

Three new species of *Hexanchorus* Sharp, 1882 (Coleoptera: Elmidae: Larinae) from South America

P. J. Spangler and C. L. Staines
Department of Systematic Biology- Entomology
National Museum of Natural History, MRC 187
Smithsonian Institution
P. O. Box 37012
Washington, DC 20013-7012

Abstract. Three new species of *Hexanchorus* Sharp, *H. dimorphus* and *H. shannoni* from Argentina, and *H. mediarmidi* from Venezuela, are described and illustrated.

Keywords: Elmidae, Larinae, *Hexanchorus*, new species.

Introduction

During curatorial work on the backlog of the Coleoptera collection at the Smithsonian Institution, these three new species of *Hexanchorus* were found. Members of this genus are externally similar but males may be distinguished by their distinctive aedeagi. Species are known to occur from Mexico throughout Middle and South America as far south as Peru and Argentina.

Sharp (1882) erected the genus *Hexanchorus* for the new species *gracilipes* from Mexico. Grouvelle (1896) transferred *caraibus* Coquerel (1851) from the Caribbean, *cordillerae* Guérin-Méneville (1830) from South America, and *thermarius* Coquerel (1851) from Brazil to *Hexanchorus* (misspelled *Xexanchrous*). During the 1900s, many new species were discovered throughout Latin America Hinton described *tibialis* from Bolivia (1935) and *tarsalis* from Brazil (1937). Dèleve (1968) described *leleupi* from Ecuador. Zaragoza (1982) described *gracilipes orientalis* from México. Spangler and Santiago-Fragoso (1992) described *browni* from México and Panamá, *crinitus* from Costa Rica and Panamá, and *emarginatus* and *usitatus* from Panamá. They also synonymized *gracilipes orientalis* Zaragoza with *gracilipes* Sharp.

Hexanchorus Sharp 1882

Type species: *Hexanchorus gracilipes* Sharp 1882:128 (by monotypy).

Diagnosis. Body form elongate, subparallel; length 2.8 to 4.7 mm. Cuticle moderately soft; covered dorsally and ventrally with dense hydrofuge pubescence and without tracts of plastron setae. Pronotum with distinct transverse impression across apical 1/3; each anterolateral angle acute; broad, shallow depression at each posterolateral angle. First abdominal sternum with 2 carinae, each carina extending obliquely

from inner edge of each metacoxal cavity to posterior margin of first sternum. Adults are primarily riparian but enter water presumably for feeding and ovipositing; larvae are aquatic.

Hexanchorus shannoni Spangler and Staines, new species (Figs. 1, 2)

Diagnosis. Pronotum finely, densely punctate interspersed with sparse, coarse punctures. Mesotibia with lateral pubescent area at extreme base; medial pubescent area about 3 times as long as lateral pubescent area. Elytral striae ending at apical 1/6th. Male genitalia diagnostic; in lateral view with apex of median lobe hooked; parameres without basolateral emarginations; and basal piece without spinous process.

Description: Holotype (male). Body form and size: Elongate, subparallel, moderately convex; length 3.9 mm, width (across elytral humeri) 1.4 mm. **Color:** Cuticle black to reddish-brown; antennomeres 1-2, mouthparts, trochanters, base of femora, and tibiae paler; with fine, short, reddish-brown hair-like setae dorsally; some of these setae often with greenish iridescence; ventral surface with golden-yellow hair-like setae. **Head:** Without distinct impressions; surface microreticulate, with dense fine punctures separated by a distance equal to puncture diameter and sparse coarse punctures confluent to separated by 1-3x puncture diameter; clypeus with anterior margin truncate, angle on each side broadly rounded; labrum with anterior margin subtruncate, angle on each side broadly rounded; eye narrowed posteriorly and bordered by long black curved setae which arise near dorsal and ventral side of eye and extend toward middle of eye. **Antenna:** Pubescent; numerous long setae present on antennomeres 1-2 which are longer than the width of an antennomere; antennomeres of club compact, with dense setae, most setae on club shorter than ½ the width of an antennomere. **Pronotum:** Wider than long (1.0 mm: 0.9

mm); base wider than apex; surface punctate as head, with coarse punctures separated by their diameter or less. **Scutellum:** Slightly longer than wide; moderately convex; slightly elevated above adjacent elytral intervals. **Elytron:** 2.9 mm long, 1.4 mm wide; more than 3x as long as pronotum; elytra widest across humeri but only slightly wider than at apical 1/3; inner side of apex rounded; lateral margin smooth; humerus moderately gibbous; sutural interval raised on posterior 5/6s, other intervals flat; punctures on intervals no larger than finest punctures of head and pronotum and separated by 2-5x puncture diameter; mid-discal striae punctures round to subquadrate, 1/3 to 1/2 as wide as intervals and separated longitudinally by a puncture diameter or less; punctures becoming slightly finer laterally; apically punctures becoming finer and striae shallower, effaced on apical 1/6. **Venter:** Prosternum shallowly concave medially; prosternal process long, moderately wide, concave medially. **Leg:** Protibia slightly curved inward near apical 1/3; mesotibia with dense pubescence covering a narrow basolateral area and basal 1/4 of medial area. **Abdomen:** Entire disc of sterna 1-4 deeply concave; sternum 1 with indistinct carina on each side of concavity extending slightly behind coxal cavity; apicomedial margin of sternum 5 deeply and broadly emarginate. **Genitalia:** As illustrated (Figures 1, 2).

Female. Externally similar to male except inner apex of each elytron prolonged. Protibia slightly less curved than those of male. Metasternal disc not as deeply and less extensively concave. Abdominal sterna 1-3 convex, not concave; apicomedial margin of sternum 5 deeply, narrowly emarginate.

Variation. Pronotal width 1.0-1.1 mm; pronotal length 0.6-1.0 mm. Elytral width 1.3-1.6 mm; elytral length 2.6-3.3 mm. Total length 3.7-4.3 mm.

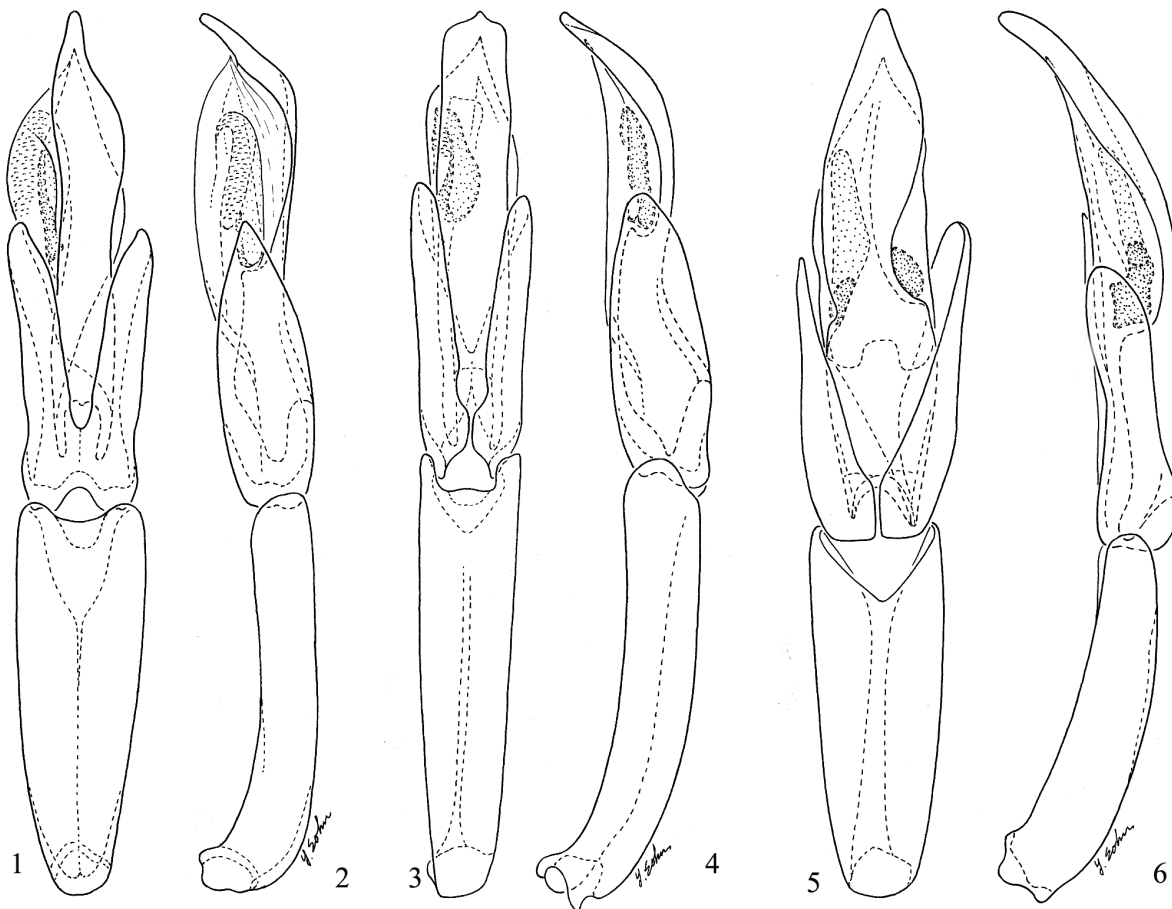
Type Data. Holotype (male): Argentina, Misiones, Iguazu Falls, 10 Oct. 1927, R. C. Shannon. Deposited in the National Museum of Natural History, Smithsonian Institution. Allotype (female): same label data as holotype. Deposited in National Museum of Natural History, Smithsonian Institution. Paratypes (88 males, 108 females): same label data as holotype. Deposited in National Museum of Natural History, Smithsonian Institution, the Natural History Museum (London), the Field Museum of Natural History (Chicago).

Etymology. Named for the collector of the species, R. C. Shannon.

***Hexanchorus dimorphus* Spangler and
Staines, new species**
(Figs. 3, 4)

Diagnosis. Pronotum finely, densely punctate interspersed with sparse, coarse punctures. Mesotibia with lateral pubescent area at extreme base and medial pubescent area about 4 times as long. Elytral striae ending at apical 1/6th. Male genitalia distinctive; medial lobe broad, in lateral view hooked at apex; without basolateral emargination on each paramere; basal piece without a spinous process.

Description: Holotype (male). Body form and size: Elongate, subparallel, moderately convex; length 4.1 mm, width (across elytral humeri) 1.4 mm. **Color:** Cuticle black to reddish-brown; antennomeres 1-2, mouthparts, trochanter, base of femora, and tibiae paler; with fine, short, reddish-brown hair-like setae dorsally; some of these setae often with greenish iridescence; ventral surface with golden-yellow hair-like setae. **Head:** Without distinct impressions; surface microreticulate, with dense fine punctures separated by a distance equal to puncture diameter and sparse coarse punctures confluent to separated by 1-3x puncture diameter; clypeus with anterior margin truncate, angle on each side broadly rounded; labrum with anterior margin emarginate in middle, angle on each side broadly rounded; eye narrowed posteriorly and bordered by long black curved setae which arise near dorsal and ventral side of eye and extend toward middle of eye. **Antenna:** Pubescent; numerous long setae present on antennomeres 1-2 which are longer than the width of an antennomere; antennomeres of club compact, with dense setae, most setae on club shorter than 1/2 width of an antennomere. **Pronotum:** As wide as long (1.0 mm: 1.0 mm); base wider than apex; surface punctate as head, with coarse punctures separated by their diameter or less. **Scutellum:** Slightly longer than wide; moderately convex; on same plane with adjacent elytral intervals. **Elytron:** 2.8 mm long, 1.3 mm wide; more than 3x as long as pronotum; elytra widest across humeri but only slightly wider than at apical 1/3; inner side of apex rounded; lateral margin smooth; humerus moderately gibbous; sutural interval raised on posterior 5/6s, other intervals flat; punctures on intervals no larger than finest punctures of head and pronotum and separated by 2-5x puncture diameter; mid-discal striae punctures round to subquadrate, 1/3 to 1/2 as wide as intervals and separated longitudinally by a puncture diameter or less; punctures becoming slightly finer laterally; apically punctures becoming finer and striae shallower, effaced on apical 1/6. **Venter:** Prosternum shallowly concave medially; prosternal process long, moderately wide, concave medially. **Leg:** Protibia slightly curved inward near apical third; mesotibia with dense pubescence covering a narrow basolateral area and basal 1/3 of medial area. **Abdomen:** Entire disc of sterna 1-3 deeply concave; sternum 1 with indistinct carina on each side of concavity extending slightly behind coxal cavity; apicomedial margin of sternum 5 deeply and broadly emarginate. **Genitalia:** As illustrated (Figures 3-4).



Figures 1-6. *Hexanchorus* spp., male genitalia. 1-2. *H. shannoni* new species. 1. ventral view. 2. lateral view; 3-4. *H. dimorphus* new species. 3. ventral view. 4. lateral view; 5-6. *H. mdiarmidi* new species. 5. ventral view. 6. lateral view.

Female. Externally similar to male except inner apex of each elytron slightly turned upward at an angle to the general surface. Metasternal disc not as deeply and less extensively concave. Abdominal sterna 1-3 convex, not concave; apicomedial margin of sternum 5 deeply, narrowly emarginate.

Variation. Pronotal width 0.9-1.3 mm; pronotal length 0.7-0.9 mm. Elytral width 1.1-1.6 mm; elytral length 2.6-3.1 mm. Total length 3.6-4.3 mm.

Type Data. Holotype (male): Argentina, Misiones, Iguazu Falls, 10 Oct. 1927, R. C. Shannon. Deposited in the National Museum of Natural History, Smithsonian Institution. Allotype (female): same label data as holotype. Deposited in the National Museum of Natural History, Smithsonian Institution. Paratypes (126 males, 107 females): same label data as holotype. Deposited in the National Museum of Natural History, Smithsonian Institution, the Natural History Museum (London), Field Museum of Natural History (Chicago).

Etymology. From *dimorpha* (Latin) for two forms, for the distinct sexual differences in this species.

***Hexanchorus mdiarmidi* Spangler and Staines, new species**
(Figs. 5-6)

Diagnosis. Pronotum finely, densely punctate interspersed with sparse, coarse punctures. Mesotibia with lateral pubescent area small, narrow; medial pubescent area extending 3/4 length. Elytral striae ending at apical 1/6. Male genitalia is diagnostic with median lobe broad, in lateral view hooked at apex; parameres without basolateral emargination; basal piece without a spinous process.

Description: Holotype (male). Body form and size: Elongate, subparallel, moderately convex; length 3.2 mm, width (across elytral humeri) 1.1 mm. **Color:** Cuticle black to reddish-brown; antennomeres 1-2, mouthparts, trochanter, base of femora, and tibiae paler; with fine, short, reddish-brown hair-like setae dorsally; some of these setae often with greenish iridescence; ventral surface with golden-yellow hair-like setae. **Head:** Without

distinct impressions; surface microreticulate, with dense fine punctures separated by a distance equal to puncture diameter and sparse coarse punctures confluent to separated by 1-3x puncture diameter; clypeus with anterior margin truncate, angle on each side broadly rounded; labrum with anterior margin emarginate in middle, angle on each side broadly rounded; eye narrowed posteriorly and bordered by long black curved setae which arise near dorsal and ventral side of eye and extend toward middle of eye. **Antenna:** Pubescent; numerous long setae present on antennomeres 1-2 which are longer than the width of an antennomere; antennomeres of club compact, with dense setae, most setae on club shorter than 1/2 width of an antennomere. **Pronotum:** Wider than long (0.9 mm: 0.4 mm); base wider than apex; surface punctate as head, with coarse punctures separated by their diameter or less; with depression in each posterior angle; medial longitudinal sulcus at base. **Scutellum:** Slightly longer than wide; moderately convex; on same plane with adjacent elytral intervals. **Elytron:** 2.2 mm long, 1.1 mm wide; more than 3x as long as pronotum; elytra widest across humeri but only slightly wider than at apical 1/3; inner side of apex rounded; lateral margin smooth; humerus moderately gibbous; sutural interval raised on posterior 5/6s, other intervals flat; punctures on intervals no larger than finest punctures of head and pronotum and separated by 2-5x puncture diameter; mid-discal striae punctures round to subquadrate, a to 2 as wide as intervals and separated longitudinally by a puncture diameter or less; punctures becoming slightly finer laterally; apically punctures becoming finer and striae shallower, effaced on apical 1/6. **Venter:** Prosternum shallowly concave medially; prosternal process long, moderately wide, concave medially. **Leg:** Protibia slightly curved inward near apical 1/3; mesotibia with dense pubescence extending 3/4 laterally and a narrow basolateral area. **Abdomen:** Entire disc of sterna 1-3 deeply concave; sternum 1 with indistinct carina on each side of concavity extending slightly behind coxal cavity; apicomedial margin of sternum 5 deeply and broadly emarginate. **Genitalia:** As illustrated (Figures 3-4).

Female. Externally similar to male except inner apex of each elytron slightly turned upward at an angle to the general surface. Metasternal disc not as deeply and less extensively concave. Abdominal sterna 1-3 convex, not concave; apicomedial margin of sternum 5 deeply, narrowly emarginate.

Variation. Pronotal width 0.7-0.9 mm; pronotal length 0.4-0.5 mm. Elytral width 1.0-1.2 mm; elytral length 2.0-2.3 mm. Total length 2.9-3.3 mm.

Type Data. Holotype (male): Venezuela, Dto. Federal, Los Caracas, 19 January 1985, P. Spangler, R. Faitoute, W. Steiner and A. Conover. Deposited in National Museum of Natural History, Smithsonian

Institution. Allotype (female): same label data as holotype. Deposited in National Museum of Natural History, Smithsonian Institution. Paratypes (47 males, 31 females): same label data as holotype. Deposited in National Museum of Natural History, Smithsonian Institution, the Natural History Museum (London), Field Museum of Natural History (Chicago).

Etymology. Named for Roy W. McDiarmid.

Acknowledgments

We thank Susan L. Staines for editorial assistance and Young T. Sohn for his excellent line drawings. A. S. Konstantinov, Systematic Entomology Lab, USDA, and W. D. Shepard, California State University, provided valuable and useful comments on an earlier draft of this manuscript.

Literature Cited

- Coquerel, J. C.** 1851. Monographie du genre *Potamophilus*. Revue et Magasin de Zoologie (2)3:591-603.
- Déleve, J.** 1968. IV. Coleoptera Elminthidae. Mission zoologique belge aux îles Galapagos et en Ecuador (N. et J. Leleup, 1964-1965) 1:211-272.
- Grouvelle, A. H.** 1896. Notes sur les subdivisions générique des Potamophiliens (Col.). Bulletin de la Société Entomologique de France 1896:77-79.
- Guérin-Méneville, F. E.** 1830. Insectes nouveaux, observes sur les plateaux des Cordillieres et dans les vallées chaudes de la Nouvelle-Grenade. Revue Zoologique 1:12-22.
- Hinton, H. E.** 1935. Notes on the Dryopoidea (Col.). Stylops 4:169-179.
- Hinton, H. E.** 1937. Notes on some Brazilian Potamophilinae and Elminae (Coleoptera, Dryopidae). Entomologist's Monthly Magazine 73:95-100.
- Sharp, D.** 1882. Parnidae. in F. D. Godman and O. Salvin (eds.). Biologia Centrali-Americana. Insecta, Coleoptera. 1(2):119-144. London.
- Spangler, P. J. and S. Santiago-Fragoso.** 1992. The aquatic beetle subfamily Larinae (Coleoptera: Elmidae) in México, Central America, and the West Indies. Smithsonian Contributions to Zoology Number 528. 74 pp.
- Zaragoza, S.** 1982. Una nueva subespecie de *Hexanchorus gracilipes* Sharp, 1882 (Coleoptera: Elmidae; Larini) de Soteapa, Veracruz, México. Anales del Instituto de Biología Universidad Nacional Autónoma de México, Series Zoología 52:353-360.