

A REVIEW OF THE GENUS *BRYOTHINUSA* WITH DESCRIPTIONS OF THREE NEW SPECIES (COLEOPTERA: STAPHYLINIDAE)¹

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Bryothinusa is one of several strictly marine genera of rove beetles. For many years it was known by only a single species from the eastern Pacific Ocean. Recently, a number of species have been found on the western shores of the Pacific Ocean. The genus is reviewed below and three new species from Hong Kong are described. A subsequent paper will deal with the larvae of some of the species.

The genus, first described by Casey (1904), was based on *B. catalinae* from California. Fenyès (1920) repeated the original description and placed it in the group *Phytosi* with several other marine genera. Moore (1956) redescribed the genus and the species, leaving it in the *Phytosi* but expressed doubt about its position there. The next species to be placed in the genus was *chani* Moore and Legner (1971) from Hong Kong. They called attention to the fact that the mouth parts were similar to those of *Myllaena*. The genus *Halesthenus* was described by Sawada (1955) for four species from Japan. Sawada later (1971) synonymized *Halesthenus* with *Bryothinusa*, synonymized one of his species, added another species from Japan, and removed the genus to the tribe *Myllaenini* of the subfamily Aleocharinae.

As now constituted the tribe *Myllaenini* contains the genera *Camacopalpus* Motschulsky (Indonesias), *Myllaena* Erichson (cosmopolitan, terrestrial), *Polypia* Fauvel (Indonesia, marine), *Halorhadinus* Sawada (east Pacific Ocean, marine), and *Bryothinusa* Casey (north Pacific Ocean, marine). In each of these genera the front and middle tarsi are four-segmented and the posterior tarsi are five-segmented. In *Myllaena*, *Halorhadinus* and *Bryothinusa* the outer lobe of the maxilla is entirely corneous. The condition of

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the outer lobe of the maxilla is not known in *Camacopalpus* and *Polypea*. In each of them the head is produced between the eyes in the form of a beak similar to that of *Myllaena*.

KEY TO THE GENERA OF THE MYLLAENINI

1. Head not produced in front in the form of a beak 2
- Head produced in front in the form of a beak 3
- 2(1). Ligula very short, inconspicuous *Bryothinusa* Casey
- Ligula more than half as long as first segment of labial palpus
 *Halorhadinus* Sawada
- 3(1). Abdomen rapidly narrowed behind *Myllaena* Erichson
- Abdomen subparallel 4
- 4(3). First antennal segment as long as head, club shaped. . . *Camacopalpus* Motschulsky
- First antennal segment much shorter than head *Polypea* Fauvel

KEY TO THE SPECIES OF BRYOTHINUSA

1. Eyes small, occupying one-fourth or less of side of head 2
- Eyes large, occupying one-third or more of side of head 4
- 2(1). Elytra shorter than pronotum 3
- Elytra about as long as pronotum *catalinae* Casey
- 3(2). Small species, 1.60 mm *minuta* (Sawada)
- Larger species, 2.50 mm *algarum* Sawada
- 4(1). Tenth antennomere longer than wide 5
- Tenth antennomere wider than long 6
- 5(4). Tempora twice as long as eyes *tsutsuii* (Sawada)
- Tempora about as long as eyes *sawada* n. sp.
- 6(4). Eyes much longer than tempora 7
- Eyes not longer than tempora 8
- 7(6). Elytra piceous *chani* Moore and Legner
- Elytra yellow *sinensis* n. sp.
- 8(6). Third segment of maxillary palpi more than three times as long as wide
 *nakanei* (Sawada)
- Third segment of maxillary palpi about twice as long as wide
 *hongkongensis* n. sp.

Bryothinusa catalinae Casey

Bryothinusa catalinae Casey, 1904, Can. Entomol. 36: 313; Moore, 1956, Trans. San Diego Soc. Nat. Hist. 12: 132, Fig. 60-65.

The eyes are very small, occupying about a fourth of the side of the head, all the antennal segments are longer than wide, the third segment of the maxillary palpi is not exceptionally elongate and the elytra are a little wider than long. The color is fulvous with the abdomen slightly darker. The head and pronotum are concave. California.

Bryothinusa sawadai, NEW SPECIES

(Figures 2, 4B, 5B)

Description of holotype.

Color. Pronotum, elytra and appendages pale ferruginous; head and elytral humeri slightly darker; abdomen with first visible segment dark ferruginous, the following segments increasingly darker to base of fifth segment which is piceous, apex of fifth segment and sixth segment gradually paler.

Head. Head ovoid, a little wider than long. Surface flattened at center of disc; finely densely microreticulate with very fine scattered punctures and sparse short fine pubescence. Surface beneath very finely microreticulate. Eyes not protruding, about as long as tempora, the facets interspersed with short pubescence. Antennae slender, hardly incrassate; first and second segments subequal in length and width, each more than twice as long as wide; third segment little more than half as long as second, very little longer than wide; fourth through tenth segments subequal in length, tenth segment about one-fourth longer than wide; eleventh segment a little more than twice as long as tenth, pointed at apex. Third segment of maxillary palpi almost three times as long as wide, widest near apical third.

Thorax. Pronotum one-fourth wider than long, widest just behind apical angles; base four-fifths as wide as apex, slightly arcuate; apex nearly straight; apical angles nearly square; sides gently arcuate in apical half, thence nearly straight to the slightly obtuse basal angles; disc flattened in center. Surface very finely microreticulate. Pubescence as on head. Beneath with sculpture and pubescence much as above.

Elytra. Elytra conjointly one-third wider than long, humeri broadly rounded, sides very gently arcuate, outer and inner apical angles nearly square. Surface finely densely microreticulate. Punctuation and pubescence much as on head and pronotum.

Abdomen. Abdomen subparallel. First four visible tergites impressed at base. Surface sculpture and pubescence very similar to but less dense than that of foreparts. No external sexual modifications observed.

Length. 2.00 mm.

Holotype. Tolo Harbor, New Territory, Hong Kong, May 24, 1971. Tai-din Chan Collector.

Paratypes. Twelve specimens, some in poor condition, same data as holotype; five specimens same locality, August 1, 1971.

Remarks. Found among rock crevices and dead shells of barnacles and oysters. When burrowing in the sand never more than one centimeter deep. Can be found throughout the year.

This species has the eyes occupying about one-half of the side of the head, all the antennal segments elongate, the third segment of the maxillary palpi not unusually elongate and the elytra a little wider than long. The color is largely pale orange with the abdomen darker particularly in the posterior part of the middle segments.

This species is named in honor of Kohei Sawada.

Bryothinusa sinensis, NEW SPECIES

Description of holotype. (Figures 3, 4C, 5C)

Color. Largely piceus with the elytra, mouth parts and appendages yellow, the legs slightly smoky, the tip of the abdomen gradually ferruginous.

Head. Orbicular, about one-half wider than long. Surface evenly convex; finely very densely microreticulate with very fine short pubescence. Beneath with sculpture very similar to upper surface. Eyes not protruding, occupying most of the side of head, tempora about one-fourth the length of eye. Eyes pubescent. Antennae not incrassate; first and second segments subequal in length and width, each more than twice as long as wide; third segment less than half as long as second, little longer than wide; fourth through tenth segments subequal in length, tenth segment one-third wider than long; eleventh segment about as long as two preceding together, pointed at apex. Third segment of maxillary palpi about five times as long as wide.

Thorax. Pronotum one-third wider than long, widest just behind apical angles; base three-fourths as wide as apex, slightly arcuate; apex nearly straight; apical angles nearly square; sides gently arcuate in apical half thence convergent and somewhat sinuate before the nearly square basal angles. Disc evenly convex. Surface sculpture and pubescence similar to that of head.

Elytra. Elytra conjointly one-tenth wider than long; humeri broadly rounded; sides nearly straight and parallel; outer apical angles acute; inner apical angles square. Sculpture and pubescence similar to that of head and pronotum.

Abdomen. Abdomen subparallel, slightly wider apically. First four visible tergites impressed at base. Surface sculpture and pubescence very similar to but less dense than that of foreparts. No external sexual modifications observed.

Length. 2.20 mm.

Holotype. Tolo Harbor, New Territory, Hong Kong, April 1, 1971. Tai-din Chan Collector.

Paratypes. Ten specimens same data as holotype.

Remarks. Found among rocks, wandering on sand or burrowing in the sand as deep as 36 cm. Seems to prefer a sandy beach. Can be found throughout the year.

This species has the eyes occupying almost the entire side of the head, the outer antennal segments transverse, the third segment of the maxillary palpi unusually elongate and the elytra nearly as long as wide. The elytra are largely bright yellow in contrast to the rest of the body.

Bryothinusa chani Moore and Legner

(Figures 4D, 5D)

Bryothinusa chani Moore and Legner, 1971, Coleopt. Bull. 25: 107, Fig. 1.

The eyes are large, occupying about two-thirds of the side of the head, the tenth antennal segment is about as wide as long, the third segment of the maxillary palpi is not unusually elongate and the elytra are about as long as wide. The color is largely piceus with the appendages paler. Hong Kong.

Bryothinusa tsutsuii (Sawada)

Halesthenus tsutsuii Sawada, 1955, Publ. Seto Mar. Biol. Lab. 5: 84, Fig. 8, 10.

Halesthenus serpentis Sawada, 1955, Publ. Seto Mar. Biol. Lab. 5: 85, 1971, Publ. Seto Mar. Biol. Lab. 19: 87.

Bryothinusa tsutsuii Sawada, 1971, Publ. Seto Mar. Biol. Lab. 19: 85, Fig. 2.

The eyes are moderate in size, occupying about one-third of the side of the head, all the antennal segments are elongate, the third segment of the maxillary palpi is not exceptionally elongate and the elytra are a little wider than long. The color is dusky yellow with the head and middle of the abdomen infusate. Japan.

Bryothinusa nakanei (Sawada)

Halesthenus nakanei Sawada, 1955, Publ. Seto Mar. Biol. Lab. 5: 85, Fig. 9.

Bryothinusa nakanei Sawada, 1971, Publ. Seto Mar. Biol. Lab. 19: 87, Fig. 3.

The eyes are moderate in size, occupying more than one-third of the side of the head, the tenth antennal segment is transverse, the third segment of the maxillary palpi is exceptionally elongate being about four times as long as wide. The body is largely brown with the apices of the elytra and the antennae paler and the abdomen almost black. Japan.

Bryothinusa algarum Sawada

Bryothinusa algarum Sawada, 1971, Publ. Seto Mar. Biol. Lab. 19: 90, Fig. 4.

The eyes are very small, occupying about a fifth of the side of the head, all the antennal segments are elongate and the elytra is about one-fourth wider than long. The color is largely reddish yellow with the abdomen darker posteriorly and the appendages paler. Japan.

Bryothinusa minuta (Sawada)

Halesthenus minutus Sawada, 1955, Publ. Seto Mar. Biol. Lab. 5: 83, Figs. 3-7.

Bryothinusa minuta Sawada, 1971, Publ. Seto Mar. Biol. Lab. 19: 82, Fig. 1.

The eyes are very small, being composed of four coarse facets, all the antennal segments are elongate, the third segment of the maxillary palpi is not exceptionally elongate and the elytra are about one-fourth wider than long. The color is pale yellowish brown with the posterior half of the abdomen darker and the appendages paler. Japan.

Bryothinusa hongkongensis, NEW SPECIES

(Figures 1, 4A, 5A)

Description of holotype.

Color. Head and pronotum dark ferruginous, mouth parts and appendages yellow, elytra golden with the scutellar region infumate, abdomen piceous.

Head. Head ovoid about one-third wider than long. Surface concave, feebly densely microreticulate with fine pubescence. Surface beneath microreticulate. Eyes not protruding, about two-thirds the length of the tempora, the facets interspersed with pubescence. **Antennae** hardly incrassate; first and second segments subequal in length and width, each more than twice as long as wide; third segment less than half as long as second, little longer than wide; fourth through tenth segments subequal in length, tenth segment about one-fourth wider than long; eleventh segment a little longer than two preceding segments together, pointed at apex. Third segment of maxillary palpi about two and one-half times as long as wide, widest near apex.

Thorax. Pronotum one-seventh wider than long, widest very near apical angles; base six-sevenths as wide as apex, slightly arcuate; apex nearly straight; apical angles nearly square; sides very gently arcuate and not sinuate before the slightly obtuse basal angles; disc concave. Surface sculpture and pubescence similar to that of head.

Elytra. Elytra conjointly one-tenth longer than wide; humeri narrowly rounded; sides nearly straight and parallel; outer apical angles nearly square; inner apical angles rounded. Surface sculpture much like that of pronotum.

Abdomen. Abdomen subparallel. First four visible tergites impressed at base. Surface sculpture with somewhat denser micromreticulation than that of foreparts. Pubescence dense. No external sexual modifications observed.

Length. 1.48 mm.

Holotype. Ho Tung Lau, Tolo Harbor, New Territory, Hong Kong, April 1, 1971. Tai-din Chan Collector.

Paratypes. Fifteen specimens, same data as holotype.

Remarks. Found wandering on sand or burrowing in sand as deep as 36 cm. from mid-tidal zone to low tidal zone. Specimens were found from February to April, 1971 only on one beach at Ho Tung Lau, Tolo Harbor.

This is the smallest species known. The eyes occupy less than half of the side of the head but are larger than in *algarum*, *catalinae* and *minuta*. The tenth antennal segment is about one-fourth wider than long, the third segment of the maxillary palpi is not unusually elongate and the elytra are longer than wide. The body is dark with the elytra largely golden and the legs and antennae pale. The head and pronotum of all specimens examined are broadly concave, some more deeply so than others, a condition which exists also in *catalinae*.

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LITERATURE CITED

- Casey, T. L. 1904. On some new Coleoptera, including five new genera. Canadian Ent. 36: 312-324.
- Fenyés, A. 1920. Genera Insectorum, Coleoptera, Fam. Staphylinidae, Subfam. Aleocharinae. Fasc. 173B: 111-414.
- Moore, I. 1956. A revision of the Pacific Coast Phytosi with a review of the foreign genera. Trans. San Diego Soc. Nat. Hist. 12: 103-152, Pl. 8-11.
- Moore, I. and E. F. Legner. 1971. *Bryothinusa chani*, a new species of marine beetle from Hong Kong (Coleoptera: Staphylinidae). Coleopt. Bull. 25: 107-108, 1 Fig.
- Sawada, K. 1955. Marine insects of the Tokara Islands. VIII. Family Staphylinidae (Coleoptera). Publ. Seto Mar. Biol. Lab. 5: 81-87, 10 Figs.
- _____. 1971. Aleocharinae (Staphylinidae) from the intertidal zone of Japan. Publ. Seto Mar. Biol. Lab. 19: 81-110, 10 Figs.

ABSTRACT. A key is given to the five genera of the Myllaenini and a key to the nine species of *Bryothinusa*. Three new marine species of *Bryothinusa* are described and illustrated from Hong Kong, *hongkongensis*, *sawadai* and *sinensis*.

Descriptors: Coleoptera: Staphylinidae; genera of Myllaenini; key; species of *Bryothinusa*; key; *Bryothinusa hongkongensis* n. sp.; *Bryothinusa sawadai* n. sp.; *Bryothinusa sinensis* n. sp.

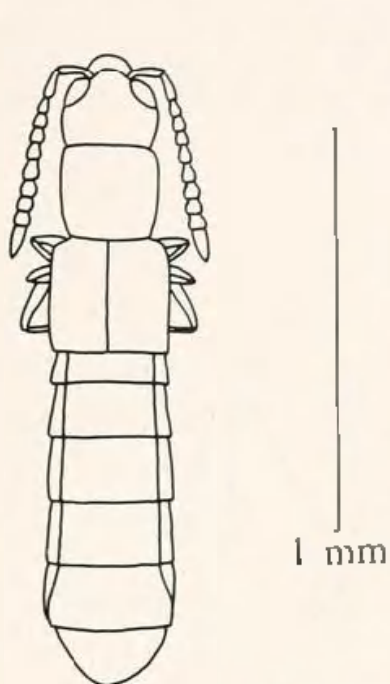


Figure 1. *Bryothinusa hongkongensis* Moore, Legner and Chan, new species, habitus.

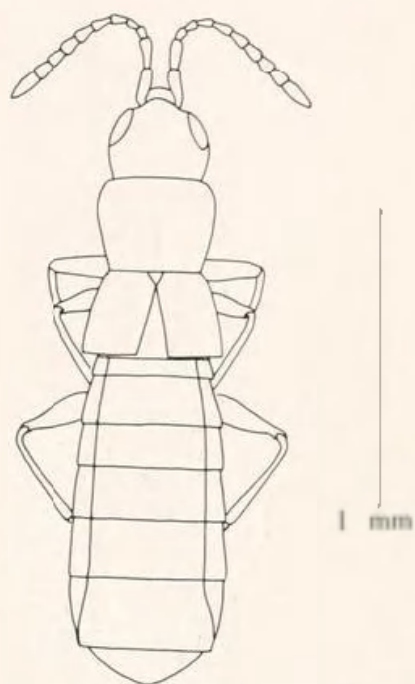


Figure 2. *Bryothinusa sawadai* Moore, Legner and Chan, new species, habitus.

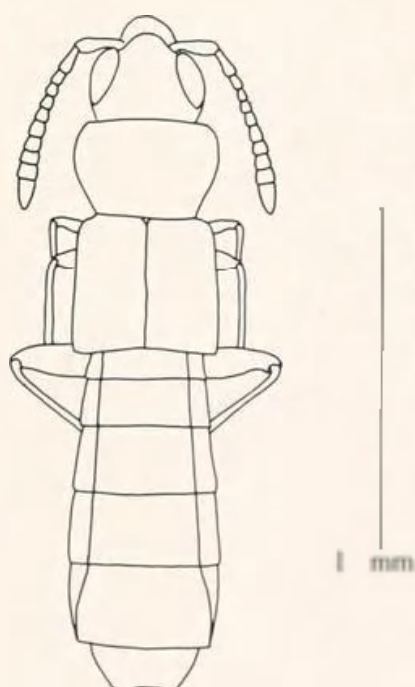


Figure 3. *Bryothinusa sinensis* Moore, Legner and Chan, new species, habitus.

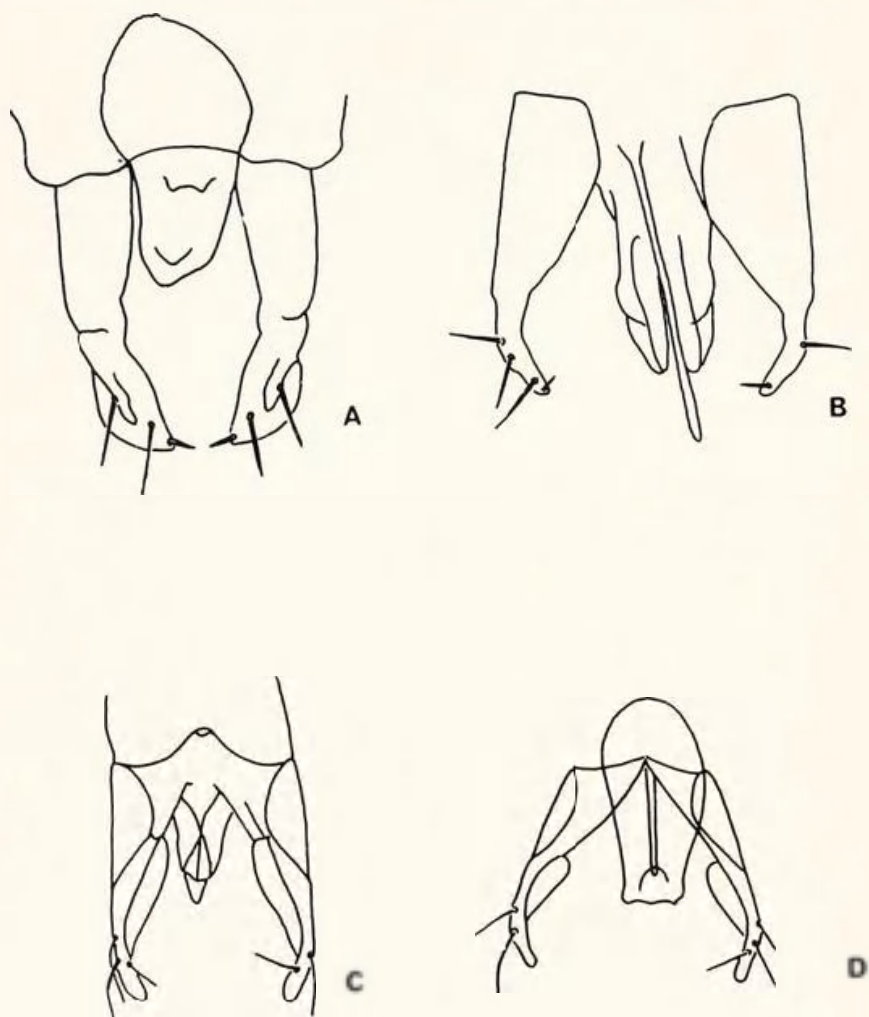


Figure 4. Male genitalia of some species of *Bryathinusa*: A, *hongkongensis*; B, *szwadaei*; C, *sinensis*; D, *chani*.



A



B



C



D

Figure 5. Spermatheca of some species of *Bryothinusa*: A, *hongkongensis*; B, *sawadai*; C, *sinensis*; D, *chani*.