

DESCRIPTION OF A NEW SPECIES OF *METRIUS*
(COLEOPTERA: CARABIDAE: PAUSSINI) FROM IDAHO
WITH COMMENTS ON THE TAXONOMIC STATUS OF THE
OTHER TAXA OF THE GENUS

YVES BOUSQUET AND HENRI GOULET
Biosystematics Research Center,
Agriculture Canada, Ottawa, Ontario K1A 0C6, Canada

Abstract.—A new species of *Metrius* Eschscholtz, *M. explodens* Bousquet & Goulet, is described from Idaho. Specimens representing the three previously described *Metrius* taxa were examined, but conclusions as to the taxonomic status of each of these taxa could not be drawn from the material at hand.

Key Words.—Insecta, Carabidae, *Metrius explodens*, bionomics, interspecific variations

The genus *Metrius* Eschscholtz (1829) as recently discussed (Bousquet 1986), represents the sister-group of the remaining Paussini (= ozaenines + paussines of authors). The adults are odd, looking superficially more like tenebrionids than carabids. The genus is confined to the Pacific Coast, ranging from southern British Columbia to the Sierra Nevada in California. The beetles live along forest edges and in woodlands under rocks, rotten logs and in leaf litter. Lindroth (1961) recognized two species of *Metrius*, *M. contractus* Eschscholtz (1829) and *M. sericeus* Rivers (1900) but Van Dyke (1925) suggested they may represent subspecies of a single species. In the same paper, Van Dyke (1925) described a subspecies, *M. contractus planatus*, from the alpine areas of the Lake Tahoe region.

This paper describes a new species of *Metrius* collected several years ago in Idaho, compares it with *Metrius*, and briefly discuss the status of taxa within *Metrius*.

METRIUS EXPLODENS BOUSQUET & GOULET, NEW SPECIES

Type Material.—Holotype (male) and paratype (male). IDAHO: "Ida: Idaho Co. Hwy 12, 39 mi N.E. Lowell (2860') 30.VII.1968, R.E. Leech." The holotype is deposited in the California Academy of Sciences, San Francisco (CAS Type No. 16494) and the paratype in the Canadian National Collection, Ottawa (CNC No. 20010).

Description.—*Coloration:* body, including palpi and legs, uniformly brownish with head and first four antennomeres slightly darker than remaining parts. *Microsculpture:* nearly entire body with isodiametric, flat microsculpture. *Head:* frons with one supraorbital seta on each side; clypeus with one long seta on each side and one to three smaller ones medially; labrum with 13-14 setae along anterior margin; eyes small, flat; antennae pubescent from fifth segment, antennomere X about 2× as long as wide. Mentum with epilobes rounded anteriorly; tooth truncate; labial pits not apparent; paraglossa fused to ligula; ligula with one pair of setae near anterior margin; last segments of both labial and maxillary palpi slightly dilated in apical half; penultimate labial palpomere with two long setae on anterior margin and usually a few additional smaller setae. *Pronotum* (Fig. 2): pronotum rather flat, about 1.5× wider than long; lateral margins barely sinuate in posterior half, with three or four (only two unilaterally in one specimen) setae on each side; lateral bead thin, especially in anterior half; anterior angles rather protruding, rounded; posterior angles sharp, distinctly protruding posteriorly; base without lateral impression; basal margin strongly sinuate. *Elytra:* elytra oviform, convex,

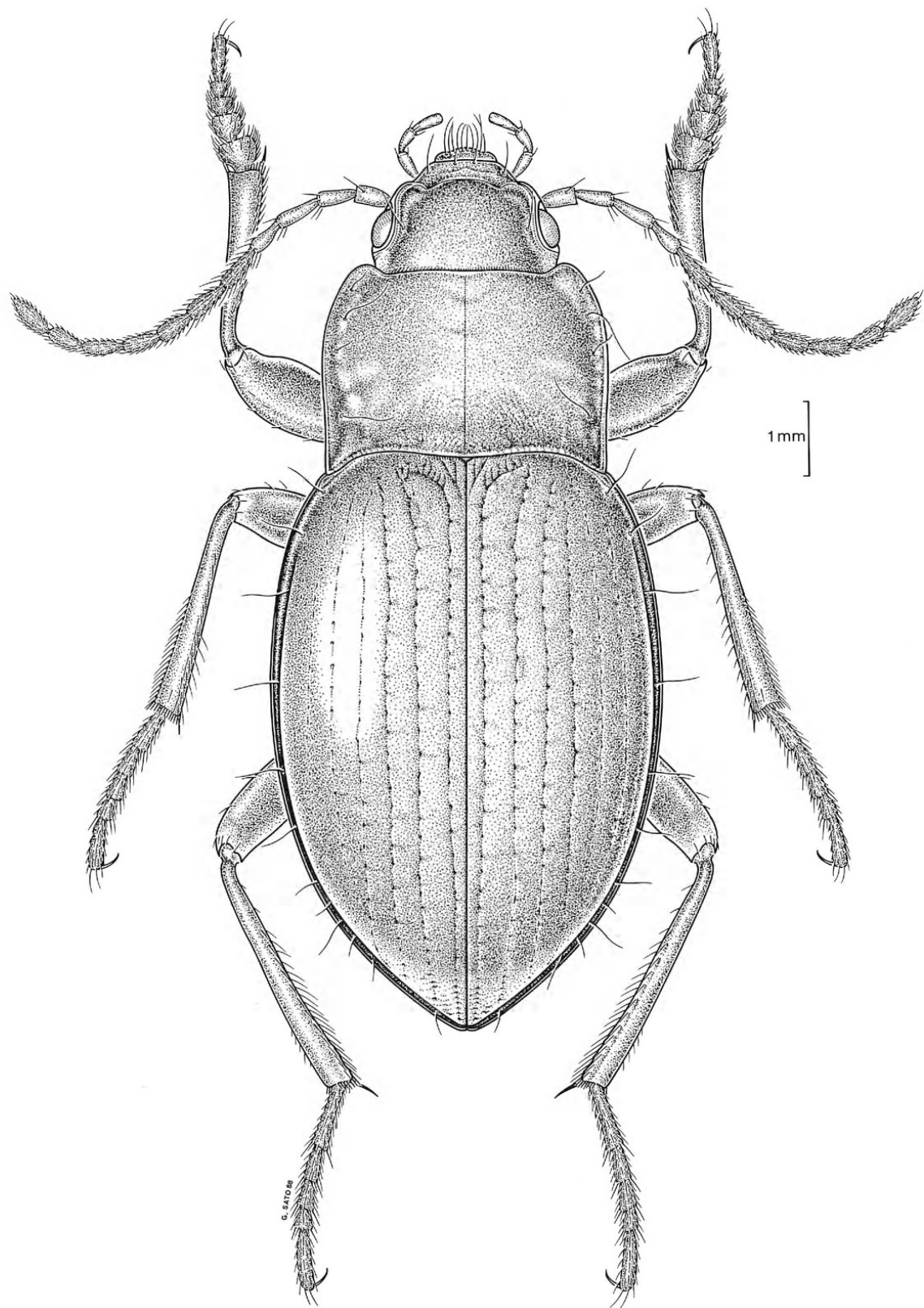
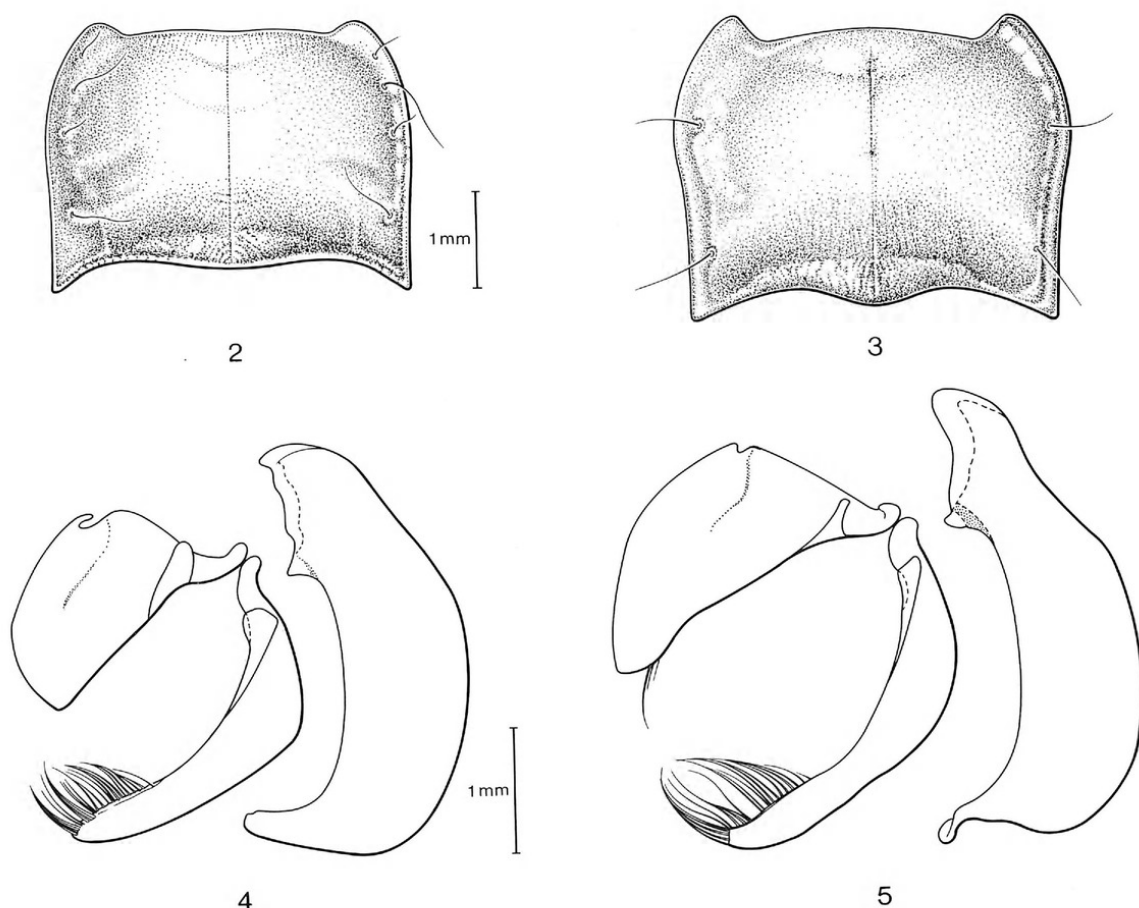


Figure 1. *Metrius explodens* Bousquet & Goulet.



Figures 2–5. Figure 2. Pronotum, *M. explodens*. Figure 3. Pronotum, *M. contractus*. Figure 4. Aedeagus (left lateral view), *M. explodens*. Figure 5. Aedeagus (left lateral view), *M. contractus*.

coalescent, without discal or parascutellar setae; striae shallow; intervals slightly convex. *Underside*: underside impunctate; prothoracic epipleura as wide anteriorly as at middle; prosternum and prosternal apophysis with setae medially; apophysis not margined, pointed at apex; metasternum and metepisternum short; metasternum with a few setae laterally; metepimera distinct; abdominal sternite III with a patch of small setae at level of trochanter; sternites III, IV and V with two or three setae on each side near posterior margin; sternite VI with a few setae medially and usually with two setae on each side at posterior margin. *Legs*: tibiae smooth dorsally near apex; fore tibia with 8–10 clip setae; all tarsomeres sparsely pubescent dorsally; last tarsomeres with rows of spiniform setae on ventral side; first three fore tarsomeres of male with adhesive setae ventrally; middle tibia densely pubescent in apical half; hind trochanter with two or three small setae dorsobasally and one longer seta near posterior margin. *Genitalia* (Fig. 4): median lobe of aedeagus with apical part distinctly curved, nearly perpendicular to remaining part, apex straight, not twisted in lateral view, rounded in dorsal view; parameres asymmetric, left one without setigerous puncture, right one with brush of hair apically on medial side. *Body length*: 11.0–11.5 mm.

Diagnosis.—The other *Metrius* differ most importantly from this species by the following character states: microsculpture on body convex or beadlike; eyes more convex; antennae proportionally shorter, antennomere X approximately $1.5\times$ longer than wide; epilobe of mentum longer and more oblique anteriorly; tooth of mentum emarginate; lateral margins of pronotum (Fig. 3) more sinuate in posterior half, with two setae on each side; lateral bead thick over entire length; pronotum with anterior angles more protruding and more or less angulate, posterior angles less protruding posteriorly; elytral intervals flat; prothoracic epipleura

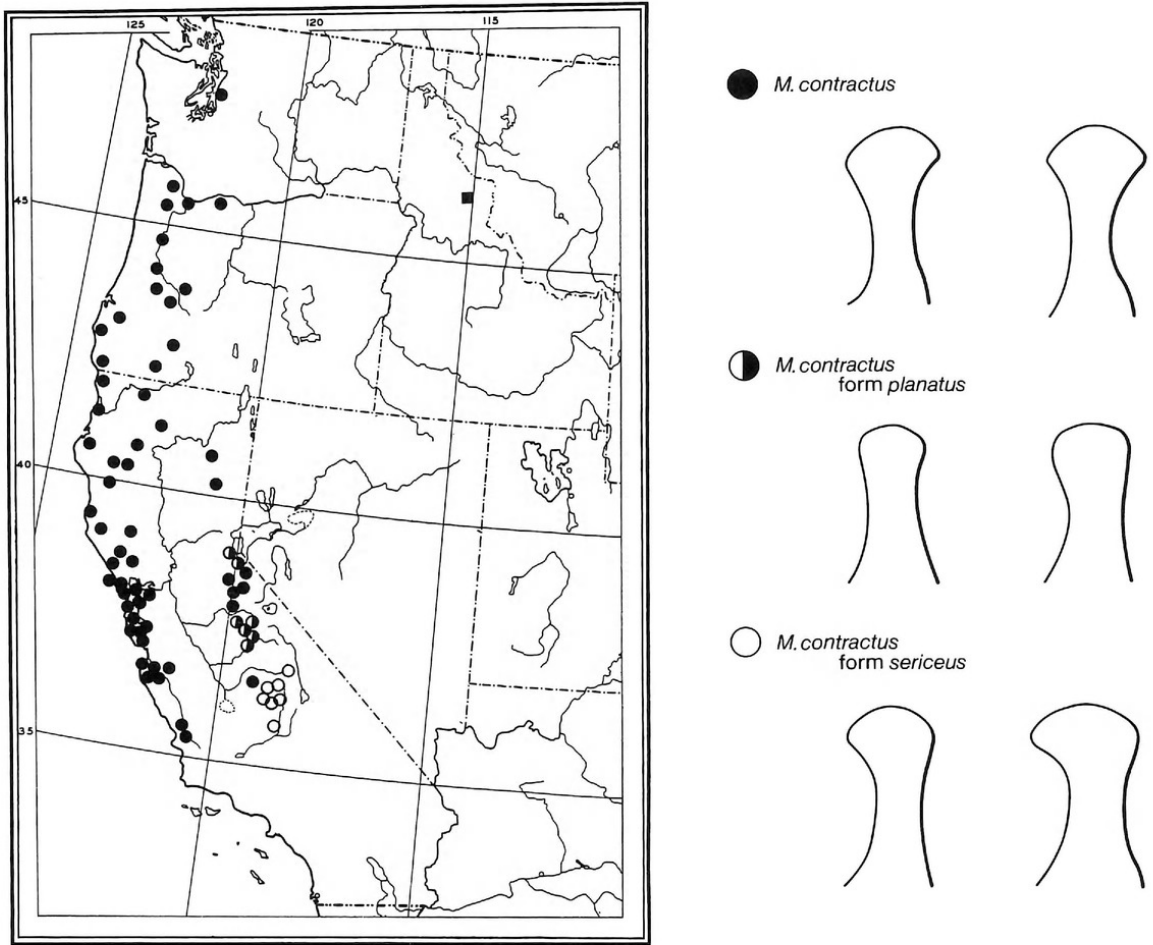


Figure 6. Distribution (including *M. explodens* [■]) and variation of the apex of median lobe (dorsal view) of *M. contractus* (●), *M. contractus* form "planatus" (◐) and *M. contractus* form "sericeus" (○). Outside the map, *M. contractus* is also known from Vancouver, B.C.

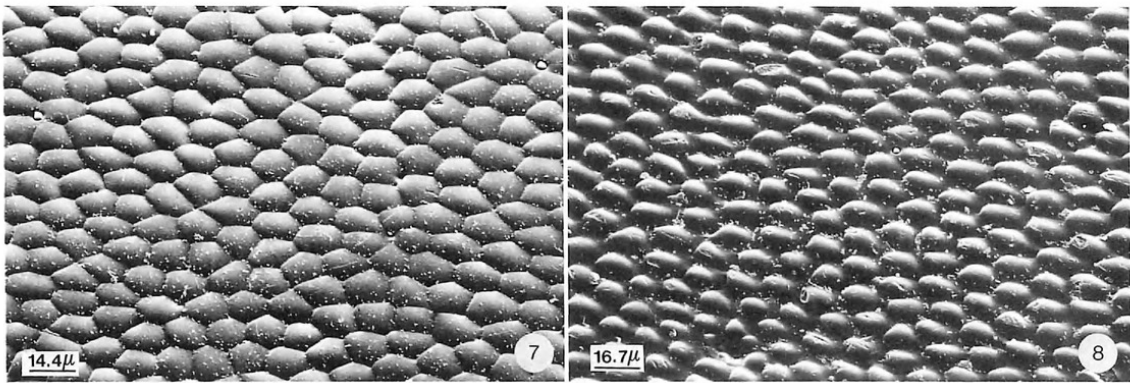
wider anteriorly than at middle; prosternal apophysis rounded apically; abdominal sternites III, IV and V usually with only one seta on each side at posterior margin; tibiae more or less furrowed dorsally near apex; first two fore tarsomeres of male with adhesive setae ventrally; metatrochanter without setae basally; median lobe of aedeagus with apex twisted (Fig. 5), left paramere usually with few small setae apically (Fig. 5).

Etymology.—The specific name *explodens* is derived from the Latin verb *explodo*, -ere (in the figurative expression to expel). It refers to the ability of the species to expel the content of the pygidial glands like the bombardier beetles (H. B. Leech, personal communication).

Distribution.—The species is known only from the type locality in Idaho.

Bionomics.—The two specimens of *M. explodens* were collected in a partly logged pine-fir forest adjacent to a river (H. B. Leech, personal communication). Leech (1971) reported collecting a female of the spider *Callobius enus* (Chamberlin & Ivie) eating an adult of *M. explodens*. He also noted that the egg sac of the spider was covered with remains of *Metrius*.

Taxonomic Status of Other *Metrius* Taxa.—In addition to the new species, three *Metrius* taxa have been described previously: (1) *M. contractus*, occurring



Figures 7, 8. Figure 7. Microsculpture near the middle of the fifth elytral interval, *M. contractus*. Figure 8. Same, *M. contractus* form “*sericeus*.”

from SW British Columbia to southern California along the coast and in the Sierra Nevada, usually at low elevation (< 600 m); (2) *M. planatus*, a montane form recorded from near Lake Tahoe and from the Yosemite National Park, originally described as a subspecies of *contractus*; (3) *M. sericeus*, found in the southern Sierra Nevada, from Kings Canyon and Sequoia National Parks to northern part of Kern County.

Differentiation between these three forms is based on the shape of the apex of the median lobe of the aedeagus and the type of microsculpture of the elytral disc. These differences are summarized in Table 1.

Whether this complex consists of a single species or three taxa (subspecies or species) is uncertain. The form *planatus* appears to be intermediate both geographically and in the shape of the microsculpture. On the other hand, the difference in the shape of the median lobe of these three forms, though slight, is constant. Moreover, one typical male of *contractus* was found in proximity to the other two forms that occur in the Sierra Nevada. We feel that better sampling of *Metrius* from the Sierra Nevada is needed to resolve the complex. Therefore, we currently consider all specimens to represent one species, *M. contractus* Eschscholtz, without recognition of subspecific status for the different forms.

Two of these three forms show no geographical variation. Adults of the form *contractus* are uniform from southern British Columbia south to San Francisco, California. From there southward, they tend to be smaller.

This study is based on 601 adults from the California Academy of Sciences,

Table 1. Distribution of character states between the three forms of *M. contractus*

Forms	Character states	
	Apex of median lobe (Fig. 6)	Elytral microsculpture
<i>contractus</i>	symetrically fanlike and sharp laterally	sculpticells moderately convex and meshed (Fig. 7)
“ <i>planatus</i> ”	symetrically fanlike and round laterally	sculpticells convex and not meshed in spots
“ <i>sericeus</i> ”	asymmetrically expanded	sculpticells very convex (wartlike) and not meshed (Fig. 8)

San Francisco and from the Biosystematics Research Center, Ottawa. All specimens studied were labelled according to the form to which they belong to facilitate future studies.

ACKNOWLEDGMENT

We thank H. B. Leech and D. Kavanaugh (California Academy of Sciences, San Francisco) for the loan of specimens; A. Smetana and J. M. Campbell (Biosystematics Research Center, Agriculture Canada, Ottawa) for reviewing the manuscript; and G. Sato for preparing the habitus and inking the drawings.

LITERATURE CITED

- Bousquet, Y. 1986. Description of first-instar larva of *Metrius contractus* Eschscholtz (Coleoptera: Carabidae) with remarks about phylogenetic relationships and ranking of the genus *Metrius* Eschscholtz. Can. Entomol., 118: 373-388.
- Eschscholtz, J. P. 1829. Zoologischer Atlas, enthaltend Abbildungen und Beschreibungen neuer Thierarten, während des Flottcapitains v. Kotzebue zweiter Reise um die Welt, auf der Russisch-Kaiserlichen Kriegsschlupp Predpriaetië in den Jahren 1823-1826. Erstes Heft. G. Reimer, Berlin.
- Leech, R. E. 1971. Revision of the Amaurobiid spiders of the Nearctic Region (Arachnida: Araneida). Ph.D. Thesis, University of Alberta.
- Lindroth, C. H. 1961. The ground-beetles (Carabidae, excl. Cicindelinae) of Canada and Alaska. Part 2. Opusc. Entomol. Suppl., 20: 1-200.
- Rivers, J. J. 1900. A new *Metrius* from California. Entomol. News, 11: 389.
- Van Dyke, E. C. 1925. Studies of western North American Carabinae (Coleoptera) with descriptions of new species. Pan-Pacific Entomol., 1: 111-125.

Received 9 February 1989; accepted 13 October 1989.



Bousquet, Yves and Goulet, Henri. 1990. "Description of a new species of *Metrius* (Coleoptera: Carabidae: Paussini) from Idaho with comments on the taxonomic status of the other taxa of the genus." *The Pan-Pacific entomologist* 66(1), 13–18.

View This Item Online: <https://www.biodiversitylibrary.org/item/252465>

Permalink: <https://www.biodiversitylibrary.org/partpdf/269552>

Holding Institution

Pacific Coast Entomological Society

Sponsored by

IMLS LG-70-15-0138-15

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: Pacific Coast Entomological Society

License: <http://creativecommons.org/licenses/by-nc-sa/4.0/>

Rights: <http://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.