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New World Limnichinae III. A Revision of *Limnichites* Casey (Coleoptera: Limnichidae)

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NEW WORLD LIMNICHINAE III. A REVISION OF *LIMNICHITES* CASEY (COLEOPTERA: LIMNICHIDAE)

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ABSTRACT

A diagnosis is given for the genus *Limnichites*. Descriptions and a key to separate the 12 known species, including five new species, are presented. The new species are *Limnichites imparatus, L. porrectus, L. rudis, L. browni, L. simplex.*

Limnichites was erected by Casey (1889) as one of four subgenera of *Limnichus*, the genus in which most U.S. species of limnichids were placed at that time. Sharp (1902) in *Biologica Centrali-Americana* described a number of limnichids from Mexico and Central America. He treated Casey's subgenera as genera, following the arrangement in a recent catalog. Sharp apparently misinterpreted Casey's diagnosis of *Limnichites*, however, for he described the single new species under the name *Eulimnichus* Casey.

Casey's 1912 revision of the Byrrhidae retained the full generic status and described several new U.S. species. Since then no new *Limnichites* have been described, but the genus has been maintained in most catalogs. However, most available keys have continued to place the species in *Limnichus* which, as now constituted, is restricted to the Old World.

In this study five new species are described, three species are placed in synonymy, and one species is removed from synonymy as valid. A total of 12 species of *Limnichites* is now known.

The following abbreviations are used in this paper to indicate the disposition of type material.

CAS – California Academy of Sciences, San Francisco.

HPBC – Dr. Harley P. Brown, Stovall Museum, University of Oklahoma, Norman.

INHS – Illinois Natural History Survey, Urbana.

MCZ – Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

USNM – U.S. National Museum, Washington, D.C.

Genus **LIMNICHITES** Casey

Type species *Limnichus punctatus* LeConte 1854, p. 116.

Type designated by Casey 1912, p. 38.

The genus is separated from related genera primarily on the basis of the characters of the head and prothorax. A brief summary of these characters is presented here.

Pronotum not excavated to receive antennae (= tribe Limnichini). Eyes very convex and prominent from above, sides above eyes not acute or cariniform. Antennae inserted in open fovea at the ends of the epistomal suture in front of eyes, the bases not concealed. Epistomal suture often obliterated by coarse sculpture. Prosternum longitudinally sulcate. Pronotum usually with an arcuate row of somewhat tuberculate punctures extending

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laterally on each side of the midline about midway between the anterior and posterior margin; surface usually slightly depressed behind this series of punctures. Overall punctation usually cribrate.

The color of the integument is black in all known species. Because of the hairs associated with each puncture, many appear to be yellow, golden, or variegated in shades of yellow and brown. The form of these hairs varies from very short and scale-like to long and setaceous. The color differences seem to be due, in part, to the angle at which incident light strikes the pubescence. Patches of apparently different colored hairs are often oriented at different angles, and turning the beetle causes color changes and may make the maculations disappear. The pattern of maculations is similar in all species but the extent of any given spot may vary considerably. For this reason, and because the hairs are so easily eroded, the pattern is not very useful in distinguishing species.

The male of some species can be reliably separated from females by the presence of a densely punctate and pubescent depressed triangle in the center of the last abdominal sternum. This triangle is oriented with its apex pointing posteriorly and its base may extend along half or more of the base of the segment. In males of most species, however, this triangle is only slightly more developed than in the female and dissection is the only certain way to determine sex.

KEY TO THE SPECIES OF *LIMNICHITES*

1. Elytral punctation dense and coarse, forming closely packed hexagonal cells with the punctures separated by less than their own diameters (southwestern and western U.S. to central Mexico) . . . . . *.nebulosus* (Leconte)

1′. Elytral punctation not hexagonal, very fine to dense, punctures often separated by their own diameters or more, especially at the sides and apex 2

2(1′). Elytral punctation very fine and faint, not at all impressed; punctation of head close only on frons and clypeus (central Mexico) . . . . . *.imparatus* new species

2′. Elytral punctation distinct, at least on some parts of the surface 3

3(2′). Elytral punctation impressed, surface between punctures somewhat raised to give a ridged appearance, at least on the anterior parts 4

3′. Elytral punctation perforate, not at all impressed, surface flat between punctures (Massachusetts to Illinois and adjacent Canada) . . . . . *huronicus* Casey

4(3). Punctation of second visible abdominal sternum about the same size across its width 5

4′. Punctation of second visible abdominal sternum noticeably finer at midline . . . 8

5(4). Punctation of metasternum very fine and fairly even at sides and midline 6

5′. Punctation of metasternum crowded and perforate 7

6(5). Epipleura concave; pronotum broadly depressed at midline in posterior 2/3; hypomera densely punctate on posterior 2/3 (Chiapas, Mexico) . . . . . *porrectus* new species

6′. Epipleura flat; pronotum sharply incised at midline, hypomera finely punctate except along inner margin (Cuba, Haiti, Jamaica) . . . . . *rudis* new species

7(5′). Size smaller (less than 2.0 mm); epipleura coarsely punctate, usually flat or only slightly excavated; metasternal punctation becoming coarser and larger at sides (central and eastern U.S. and southern Canada) . . . . . *punctatus* (LeConte)

7′. Size larger (more than 2.0 mm); epipleura deeply concave, punctation obscured; metasternal punctation about even at sides and midline, slightly more distant at midline (eastern and central U.S.) . . . . . *olivaceus* (LeConte)

8(4′). Inner posterior angles of hypomera strongly depressed 9

8′. Inner posterior angles of hypomera not depressed, hypomera nearly flat 11

9(8). Outer anterior angles of hypomera acute and produced 10

9′. Outer anterior angles of hypomera not at all produced (California and Baja, Mexico) . . . . . *perforatus* (Casey)

10(9). Outer anterior hypomeral angles produced into a short, tooth-like spine; inner anterior angles also produced; abdominal punctation distinctly finer and much

more distant at midline than at sides (Mexico, Central America, and West Indies) . . . . . *confertus* (Sharp)

10'. Outer anterior hypomeral angles produced and acute but seldom tooth-like; inner angles not produced; abdominal punctation indistinctly finer and only slightly more distant at midline than at sides (Texas to California & Oregon and northern Mexico . . . . . *foraminosus* Casey

11(8'). Anterior margins of hypomera strongly advancing, forming a distinct angle with prosternal margin; elytral punctation not noticeably finer along the suture (Mexico and El Salvador) . . . . . *browni* new species

11'. Anterior margins of hypomera not advancing, continuing the line of the anterior prosternal margin; elytral punctation distinctly finer along suture (Mexico and Central America) . . . . . *simplex* new species

Limnichites nebulosus (LeConte)

Limnichus nebulosus LeConte 1879, p. 515. Type-locality: California. Lectotype here designated.

Limnichites nebulosus, Casey 1912, p. 40.

Limnichites densissimus Casey 1912, p. 41. Type-locality: Calaveras Co., Calif. NEW SYNONYMY.

TYPE-MATERIAL: The type-series of *L. nebulosus* consists of five specimens in the LeConte cabinet at Harvard's Museum of Comparative Zoology. The first of these, labelled Cala., and bearing a red label reading Type 2304, is here designated lectotype. The specimen has been so labelled for me by Mrs. Janice C. Scott.

The type of *L. densissimus* is in the Casey collection at the U.S.N.M. It bears a label reading type USNM 48359. Casey based his description on this single specimen from California, comparing it to Texas specimens of *L. nebulosus* but apparently not with California specimens with which it seems identical. For further discussion see variation.

DESCRIPTION: Male (based on a specimen from San Bernardino, California). Length 1.8 mm. Width 1.0 mm. Elongate oval. Black. Head coarsely punctate, punctures polygonally crowded; pubescence of short, flattened, golden hairs. Pronotum coarsely punctate, punctures polygonally crowded at sides, but not behind row of tuberculate punctures; pubescence of short flattened golden hairs. Scutellum punctured like adjacent pronotum. Elytra coarsely punctate, punctures polygonally crowded; pubescence of short, flattened, golden hairs; epipleura slightly depressed, coarsely punctate. Femora with large, crowded perforate punctures. Prosternum coarsely but distantly punctate. Hypomera closely, coarsely punctate; outer anterior angles produced into a short acute tooth. Metasternal punctation polygonally crowded. Abdominal punctation coarse and polygonally crowded except for a narrow polished hind margin on segments 3 and 4; pubescence of long golden hairs; central triangle of last sternum not developed. Genitalia as in Figure 1.

Female (based on a specimen from same locality as male): Externally identical to male.

VARIATION: Specimens from the eastern part of the range do not have the punctation as closely crowded, although it is still polygonal. The outer hypomeral angles are not as acute nor as produced as those from the western U.S. Specimens from Mexico have the punctation more crowded and the hypomeral angles more acutely prolonged than those from California. The variation seems to be largely geographical. Members of local populations are all similar to one another.

DISTRIBUTION: I have examined 122 specimens from the following localities. MEXICO: Baja California, Chiapas, Nayarit, Oaxaca, and Sinaloa. U.S.: Arkansas, Arizona, Oklahoma, Oregon, and Texas.

Limnichites imparatus new species

HOLOTYPE: Female. Mexico, Cuernavaca. Dr. A. Fenyes (CAS). Length 0.90 mm. Width 0.75 mm. Oval. Black. Head with fine, distant punctation that becomes close only on

the frons and clypeus; surface alutaceous; pubescence short, golden, recumbent. Pronotum finely, distantly punctate, punctures separated by 5 to 7 times their diameters, closer near margins; pubescence coarse, golden, long. Elytral punctation very faintly impressed, punctures separated by 2 to 3 times their diameters; pubescence coarse, golden, long; epipleura flat with scattered, even punctures. Prosternal punctation fine and distant. Hypomera microreticulate, punctures very minute; anterior outer margins rounded and obliterated. Metasternal punctation very fine, almost imperceptible, not at all more distinct at sides. Abdominal punctation small, scattered, very fine; pubescence long, golden.

Male: Unknown.

The holotype is the only specimen I have seen.

Limnichites huronicus Casey

Limnichites huronicus Casey, 1912, p. 43-4. Type-locality: Detroit, Mich. Lectotype here designated.
Limnichites olivaceus, Casey, not LeConte, 1889, p. 154.

TYPE-MATERIAL: Two specimens, probably both females, labelled Detroit, 7 June, are in the Casey collection at the U.S.N.M. One of these, bearing a red label reading Type USNM 48363, is here designated lectotype, the other a lectoparatype, and they have been so labelled by me.

DESCRIPTION: Male (based on a specimen from the type-locality). Length 2.2 mm. Width 1.3 mm. Broadly oval, widest at humeri. Black. Head with close, perforate punctation; pubescence short, golden. Pronotal punctation perforate, punctures separated by 1 to 1½ times their diameters, slightly more distant on disk; pubescence long, golden. Elytral punctation perforate, punctures separated by 1 to 3 times their diameters; pubescence of unmodified reddish-yellow hairs with a few patches of short, flattened, golden hairs; epipleura concave, punctures well separated. Femora with large perforate punctures. Prosternum closely perforate punctate. Hypomera closely, finely punctate; inner angles shallowly impressed; outer anterior angles not at all acute or prolonged. Metasternum closely perforate punctate at sides, punctures becoming finer and more distant toward midline, very fine at midline. Abdomen coarsely, closely punctate at sides, becoming gradually finer and more distant toward midline; pubescence long and golden; central triangle of last sternum not developed. Genitalia as in Figure 2.

Female (based on a specimen from type-locality): Externally identical to male.

DISTRIBUTION: I have seen 17 specimens from the following localities. CANADA: Ontario. U.S.: Illinois, Massachusetts, and Michigan. The species is apparently widespread but uncommon.

Limnichites porrectus new species

HOLOTYPE: Female. Mexico, Chiapas. Rio Lajas, N. of Ixtapa, 66/12/4, Harley P. Brown. U.S.N.M. Type #73403. Length 1.80 mm. Width 1.0 mm. Narrowly elongate oval. Black. Head punctation close, coarse, somewhat coalescent into longitudinal ridged grooves; pubescence golden, erect. Pronotal punctation fine and distant on disk, punctures separated by 3 to 4 times their diameters, becoming coarser, deeper and much closer at sides; surface broadly depressed in posterior 2/3 behind tuberculate series of punctures; pubescence short and golden. Elytral punctation distinct but fine, punctures separated by 2 to 3 times their diameters, becoming coarser and more impressed toward sides, then much finer at margins; surface slightly ridged between punctures; pubescence long, golden, relatively coarse and semi-erect; epipleura concave, punctures impressed. Prosternal punctation fine and distant, separated by 5 to 7 times their diameters. Hypomera densely perforate punctate in posterior, becoming slightly finer toward front; inner angle not impressed. Metasternum densely pubescent at sides, obscuring punctation; punctures very fine and unimpressed except along mesocoxal cavities. Abdominal punctation close and fine, mostly obscured by the fine, dense, relatively short pubescence.

Male: Unknown.
The holotype is the only specimen I have seen.

Limnichites rudis new species

HOLOTYPE: Male. Cuba, Soledad nr. Cienfuegos, July 4, 1950, Acc. No. 49679 (INHS). Length 1.55 mm. Width 0.95 mm. Elongate oval. Black. Head punctation fine, punctures separated by 3 to 5 times their diameters, except closer and coarser on front between antennae; pubescence of short, flattened, golden hairs. Pronotal punctation very fine and distant; midline sharply incised; pubescence of dense, short, flattened golden hairs. Elytral punctation fine, shallow, punctures separated by 1 to 2 times their diameters; pubescence of short, flattened golden hairs variegated with patches of reddish-yellow hairs; epipleura flat and very finely punctate. Maxillary and labial palpi dark yellow-brown. Antennae dark testaceous. Femora black, finely punctate; tibiae and tarsi dark testaceous. Prosternum finely, sparsely punctate, punctures separated by 3 to 5 times their diameters. Hypomera flat, finely punctate, except more coarsely so along inner margins; outer margins evenly curved. Metasternal punctation coarse, shallow and distant at sides and around mesocoxal cavities, becoming very fine and indistinct at midline. Abdomen with irregular, distantly scattered, very coarse, shallow punctures that are only slightly finer and more distant at midline; pubescence of long golden hairs; central triangle of last sternum poorly developed, composed of many punctures that are very slightly more impressed than those surrounding it. Parameres of aedeagus straight and parallel sided, inner margins curving outward to rounded tips; penis narrow, slightly expanded just before rounded tip (Fig. 3).

ALLOTYPE: Female. Same data as holotype (INHS). Externally identical to male, except last sternum with central triangle slightly less impressed.

PARATYPES: 3♂, 3♀, same data as holotype (2♂, 2♀ INHS, 1♂, 1♀ USNM). HAITI: 2♂, Ennery, nr. 1000 ft. Sept 6-11. '34, Darlington (MCZ). JAMAICA: 1♀, Kingston, Aug. 27-29. '34. Darlington (MCZ).

Limnichites punctatus (LeConte)

Limnichus punctatus LeConte, 1854, p. 116. Type-locality: Pennsylvania. Lectotype here designated.
Limnichus olivaceus, LeConte, 1879, p. 515, in error.
Limnichites punctatus, Casey, 1912, p. 41.
Limnichites austinianus Casey, 1912, p. 42. Type-locality: Austin, Texas. NEW SYNONYMY.

TYPE-MATERIAL: Four syntypes are in the LeConte collection at Harvard. The first of these, bearing a red label reading Type 2303, is here designated lectotype and has been so labelled by me. I believe this specimen is a female, although it has not been dissected.

The holotype of *L. austinianus* is in the Casey collection at the USNM. It bears a label reading: Type USNM 48360.

DESCRIPTION: Male (based on a specimen from Easton, Pa.). Length 1.8 mm. Width 1.1 mm. Ovate, widest past middle of elytra. Black. Head with deep, close, but not polygonally crowded punctures; pubescence golden. Pronotal punctation close and deep, nearly as close on disk as at sides, punctures separated by their own diameter or less; midline impressed; tuberculate line of punctures not well marked; pubescence golden. Elytral punctaion close, coarse, punctures separated by much less than their diameters; surface strongly ridged between punctures; pubescence golden, somewhat variegated with testaceous; epipleura nearly flat, coarsely punctate. Femora with close, coarse, perforate punctures. Prosternal punctation fine and distant. Hypomera flattened, slightly depressed at immer angles; punctation fine; outer anterior angles slightly produced and acute. Metasternal punctation coarse and close, slightly coarser at sides. Abdomen with small, even, perforate punctures across width; punctures very slightly larger and somewhat coalescent at sides; last

sternum with punctures nearly polygonally crowded; central triangle indistinctly developed. Genitalia as in Figure 4.

Female (based on a specimen from same locality as male): Externally identical to male, except last abdominal sternum slightly less closely punctate in central triangle.

VARIATION: The punctation on northern specimens seems to be slightly less crowded on the average than on those from the south. The type of *L. austinianus* agrees closely with specimens from Alabama and Mississippi. The genitalia of these latter, upon dissection, proved to be identical to those of typical *L. punctatus*.

The epipleura vary from very flat to slightly depressed along their inner margins. They are never deeply concave and their punctation is always distinct.

DISTRIBUTION: I have seen 282 specimens from the following states and provinces. CANADA: British Columbia, Quebec. U.S.: Alabama, District of Columbia, Georgia, Illinois, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, New Hampshire, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, Rhode Island, Texas, Virginia and Wisconsin.

Limnichites olivaceus (LeConte) name restored

Limnichus olivaceus LeConte, 1854, p. 116. Type-locality: Illinois.
Limnichus punctatus, LeConte, 1879, p. 515, in error.
Limnichus olivaceus, Casey, not LeConte, 1889, p. 154.
Limnichites punctatus, Casey, 1912, p. 41, ex parte.
Limnichites virginincus Casey, 1912, p. 42. Type-locality: Stone Creek, Lee Co., Virginia. NEW SYNONYMY.

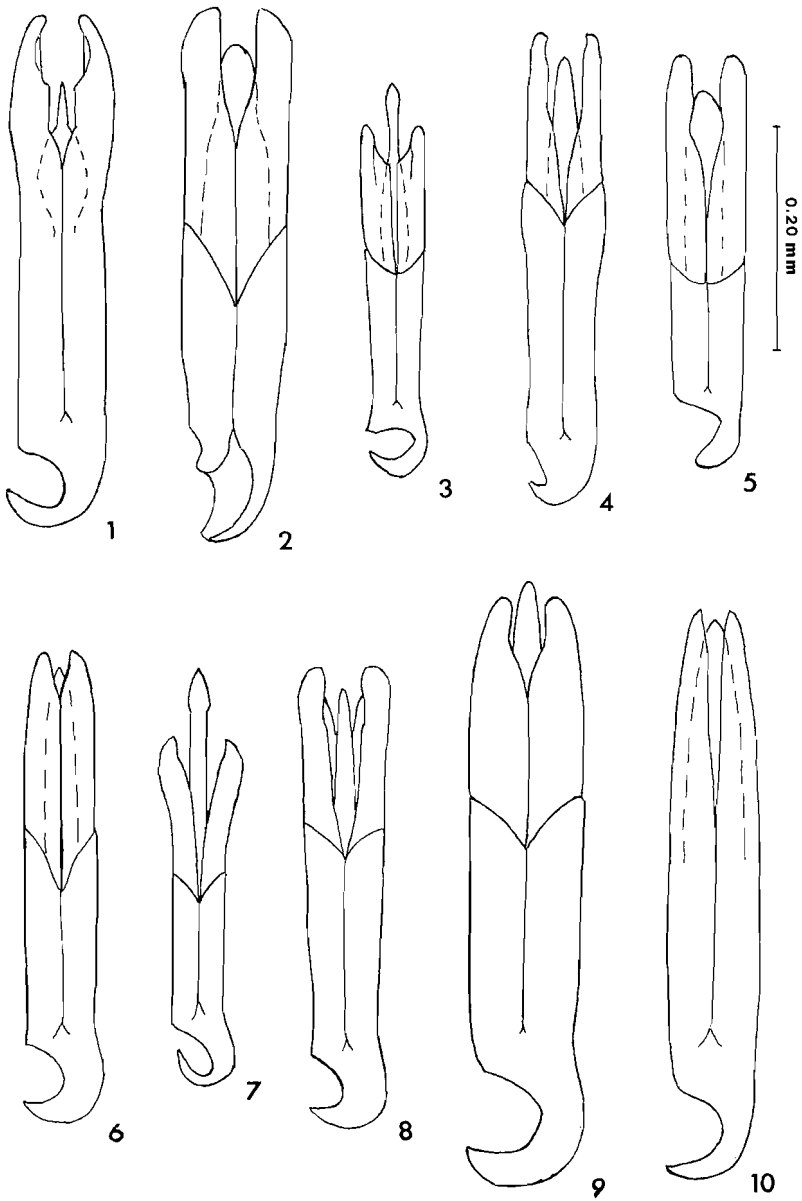
TYPE-MATERIAL: The holotype of *L. olivaceus* is in the LeConte collection at Harvard. It bears a red label reading: Type 2314. This single representative of the species has been placed at the end of the series of *L. punctatus*, presumably because LeConte placed the two in synonymy. According to Casey (1889) the types of *L. punctatus* and *L. olivaceus* are identical, but Casey was trying to justify the opinion that the specimen labelled *L. olivaceus* was not the original type, an idea he later discarded. A careful examination reveals numerous differences between the two types, and I therefore feel *L. olivaceus* is a valid species.

By accepting the synonymy, Casey was left with the larger of the two forms which he later described as *L. virginicus*. The holotype of this is in the Casey collection of the USNM, and it bears a label reading: Type USNM 48358.

DESCRIPTION: Male (based on a specimen from Vermilion Co., Ill.). Length 2.3 mm. Width 1.3 mm. Oblong oval with parallel sides. Black. Head with deep, close, but not polygonal punctation; pubescence short, golden. Pronotum with punctation deep and close, but not crowded at sides, slightly more distant on disk, much finer behind the well marked row of tuberculate punctures; midline impressed; pubescence golden. Elytral punctation deep and close, punctures separated by about their diameters; surface ridged between punctures at base; pubescence long, golden, appearing variegated; epipleura deeply, convexly excavated with punctation obscured unless viewed obliquely. Femora with fine, impressed, not perforate punctures. Prosternal punctation close. Hypomera slightly depressed at inner angles; punctation fine; outer anterior angles not at all prolonged. Metasternal punctation close but not crowded, slightly more distant at midline but not much smaller. Abdomen evenly punctate with small perforate punctures that show a slight tendency to coalesce at sides; pubescence long and fine; punctures of central triangle of last sternum barely impressed. Genitalia as in Figure 5.

Female (based on a specimen from same locality as male): Externally identical to the male.

DISTRIBUTION: I have examined 81 specimens from the following localities. U.S.: Alabama, Arkansas, Connecticut, District of Columbia, Illinois, Indiana, Iowa, Massachusettes, Michigan, Missouri, North Carolina, Ohio, Oklahoma, Pennsylvania, Texas, Virginia, and West Virginia.



Figs. 1-10. Male genitalia, dorsal view. 1, *Limnichites nebulosus.* 2, *L. huronicus.* 3, *L. rudis.* 4, *L. punctatus.* 5, *L. olivaceus.* 6, *L. perforatus.* 7, *L. confertus.* 8, *L. foraminosus.* 9, *L. browni.* 10, *L. simplex.*

Limnichites perforatus (Casey)

Limnichus perforatus Casey, 1889, p. 155. Type-locality: California.

TYPE-MATERIAL: A single male specimen is in the Casey collection at the USNM. It bears a label reading Type USNM 48361.

DESCRIPTION: Male (based on a specimen from Inyo Co., Cal.). Length 1.7 mm. Width 0.95 mm. Elongate oval. Black. Head with punctation close, coarse, somewhat polygonally crowded on front; pubescence of short golden hairs. Pronotal punctation fine and impressed on disk, punctures separated by 2 to 3 times their diameters, becoming coarser and much closer at sides; pubescence short, golden, very flattened; midline deeply impressed; row of tuberculate punctures not apparent. Elytral punctation large, impressed, punctures separated by about their diameters; some surface ridging between punctures; pubescence of golden, flattened, long hairs, shorter, yellow not so flattened hairs, and long testaceous unmodified hairs; epipleura depressed along inner margins, deeply punctate. Femora with a few fine to coarse, shallow, scattered punctures. Prosternal punctation coarse and close. Hypomera depressed at inner angles; punctation close and coarse near rear, more distant toward front; outer margins sinuous; anterior angles not produced. Metasternal punctation coarse and deep at sides, becoming less coarse, but as close and deep near the impressed midline. Abdominal punctation close and coarse at sides, with a tendency to coalesce, becoming less coarse but about as close at midline; pubescence long and golden; central triangle of last sternum not developed. Genitalia as in Figure 6.

Female (based on a specimen from same locality as male): Externally identical to the male.

DISTRIBUTION: I have examined 33 specimens from the following localities. MEXICO: Baja California, Norte. U.S.: California: Alameda Co., Inyo Co., Kern Co., Los Angeles Co., San Diego Co., and Tulare Co.

Limnichites confertus (Sharp)

Eulimnichus confertus Sharp, 1902, p. 676. Type-locality: Guatemala City, Guatemala. Lectotype here designated.

TYPE-MATERIAL: Sharp's series of types is in the British Museum (Natural History). I have examined one pin containing two of these specimens. One of these, a male, is here designated lectotype. The second, which I believe is a female, is designated a lectoparatype and has been remounted by me on a separate pin. In addition to my labels, each pin has the following: A red disk, bearing the word 'Type', a label reading Guatemala/City/Champion, and a third reading B.C.A. II, 1/Eulinmichus/confertus/Sharp.

DESCRIPTION: Male (based on a specimen from Honduras). Length 1.5 mm. Width 0.6 mm. Elongate oval. Black. Head punctation coarse, close but not crowded; pubescence of short golden hairs. Pronotal punctation fine and distant on disk, punctures separated by 2 to 4 times their diameters, closer and coarser at sides, crowded at hind angles; pubescence of short, flattened, golden hairs; midline shallowly impressed; line of tuberculate punctures not well developed. Elytral punctation shallow, broad and coarse, punctures separated by about their diameters; surface ridged between punctures; pubescence variegated with golden and testaceous hairs, of which the golden appear more flattened; epipleura coarsely punctate. Labial palpi yellow-gray. Femora with large coarse, shallow scattered punctures. Prosternum finely, distantly punctate. Hypomera evenly, fairly coarsely punctate; outer margins sinuate; inner and outer anterior angles acutely produced, the outer strongly so. Metasternal punctation large and close at sides, becoming finer and less impressed toward midline. Abdomen with coarse, coalescent punctation at sides, becoming finer and distant at midline; last segment closely but not very coarsely punctate; pubescence of long golden hairs; central triangle of last sternum not developed. Genitalia as in Figure 7.

Female (based on a specimen from same locality as male): Externally identical to male.

DISTRIBUTION: I have examined 42 specimens from the following localities. JAMAICA: Clarkstown, Gordontown, Troy. COSTA RICA: Rio Puerto Nueva, near Palmar. HONDURAS: Rio Verdura S. of San Antonio Flores. MEXICO: Chiapas: Puente Margarita, E. of Piijapan; Colima: El Trapiche; Sonora: Rio Cuchujaqui. NICARAGUA: Managua; Sapoa.

Limnichites foraminosus Casey

Limnichites foraminosus Casey, 1912, p. 43. Type-locality: Columbus, Texas.

TYPE-MATERIAL: The holotype, a male, is in the Casey collection at the U.S.N.M. It bears a label reading USNM Type 48362.

DESCRIPTION: Male (based on a specimen from the type-locality). Length 1.7 mm. Width 0.95 mm. Ovate, more attenuate at the posterior. Black. Head with coarse and close punctures with a tendency to coalesce on front, becoming slightly less coarse on apex; pubescence very short, golden, flattened at base. Pronotal punctation at midline fine, punctures separated by about twice their diameters, becoming close and coarse at sides and somewhat polygonally crowded at posterior angles; line of tuberculate punctures visible but poorly marked; midline slightly impressed; pubescence short, golden, very flattened. Elytral punctation coarse, punctures separated by less than half their diameters on the anterior, becoming slightly more distant and less coarse toward apex; surface ridged between punctures on anterior half; pubescence short, very flattened and variegated golden and testaceous; epipleura flat and coarsely punctate. Femora with coarse, shallow punctures. Prosternal punctation fine, punctures separated by 2 to 3 times their diameters. Hypomeral punctation close and coarse; deeply depressed at inner angles; outer margins sinuate; anterior outer angles prolonged and acute. Metasternal punctation broad and coarse at sides, becoming finer toward midline. Abdomen with punctation coarse, punctures separated by less than their own diameters with a tendency to coalesce at sides, becoming finer and slightly more distant at midline; pubescence of long golden hairs; central triangle of last sternum only feebly indicated. Genitalia as in Figure 8.

Female (based on a specimen from the type-locality): Externally identical to the male, except no trace of central triangle on last sternum.

VARIATION: Specimens from the western and northern part of the range do not have the outer hypomeral angles produced into a distinct tooth, although they are always acute. The size of the lateral abdominal punctures also seems quite variable. The length ranges from 1.3 to 1.8 mm.

DISTRIBUTION: I have examined 147 specimens from the following states. MEXICO: Coahuila. U.S.: Arizona, California, New Mexico, Oregon, Texas, and Utah.

Limnichites browni new species

I take pleasure in naming this species for Dr. Harley P. Brown, from whose collection came all known specimens.

HOLOTYPE: Male. Mexico, Sonora, Rio Cuchujaqui, 5 mi. E. Alamos, VI.11.74, H.P.Brown (USNM Type 73402). Length 2.10 mm. Width 1.25 mm. Elongate oval. Black. Head deeply and fairly distantly punctate, punctures separated by their own diameters; pubescence of short, flattened, golden hairs plus non-flattened very dark testaceous hairs. Pronotal punctation fine, impressed and distant on disk, punctures separated by 2 to 3 times their diameters, becoming much coarser, but not crowded at sides; line of tuberculate punctures not well marked; surface depressed at sides behind eyes; anterior margin sinuous; pubescence of short, flattened golden hairs and longer dark testaceous ones. Elytral punctation fine and perforate on disk, punctures separated by 2 to 3 times their diameters, becoming coarser and larger at sides; surface ridged between punctures at sides; pubescence variegated like pronotum, margins with long, erect, golden hairs, epipleura slightly depressed with coarse, well separated punctures. Femora finely, indistinctly punctate. Prosternal

punctation fine and distant. Hypomera flat, punctation relatively fine except much coarser at inner angles; anterior outer angle acute and advancing, but not prolonged or toothed; outer margins sinuous. Metasternal punctation coarse but not crowded at sides, becoming gradually smaller and finer toward midline; punctures separated by 3 to 5 times their diameters at midline. Abdomen coarsely but not too closely punctate at sides, more finely but about as closely at midline; last sternum more closely punctate, very densely so in the large central triangle. Parameres of aedeagus broad, tips slightly narrowed and broadly rounded; penis narrow and tapered to rounded tip (Fig. 9).

ALLOTYPE: Female (same data as male): Externally identical to male, except last sternum with the central triangle not as large nor as densely punctate.

PARATYPES: 6♂ 17♀, all collected by Harley P. Brown. EL SALVADOR: 2♀, Rio Paequina, Santa Rosa de Lima, 66/11/27 (HPBC). MEXICO: Colima: 1♂, 4♀, Armeria, 70/3/26 (1♂, 1♀ INHS; 3♀ HPBC). Guerrero: 4♀, Atoyac, 69/3/31 (USNM); 1♀, Trib. of R. Atoyac, Atoyac, 69/3/31 (HPBC); 1♀, Trib. of R. Papagayo, Playon, 69/3/30 (HPBC); 1♀, Treinta, 69/3/30 (HPBC); 1♀, Xaltianguis, 69/3/30, trib. of Rio Papagayo (USNM). Sinaloa: 1♂, Choix, VI.10.74 (USNM). Sonora: 4♂, 3♀, same data as holotype, (2♂, 2♀, HPBC; 2♂, 1♀ USNM).

Limnichites simplex new species

HOLOTYPE: Male. Mexico, Chiapas, S. of Las Cruces, 66/10/19-20, H.P. Brown (USNM Type #73401). Length 1.85 mm. Width 1.20 mm. Broadly oval. Black. Head coarsely, closely punctate, punctures polygonally crowded on front; pubescence long and golden. Pronotal punctation finely perforate at midline, punctures separated by 2 to 3 times their diameters, becoming rapidly coarser and closer toward sides, very fine behind the poorly marked tuberculate series; midline impressed; margins slightly explanate; pubescence long and golden. Elytral punctation fine, distant, impressed on disk, punctures separated by 2 to 3 times their diameters, becoming rapidly coarser and closer at sides; narrowly finer along margins and near suture; ridged between punctures; pubescence of slightly flattened golden hairs with patches of less flattened testaceous hairs; epipleura concave with coarse, unimpressed punctures. Maxillary and labial palpi, antennae and tarsi vary dark testaceous. Femora closely punctate. Prosternum coarsely but distantly punctate. Hypomera broad and flat, evenly punctate with shallow punctures; outer margins sinuate, outer anterior angles acute and slightly produced. Mesosternal punctation coarse and close at sides, becoming gradually finer, perforate and more distant toward midline where the punctures are separated by 3 to 5 times their diameters. Abdominal punctation coarse with a tendency to coalesce at sides, becoming only slightly finer and more distant at midline; last sternum with a central triangle of fine but densely crowded punctures; pubescence of long fine golden hairs. Parameres of aedeagus slender and evenly tapered to acute tips; penis evenly narrowing from middle to acute but rounded tip (Fig. 10).

ALLOTYPE: Female. Mexico, Gro. Colotlipa, 69/4/1, Harley Brown (USNM). Externally identical to the male except ventral punctation somewhat finer and more distant, and last sternum without the densely punctate central triangle.

PARATYPES: 1♂, 2♀. COSTA RICA: 1♀, W. of Barranca, 66/11/4, H.P.B. (HPBC). MEXICO: Colima: 1♂, El Cobano, 70/3/25, Harley Brown (USNM); Nayarit: 1♀, Pool in drying stream bed 20 mi. SE of Tepic, 23.IX.1948, HB Leech (CAS).

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