

Southwestern Association of Naturalists

A New Species of *Heterelmis* from Texas (Coleoptera: Elmidae)

Author(s): Linda S. Bosse, Donald W. Tuff, Harley P. Brown

Reviewed work(s):

Source: *The Southwestern Naturalist*, Vol. 33, No. 2 (Jun. 15, 1988), pp. 199-203

Published by: [Southwestern Association of Naturalists](#)

Stable URL: <http://www.jstor.org/stable/3671895>

Accessed: 09/01/2012 11:02

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



Southwestern Association of Naturalists is collaborating with JSTOR to digitize, preserve and extend access to *The Southwestern Naturalist*.

<http://www.jstor.org>

A NEW SPECIES OF *HETERELMIS* FROM TEXAS
(COLEOPTERA: ELMIDAE)

LINDA S. BOSSE, DONALD W. TUFF,
AND HARLEY P. BROWN

ABSTRACT—*Heterelmis comalensis* new species is described from Comal Springs, one of the headwaters of the Comal River, in New Braunfels, Texas. It is apparently endemic, hind wings brachypterous, and smaller in size than any other species known from the United States (1.7 to 2.1 mm in length, 0.8 to 0.91 mm in breadth). It is closest to *Heterelmis glabra* (Horn) from which it differs in body contour and in size, *H. glabra* being 1.9 to 2.35 mm long and 1.0 to 1.17 mm wide.

The genus *Heterelmis* Sharp 1882 is primarily neotropical, with 13 species scattered throughout much of South and Central America (Brown, 1981). One of these, *Heterelmis obesa*, ranges northward into mountainous sections of the western United States, and three additional species, *Heterelmis glabra*, *Heterelmis stephani*, and *Heterelmis vulnerata*, also occur in the western states (Brown, 1983). In Texas, *H. obesa* is known from the Guadalupe Mountains and *H. glabra* from the Rio Grande, but *H. vulnerata* is widespread (Burke, 1963; Brown, 1972). We here describe a new species from the headwaters of the Comal River in New Braunfels, Texas.

Heterelmis comalensis, new species
(Fig. 1A-G)

DESCRIPTION—*Male*—Length 1.7 to 2.1 mm; breadth 0.8 to 0.91 mm. Body elongate sides subparallel; elytra slightly wider than prothorax (Fig. 1A); moderately convex. Surface inconspicuously pubescent, clothed with fine, golden, recumbent hairs. Cuticle moderately shining, ranging in color from testaceous (preponderant) to dark brown, the pronotum usually somewhat darker than the elytra; legs, antennae, and mouthparts testaceous.

Head (Fig. 1B) without distinct impressions; frontal angles slightly produced above antennal sockets; pubescence of fine, golden decurved setae directed anteriorly; clypeus smooth, with anterior margin broadly emarginate, anterior angles protruding and rounded; labrum smooth, with margins broadly rounded; mandibles fuscous, shining, with three subacute apical teeth and a thumblike lateral process on outer margin; maxillary palpi four-segmented, apex truncate; labial palpi three-segmented, apex roundly truncate, with short setae arranged in groups of three or four; ligula with recurved setae on anterior margin increasing medially in number and thickness; antennae about 0.7 mm long, filiform, 11-segmented, segments I and II broadest, segment XI twice as long as II; eyes subequal in size to procoxae.

Pronotum 0.55 to 0.7 mm long and 0.65 to 0.75 mm wide, broadest near basal third, slightly narrowing anteriorly; with transverse impression near

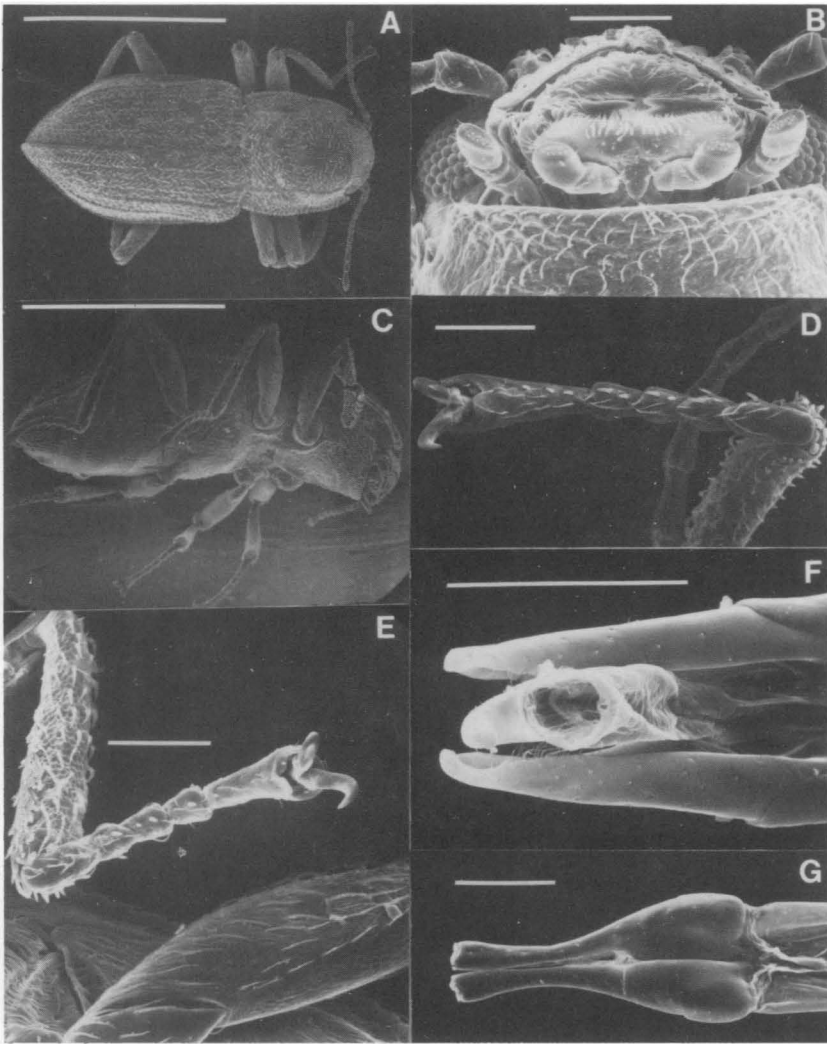


FIG. 1.—Scanning electron microscope photos of *Heterelmis comatensis*, new species. A. Dorsal aspect, scale = 1 mm. B. Ventral aspect of head showing palpi, scale = 0.1 mm. C. Ventro-lateral aspect, scale = 1 mm. D. Ventral aspect of protarsus, scale = 0.1 mm. E. Ventral aspect of mesotarsus, scale = 0.1 mm. F. Portion of male genitalia, ventral aspect, showing parameres and shrunken penis (median lobe) scale = 0.1 mm. In fresh preparations, the decurved apex of the penis extends well beyond the apices of the parameres, but, in the process of drying for SEM examination, the penis has curled downward and appears shorter than the parameres. G. Female genitalia, ventral aspect, scale = 0.1 mm. The digitiform styli which were attached to the apices of the coxites were lost in SEM preparation.

middle and with shallower oblique impressions in basal half converging toward base; setae or hairs sparse, rather uniformly spaced over surface except denser between sublateral carinae and lateral margins and thickened and erect along anterior margin; transverse impression more sparsely setose;

setae on anterior half of disk directed medially, those on posterior half directed toward scutellum (Fig. 1A); sublateral carinae granulate and extending from base to apex, curving medially anterior to transverse impression; lateral margin bisinuate, feebly explanate, produced at anterior angle.

Scutellum pentagonal, flat, with rounded lateral angles.

Elytra 1.25 to 1.5 mm by 0.8 to 0.91 mm, slightly wider than pronotum and twice as long, strongly convex from median line to lateral margin, moderately decurved at apical third (caudad of visible abdominal segment II); anterior margin bisinuate and flattened between striae II and VI; stria punctures ovoid, shallow, and regularly spaced; on elytral disk, the decurved hairs of the first longitudinal row (sutural) are directed posterolaterally, those of the second row postero-medially, thus alternating with each stria; erect hairs interspersed irregularly over surface; inner sublateral carinae extend to apical fourth, outer carinae to apex; both carinae and lateral margins granulate.

Flight wings short and non-functional.

Prosternum (Fig. 1C) with anterior half convex and feebly deflexed; apical margin straight, anterior angles rounded; prosternal process about 0.2 mm long, 0.3 mm wide at base, and 0.18 mm wide near apex, shallowly concave, truncate; carinae extend anteriorly from sides of process half way or more toward anterior margin; disk sparsely covered with short decurved setae.

Mesosternum (Fig. 1C) concave between coxae, sparsely covered with short setae.

Metasternum (Fig. 1C) slightly concave anteriorly conjointly with mesosternum; disk broadly convex, sparsely covered with decumbent hairs directed posteriorly.

Abdomen (Fig. 1C) with carinae of sternum I extending from metacoxae to margin of sternum II; all sterna broadly convex, sparsely covered with short, decumbent hairs directed posteriorly.

Legs (Fig. 1D,E) each with a rather narrow band of tomentum on about distal half of mesial surface of tibia; tarsal segment I with one or two stout and several slender spines, segments II to V each with two or three small, stout, ventral spines.

Genitalia (Fig. 1F) with slender penis and parameres; penis, though decurved, extends well beyond apices of parameres but may shrink and curl downward when dried for SEM (scanning electron microscopy) so that it appears to be shorter than the parameres (as in Fig. 1F); parameres slightly shorter than basal piece, with medial inner fringe of long hairs.

Female—Like male but averaging slightly larger. Genitalia (Fig. 1G) long, slender, broadest near base. (The digitiform styli attached to the apices of the coxites were lost in preparation of the specimen for SEM examination, and are missing in Fig. 1G).

HOLOTYPE—Male deposited in the U.S. National Museum of Natural History, Washington, D.C. Collection data: United States, Texas, Comal County, Comal River, Landa Park Springs, 9 April 1976, L. S. Bosse, collector.

PARATYPES—Thirty-seven with same locality data as holotype but with varying collection dates; 30 adults (and 31 larvae) from same locality but collected 22 March 1977 by H. P. Brown. Paratypes deposited with holotype; in the collection of L. S. Bosse; Southwest Texas State University, Aquatic Station, San Marcos; Texas A&M University, College Station; Stovall Museum of Science and History, University of Oklahoma, Norman.

ETYMOLOGY—The new species is named for the unique Comal Springs from which it was taken.

COMPARATIVE NOTES—The body contours of *H. comalensis* n. sp. are similar to those of *H. stephani*, but *H. stephani* is appreciably larger and lacks distinct sculpturing on the disk of the pronotum. The parameres of the male genitalia have an inner fringe of hair as in *H. glabra* and *Heterelmis obscura*; such a fringe is absent in *Heterelmis longula*, *H. obesa*, *H. stephani*, and *H. vulnerata*. The male genitalia appear to be indistinguishable from those of *H. glabra*, but specimens of *H. comalensis* n. sp. are smaller, paler, and slenderer than those of *H. glabra*. It seems probable that the new species evolved from an isolated population of *H. glabra*.

The new species can be inserted into Brown's (1972) key to North and Central American species of *Heterelmis* by replacing couplet 7' on page 237 with the following insertion:

- 7'. Median lobe (penis) of male genitalia narrow (about 0.017 mm) between apices of parameres (Fig. 16 to 18).....7A.
 7A. Small and relatively slender (1.7 to 2.1 mm long, 0.8 to 0.91 mm wide); usually pale or light in color; known thus far only from Comal Springs in Comal Co., Texas.....*H. comalensis*, new species
 7A'. Larger and more robust (1.9 to 2.35 mm long, 1.0 to 1.17 mm wide); usually dark in color; in Arizona, Mexico, Central America, and Big Bend region of Texas.....*H. glabra* (Horn) 1870

ECOLOGICAL NOTES—The Comal River has its source in large springs in Landa Park, within the city limits of New Braunfels, Texas, and flows southeast approximately 4 km, where it joins the Guadalupe River. All specimens were found in only one of several headwater springs, located about 70 m from where it joins a second spring run. Water depth ranged from 2 to 10 cm over a hard-packed gravel substrate. Apparently the population reaches greatest density from February through April. Another species of *Heterelmis*, *H. vulnerata*, occurs in the near-by San Marcos River, which arises from springs derived from the same aquifer. The latter species is rather widely distributed in Texas and Oklahoma (Brown, 1972).

The authors thank R. Scott for his expertise in producing the SEM photos on a JEOL JSM-U3 scanning electron microscope. Funding for the use of the electron microscope was provided to D. W. Tuff by the Alfred P. Sloan Foundation.

LITERATURE CITED

- BROWN, H. P. 1972. Synopsis of the Genus *Heterelmis* Sharp in the United States, with description of a new species from Arizona (Coleoptera, Dryopoidea, Elmidae). Entomol. News, 83:229-238.

- . 1981. A distributional survey of the world genera of aquatic dryopoid beetles (Coleoptera: Dryopidae, Elmidae, and Psephenidae sens. lat.). *Pan-Pacific Entomol.*, 57:133-148.
- . 1983. A catalog of the Coleoptera of America north of Mexico. Family: Elmidae. U.S.D.A., Agriculture Handbook No. 529-50, 23 pp.
- BURKE, H. R. 1963. Notes on Texas riffle beetles (Coleoptera: Elmidae). *Southwestern Nat.*, 8:111-114.

Address of authors: (LSB) *P.O. Box 905, Midlothian, TX 76065*; (DWT) *Dept. of Biol., Southwest Texas State Univ., San Marcos, TX 78666*; (HPB) *Dept. of Zool., Univ. of Oklahoma, Norman, OK 73019*.