Spring, Ash Meadows NWR, 27 March 1992, R. S. Zack & K. A. Rosema (WSUC); 9 males, 4 females, Marsh Spring, Ash Meadows NWR, 27 March 1992, R. S. Zack & K. A. Rosema (WSUC); 1 male, 1 female, 4 nymphs, Scruggs Spring, Ash Meadows NWR, WDS-A-911, 8 August 1992, W. D. Shepard (WSUC); 3 males, 2 females, 10 nymphs, Indian Spring, Ash Meadows NWR, WDS-A-910, 8 August 1992, W. D. Shepard (WSUC).

Etymology.—The name *relictus* refers to the relictual nature of this warm spring endemic. Masculine.



Figs. 1–3. *Ambrysus relictus*, n. sp. 1. Dorsal habitus. 2. Female abdominal terminalia, ventral view. 3. Male abdominal terminalia, dorsal view.

DISCUSSION

A. relictus, n. sp. differs from *A. amargosus* La rivers in the following respects: the male process is absent, with the sixth male tergite differently formed, having no angle or posterior protuberance as in *amargosus* (Fig. 3); the female subgenital plate is almost symmetrical, versus quite asymmetrical in *amargosus*, and is notched apically as in *amargosus*, but with a slightly different shape along the posterior margin (Fig. 2); the body is smaller and narrower than *amargosus*; the head is more strongly produced posteriorly than *amargosus*; and the connexival margins of *relictus* are smooth on tergites II–III (first and second visible segments) and weakly serrate on IV–VI, versus strongly serrate on IV–VI in *amargosus*, and non-serrate in *A. funebris* La Rivers. This set of character states would place *relictus* in the *Ambrysus pudicus* group of La Rivers (1953:89).

The speciation of *Ambrysus* in isolated warm springs throughout the Amargosa River drainage of southern Nevada and the adjacent Death Valley region of California parallels a phenomenon well documented for the desert pupfishes (Williams et al., 1985). *A. relictus*, n. sp. is the third thermally endemic *Ambrysus* species now known from the Amargosa system; the spring habitats of the other two species, *A. amargosus* and *A. funebris*, were discussed by La Rivers (1949, 1953).

HABITAT

Ambrysus relictus occurs in a closed basin containing five warm springs: North Scruggs Spring, South Scruggs Spring, Marsh Spring, North Indian Spring and School Spring. All of these springs are small thermal outflows with shallow runs less than one meter across. The insects were found in open reaches that were not covered over with vegetation, and had a marly bottom substrate of partially cemented stones, small pebbles and gravel. Both North and South Scruggs Springs have substantial populations of *A. relictus*, while Marsh and North Indian Springs appear to harbor smaller populations. *A. relictus* is apparently absent from School Spring, possibly because this spring was seriously disturbed by previous owners.

The spring complex containing *A. relictus* is approximately five kilometers north of Point of Rock Springs, a tightly clustered set of thermal outflows harboring the endemic *Ambrysus amargosus* La Rivers. This latter taxon has experienced extreme population declines over the past forty years due to habitat alterations associated with water development, and is the only aquatic insect presently held on the Federal Register, where it is listed as threatened. The current status of *A. amargosus* and the history of its decline was recently reviewed by the junior author (Polhemus, in press).

Although currently abundant, *A. relictus* must also be considered potentially at risk, since it occurs in a similarly limited thermal spring ecosystem. The springs containing *A. relictus* have been designated as "Desert Pupfish Habitat" by the U.S. Fish and Wildlife Service, since they contain an endemic pupfish in addition to the naucorids, and this should in principle confer the species' habitat some degree of protection. Because of the restricted distribution of *A. relictus*, consideration should be given to it in future decisions concerning resource management activities and planning.

ACKNOWLEDGMENTS

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