

NOTES ON TYCHINI FROM WESTERN NORTH AMERICA

(Coleoptera: Pselaphidae)

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In 1958 Schuster and Marsh proposed the genus *Hesperotychus* for species of California Tychini with asymmetric genitalia. They did not consider the North American species of *Tychus* with symmetrical genitalia to be congeneric with *Tychus* Leach, neither did they propose a new genus for those species. Park and Wagner (1961) proposed the genus *Lucifotychus* for western species with symmetrical genitalia and a subgenus *Custotychus* for the eastern species. We feel that *Custotychus* deserves generic rank and that *Lucifotychus s. str.* can be divided satisfactorily into two distinct genera as follows:

Metasternum of males with a process between or immediately behind mesocoxae; pro- and metatrochanters armed. Tergites IV and/or V of females medianly tumid.....*Lucifotychus*
Park and Wagner

Metasternum of males simple; pro- and metatrochanters simple; mesotrochanter usually with macroseta. Tergites IV or V of females not tumid.....*Hylotychus* Grigarick and Schuster

LUCIFOTYCHUS Park and Wagner

Lucifotychus impellus Park and Wagner, the type species of the genus, was described from Charleston, Coos Co., Oregon and their distribution records for the species included widely separated localities in Oregon and Washington. We have studied material from numerous localities also, and can discern at least five distinct populations. Whether these represent closely related species or subspecies is a question that cannot satisfactorily be answered on the basis of the limited material now available.

Lucifotychus agomphius Grigarick and Schuster, new species¹

(Fig. 1)

Male.—Head 325 μ long x 260 μ wide; antennal club 330 μ long. Eyes well developed, five peripheral facets visible; vertexal foveae separated by 3½ times distance from each fovea to eye margin; right mandibular ramus with six teeth; labrum 100 μ wide; maxillary palpus segment lengths/widths: I 37/15 μ , II 215/52 μ , III 140/56 μ , IV 195/90 μ with terminal palpal cone 60 μ long and subapical projection 15 μ long. Pronotum 350 μ long x 420 μ wide; elytra 570 μ long. Brachypterous. Protrochanter with blunt spine;

¹ All of the holotypes of new species are slide-mounts, and are deposited in the California Academy of Sciences. The paratypes are retained by the authors.

mesotrochanter with tubercle; metatrochanter flanged; metatibia 510μ long. Each tibia with distal spine. Metasternum with blunt, longitudinal apophysis 23μ long, arising 15μ posterior to a line passing across base of metacoxal cavities. Posterior margin of tergite V transverse; that of sternite VI concave, slightly angulate. Aedeagus (fig. 1) about 440μ long, the base less than $\frac{1}{2}$ this length; each paramere sclerotized for basal $\frac{2}{3}$, membranous to apex; its apex bears a number of setae of which four are noticeably longer; dorsal lobe of aedeagus lacking lateral teeth, entirely membranous and minutely setate; ventral lobe excavate distally, with numerous small pores apically and a few large pores basally.

Male (point-mount). Predominantly dark brown, with elytra, legs and antennal club lighter brown; palpi and sternite VII yellow. Pronotum with seven basal punctures, median largest. Elytral stria over $\frac{1}{2}$ length of elytron. Metasternum with small median impression. Sternite III impressed laterally along anterior margin. Sternite VI medianly impressed.

Female (point-mount). Resembles male except lacking modifications of the trochanters and metasternum. Sternite III not impressed. Sternite VI shorter, not impressed. Median tumosity of tergite V nearly obsolete, represented by a glabrous swelling, this polished, with impunctate surface.

The *holotype male*, one paratype male and two paratype females were collected NEAR BRIDGE CAMP, COOS COUNTY, OREGON, July 28, 1954 by V. D. Roth.

The males differ from those of *L. impellus* in the lack of marginal teeth of the aedeagus and in their smaller overall size. The females are distinguished by the near absence of a median tumosity on tergite V.

Hylotychus Grigarick and Schuster, new genus

Type of genus: *Hylotychus dentatus* Grigarick and Schuster, new species.

Tychini similar to *Lucifotychus* but in which the males differ in the general facies of the aedeagus, in the unarmed pro- and metatrochanters, and in the simple metasternum. The females differ in the lack of tumosities of tergites IV and V. The presence of a subapical projection on the fourth segment of the maxillary palpus (fig. 7) distinguishes both genera from *Cylindrartus* and the subgenus *Lucifotychus* (*Custotychus*).

Hylotychus dentatus Grigarick and Schuster, new species

(Fig. 2)

Male. Head 315μ long x 240μ wide; antennal club 315μ long; maxillary palpal segment III 135μ long, IV 205μ . Pronotum 345μ long x 390μ wide. Elytra 615μ long. Winged. Protibia with apical spur; metatibia 540μ long; mesotrochanter with prominent macroseta. Aedeagus (fig. 2) 315μ long x 165μ wide. Dorsal lobe 180μ long, wide basally, tapering distally to two lateral arms at apex; lateral arms 80μ across; a pair of small lateral projections

arise 60μ below apex, area between lateral arms and projections slightly granulate. Ventral lobe uniformly thick to fan-shaped apex, lateral arms 90μ across. Parameres as long as ventral lobe, ending in blunt apex of several small teeth.

Female. Unknown.

The *holotype male* and 11 paratype males were collected 19 MILES NORTHEAST OF GASQUET, DEL NORTE COUNTY, CALIFORNIA, July 11, 1959, altitude 1200 feet, in maple litter, by L. M. Smith. Additional paratypes were collected as follows: Ryan Creek, 6.5 miles north of Willits, Mendocino Co., California, 3♂ III-7-54 (P. D. Hurd); Faulkner Park, Anderson Valley, Mendocino Co., California, 1♂ X-14-54 (J. R. Helfer); 19 miles east of Green Point Ranch, Humboldt Co., California, 2♂ VII-11-54 (E. E. Gilbert, R. O. Schuster); French Creek, Trinity Co., California, 1♂ VII-11-54 (E. E. Gilbert, R. O. Schuster); Loon Lake, Douglas Co., Oregon, 3♂ VI-30-59 (humus under alder, L. M. Smith); Triangle Lake, Lane Co., Oregon, 1♂ IV-13-47 (I. M. Newell).

This species lacks the apical spine on mesotibia as does *H. cognatus* and *H. stellatus*, but the parameres of the aedeagus are blunt and multitoothed.

Hylotychus intellectus Grigarick and Schuster, new species

(Fig. 3)

Male. Head 295μ long x 235μ wide; antennal club 304μ long; maxillary palpal segment III 305μ long, IV 180μ . Pronotum 327μ long x 387μ wide; elytra 577μ long. Winged. Pro- and mesotibiae have apical spine; mesotrochanter with prominent macroseta; metatibia 476μ long. Aedeagus (fig. 3) 377μ long x 168μ wide. Dorsal lobe 204μ long; uniformly wide at base, tapering sharply at $\frac{1}{2}$ its length, nearly parallel-sided to small obscure subapical projections; apex sharply pointed; a mucroned area extends 45μ posterior to lateral projections. Ventral lobe fan-shaped apically: prominent lateral arms 163μ across, these arise 56μ below apex. Parameres 159μ long, relatively straight, with five subapical setae 123μ long.

Female. Unknown.

The *holotype male* and three paratype males were collected at TRIANGLE LAKE, LANE COUNTY, OREGON, April 13, 1947, by I. M. Newell. One paratype male was collected at Loon Lake, Douglas Co., Oregon, July 1, 1959, by L. M. Smith.

The combination of long lateral arms on the ventral lobe of the aedeagus and the long setae of the parameres distinguish this species.

A parasitic mite, *Hoplothrombium* sp., determined by I. M. Newell, was recovered from a tergite of one of the specimens from Triangle Lake.

***Hylotychus stellatus* Grigarick and Schuster, new species**

(Fig. 4)

Male. Head 330μ long x 255μ wide; antennal club 390μ long; maxillary palpal segment III 127μ long, IV 180μ . Pronotum 350μ long x 397μ wide. Winged. Elytra 600μ long. Protibia with apical spine; mesotrochanter with macroseta; metatibia 517μ long. Aedeagus (fig. 4) 405μ long x 180μ wide. Dorsal lobe 215μ long, gradually tapering to apex with a pair of small lateral projections 45μ below apex; area from 45 to 90μ below apex covered with mucrones. Ventral lobe relatively narrow, fan-shaped apically, with two lateral projections arising 40μ below apex. Parameres extend to $\frac{1}{2}$ the length of dorsal lobe, ending in a laterally directed subtriangular tooth and five long apical setae that extend to tip of dorsal lobe.

Female. unknown.

The *holotype male* and one paratype male were collected at FRESHWATER, HUMBOLDT COUNTY, CALIFORNIA, August 13, 1953, by G. A. Marsh and R. O. Schuster. One paratype male, from 6.4 miles south of Klamath, Del Norte Co., California, III-22-56 (N. A. Walker), and one paratype male, Smith River Cutoff, Del Norte Co., California, X-13-54 (V. D. Roth).

The aedeagus of this species is similar to that of *H. intellectus* but has shorter parameres and differs in the setal arrangement on the parameres. It is similar to *H. dentatus* in lacking an apical metatibial spine.

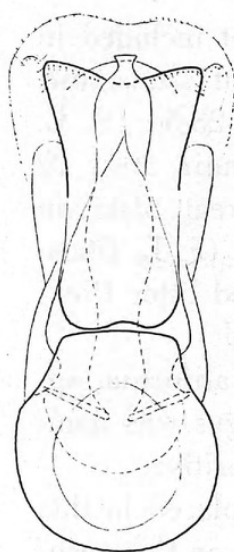
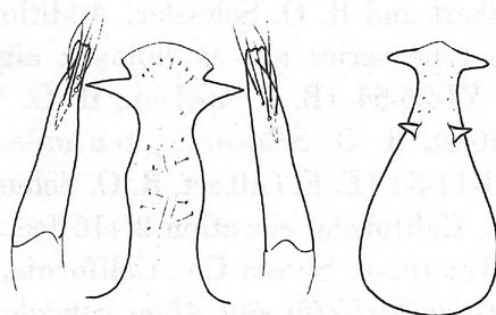
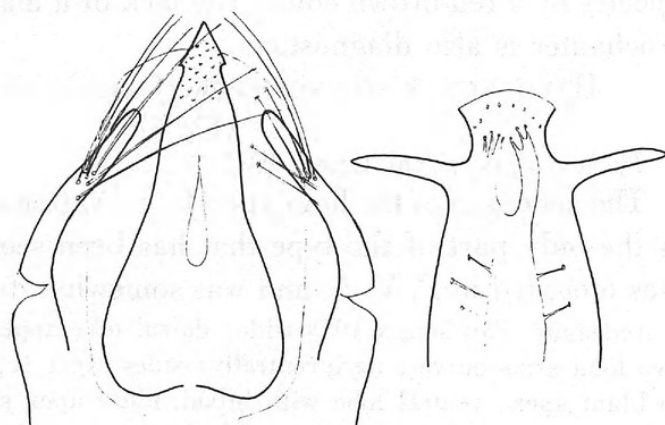
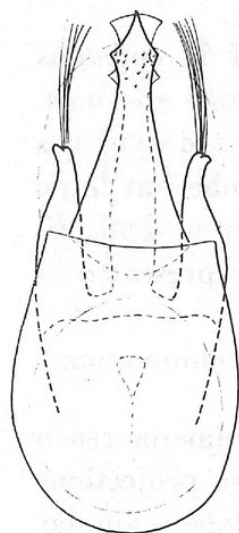
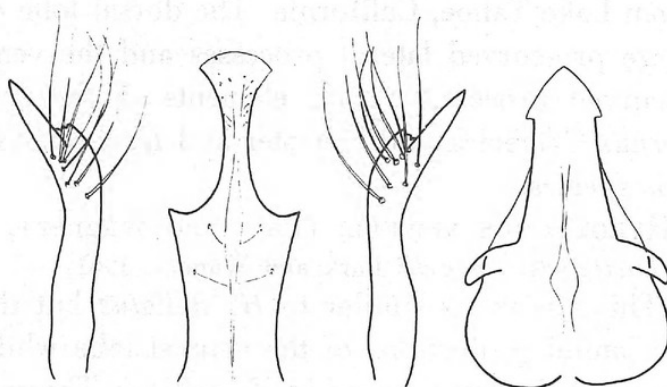
***Hylotychus remipenis* Grigarick and Schuster, new species**

(Fig. 5)

Male. Head 307μ long x 240μ wide; antennal club 345μ long; maxillary palpal segment III 127μ long, IV 172μ . Pronotum 335μ long x 390μ wide. Winged. Elytra 600μ long. Pro- and mesotibia have weak apical spines; mesotrochanter with microsetae only; metatibia 525μ long. Aedeagus (fig. 5) 382μ long x approximately 195μ wide. Dorsal lobe 195μ long, with broad base gently tapering to apex; a pair of lateral recurved arms 110μ across arise 90μ below apex; two weak projections arise 22μ below apex giving apex a triangular shape; mucronated area lacking. Sides of ventral lobe gradually expand for $\frac{1}{2}$ its length, then rapidly constrict, expanding gradually to fan-shaped apex. Parameres subequal to length of ventral lobe, terminating in acute, laterally directed apices; an excrescence comprising four to eight small teeth occurs in region of eight subapical setae.

Female resembles the male except for brachyptery and lack of secondary sexual characters.

The *holotype male* and one paratype male were collected EIGHT MILES SOUTH OF DUNSMUIR, SISKIYOU COUNTY, CALIFORNIA, November 23, 1954, by E. E. Gilbert and R. O. Schuster. One paratype male was collected from the same locality July 11, 1954, by E. E. Gilbert and R. O. Schuster, and one paratype male, 11 miles east of Douglas City, Trinity Co., California, on the same date by E. E.

1 *agomphius*2 *dentatus*3 *intellectus*4 *stellatus*5 *remipenis*

EXPLANATION OF FIGURES

Figs. 1, 4, entire aedeagi, dorsal; figs. 2, 3, 5, aedeagi, parmeres shown with ventral lobe, dorsal lobe separate except fig. 3 which is reversed.

Gilbert and R. O. Schuster. Additional specimens not included in the type series are as follows: eight miles south of Dunsmuir, 2♀ VI-26-54 (B. J. Adelson, R. O. Schuster), 9♀ XI-23-54 (E. E. Gilbert, R. O. Schuster); ten miles south of Dunsmuir, 2♂, 1♀ VII-11-54 (E. E. Gilbert, R. O. Schuster); Shasta Retreat, Siskiyou Co., California, elevation 2,416 feet, 1♀ July 1, 1931 (F. E. Blaisdell); Ingot, Shasta Co., California, 2♀ II-3-59, mixed litter *Pseudotsuga taxifolia* and *Abies concolor* (R. W. Gerhardt).

A male from Mokelumne Hill, Calaveras County, California, apparently belongs to this species. However, the aedeagus was damaged during dissection and identification was not positive.

The black body color, normal for this genus is replaced in this species by a red-brown color. The lack of a macroseta on the mesotrochanter is also diagnostic.

HYLOTYCHUS BIPUNCTICEPS (Casey), new combination

(Fig 6)

Tychus bipuncticeps Casey, 1887.

The aedeagus of the holotype (U. S. National Museum #38741) is the only part of the type that has been seen by the authors. It was mounted in P. V. A. and was somewhat distorted.

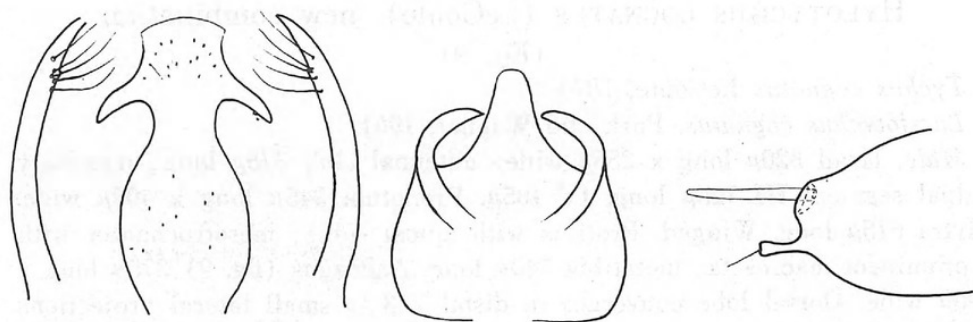
Aedeagus 375 μ long x 195 μ wide; dorsal lobe appears very broad basally; two long arms curve anterioventrally; sides taper rapidly from lateral arms to blunt apex; ventral lobe with broad, blunt apex and two large subapical arms curving basodorsally; lateral parameres relatively slender, slightly curved inwardly with five subapical setae.

This species was considered to be a synonym of *T. cognatus* LeConte by Casey in 1893. It was described from one specimen from Lake Tahoe, California. The dorsal lobe of the aedeagus has large pro-curved lateral processes and the ventral lobe has large recurved processes. Thus, elements of the aedeagus of both *H. cornus* Grigarick and Schuster and *H. dentatus* are represented in this species.

HYLOTYCHUS NEWELLI (Park and Wagner), new combination

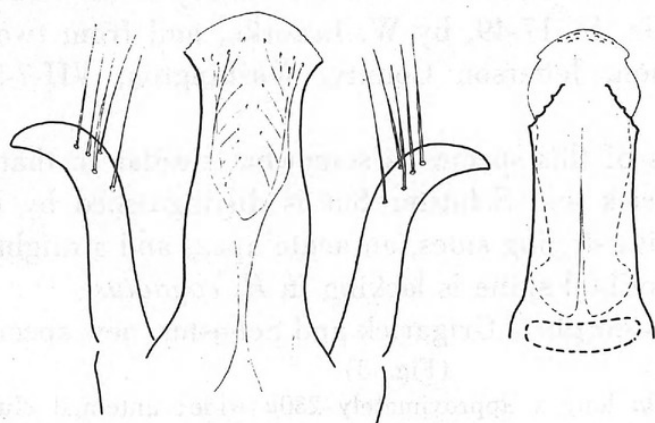
Lucifotychus newelli Park and Wagner, 1961.

This species is similar to *H. stellatus* but the parameres reach the lateral projections of the ventral lobe while these projections are much farther forward in *H. stellatus*. The ventral lobe is similar to that of *H. remipenis* but the dorsal lobe of *H. remipenis* is much broader and bears large lateral projections. We have not seen the type of *H. newelli*; however, Dr. Park kindly loaned the manuscript description of this species and a detailed illustration of the aedeagus.

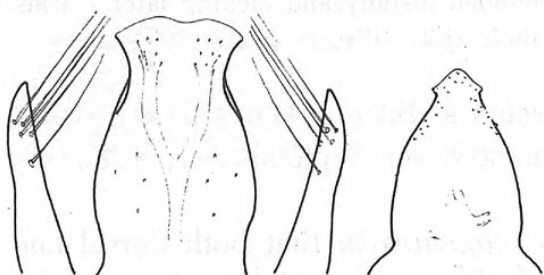


6 bipuncticeps

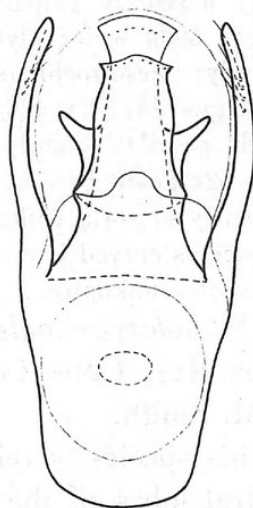
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8 simplicis



9 cognatus



10 cornus

EXPLANATION OF FIGURES

Figs. 6, 8, 9, aedeagi, parameres shown with ventral lobe, dorsal lobe separate; fig. 7, fourth segment of maxillary palpus showing palpal cone and subapical projection; fig. 10, entire aedeagus, dorsal.

HYLOTYCHUS COGNATUS (LeConte), new combination

(Fig. 9)

Tychus cognatus LeConte, 1874.*Lucifotychus cognatus*, Park and Wagner, 1961.

Male. Head 320μ long x 255μ wide; antennal club 375μ long; maxillary palpal segment III 125μ long, IV 185μ . Pronotum 345μ long x 405μ wide. Elytra 615μ long. Winged. Protibia with apical spine; mesotrochanter with a prominent macroseta; metatibia 540μ long. Aedeagus (fig. 9) 375μ long x 190μ wide. Dorsal lobe converges in distal 1/3 to small lateral projections arising 15μ below apex; margins and apex set with small mucrones. Ventral lobe relatively broad with fan-shaped apex; lateral extensions lacking. Parameres relatively straight, tapering distally and bearing five large subapical setae.

Female. unknown.

Specimens examined were collected at Stanley Park, Vancouver, British Columbia, IV-17-49, by W. Lazorko, and from two miles north of Brinnon, Jefferson County, Washington, VII-7-59, by L. M. Smith.

The aedeagus of this species is somewhat similar to that of *H. simplicis* Grigarick and Schuster but is distinguished by having a dorsal lobe with sloping sides, an acute apex, and straight parameres. The mesotibial spine is lacking in *H. cognatus*.

***Hylotychus simplicis* Grigarick and Schuster, new species**

(Fig. 8)

Male. Head 320μ long x approximately 230μ wide; antennal club 360μ long; maxillary palpal segment III 127μ long, IV 195μ . Pronotum 330μ long x 390μ wide; elytra 620μ long. Winged. Pro- and mesotibiae spined apically; mesotrochanter has prominent macroseta; metatibia 532μ long. Aedeagus (fig. 8) 480μ long x 210μ wide. Dorsal lobe 205μ long; sides nearly parallel, slightly broader at base; two converging rows of mucrones arise 52μ below base and extend toward broadly rounded apex. Ventral lobe of nearly uniform width, broadly rounded distally and lacking lateral arms. Parameres curved laterally so that their apices diverge nearly 90 degrees.

Female. unknown.

The *holotype male* was collected at SHORE ACRES STATE PARK, COOS BAY, COOS COUNTY, OREGON, on September 7, 1958, by L. M. Smith.

This species is related to *H. cognatus* in that both dorsal and ventral lobes of the aedeagus lack pronounced lateral processes. It differs in having a dorsal lobe which is parallel sided and blunt distally, curved parameres, and spined mesotibiae.

***Hylotychus cornus* Grigarick and Schuster, new species**

(Fig. 10)

Male. Head 315μ long x 255μ wide; antennal club 315μ long; maxillary palpal segment III 127μ long, IV 187μ . Pronotum 337μ long x 405μ wide.

Elytra 630μ long. Winged. Pro- and mesotibiae with prominent apical spine; mesotrochanter has prominent macroseta; metatibia 525μ long. Aedeagus (fig. 10) 390μ long x 210μ wide. Dorsal lobe 135μ long; a pair of lateral arms 112μ across arise 52μ from base. Ventral lobe with sides parallel, widely divergent at base. Parameres of uniform width, curving inward to blunt apex with four subapical setae.

Female resembles the male except for brachyptery and lack of secondary sexual characters.

The *holotype male* was collected at MENDOCINO, MENDOCINO COUNTY, CALIFORNIA, on May 26, 1955, by J. R. Helfer. Two paratype males from the same locality, October 10 and October 20, 1954, and one paratype male from Little River, Mendocino Co., May 3, 1955, were also collected by J. R. Helfer. Specimens considered to be conspecific, but not dissected or included in the type series, are as follows: Mendocino, Mendocino Co., California, 1 ♂ XII-19-53, 1 ♀ I-1-54, 1 ♂, 3 ♀ X-10-54, 1 ♂, 5 ♀ X-20-54, 1 ♂ XI-10-54, 1 ♂, 3 ♀ III-23-55, 1 ♀ V-26-55, 3 ♂, 4 ♀ VII-14-55, 1 ♂, 2 ♀ VII-23-55, 1 ♂, 2 ♀ III-30-57, 3 ♂, 8 ♀ IV-3-57, 1 ♂, 3 ♀ V-2-57, 2 ♀ V-15-57, 1 ♀ VII-2-57, 1 ♀ X-8-57, 2 ♀ X-19-57, 2 ♀ XII-2-57; Little River, Mendocino Co., 2 ♂, 2 ♀ V-3-55, 1 ♀ VI-7-55, 1 ♂ VII-9-57, 1 ♂, 2 ♀ VIII-4-57 (all J. R. Helfer); Monte Rio, Sonoma Co., California, 1 ♂ II-22-54 (M. Schuster); five miles south of Scotia, Humboldt Co., California, 1 ♂ X-1-59 (V. D. Roth); Smith River Cutoff, Del Norte Co., California, 1 ♂ X-13-54 (V. D. Roth).

This species is unique in that the aedeagus lacks subapical teeth on the ventral lobe but has well developed lateral processes on the dorsal lobe.

HYLOTYCHUS SONOMAE (Casey), new combination

Tychus sonomae Casey, 1887.

This species was described from a female. Since the species concepts in this genus are based on males and most of the females have not shown distinguishing characters, we consider it to be a *nomen dubium*.

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