

## TWO NEW SPECIES OF *GIULIANIUM* MOORE FROM THE PACIFIC COASTS OF ALASKA AND CALIFORNIA (COLEOPTERA: STAPHYLINIDAE: OMALIINAE)

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**Abstract.**—A systematic review of the omaliine genus *Giulanium* Moore is presented. Diagnosis of *Giulanium* is presented, and three species are recognized, two of which are described as new (*G. alaskanum*, NEW SPECIES, and *G. newtoni*, NEW SPECIES). Types and paratypes of the two new species are designated. A key is provided for separation of known species of *Giulanium* and illustrations of diagnostic features are provided.

**Key Words.**—Insecta, Coleoptera, Staphylinidae, Omaliinae, *Giulanium*, new species, intertidal.

While taking collecting trips to Alaska and Hokkaido (Japan) and studying Field Museum of Natural History (Chicago, Illinois) collections, we discovered two remarkable new species of intertidal staphylinid beetles. We concluded after detailed study of these specimens that these species represented two new species of Omaliine genus *Giulanium* Moore. This genus was first described and characterized by Moore (1976) based on the new species *G. campbelli* from California, U.S.A. He tentatively placed *Giulanium* in the subfamily Phloeocharinae. However, Newton & Thayer (1995) proposed that *Giulanium* should be placed in the Omaliinae (tribe Aphaenostemmini Peyerimhoff) because members of *Giulanium* lack the derived characters of the Phloeocharinae and have a well-developed Omaliine-type gland system (Thayer 1987). Their phylogenetic analysis indicated that *Giulanium* showed a sister group relationship with *Aphaenostemmus* Peyerimhoff (see Newton & Thayer 1995 for more detailed discussions).

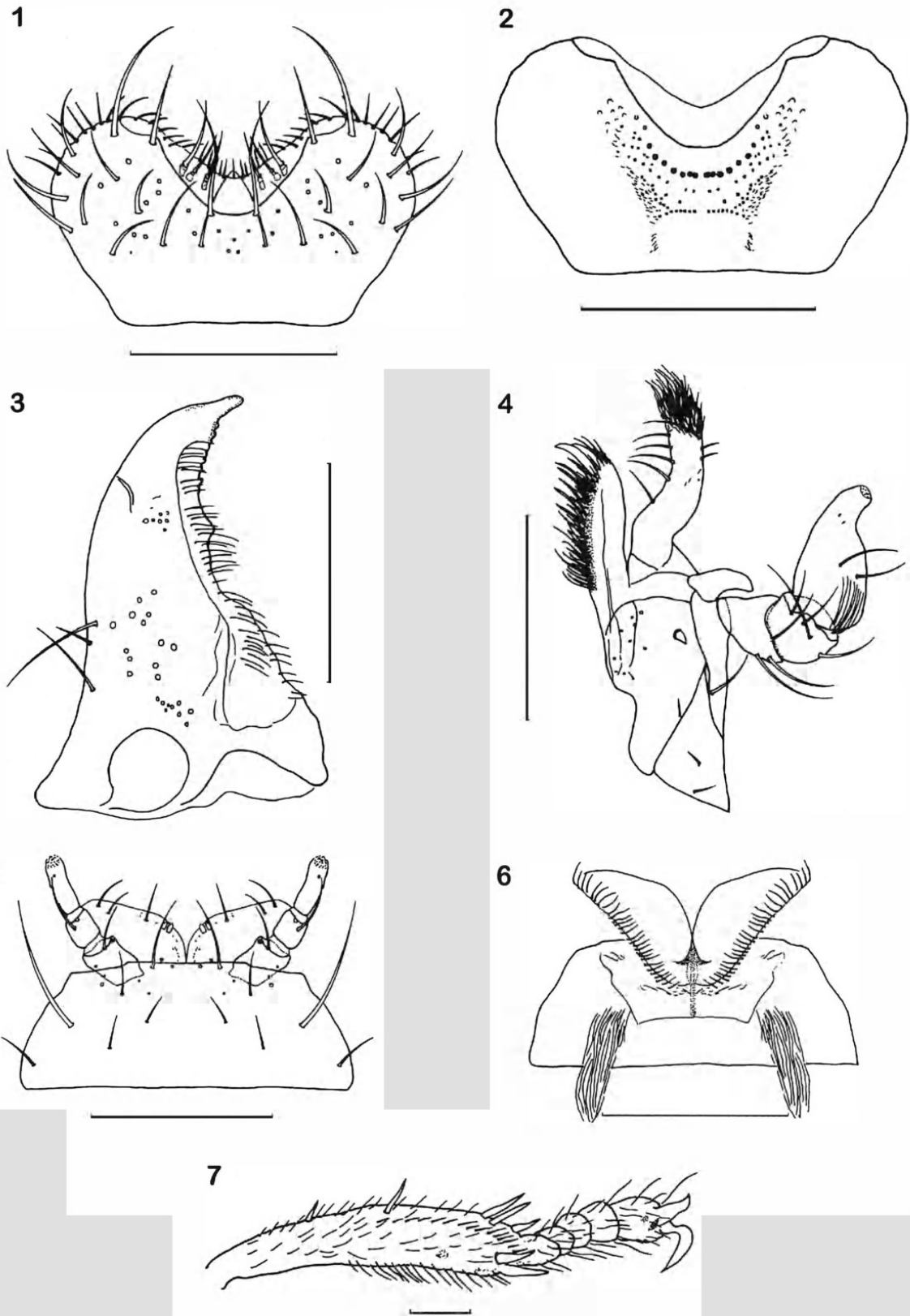
Our objectives in this paper are to redescribe *Giulanium*, to describe two new species (*G. alaskanum* and *G. newtoni*), and to provide a key for separation of known species.

### *GIULANIUM* MOORE

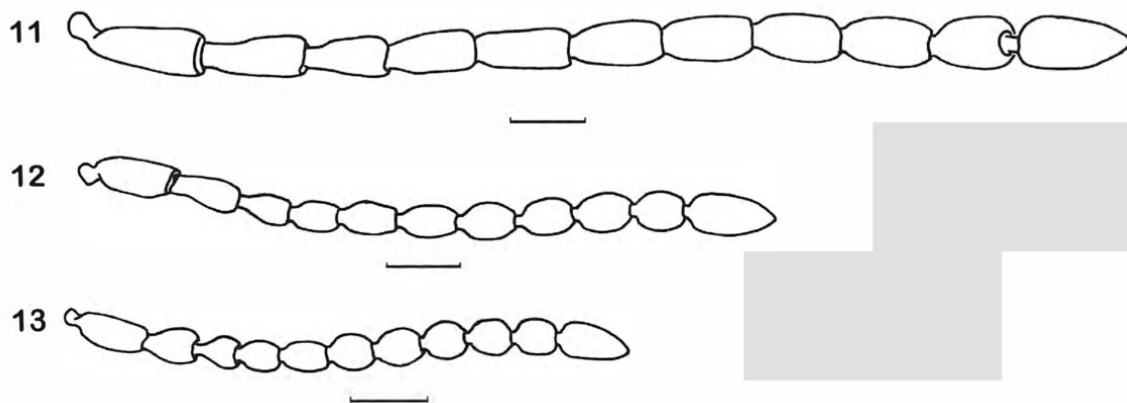
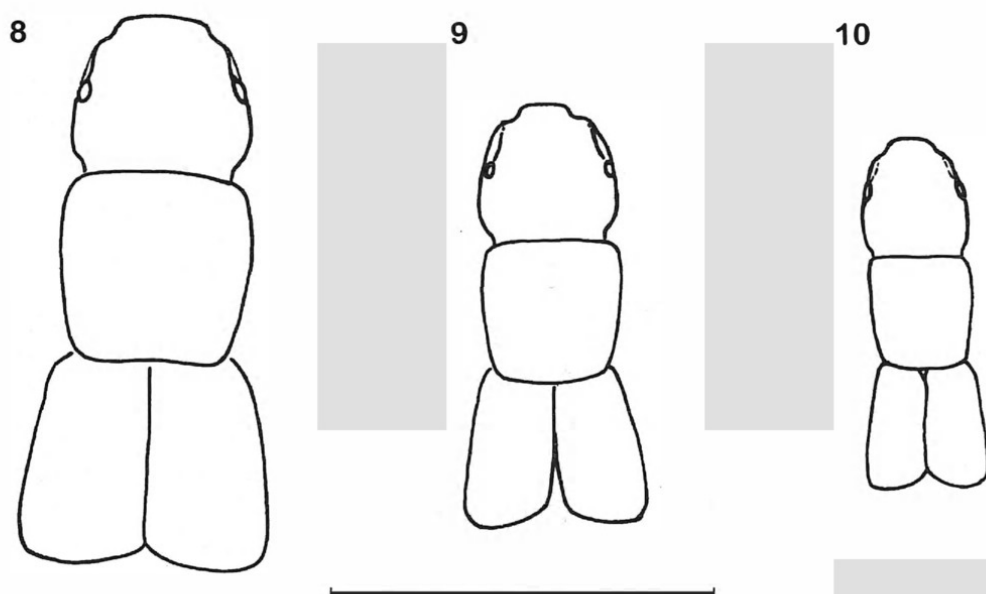
*Giulanium* Moore, 1976: 56.

**Type Species.**—*Giulanium campbelli* Moore 1976, by original designation.

**Diagnosis.**—Moore (1976) has provided a complete description of this genus. This diagnosis condenses and updates that description to include other species, corrects mistakes and adds characters not mentioned by Moore. Members of *Giulanium* can be recognized by the following combination of characteristics: small, length 2.1 mm–3.0 mm; body uniformly dark brown to light brown (teneral specimens often dark rufus with darker abdomens); body form slender, parallel-sided or abdomen slightly wider than very slender head thorax and elytra, flattened; body densely pubescent with very short and fine microsetae; integument moderately densely reticulate throughout. Head orbicular to slightly elongate (Figs. 8–10), narrowed at base to broad neck, nuchal constriction faint to absent dorsally. Gular sutures separated, diverged to base of head. Infraorbital carina absent. Eyes very small, several setae between facets. Tempora long. Antennae long, reaching to posterior fourth or to beyond apex of elytra when extended posteriorly, all antennomeres elongate (Figs. 11–13). Labrum (Fig. 1)



Figures 1–7. *G. alaskanum*. Figure 1. Labrum, dorsal aspect; Figure 2. Epipharynx, ventral aspect; Figure 3. Mandible, ventral aspect; Figure 4. Maxilla, dorsal aspect; Figure 5. Labium, dorsal aspect; Figure 6. Hypopharynx, dorsal aspect; Figure 7. Hind tarsus, lateral aspect. Scales 0.1 mm.



Figures 8–10. Body shape, dorsal aspect and Figs. 11–13. Antenna, lateral aspect. Figure 8. *G. campbelli*; Figure 9. *G. alaskanum*; Figure 10. *G. newtoni*; Figure 11. *G. campbelli*; Figure 12. *G. alaskanum*; Figure 13. *G. newtoni*. Scales 0.1 mm.

deeply and broadly emarginate anteriorly, appearing bilobed, anterior margin with diffuse fringe of fine setae. Epipharynx as in Fig. 2. Mandible (Fig. 3) with acute apex, and finely ciliate prosthema, without enlarged molar region. Maxilla as in Fig. 4; lacinia with 2 large spines apically and numerous spinose setae and smaller setae along inner margin; galea with numerous moderately long setae at apex, 4–6 widely separated large setae on inner margin and 1 large seta externally near base of densely setose area. Maxilla with palpomere 4 as long or longer than 2+3, somewhat bulbous at base and narrowed apically with a distinctive recurved apex (Fig. 4). Labium (Fig. 5) with 3-articled palpi, 2<sup>nd</sup> wider than 3<sup>rd</sup>, narrower than 1<sup>st</sup>, ligula very broad and divided to base into 2 broad lobes. Hypopharynx as in Fig. 6. Pronotum subquadrate to slightly elongate (Figs. 8–10). Tibiae (Fig. 7) with a few scattered spines, tarsal claws falcate. All tarsi 5-articled, tarsomere 1–4 short, subequal, article 5 longer. Hind wings absent. Abdominal sternite III very deeply sinuate anteriorly, more or less U-shaped. Abdomen III–VII without paratergites. Abdominal tergite VII slightly longer than VI, abdom-

inal tergites without transverse basal impressions. Anterior margin of abdominal sternite VIII modified into broad lobe in association with sternal gland and gland reservoir.

Intertidal, found under stones and boards (and probably other debris) below the high-tide mark on beaches of the Pacific Coast of North America from Northern California to Alaska and Hokkaido. Larvae unknown.

*Distribution*.—Pacific Coasts of California, Alaska, Hokkaido (Japan).

#### KEY FOR IDENTIFICATION OF KNOWN SPECIES OF *GIULIANIUM*

1. Larger species, 3.0 mm in length; antenna very elongate, nearly attaining apex of elytra when extended posteriorly, antennal articles 3–10 very elongate, 2.0–1.5 times longer than wide (Fig. 11); aedeagus as in Fig. 14 ..... *G. campbelli*
- 1'. Smaller species, 2.1–2.7 mm in length; antenna less elongate, attaining middle to apical third of elytra when extended posteriorly, antennal articles 3–10 less elongate 1.7–1.1 times longer than wide (Figs. 12 and 13); aedeagus not as above ..... 2
- 2(1'). Smaller species, 2.1–2.2 mm in length, mature specimens uniformly light brown; head distinctly elongate, 1.1–1.2 times longer than wide (Fig. 10); pronotum slightly, but distinctly elongate, about 1.1 times longer than wide (Fig. 10); aedeagus as in Fig. 16; known from northern California ..... *G. newtoni*
- 2'. Larger species, 2.4–2.7 mm in length, mature specimens uniformly dark brown; head subquadrate, about as long as wide (Fig. 9); pronotum about as long as wide to slightly longer than wide (up to 1.05 times longer than wide) (Fig. 9); aedeagus as in Fig. 15.; known from Alaska and Japan ..... *G. alaskanum*

#### *GIULIANIUM CAMPBELLI* MOORE 1976

(Figs. 8, 11, 14)

*Giulanium campbelli* Moore, 1976: 57.

*Redescription*.—Length 3.0 mm. Body uniformly dark brown throughout, uniformly covered with dense vestiture of very fine pubescence, slender, parallel-sided. Head slightly wider than long (1.1–1.2 times wider than long) (Fig. 8); antenna (Fig. 11) very long and slender, nearly attaining apex of elytra when extended posteriorly, all antennomeres very elongate, antennomere 3–10 about 2.0–1.5 times longer than wide, with apical articles relatively shorter than more basal articles. Pronotum (Fig. 8) about as wide as long (Moore 1976 says that the pronotum is  $\frac{1}{2}$  longer than wide but our measurements of the holotype and one paratype did not confirm this). Aedeagus as in Fig. 14 (dorsal aspect only, lateral aspect of parameres not available because the aedeagus is permanently mounted in mounting medium and could not be reoriented).

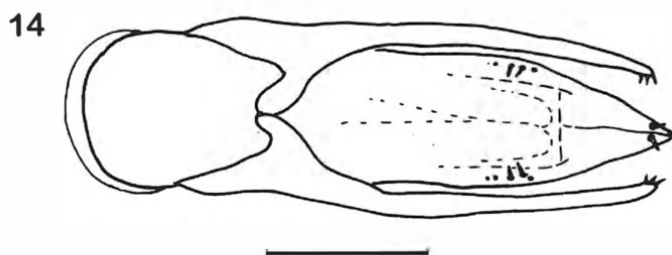
*Distribution*.—California.

*Material Examined*.—Holotype, labeled as follows: 'Bear Harbor, Humboldt County, California, June 1964, Derham Giuliani; Holotype, *Giulanium campbelli* Moore' deposited in the Entomological Research Institute, Ottawa, Canada. Paratype 1, same data as holotype.

#### *GIULIANIUM ALASKANUM*, NEW SPECIES

(Figs. 9, 12, 15, 16)

*Types*.—Holotype, labeled as follows: 'U.S.A.: Alaska. Seward, 24 V 1994, K. J. Ahn, ex., under boulder in low tide; Holotype, *Giulanium alaskanum* Ahn and



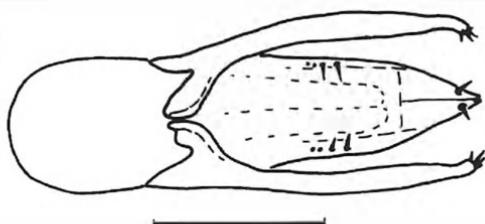
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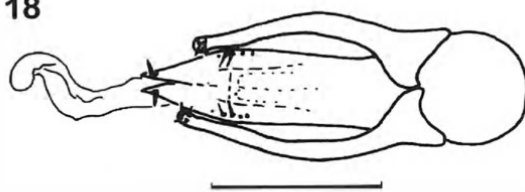
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16



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Figures 14–18. Aedeagus. Figure 14. *G. campbelli*, dorsal aspect; Figure 15. *G. alaskanum*, lateral aspect; Figure 16. Dorsal aspect; Figure 17. *G. newtoni*, lateral aspect; Figure 18. Dorsal aspect. Scales 0.1 mm.

Ashe, Desig. K.-J. Ahn and J. S. Ashe 1998.' deposited in the Snow Entomological Museum, University of Kansas, Lawrence, Kansas. Paratypes, 28; 2 labeled as follows: 'Japan: Hokkaido. Akkeshi, Tokotan, 15 VI 1994, ex., under beach ground' 26 same data as type (18, Snow Entomological Museum; 8, Chungnam National University Insect Collection, Daejeon, Korea; 2, Field Museum of Natural History, Chicago, Illinois).

*Description*.—Length 2.4–2.7 mm. Body uniformly dark brown throughout, uniformly covered with dense vestiture of very fine pubescence, slender, parallel-sided. Head about as wide as long (Fig. 9); antenna (Fig. 11) long and slender, attaining apical third of elytra when extended posteriorly, all antennal articles elongate, articles 3–10 about 1.7–1.3 times longer than wide, with apical articles relatively shorter than more basal articles. Pronotum (Fig. 9) subquadrate to slightly longer than wide (less than 1.1 times longer than wide). Aedeagus as in Figs. 15 and 16; parameres more or less straight in lateral aspect, not bent upwards with respect to the medial lobe, lateral edge narrowed in apical fifth (Fig. 15), dorsal aspect more or less uniformly divergent from base to apex (Fig. 16).

*Distribution*.—Alaska and Japan (Hokkaido).

#### *GIULIANIUM NEWTONI*, NEW SPECIES

(Figs. 10, 13, 17, 18)

*Types*.—Holotype, labeled as follows: 'U.S.A.: California, San Mateo Co. Moss Beach, 27 II 1952, under boards below high tide, O. Bryant, Field Museum Nat



Hist; Holotype, *Giulianium newtoni* Ahn and Ashe, Desig. K.-J. Ahn and J. S. Ashe 1998,' deposited in the Field Museum of Natural History, Chicago. Paratypes, 5; same data as type (3, Field Museum of Natural History; 2, Snow Entomological Museum).

*Description*.—Length 2.1–2.2 mm. Body uniformly light brown throughout, uniformly covered with dense vestiture of very fine pubescence, very slender, parallel-sided. Head distinctly longer than wide (Fig. 10); antenna (Fig. 13) long and slender, attaining apical half of elytra when extended posteriorly, all antennomeres elongate, antennomeres 3–10 about 1.5–1.1 times longer than wide, with apical articles relatively shorter than more basal articles. Pronotum (Fig. 10) distinctly longer than wide, about 1.1 times longer than wide. Aedeagus as in Figs. 17 and 18; parameres distinctly bent upwards with respect to the median lobe, lateral edge not narrowed in apical fifth (Fig. 17), dorsal aspect with parameres diverging in basal half and converging toward midline from near middle to apex (Fig. 18).

*Distribution*.—California.

*Discussion*.—The three known species are superficially very similar, but they can be distinguished by the characters in the key, and by the slight, but consistent, differences in the parameres noted in the descriptions (see also Figs. 14–18). To facilitate comparisons between these similar species, the illustrations of comparable structures of all three species are drawn to the same scale. The differences in relative size and proportions of the head, pronotum and antennae, and the differences in the parameres of the aedeagi, are readily apparent in these illustrations.

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#### LITERATURE CITED

- Moore, I. 1976. *Giulianium campbelli*, a new genus and species of marine beetle from California (Coleoptera: Staphylinidae). *Pan-Pacif. Entomol.*, 52: 56–59.
- Newton, A. F. & M. K. Thayer. 1995. Protopselaphinae new subfamily for *Protopselaphus* new genus from Malaysia, with a phylogenetic analysis and review of the Omaliine Group of Staphylinidae including Pselaphidae (Coleoptera). pp. 219–320. In J. Pakaluk & S. A. Slipinski (eds.). *Biology, Phylogeny, and Classification of Coleoptera. Papers Celebrating the 80<sup>th</sup> Birthday of Roy A. Crowson*.
- Thayer, M. K. 1987. Biology and phylogenetic relationships of *Neophonus bruchi*, an anomalous south Andean staphylinid (Coleoptera). *Syst. Entomol.*, 12: 389–404.

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