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**Systematics, distributions and bionomics of the Catopocerini
(eyeless soil fungivore beetles)
of North America (Coleoptera: Leiodidae: Catopocerinae)**

STEWART B. PECK & JOYCE COOK

Department of Biology, Carleton University, Ottawa, Ontario K1S 5B6 Canada

E-mail: stewart_peck@carleton.ca, joyce_cook@carleton.ca



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Abstract

This paper is a review and revision of the tribe Catopocerini (Coleoptera: Leiodidae: Catopocerinae) of North America. It covers the following genera: *Catopocerus* Motschulsky, 1870 with five species east of the Mississippi River and the resurrected genus *Pinodytes* Horn, 1880 with 42 species in North America west of the Mississippi River. All species in the tribe are eyeless and wingless inhabitants of forest soil and litter. Larvae and adults probably feed on subterranean fungi. *Pinodytes* Horn is resurrected to valid generic status. A neotype is assigned for *Catopocerus politus* Motschulsky. Lectotypes are designated for *Catops cryptophagoides* (Mannerheim, 1852) (which is transferred to *Pinodytes*), and *Pinodytes pusio* Horn, 1892. The following new synonym is recognized: *Catopocerus ulkei* Brown, 1933 = *Catopocerus politus* Motschulsky, 1870. The 33 new species and their distributions are as follows: *Pinodytes angulatus* (NW Oregon, USA), *P. borealis* (central Alaska, USA), *P. chandleri* (N California, USA), *P. colorado* (Colorado, USA), *P. constrictus* (S California, USA), *P. contortus* (E California, USA), *P. delnorte* (NW California, USA), *P. eldorado* (E California, USA), *P. fresno* (central California, USA), *P. garibaldi* (NW Oregon, USA), *P. gibbosus* (S California, USA), *P. haidagwaii* (Haida Gwaii (formerly Queen Charlotte) Islands, British Columbia, Canada), *P. humboldtensis* (NW California, USA), *P. idaho* (NW Idaho, USA), *P. isabella* (N Idaho, USA), *P. klamathensis* (SW Oregon and NW California, USA), *P. losangeles* (S California, USA), *P. marinensis* (W California, USA), *P. minutus* (central California, USA), *P. monterey* (SW California, USA), *P. newtoni* (Ozarks region to E Texas, USA), *P. orca* (SW Oregon, USA), *P. parvus* (NW California, USA), *P. punctatus* (W Idaho and E Washington, USA), *P. sanjacinto* (S California, USA), *P. sequoia* (S central California, USA), *P. setosus* (SW Oregon and NW California, USA), *P. shasta* (N California, USA), *P. shoshone* (N Idaho, USA), *P. sinuatus* (SW Oregon, USA), *P. spinus* (N central California, USA), *P. tehama* (N California, USA), and *P. tuolumne* (E central California, USA). The following new combinations are established: *Pinodytes capizzii* (Hatch, 1957), ex *Catopocerus*; *P. cryptophagoides* (Mannerheim, 1852), ex *Catopocerus*; *P. imbricatus* (Hatch, 1957), ex *Catopocerus*; *P. newelli* (Hatch, 1957), ex *Catopocerus*; *P. ovatus* (Hatch, 1957), ex *Catopocerus*; *P. pusio* Horn, 1892, ex *Catopocerus*; *P. rothi* (Hatch, 1957), ex *Catopocerus*; *P. subterraneus* (Hatch, 1935), ex *Catopocerus*; *P. tibialis* (Hatch, 1957), ex *Catopocerus*.

Key words: *Catopocerus*, *Pinodytes*, *Perkovskius*, *Glacicavicola*, Glacicavicolini, Catopocerini, Leiodidae, taxonomy, new species

Introduction

The subfamily Catopocerinae (Coleoptera: Leiodidae) was previously recognized to be composed of three described genera. These are distributed in north temperate (east Asia and North America) and south temperate (an undescribed genus in Chile, southern South America) parts of the world. Little is known of their biology, but some species, and perhaps many, feed as adults and larvae on subterranean fungi (Newton 1998).

The subfamily is composed of two tribes (Newton 1998): Glacicavicolini, with one species (and the most modified cave-adapted morphology of any beetle species in North America) in ice caves in Idaho and Wyoming; and Catopocerini, with three genera: *Catopocerus* Motschulsky, 1870 with 5 species occurring east of the Mississippi River in North America; *Pinodytes* Horn, 1880 (here resurrected from synonymy) with 42 species (of which 33 are newly described in this paper) occurring west of the Mississippi River in North America; and *Perkovskius* Lafer, 1989 occurring in eastern Siberia. The Catopocerini genera are composed exclusively of small (1.0–4.5 mm body length) beetles which are eyeless, wingless, and usually depigmented inhabitants of moist forest soil and leaf litter.

Previous publications on the Catopocerinae are few and are mostly isolated species descriptions. For the tribe Glacicavicolini they are Westcott (1968) who described the remarkable ice cave beetle *Glacicavicola bathysciodes* and placed it in a monobasic subfamily Glacicavicolinae, which was reduced to a tribe by Newton (1998). Peck (1974, 1982) reported on its life cycle and distribution. For the tribe Catopocerini of North America the publications are: Mannerheim (1852), Motschulsky (1870), Austin (1880), Horn (1880), Hatch (1935, 1957), and Peck (1975).

Victor Motschulsky (1870) described the genus *Catopocerus* for the species *Catopocerus politus*, type locality: “North America”, based on a specimen apparently collected by himself: “Je l’ai découvert dans l’Amérique du nord.” Motschulsky was a Russian military officer and a prolific collector and describer of beetles. It has been assumed that this species was from somewhere in Russian North America (which extended from Alaska down to northern California). We have found no reference to Motschulsky ever visiting western North America. However, it is recorded that he visited and extensively collected in eastern North America in 1853 and spent the months of May and June in the vicinities of Washington, DC and Philadelphia, PA (Motschulsky 1856). We have been unable to locate the type specimen of *Catopocerus politus*. It is known that much of his collection has been lost or destroyed.

For a description of the deterioration and loss of Motschulsky's collection see Dow (1914). A search in the surviving Motschulsky collection in the Zoology Museum, Moscow State University, Moscow, Russia by SBP in 2003 was not successful. We therefore find it necessary to designate a neotype for the species. Based on Motschulsky's description of *C. politus*, and the widespread occurrence of *C. ulkei* Brown, 1933 in both the District of Columbia and vicinity of Philadelphia, Pennsylvania (Peck 1975) we place *C. ulkei* in synonymy with *C. politus* and designate the holotype of *C. ulkei* Brown as the neotype of *C. politus* Motschulsky (see below).

The genus *Pinodytes* was established by Horn (1880) to contain *Catops cryptophagoides* Mannerheim 1852. *Pinodytes* was subsequently synonymized with *Catopocerus* by Portevin (1922). In the current analysis we resurrect *Pinodytes* and place all North American Catopocerini occurring west of the Mississippi River in this genus. We designate a lectotype from a syntype of *P. cryptophagoides* in the LeConte collection, MCZC.

Lafer (1989) established the genus *Perkovskius* and described *P. ussuriensis* from the Russian Far East. Perreau and Růžička (2007) have placed this in the Catopocerini and contributed the species *P. zerchei* Perreau and Růžička (2007), also from the Russian Far East. Perkovsky (1989) described *Catopocerus kovalevi* from a single female from Kamenuška, Primorskiy Krai district, in the Russian Far East (eastern Siberia). This specimen has recently been found to actually belong in the genus *Perkovskius* (E. E. Perkovsky to V. Grebennikov, August, 2010. pers. comm., unpublished), so this species is not included in our current analysis.

Since the previous publications on the Nearctic species, a considerable quantity of new material has accumulated which is used here to revise and document the systematics, distribution, and bionomics of the North American fauna of Catopocerini. This is the subject and purpose of this paper.

Materials

This study is based on the examination of over 6393 specimens from the Nearctic Region, many of which were collected by the first author. Only a few other collections have many specimens. These were obtained as the result of extensive or intensive studies of soil and litter beetles from the devoted collecting efforts of F. G. Andrews (CSCA), D. Chandler (UNHC), M. Caterino (SBMN) A. F. Newton, M. Thayer and the late Henry Dybas (FMNH), E. M. Benedict (when she was a graduate student of C. H. Hoff at Oregon State University, Corvallis, Oregon), and John Pinto (then at Arcata State University, Arcata, California). Additional specimens were borrowed for study from the following collections and curators (who made the loans, not always the present curators) or private collectors. Most collection addresses are given in full in Arnett et al. (1997) although there have been many changes in curators or other persons in charge of the collections.

CASC	California Academy of Sciences, San Francisco, California. D. Kavanaugh.
CNCI	Canadian National Collection of Insects, Agriculture Canada, Ottawa, Ontario. A. Smetana and A. Davies.
CSCA	California State Collection of Arthropods, Plant Pest Diagnostics Branch, California Department of Food and Agriculture, Sacramento, California. F.G. Andrews.
EMEC	Essig Museum, University of California, Berkeley, California. C. Barr.
FMNH	Field Museum of Natural History, Chicago, Illinois. A.F. Newton.
FSCA	Florida State Collection of Arthropods, Gainesville, Florida. M.C. Thomas.
IRCW	Department of Entomology, University of Wisconsin, Madison, Wisconsin. D.K. Young.
JFCC	J.F. Cornell Collection, Raleigh, North Carolina.
LACM	Los Angeles County Museum, Los Angeles, California. C.L. Hogue.
LEWC	L. E. Watrous Collection, St. Louis, Missouri.
MCZC	Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts. P.D. Perkins.
OSAC	Oregon State Arthropod Collection, Corvallis, Oregon. D. Judd, J. Ogawa.
RHTC	R.H. Turnbow Collection, Fort Rucker, Alabama.
SBMN	Santa Barbara Museum of Natural History, Santa Barbara, California. M. Caterino.
SBPC	Stewart B. Peck Collection, Ottawa, Ontario (to be eventually placed in Canadian Museum of Nature Collection).
TAMU	Texas A & M University, College Station, Texas. E.G. Riley.

- UADE Department of Entomology, University of Arkansas, Fayetteville, Arkansas. J.K. Barnes and C.E. Carlton.
- UCDC Bohart Museum of Entomology, University of California, Davis, California. L.S. Kimsey.
- UNHC Department of Biological Sciences, University of New Hampshire, Durham, New Hampshire. D. Chandler.
- USNM United States National Museum of Natural History, Washington, DC. D. Furth.
- WFBM William F. Barr Entomological Collection, University of Idaho, Moscow, Idaho. J. B. Johnson.
- WSUC Department of Entomology, Washington State University, Pullman, Washington. R.S. Zack.

Methods

Almost all of the specimens seen during this study were taken with the use of Berlese-Tullgren funnels for the extraction of microcoleoptera from sifted forest soil and litter. A few specimens were taken at small baits of cheese or meat set in caves, or by searching under large rocks in forests and caves.

For holotype, lectotype, or paratype specimens we report label data as they appear on the specimen labels. We have not edited or altered this data for uniformity, but have quoted it to aid in recognition of type specimens seen by us. Full label data of additional specimens are included in the appendix of this paper. Not all specimen labels contained full information on locality, date, or habitat. In some cases, new species are represented by a very large number of specimens. In such cases, only a subset of specimens were designated as paratypes. The specimens not indicated as paratypes do not represent variation or geographic areas.

We use a phylogenetic species concept (Wheeler and Platnick 2000) in which a species is recognized as being the smallest aggregation of sexual populations or lineages diagnosable by a unique combination of character states. The species are rather similar and generally lacking in distinct external characters.

To confirm identifications it is necessary to examine the aedeagus of male specimens. Females may be difficult to place to species. We have found that a sclerotized spermatheca exists in female Catopocerini and that these may be useful for identification. Specimens were dissected after being relaxed and removed from points or a card. Relaxing was by immersion for one day in a commercial household ammonia-based window cleaning solution. The specimen was then dissected and placed in 70% ethyl alcohol. In males the aedeagus was examined, dehydrated in 100% ethyl alcohol and placed in euparal mounting medium on a small acetate-plastic micro slide. Females usually required additional maceration of soft tissue in a warm solution of 5–10% potassium hydroxide. The spermatheca was then washed, dehydrated, and mounted in euparal. External characters were examined with a stereomicroscope from 10 to 200X magnification. Structures for illustration were photographed with a digital camera mounted on a stereomicroscope. Details were observed with a compound microscope and then added to outline illustrations made from the digital photographs. Wherever possible, illustrations of the aedeagus include features of the armature of the internal sac in an everted or inverted position. It was not possible to evert the sac in all species. We found that the aedeagus and its internal sac contained characters useful in defining species and establishing sister species relationships.

Measurements are given in millimetres and were made with a calibrated ocular micrometer disc. Total length was measured dorsally along the midline; greatest width was measured dorsally across the closed elytra at their widest point.

We have used the criteria of both priority and alphabetical order to arrange the taxa in this paper, within informal species groups. Tentative phylogenetic groupings for Nearctic species of Catopocerini were determined using PAUP 4.0b10 (Swofford 2003), TREEVIEW 1.6.6 (Page 1996) and WINCLADA 0.9.99 (Nixon 1999). Characters and character states used for the phylogenetic analysis are given in Table 1. The character matrix (Table 2) was analyzed with PAUP 4.0b10. All characters are of equal weight. Unordered states were used for the transformation series. Fig. 1 is one of 40 equally parsimonious trees. The outgroup is *Glacicavicola bathyscioides*, in the sister tribe Glacicavicolini.

TABLE 1. Character polarization of Nearctic and Palaearctic Catopocerini species with *Glacivicola bathyscioides* as out-group.

Character	Plesiomorphic state	Apomorphic states
1. Epistomal suture	Without stem (0)	With stem (1)
2. Antennomere 7	Subequal in size to antennomere 8 (0)	Clearly larger than antennomere 8 (1)
3. Antennomeres 9 and 10	Without visible sensory vesicle (0)	Each with 1 visible sensory vesicle (1)
4. Microsculpture of pronotum	Reticulate (0)	Transverse substriate (1); finely, closely striate (2)
5. Elytral base	Without transverse row of punctures joined by a stria (0)	With transverse row of punctures joined by a stria (1)
6. Mesoventrite	With excavation anterior to longitudinal carina (0)	Lacking excavation anterior to longitudinal carina (1)
7. Mesoventrite	Lacking teeth or lobes on longitudinal carina (0)	With teeth or lobes on longitudinal carina (1)
8. Metaventrite	Without setose paired impressions (0)	With setose paired impressions (1)
9. Metaventrite	Longitudinal carina absent (0)	Longitudinal carina present (1)
10. Male tarsal formula	5–5–5 (0)	5–5–3 (1)
11. Female tarsal formula	5–5–5 (0)	4–4–3 (1)
12. Male protarsomeres	Bearing many small phanerae (0)	Bearing thin, transverse or spatulate phanerae (1)
13. Male protarsomere 1	Shorter than protarsomeres 2 and 3 combined (0)	As long as or longer than protarsomeres 2 and 3 combined (1)
14. Male protibia	With sides parallel or weakly expanded apically (0)	Strongly expanded apically (1)
15. Male mesotarsus	Mesotarsomeres bearing phanerae (0)	Mesotarsomeres not bearing phanerae (1)
16. Male mesotibia	Apex not bearing patch of dense fine spines on inner margin (0)	Apex bearing patch of dense fine spines on inner margin (1)
17. Male metatibia	Without an excavation on inner margin at apex bearing dense setae (0)	With an excavation on inner margin at apex bearing dense setae (1)
18. Ventrite 1	Without setose paired impressions (0)	With setose paired impressions (1)
19. Spiculum gastrale	Present (0)	Absent (1)
20. Median lobe of aedeagus	Without lateral notches before apex (0)	With lateral notches before apex (as in <i>P. pusio</i> , Fig.) (1)
21. Parameres	Continuous with basal piece (0)	Separated from basal piece (1)
22. Parameres	Slender, with apical setae (0)	Broad, with apical setae (1); broad, with pre-apical setae (2); broad, without apical setae (3)
23. Inverted internal sac of aedeagus	Without an elongate row of dark spines or elongate setae visible beyond base of aedeagus (0)	With an elongate row of dark spines visible beyond base of aedeagus (Fig.) (1); with elongate setae visible beyond base of aedeagus (Fig.) (2)
24. Female sternite 8	Anterior apophysis present (0)	Anterior apophysis absent (1)
25. Spermatheca	Elongate, sinuate (0)	Globose (1)

TABLE 2. Character matrix of Nearctic and Palaearctic Catopocerini species.

	1	2	3	4	5	6	7	8	9	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2
										0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5
<i>Glacivicola bathyscioides</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(Outgroup)																									
<i>Catopocerus alabamae</i>	1	1	0	?	0	?	?	1	?	0	?	0	0	1	0	1	1	1	?	0	1	3	0	?	?
<i>Pinodytes angulatus</i>	1	1	0	0	0	0	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
<i>Catopocerus appalachianus</i>	1	1	0	2	0	0	0	1	1	0	0	0	0	1	0	1	1	1	1	0	1	3	0	1	1
<i>Pinodytes borealis</i>	1	1	0	0	0	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Pinodytes capizzii</i>	1	1	0	0	0	0	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
<i>Pinodytes chandleri</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	1	0	0
<i>Pinodytes colorado</i>	1	1	0	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	2	0	0
<i>Pinodytes constrictus</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0
<i>Pinodytes contortus</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0
<i>Pinodytes cryptophagoides</i>	1	1	0	0	1	0	0	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
<i>Pinodytes delnorte</i>	1	1	0	0	1	0	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
<i>Pinodytes eldorado</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	1
<i>Pinodytes fresno</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	1	0	2	0	0	0
<i>Pinodytes garibaldi</i>	1	1	0	0	0	0	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
<i>Pinodytes gibbosus</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	1	0	2	0	0	0
<i>Pinodytes haidagwaii</i>	1	1	0	0	0	0	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
<i>Catopocerus hamiltoni</i>	1	1	0	2	0	0	0	1	1	?	0	?	?	?	?	?	?	1	?	?	?	?	?	1	1
<i>Pinodytes humboldtensis</i>	1	0	1	0	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	1	0	0
<i>Pinodytes idaho</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0
<i>Pinodytes imbricatus</i>	1	1	0	0	0	0	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
<i>Pinodytes isabella</i>	1	1	0	0	0	0	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
<i>Catopocerus jonesi</i>	1	1	0	2	0	0	0	1	1	0	0	0	0	1	0	1	1	1	1	0	1	3	0	1	1
<i>Pinodytes klamathensis</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0
<i>Pinodytes losangeles</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0
<i>Pinodytes marinensis</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0
<i>Pinodytes minutus</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0
<i>Pinodytes monterey</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0
<i>Pinodytes newelli</i>	1	1	0	0	0	0	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
<i>Pinodytes newtoni</i>	1	1	0	1	0	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
<i>Pinodytes orca</i>	1	1	0	0	0	0	1	0	1	0	?	1	1	1	1	0	0	0	0	0	0	0	0	?	?
<i>Pinodytes ovatus</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0
<i>Pinodytes parvus</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0
<i>Catopocerus politus</i>	1	1	0	2	0	0	0	1	1	0	0	0	0	1	0	1	1	1	1	0	1	3	0	1	1
<i>Pinodytes punctatus</i>	1	1	0	0	0	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
<i>Pinodytes pusio</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	1	0	2	0	0	0
<i>Pinodytes rothi</i>	1	1	0	0	1	0	0	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
<i>Pinodytes sanjacinto</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0
<i>Pinodytes sequoia</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	1	0	2	0	0	1
<i>Pinodytes setosus</i>	1	1	0	0	1	0	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
<i>Pinodytes shasta</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	1	0	0
<i>Pinodytes shoshone</i>	1	1	0	0	0	0	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
<i>Pinodytes sinuatus</i>	1	1	0	0	0	0	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
<i>Pinodytes spinus</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0
<i>Pinodytes subterraneus</i>	1	1	0	0	0	0	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
<i>Pinodytes tehama</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	1	0	0
<i>Pinodytes tibialis</i>	1	1	0	0	0	0	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
<i>Pinodytes tuolumne</i>	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	0	1	0	2	0	0	0
<i>Perkovskius ussuriensis</i>	0	1	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
<i>Perkovskius zerchei</i>	0	1	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0

Bionomics and life history

The eyeless and wingless condition of all species in the tribe is interpreted as an ancient and monophyletic specialization for deep litter and soil habitats.

Few precise data are available on the bionomics of the tribe. All members, as larvae and adults, seem to feed on subterranean yeasts or fungi (Newton 1984, 1998), although explicit records are few. These are reviewed in Fogel and Peck (1975) and Newton (1984). Several species have been taken repeatedly on subterranean (hypogean) ascomycete fungi in Oregon and Washington, and these fungi may be prime food materials. These are reported to be abundant, with as many as 11,052 to 16,753 sporocarps per hectare, with a dry mass of 2.3 to 5.4 kg per hectare (Fogel 1976). Peck (1974 pp.391–392) has reared *Catopocerus appalachianus* eggs through to adults on baker's yeast on moist clay in petri dishes at 12°C. Larval features are illustrated in Newton (1991: 328, 2005: 275).

The habitats of both larvae and adults are usually in cool temperate and moist forests. Adults are only infrequently taken in caves, under rocks or in baited or unbaited pitfall traps. Most specimens have been collected by sifting and Berlese-Tullgren funnel extraction from forest soil and litter. Label data show adults of different species to be active during various seasons, often in midsummer, but some species are known mostly from late fall and winter months when cool and moist conditions seem to bring them up into the more surficial layers of soil and litter. Specimens of *C. hamiltoni* were found congregated around a dead beetle larva (Peck 1975).

Phylogeny

Catopocerinae is one of five subfamilies of Leiodidae (Newton 1998, 2005) within the Staphylinoidea. The family is seemingly an ancient one. Fossils attributed to Leiodidae Leiodinae (sister group to Catopocerinae) go back to the late Jurassic (Perkovsky 1999, 2002). The Leiodidae are seemingly a sister group to the Agyrtidae, and these, together with Ptiliidae+Hydraenidae, form a sister group to the immense radiation of the Staphylinidae+Silphidae (Beutel and Leschen 2005), which are also known as fossils from the late Jurassic Kara Tau series in the present Russian Far East (Crowson 1981). This suggests an ancient age for the Leiodidae, originating perhaps as early as in the Triassic or early Jurassic. The phylogenetic position of Catopocerinae within Leiodidae (Newton 1998, 2005) also indicates that it may have had an origin in the Jurassic.

The cladistic analysis (Fig. 1) shows that the eastern and western species of North American Catopocerini form two monophyletic clades. Newton (1998, 2005) had hinted that the eastern and western groups were distinct in both larval and adult characters, and we corroborate that there are sufficient adult differences to merit their recognition as two different genera. These two genera and their species occur in two discrete geographical groupings. An eastern group of species occurs in eastern North America in the Appalachian Mountains and bordering uplands of the Piedmont and Allegheny-Cumberland Plateaus from Alabama and Georgia northwards to unglaciated Pennsylvania. These species are grouped in the monophyletic genus *Catopocerus*. The western group of species is widely distributed from southern California to Colorado, east Texas and the Ozarks, northwards to British Columbia and central unglaciated Alaska. These species are grouped in the monophyletic genus *Pinodytes*.

Zoogeography

A reconstruction of the distributional history of the Catopocerini must consider both the great apparent age of the tribe and the seeming sedentary nature of its species, considering that all present members are eyeless and flightless soil inhabitants. Such a set of restraints on vagility often imply to biogeographers that such organisms provide more reliability in reconstructing the ancient vicariant events that have formed their present distributions because the complicating process of dispersal is less likely. However, complete acceptance of this generalization of low vagility of flightless soil arthropods is questionable as is shown by at least ten species of eyeless terrestrial soil-litter arthropods inhabiting the very young Galapagos Islands. It seems most parsimonious that these have most likely dispersed comparatively recently as eyeless and flightless colonizers over a significant oceanic barrier of 1000 km (Peck 1990).

To understand the timing and sequence of possible vicariant events we have used the geomorphology and geology sources of Caldwell and Kauffman (1993), Clark and Stearn (1968), Condie and Sloan (1998), Hunt (1974), King (1977), and Thornbury (1965), and the biological discussions of Allen (1983), Carlton (1990), and Noonan (1986).

The tribe Catopocerini is north and south temperate in distribution (but the south temperate representative, from Chile, has not yet been formally named and described (Newton 1998)). Such a distribution for an ancient group of limited vagility suggests a very ancient pattern dating to a time when the Asian, North American, and South American land masses were all in direct connection as a single landmass called Pangaea. This would date to pre-Cretaceous times. And the present distribution suggests a past distribution limited to western Pangaea, in the parts that would become North and South America, because there is no evidence that the ancestor either dispersed or vicariated into lands that would become Africa and western Eurasia (or they became extinct there). At that time, western North America was always connected to eastern Asia by land bridge terranes moving northwards toward Alaska, as an Asiamerican land mass. For instance, late Jurassic rifting of Pangaea moved the Chukotka block (northern Alaska and part of eastern Siberia) from North America, possibly isolating the ancestor of *Perkovskius* in what would become the Russian Far East.

This north-south disjunct ancestral distribution of Catopocerini can also be called an amphitropical distribution, in which representatives are now absent in tropical lowland habitats but occur on both sides of the tropics. Newton (1985) has discussed this and the apparent Gondwanian vicariance of south temperate staphylinoid genera. The presence of the species "*Catopocerus*" *kovalevi* Perkovsky in the Russian Far East previously suggested that this genus is Holarctic. However, reexamination of the species by E. E. Perkovsky (2010 pers. comm.) shows it to be a member of the Palearctic genus *Perkovskius*. The separation of *Perkovskius* from the *Pinodytes*-*Catopocerus* ancestor may be a vicariant one, achieved in the late Mesozoic or early Tertiary, with the break of the land connection across what is now the Bering Strait. This is a common pattern of sister-group species or genera, most notable in the floristic similarities between eastern and western North America and northeastern Asia (Li 1952). This is also a distributional pattern commonly found in various groups of arthropods (Allen 1983).

Epicontinental seaway vicariance? Eastern and western North America have remained emergent since the early Mesozoic, but not the middle of the continent. The time of separation of the eastern *Catopocerus* clade from the western *Pinodytes* clade may possibly date from a major geological-climatological event. The cause of the separation of the eastern and western clades could date back to the mid-continental Cretaceous seaway that separated eastern from western North America from 100 Ma to about 70 Ma (Condie and Sloan 1998). This implies that the two sides of the continent were occupied by Catopocerini before the seaway separated them. The eastern part of the seaway formed the Mississippi Embayment, a crustal sag containing Cretaceous and Tertiary deposits that extend inland from the Gulf Coast to southern Illinois, and Cretaceous sediments continue to the north to the Arctic. The Mississippi embayment of the late Cretaceous separated the emergent Ozarks from the more eastern Appalachians. We favor this timing of the separation of the eastern *Catopocerus* and western *Pinodytes* clades, and the isolation of the *Catopocerus* clade east of what would become the Mississippi River.

A broad Eocene western distribution? In the Eocene (55-35 Ma) an unbroken warm temperate forest, surpassing in tree diversity any living today on the continent, covered all of the northern half of North America from coast to coast (Chaney 1947, Barghoorn 1951). Ginkoes, dawn redwoods, redwoods, pines, firs, and cedars grew with hickories, beeches, magnolias and other hardwoods. This flora, which has been called the Arcto-Tertiary Geoflora, extended unbroken and directly into eastern Asia. After the Eocene, the North American climate became cooler and drier (Dorf 1970). The North American continent was later fragmented by tectonic uplift and mountain building during the Miocene 20-5 Ma (Matthews 1980). These events drove the forest southward, and in North America split it in half (Wolfe 1978 and references). Deciduous hardwoods migrated to the southeast to where the summer rains they needed were still present. Many conifers migrated to the southwest to cover the emerging Rocky Mountains and Pacific coastal ranges. Ginkoes and dawn redwoods vanished from North America to persist only in eastern Asia, but many genera remain in common but disjunct between east Asia and North America (Li 1952, Thorne 1972). These events resulted in the present and comparatively impoverished forests of southern temperate North America, now widely separated by plains and prairies (Banks 1970) in central North America.

As a result of this process, the broadly distributed western Catopocerini clade, which became *Pinodytes*, was broken into a series of separate lineages, which generally occur west of the Rocky Mountains. One large lineage, called the *cryptophagoides* group, is generally of a northern distribution in the Pacific Northwest of the United

States and Canada, and west of the volcanic Cascade Mountains. The other large lineage, which we call the *pusio* group, is generally distributed to the south, mostly in Oregon and California, and in the Sierra Nevada Mountains and the Coast Ranges.

This implies that the widespread distribution of ancestral *Pinodytes*, perhaps achieved in the Paleocene-Eocene when North America was relatively without relief and forests were transcontinental and warm-humid was severed in the mid-Tertiary, perhaps in the Oligocene (35-25 Ma). Some environmentally sensitive vertebrates also show this ancient geographic split: e. g., some salamanders (*Plethodon* and *Aneides*, Plethodontidae) had a transcontinental Eocene distribution (Welsh 1990) and biota with such a history has been referred to as belonging to the “old northern element” (Savage 1960). We suggest that the Catopocerini is such an old group and was in existence in the Eocene if not before, and that it achieved its wide distribution west of the Mississippi in conjunction with those broadly distributed forests in the equable Eocene climate. And that the later climatic changes and adjustments impacting forest distribution and composition also caused fragmentation (vicariance) in *Pinodytes*. These were the major isolating factors promoting distributional fragmentation and speciation.

There is still an area west of the Rockies where rainfall and temperatures approximate the benign Eocene climate: this is in the coastal ranges of western Oregon and northwestern California. Of special importance are the Klamath-Siskiyou Mountains. These mountains hold a community of trees with a 40 million year association (Axelrod 1976, Axelrod and Raven 1985, Whittaker 1960, 1961). Several tree species that once grew throughout the west now survive only here. It is the region with the greatest generic and specific diversity of conifers (31 species in 10 genera) in North America and is a region rich in other endemic species (Coleman and Kruckeberg 1999). It is both a center for hosting rapid speciation (neoendemics) and a refugium area for relictual species (paleoendemics) (Coleman and Kruckeberg 1999). It is precisely this general region which contains the greatest diversity of *Pinodytes*.

It is probably meaningful that the two large species groups have four small sister clades (Fig. 1), which we call the *borealis*, *punctatus*, *colorado*, and *newtoni* species groups. These are generally geographically peripheral. *Pinodytes borealis* occurs north of the limits of Pleistocene glaciations in Alaska; *P. punctatus* occurs in eastern Oregon and western Idaho; *P. colorado* occurs in Colorado, in the Rocky Mountains; and *P. newtoni* occurs from the Ozarks south to east Texas. These are distinctive, isolated, and peripheral groups that may be old relictual outliers.

Laramide orogeny vicariance? The cause of population separation and fragmentation, promoting speciation, of the large western *cryptophagoides* and *pusio* groups and the smaller species groups of *Pinodytes* could be the mid Tertiary rise of the Rocky Mountains. This formed a rain shadow in the continental interior, and the development of the increasing aridity of the prairie grasslands of the Great Plains (King 1977). *Pinodytes* have not been found in soils in grassland habitats in the Great Plains and their absence may be due to these climatic causes. This scenario implies that the occupation of the Ozarks and east Texas by *P. newtoni* predate the formation and drying of the Great Plains.

Pleistocene vicariance. North American Catopocerini are generally absent from lands that experienced both Pleistocene volcanism and glacial ice cover. We know of few records from the volcanic soils (weathered basalts, deep ashfalls, or pyroclastic ash and mud flows) of the Cascade Mountain range except for southeastern Shasta County and eastern Tehama County, California. There are also few records from glaciated terranes. We assume this is because volcanism and glaciations destroyed the soil fauna, and the unassisted dispersal of these beetles back into such terranes is usually a slow process at best. The species *Pinodytes borealis* n. sp., occurring in central Alaska near Fairbanks, is assumed to be a relict of a Tertiary (pre-Pleistocene) distribution that survived north of the limit of Pleistocene glaciation. Its basal cladistic position to the southern *pusio* species group suggests that is a very old lineage. Other eyeless and flightless soil beetles are thought to be Tertiary relicts that have survived in peri-glacial habitats. One is the leptotyphline staphylinid *Chionotyphlus alaskensis* Smetana, also from unglaciated central Alaska (Smetana 1986). Another is the omaliine staphylinid *Omalonomus relictus* Campbell and Peck, from the unglaciated Cypress Hills refugium of Alberta-Saskatchewan, Canada (Campbell and Peck 1990).

With the retreat of the last glacial ice cover, the glaciated lands of western North America were revegetated (Heusser 1960) but *Pinodytes* did not appreciably recolonize such lands. The exceptions have seemingly survived in peri-glacial refugia or have dispersed by marine drift into glaciated lands along the coastal Pacific Northwest since deglaciation.

Some post-Pleistocene survival in and dispersal from ice-free coastal refugia does seem to be likely. Two such refugia have received much attention. One is that proposed for the Haida Gwaii (formerly Queen Charlotte)

Islands, BC. There is some botanical and other evidence supporting this and it is summarized in Scudder and Gessler (1989). The other possible major coastal refugium is Kodiak Island, Alaska. The analysis of this in Karlstrom and Ball (1969) is equivocal and it does not seem to be relevant to *Pinodytes*.

Pleistocene dispersal. Since the species of *Pinodytes* live in soil, we can hypothesize the transport of individuals in soil around the roots of trees that washed into the ocean during floods and were distributed coastally by ocean currents into previously glaciated lands. It is recognized that “slide rafts” have been an important dispersal mechanism in the wet Pacific Northwest. Such rafts are large dynamic slippages of earth, humus, roots, branches, tree trunks, and rooted vegetation that are carried down rivers and along coasts. These have been used to explain the distribution of *Peromyscus* mice along the coast of British Columbia (McCabe and Cowan 1945). This transport mechanism seems most likely for the elongated coastal distribution of *P. cryptophagoides*, if those populations are not relict survivors from pre-existing coastal refugia.

Species allopatry versus sympatry. All but two of the presently known species are of allopatric distribution. We know of only three instances in which two species are sympatric (or syntopic, meaning they have been taken in the same collection on the same date and in the same exact locality). The co-occurrences are for *P. cryptophagoides* and *P. haidagwaii* in the Haida Gwaii (Queen Charlotte) Islands, where we think *P. haidagwaii* is an endemic species and *P. cryptophagoides* has more recently reached the islands by natural coast-wise marine transportation. The two species were present in two collections on Graham Island and one on Lyall Island, and in each instance *P. haidagwaii* was represented by only one specimen and *P. cryptophagoides* by from one to 25 specimens. This observation of general species allopatry for all other members of the genus supports the origin of these species by a mechanism of geographic separation and isolation, with the absence of post-speciation geographic dispersal.

Systematics

Subfamily Catopocerinae Hatch, 1927 (1880)

Catopocerini Hatch, 1927: 4 (new name for Pinodytini [whose type genus was considered a junior synonym]; maintained, Article 40b, ICZN (1985). Type genus: *Catopocerus* Motschulsky, 1870.

Pinodytini Horn, 1880: 248 (replaced, Article 40b, International Code of Zoological Nomenclature (1985). Type genus: *Pinodytes* Horn, 1880.

Diagnosis. Leiodidae without an occipital carina or crest; antennae 11-segmented, segment 8 smaller than segments 9-10 and 8 without a periarticular gutter and internal vesicles [note: we have found internal vesicles to be present in antennomeres 9 and 10 only in the *P. pusio* group]; cervical sclerites present; abdominal intersegmental membranes short and without minute sclerites; both sexes with 5 visible abdominal ventrites; antennal insertions concealed in dorsal view (except *Glacicavicola*); head relatively flattened and broad, usually about one-half as wide as pronotum; dorsum apparently glabrous; prosternum in front of coxae longer than coxal width; hind coxae separated by about a third or more of their width; tarsi 5-5-5 segmented (except *Perkovskius*) (after Newton 1998 in part).

Tribe Catopocerini Hatch, 1927 (1880)

Diagnosis. Catopocerinae with labrum entire; gular sutures widely separated; pronotum transverse, laterally margined, subequal in width to both elytra together; abdominal sternites free; “pleurites” of male genital segment connected in front of tergite; body form ovoid, flattened; appendages short (after Newton 1998, in part).

Key to genera of Catopocerini

Adapted in part from Perreau and Růžička 2007: 263

1 Epistomal suture with a median stem. Metaventricle with a median carina. Tarsal formula 5-5-5 in both sexes 2

- Epistomal suture without a median stem. Metaventricle without a median carina. Tarsal formula 5-5-3 in males, 4-4-3 in femalesPerkovskius
- 2 Antennomeres 7, 9 and 10 each bearing several teeth. Metaventricle and first visible abdominal sternite with setose paired impressions. Spiculum gastrale absent. Parameres separate from basal piece. Anterior apophysis absent from female sternite 8*Catopocerus*
- Antennomeres 7, 9 and 10 without teeth. Metaventricle and first visible abdominal sternite without setose paired impressions. Spiculum gastrale present. Parameres continuous with basal piece. Anterior apophysis present on female sternite 8 . *Pinodytes*

Genus *Catopocerus* Motschulsky, 1870

Catopocerus Motschulsky, 1870: 351. Type species, original combination: *Catopocerus politus* Motschulsky, 1870, by monotypy.

Diagnosis. Antennal segments 7, 9, and 10 each bear several tooth-like serrations. Metaventricle and first visible abdominal sternite with setose paired impressions. Apex of male mesotibia bearing a patch of fine, dense spines on inner margin. Male metatibia with an excavation on inner margin at apex bearing dense setae. Spiculum gastrale absent. Parameres separate from basal piece. Parameres lack apical setae. Anterior apophysis absent from female sternite 8. Spermatheca globose. Larvae with entire ligula and undivided maxillary lobe.

Distribution and diversity. The genus is known to contain only the following five species from the eastern United States, ranging from the southern Appalachian Mountains and adjacent uplands of northern Alabama and Georgia, northwards to the District of Columbia and southern Pennsylvania (south of the limit of Pleistocene glaciation). No new species and no new distributional records have been seen since the revision of Peck (1975).

Key to species. See Peck (1975).

Catopocerus politus Motschulsky, 1870

Catopocerus politus Motschulsky 1870: 351; Portevin 1922: 2 (synonymy with *Catopocerus cryptophagoides* Mannerheim, this is an error); Hatch 1928: 72.

Catopocerus ulkei Brown 1933: 215. Holotype in CNCI. Type locality: District of Columbia. Peck 1975: 383. **New synonymy.** *Pinodytes cryptophagoides* Mannerheim (in part), Horn 1880: 249; 1892: 46; Hamilton 1894: 16; Blatchley 1910: 277. All misidentifications.

Type material. The type specimen was not found in the Motschulsky collection in the Zoology Museum, Moscow State University, Moscow, Russian Federation, by searches by SBP (2003) or by Dr. N. B. Nikitsky of the the Zoology Museum (2003, in litt.). Type locality: "North America". Specific locality and collector not mentioned. Type assumed to have been collected by Motschulsky himself (1870: 351; "Je l'ai découvert dans l'Amerique du Nord."). He was never in Alaska or California to collect there (contrary to what was assumed in the past), but he was in the eastern United States (from southeastern Pennsylvania and the District of Columbia to Alabama) in 1853-1854 (Motschulsky 1856, Bousquet 1997). **Neotype** here designated for the purpose of obtaining stability of application of the name, holotype female specimen in CNCI bearing the following labels: *Catopocerus ulkei* Brown, 1933, no. 3538; and our red neotype label. Type locality: District of Columbia, USA.

Material examined. No new material has become available.

Distribution. United States. District of Columbia, Maryland, North Carolina, Pennsylvania, Virginia, West Virginia; distributed over a maximum airline distance of 650 km.

Catopocerus hamiltoni (Horn, 1892)

Pinodytes hamiltoni Horn 1892: 45. Lectotype designated by Peck (1975: 381); in MCZ, Horn collection (no. 3027). Type locality: "vicinity of Allegheny City" (Pittsburgh), Pennsylvania.

Material examined. We have seen no additional specimens.

Notes. Peck (1975: 380) illustrated the female genitalia and mistakenly labeled it as male genitalia as noted by Perreau and Růžička (2007). No male specimens are known for this species, so the male genitalia are still unknown.

Distribution. The species is known only from southwestern Pennsylvania, in the vicinity of Pittsburgh and St. Vincent. No specimens have been collected since 1901.

***Catopocerus applachianus* Peck, 1975**

Catopocerus applachianus Peck 1975: 387. Holotype in MCZC. Type locality: Balsam Gap, Mt. Mitchell, Yancy County, North Carolina.

Material examined. No new material is available.

Distribution. North American distribution: United States. AL, IL, KY, NC, TN, VA, WV.

The species has a roughly linear range of 772 km along the Appalachian mountains from Madison County, northern Alabama, northeastward to Pocahontas County, West Virginia. One collection is known from the Cumberland Plateau of Kentucky and one in the Shawnee Hills of southern Illinois. A tentatively associated female from St. Louis (mentioned in Peck 1975), in eastern Missouri, has proved to be *Pinodytes newtoni* n. sp., which is described below.

***Catopocerus jonesi* Peck, 1975**

Catopocerus jonesi Peck 1975: 392. Holotype male in MCZC. Type locality: Eudy Cave, 1 mi S Oleander, Marshall County, Alabama.

Material examined. No new material is available.

Distribution. The species is known only from Morgan, Marshall and Jackson counties in northeastern Alabama.

***Catopocerus alabamae* Peck, 1975**

Catopocerus alabamae Peck 1975: 393. Holotype male in MCZC. Type locality: Cave Spring Cave, Chapman Mt., Huntsville, Madison County, Alabama.

Material examined. No new material is available.

Distribution. The species is known only from the type specimen, recovered from the stomach of a cave salamander, *Eurycea lucifuga* (Rafinesque).

Genus *Pinodytes* Horn, 1880, resurrected status

Pinodytes Horn 1880: 248. Type species: *Catops cryptophagoides* Mannerheim, 1852 (monotypy); valid name: *Pinodytes cryptophagoides* (Mannerheim).

Homeosoma Austin 1880: 16 (attributed to Horn; preoccupied, not Curtis 1833); synonymy in Hatch 1928: 72. Type species: *Catops cryptophagoides* (Mannerheim), 1852. Note: as *Homaeosoma* in Neave (1939-40).

Typhloleiodes Hatch 1935: 116; synonymy in Hatch 1957: 19. Type species: *Typhloleiodes subterraneus* Hatch, 1935; by original designation.

Diagnosis. Antennal segments 7, 9, and 10 do not bear tooth-like serrations. Metaventricle and first visible abdominal sternite without setose paired impressions. Spiculum gastrale present. Parameres continuous with basal piece. Parameres with paired apical or subapical setae. Anterior apophysis present on female sternite 8. Spermatheca usually elongate, sinuate. Larvae (of examined species) with bilobed ligula and maxillary lobe (Newton 1998).

Distribution and diversity. The genus is Nearctic in distribution, and is presently known to contain 42 species in North America west of the Mississippi River; distributed from the Ozarks and east Texas, westward to southern California, and through Colorado and Idaho to central Alaska, but absent in most of glaciated western North America.

Key to North American species of *Pinodytes* (males)

Males can be separated from females by the presence of phanerae (apically widened setae) ventrally on at least the protarsomeres.

- 1 Both protarsomeres and mesotarsomeres bearing phanerae ventrally (Figs. 46, 55, 64, 72) 2
- Only protarsomeres bearing phanerae ventrally 5
- 2 Median lobe of aedeagus short and broad (Fig. 49); parameres broad (Fig. 49); interior highlands region of the United States ...
newtoni group *P. newtoni*
- Median lobe of aedeagus elongate (Figs. 59, 67, 75); parameres narrow (Figs. 59, 67, 75); occurs in western North America . . . 3
- 3 Larger (total length about 2 mm); longitudinal carina of mesoventrite expanded at middle (Fig. 61); the state of Alaska ...
borealis group *P. borealis*
- Smaller (total length 1.5 mm or less); longitudinal carina of mesoventrite not expanded at middle (Figs. 69, 78); does not occur
in Alaska 4
- 4 Median lobe of aedeagus in lateral view with depth at middle about equal to depth of paramere (Fig. 66); longitudinal carina of
mesoventrite with a small tooth (Fig. 69); the states of Washington and Idaho ... *punctatus* group *P. punctatus*
- Median lobe of aedeagus in lateral view with depth at middle about twice depth of paramere (Fig. 74); longitudinal carina of
mesoventrite lacks teeth (Fig. 78); the state of Colorado ... *colorado* group *P. colorado*
- 5 Antennomeres 9 and 10 lack visible sensory vesicles; antennomere 7 clearly larger than 8 (Fig. 257); parameres slender and
distinctly shorter than median lobe of aedeagus (Fig. 262); protibia strongly widened apically (Fig. 258); mesoventrite with a
distinct, deep excavation posterior to transverse carina (Fig. 282) *cryptophagoides* group ... 6
- Antennomeres 9 and 10 with visible sensory vesicles (Fig. 79); antennomeres 7 and 8 subequal in size (Fig. 79); parameres
broad, extending nearly to or beyond apex of median lobe of aedeagus (Fig. 84); protibia not strongly widened apically; meso-
ventrite without a distinct excavation posterior to transverse carina (Fig. 86) *pusio* group 21
- 6 Mesoventrite with large patch of dense white setae on each side of longitudinal carina (Fig. 334) 7
- Mesoventrite without patches of white setae 8
- 7 Median lobe of aedeagus in dorsal view slightly constricted before narrow apex (Fig. 332) *P. delnorte*
- Median lobe of aedeagus in dorsal view broadly rounded apically (Fig. 373) *P. setosus*
- 8 Apex of median lobe of aedeagus demarked by a ridge (Figs. 271, 340) 9
- Apex of median lobe of aedeagus not demarked by a ridge 10
- 9 Apex of median lobe of aedeagus narrow (Fig. 340) and strongly declivous (Fig. 339) *P. garibaldi*
- Apex of median lobe of aedeagus broad (Fig. 271) and not declivous (Fig. 270) *P. subterraneus*
- 10 Mesotibia abruptly widened before apex (Fig. 313) 11
- Mesotibia evenly widened from base to apex 13
- 11 Median lobe of aedeagus not sinuate in dorsal view; apex of median lobe narrow with a weak, rounded lobe (Fig. 316)
..... *P. tibialis*
- Median lobe of aedeagus sinuate in dorsal view (Figs. 366, 389); apex of median lobe broad (Figs. 366, 389) 12
- 12 Total length more than 4.0 mm; longitudinal carina of mesoventrite irregularly serrate (Fig. 367); apical one-third of mesotibia
expanded (Fig. 362) *P. orca*
- Total length less than 2.5 mm; longitudinal carina of mesoventrite with a single small tooth (Fig. 391); mesotibia expanded
before apex (Fig. 386) *P. sinuatus*
- 13 Median lobe of aedeagus sharply dorsoventrally angulate before flattened apex (Figs. 323, 279); inner margin of mesotibia concave
(Figs. 321, 277) 14
- Median lobe of aedeagus not as above; inner margin of mesotibia convex or straight 16
- 14 Total length about 2 mm; internal sac of aedeagus with a bilobed sclerite (Fig. 324) *P. angulatus*
- Total length greater than 2 mm; internal sac of aedeagus without a bilobed sclerite 15
- 15 Internal sac of aedeagus with several large sclerotized structures (Fig. 280); the state of Oregon *P. imbricatus*
- Internal sac of aedeagus with several types of spines (Fig. 348); the islands of Haida Gwaii, British Columbia *P. haidagwaii*
- 16 Median lobe of aedeagus sharply dorsoventrally angulate in lateral view (Fig. 296) *P. capizzii*
- Median lobe of aedeagus variously dorsoventrally curved 17
- 17 Median lobe of aedeagus in dorsal view wider in apical one-fifth than at middle (Figs. 356, 381); inner margin of mesotibia
straight (Figs. 353, 378); the state of Idaho 18
- Apex of median lobe of aedeagus in dorsal view narrower than middle of median lobe (Figs. 262, 288); inner margin of
mesotibia convex (Figs. 259, 285); Pacific coast 19
- 18 Total length less than 2.0 mm; median lobe of aedeagus most strongly curved in apical one-half (Fig. 355) *P. isabella*
- Total length more than 2.0 mm; median lobe of aedeagus most strongly curved in posterior one-half (Fig. 380) . . . *P. shoshone*
- 19 Apex of median lobe of aedeagus in dorsal view doubly constricted before apex (Fig. 288) *P. newelli*

–	Apex of median lobe of aedeagus not doubly constricted before apex	20
20	Apex of median lobe of aedeagus in dorsal view attenuately spinose (Fig. 262)	<i>P. cryptophagoides</i>
–	Apex of median lobe of aedeagus broadly triangular (Fig. 307)	<i>P. rothi</i>
21	Median lobe of aedeagus constricted before rounded, lobed apex (Fig. 158); known only from the state of Idaho	<i>P. idaho</i>
–	Median lobe of aedeagus not as above; California or southern Oregon	22
22	Outer margin of mesotibia with a distinctive elongate spine near middle that is about two times length of other spines on outer margin (Figs. 90, 147)	23
–	Outer margin of mesotibia without a distinctive elongate spine near middle	29
23	Inverted internal sac of median lobe of aedeagus with a series of dark spines extending beyond base (Figs. 150, 230)	24
–	Inverted internal sac of median lobe of aedeagus without a series of dark spines extending beyond base	27
24	Mesoventrite with longitudinal carina on different plane than transverse carina (Figs. 152, 232)	25
–	Mesoventrite with longitudinal carina on about same plane as transverse carina	26
25	Apex of median lobe of aedeagus broadly rounded (Fig. 150); pronotum with reticulate microsculpture	<i>P. humboldtensis</i>
–	Apex of median lobe of aedeagus narrowly rounded (Fig. 230); pronotum with transverse, substrate microsculpture	<i>P. shasta</i>
26	Median lobe of aedeagus narrow at apex (Fig. 246); sides of base of median lobe meet at dorsal midline (Fig. 246)	<i>P. tehama</i>
–	Median lobe of aedeagus not narrow at apex (Fig. 101); sides of base of median lobe do not meet at dorsal midline (Fig. 101)	<i>P. chandleri</i>
27	Apex of median lobe of aedeagus strongly narrow (Fig. 93); internal sac with one pair of large spines and numerous small spines (Fig. 93)	<i>P. ovatus</i>
–	Apex of median lobe moderately narrow (Figs. 165, 190); internal sac not as above	28
28	Internal sac of aedeagus with two pairs of large spines (Fig. 165)	<i>P. klamathensis</i>
–	Internal sac of aedeagus with an hour-glass shaped sclerite and, when inverted, a double series of small spines (Fig. 190)	<i>P. minutus</i>
29	Median lobe of aedeagus broad, asymmetrical at apex (Fig.); internal sac with a single large, strong spine and clusters of smaller spines (Fig. 238)	<i>P. spinus</i>
–	Aedeagus not as above	30
30	Median lobe of aedeagus, in dorsal view, with lateral notches before apex (Figs. 84, 142, 254)	31
–	Median lobe of aedeagus, in dorsal view, without lateral notches before apex	35
31	Inner margin of parameres, in dorsal view, with a flange before apex (Figs. 142, 254)	32
–	Inner margin of parameres straight	33
32	Median lobe of aedeagus, in lateral view, with dorsal margin sharply declivous at apical one-third (Fig. 141); apex of median lobe not narrow (Fig. 142)	<i>P. gibbosus</i>
–	Median lobe of aedeagus, in lateral view, not sharply declivous (Fig. 253); apex of median lobe narrow (Fig. 254)	<i>P. tuolumne</i>
33	Larger species, total length 2–3 mm; longitudinal carina of mesoventrite irregularly serrate (Fig. 223)	<i>P. sequoia</i>
–	Smaller species, total length less than 1.7 mm; longitudinal carina of mesoventrite with a single tooth (Figs. 86, 135)	34
34	Apex of median lobe of aedeagus flat (Fig. 132), with acute tip (Fig. 133)	<i>P. fresno</i>
–	Apex of median lobe of aedeagus not flat (Fig. 83), with rounded tip (Fig. 84)	<i>P. pusio</i>
35	Width of metafemur 3–4 times width of metatibia	36
–	Width of metafemur less than three times width of metatibia	37
36	Metatibia with elongate spine near middle of outer margin (Fig. 196); apex of median lobe of aedeagus triangular in dorsal view (Fig. 198)	<i>P. monterey</i>
–	Metatibia without elongate spine near middle of outer margin; median lobe of aedeagus with narrow apex (Fig. 173)	<i>P. losangeles</i>
37	Body dorsally elongate in shape, length/width more than 2.25	38
–	Body dorsally oval in shape, length/width less than 2.00	39
38	Metatibia with strong spine near middle of outer margin (Fig. 107); median lobe of aedeagus sharply constricted before triangular apex (Fig. 109)	<i>P. constrictus</i>
–	Metatibia without strong spine near middle of outer margin; median lobe of aedeagus broad with narrow apex (Fig. 214)	<i>P. sanjacinto</i>
39	Apices of parameres contorted (Fig. 117)	<i>P. contortus</i>
–	Apices of parameres not contorted	40
40	Median lobe of aedeagus widest at apical one-third (Fig. 125); apex of median lobe acute (Fig. 125)	<i>P. eldorado</i>
–	Median lobe of aedeagus widest at basal one-third (Figs. 181, 206); apex of median lobe narrowly rounded (Fig. 181, 206)	41
41	Apex of median lobe of aedeagus ogival in shape (Fig. 181); inverted internal sac with one pair of elongate sclerites (Fig. 181)	<i>P. marinensis</i>
–	Apex of median lobe of aedeagus rounded (Fig. 206); inverted internal sac with two pairs of elongate sclerites (Fig. 206)	<i>P. parvus</i>

***Pinodytes newtoni* species group**

Diagnosis. This monotypic group is defined by the following combination of characters: head and pronotal

microsculpture substriate; antennomere 7 clearly larger than 8; male protibia evenly widened to apex; male protarsomeres and mesotarsomeres bearing spatulate phanerae ventrally; mesoventrites longitudinal carina not excavated anteriorly; median lobe of aedeagus broad, short, with flattened apex; parameres broad, short, apical one-half dorsoventrally expanded, bearing paired setae apically.

***Pinodytes newtoni* Peck & Cook, new species**

(Figs. 2, 44–52)

Type material. Holotype: male (UADE). **UNITED STATES. Arkansas:** Polk Co., 3.5 mi W. Queen Wilhelmina St. Pk., 12.X.1974, 2500', A. Newton, Ber. ground litter, mixed hardwood for. **Paratypes** (94). **UNITED STATES. Arkansas:** same data as holotype, 6 (UADE); Benton Co.: 2miSE Gateway, 23.III.1984, L.E. Watrous, litter along stream, 1 (FMNH); Franklin Co., Ozark-St. Francis NF, White Rock WMA, 9.4kmN Cass, 17.IV.2008, J. Dorshorst & J. Gruber, sift flood debris W. Fleming Ck., 1 (IRCW); Garland Co., Camp Clearfork, RL891, 20.II.1988, R. Leschen, *Xylaria* polymorphs at base of old *Quercus*, 3 (UADE); Hot Spring Co., Bismark, 2miWNW, 13.IV.1984, D. Beyers & M. Jenks, log and lotter, 5 (FMNH); Marion Co., Buffalo Pt. nr. Mull, 24–25.X.1974, 500', A. Newton, Ber. ground litter, mixed hw for., 9 (UADE); Newton Co., Lost Valley nr. Ponca, 23–24.X.1974, 1000', A. Newton, Ber. ground litter, mixed hw for., 1 (UADE); Polk Co., 0.6miWSW Rich Mountain (town), 26.VI.1986, 570m, A. Newton & M. Thayer, 756, hickory, oak, mixed hw forest litter Ber., 4 (FMNH); Polk Co., 3.5miW Queen Wilhelmina St. Pk., 11–12.X.1974, 2500', A. Newton, Ber. ground litter, mixed hw for., 13 (UADE); Polk Co., Ouachite N.F., E. end Caney Ck. Trail, 27.VI.1986, 440m, A. Newton & M. Thayer, 757, Oak-hickory for. litter Ber., 3 (FMNH); Polk Co., Queen Wilhelmina St. Pk., 11–12.X.1974, A. Newton, Ber. ground litter mixed hw for., 2 (FMNH); Pope Co., 2miN Dover, 27.III.2984, L.E. Watrous, pine oak litter, 1 (FMNH); Stone Co., Blanchard Springs nr. Fifty Six, 25–26.X.1974, 300', A. Newton, Ber. ground litter, mixed hw for., 4 (UADE); **Missouri:** Crawford Co., 6miSE Leasburg, 38.0304N, 91.2150W, 28.V.2007, L.E. Watrous, 866, woodland soil, 1 (LEWC); Crawford Co., 6miSE Leasburg, 38.0307N, 91.2110W, 30.VI.2007, L.E. Watrous, 904, bottomland soil, 1 (LEWC); McDonald Co., 1miN Noel, 35.5994N, 94.4962W, 13.VI.2007, L.E. Watrous, 866, glade soil, 1 (LEWC); St. Louis Co., 2.6miNE Pacific, 38.5039N, 90.7020W, 19.VI.2007, L.E. Watrous, 894, bottomland soil, 6 (LEWC); St. Louis Co., 3miE Pacific, 38.4984N, 90.6861W, 3.VI.2007, L.E. Watrous, 874, grass soil, 1 (LEWC); St. Louis Co., 3miNE Pacific, 38.4985N, 90.6890W, 27.V.2007, L.E. Watrous, 872, grass soil, 1 (LEWC); St. Louis, 4miN Eureka, 38.5656N, 90.6453W, 16.II.2006, L.E. Watrous, 477, glade litter, 2 (LEWC); St. Louis Co., 4miN Eureka, 38.5656N, 90.6469W, 27.V.2007, L.E. Watrous, 865, woodland soil, 15 (LEWC); **Texas:** Sabine Co., 9miE Hemphill "Beech Bottom", 8.III.1989, R. Anderson & E. Morris, Ber. beech-magnolia leaf litter, 5 (SBPC); Sabine Co., 9miE Hemphill "Beech Bottom", 16.III.1997, E.G. Riley, 424, Ber. litter beech-magnolia forest, 2 (TAMU); Sabine Co., 9miE Hemphill "Beech Bottom", 24.IV.89, R. Anderson et al., Ber. beech-magnolia leaf litter, 6 (SBPC).

Material examined. We have examined 95 specimens.

Distribution. Specimens (Fig. 52) are known from Benton, Franklin, Garland, Hot Spring, Marion, Newton, Polk, Pope, and Stone counties, Arkansas; Crawford, McDonald, and St. Louis counties, Missouri; and Sabine County, Texas.

Diagnostic description. Total length 1.66–1.98 mm; greatest width 0.74–0.94 mm. Light to dark reddish brown, head often darker; elongate-oval in shape (Fig. 2). **Head.** Finely, sparsely punctate; with faint substriate microsculpture. Eyes absent. Antennomere 2 longer than 3 (Fig. 44); antennomeres 5 and 6 subequal, larger than 4; antennomere 7 larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Finely, sparsely punctate; with faint substriate microsculpture. Widest at basal one-fourth, narrower at apex than at base, sides rounded; apical margin slightly emarginate, basal margin straight; apical angles rounded, basal angles slightly obtuse. **Elytra.** Punctures larger and more dense than on pronotum; weak strigae between punctures; striae vaguely indicated basally, absent apically. Joined elytra widest in basal one-half; sides parallel basally, narrowing in apical one-half. **Legs.** Protibia (Fig. 45) evenly widening to apex; dense, fine spines on apical one-half of inner margin; outer margin with three short spines and two longer spines near apex. Mesotibia (Fig. 46) evenly widening to apex; apical one-half on inner margin finely spinose; outer margin spinose. Metatibia (Fig. 47) elongate, slender, weakly curved in male, spinose. Metafemur (Fig. 47) slender. Male protarsomeres (Fig. 45) and mesotarsomeres (Fig. 46)

weakly expanded and bearing elongate setae laterally and white, spatulate phanerae ventrally. **Venter.** Mesoventrite (Fig. 51) carinate, longitudinal carina with one or two small lobes anteriorly, not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 48, 49) broad, flat apically; apex variable in width. Everted internal sac covered with short, broad spines; elongate spines at apex. Parameres (Figs. 48, 49) broad, not reaching apex of median lobe; each with two apical setae. **Spermatheca.** Elongate (Fig. 59), tubular, variably curved.

Notes. Three specimens, with guts packed with host tissue, were taken on sporocarps of *Xylaria polymorpha* (Xylariaceae) by Richard Leschen (in litt 24 Feb 1988).

Etymology. This species is named in recognition of its discovery by Dr. A.F. Newton of the Field Museum, Chicago, Illinois.

Pinodytes borealis species group

Diagnosis. This monotypic group is defined by the following combination of characters: head and pronotal microsculpture reticulate; antennomere 7 clearly larger than 8; male protibia slender, evenly widened to apex; male protarsomeres and mesotarsomeres bearing two rows of thin, broad phanerae ventrally; mesoventrites longitudinal carina not excavated anteriorly; median lobe of aedeagus elongate, broad; parameres moderately narrow, not reaching apex of median lobe, each bearing two apical setae.

Pinodytes borealis Peck & Cook, new species

(Figs. 3, 52–61)

Type material. Holotype: male (SBPC). **UNITED STATES. Alaska:** Chena Ridge, 5miW Fairbanks, 27.VII.84, S. & J. Peck, alder litter. **Paratypes** (145). **UNITED STATES. Alaska:** same data as holotype, 69 (SBPC), 17 (FMNH); Chena Hot Spgs., mi 49 Chena River Rd., 28.VII.84, 1000', S. & J. Peck, birch-alder litter, S face slope, 24 (SBPC); Circle Hot Springs, 6.VIII.84, S. & J. Peck, alder-poplar-willow forest litter, 29 (SBPC); Lost Creek, 7miN Livengood, 30.VII.84, S. & J. Peck, carrion, 5 (SBPC).

Material examined. We have examined 145 specimens.

Distribution. Specimens (Fig. 52) are known from the vicinity of Fairbanks, in formerly unglaciated central Alaska. We interpret these populations to be relictual and indicating a Tertiary distribution, before Pleistocene glaciations caused the extinction of other populations and species in western North America.

Diagnostic description. Total length 2.02–2.10 mm; greatest width 0.92–0.96 mm. Reddish brown; elongate-oval in shape (Fig. 3). **Head.** Finely, sparsely punctate, shining, with faint reticulate microsculpture on vertex and sides. Eyes absent. Antennae (Fig. 53) with antennomeres 2 and 3 subequal in length; antennomere 5 longer than 4 and 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Finely, sparsely punctate, shining, with faint reticulate microsculpture. Slightly wider at middle than at base, narrowing from middle to apex; apical margin weakly emarginate, basal margin straight; apical angles rounded, basal angles nearly right-angled. **Elytra.** Strial punctures in rows, weakly impressed medially in basal one-half; interstitial punctures variable in size and density; shining. Joined elytra widest near middle, wider than pronotum, sides moderately rounded, rounded at apex. **Legs.** Protibia (Fig. 54) moderately slender; outer margin with spine one-fifth from apex; apex spinose; inner margin with fine spines on apical two-thirds. Mesotibia (Fig. 55) moderately slender; apical one-half of inner margin finely spinose, outer margin and apex spinose. Metatibia (Fig. 56) elongate, narrow, straight; fine spines on apical one-half of inner margin; spinose at apex. Metafemur (Fig. 56) slender. Male protarsomeres (Fig. 54) and mesotarsomeres (Fig. 55) little expanded, bearing elongate setae laterally and thin, broad, colorless phanerae ventrally in two rows. **Venter.** Mesoventrite (Fig. 61) carinate; longitudinal carina expanded at middle, not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 57, 59) elongate, broad, with apex flattened and dorsoventrally sinuate. Everted internal sac (Fig. 58) with a bifurcated sclerotized structure, a single elongate spine, and numerous small spines. Parameres (Figs. 57, 59) straight, not reaching apex of median lobe, each with two apical setae. **Spermatheca.** Elongate (Fig. 60), tubular, curved.

Etymology. The name *borealis*, Latin, northern, refers to the northern distribution of this species.

Bionomics. The collections are all from leaf litter of broadleaf forests (aspens) on loess soils. These soils are deep, well drained, and warmer than other soil types in central Alaska. We suggest that these soil properties are important for the northern survival of the species. These soils are the same as those in which is found the eyeless northern relictual soil staphylinid *Chionotyphlus alaskensis* Smetana (1986).

Pinodytes punctatus species group

Diagnosis. This monotypic group is defined by the following combination of characters: head and pronotal microsculpture reticulate; antennomere 7 clearly larger than 8; male protibia slender, evenly widened to apex; male protarsomeres and mesotarsomeres bearing two rows of thin, broad phanerae ventrally; male protarsomeres and mesotarsomeres bearing two rows of thin, broad phanerae ventrally; mesoventrites longitudinal carina not excavated anteriorly; median lobe of aedeagus elongate, moderately broad, flat; parameres moderately narrow, not reaching apex of median lobe, each bearing two apical setae.

Pinodytes punctatus Peck & Cook, new species

(Figs. 4, 52, 62–69)

Type material. Holotype: male (FMNH). **UNITED STATES. Washington:** Spokane Co.: Mt. Spokane, base, 22 June 1957, H.S. Dybas leg., floor litter. **Paratypes** (73): same data as holotype, 12 (FMNH); Spokane Co., Mt. Spokane, Bald Knob, 22.VI.1957, 4500', H.S. Dybas, under dung, 3 (FMNH); Spokane Co., Mt. Spokane, Bald Knob, 3.VI.1986, J.B. Johnson, 3 (WFBM); **Idaho:** Benewah Co., 12miS Coeur D'Alene, 15.IV.1988, F.W. Merickel, B.F., 55 (WFBM).

Material examined. We have examined 74 specimens.

Distribution. Specimens (Fig. 52) are known from Benewah County in northern Idaho, and Spokane County, in eastern Washington.

Diagnostic description. Total length 1.36–1.50 mm; greatest width 0.64–0.72 mm. Reddish brown; elongate oval in shape (Fig. 4) **Head.** Finely, sparsely punctate, shining, with reticulate microsculpture posteriorly on vertex. Eyes absent. Antenna (Fig. 62) with antennomere 2 longer than 3; antennomere 5 larger than 4 and 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Punctures larger than on head, separated by 2–4 diameters, shining, with faint reticulate microsculpture. Widest at base, slightly narrower than elytra; sides nearly parallel in basal one-half; more rounded, converging in apical one-half; apical margin emarginate, basal margin nearly straight; apical angles subangulate, basal angles about right-angled. **Elytra.** With moderately coarse punctures arranged serially, becoming finer laterally and apically; shining; posterolateral punctures with erect setae. Joined elytra slightly wider than pronotum, widest at basal one-fourth, narrowing to apex. **Legs.** Protibia (Fig. 63) slender, straight, evenly widened to apex; outer margin with two elongate curved spines apically, shorter spines on apical one-half; apical one-half of inner margin with fine spines. Mesotibia (Fig. 64) slightly wider apically than protibia; strong spines on outer margin, apical one-half of inner margin with fine spines. Metatibia (Fig. 65) slender, straight; strong spines apically; apical one-half of inner margin with fine spines. Metafemur (Fig. 65) slender. Male protarsomeres (Fig. 63) and mesotarsomeres (Fig. 64) not expanded, bearing elongate setae laterally and a double row of broad, thin, colorless phanerae ventrally. **Venter.** Mesoventrite (Fig. 69) carinate, longitudinal carina with a small median tooth; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 66, 67) elongate, broad, dorsoventrally flattened throughout, evenly narrowed to apex. Inverted internal sac with a transverse, curved sclerite. Parameres (Figs. 66, 67) broad, flat; not reaching apex of median lobe; each bearing one subapical and one apical seta. **Spermatheca.** Elongate (Fig. 68), cylindrical, curved.

Etymology. The name *punctatus*, Latin, punctate, refers to the prominently punctured pronotum and elytra of this species.

Pinodytes colorado species group

Diagnosis. This monotypic group is defined by the following combination of characters: head and pronotal microsculpture transverse substrate; antennomere 7 clearly larger than 8; male protibia evenly widened to apex; male protarsomeres and mesotarsomeres bearing two rows of thin, broad phanerae ventrally; mesoventrites longitudinal carina not excavated anteriorly; median lobe of aedeagus elongate, broad; parameres moderately narrow, not reaching apex of median lobe, each bearing two apical setae.

Pinodytes colorado Peck & Cook, new species

(Figs. 5, 52, 70–78)

Type material. Holotype: male (SBPC). **UNITED STATES. Colorado:** Eagle Co., 10miN Wolcott, 8300', 2.IX.58, aspen litter, C.C. Hoff, (213), 2F. **Paratypes** (14). **UNITED STATES. Colorado:** same data as holotype, 3 (SBPC); Archuleta Co., Frances, 30.VI.41, B. Rotger, 1 (CASC); Eagle Co., 7miSSE Minturn, 8900', 30.VIII.58, lodgepole pine litter, C.C. Hoff, (180), 2F, 2(SBPC); Gunnison Co., 16miNNE Gunnison, 8200', 28.VIII.58, aspen litter, C.C. Hoff, (152), 2F, 8 (SBPC).

Material examined. We have examined 15 specimens.

Distribution. Specimens (Fig. 52) are known from Archuleta, Eagle, and Gunnison counties, Colorado. These localities are in the mountainous interior of the state, behind the Front Ranges of the Rocky Mountains.

Diagnostic description. Total length 1.50–1.66 mm; greatest width 0.56–0.58 mm. Yellowish brown to reddish brown; elongate in shape (Fig. 5). **Head.** Finely, sparsely punctate; with substrate microsculpture on the vertex and reticulate microsculpture laterally. Antenna (Fig. 70) with antennomere 2 longer than 3; antennomere 5 larger than 4 and 6; antennomere 7 larger than 8; antennomeres 9 and 10 without visible sensory vesicles. **Pronotum.** Finely, sparsely punctate, with reticulate to substrate microsculpture. Widest near middle, sides rounded; apical margin emarginate, basal margin straight; apical angles rounded, basal angles weakly obtuse. **Elytra.** Finely, sparsely punctate; punctures joined by fine transverse striae; some punctures bearing short, erect setae. Joined elytra slightly wider than pronotum, widest in basal one-half, narrowing to apex; conjointly narrowly truncate at apex. **Legs.** Protibia (Fig. 71) moderately slender, width increases evenly to apex; inner margin with fine spines on apical one-half; apex spinose. Mesotibia (Fig. 72) similar in shape to protibia; outer margin and apex spinose; inner margin with fine spines on apical one-half. Metatibia (Fig. 73) elongate, weakly curved; fine spines on apical one-half of inner margin; spines near apex of outer margin and apically. Metafemur (Fig. 73) slender. Male protarsomeres (Fig. 71) and mesotarsomeres (Fig. 72) not expanded, bearing elongate setae laterally and thin, broad, colorless phanerae in double rows ventrally. **Venter.** Mesoventrite (Fig. 78) carinate; longitudinal carina not toothed, not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 74, 75) elongate, broad; apex rounded, thin. Everted internal sac (Fig. 76) with elongate setae. Parameres (Figs. 74, 75) weakly curved, not reaching apex of median lobe; each bearing two setae apically. **Spermatheca.** Tubular (Fig. 77), curved.

Etymology. The name *colorado*, a noun in apposition, refers to the state of Colorado, USA, where this species occurs.

Pinodytes pusio species group

Diagnosis. This group is defined by the following combination of characters: head and pronotal microsculpture transverse substrate; antennomeres 7 and 8 subequal in size; antennomeres 9 and 10 bearing sensory vesicles; male protibia slender, weakly widened to apex; male protarsomeres bearing phanerae ventrally, mesotarsomeres lack phanerae; mesoventrites longitudinal carina not excavated anteriorly; median lobe of aedeagus elongate, variously widened; parameres elongate, usually extending beyond apex of median lobe, broad, with flattened apices, each bearing two setae before apex.

***Pinodytes pusio* Horn, 1892, resurrected combination**

(Figs. 6, 79–87)

Pinodytes pusio Horn 1892: 45.

Catopocerus pusio: Hatch 1928: 72 (new combination).

Type material. Lectotype of *P. pusio* here designated, to ensure the name's proper and consistent application, male, in MCZC, Horn collection; bearing white label "Alameda Co. Cal"; white label "1722"; pale green label "Para-Type 3028"; white hand-written label "Catopocerus pusio Horn det S. Peck '68"; red label "MCZ TYPE 35341"; and our red lectotype label; seen. Type locality: Alameda County, California.

Additional material examined. We have examined an additional 267 specimens (see Appendix).

Distribution. Specimens (Fig. 87) are known from Alameda, Contra Costa, Fresno, Marin, Mariposa, Mendocino, Monterey, San Bernardino, San Francisco, San Mateo, Santa Clara, Santa Cruz, and Tulare counties, California.

Diagnosis. Total length 1.46–1.70 mm; greatest width 0.68–0.82 mm. Reddish brown; elongate oval in shape (Fig. 6). **Head.** Finely punctate, punctures separated by 2–4 diameters, with substrate microsculpture. Eyes absent. Antennae (Fig. 79) with antennomeres 2 and 3 subequal in length; antennomere 5 slightly larger than 4 and 6; antennomere 7 longer but not wider than 8; antennomeres 9 and 10 each with a sensory vesicle indicated apically by a protruding flange. **Pronotum.** Punctuation similar to head, shining, with transverse substrate microsculpture. Widest near base; sides slightly rounded, narrowing to apex; apical margin emarginate, basal margin straight; apical angles rounded, basal angles rectangular. **Elytra.** Punctuation moderately strong and dense mediobasally, finer apically and laterally; in longitudinal rows, some rows weakly impressed basally; an impressed lateral stria with larger closely spaced punctures; punctures joined transversely by fine strioles. Joined elytra slightly wider than pronotum, widest in basal one-third, narrowing to apex. **Legs.** Protibia (Fig. 80) moderately slender; spinose on apical one-half of outer margin and apically; fine dense spines on apical one-half of inner margin. Mesotibia (Fig. 81) moderately slender; strongly spinose on outer margin and apically; fine spines on inner margin. Metatibia (Fig. 82) slender, straight; outer margin weakly spinose, inner margin with fine spines. Metafemur (Fig. 82) broad in larger males, more slender in smaller males and females. Male protarsomeres (Fig. 80) expanded, bearing elongate setae laterally and thin, colorless transverse phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 86) carinate, longitudinal carina with tooth near middle; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 83, 84) elongate, broad, narrowing to rounded apex; with lateral notches before apex; apex flattened only at extreme tip. Inverted internal sac (Fig. 84) with small complex sclerotized structure. Parameres (Figs. 83, 84) elongate, broad, with flattened apices; each bearing two setae before apex; parameres extend beyond apex of median lobe. **Spermatheca.** Tubular (Fig. 85), coiled before duct.

***Pinodytes ovatus* (Hatch, 1957), new combination**

(Figs. 7, 87–95)

Catopocerus ovatus Hatch 1957: 21.

Type material. Type male in USNM, seen. Type label data: 5 mi N Gold Beach, Curry County, Oregon; 11.V.1955, J. Capizzi.

Additional material examined. We examined an additional 44 specimens (see Appendix).

Distribution. Specimens (Fig. 87) are known only from Curry County, in southwestern Oregon.

Diagnosis. Total length 1.26–1.34 mm; greatest width 0.77–0.80 mm. Reddish brown; oval in shape (Fig. 7). **Head.** Finely, sparsely punctate, shining, with transverse substrate microsculpture on vertex. Eyes absent. Antenna (Fig. 88) with antennomere 3 narrower than 2, 2 and 3 subequal in length; antennomere 5 larger than 4, longer than 6; antennomere 7 longer but not wider than 8; antennomeres 9 and 10 each with a sensory vesicle indicated apically by a protruding flange. **Pronotum.** Finely, sparsely punctate; with transverse, closely spaced substrate microsculpture. Widest at base, nearly as wide as elytra; sides rounded, converging to apex; apical margin weakly emarginate, basal margin nearly straight; apical angles broadly rounded, basal angles narrowly rounded. **Elytra.** Punctuation fine, in obscure longitudinal rows, striae not impressed; with fine, rather widely spaced transverse strioles. Joined

elytra broad, widest at basal one-fourth. **Legs.** Protibia (Fig. 89) slender; apical two-thirds of outer margin and apical margin spinose; apical one-half of inner margin with fine, short spines. Mesotibia (Fig. 90) slender; strongly spinose on outer margin and apically; an exceptionally elongate spine at middle of outer margin; smaller spines on apical one-third of inner margin. Metatibia (Fig. 91) slender, nearly straight; with strong spines apically, smaller spines on outer and inner margins. Metafemur (Fig. 91) slender. Male protarsomeres (Fig. 89) feebly or not dilated, bearing elongate setae laterally and thin, broad, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 95) carinate; longitudinal carina with expansion in anterior one-half; not excavated behind transverse carina. Transverse carina on different plane than longitudinal carina. **Male genitalia.** Median lobe of aedeagus (Figs. 92, 93) elongate, broad, narrowing strongly at apex. Inverted internal sac with paired large spines and clusters of small spines. Parameres (Figs. 92, 93) moderately broad with flattened apices not surpassing apex of median lobe; each with two closely spaced elongate setae before apex. **Spermatheca.** Elongate (Fig. 94), tubular, weakly curved.

Bionomics. Ecology: Fogel and Peck 1975.

***Pinodytes chandleri* Peck & Cook, new species**

(Figs. 8, 87, 96–103)

Type material. Holotype: male (FMNH). **UNITED STATES. California:** Teh. Co., 6miW Log Springs, Mendocino Nat. For., 5200', XI-29-1986, D.S. Chandler, sift maple, Avens & oak leaf litter. **Paratypes** (164). **UNITED STATES. California:** same data as holotype, 35 (UNHC); Del Norte Co., 45miNW Crescent City, Redwood Quarantine Stn., 2.IV.1980, T.R. Haig, Ber. Douglas fir duff, 3, CSCA; Humboldt Co., 2kmN Miranda, 23.III.1981, R.E. Nelson, 16 (SBPC); Humboldt Co., along Redwood Creek, 27.XI.1976, 650–700', A.K. Johnson, 37 (EMEC); Humboldt Co., Bair's Rch., Redwood Crk., 11.6.03, H.S. Barber, 6 (USNM); Humboldt Co., Kneeland School, 2.V.1973, T.R. Haig, 29 (CSCA); Humboldt Co., Weott, 17.III.1976, T.R. Haig, Ber. redwood duff, 15 (CSCA); Humboldt Co., Willow Creek, 15.III.1979, T.R. Haig, Ber. oak duff, 2 (CSCA); Tehama Co., 10miSW Paskenta, 30.XI.1991, 2500', D.S. Chandler, sift laurel litter, 3 (UNHC); Tehama Co., 6miW Log Springs, Mendocino Nat. For., 29.XI.1986, 4850', D.S. Chandler, sift *Cornus*, *Quercus*, *Acer* leaf litters, 6 (UNHC); Tehama Co., Mendocino Nat. For., 3miNE Log Springs, Lantz Ridge, 3.XII.1991, 4400', D.S. Chandler, sift black oak litter, 9 (UNHC); Tehama Co., Shasta-Trinity NF, 3miNW Rat Trap Gap, USFS Rd. 35, 26.V.2000, 5200', D.S. Chandler, maple & Douglas fir litter, 2 (UNHC); Trinity Co., 4miW Forest Glen, 1.VII.1975, 3300', A. Newton, berl. litter, mixed conifer-hdwd. for., 2 (FMNH).

Material examined. We have examined 165 specimens.

Distribution. Specimens (Fig. 87) are known from Del Norte, Humboldt, Tehama, and Trinity counties, in northwestern California. This is one of the few species which may occur in volcanic soils in southeastern Shasta County and eastern Tehama County, CA.

Diagnostic description. Total length 1.38–1.54 mm; greatest width 0.80–0.90 mm. Reddish brown; oval in shape (Fig. 8). **Head.** Scattered fine punctures and a transverse row of 4 larger punctures, 2 on each side of stem of epistomal suture; shining, with faint transverse microsculpture on vertex. Eyes absent. Antenna (Fig. 96) with antennomeres 2 and 3 subequal in length; antennomere 5 wider than 4, longer than 6; antennomere 7 longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Finely punctate, punctures separated by 2–4 diameters; shining, with transverse substriate microsculpture. Widest at base, sides curving to narrower apex; apical margin weakly emarginate, basal margin with angles slightly extended posteriorly; apical angles broadly rounded, basal angles weakly acute. **Elytra.** Moderately fine punctures arranged in longitudinal rows; rows not impressed; punctures joined by widely spaced, fine transverse striae. Joined elytra slightly wider than pronotum, widest at base, roundly narrowing to apex. **Legs.** Protibia (Fig. 97) slender; apex spinose; outer margin with a few small spines; apical two-thirds of inner margin finely, densely spinose. Mesotibia (Fig. 98) slender, strongly spinose on outer margin, apically, and apical two-fifths of inner margin; elongate spine at middle of outer margin. Metatibia (Fig. 99) slender, straight; apex spinose; apical three-fourths with small spines; larger spine two-fifths from apex on outer margin. Metafemur (Fig. 99) slender. Male protarsomeres (Fig. 97) weakly expanded, bearing elongate setae laterally and broad, thin, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 103) carinate; longitudinal carina with trans-

verse ridge and toothlike expansion near middle; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 100, 101) elongate, broad, narrowing slightly to flat apex. Inverted internal sac (Fig. 101) with a pair of elongate structures and a cluster of spines in apical one-half, and a series of elongate spines at base of median lobe. Parameres (Figs. 100, 101) moderately slender, extending to near apex of median lobe; each with flat, deflexed apex and bearing two closely spaced setae before apex. **Spermatheca.** Elongate (Fig. 102), curved, tubular; entire surface finely ribbed.

Etymology. This species is named in recognition of Dr. D.S. Chandler, University of New Hampshire, who collected a large number of specimens of several species of *Pinodytes* in California.

***Pinodytes constrictus* Peck & Cook, new species**

(Figs. 9, 87, 104–111)

Type material. Holotype: male (FMNH). **UNITED STATES. California:** Los Angeles Co., Angeles Crest Hwy., 2.0 mi off on Forest Road 2N46, 1650m, 34°16.7'N 118°04.1'W, 15.III.1995, *Quercus* old growth for. w/*Pinus coulteri*, FMHD #95–41, berl. forest leaf & log litter, A. Newton, M. Thayer, 952. **Paratypes** (12). **UNITED STATES. California:** with same data as holotype, 12 (FMNH).

Material examined. We have examined 13 specimens.

Distribution. Specimens (Fig. 87) are known only from the San Gabriel Mountains, Los Angeles County, California.

Diagnostic description. Total length 1.34–1.54 mm; greatest width 0.66–0.74 mm. Dark reddish brown; elongate-oval in shape (Fig. 9). **Head.** Finely, sparsely punctate; shining; transverse substriate microsculpture on vertex and laterally. Eyes absent. Antenna (Fig. 104) with antennomere 2 slightly longer than 3; antennomere 5 wider than 4 and 6; antennomeres 7 and 8 subequal; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** With fine punctures separated by 2–3 diameters; shining; with substriate microsculpture. Widest before base, sides curving to apex; apical margin weakly emarginate, basal margin nearly straight; apical angles obtuse, basal angles weakly obtuse, narrowly rounded. **Elytra.** Basally, punctures larger than on pronotum; longitudinal rows discernable basally; shining; punctures joined by fine transverse striae. Slightly wider than pronotum, widest in basal one-third, roundly narrowing to apex. **Legs.** Protibia (Fig. 105) moderately widened apically; spinose on outer margin and apically; dense setae on apical two-thirds of inner margin. Mesotibia (Fig. 106) moderately broad apically; strongly spinose on outer margin and apically; smaller spines on apical one-half of inner margin. Metatibia (Fig. 107) elongate, slender, slightly curved; strongly spinose apically; a single strong spine near middle of outer margin. Metafemur (Fig. 107) slender. Male protarsomeres 1–4 expanded, bearing elongate setae laterally and thin, broad, colorless phanerae ventrally (Fig. 105). Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 111) carinate; longitudinal carina with tooth-like expansion near middle; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 108, 109) elongate, broad, sharply constricted before flattened apex. Inverted internal sac (Fig. 109) with two elongate sclerites. Parameres (Figs. 108, 109) elongate, extending beyond apex of median lobe; with flattened apices; each bearing two setae before apex. **Spermatheca.** Tubular (Fig. 110), slender, curved.

Etymology. The name *constrictus*, Latin, contracted, refers to the shape of aedeagal apex of this species.

***Pinodytes contortus* Peck & Cook, new species**

(Figs. 10, 87, 112–119)

Type material. Holotype male (CSCA). **UNITED STATES. California:** El Dorado Co., 5miE Placerville off Hwy. 50, VI-26-1980, S. Kuba and T. Eichlin, F80-19, Berlesed from Neotoma nest at base of *Pseudotsuga taxifolia*. **Paratypes** (10). **UNITED STATES. California:** with same data as holotype, 1 (CSCA); Butte Co., 2miN Hurlerton, Stringtown Road, 22.III.1983, D.A. Chandler, sift maple & grape litter, 1 (UNHC); El Dorado Co., Blodgett Forest, 27.VIII.1975, F.G. Andrews, M.S. Wasbauer, Ber. *Pinus ponderosa*, 1 (CSCA); El Dorado Co., Blodgett Forest, 27.VIII.1975, F.G. Andrews, M.S. Wasbauer, Ber. *Libocedrus decurrens* duff, 2 (CSCA); El Dorado Co., Blodgett Forest, 13miE Georgetown, 28.IV.1976, J. Doyen, Ber. litter *Quercus kelloggii*, 1 (EMEC);

El Dorado Co., Peavine Ridge Rd., 7miSW Ice House, 16.IV.1992, F.G. Andrews, Ber duff under *Quercus kelloggii*, 1 (CSCA); Placer Co., 2miW Colfax, 14.X.1971, E.A. Kane, Ber. oak duff, 2 (CSCA); Placer Co., 3miN Colfax, Rollins Lake, 26.I.1971, F.G. Andrews, Ber. pine & oak duff, 1 (CSCA).

Material examined. We have examined 11 specimens.

Distribution. Specimens (Fig. 87) are known from Butte, El Dorado, and Placer counties, on the western side of the Sierra Nevada Mountains, of California.

Diagnostic description. Total length 1.16–1.34 mm; greatest width 0.60–0.70 mm; Reddish brown; oval in shape (Fig. 10). **Head.** Finely, sparsely punctate; shining; vertex with faint reticulate microsculpture. Eyes absent. Antenna (Fig. 112) with antennomere 2 longer and wider than 3; antennomere 5 wider than 4, longer than 6; antennomere 7 longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Finely punctate, punctures separated by 3–4 diameters; shining, microsculpture faintly indicated. Widest near base, weakly narrowing to apex; apical margin weakly emarginate, basal margin nearly straight; apical angles obtuse, basal angles about rectangular. **Elytra.** Finely punctate, in longitudinal rows only basally near suture; punctures joined by fine transverse striae. Joined elytra slightly wider than pronotum; widest in basal one-third, roundly narrowing to apex. **Legs.** Protibia (Fig. 113) slender, width increases slightly from base to apex; spinose on outer margin near apex and apically; finely spinose on apical one-half of inner margin. Mesotibia (Fig. 114) moderately slender; strongly spinose on outer margin and apically. Metatibia (Fig. 115) slender, weakly curved; spinose apically and near apex; scattered small spines on outer margin. Metafemur (Fig. 115) slender. Male protarsomeres (Fig. 113) weakly expanded, bearing elongate setae laterally and broad, thin, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 119) carinate; longitudinal carina with toothlike expansion near middle; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 116, 117) broad, with narrow, flattened apex; inverted internal sac (Fig. 117) with three clusters of elongate spines and clusters of short spines basally. Parameres (Figs. 116, 117) elongate, extending beyond apex of median lobe; apices deflexed, flattened and contorted; each bearing two setae before apex. **Spermatheca.** Elongate (Fig. 118), tubular, ribbed.

Etymology. The name *contortus*, Latin, twisted, refers to the shape of the paramere apices of this species.

Pinodytes eldorado Peck & Cook, new species

(Figs. 11, 87, 120–127)

Type material. Holotype: male (CSCA). **UNITED STATES. California:** El Dorado Co., 1.6 mi W Quintette, IV-4-1971, Berlese pine duff, Fred G. Andrews. **Paratypes** (11). **UNITED STATES. California:** same data as holotype, 11 (CSCA).

Material examined. We have examined 12 specimens.

Distribution. Specimens (Fig. 87) are known only from El Dorado County, on the western side of the Sierra Nevada Mountains, California.

Diagnostic description. Total length 1.14–1.28 mm; greatest width 0.63–0.74 mm. Reddish brown; oval in shape (Fig. 11). **Head.** Punctuation fine, scattered; a larger puncture on each side of apex of stem of epistomal suture; shining, with transverse substrate microsculpture on vertex and laterally. Eyes absent. Antenna (Fig. 120) with antennomeres 2 and 3 subequal in length; antennomere 5 wider than 4, slightly narrower than 6; antennomere 7 longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Finely punctate, punctures separated by 1–4 diameters; shining, with transverse substrate microsculpture. Widest at base, sides curving to apex; apical margin weakly emarginate, basal margin nearly straight; apical angles rounded, basal angles narrowly rounded. **Elytra.** Moderately finely punctate; longitudinal rows discernable basally near suture; punctures joined by fine transverse striae. Slightly wider than pronotum, widest in basal one-third, roundly narrowing to apex. **Legs.** Protibia (Fig. 121) slender, width at apex about 2X width at base; spinose on outer margin and apically; fine spines on apical three-fifths of inner margin. Mesotibia (Fig. 122) moderately slender, straight; strongly spinose on outer margin and apically; spinose on apical two-fifths of inner margin. Metatibia (Fig. 123) moderately slender, straight; strong spines near apex of outer margin and apically; smaller spines on apical one-half of inner margin. Metafemur (Fig. 123) slender. Male protarsomeres (Fig. 121) weakly expanded, bearing elongate setae laterally and broad, thin, colorless transverse phanerae ventrally.

Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 127) carinate; longitudinal carina with tooth near middle; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 124, 125) broad, with flattened acute apex. Inverted internal sac (Fig. 125) with several elongate spines and clustered small spines. Parameres (Figs. 124, 125) elongate, broad, with thin, flattened apices; extending beyond apex of median lobe; each bearing two setae before apex. **Spermatheca.** Globose (Fig. 126).

Etymology. The name *eldorado*, a noun in apposition, refers to the type locality of this species in Eldorado Co., California.

***Pinodytes fresno* Peck and Cook, new species**

(Figs. 12, 128–136)

Type material. Holotype: male (FMNH). **UNITED STATES. California:** Fresno Co., Sierra N.F., Tamarack Ridge, 3.4 mi SE Hwy 168, 7500', 16.V.1976, berl. litter, fir-lodgepole pine for., A. Newton, M. Thayer. **Paratypes:** (29). **UNITED STATES. California:** with same data as holotype, 3 (FMNH); Fresno Co., 15miE Squaw Valley, 26.I.1977, A. Gilbert, Ber. live oak litter, 26 (CSCA).

Material examined. We have examined 30 specimens.

Distribution. Specimens (Fig. 136) are known only from Fresno County, on the western side of the Sierra Nevada Mountains, California.

Diagnostic description. Total length 1.28–1.68 mm; greatest width 0.59–0.80 mm. Reddish brown; elongate-oval in shape (Fig. 12). **Head.** Finely, sparsely punctate; a large puncture on each side of apex of stem of epistomal suture; shining; transverse substriate microsculpture on vertex. Antenna (Fig. 128) with antennomeres 2 and 3 subequal in length; antennomere 5 larger than 4 and 6; antennomere 7 longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Moderately finely punctate, punctures separated by 2–4 diameters, bearing minute erect setae; shining; with transverse substriate microsculpture. Widest before base, sides curving to apex; apical margin weakly emarginate, basal margin nearly straight; apical angles rounded, basal angles weakly obtuse, narrowly rounded. **Elytra.** Punctuation moderately fine; longitudinal rows discernable basally near suture; bearing minute erect setae; punctures joined by fine transverse striae, giving an imbricate appearance basally. Slightly wider than pronotum, widest in basal one-third, roundly narrowing to apex. **Legs.** Protibia (Fig. 129) moderately broad apically; width at apex more than 2X width at base; spinose on outer margin and apically; dense fine spines on apical one-half of inner margin. Mesotibia (Fig. 130) moderately slender; strongly spinose on outer margin and apically; spinose on apical one-fourth of inner margin. Metatibia (Fig. 131). moderately slender, weakly curved; strongly spinose apically; small spines on apical two-thirds of inner margin. Metafemur (Fig. 131) sexually dimorphic, broad in male. Male protarsomeres (Fig. 129) weakly expanded, bearing elongate setae laterally and broad, thin, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 135) carinate; longitudinal carina with toothlike expansion near middle; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 132, 133) broad; apex flattened and narrowing to acute tip. Everted internal sac (Fig. 133) with triangular sclerotized structure. Parameres (Figs. 132, 133) elongate with thin, flattened apices; extending beyond apex of median lobe; each bearing two well-spaced setae before apex. **Spermatheca.** Elongate (Fig. 134), tubular, twisted before duct.

Etymology. The name *fresno*, a noun in apposition, refers to the type locality of this species in Fresno Co., California.

***Pinodytes gibbosus* Peck & Cook, new species**

(Figs. 13, 136–144)

Type material. Holotype: male (SBPC). **UNITED STATES. California:** Orange Co., Rt. 74, 20 km SW Lake Elsinore, Lower San Juan Picnic Area, 11.III.99, 430m, oak forest litter, S. & J. Peck, 99-88. **Paratypes** (110). **UNITED STATES. California:** same data as holotype, 10 (SBPC); Los Angeles Co., 34.0561N 118.8800W, Charmlee Park, 14.IV.2009, M.S. Caterino, K.J. Hopp, *Quercus* litter, 1 (SBMN); Los Angeles Co., 34.0561N 118.8800W, Leo Carrillo SP, 14.IV.2009, M.S. Caterino, K.J. Hopp, *Heteromeles/Quercus* litter, 1 (SBMN); Los

Angeles Co., 34.0769N 118.8157W, Santa Monica Mts., Zuma Cyn., 14.IV.2009, M.S. Caterino, K.J. Hopp, *Quercus* litter, 1 (SBMN); Los Angeles Co., 34.0809N 118.5654W, Topanga SP, Santa Ynez Cyn., 30.III.2009, K.J. Hopp, *Heteromeles* litter, 1 (SBMN); Los Angeles Co., 34.0809N 118.7958W, Santa Monica Mtns NRA, Castro Crest, 29.IV.2009, K.J. Hopp, *Umbellularia* litter, 2 (SBMN); Los Angeles Co., 34.0861N 118.6645W, Santa Monica Mts. NRA, 3.III.2009, M.S. Caterino, K.J. Hopp, *Arctostaphylos/Cercocarpus* litter, 6 (SBMN); Los Angeles Co., 34.0861N 118.6645W, Santa Monica Mts. NRA, 3.III.2009, M.S. Caterino, K.J. Hopp, *Arctostaphylos/Cercocarpus* litter, 10 (SBMN); Los Angeles Co., 34.0976N 118.5858W, Santa Monica Mts., Topanga SP, 8.II.2009, M.S. Caterino, K.J. Hopp, *Quercus* litter, 1 (SBMN); Los Angeles Co., 34.1115N 118.7785W, Peter Strauss Ranch, 29.IV.2009, K.J. Hopp, *Umbellularia/Quercus* litter, 1 (SBMN); Los Angeles Co., 34.1289N 118.5162W, Topanga SP, San Vincente Mtn., 16.III.2009, M.S. Caterino, K.J. Hopp, *Quercus* litter, 1 (SBMN); Los Angeles Co., S.M. Mtns., Bundy Cyn., 24.I.1963, L. Woodley, 1 (TAMU); Los Angeles Co., Santa Catalina Is. East End Rd, 33.3216N 118.3464W, 29.I.2010, M.S. Caterino, K.J. Hopp, *Rhus/Quercus* litter, 1 (SBMN); Los Angeles Co., Santa Catalina Is. Howlands Landing, 33.4598N 118.5268W, 30.I.2010, M.S. Caterino, K.J. Hopp, *Rhus* litter, 2 (SBMN); Los Angeles Co., Santa Catalina Is. nr Black Jack Peak, 33.3890N 118.3962W, 31.I.2010, M.S. Caterino, K.J. Hopp, *Quercus* litter, 1 (SBMN); Los Angeles Co., Santa Catalina Is. nr Black Jack Peak, 33.3896N 118.3969W, 31.I.2010, M.S. Caterino, K.J. Hopp, *Lyonothamnus* litter, 1 (SBMN); Los Angeles Co., Santa Catalina Is, west end, 33.4540 118.5178W, 30.I.2010, M.S. Caterino, K.J. Hopp, *Lyonothamnus* litter, 3 (SBMN); Los Angeles Co., Santa Monica Mts. 34.0899N 118.6530W, 11.II.2010, M.S. Caterino, K.J. Hopp, *Heteromeles/Umbellularia* litter, 1 (SBMN); Riverside Co., 20 rd km SW Lake Elsinore, Elsinore Mtns., 2.II.1999, 800m, S. & J. Peck, 99-40, oak forest litter, 2 (SBPC); Riverside Co., Rt 74, 16kmSW Lake Elsinore, Upper San Juan Cpgds., 11.III.1999, S. & J. Peck, 99-89, canyon oak forest litter, 3 (SBPC); Riverside Co., Rt 74, 16kmSW Lake Elsinore, Upper San Juan Cpgds., 22.I.1999, 630m, S. & J. Peck, 99-25, canyon oak forest litter, 1 (SBPC); Santa Barbara Co., 33.9795N 120.0784W, CINP, Santa Rosa I., Black Mtn. summit, 24.IV.2008, M.S. Caterino, litter *Quercus tomentella*, 7 (SBMN); Santa Barbara Co., 33.9826N 120.0222W, CINP, Santa Rosa I., Torrey Pines grove, 23.IV.2008, M.S. Caterino, litter *Pinus torreyana*, 1 (SBMN); Santa Barbara Co., 33.9842N 120.0202W, CINP, Santa Rosa I., Torrey Pines area, 15.VI.2007, Caterino & Chatzimanolis, *Pinus* litter, 1 (SBMN); Santa Barbara Co., 33.9842N 120.0202W, CINP, Santa Rosa Island, Torrey pines gr., 26.IV.2008, M.S. Caterino, litter *Pinus torreyana*, 8 (SBMN); Santa Barbara Co., 33.9842N 120.0734W, CINP, Santa Rosa I., upper Cherry Cyn., 27.IV.2008, M.S. Caterino, litter *Quercus tomentella*, 15 (SBMN); Santa Barbara Co., 33.9842N 120.0734W, CINP, Santa Rosa I., upper Cherry Cyn., 27.IV.2008, M.S. Caterino, litter *Quercus pacifica*, 7 (SBMN); Santa Barbara Co., 33.9850N 120.0764W, CINP, Santa Rosa Island, Windmill Cyn., 22.IV.2008, M.S. Caterino, litter *Quercus tomentella*, 6 (SBMN); Santa Barbara Co., 34.0166N 119.8096W, UC Santa Cruz I. Res., Canada Christy, 14.V.2009, Caterino, Chatzimanolis, Hopp, Polihronakis, *Pinus/Quercus* litter, 1 (SBMN); Santa Barbara Co., 34.0320N 119.8033W, UC Santa Cruz I. Res., Lagunitas Secas, 12.V.2009, Caterino, Chatzimanolis, Hopp, Polihronakis, *Quercus* litter, 1 (SBMN); Santa Barbara Co., 34.0332N 119.8136W, UC Santa Cruz I. Res., Valdez Cyn., 12.V.2009, Caterino, Chatzimanolis, Hopp, Polihronakis, *Quercus* litter, 2 (SBMN); Santa Barbara Co., Santa Cruz Is., Central Vy. nr U.C. Sta., 2.II.1979, J. Doyen, 2 (EMEC); Santa Barbara Co., Santa Cruz Isl. no Field Station, X-S-1981, J.A. Moore, 81–207, Oak litter, 5 (CSCA).

Material examined. We have examined 111 specimens.

Distribution. Specimens (Fig. 136) are known from Los Angeles, Orange, Riverside, and Santa Barbara counties, in southwestern California, including Santa Rosa, Santa Catalina, and Santa Cruz islands of the Channel Islands.

Diagnostic description. Total length 1.68–1.84 mm; greatest width 0.90–0.97 mm. Reddish brown; oval in shape (Fig. 13). **Head.** Finely punctate, punctures separated by 2–5 diameters; a larger puncture on each side opposite apex of stem of epistomal suture; shining, without microsculpture. Eyes absent. Antenna (Fig. 137) with antennomere 3 slightly longer than 2; antennomere 5 wider than 4, larger than 6; antennomere 7 longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Evenly, finely punctate; punctures separated by about 2 diameters; shining, with transverse substriate microsculpture. Widest before base, sides weakly rounded, narrowing to apex; apical margin weakly emarginate, basal margin nearly straight; apical angles rounded, basal angles rectangular. **Elytra.** Strongly, densely punctate; punctures in longitudinal rows, joined transversely by fine striae. Joined elytra slightly wider than pronotum, widest in basal one-half, narrowing to apex. **Legs.** Protibia (Fig. 138) of moderate width, width increasing evenly

from base to apex; spinose on apical one-half of outer margin and apically; fine, dense spines on apical one-half of inner margin. Mesotibia (Fig. 139) of moderate width; strongly spinose on outer margin and apically; smaller spines on apical one-half of inner margin. Metatibia (Fig. 140) slender, straight; outer margin with a single spine near middle, spinose at apex; small spines on apical one-half of inner margin. Metafemur (Fig. 140) sexually dimorphic, broad in males, slender in females. Male protarsomeres (Fig. 138) weakly expanded, bearing elongate setae laterally and thin, broad, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoven-trite (Fig. 144) carinate; longitudinal carina with toothlike expansion near middle; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 141, 142) broad, sharply declivous dorsally at apical one-third; apex rounded, flattened at tip. Everted internal sac (Fig. 142) with a small, dentate, heavily sclerotized structure. Parameres (Figs. 141, 142) elongate, broad, with flattened apices; an expanded flange on inner margins before apices; each bearing two well separated setae on outer margins before apices. **Spermatheca.** Elongate (Fig. 143), tubular, coiled before duct.

Etymology. The name *gibbosus*, Latin, protuberant, refers to the shape of the median lobe of the aedeagus in this species.

Pinodytes humboldtensis Peck & Cook, new species

(Figs. 14, 136, 145–152)

Type material. Holotype: male (SBPC). **UNITED STATES. California:** Humboldt Co., Redwood Nat. Park, Orick, N41°18' W124°01', 400m, Lady Byrd Johnson Grove, litter Ber., 28.V.03, S. Peck, 03-85. **Paratypes** (96). **UNITED STATES. California:** same data as holotype, 25 (SBPC); Humboldt Co., Orick, 29.IV.1976, T.R. Haig, Ber. redwood duff, 25 (CSCA); Humboldt Co., Prairie Ck. Redwoods St. Pk., Orick, 16.VIII.1966, J. & S. Cornell, ex. redwood litter, 966VIII-16-1, 15 (JFCC); Humboldt Co., 4miS Fieldbrook, 29.VI.1969, J. Powell, under *Sequoia* logs w/fungus, 8 (EMEC); Humboldt Co., Freshwater, 13.VIII.1953, G.A. Marsh, R.O. Schuster, 1 (EMEC); Humboldt Co., Dry Lagoon St. Pk., 22.III.1967, E.M. Benedict, DM 248, 3 (UCDC); [Humboldt Co.], Eureka, 2.6, H.S. Barber, 2 (MCZC); [Humboldt Co.], Eureka, 3.6, H.S. Barber, 1 (MCZC); [Humboldt Co.], Eureka, 5.6, H.S. Barber, 2 (USNM); [Humboldt Co.], Eureka, 4.6.03, H.S. Barber, 1 (USNM); [Humboldt Co.], Eureka, 3.6, H.S. Barber, 3 (USNM); [Humboldt Co.], Eureka, 2.6, H.S. Barber, 3 (USNM); [Humboldt Co.], Fieldbrook, 29.5.03, H.S. Barber, 1 (USNM); Del Norte Co., Stout Grove, II.1986, *Sequoia* litter, F. W. Merickel, 6 (WFBM).

Additional material examined. We examined 934 specimens additional to those listed above (See Appendix) for a total of 1031 specimens.

Distribution. Specimens (Fig. 136) are known only from Del Norte and Humboldt counties in northwestern California.

Diagnostic description. Total length 1.32–1.46 mm; greatest width 0.82–0.86 mm. Reddish brown; oval in shape (Fig. 14). **Head.** Finely, sparsely punctate, shining, with faint reticulate microsculpture on vertex. Eyes absent. Antenna (Fig. 145) with antennomeres 2 and 3 subequal in length; antennomere 5 wider than 4, subequal to 6; antennomere 7 longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Minutely, sparsely punctate; with reticulate microsculpture. Widest at base, nearly as wide as elytra; sides rounded, narrowing to apex; apical margin weakly emarginate, basal margin nearly straight; apical angles broadly rounded, basal angles narrowly rounded. **Elytra.** Finely punctate; punctures in obscure longitudinal rows; with fine, widely spaced transverse striae. Joined elytra slightly wider than pronotum, widest at basal one-fourth, narrowing to apex. **Legs.** Protibia (Fig. 146) slender; apical two-thirds of outer margin and apical margin spinose; apical three-fifths of inner margin with fine spines. Mesotibia (Fig. 147) slender, straight; strongly spinose apically; a large, elongate spine at middle of outer margin. Metatibia (Fig. 148) slender, nearly straight; strong spines apically; smaller spines on apical three-fifths. Metafemur (Fig. 148) slender. Male protarsomeres (Fig. 146) feebly or not dilated, bearing elongate setae laterally and thin, broad, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoven-trite (Fig. 152) carinate; longitudinal carina with a toothlike expansion near middle; transverse carina on different plane than longitudinal carina; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 149, 150) broad with flat, dorsally depressed, rounded apex. Inverted internal sac (Fig. 150) with two pairs of elongate, narrow structures near middle; posteri-

only with a distinctive elongate, dark structure bearing spines. Parameres (Figs. 149, 150) moderately narrow, extending to near apex of median lobe; with flat, deflexed apices, each bearing two closely spaced setae before apex. **Spermatheca.** Elongate (Fig. 151), tubular, sinuate.

Etymology. The name *humboldtensis* refers to the abundance of this species in Humboldt Co., California.

***Pinodytes idaho* Peck & Cook, new species**

(Figs. 15, 136, 153–159)

Type material. Holotype: male (WFBM). **UNITED STATES. Idaho:** Idaho Co., Slate Creek Campgrd., 10mi E Slate Creek, IV-28-1983, F.W. Merickel (B.F.). **Paratypes (2):** same data as holotype (WFBM).

Material examined. We have examined 3 specimens.

Distribution. Specimens (Fig. 136) are known only from Idaho County, in northern Idaho.

Diagnostic description. Total length 1.28–1.38 mm; greatest width 0.61–0.65 mm. Light reddish brown; elongate-oval in shape (Fig. 15). **Head.** With scattered fine punctures, shining, microsculpture of sinuate lines on vertex. Antenna (Fig. 153) with antennomere 2 longer than 3; antennomere 5 slightly larger than 4 and 6; antennomere 7 slightly longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** With minute, widely spaced punctures, shining, with microsculpture of sinuate lines with cross-connections. Widest subbasally; sides rounded; apical margin weakly emarginate, basal margin straight; apical angles rounded, basal angles about right-angled. **Elytra.** With fine punctures in longitudinal rows, becoming obscure laterally and apically; punctures joined by fine transverse striae. Barely wider than pronotum; widest subbasally, narrowing to apex. **Legs.** Protibia (Fig. 154) slender; spinose apically; apical one-half of inner margin finely, densely spinose. Mesotibia (Fig. 155) slender, straight, strongly spinose. Metatibia (Fig. 156) slender, nearly straight; apical one-half spinose. Metafemur (Fig. 156) slender. Male protarsomeres (Fig. 154) not expanded, bearing elongate setae laterally and two rows of thin, colorless, transverse phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 159) carinate, longitudinal carina with median tooth; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 157–158) elongate, broad, with dorsoventrally flattened, lobed apex. Inverted internal sac (Fig. 158) with two bands of elongate setae. Parameres (Fig. 157, 158) broad with flattened apices; not reaching apex of median lobe; each bearing two setae before apex. **Spermatheca.** Elongate, cylindrical, curved.

Etymology. The name *idaho*, a noun in apposition, refers to the type locality of this species in the state of Idaho, USA.

***Pinodytes klamathensis* Peck & Cook, new species**

(Figs. 16, 136, 160–167)

Type material. Holotype: male (SBPC). **UNITED STATES. California:** Del Norte Co., Myrtle Ck. Botanical Res., 30m, 18kmNE Crescent City, N41°48' W124°03', mixed forest litter Ber., 31.V.03, S. Peck, 03-88. **Paratypes (8).** **UNITED STATES. California:** with same data as holotype, 1 (SBPC); Del Norte Co., Gasquet, French Hill Trail, N41°50.688' W123°57.924', mixed forest litter Ber., 95m, 1.VI.03, S. Peck, 03-89, 1 (SBPC); **Oregon:** Josephine Co., 1miS, 0.5miW O'Brien, US199, 19.XII.1971, 1400', E.M. Benedict, EB-241, Madrone & Doug. fir duff, 1 (SBPC); Josephine Co., 2.5miS, 1miW O'Brien, 18.XII.1971, 1600', E.M. Benedict, EB-238, 3 (SBPC); Josephine Co., 5miS, 1miW O'Brien, CA-OR border on US199, 18.XI.1971, 1700', E.M. Benedict, EB-227, mixed Doug. fir & incense cedar duff, 1 (SBPC); Josephine Co., Cave Creek Cpgd., 4miNW Oregon Caves N.M., 3.III.1973, 3000', E.M. Benedict, EB-107, Madrone & Doug. fir duff, 1 (SBPC).

Material examined. We have examined 9 specimens.

Distribution. Specimens (Fig. 136) are known only from Del Norte County, California and Josephine County, Oregon, in the Klamath Mountains.

Diagnostic description. Total length 1.34–1.40 mm; greatest width 0.68–0.70 mm. Dark reddish brown; elongate-oval in shape (Fig. 16). **Head.** With scattered minute punctures; shining, with transverse substrate microsculpture posteriorly. Eyes absent. Antenna (Fig. 160) with antennomeres 2 and 3 subequal in length; antennomere 5

wider than 4, longer than 6; antennomere 7 slightly longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Minutely punctate, punctures separated by 2–5 diameters; shining, with transverse substrate microsculpture. Widest at base, sides curving to narrower apex; apical margin weakly emarginate, basal margin nearly straight; apical angles broadly rounded, basal angles narrowly rounded. **Elytra.** Finely punctate; punctures in serial rows but striae not impressed, obscure apically; punctures joined by fine transverse striae. Joined elytra slightly wider than pronotum, widest near base; roundly narrowing to apex. **Legs.** Protibia (Fig. 161) slender; apex spinose; apical one-half of outer margin with three small spines; apical three-fifths of inner margin finely, densely spinose. Mesotibia (Fig. 162) slender; strongly spinose on outer margin and apically, with elongate spine near middle of outer margin; apical one-third of inner margin with small spines. Metatibia (Fig. 163) slender, weakly curved; apex spinose; two spines on apical one-half of outer margin; apical one-half of inner margin spinose. Metafemur (Fig. 163) slender. Male protarsomeres (Fig. 161) weakly expanded, bearing elongate setae laterally and thin, colorless, transverse phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 167) carinate; longitudinal carina with large toothlike expansion near middle; slightly sloping to transverse carina; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 164, 165) broad, evenly narrowed to flattened apex. Internal sac (Figs. 164, 165) with two pairs of large spines. Parameres (Figs. 164, 165) moderately slender, elongate, with flattened apices; extending beyond apex of median lobe; each bearing two closely spaced setae before apex. **Spermatheca.** Elongate (Fig. 166), tubular, swollen medially; narrowly, transversely ribbed throughout length.

Etymology. The name *klamathensis* refers to the occurrence of this species in the Klamath Mountains of SW Oregon and NW California, USA.

***Pinodytes losangeles* Peck & Cook, new species**

(Figs. 17, 136, 168–175)

Type material. Holotype: male (USNM). **UNITED STATES. California:** Los Angeles Co., Feb., Collection Coquillett. **Paratypes (5).** **UNITED STATES. California:** Los Angeles Co., Van Dyke Collection, 4 (CASC); Santa Barbara, 9.I.1946, W.S. Ross, E.S. Ross Collection, 1 (CASC).

Material examined. We have examined 6 specimens.

Distribution. Specimens (Fig. 136) are known only from Los Angeles and Santa Barbara counties in coastal southern California.

Diagnostic description. Total length 2.00–2.38 mm; greatest width 0.94–1.10 mm. Reddish brown; elongate-oval in shape (Fig. 17). **Head.** Moderately finely punctate, punctures separated by 2 or more diameters; shining; with substrate microsculpture laterally. Eyes absent. Antenna (Fig. 168) with antennomere 3 longer than 2; antennomere 5 larger than 4 and 6; antennomeres 7 and 8 subequal; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Moderately finely punctate, shining, with transverse substrate microsculpture. Widest in basal one-half, sides slightly rounded, narrowing to apex; apical margin emarginate, basal margin straight; apical angles rounded, basal angles rectangular. **Elytra.** Moderately strongly, densely punctate; punctures in longitudinal rows, some rows impressed in basal one-half; punctures joined transversely by fine striae. Joined elytra equal to pronotum in width; sides parallel in basal one-half, narrowing to apex. Basal one-half on lateral margin weakly serrate. **Legs.** Protibia (Fig. 169) moderately slender; spinose apically and on apical one-half of outer margin; finely spinose on apical one-half of inner margin. Mesotibia (Fig. 170) moderately slender; strongly spinose on outer margin and apically. Metatibia (Fig. 171) elongate, slender; spinose apically; outer margin sparsely spinose; apical one-half of inner margin finely spinose. Metafemur (Fig. 171) sexually dimorphic, broad in males. Male protarsomeres not expanded, bearing elongate setae laterally and thin, broad, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 175) carinate; longitudinal carina with triangular toothlike expansion in anterior one-half; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 172, 173) elongate, broad, with flattened, narrow apex. Inverted internal sac (Fig. 173) with a small triangular sclerite. Parameres (Figs. 172, 173) elongate, broad, with thin apices, extending beyond apex of median lobe; each bearing two well separated setae before apex. **Spermatheca.** Elongate (Fig. 174), tubular, curved.

Etymology. The name *losangeles*, a noun in apposition, refers to the type locality of this species in Los Angeles Co., California.

Pinodytes marinensis Peck & Cook, new species

(Figs. 18, 176–184)

Type material. Holotype: male (FMNH). **UNITED STATES. California:** Marin Co., Tocaloma, 19.V.1952, H.S. Dybas, berlese *Neotoma* debris pile. **Paratypes** (116). **UNITED STATES. California:** with same data as holotype, 26 (FMNH); Marin Co., 1miS Olema, 18.III.1983, D.S. Chandler, sift laurel litter, 16 (UNHC); Marin Co., 1miS S.P. Taylor St. Pk., 20.XII.1959, D.D. Linsdale, J.F. Lawrence Coll., 1 (MCZC); Marin Co., 1miSE Inverness, 12.XI.1961, P.D. Ashlock, Fall Coll., 2 (MCZC); Marin Co., 1miW Olema, 28.II.1976, J. Doyen, Ber. litter *Lithocarpus densiflorus*, 13 (EMEC); Marin Co., 2kmS Olema, N38°00.5' W122°46', 9.V–11.VI.2003, 20m, S. Peck, 03-96, mixed ravine for. litter Ber., 2 (SBPC); Marin Co., 6miNE Stinson Beach, 17.X.1975, F.G. Andrews, K.S. Corwin, Ber. mixed litter, 1 (CSCA); Marin Co., 6miNE Stinson Beach, 17.X.1975, Fred G. Andrews, K.S. Corwin, Ber. redwood duff, 2 (CSCA); Marin Co., Inverness, 17.V.1952, H.S. Dybas, underside of pine log, 1 (SBPC); Marin Co., Inverness, 16.V.1952, H.S. Dybas, 1 (SBPC); Marin Co., Inverness, Tomales Bay St. Pk., N38°07.908' W122°53.462', 13.VI.2003, 15m, S. Peck, 03-99, Bay laurel log-side litter Ber., 9 (SBPC); Marin Co., Mill Valley, 30.V.1952, H.B. Leech, sift forest duff, 2 (CASC); Marin Co., Mill Valley, 14.VI.1952, H.B. Leech, sift forest duff, 1 (CASC); Marin Co., Mill Valley, 28.V.1952, H.B. Leech, sift forest duff, 2 (CASC); Marin Co., Mill Valley, 16.III.1954, H.B. Leech, damp leaves, 1 (CASC); Marin Co., Mt. Tamalpais, E. slope, 21.V.1952, H.S. Dybas, Ber. ground litter, open oak grove, 1 (SBPC); Marin Co., Muir Woods, Mill Valley, 17.V.1908, 1 (CASC); Marin Co., Point Reyes, Five Brooks Trail, N37°59.844' W122°45.492', 16.VI.2003, 60m, S. Peck, 03-102, Bay myrtle litter Ber., 12 (SBPC); Marin Co., S.P. Taylor St. Pk., 27.III.1971, F.G. Andrews, Ber. redwood duff, 3 (CSCA); Marin Co., S.P. Taylor St. Pk., 31.III.1976, F.G. Andrews, T.D. Eichlin, Ber. redwood duff, 1 (CSCA); Marin Co., S.P. Taylor St. Pk., N38°03' W122°44', 11.VI.2003, 70m, S. Peck, 03-97, mixed forest litter Ber., 2 (SBPC); Marin Co., S.P. Taylor St. Pk., 15.VII.1995, J.F. Cornell, ex. redwood litter, 3 (JFCC); Marin Co., Tocaloma, 18.V.1952, H.S. Dybas, Ber. *Neotoma* debris pile, 4 (SBPC); Marin Co., Tocaloma, 18.V.1852, H.S. Dybas, sifting *Neotoma* debris pile, 3 (SBPC); Marin Co., Woodacre, 1.XI.1953, R.O. Schuster, 6 (UCDC).

Additional material examined. We examined 64 additional specimens (see Appendix) for a total of 181 specimens.

Distribution. Specimens (Fig. 184) are known from Marin and San Mateo counties, on both sides of the mouth of San Francisco Bay, in the Coastal Ranges of California.

Diagnostic description. Total length 1.00–1.08 mm; greatest width 0.54–0.58 mm. Reddish brown; oval in shape (Fig. 18). **Head.** Finely, sparsely punctate; shining, with transverse substriate microsculpture. Eyes absent. Antenna (Fig. 176) with antennomere 2 longer than 3; antennomere 5 larger than 4 and 6; antennomere 7 slightly larger than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Finely punctate, punctures separated by 2–4 diameters; shining, with transverse substriate microsculpture. Widest at base, sides roundly narrowing to apex; apical margin weakly emarginate, basal margin nearly straight; apical angles rounded, basal angles about rectangular. **Elytra.** Moderately finely punctate; punctures in longitudinal rows and joined by fine transverse striae. Joined elytra slightly wider than pronotum, widest in basal one-fourth, roundly narrowing to apex. **Legs.** Protibia (Fig. 177) slender; spinose on outer margin and apically; densely, finely spinose on apical three-fifths of inner margin. Mesotibia (Fig. 178) moderately slender, straight; strongly spinose on outer margin and apically. Metatibia (Fig. 179) slender, straight; outer margin and apex spinose; small spines on apical one-third of inner margin. Metafemur (Fig. 179) moderately slender. Male protarsomeres (Fig. 177) weakly expanded, bearing elongate setae laterally and broad, thin, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 183) carinate; longitudinal carina with toothlike expansion near middle; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 180, 181) broad, moderately flat; apex flat, weakly ogival in shape with narrowly rounded tip. Inverted internal sac (Fig. 181) with a pair of elongate structures. Parameres (Figs. 180, 181) elongate, broad, extending beyond apex of median lobe; apices flat; each bearing one long and two short setae before apex. **Spermatheca.** Elongate (Fig. 182), sinuate, tubular.

Etymology. The name *marinensis* refers to the abundance of this species in Marin Co., California.

Pinodytes minutus Peck & Cook, new species

(Figs. 19, 184–192)

Type material. Holotype: male (FMNH). **UNITED STATES. California:** Amador Co., 4.9 mi. W. Pine Grove, 1600', 19.V.1976, Berl. litter, mixed hdwd. & pine forest, A. Newton, M. Thayer. **Paratypes (55). UNITED STATES. California:** same data as holotype, 7 (FMNH); Amador Co., 1miW Pine Grove, 24.VI.1975, A. Newton, Berl. litter, mixed hdwd. & conifer for. in ravine, 4 (FMNH); Amador Co., 1miW Pine Grove, 14.II.1971, R.F. Wilkey, ex. rotten wood, 1 (CSCA); Amador Co., Tiger Creek, 26.VI.1975, 3500', A. Newton, M. Thayer, Berl. litter, mixed conifer for., 1 (FMNH); Calaveras Co., 3.0miNW West Point, 20.V.1976, 2250', A. Newton, M. Thayer, Berl. litter, mixed hdwd. *Pinus-Libocedrus-Abies* for., 4 (FMNH); Calaveras Co., 3miNE Glencoe, 25.VI.1975, 2000', A. Newton, M. Thayer, Berl. litter oak-conifer for. away from stream, 2 (FMNH); Napa Co., 2miN St. Helena, White's Cave entr., 26.IV–19.VIII.1981, R. Aalbu, Antifreeze pit trap, 3 (CSCA); Solano Co., Gates Canyon, 2.XI.1947, A.T. McClay, leaf mold, 1 (UCDC); Solano Co., Lake Solano, 12.XII.1977, DSC, sift *Sambucus* & oak litter, 26 (CUIC); Yolo Co., Capay, Willow Ck. at Hwy. 16; 27.II.1981, S. Kuba, *Neotoma* nest in *Rhus*, rocks on bank; 4 (CSCA); Yolo Co., Capay, Willow Ck. at Hwy. 16, 27.II.1981, S. Kukba, *Neotoma* nest in *Rhus*, *Rubus* on bank, 2 (CSCA).

Material examined. We have examined 56 specimens.

Distribution. Specimens (Fig. 184) are known from Amador, Calaveras, Napa, Solano, and Yolo counties, on both sides of the Central Valley, in central California.

Diagnostic description. Total length 1.00–1.20 mm; greatest width 0.55–0.61 mm. Reddish brown; oval in shape (Fig. 19). **Head.** Finely, sparsely punctate; a larger puncture on each side of stem of epistomal suture; shining, with transverse substriate microsculpture. Eyes absent. Antenna (Fig. 185) with antennomere 2 slightly longer than 3; antennomeres 5 and 6 subequal; antennomeres 7 and 8 subequal; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Finely punctate, punctures separated by 2–4 diameters; shining, with transverse substriate microsculpture. Widest near base, sides roundly narrowing to apex; apical margin weakly emarginate, basal margin nearly straight; apical angles rounded, basal angles narrowly rounded. **Elytra.** Moderately finely punctate; punctures in longitudinal rows anteromedially; punctures joined by fine transverse striae. Joined elytra slightly wider than pronotum; widest at base, roundly narrowing to apex. **Legs.** Protibia (Fig. 186) slender; spinose on apical one-half of outer margin and apically; apical one-half of inner margin finely, densely spinose. Mesotibia (Fig. 187) slender; strongly spinose on outer margin and apically; exceptionally long spine at middle of outer margin. Metatibia (Fig. 188) slender, straight; outer margin with fine spines and a strong spine near apex; apex strongly spinose. Metafemur (Fig. 188) slender. Male protarsomeres (Fig. 186) weakly expanded, bearing elongate setae laterally and thin, colorless, transverse phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventer (Fig. 192) carinate; longitudinal carina with toothlike expansion near middle; depressed but not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 189, 190) broad, moderately flat; apex flat with narrow, rounded tip. Inverted internal sac (Fig. 190) with distinctive hourglass-shaped sclerite apically and two rows of inwardly directed spines basally. Parameres (Figs. 189–190) elongate, extending beyond apex of median lobe, moderately wide, somewhat constricted before flat apices; each bearing two closely spaced setae before apex. **Spermatheca.** Elongate (Fig. 191), sinuate, tubular.

Etymology. The name *minutus*, Latin, small, refers to the small size of this species.

Pinodytes monterey Peck & Cook, new species

(Figs. 20, 184, 193–200)

Type material. Holotype: male (CSCA). **UNITED STATES. California:** Monterey Co., 2.2mi W Bottchers Gap, XII-8-1983, A. Gilbert, berlese redwood duff. **Paratypes (49). UNITED STATES. California:** same data as holotype, 11 (CSCA); Monterey Co., 1.1miW Bottchers Gap, 8.XII.1983, A. Gilbert, Berl. oak duff, 1 (CSCA); Monterey Co., 25.4miSE Carmel Valley, 19.II.1981, F.G. Andrews, A.J. Gilbert, Berl. *Neotoma* nest at base of oak, 1 (CSCA); Monterey Co., 4miSE Nottleys Landing, 9.II.1982, F.G. Andrews, Berl. *Neotoma* nest u *Quercus*, 20 (CSCA); Monterey Co., Los Padres NF, Skinner Ridge Trail at Mill Ck., 36°21.5'N 121°48.7'W, 19.III.1995, 725m, A. Newton, M. Thayer, *Quercus-Arbutus menziesii* woodland, Berl. leaf & log litter, 2 (FMNH); Monterey

Co., Palo Colorado Rd., 2.5miWNW Bottchers Gap, Turner Ck., 15.XII.1991, 450m, A. Newton, M. Thayer, redwood–oak–maple for., ber. leaf & log litter, 4 (FMNH); Monterey Co., Wiley Ranch, 6miW Greenfield, 3.V.1975, 1200', H. Real, under mouse nest, 1 (EMEC); San Luis Obispo Co., 8miSE Santa Margarita, 2.II.1984, A. Gilbert & D. Griffin, *Chamise-Caenothus* duff, 2 (CSCA); San Luis Obispo Co., Atascadero, 2.XII.1945, ex. gopher burrow, 1 (USNM); Atascadero, 7.XII.1945, ex gopher burrow, 6 (USNM).

Material examined. We have examined 50 specimens.

Distribution. Specimens (Fig. 184) are known from Monterey and San Luis Obispo counties, in the Santa Lucia Mountains of coastal southern California.

Diagnostic description. Total length 1.50–1.64 mm; greatest width 0.70–0.80 mm. Reddish brown; elongate-oval in shape (Fig. 20). **Head.** Finely punctate, punctures separated by 1–5 diameters; a larger puncture on each side of apex of stem of epistomal suture; shining; weak substrate microsculpture on vertex and laterally. Eyes absent. Antenna (Fig. 193) with antennomeres 2 and 3 subequal in length; antennomere 5 larger than 4 and 6; antennomere 7 longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Punctures similar in size to head punctation, separated by 2–4 diameters; shining, with weak transverse substrate microsculpture. Widest before base, sides weakly rounded, narrowing to apex; apical margin weakly emarginate, basal margin nearly straight; apical angles rounded, basal angles rectangular. **Elytra.** Moderately strongly punctate, punctures in longitudinal rows and joined by fine transverse striae. Joined elytra slightly wider than pronotum; widest in basal one-half, roundly narrowing to apex. **Legs.** Protibia (Fig. 194) moderately slender, width increases evenly from base to apex; spinose on apical one-half of outer margin and apically; fine, dense spines on apical three-fifths of inner margin. Mesotibia (Fig. 195) moderately slender; strongly spinose on outer margin and apically; inner margin with smaller spines near base. Metatibia (Fig. 196) slender, weakly outwardly curved in male; outer margin with a strong spine near middle; apex spinose; small spines on apical one-half of inner margin. Metafemur (Fig. 197) moderately broad in both sexes. Male protarsomeres (Fig. 194) expanded, bearing elongate setae laterally and broad, thin, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 200) carinate; longitudinal carina with large toothlike expansion near middle; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 197, 198) elongate, broad, with shallow dorsal depressed area before apex; apex flattened, narrowly rounded at tip. Everted internal sac (Fig. 198) with a bifurcated sclerite. Parameres (Figs. 197, 198) elongate, broad, straight, with flattened apices; extending beyond apex of median lobe; each bearing two well-spaced setae before apex. **Spermatheca.** Elongate (Fig. 199), tubular, coiled before duct.

Etymology. The name *monterey*, a noun in apposition, refers to the type locality of this species in Monterey Co., California.

***Pinodytes parvus* Peck & Cook, new species**

(Figs. 21, 184, 201–208)

Type material. Holotype: male (CSCA). **UNITED STATES. California:** Del Norte Co., 5 mi S Gasquet, V-7-1971, Fred G. Andrews. **Paratypes** (90). **UNITED STATES. California:** with same data as holotype, 58 (CSCA); Contra Costa Co., 3miSE Lafayette, 10.III.2000, D.S. Chandler, sift live oak litter, 2 (UNHC); Contra Costa Co., Mt. Diablo, 15.II.1953, G.A. Marsh, 5 (EMEC); Contra Costa Co., Mt. Diablo, 24.II.1953, G.A. Marsh, 1 (EMEC); Del Norte Co., Jeddiah Smith St. Pk., 25.XI.1981, F.W. Merickel, Ber. sequoia leaf litter, 9 (WFBM); Humboldt Co., Blue Lake, 31.III.1975, T.R. Haig, Ber. redwood duff, 1 (CSCA); Mendocino Co., 16miW Willets, 27.III.1964, C.W. O'Brien, redwood duff, 1 (CNCI); Mendocino Co., Hwy. 20, 11.3miE Jct. Hwy. 1, 10.IV.1971, Fred G. Andrews, Ber. unident. litter, 2 (CSCA); Mendocino Co., Leggett, Drive-Thru Tree Park, 27.III.1995, 300m, A. Newton, M. Thayer, 956, *Sequoia-Pseudotsuga menziesii* for. w/some hdwds., Ber. leaf & log litter, 10 (FMNH); Mendocino Co., Little River, 10.VIII.1957, J.R. Helfer, 1 (UCDC).

Material examined. We have examined 91 specimens.

Distribution. Specimens (Fig. 184) are known from Del Norte, Humboldt, and Mendocino counties in the Coastal Ranges of northern California, and from Contra Costa County on the south side of San Francisco Bay.

Diagnostic description. Total length 1.20–1.36 mm; greatest width 0.66–0.74 mm. Reddish brown to dark brown; oval in shape (Fig. 21). **Head.** Finely, sparsely punctate; a larger puncture on each side opposite posterior

one-half of stem of epistomal suture; shining, with transverse substriate microsculpture. Eyes absent. Antenna (Fig. 201) with antennomeres 2 and 3 subequal in length; antennomere 5 larger than 4 and 6; antennomere 7 longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Finely punctate, punctures separated by 2–4 diameters; shining, with transverse substriate microsculpture. Widest at base, weakly narrowing in apical one-half; apical margin weakly emarginate, basal margin nearly straight; apical angles rounded, basal angles about rectangular. **Elytra.** Moderately finely punctate; punctures not arranged in longitudinal rows except basally near suture; punctures joined by fine transverse striae. Joined elytra slightly wider than pronotum; widest in basal one-third, roundly narrowing to apex. **Legs.** Protibia (Fig. 202) slender; width increases evenly from base to apex; spinose near apex and apically; densely, finely spinose on apical one-half of inner margin. Mesotibia (Fig. 203) moderately slender; strongly spinose on outer margin and apically; spine at apical one-fourth of inner margin. Metatibia (Fig. 204) slender, straight; outer margin with strong spines near apex and one-third from apex; apex spinose; small spines on apical one-half of inner margin. Metafemur (Fig. 204) slender. Male protarsomeres (Fig. 202) weakly expanded, bearing elongate setae laterally and broad, thin, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 208) carinate; longitudinal carina with large toothlike expansion near middle; depressed but not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 205, 206) elongate; apex flat, moderately narrow with rounded apex. Inverted internal sac (Fig. 206) with two pairs of elongate sclerotized structures. Parameres (Figs. 205, 206) elongate, moderately narrow, extending beyond apex of median lobe; apices flat, each bearing two setae before apex. **Spermatheca.** Elongate (Fig. 207), bulbous at apex.

Etymology. The name *parvus*, Latin, little, refers to the small size of this species.

***Pinodytes sanjacinto* Peck & Cook, new species**

(Figs. 22, 184, 209–215)

Type material. **Holotype** male (SBPC). **UNITED STATES. California:** Riverside Co., San Jacinto Mts., Lake Fulmor, ± 15 km NW Idyllwild, 26.III.1999, 1530m, oak forest litter, S. & J. Peck, 99–112. **Paratypes** (2). **UNITED STATES. California:** same data as holotype, 1 (SBPC); Riverside Co., San Jacinto Mts., Vista Grande, ± 20 km NW Idyllwild, 26.III.1999, 1450m, S. & J. Peck, 99–111, scrub oak litter, 1 (SBPC).

Material examined. We have examined 3 specimens.

Distribution. Specimens (Fig. 184) are known only from Riverside County, in the San Jacinto Mountains of southern California.

Diagnostic description. Total length 1.52–1.62 mm; greatest width 0.70–0.76 mm. Color reddish brown; elongate-oval in shape (Fig. 22). **Head.** Finely, sparsely punctate; a pair of widely spaced larger punctures on front; shining, with transverse substriate microsculpture on vertex and laterally. Eyes absent. Antenna (Fig. 209) with antennomeres 2 and 3 subequal in length; antennomere 5 larger than 4, longer than 6; antennomere 7 longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Finely punctate, punctures separated by 2–3 diameters; shining; with weak transverse substriate microsculpture basally and laterally. Widest near base, sides curving to apex; apical margin weakly emarginate, basal margin nearly straight; apical angles broadly rounded, basal angles narrowly rounded. **Elytra.** Punctures larger than on pronotum; in longitudinal rows on basal one-half; shining; punctures joined by fine, curved striae giving an imbricate appearance at base. Joined elytra slightly wider than pronotum, widest in basal one-third, roundly narrowing to apex. **Legs.** Protibia (Fig. 210) slender, straight, moderately widened from base to apex; spinose on outer margin and apically; finely spinose on apical two-thirds of inner margin. Mesotibia (Fig. 211) slender, straight; strongly spinose on outer margin and apically; spinose on apical one-third of inner margin. Metatibia (Fig. 212) elongate, slender, nearly straight; strongly spinose apically; smaller spines on apical one-half. Metafemur (Fig. 212) slender. Male protarsomeres (Fig. 210) little expanded, bearing elongate setae laterally and thin, broad, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 215) carinate; longitudinal carina with tooth-like expansion near middle; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 213, 214) broad, with narrow apex. Inverted internal sac (Fig. 214) with elongate structures. Parameres (Figs. 213, 214) elongate, with flattened apices; extending beyond apex of median lobe; each bearing two setae before apex. **Spermatheca.** Tubular, slender, curved.

Etymology. The name *sanjacinto*, a noun in apposition, refers to the occurrence of this species in the San Jacinto Mountains of California.

***Pinodytes sequoia* Peck & Cook, new species**

(Figs. 23, 216–224)

Type material. Holotype: male (SBPC). **UNITED STATES. California:** Tulare Co., Carmoe Crevice, 18.XI.2003, J. Krejca, V. Loftin, JKK331B3. **Paratypes (62). UNITED STATES. California:** with same data as holotype, 20 (SBPC); Tulare Co., Carmoe Crevice, 5.VII.2004, J. Krejca, A. Gluesenkamp, JKK1D4, 1 (SBPC); Tulare Co., Carmoe Crevice, 5.VII.2004, J. Krejca, A. Gluesenkamp, JKK5D2, 1 (SBPC); Tulare Co., Hurricane Crawl Cave, 16.VII.2003, J. Krejca, A. Snow, V. Loftin, S. Fryer, JKK17A4, 1 (SBPC); Tulare Co., Lost Soldier's Cave, 23.VII.2003, J. Krejca, V. Loftin, JKK80A7, 1 (SBPC); Tulare Co., Lost Soldier's Cave, 6.VII.2004, J. Krejca, A. Gluesenkamp, N. Barth, JKK13D2, 1 (SBPC); Tulare Co., Lost Soldier's Cave, 9.XI.2003, J. Krejca, V. Loftin, K. Despain, JKK232B4, 1 (SBPC); Tulare Co., Lost Soldier's Cave, 9.XI.2003, J. Krejca, V. Loftin, K. Despain, JKK232B5, 5 (SBPC); Tulare Co., Lost Soldier's Cave, 21.VII.2003, J. Krejca, S. Fryer, C. Walck, JKK52A2, 1 (SBPC); Tulare Co., Lost Soldier's Cave, 23.VII.2003, J. Krejca, V. Loftin, JKK80A5, 2 (SBPC); Tulare Co., Lost Soldier's Cave, 9.XI.2003, J. Krejca, V. Loftin, K. Despain, JKK230B2, 2 (SBPC); Tulare Co., Palmer's Cave, 27.VII.2003, J. Krejca, V. Loftin, JKK081A4, 1 (SBPC); Tulare Co., Palmer's Cave, 28.VII.2003, J. Krejca, V. Loftin, S. Fryer, D. Bolano, JKK087A1, 1 (SBPC); Tulare Co., Pet Cemetery Cave, 11.V.2004, J. Krejca, S. Fryer, J. Snow, P. Sprouse, JKK123C2, 2 (SBPC); Tulare Co., Soldier's Cave, XII.1977, A.G. Grubbs, 19 (SBPC); Tulare Co., Three Rivers, N36.35° W118.77°, Lost Soldier's Cave, 20.II.2010, 1212m, Graening, Audisio, 1 (SBPC); Tulare Co., Weiss Raum Cave, 10.V.2004, J. Krejca, P. Sprouse, S. Fryer, C. Walck, E. Olmbeck, JKK115C12, 2 (SBPC).

Material examined. We have examined 63 specimens.

Distribution. Specimens (Fig. 224) are known only from Tulare County, on the western side of the Sierra Nevada Mountains, California.

Diagnostic description. Total length 2.20–3.08 mm; greatest width 1.02–1.28 mm. Dark reddish brown; elongate-oval in shape (Fig. 23). **Head.** Finely, sparsely punctate; with up to four large punctures on vertex; microsculpture of vertex reticulate to substriate. Eyes absent. Antenna (Fig. 216) with antennomere 3 longer than 2; antennomeres 4–6 subequal; antennomere 7 longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Finely punctate with several larger punctures near apical margin; microsculpture moderately strong, substriate. Widest at base, sides roundly tapering to apex; apical margin emarginate, basal margin straight; apical angles rounded, basal angles rectangular. **Elytra.** Punctuation moderately strong and dense, in longitudinal rows, some rows weakly impressed; punctures joined transversely by fine striae. Joined elytra slightly narrower than pronotum, nearly parallel in basal one-half, narrowing to apex; basal one-third serrate laterally. **Legs.** Protibia (Fig. 217) narrow, straight; apex and outer margin spinose; inner margin with dense, fine spines on apical one-half. Mesotibia (Fig. 218) narrow, straight, with strong spines on entire outer margin and apically; inner margin with fine spines on apical one-half. Metatibia (Fig. 219) elongate, narrow, straight, spinose apically; apical two-thirds of outer margin with fine spines, a stronger spine at about one-fourth from apex; fine spines on apical two-fifths of inner margin. Metafemur (Fig. 219) moderately slender in both sexes. Male protarsomeres (Fig. 217) not expanded, bearing elongate setae laterally and thin, broad, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 223) carinate; longitudinal carina irregularly serrate posteriorly, expanded in anterior one-half, depressed but not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 220, 221) broad, abruptly narrowed before flattened apex. Inverted internal sac (Fig. 221) with a transverse dentate sclerite and a cluster of short, broad spines. Parameres (Figs. 220, 221) broad, elongate, with thin, deflexed apices; each bearing two setae before apex; apices extending beyond apex of median lobe. **Spermatheca.** Globose (Fig. 222).

Notes. All specimens are known from caves but this does not mean that the species can be categorized as a specialized cave inhabitant (troglobite). At best it would be classed as a troglophile, because it shows modifications only for soil habitats, as do all other species in the genus. Caves are a secondary habitat for the collection of soil beetles. This shows that sampling has been extensive in cave habitats and that no sampling has been done in the southern Sierra Nevada Mountains for soil inhabiting beetles.

Etymology. The name *sequoia*, a noun in apposition, refers to the distribution of this species in Sequoia National Park, Tulare Co., California.

***Pinodytes shasta* Peck & Cook, new species**

(Figs. 24, 224–232)

Type material. Holotype: male (FMHN). **UNITED STATES. California:** Shasta-Trinity Co. line, Buckhorn Pass, Hwy. 299, 3200', V-25-2002, D.S. Chandler, leaf litter, tanbark oak. **Paratypes** (115). **UNITED STATES. California:** same data as holotype, 11 (UNHC); Shasta Co., 11miW Whiskeytown, Hwy. 299 nr. Trail Gulch, 14.III.2001, 1900', D.S. Chandler, madrone leaf litter, 8 (UNHC); Shasta Co., 11miW Whiskeytown, Hwy. 299 nr. Trail Gulch, 14.III.2001, 1900', D.S. Chandler, sift bigleaf maple litter, 1 (UNHC); Shasta Co., 4miSW Platina, 13.III.2000, 3100', D.S. Chandler, sift buckeye litter, 2 (UNHC); Shasta Co., Buckhorn Summit, 15.IV.1981, T.R. Haig, Ber. oak duff, 17 (CSCA); Shasta Co., Buckhorn Summit, 24.IV.1985, T.R. Haig, Ber. pine duff, 3 (CSCA); Shasta Co., Buckhorn Summit, 9.V.1982, T.R. Haig, Ber. oak duff, 8 (CSCA); Shasta Co., Buckhorn Summit, Hwy. 299, 14.III.2001, 3200', D.S. Chandler, maple & tanbark oak leaf litter, 2 (UNHC); Shasta Co., Buckhorn Summit, Hwy. 299, 14.III.2001, 3200', D.S. Chandler, Douglas fir litter, 2 (UNHC); Shasta Co., Zachary Gulch, 6miSW Platina, 13.III.2000, 2200', D.S. Chandler, sift maple & live oak leaf litter, 7 (UNHC); Shasta Co., Zachary Gulch, 6miSW Platina, 13.III.2000, 2200', D.S. Chandler, sift big leaf maple litter by stream, 1 (UNHC); Shasta Co., Zachary Gulch, 6miSW Platina, 13.III.2000, 2200', D.S. Chandler, sift live oak leaf litter, 9 (UNHC); Shasta-Trinity Co. line, Buckhorn Pass, Hwy. 299, 25.V.2002, 3200', D.S. Chandler, sift Douglas fir leaf litter, 5 (UNHC); Shasta-Trinity Co. line, Buckhorn Pass, Hwy. 299, 25.V.2002, 3200', D.S. Chandler, sift mixed forest litter, 3 (UNHC); Tehama Co., 0.5miS Paynes Ck., Plum Ck. Rd., 12.XI.1996, 1950', D.S. Chandler, sift manzanita & *Cercis* leaf litter, 1 (UNHC); Tehama Co., 3miSE Paynes Ck., Plum Ck. Rd., 16.III.2000, 2700', D.S. Chandler, sift digger pine logs, 2 (UNHC); Tehama Co., 4miSW Platina, 3.XII.1986, 2250', D.S. Chandler, sift *Quercus durata* leaf litter, 2 (UNHC); Tehama Co., 6miS Paynes Ck., Oak Ck., High Trestle Rd., 12.XI.1996, 2500', D.S. Chandler, *Quercus dumosa* leaf litter, 7 (UNHC); Tehama Co., Shasta-Trinity NF, 1miNE Round Mtn., Round Mtn. Ck., 5.XII.1991, 3000', D.S. Chandler, sift black oak litter, 2 (UNHC); Tehama Co., Shasta-Trinity NF, 1miNW Round Mtn., middle fork Beegum Ck., 5.XII.1991, D.S. Chandler, sift alder litter, 2 (UNHC); Tehama-Shasta Co. line, Beegum Ck., 8miSW Platina, 10.III.2001, 2300', D.S. Chandler, sift laurel leaf litter, 3 (UNHC); Trinity Co., Del Loma, 23.I.1980, T.R. Haig, Ber. *Alnus* duff, 3 (CSCA); Trinity Co., Del Loma, 12.III.1980, T.R. Haig, Ber. Douglas fir duff, 6 (CSCA); Trinity Co., Weaverville, 15.IV.1981, T.R. Haig, Ber. oak litter, 8 (CSCA).

Material examined. We have examined 116 specimens.

Distribution. Specimens (Fig. 224) are known from Shasta, Tehama, and Trinity counties, in northern California, on both sides of the Sacramento River valley. This is one of the few species which may occur in volcanic soils, where it occurs in southeastern Shasta County and eastern Tehama County, California.

Diagnostic description. Total length 1.14–1.30 mm; greatest width 0.60–0.70 mm. Reddish brown; oval in shape (Fig. 24). **Head.** Finely, sparsely punctate; shining, with faint reticulate microsculpture on vertex. Eyes absent. Antenna (Fig. 225) with antennomere 2 slightly longer than 3; antennomere 5 larger than 4, narrower than 6; antennomere 7 slightly longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Finely punctate, punctures separated by 2–4 diameters; with transverse, substriate microsculpture. Widest at base, nearly as wide as elytra; sides rounded, narrowing to apex; apical margin nearly straight, basal margin weakly sinuate laterally; apical angles broadly rounded, basal angles narrowly rounded. **Elytra.** Moderately finely punctate; punctures in longitudinal rows, joined by fine transverse striae. Joined elytra widest at base, roundly narrowing to apex. **Legs.** Protibia (Fig. 226) slender; outer margin and apical margin spinose; apical two-thirds of inner margin finely, densely spinose. Mesotibia (Fig. 227) slender, straight; outer margin and apex strongly spinose, with an elongate spine at middle of outer margin. Metatibia (Fig. 228) slender, straight; apical margin spinose; outer margin with larger spines at middle and before apex; apical three-fifths of inner margin spinose. Metafemur (Fig. 228) slender. Male protarsomeres (Fig. 226) feebly or not dilated; bearing elongate setae laterally and thin, broad, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 232) carinate; without excavation behind transverse carina; longitudinal carina on different plane than transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 229, 230) elon-

gate, broad, with flat, rounded apex. Inverted internal sac (Fig. 230) with two pairs of elongate structures near middle, and basally an elongate structure with infolded spines. Parameres (Figs. 229, 230) moderately slender; flat apices deflexed and not reaching apex of median lobe; each bearing two closely spaced setae before apex. **Spermatheca.** Elongate (Fig. 231), tubular, sinuate; finely, transversely ribbed throughout entire length.

Etymology. The name *shasta*, a noun in apposition, refers to the occurrence of this species in Shasta Co., California.

***Pinodytes spinus* Peck & Cook, new species**

(Figs. 25, 224, 233–240)

Type material. Holotype: male (CSCA). **UNITED STATES. California:** Butte Co., 5 mi NE Butte Meadows, V-8-1976, Fred G. Andrews, berlesed from oak duff. **Paratypes** (9). **UNITED STATES. California:** same data as holotype, 3 (CSCA); Butte Co., 5miNE Butte Meadows, 8.V.1976, F. G. Andrews, berlesed from Ponderosa pine duff, 5 (CSCA); Butte Co., 5miNE Butte Meadows, 8.V.1976, F.G Andrews, berlesed from Douglas fir duff, 1 (CSCA).

Material examined. We have examined 10 specimens.

Distribution. Specimens (Fig. 224) are known only from Butte County, on the western side of the Sierra Nevada Mountains, in northern California.

Diagnostic description. Total length 1.20–1.49 mm; greatest width 0.62–0.76 mm. Reddish brown; oval in shape (Fig. 25). **Head.** Finely, sparsely punctate; a larger puncture on each side of apex of stem of epistomal suture; shining; with reticulate microsculpture on vertex and laterally. Eyes absent. Antenna (Fig. 233) with antennomeres 2 and 3 subequal in length; antennomere 5 wider than 4, slightly narrower than 6; antennomere 7 longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Finely punctate, punctures separated by 3–5 diameters; shining, with transverse, substriate microsculpture. Widest at base, narrowing in apical two-thirds; apical margin weakly emarginate, basal margin nearly straight; apical angles rounded, basal angles about rectangular. **Elytra.** Moderately coarsely punctate; longitudinal rows weakly discernable; punctures joined by fine transverse strioles. Slightly wider than pronotum; widest in basal one-third, roundly narrowing to apex. **Legs.** Protibia (Fig. 234) moderately slender, width increases evenly from base to apex; spinose on apical one-third of outer margin and apically; inner margin with dense fine spines on apical one-half. Mesotibia (Fig. 235) moderately slender, nearly straight; strongly spinose on outer margin and apically; spinose on apical two-fifths of inner margin. Metatibia (Fig. 236) slender, nearly straight; outer margin with strong spines near middle and before apex; apex spinose; several fine spines on apical one-half of inner margin. Metafemur (Fig. 236) slender. Male protarsomeres (Fig. 234) weakly expanded, bearing elongate setae laterally and broad, thin, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 240) carinate; longitudinal carina with rounded, toothlike expansion near middle; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 237, 238) broad; apex flattened, asymmetrical in dorsal view. Inverted internal sac (Fig. 238) with clusters of elongate spines and a single large, strong spine. Parameres (Figs. 237, 238) elongate, longer than median lobe, with flattened, deflexed apices; each bearing two setae before apex. **Spermatheca.** Elongate (Fig. 239), tubular, ribbed.

Etymology. The name *spinus*, Latin, spine, refers to the distinctive large spine of the internal sac of the aedeagus of this species.

***Pinodytes tehama* Peck & Cook, new species**

(Figs. 26, 224, 241–248)

Type material. Holotype: male (UNHC). **UNITED STATES. California:** Tehama Co., 5 mi SE Manton, Bluff Springs, 2550', XII-4-1991, D.S. Chandler, sift laurel leaf litter. **Paratypes** (66). **UNITED STATES. California:** same data as holotype, 37 (UNHC); Tehama Co., 3miNW Mineral, Hampton Butte, 2.XII.1991, 6000', D.S. Chandler, sift conifer litter, 3 (UNHC); Tehama Co., 5miSE Manton, Bluff Springs, 1.XII.1987, 2500', D.S. Chandler, sift rotten oak log, 1 (UNHC); Tehama Co., 5miSE Manton, Bluff Springs, 1.XII.1987, 2500', D.S. Chandler, sift

leaf litter at stream edge, 1 (UNHC); Tehama Co., 5miW Mineral, 6.XII.1987, 4250', D.S. Chandler, bigleaf maple leaf litter, 1 (UNHC); Tehama Co., 6miSE Manton, Soap Creek, 4.XII.1991, 2350', D.S. Chandler, sift black oak litter, 1 (UNHC); Tehama Co., 6miSE Manton, Soap Creek, 4.XII.1991, 2350', D.S. Chandler, sift willow/mixed leaf litter by stream, 10 (UNHC); Tehama Co., 10miSE Manton, Snoqualmie Gulch, 4.XII.1991, 2950', D.S. Chandler, sift litter by stream, 12 (UNHC).

Additional material examined. We examined 100 additional specimens (see Appendix) for a total of 167 specimens.

Distribution. Specimens (Fig. 224) are known from Shasta and Tehama Counties, in northern California, on both sides of the Sacramento River. This is one of the few species which may occur in volcanic soils where it occurs in southeastern Shasta County and eastern Tehama County, California.

Diagnostic description. Total length 1.10–1.30 mm; greatest width 0.58–0.62 mm. Reddish brown; oval in shape (Fig. 26). **Head.** With scattered minute punctures and a few larger punctures; shining, with faint reticulate microsculpture posteriorly. Eyes absent. Antenna (Fig. 241) with antennomeres 2 and 3 subequal in length; antennomere 5 wider than 4, longer than 6; antennomere 7 slightly longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** Finely punctate, punctures separated by 3–4 diameters; shining, with transverse substrate microsculpture. Widest at base, sides curving to narrower apex; apical margin weakly emarginate, basal margin nearly straight; apical angles broadly rounded, basal angles narrowly rounded. **Elytra.** Finely punctate; punctures in serial rows but striae not impressed; punctures joined by fine transverse striae. Joined elytra slightly wider than pronotum, widest at base, roundly narrowing to apex. **Legs.** Protibia (Fig. 242) slender; apex spinose; apical one-half of outer margin with three spines; apical three-fifths of inner margin finely, densely spinose. Mesotibia (Fig. 243) slender; strongly spinose on outer margin and apically, with elongate spine near middle of outer margin; apical one-third of inner margin with smaller spines. Metatibia (Fig. 244) slender, straight; spinose at apex; inner margin with two moderately strong spines on apical one-fourth. Metafemur (Fig. 244) slender. Male protarsomeres (Fig. 242) weakly expanded; bearing elongate setae laterally and thin, broad, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 248) carinate; longitudinal carina with large toothlike expansion near middle; not excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 245, 246) broad; apex narrowing, flattened. Internal sac (Figs. 245, 246) with two pairs of elongate, flattened structures; a series of smaller, strongly sclerotized spines visible anterior to base of median lobe when internal sac is inverted. Parameres (Figs. 245, 246) moderately broad with apices flat, deflexed, each bearing two closely spaced setae before apex. **Spermatheca.** Elongate (Fig. 247), tubular, evenly curved.

Etymology. The name *tehama*, a noun in apposition, refers to the occurrence of this species in Tehama Co., California.

Pinodytes tuolumne Peck & Cook, new species

(Figs. 27, 224, 249–256)

Type material. Holotype: male (SBPC). **UNITED STATES. California:** Tuolumne Co., Harden Flat, 37°48.71'N 119°56.6'W, 3780' elev., 14-JUL-2005, A.R. Cline collr., ex. Berleseate. **Paratypes (5).** **UNITED STATES. California:** Tuolumne Co., Yosemite NP, Tioga Rd., 9.0miE Crane Flat, 18.V.1976, 7100', A. Newton. M. Thayer, Ber. squirrel middens & litter, fir forest, 5 (FMNH).

Material examined. We have examined 6 specimens.

Distribution. Specimens (Fig. 224) are known only from Tuolumne County, California, on the western slope of the Sierra Nevada Mountains, in and near Yosemite National Park.

Diagnostic description. Total length 1.64 mm; greatest width 0.88 mm. Reddish brown; oval in shape (Fig. 27). **Head.** Finely, sparsely punctate; a pair of larger punctures on vertex; shining, with microsculpture of transverse lines on vertex. Eyes absent. Antenna (Fig. 249) with antennomeres 2 and 3 subequal in length, 2 wider than 3; antennomere 5 larger than 4 and 6; antennomere 7 longer but not wider than 8; antennomeres 9 and 10 each with a single sensory vesicle indicated apically by a protruding flange. **Pronotum.** With scattered fine punctures, a few larger punctures at base and apex; shining; completely covered with substrate microsculpture. Widest at base, sides slightly rounded and narrowing to apex; apical margin emarginate; basal margin broadly, weakly emarginate; apical angles rounded, basal angles more narrowly rounded. **Elytra.** Punctuation fine, serially arranged but not

impressed; punctures joined by fine transverse striae. Joined elytra slightly wider than pronotum; widest at base; nearly parallel in basal one-half, narrowing to apex; weakly serrate laterally. **Legs.** Protibia (Fig. 250) slender; with spines apically and near base of outer margin; apical one-half of inner margin finely, densely spinose. Mesotibia (Fig. 251) slender, weakly curved; strongly spinose apically, on outer margin, and apical one-third of inner margin. Metatibia (Fig. 252) moderately elongate, curved in male, widened in apical three-fifths; spinose apically, two spines on ventral face; apical one-half of inner margin with widely spaced fine spines. Metafemur (Fig. 252) moderately slender. Male protarsomeres (Fig. 250) expanded, bearing elongate setae laterally and thin, broad, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 256) carinate; longitudinal carina depressed at middle; with toothlike expansion in anterior one-half; not excavated, but with a small depression behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 253, 254) broad, with narrow, flattened apex. Inverted internal sac (Fig. 254) with cluster of spines. Parameres (Figs. 253, 254) elongate, broad, extending beyond apex of median lobe; with a small flange on inner margin before apex; each bearing two well separated setae before apex. **Spermatheca.** Elongate (Fig. 255), bulbous at apex.

Etymology. The name *tuolumne*, a noun in apposition, refers to the type locality of this species in Tuolumne Co., California.

Pinodytes cryptophagoides species group

Diagnosis. This group is defined by the following combination of characters: head and pronotal microsculpture reticulate; antennomere 7 clearly larger than 8; male protibia strongly widened apically; male protarsomeres only bearing phanerae ventrally; mesoventrites longitudinal carina excavated anteriorly; median lobe of aedeagus elongate, strongly curved dorsoventrally; parameres strongly narrow, not reaching apex of median lobe, each bearing two apical setae.

Pinodytes cryptophagoides (Mannerheim, 1852), resurrected combination

(Figs. 28, 257–264, 265A)

Catops cryptophagoides Mannerheim 1852: 333;

Pinodytes cryptophagoides: Horn 1880: 249 (new combination); Hamilton 1894: 16; Keen 1895: 168; Blatchley 1910: 277. .

Catopocerus cryptophagoides: Hatch 1928: 72 (new combination); 1957: 72; Brown 1933: 215.

Type material. Lectotype here designated, to ensure the name's proper and consistent application, from syntype in LeConte collection, MCZC, with the following labels: "Pinodytes cryptophagoides," "Pippingsk." [printed], "Sitkha" [hand written], '56." [handwritten], and red label "type/7377"; and our red lectotype label. This is undoubtedly the specimen seen by Horn (1880: 249). Another syntype is reported in MZHF (Silferberg 1987: 49), not seen. Type locality: "Sitkha" [=Sitka], Alaska.

Additional material examined. We examined 678 additional specimens (see Appendix) for a total of 679 specimens.

Distribution. Specimens (Fig. 265A) are known from mainland British Columbia, Canada, and Vancouver and the Haida Gwaii (formerly Queen Charlotte) Islands as well as Sitka, in the "panhandle" of southeastern Alaska, and numerous localities in Washington State, in Clallam, Jefferson, King, Mason, Pierce, Snohomish, Thurston, and Walla Walla counties. Horn (1880: 249) mentions the species near Washington, D. C., but this is a misidentification of *Catopocerus politus* Motschulsky. Leng (1920) repeats this D. C. locality and also erroneously adds southern California to the distribution.

As presently understood the species has a distribution of about 1700 km in length along the Pacific coast, from eastern Washington, through northwestern Washington and coastal BC to Sitka, Alaska, including Vancouver and the Haida Gwaii Islands. These last populations need not represent post-glacial colonization from southern populations. There is evidence that parts of the islands were ice free at the height of the late Wisconsin glaciation (Warner et al. 1982) and that they may have served as a biotic refugium (Scudder and Gessler 1989). But post glacial colonization is certainly a possibility through the mechanism of marine drift of slide rafts and other floating debris. There may be other populations that survived Pleistocene glaciations in other smaller coastal refugia.

Based on a misunderstanding of the identity of *Catopocerus politus* in the vicinity of Washington, D. C., Blatchley (1910: 277) assumed that it was *P. cryptophgoides*, which he thought was distributed from Alaska to D. C., would be found in Indiana. This is an error.

Diagnosis. Total length 1.66–1.88 mm; greatest width 0.80–0.90 mm. Reddish brown; elongate-oval in shape (Fig. 28). **Head.** Sparsely punctate, punctures variable in size; with reticulate microsculpture. Eyes absent. Antennae (Fig. 257) with antennomere 3 shorter and narrower than 2; antennomere 5 larger than 4, longer than 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Finely, sparsely punctate; a few larger punctures near apical margin; with reticulate microsculpture. Widest sub-basally, slightly narrower than elytra; sides rounded, converging in apical one-half; apical margin emarginate; basal angles weakly produced posteriorly, weakly obtuse; apical angles rounded. **Elytra.** Punctuation variable in size, moderately closely but irregularly spaced; punctures joined transversely by fine striae; sub-basally with a clearly impressed transverse stria connecting a transverse row of punctures; joined elytra widest at basal one-fourth, narrowing to apex. **Legs.** Protibia of male (Fig. 258) triangular, broad at apex; narrower in female; outer margin with a few spines on apical one-half; inner margin with dense small spines on apical one-half. Mesotibia (Fig. 259) evenly widened to apex; strongly spinose. Metatibia (Fig. 260) slender, nearly straight; spinose on apical one-half. Metafemur (Fig. 260) slender. Male protarsomeres (Fig. 258) not or weakly dilated; bearing setae laterally and thin, transverse, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 264) carinate; longitudinal carina depressed medially, shallowly excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 261, 262) strongly curved near middle in lateral view, flattened apically; in dorsal view broad, apex attenuately spinose. Inverted internal sac (Fig. 262) with various shapes and sizes of spines and a sclerotized curved structure. Parameres (Figs. 261, 262) narrow, not reaching apex of median lobe, each bearing two setae at apex. **Spermatheca.** Tubular (Fig. 263), robust, curved at apex and base.

Notes on material. The first collections of the species were by D. Pippingsköld, a Master Surgeon, of the Russian-American Company, at the Russian fort at Sitka, Alaska, or on a Finnish ship visiting Sitka. The small size of the beetle, collected under rocks, attests to the thoroughness of his search for beetles. This is just one of the numerous species of beetles discovered and described by Russian naturalists from lands around the north Pacific. We find remarkable the activities of Russian and other naturalists in Russian North America, considering that their field work necessitated voyages from St. Petersburg and to sites half way around the world to make the collections and the same to return. These collecting efforts, from about 1820 to 1840, were of G. Fischer von Waldheim, Johann F. Eschscholtz, and C. G. Mannerheim.

We assume that the report of *Catopocerus cryptophagoides* by Horn (1880), and repeated by Leng (1920), from the District of Columbia (both as a misidentification of *C. politus* Motschulsky (= *C. ulkei* Brown 1933)), was probably the basis of Portevin's (1922) synonymization of *C. politus* under *C. cryptophagoides*.

Bionomics. The species has been found associated with sporocarps of hypogeous fungi (Fogel and Peck 1975). Keen (1895: 168) reports the species from under logs from June to September at Massett, Queen Charlotte Islands, B. C.

***Pinodytes subterraneus* (Hatch, 1935), new combination**

(Figs. 29, 266–274)

Catopocerus subterraneus (Hatch) 1935: 115; 1957: 19. Original genus: *Typhloleiodes*.

Type material. Type male in USNM, seen. Type label data: Seaside, Clatsop Co., Oregon; 28.VI.1933, M. C. Lane.

Additional material examined. We examined 3 additional specimens (see Appendix) for a total of 4 specimens.

Distribution. Specimens (Fig. 274) are known only from Clatsop County, in northwestern Washington.

Diagnosis. Total length 2.56–3.72 mm; greatest width 1.16–1.64 mm. Reddish brown; elongate-oval in shape (Fig. 29). **Head.** Moderately finely punctate, punctures separated by 2–3 diameters; with a mixture of reticulate and substriate microsculpture. Eyes absent. Antenna (Fig. 266) with antennomere 3 as wide as and slightly longer than 2; antennomere 5 longer than 4 and 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Moderately finely punctate, punctures separated by 2–3 diameters; five large punctures,

each bearing a short erect seta, along each lateral margin; a few large punctures subapically and subbasally, paired or randomly scattered; with reticulate microsculpture. Posterior one-half of about equal width from base to middle, then narrowing to apex; apical margin emarginate, basal margin straight; apical angles rounded, basal angles subrectangular. **Elytra.** Strial punctures moderately coarse, arranged in variably feebly impressed longitudinal rows; interstitial punctures mostly slightly smaller, with a few scattered larger punctures; punctures feebly or not joined by fine striae, forming a weak imbricate pattern. Joined elytra slightly wider than pronotum; sides subparallel in basal one-half, narrowing apically. **Legs.** Protibia (Fig. 267) broad at apex in male, more slender in female; two curved spines at apex of outer margin; apical one-half of inner margin with fine, dense spines. Mesotibia (Fig. 268) evenly widened to apex; with strong spines on outer margin and apically; apical one-half of inner margin with small spines. Metatibia (Fig. 269) slender basally, widened in apical two-fifths, spinose in apical one-half. Metafemur (Fig. 269) moderately slender; slightly widened in apical one-half. Male protarsomeres (Fig. 267) bearing elongate setae laterally and thin, colorless, broad phanerae ventrally; first protarsomere elongate. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 273) carinate, with small median tooth; excavation behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 270–271) elongate, broad, evenly curved; angulate before short, flattened apex; angulation sinuate dorsally. Inverted internal sac (Fig. 271) with curved structure bearing two small narrow lobes. Parameres (Figs. 270, 271) slender, about two-thirds length of median lobe, each bearing one apical and one subapical seta. **Spermatheca.** Tubular (Fig. 272), sharply curved near middle.

Bionomics. Specimens have been found associated with sporocarps of hypogeous fungi (Fogel and Peck 1975).

Pinodytes imbricatus (Hatch, 1957), new combination

(Figs. 30, 274–282)

Catopocerus imbricatus Hatch 1957: 20.

Type material. Type female in USNM, seen. Type label data. 6 mi N Buxton, Washington Co., Oregon; 6.IV.1955, W. Roth, from duff.

Additional material examined. We examined 14 additional specimens (see Appendix) for a total of 15 specimens.

Distribution. Specimens (Fig. 274) are known only from Tillamook and Washington counties in northwestern Washington.

Diagnosis. Total length 3.20–3.60 mm; greatest width 1.32–1.52 mm. Reddish brown; elongate in shape (Fig. 30). **Head.** Moderately finely punctate, punctures separated by 1–2 diameters or less; with both reticulate and substriate microsculpture. Eyes absent. Antenna (Fig. 275) with antennomere 3 slightly longer than 2; antennomere 5 longer than 4 and 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Evenly, moderately finely punctate, punctures separated by 1–2 diameters; with a few larger punctures, usually paired; with reticulate microsculpture. Slightly wider at middle than at base, sides weakly rounded; apical margin emarginate, basal margin straight; apical angles rounded, basal angles weakly obtuse. **Elytra.** Strial punctures moderately coarse; striae impressed in basal one half; interstitial punctures moderately fine; with imbricate microsculpture basally, stronger in females. Joined elytra slightly wider than pronotum; sides subparallel in basal one-half, narrowing apically. **Legs.** Protibia (Fig. 276) broad at apex in male, narrower in female; two curved spines at apex of outer margin; apical one-half of inner margin with fine, dense spines. Mesotibia (Fig. 277) weakly curved in male, straight in female; with strong spines on outer margin and apically, fine spines on apical one-half of inner margin. Metatibia (Fig. 278) slender, weakly widened apically. Metafemur (Fig. 278) slender. Male protarsomeres (Fig. 276) bearing elongate setae laterally and thin, colorless, transverse phanerae ventrally. Protarsomere 1 elongate. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 282) carinate, with a small median tooth; excavation behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 279, 280) elongate, broad, evenly curved in basal one-half; sharply angulate before slightly narrowed, flattened apex. Inverted internal sac (Fig. 280) with asymmetrical sclerotized structures. Parameres (Figs. 279, 280) slender, about two-thirds length of median lobe; each paramere bearing one apical and one sub-apical seta. **Spermatheca.** Tubular (Fig. 281), sharply curved near middle.

***Pinodytes newelli* (Hatch, 1957), new combination**

(Figs. 31, 274, 283–291)

Catopocerus newelli Hatch 1957: 20.

Type material. Type male in USNM, seen. Type label data: Coos Head, Coos County, Oregon; 14.IX.1947, J. M. Newell.

Additional material examined. We examined 402 additional specimens (see Appendix) for a total of 403 specimens.

Distribution. Specimens (Fig. 274) are known from Benton, Clatsop, Columbia, Coos, Curry, Douglas, Lane, Lincoln, Tillamook, and Washington counties, Oregon, and Grays Harbor County, Washington in the Coastal Range mountains.

Diagnosis. Total length 1.60–2.60 mm; greatest width 0.64–1.00 mm. Reddish brown to dark reddish brown; elongate in shape (Fig. 31). **Head.** Moderately finely punctate, punctures separated by 1–4 diameters, with a mixture of reticulate and substriate microsculpture. Eyes absent. Antennae (Fig. 283) with antennomere 2 slightly longer than 3; antennomere 5 slightly larger than 4 and 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Moderately finely punctate, punctures separated by 2–3 diameters; with reticulate microsculpture. Posterior one-half of about equal width, then narrowing to apex; apical margin emarginate, basal margin straight; apical angles rounded, basal angles sub-rectangular. **Elytra.** Moderately coarsely punctate; a few striae weakly indicated adjacent to suture; punctures joined by fine striae that create a weak imbricate pattern basally; joined elytra about as wide as pronotum, sides sub-parallel in basal one-half, narrowing to apex. **Legs.** Protibia (Fig. 284) triangular, broad at apex; two curved spines at apex of outer margin; apical one-half of inner margin with fine dense spines. Mesotibia (Fig. 285) evenly widened to apex; with strong spines on outer margin and apically; inner margin convex. Male metatibia (Fig. 386) narrow in basal one-half; widened in apical one-half; curved; unmodified in female. Metafemur (Fig. 286) moderately broad in male, slender in female. Male protarsomeres (Fig. 284) bearing elongate setae laterally and thin, colorless, transverse phanerae ventrally; protarsomere 1 elongate. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 291) carinate, with a median tooth; excavation behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 287, 288) elongate, angulate at basal one-third and before apex; broad, narrowing and flattening before rounded, weakly lobed apex. Width of apex variable (Fig. 289). Inverted internal sac (Fig. 288) with elongate cluster of small spines medially and a complex sclerotized structure basally. Parameres (Figs. 287, 288) narrow, about two-thirds length of median lobe; each paramere with one apical and one sub-apical seta. **Spermatheca.** Tubular (Fig. 290), curved, sharply angulate medially.

***Pinodytes capizzii* (Hatch, 1957), new combination**

(Figs. 32, 274, 292–301)

Catopocerus capizzii Hatch 1957: 21.

Type material. Type male in USNM, seen. Type label data: Humbug Mt., Curry County, Oregon; 22.V.1955, J. Capizzi.

Additional material examined. We examined 1003 additional specimens (see Appendix) for a total of 1004 specimens.

Distribution. Specimens (Fig. 274) are known from Benton, Clackamas, Columbia, Coos, Curry, Douglas, Harney, Lane, Lincoln, Linn, Marion, Polk, Tillamook, and Yamhill counties, Oregon, and Thurston County, Washington.

Diagnosis. Total length 1.50–1.70 mm; greatest width 0.76–0.81 mm. Reddish brown; oval in shape (Fig. 32). **Head.** Finely, sparsely punctate, shining, with reticulate microsculpture. Eyes absent. Antennae (Fig. 292) with antennomere 2 wider and slightly longer than 3; antennomere 5 slightly larger than 4 and 6; antennomere 7 clearly longer and slightly wider than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Finely, sparsely punctate, shining, with reticulate microsculpture. Widest near base; sides slightly rounded, narrowing to apex; api-

cal margin emarginate; basal margin weakly sinuate on each side; apical angles rounded, basal angles subrectangular. **Elytra.** Punctuation irregular, punctures larger than on pronotum, separated by 2–4 diameters; punctures joined transversely by fine striae. Joined elytra slightly wider than pronotum, widest in basal one-third, narrowing to apex. **Legs.** Protibia (Fig. 293) triangular, broad at apex; two large spines near apex of outer margin; apical one-half of inner margin with fine, dense spines. Mesotibia (Fig. 294) evenly widened to apex; strong spines on outer margin, apically and on apical one-half of inner margin. Metatibia (Fig. 295) weakly sinuate in most males, not sinuate in females, narrow in basal one-third, widening in apical two-thirds, with strong spines apically. Metafemur (Fig. 295) slender. Male protarsomeres (Fig. 293) expanded, bearing elongate setae laterally and thin, colorless, transverse phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 301) carinate, longitudinal carina with one small tooth; excavation behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 296, 297) elongate, broad, sinuate before expanded flattened apex; strongly curved at middle, nearly right-angled in lateral view. There is geographical variation in the shape of the aedeagal apex (Figs. 298, 299). Everted internal sac (Fig. 296) with various shapes and sizes of spines and a small sclerite ventrally near apex. Parameres (Figs. 296, 297) narrow, not reaching apex of median lobe; each bearing two setae apically. **Spermatheca.** tubular (Fig. 300), curved.

Bionomics. Specimens have been found associated with sporocarps of hypogeous fungi (Fogel and Peck 1975).

***Pinodytes rothi* (Hatch, 1957), new combination**

(Figs. 33, 302–310)

Catopocerus rothi Hatch 1957: 21.

Type material. Type male in USNM, seen. Type label data: 6 mi N Buxton, Washington County, Oregon; 6.IV.1955, V. Roth.

Additional material examined. We examined 1105 additional specimens (see Appendix) for a total of 1106 specimens.

Distribution. Specimens (Fig. 310) are known from Mendocino County, California and Clackamas, Clatsop, Columbia, Coos, Douglas, Hood River, Marion, Multnomah, Polk, Tillamook, Wasco, Washington, and Yamhill counties, Oregon.

Diagnosis. Total length 1.56–1.70 mm; greatest width 0.76–0.81 mm. Reddish brown; elongate-oval in shape (Fig. 33). **Head.** Finely, sparsely punctate, with reticulate microsculpture. Eyes absent. Antennae (Fig. 302) with antennomere 3 shorter and narrower than 2; antennomere 5 larger than 4 and 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 without visible sensory vesicles. **Pronotum.** Finely, sparsely punctate, with reticulate microsculpture. Widest sub-basally, slightly narrower than elytra; sides rounded, converging in apical one-half; apical margin weakly emarginate; basal margin nearly straight; apical angles rounded, basal angles nearly right-angled. **Elytra.** Punctuation variable in size, larger than pronotal punctuation; variable spaced; punctures joined by fine transverse striae. Sub-basally with a clearly impressed transverse striae connecting a transverse row of punctures. Joined elytra widest at basal one-third; narrowing to apex. **Legs.** Protibia (Fig. 303) of male broad at apex, triangular, narrower in female; outer margin with a few spines on apical one-half; inner margin with dense small spines on apical one-half. Mesotibia (Fig. 304) evenly widened to apex; strongly spinose. Metatibia (Fig. 305) slender, spinose on apical one-half. Metafemur (Fig. 305) slender. Male protarsomeres (Fig. 303) not dilated, bearing elongate setae laterally and thin, colorless transverse phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 309) carinate; longitudinal carina not toothed; excavated behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 306, 307) strongly curved near middle in lateral view, flattened apically; in dorsal view, broad, with triangular apex. Inverted internal sac (Fig. Fig. 307) with various shapes and sizes of spines and a sclerotized curved structure. Parameres (Figs. 306, 307) narrow, not reaching apex of median lobe, each bearing two setae at apex. **Spermatheca.** Robust (Fig. 308), thickened medially, narrower at apex and base.

Bionomics. Specimens have been found associated with sporocarps of hypogeous fungi (Fogel and Peck 1975).

***Pinodytes tibialis* (Hatch, 1957), new combination**

(Figs. 34, 310–318)

Catopocerus tibialis Hatch 1957: 20.

Type material. Type male in USNM, seen. Type label data: Gold Beach, Curry County, Oregon; 21.IV.1955, J. Capizzi.

Additional material examined. We examined 90 additional specimens (see Appendix) for a total of 91 specimens.

Distribution. Specimens (Fig. 310) are known only from Curry County in southwestern Oregon.

Diagnosis. Total length 1.40–1.60 mm; greatest width 0.65–0.80 mm. Reddish brown; elongate-oval in shape (Fig. 34). **Head.** Moderately finely, irregularly punctate; with reticulate microsculpture. Eyes absent. Antenna (Fig. 311) with antennomere 2 longer than 3; antennomere 5 slightly larger than 4 and 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Finely punctate, punctures separated by 3–4 diameters; with reticulate microsculpture. Disc with three pairs of larger punctures, positioned subapically, posteromedially and subbasally. Slightly wider at middle than at base, narrowing to apex; apical margin weakly emarginate, basal margin straight; apical angles rounded, basal angles weakly obtuse. **Elytra.** Moderately coarsely punctate; a few striae weakly indicated adjacent to suture; punctures joined by fine striae that create a weakly imbricate pattern basally. Joined elytra slightly wider than pronotum; sides subparallel in basal one-half, narrowing to apex. **Legs.** Protibia (Fig. 312) narrow at base, apical one-half strongly widened in male, less so in female; two curved spines at apex of outer margin; apical one-half of inner margin with fine, dense spines. Male mesotibia (Fig. 313) with basal two-thirds sinuate, angulate at apical one-third; unmodified in female; strong spines on outer margin in both sexes. Metatibia (Fig. 314) elongate, narrow, straight in both sexes. Metafemur (Fig. 314) slender in both sexes. Male protarsomeres (Fig. 312) bearing elongate setae laterally and thin, colorless, broad phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 318) carinate, with a small median tooth; excavation behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 315, 316) cylindrical, curved, with flattened apex narrowing to weak rounded lobe. Inverted internal sac (Fig. 316) with elongate sclerotized structures. Parameres (Figs. 315, 316) narrow, about three-fourths length of median lobe; each paramere with one apical and one subapical seta. **Spermatheca.** Tubular (Fig. 317), curved.

***Pinodytes angulatus* Peck & Cook, new species**

(Figs. 35, 310, 319–326)

Type material. Holotype: male (SBPC). **UNITED STATES. Oregon:** Linn Co., Willamette Nat. For. Rd. 1177, Green Ck., 14miN 22miE Sweet Home, 1700', 29.IV.72, mixed duff, E.M. Benedict, EB-641. **Paratypes** (49). **UNITED STATES. Oregon:** same data as holotype, 1 (SBPC); Benton Co., 12miW Philomath, 11.X.73, 4000', R. Fogel, 113E, ex subterranean *Martellia vesiculosa*, 14 (SBPC); Clackamas Co., 3mi Carver on S Baker Ferry Rd., 22.IV.72, E.M. Benedict, EB-608, rot. twigs & leaves, 1 (SBPC); Clackamas Co., 46miSE Estacada, 9.X.71, 3000', E.M. Benedict, litter, 1 (SBPC); Clackamas Co., Barton Co. Park, 0.25miS Barton, 22.IV.72, E.M. Benedict, cone scales, 1 (SBPC); Clackamas Co., Mt. Hood Nat. For. Rd. S 57, 30miSE Estacoda, 26.V.72, 2000', E.M. Benedict, EB-687, duff, 1 (SBPC); Clackamas Co., nr. Clackamas L. Cpgd., Mt. Hood Nat For Rd. S 15miS Govt. Camp, 26.V.72, 3300', E.M. Benedict, 5 (SBPC); Lincoln Co., Waldport, Patterson St. Pk., 14.X.67, J. & S. Cornell, 967x-14, ex litter *Pinus contorta*, 14 (JFCC); Linn Co., Willamette Nat. For. Rd. 1177, 0.25miW Quarterville Bridge, 13miN 23miE Sweet Home, 29.IV.72, 1900', E.M. Benedict, EB-632, duff, 3 (SBPC); Linn Co., Yellowbottom Rec. Site, 1miW Quarterville Ranger Sta., 13miN 18miE Sweet Home, 29.IV.72, 1400', E.M. Benedict, 5 (SBPC); Washington Co., 17miSW Timber, 13.VII.73, 900', E.M. Benedict, EB-122, big keaf maple duff, 1 (SBPC); Washington Co., 3miSW Tualatin off SW Tonquin Rd. nr gravel pit, 1.I.72, 200', E.M. Benedict, EB-304, duff & moss, 2 (SBPC).

Material examined. We have examined 50 specimens.

Distribution. Specimens (Fig. 310) are known from Benton, Clackamas, Lincoln, Linn, and Washington counties in western Oregon.

Diagnostic description. Total length 1.74–2.10 mm; greatest width 0.66–0.90 mm. Reddish brown; elongate in shape (Fig. 35). **Head.** Finely, sparsely punctate, with reticulate microsculpture on vertex. Eyes absent. Antenna (Fig. 319) with antennomere 2 slightly longer than 3; antennomere 5 larger than 4 and 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Finely punctate, punctures separated by 2–4 diameters; with reticulate microsculpture. Sides straight in basal one-half, then weakly rounded to apex; apical margin weakly emarginate, basal margin straight; apical angles rounded, basal angles weakly obtuse. **Elytra.** Punctures variable in size; striae not impressed; microsculpture fine, dense, transverse, forming an imbricate pattern basally. Joined elytra slightly wider than pronotum; sides subparallel in basal one-half, narrowing apically. **Legs.** Protibia (Fig. 320) broad at apex in male; two curved spines at apex of outer margin; inner margin with fine, dense spines. Mesotibia (Fig. 321) curved in male, inner margin concave; strong spines on outer margin and apically. Metatibia (Fig. 322) slender, straight, weakly widened in apical one-half. Metafemur (Fig. 322) slender. Male protarsomeres (Fig. 320) expanded; protarsomere 1 elongate, about as long as 2–4 combined; bearing elongate setae laterally and broad, thin, colorless phanerae ventrally; mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 326) carinate; longitudinal carina with a median tooth; excavation behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 323, 324) elongate, broad, evenly curved at basal one-third; angulate before flattened apex. Inverted internal sac (Fig. 324) with two distinctly shaped sclerites and a cluster of long spines. Parameres (Figs. 323, 324) slender, about two-thirds length of median lobe; each bearing one apical and one subapical seta. **Spermatheca.** Elongate (Fig. 325), tubular, sigmoid in shape.

Etymology. The name *angulatus*, Latin, angulate, refers to the shape of the median lobe of the aedeagus of this species.

***Pinodytes delnorte* Peck & Cook, new species**

(Figs. 36, 310, 327–334)

Type material. Holotype: male (SBPC). **UNITED STATES. California:** Del Norte Co., Jed Smith Redw. St. Pk., 10 km E Crescent City, N41°46' W124°05', mixed forest litter Ber., 40m, 30.V.03, S. Peck, 03-87. **Paratypes** (76). **UNITED STATES. California,** same data as holotype, 5 (SBPC); Del Norte Co., Jed Smith Redw. St. Pk., N41°48' W124°07', 4.Vi.2003, 65m, S. Peck, 03-92, redwood for. litter Ber., 1 (SBPC); Del Norte Co., Myrtle Ck. Botanical Res., 18kmNE Crescent City, N41°48' W124°03', 31.V.2003, 30m, S. Peck, 03-88, mixed for. litter, 9 (SBPC); Del Norte Co., Del Norte Redw. St. Pk., 10kmS Crescent City, N41°42' W124°08', 2.VI.2003, 300m, S. Peck, 03-91, redwood for. litter Ber., 2 (SBPC); Del Norte Co., nr. Fort Dick, 21.V.1957, redwood floor, 1 (SBPC); Del Norte Co., Crescent City, 19.IX.1978, T.R. Haig, Ber. redwood duff, 25 (CSCA); Del Norte Co., Jeddiah Smith State Pk., 25.XI.1981, F. W. Merickel, *Sequoia* leaf litter Ber., 25 (WFBM); Del Norte Co., 2miN Fort Dick, 21.XI.1953, V.D. Roth, 4 (EMEC); Del Norte Co., Fort Dick, 2.XII.1966, C.W. O'Brien, Ber. shore debris, 4 (FSCA).

Additional material examined. We examined an additional 137 specimens (see Appendix) for a total of 214 specimens.

Distribution. Specimens (Fig. 310) are known only from Del Norte and Humboldt counties, in northwestern California.

Diagnostic description. Total length 1.58–1.84 mm; total width 0.80–0.90 mm. Dark reddish brown; elongate-oval in shape (Fig. 36). **Head.** Finely punctate, shining, with reticulate microsculpture. Eyes absent. Antenna (Fig. 327) with antennomere 2 slightly longer than 3; antennomere 5 larger than 4 and 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Finely punctate, punctures separated by 2–4 diameters; with a few larger punctures bearing short setae; with reticulate microsculpture. Widest at posterior one-third; slightly narrower than elytra; sides weakly rounded, narrowing in apical two-thirds; apical margin weakly emarginate, basal margin nearly straight; anterior angles broadly rounded, basal angles weakly obtuse, narrowly rounded. **Elytra.** Moderately densely, coarsely punctate; punctures finer near apex; punctures joined by fine striae forming an imbricate pattern; subbasally with impressed transverse striae joining a row of punctures. Slightly wider than pronotum; sides about parallel in basal one-third, then narrowing to apex. **Legs.** Protibia (Fig. 328) narrow at base, broad apically in both sexes; 2 curved spines near apex of outer margin; apical one-half of inner margin with fine, dense spines. Mesotibia (Fig. 329) narrower than protibia in both sexes; with strong spines

on outer margin, apical two-fifths of inner margin, and apically. Metatibia (Fig. 330) slender, with swollen apex in male, unmodified in female; with slender spines in apical one-half, spinose apically. Metafemur (Fig. 330) slender. Male protarsomeres (Fig. 328) not or weakly expanded; protarsomere 1 as long as 2 and 3 combined; bearing elongate setae laterally and thin, broad, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 334) carinate; longitudinal carina with median tooth; broad and smooth anterior to tooth; excavated behind transverse carina; patches of dense, white setae lateral to longitudinal carina. **Male genitalia.** Median lobe of aedeagus (Figs. 331, 332) elongate, moderately slender, dorsoventrally curved, with elongate, narrow apex. Inverted internal sac (Fig. 332) with a small sclerotized structure and numerous short, broad spines. Parameres (Figs. 331, 332) slender, shorter than median lobe, each with two apical setae. **Spermatheca.** Elongate (Fig. 333), curved, tubular.

Etymology. The name *delnorte*, a noun in apposition, refers to the occurrence of this species in Del Norte Co., California.

***Pinodytes garibaldi* Peck & Cook, new species**

(Figs. 37, 310, 335–342)

Type material. Holotype: male (OSAC). **UNITED STATES. Oregon:** Garibaldi, 2 mi. N., duff, rotting wood, Mar. 15, 1955, V. Roth. **Paratypes (5).** **UNITED STATES. Oregon:** with same data as holotype, 3 (OSAC); with same data except ex moss, 2 (OSAC).

Material examined. We have examined 6 specimens.

Distribution. Specimens (Fig. 310) are known only from Tillamook County, in northwestern Washington.

Diagnostic description. Total length 2.48–2.80 mm; greatest width 1.04–1.24 mm. Reddish brown; elongate in shape (Fig. 37). **Head.** Finely punctate, punctures separated by 2–4 diameters; with faint reticulate and substriate microsculpture. Eyes absent. Antenna (Fig. 335) with antennomere 3 slightly larger than 2; antennomere 5 larger than 4 and 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Finely punctate, punctures separated by 2–5 diameters; a few large punctures subapically and subbasally; with reticulate microsculpture. Sides subparallel in basal one-half, narrowing apically; apical margin emarginate, basal margin straight; apical angles rounded, basal angles subrectangular. **Elytra.** Strial punctures moderately coarse; striae impressed in basal one-half; interstrial punctures smaller; punctures joined by fine transverse striae forming a weak imbricate pattern. Joined elytra slightly wider than pronotum; sides subparallel in basal one-half, narrowing apically. **Legs.** Protibia (Fig. 336) broad at apex in male, slightly narrower in female; two curved spines at apex of outer margin; apical one-half of inner margin with fine, dense spines. Mesotibia (Fig. 337) evenly widened from base to apex; with strong spines on outer margin and apically; fine spines on apical one-half of inner margin. Metatibia (Fig. 338) slender basally, widened in apical two-fifths; apical two-fifths spinose. Metafemur (Fig. 338) slender. Male protarsomeres (Fig. 336) weakly expanded; protarsomere 1 as long as 2–4 combined; bearing elongate setae laterally and two rows of thin, broad, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 342) carinate; longitudinal carina with a median tooth; depressed anterior to median tooth; excavation behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 339, 340) elongate, broad, dorsoventrally curved near middle; asymmetrically, sharply declivous before short, narrow apex. Inverted internal sac (Fig. 340) with three curved spines. Parameres (Figs. 339, 340) slender, about two-thirds length of median lobe; each paramere bearing one apical and one subapical seta. **Spermatheca.** Tubular (Fig. 341), angulate near middle.

Etymology. The name *garibaldi*, a noun in apposition, refers to the type locality of this species.

***Pinodytes haidagwii* Peck & Cook, new species**

(Figs. 38, 265B, 343–350)

Type material. Holotype: male (CNCI). **CANADA. British Columbia:** Queen Charlotte Is.: Kiusta, Graham Is., J.M. Campbell, 17.VIII.1983, 83-90, sifting squirrel midden. **Paratypes (5).** **CANADA. British Columbia:** same data as holotype, 1 (CNCI); Massett, Graham Is., III.46, Mrs. Clark, sifting moss, etc., 1 (MCZC); Queen Charlotte

Is., Graham Is., 1miNW Tlell, 9.VII.84, R.S. Anderson, Sitka spruce/hemlock forest, 1 (SBPC); Queen Charlotte Is., Lyall Is., Gate Ck., 10.VIII.1983, J.M. Campbell, 83-71, sifting alder litter, 1 (CNCI); Queen Charlotte Is., Moresby Is., Cumshewa, 14.VIII.1983, J.M. Campbell, 83-82, sifting squirrel midden beside totem pole, 1 (CNCI).

Material examined. We have examined 6 specimens.

Distribution. Specimens (Fig. 265B) are known only from Graham, Lyall, and Moresby Islands of the Haida Gwaii (formerly Queen Charlotte) Islands, British Columbia. The species is endemic to these islands, and its restriction to this island group argues that it survived Pleistocene glaciation on the islands. Therefore the islands (and their enlarged areas with lower sea levels) were not entirely ice covered, and they served as a glacial refugium. Other plants and animals are also known to occur only on these islands, and they are additional evidence for their being at least partly ice free and acting as a refugium (Scudder and Gessler 1989).

This is the only species that has been found in sympatry (co-occurrence) with another species of *Pinodytes* (*P. cryptophagoides*). We interpret the case to be one in which *P. haidagwaii* originated on the Haida Gwaii Islands, and *P. cryptophagoides* dispersed to the islands in a later, possibly postglacial, time. There are three collection events in which the two species were found together.

Diagnostic description. Total length 2.30–3.04 mm; greatest width 1.05–1.24 mm. Reddish brown; elongate in shape (Fig. 38). **Head.** Finely punctate, punctures separated by 2–5 diameters; with a mixture of reticulate and substriate microsculpture. Eyes absent. Antenna (Fig. 343) with antennomeres 2 and 3 subequal in length; antennomere 5 larger than 4 and 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Finely punctate, punctures separated by 2–4 diameters, with a few larger punctures, usually paired; with reticulate microsculpture. Sides weakly rounded, widest near middle; apical margin weakly emarginate, basal margin straight; apical angles rounded, basal angles weakly obtuse. **Elytra.** Strial punctures moderately coarse; striae irregularly impressed; interstitial punctures fine; imbricate microsculpture near base. Joined elytra slightly wider than pronotum; sides subparallel in basal one-half, narrowing apically. **Legs.** Protibia (Fig. 344) broad at apex in male; two curved spines at apex of outer margin; apical one-half of inner margin with fine, dense spines. Mesotibia (Fig. 345) weakly curved in male, with strong spines on outer margin and apically. Metatibia (Fig. 346) slender, widened apically. Metafemur (Fig. 346) slender. Male protarsomeres (Fig. 344) weakly expanded; protarsomere 1 as long as 2–4 combined; bearing elongate setae laterally and thin, broad, colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 350) carinate; longitudinal carina with a median tooth; depressed anterior to median tooth; excavation behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 347, 348) elongate, broad, evenly curved at basal one-third; sharply angulate before elongate, flattened apex. Inverted internal sac (Fig. 348) with a cluster of short, broad spines apically, elongate spines medially, and large spines basally. Parameres (Figs. 347, 348) slender, less than two-thirds length of median lobe; each paramere bearing one apical and one subapical seta. **Spermatheca.** Elongate (Fig. 349), tubular, sigmoid in shape.

Etymology. The name *haidagwaii*, a noun in apposition, refers to the distribution of this species on the Haida Gwaii Islands, British Columbia.

Pinodytes isabella Peck & Cook, new species

(Figs. 39, 351–359)

Type material. Holotype: male (WFBM). **UNITED STATES. Idaho:** Clearwater Co., Isabella Creek, V-29-1985, (B.F. cedar litter), F.W. Merickel. **Paratypes** (8): same data as holotype (WFBM).

Material examined. We have examined 9 specimens.

Distribution. Specimens (Fig. 359) are known only from Clearwater County, in northern Idaho.

Diagnostic description. Total length 1.62–1.74 mm; greatest width 0.74–0.86 mm. Reddish brown; elongate-oval in shape (Fig. 39). **Head.** Finely, sparsely punctate; shining; microsculpture reticulate to substriate. Eyes absent. Antenna (Fig. 351) with antennomere 2 larger than 3; antennomere 5 larger than 4 and 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Finely punctate, punctures separated by 3–5 diameters, occasional larger punctures near margins; shining, with reticulate microsculpture. Widest at about basal one-fourth; sides rounded; apical margin emarginate, basal margin nearly straight; apical angles narrowly rounded, basal angles nearly right-angled. **Elytra.** Punctures mainly larger than on pronotum,

irregularly arranged, finer apically; punctures joined transversely by fine striae. Joined elytra slightly wider than pronotum; widest in basal one-third, then narrowing to apex. **Legs.** Protibia (Fig. 352) widened apically; apex sparsely spinose; apical one-half of inner margin finely, densely spinose. Mesotibia (Fig. 353) straight, evenly widened to apex; strongly spinose apically and on outer margin. Metatibia (Fig. 354) weakly curved, expanded apically; spinose on apical one-half. Metafemur (Fig. 354) narrow. Male protarsomeres (Fig. 352) not expanded; protarsomere 1 about as long as 2 and 3 combined; with elongate setae laterally and a double row of thin, colorless, transverse phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 358) carinate; longitudinal carina shallowly emarginate, bearing a small sharp tooth; excavation behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Fig. 355, 356) strongly curved dorsoventrally beyond midpoint; broad and flattened before narrow apex. Inverted internal sac with a mass of broad, flattened setae. Parameres (Figs. 355, 356) slender, not reaching apex of median lobe; each bearing two apical setae. **Spermatheca.** Cylindrical (Fig. 357), curved.

Etymology. The name *isabella*, a noun in apposition, refers to the type locality of this species.

***Pinodytes orca* Peck & Cook, new species**

(Figs. 40, 359–367)

Type material. Holotype: male (SBPC). **UNITED STATES. Oregon:** Josephine Co., ORCA Nat. Mon., Oregon Cave, 4000–4200', 42.098N 123.406W, 28.I–27.II.1993, Ron Reed & J. Roth, (at entrance), #3 pitfall trap, cheese-baited, past connecting tunnel end, moist soil (at base of flowstone), dark zone. **Paratype** (1). **UNITED STATES. Oregon:** same data except 27.III–1.V.1993, male (SBPC).

Material examined. We have examined 2 specimens.

Distribution. Specimens (Fig. 359) are known only from Josephine County, in southwestern Oregon.

Diagnostic description. Total length 4.20 mm; greatest width 1.76 mm. Dark reddish brown; flattened and elongate in shape (Fig. 40). **Head.** Finely, sparsely punctate; vertex with reticulate microsculpture. Eyes absent. Antenna (Fig. 360) elongate; antennomere 2 shorter than 3; antennomere 5 larger than 4 and 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Punctures large, dense, separated by less than one to two diameters; microsculpture weak, reticulate. Widest at base; sides somewhat explanate, parallel in basal one-third, then narrowing to apex; apical margin emarginate, basal margin straight; apical angles rounded, basal angles nearly rectangular. **Elytra.** Punctures moderately large, irregularly spaced; surface weakly rugose, with punctures joined by curved transverse striae. Elytra explanate laterally; sides parallel in basal one-half, then narrowing to apex; each elytron with a sublateral punctate stria. **Legs.** Protibia (Fig. 361) widening to broad apex; dense fine spines on apical two-thirds of inner margin; outer margin with two or three short spines and two larger spines at apex. Mesotibia (Fig. 363) with basal three-fifths narrow, weakly sinuate; apical two-fifths broad with elongate fine spines laterally; outer margin and apex with strong spines. Metatibia (Fig. 364) elongate, narrow, straight; apical one-half and apex spinose. Metafemur (Fig. 364) slender. Male protarsomeres (Figs. 361, 362) dilated; protarsomere 1 about as long as 2–4 combined; with elongate setae laterally and two rows of thin, colorless, stalked, concave-faced phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 367) carinate; longitudinal carina irregularly serrate, setose, with excavation behind transverse carina.

Male genitalia. Median lobe of aedeagus (Figs. 365, 366) weakly sinuate in dorsal view, with rounded apex; in lateral view, strongly dorsoventrally curved at basal one-fourth, with flattened apex. Inverted internal sac (Fig. 366) with elongate, curved sclerite. Parameres (Figs. 365, 366) slender, not reaching apex of median lobe; each with two apical setae. Female unknown.

Notes. Although the species is known only from specimens taken in a cave, the species should not be considered to be a cave adapted species. It is instead a soil species which was taken in a cave, and we consider this to be a secondary habitat. The first author spent a week in May, 2003, trying to take additional material in the cave and in adjacent forests, without success.

Etymology. The name *orca* is derived from an acronym of the name of the type locality, Oregon Caves National Monument, Oregon.

Pinodytes setosus Peck & Cook, new species

(Figs. 41, 359, 368–375)

Type material. Holotype: male (FMNH). **UNITED STATES. Oregon:** Curry Co., 6.7 mi NE Brookings, 100', 4.VII.1975, berl. litter, mixed hdwd. riverbottom forest, A. Newton. **Paratypes** (20). **UNITED STATES. Oregon:** same data as holotype, 7 (FMNH); Curry Co., 20kmNE Brookings, N42°08.750' W124°09.256', 5.VI.2003, 60m, S. Peck, 03–94, mix. for. log litter Ber., 2 (SBPC); Curry Co., 4miN Pistol River, 23.V.1958, floor litter, 2 (FMNH); Curry Co., 5miN Gold Beach, 11.V.1955, J. Capizzi, Myrtle duff, 1 (OSAC); Curry Co., 7kmNW Brookings, N42°05.607' W124°20.061', 5.VI.2003, 50m, S. Peck, 03–93, mix. for. log litter Ber., 3 (SBPC); Curry Co., Gold Beach, 19.VIII.1961, W. Suter, 1 (FSCA); Curry Co., Myrtle Grove, Loeb St. Pk., 7miE Brookings, 22.V.1957, H.S. Dybas, 1 (SBPC); Curry Co., Whalehead Beach of S.H. Boardman St. Pk., 7miN, 3miE Brookings, 12.II.1972, sea level, E.M. Benedict, EB-404, 2 (SBPC); **California:** Del Norte Co., Smith R. cutoff, 13.X.1954, V.D. Roth, 1 (EMEC).

Material examined. We have examined 21 specimens.

Distribution. Specimens (Fig. 359) are known from Del Norte County, northwestern California, and Curry County, southwestern Oregon.

Diagnostic description. Total length 1.54–1.96 mm; greatest width 0.68–0.86 mm. Dark reddish brown; elongate in shape (Fig. 41). **Head.** Finely, sparsely punctate, shining, with reticulate microsculpture. Eyes absent. Antenna (Fig. 368) with antennomere 2 slightly longer than 3; antennomere 5 larger than 4 and 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Punctures slightly larger than on head, separated by 2–5 diameters; a few scattered large punctures; shining, with reticulate microsculpture. Widest at basal one-third; slightly narrower than elytra; sides weakly rounded, converging in apical two-thirds; apical margin emarginate, basal margin nearly straight; anterior angles broadly rounded, posterior angles weakly obtuse, narrowly rounded. **Elytra.** Punctuation fine to coarse, confused; punctures joined by transverse striae; sub-basally with an impressed transverse striae connecting a row of punctures. Slightly wider than pronotum; sides parallel in basal one-third, then converging to apex. **Legs.** Protibia (Fig. 369) narrow at base, broad at apex in both sexes; two curved spines near apex of outer margin; apical one-half of inner margin with fine, dense spines. Mesotibia (Fig. 370) in both sexes narrower than protibia; with strong spines on outer margin, apical one-half of inner margin and apically. Metatibia (Fig. 371) in both sexes slender in basal one-half, slightly swollen apically; apex with strong spines. Metafemur (Fig. 371) moderately slender in both sexes. Male protarsomeres (Fig. 369) weakly expanded; protarsomere 1 as long as 2 and 3 combined; bearing elongate setae laterally and a double row of overlapping thin colorless phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 375) carinate; longitudinal carina with median tooth; excavation behind transverse carina; with patches of dense white setae lateral to longitudinal carina. **Male genitalia.** Median lobe of aedeagus (Figs. 372, 373) elongate, broad, apex broadly rounded and dorsoventrally flattened. Inverted internal sac (Fig. 373) with several sclerites. Parameres (Figs. 372, 373) slender; not reaching apex of median lobe; each bearing two apical setae. **Spermatheca.** Tubular (Fig. 374), angulate near middle.

Etymology. The name *setosus*, Latin, setose, refers to the characteristic patches of dense white setae on the mesoventrite of this species.

Pinodytes shoshone Peck & Cook, new species

(Figs. 42, 359, 376–383)

Type material. Holotype: male (WFBM). **UNITED STATES. Idaho:** Shoshone Co.: Hobo Cedar Grove, P.F., VIII-23/X-18-1985, F.W. Merickel. **Paratypes** (11): Same locality as holotype, 5.VI.1982, F.W. Merickel, cedar leaf litter Ber., 5 (WFBM); Latah Co.: 10miNE Harvard, 29.X.1985, F.W. Merickel, B.F., 6 (WFBM).

Material examined. We have examined 12 specimens.

Distribution. Specimens (Fig. 359) are known only from Latah and Shoshone counties, northern Idaho.

Diagnostic description. Total length 2.18–2.36 mm.; greatest width 0.98–1.08 mm. Reddish brown; elongate-oval in shape (Fig. 42). **Head.** Finely, sparsely punctate, shining, with substriate microsculpture. Antenna (Fig. 376) with antennomere 2 slightly longer than 3; antennomere 5 slightly larger than 4 and 6; antennomere 7 clearly

larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** With fine punctures separated by 2–4 diameters and a few scattered larger punctures, shining, with reticulate microsculpture. Widest near base; sides nearly parallel in basal one-half, weakly converging in apical one-half; apical margin emarginate, basal margin nearly straight; apical angles rounded, basal angles nearly right-angled. **Elytra.** Punctures larger than on pronotum, in sublinear rows in basal one-half, smaller and more irregular apically; punctures joined transversely by fine striae. Slightly wider than pronotum, widest at about basal one-third, sides roundly converging to apex. **Legs.** Protibia (Fig. 377) widened apically; apex spinose; apical one-half of outer margin with a few spines, apical one-half of inner margin finely spinose. Mesotibia (Fig. 378) narrow, nearly straight; apex, outer margin and apical one-half of inner margin strongly spinose. Metatibia (Fig. 379) elongate, narrow, straight; apex spinose, apical one-half with scattered small spines. Metafemur (Fig. 379) elongate, narrow. Male protarsomeres (Fig. 377) not expanded; protarsomere 1 about as long as 2 and 3 combined; with elongate setae laterally and a double row of thin, colorless, transverse phanerae ventrally. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 383) carinate; longitudinal carina shallowly emarginate; large excavation behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 380, 381) elongate, broad, flattened before apex; strongly dorsoventrally curved near middle; apex triangular, rounded. Everted internal sac (Fig. 380) with broad, flattened spines of various sizes. Parameres (Figs. 380, 381) slender, apices weakly expanded; not reaching apex of median lobe; each bearing two apical setae. **Spermatheca.** Elongate (Fig. 382), cylindrical, strongly curved before duct.

Etymology. The name *shoshone*, a noun in apposition, refers to the occurrence of this species in Shoshone Co., Idaho.

Pinodytes sinuatus Peck & Cook, new species

(Figs. 43, 359, 384–391)

Type material. Holotype: male (SBPC). **UNITED STATES. Oregon:** Jackson Co.: Soda Mt. Rd., 7miS 13miE Ashland, 4900', 15.X.72, big leaf maple duff and rotted wood, E.M. Benedict, EB-958. **Paratypes** (13). **UNITED STATES. Oregon:** same data as holotype except: big leaf maple duff, EB-957, 3 (SBPC); Jackson Co.: Soda Mt Rd, 8miS 13miE Ashland, 5400', 15.X.72, white fir duff, E.M. Benedict, EB-942, 1 (SBPC); same data except: oak duff litter, EB-949, 5 (SBPC); same data except: ponderosa pine duff, EB-952, 3 (SBPC); same data except: white oak duff, EB-953, 1 (SBPC).

Material examined. We have examined 14 specimens.

Distribution. Specimens (Fig. 359) are known only from Jackson County, in southwestern Oregon.

Diagnostic description. Total length 1.92–2.44 mm; greatest width 0.84–0.92 mm. Reddish brown; elongate in shape (Fig. 43). **Head.** Moderately finely, irregularly punctate; with a mixture of reticulate and substriate microsculpture. Eyes absent. Antenna (Fig. 384) with antennomeres 2 and 3 subequal in length; antennomere 5 larger than 4, longer than 6; antennomere 7 clearly larger than 8; antennomeres 9 and 10 lack visible sensory vesicles. **Pronotum.** Moderately finely punctate; punctures separated by 2–3 diameters; disc with three pairs of larger punctures, positioned subapically, posteromedially and subbasally; with reticulate microsculpture. Slightly wider near middle than at base, narrowing apically; apical margin emarginate, basal margin straight; apical angles rounded, basal angles weakly obtuse. **Elytra.** Moderately coarse, irregular striae punctures; interstriae punctures fine; punctures joined by fine transverse striae. Slightly wider than pronotum; sides subparallel in basal one-half, narrowing to apex. **Legs.** Male protibia (Fig. 385) evenly widened from narrow base to broad apex; apex narrower in female; two curved spines at apex of outer margin; apical one-half of inner margin with fine, dense spines. Mesotibia (Fig. 386) in male with basal two-thirds narrow, sinuate; apical one-third strongly widened; unmodified in female; strong spines on outer margin in both sexes. Metatibia (Fig. 387) elongate, narrow, nearly straight in both sexes. Metafemur (Fig. 387) slender. Male protarsomeres 1–3 (Fig. 385) weakly widened, bearing elongate setae laterally and multiple broad, thin, colorless phanerae ventrally; protarsomere 1 longer than 2 and 3 combined. Mesotarsomeres without phanerae. **Venter.** Mesoventrite (Fig. 391) carinate; longitudinal carina with a small median tooth; excavation behind transverse carina. **Male genitalia.** Median lobe of aedeagus (Figs. 388, 389) cylindrical, sinuate laterally and dorsoventrally; with broad, flattened apex. Inverted internal sac (Fig. 389) with a large curved sclerite and two small sclerites. Parameres (Figs. 388, 389) narrow, reaching constriction at base of flattened apex of median lobe; each bearing one apical and one slightly subapical seta. **Spermatheca,** Tubular (Fig. 390), curved.

Etymology. The name *sinuatus*, Latin, sinuate, refers to the shape of the median lobe of the aedeagus of this species.

Acknowledgements

The many field collectors who laboured to collect specimens are gratefully thanked, especially E.M. Benedict, D.S. Chandler, M. Caterino, and A.F. Newton. Field and laboratory research was partially supported by Discovery Grants from the Natural Sciences and Engineering Research Council of Canada. V. Grebennikov, M. Caterino, and three anonymous reviewers constructively commented on the manuscript.

References

- Allen, R.T. 1983. Distribution patterns among arthropods of the north temperate deciduous forest biota. *Annals of the Missouri Botanical Garden*, 70, 616–628.
- Arnett, R.H., Jr., Samuelson, G.A. and Nishida, G.M. 1997. *The insect and spider collections of the world*. Second edition. Flora & Fauna Handbook No. 11. CRC Press. Boca Raton, FL, 310 pp.
- Austin, E.P. 1880. *Supplement to the check-list of the Coleoptera of America, north of Mexico*. Cassino, Boston, 67 pp.
- Axelrod, D. I. 1976. *History of the coniferous forests, California and Nevada*. University of California Publications in Botany. Vol. 70. University of California Press. Berkeley, CA.
- Axelrod, D.I. and Raven, P.H. 1985. Origins of the Cordilleran flora. *Journal of Biogeography*, 12, 21–47.
- Banks, H.P. 1970. *Evolution and plants of the past*. Wadsworth, Inc., Belmont California.
- Barghoorn, E.S. 1951. Age and environment: a survey of North American Tertiary floras in relation to paleoecology. *Journal of Paleontology*, 25, 736–744.
- Beutel, R.G. and Leschen, R.A.B. 2005. Phylogenetic analysis of Staphyliniformia (Coleoptera) based on characters of larvae and adults. *Systematic Entomology*, 30, 510–548.
- Blatchley, W. S. 1910. An illustrated descriptive catalogue of the Coleoptera or beetles (exclusive of the Rhynchophora) known to occur in Indiana. Nature Publishing Co., Indianapolis. 1386 pp.
- Bousquet, Y. 1997. Taxonomic status of some species of Carabidae described by V.I. Motschulsky from North America (Coleoptera). *Coleopterists Bulletin*, 51, 329–342.
- Brown, W.J. 1933. Two undescribed species of the old family Silphidae with notes on some characters that have been used to divide the group. *The Canadian Entomologist*, 65, 213–215.
- Caldwell, W.G.E. and Kauffman, E.G. (Eds.). 1993. *Evolution of the Western Interior Basin*. Geological Association of Canada Special Paper 39, 680 pp.
- Campbell, J.M. and Peck, S.B. 1990. *Omalonomus relictus*, an unusual new genus and new species (Coleoptera: Staphylinidae, Omaliinae) of blind rove beetle; a pre-glacial (Tertiary?) relict in the Cypress Hills, Alberta-Saskatchewan, Canada. *The Canadian Entomologist*, 122, 949–961.
- Carlton, C.E. 1990. Biogeographic affinities of pselaphid beetles of the eastern United States. *Florida Entomologist*, 73, 570–579.
- Chaney, R.W. 1947. Tertiary centers and migration routes. *Ecological Monographs* 17: 140–148.
- Clark, T.H. and Stearn, C.W. 1968. *Geological Evolution of North America*. Second edition. Ronald Press Co., New York, 570 pp.
- Coleman, R. G. and Kruckeberg, A. R. 1999. Geology and plant life of the Klamath-Siskiyou Mountain region. *Natural Areas Journal*, 19, 320–340.
- Condie, K.C. and Sloan, R. E. 1998. *Origin and evolution of earth; principles of historical geology*. Prentice Hall Co., Upper Saddle River, NJ, 498 pp.
- Crowson, R.A. 1981. *The biology of the Coleoptera*. Academic Press, Harcourt Brace Jovanovich, New York, 802 pp.
- Dorf, E. 1970. Botanical evidence of Mesozoic and Cenozoic climatic changes. In: *Proceedings North American Paleontological Convention, Field Museum of Natural History, Chicago, September 5–7, 1969*. Allen Press, Lawrence, KS, pp. 323–346.
- Dow, R.P. 1914. The Russian masters in Coleoptera. *Bulletin of the Brooklyn Entomological Society*, IX, 96–101.
- Fogel, R. 1976. Ecological studies of hypogeous fungi. II. Sporocarp phenology in a western Oregon Douglas fir stand. *Canadian Journal of Botany*, 54, 1152–1162.
- Fogel, R. and Peck, S.B. 1975. Ecological studies of hypogeous fungi. I. Coleoptera associated with sporocarps. *Mycologia*, 67, 741–747.
- Hamilton, J. 1894. Catalogue of the Coleoptera of Alaska, with their synonymy and distribution. *Transactions of the American Entomological Society*, 21, 1–38.

- Hatch, M.H. 1927. Studies on the carrion beetles of Minnesota, including new species. *Agricultural Experiment Station Technical Bulletin*, 48, 3–19.
- Hatch, M.H. 1928. Silphidae II. Pars. 95. In W. Junk and S. Schenkling: *Coleopterorum Catalogus*. Junk, Berlin, 7, 63–244.
- Hatch, M.H. 1935. Two remarkable blind beetles from northeastern Oregon. *The Pan-Pacific Entomologist*, 11, 115–118.
- Hatch, M.H. 1957. *The beetles of the Pacific Northwest. Part II, Staphyliniformia*. University of Washington Publications in Biology, vol. 16. University of Washington Press, Seattle, 384 pp.
- Heusser, C.J. 1960. *Late-Pleistocene environments of North Pacific North America*. American Geographical Society Special Publication 35, 308 pp.
- Horn, G.H. 1880. Synopsis of the Silphidae of the United States with reference to the genera of other countries. *Transactions of the American Entomological Society*, 8, 219–322.
- Horn, G.H. 1892. Random studies in North American Coleoptera. *Transactions of the American Entomological Society*, 19, 40–48.
- Hunt, C. B. 1974. *Natural Regions of the United States and Canada*. W. H. Freeman and Company, San Francisco, CA, 725 pp.
- ICZN. 1985. *International Code of Zoological Nomenclature*. Third Edition, adopted by the XX General Assembly of the International Union of Biological Sciences. International Trust for Zoological Nomenclature, London. xx + 338 pp.
- Karlstrom, T.N.V and Ball, G.E. (Eds.). 1969. *The Kodiak Island refugium: Its geology, flora, fauna, and history*. The Boreal Institute, University of Alberta and Ryerson Press, University of Toronto, Toronto, Ontario.
- Keen, J.H. 1895. List of Coleoptera collected at Masset, Queen Charlotte Islands, B.C. *The Canadian Entomologist*, 27, 165–172, 217–220.
- King, P.B. 1977. *The evolution of North America*. Revised edition. Princeton University Press, Princeton, NJ, 197 pp.
- Lafer, G.S. 1989. Fams. Catopidae, Leioididae. In: Ler, P. A. (Ed.), *Keys to the insects of the Far Eastern USSR in six volumes. Vol. 3, Coleoptera or beetles, Part I* [In Russian]. Nauka, Leningrad, pp. 310–329.
- Leng, C.W. 1920. *Catalog of the Coleoptera of America, North of Mexico*. J.D. Sherman, Jr., Mount Vernon, NY, 470 pp.
- Li, H. 1952. Floristic relationships between eastern Asia and eastern North America. *Transactions American Philosophical Society*, 42, 378–429.
- Mannerheim, C.G. 1852. Zweitter nachtrag zur Käfer-Fauna der Nord-Amerikanischen Laender des Russischen Reiches. *Bulletin de la Société Impériale des Naturalistes de Moscou*, 25, 283–387.
- Matthews, J.V., Jr. 1980. Tertiary land bridges and their climate: background for development of the present Canadian insect fauna. *The Canadian Entomologist*, 112, 1089–1103.
- McCabe, T.T. and Cowan, I. McT. 1945. *Peromyscus maniculatus macrorhinus* and the problem of insularity. *Transactions of the Royal Canadian Institute*, 25, 117–215.
- Motschulsky, V. 1856. *Voyages. Lettres de M. de Motschulsky à M. Ménétriés*. Etudes Entomologiques. Imprimerie de la Société de Littérature Finnoise, Helsingfors. pp. 3–20.
- Motschulsky, V. 1870 (1869). Enumeration des nouvelles espèces de Coléoptères rapportés de ses voyages, VIII. *Bulletin de la Société Impériale des Naturalistes de Moscou*, 42, 348–410.
- Neave, S. A. 1939-40. *Nomenclator Zoologicus*. A list of the names of genera and subgenera in Zoology from the Tenth Edition of Linnaeus 1758 to the end of 1935. Vols. 1–4 and supplement. Zoological Society of London, London, Xiv + 957 + 1025 + 1065 + 758 pp.
- Newton, A.F., Jr. 1984. Mycophagy in Staphylinioidea (Coleoptera). In Q. Wheeler and M. Blackwell (Eds.). *Fungus-Insect Relationships; Perspectives in Ecology and Evolution*. Columbia University Press, New York, pp. 302–353.
- Newton, A. F. 1985. South temperate Staphylinioidea (Coleoptera): their potential for biogeographic analysis of austral disjunctions. In: Ball, G.E. (Ed.), *Taxonomy, Phylogeny, and Zoogeography of beetles and ants*. W. Junk, Dordrecht, pp. 180–220.
- Newton, A. F. 1991. Agrytidae through Silphidae and Pselaphidae (Staphylinioidea), Sphaeritidae through Histeridae (Hydrophiloidea). In: Stehr, F. F. (Ed.). *Immature Insects. Vol. 2*. Kendall/Hunt Publishing Co., Dubuque, Iowa, pp. 324–341, 353–355; 359–364.
- Newton, A. F., Jr. 1998. Phylogenetic problems, current classification, and generic catalog of world Leioididae (including Cholevidae). In: P. M. Giachino and S. B. Peck (Eds.) *Phylogeny and evolution of subterranean and endogean Cholevidae (=Leioididae Cholevinae)*, *Proceedings of a symposium of the XX International Congress of Entomology, Florence, Italy, 30 August 1996*. Atti, Museo Regionale di Scienza Naturale, Torino, Italy, pp. 41–178.
- Newton, A. F., 2005. 11.4 Leioididae Fleming, 1821.. In: Beutel, R. G., and Leschen, R.A.B. (Eds.), *Handbook of Zoology, Volume IV Arthropoda: Insecta, part 38. Coleoptera, Beetles. Volume 1: Morphology and Systematics* (Archostemata, Adephaga, Myxophaga, Polyphaga partim. De Gruyter, Berlin, pp. 269–280.
- Nixon, K.C. 1999. *Winclada (BETA) ver. 0.9.9*. Published by the author, Ithaca, New York.
- Noonan, G.R. 1986. Distribution of insects in the Northern Hemisphere: continental drift and epicontinental seas. *Bulletin of the Entomological Society of America*, 32, 80–84.
- Page, R.D.M. 1996. TREEVIEW: An application to display phylogenetic trees on personal computers. *Computer Applications in the Biosciences*, 12, 357–358.
- Peck, S.B. 1974. Biology of the Idaho lava beetle, *Glacicavicola*. *National Speleological Society Bulletin*, 36, 1–3.
- Peck, S.B. 1975 (1974). The eyeless *Catopocerus* beetles (Leioididae) of eastern North America. *Psyche*, 81, 377–397.
- Peck, S.B. 1982 (1981). The Idaho cave beetle *Glacicavicola* also occurs in Wyoming. *The Coleopterists Bulletin*, 35, 451–452.
- Peck, S. B. 1990. Eyeless arthropods of the Galapagos Islands, Ecuador: composition and origin of the cryptozoic fauna of a

- young, tropical, oceanic archipelago. *Biotropica*, 22, 366–381.
- Perkovsky, E.E. 1989. *Catopocerus kovalevi* sp. n.: First Palearctic representative of the tribe Catopocerini (Coleoptera, Leiodidae). *Vestnik Zoologii*, 1989 (2), 85–86. [in Russian].
- Perkovsky, E.E. 1999. New genus and species of late Jurassic Leiodinae (Coleoptera, Leiodidae) from Mongolia. *Vestnik Zoologii*, 33 (4-5), 77–79. [in Russian, English summary].
- Perkovsky, E.E. 2002. *Agirtidno-kolonidnaya gruppa semeystv staphilinoidov (Coleoptera: Agyrtidae, Leiodidae, Colonidae) mirovoy fauna: sistematika i filogeniya*. Avtoreferat dissertatsii na soiskanie uchenoy stepeni doktora biologicheskikh nauk. Moskva, 44 pp.
- Perreau, M. and Růžička, J. 2007. Systematic position of *Perkovskius* Lafer 1989 (Coleoptera: Leiodidae: Catopocerinae), with description of a second species from the Far East of Russia. *Annales de la Société entomologique de France (n.s.)*, 43, 257–264.
- Portevin, G. 1922. Notes sur les Silphides. *Miscellanea Entomologica*, 26, 1–4.
- Savage, J. M. 1960. Evolution of a peninsular herpetofauna. *Systematic Zoology*, 9, 184–212.
- Scudder, G.G.E. and Gessler, N. (Eds.). 1989. *The outer shores, based on the proceedings of the Queen Charlotte Islands First International Scientific Symposium, University of British Columbia, August 1984*. Queen Charlotte Islands Museum Press, Skidgate, BC.
- Silferberg, H. 1987. Lists of the insect types in the Zoological Museum, University of Helsinki. 5. Coleoptera: Staphylinoidea I. *Acta Entomologica Fennica*, 48, 47–52.
- Smetana, A. 1986. *Chionotyphylus alaskensis* n.g., n.sp., a Tertiary relict from unglaciated interior Alaska (Coleoptera, Staphylinidae). *Nouvelle Revue d'Entomologie (n.s.)*, 3, 171–187.
- Swofford, D.L. 2003. *PAUP*. Phylogenetic Analysis Using Parsimony (*and Other Methods). Version 4*. Sinauer Associates, Sunderland, Massachusetts.
- Thornbury, W.D. 1965. *Regional geomorphology of the United States*. John Wiley & Sons, New York, 607 pp.
- Thorne, R.F. 1972. Major disjunctions in the geographic ranges of seed plants. *Quarterly Review of Biology*, 47, 365–411.
- Warner, B.G., Matthewes, R.W. and Clague, J.J. 1982. Ice-free conditions on the Queen Charlotte Islands, British Columbia, at the height of late Wisconsin glaciation. *Science*, 218, 675–677.
- Welsh, H.H., Jr. 1990. Relictual amphibians and old-growth forests. *Conservation Biology*, 4, 309–319.
- Wheeler, Q.D., and Platnick, N.L. 2000. The phylogenetic species concept. In: Q. D. Wheeler and R. Meier (Eds). *Species concepts and phylogenetic theory*. Columbia University Press; New York, NY, pp. 55–69.
- Whittaker, R.H. 1960. Vegetation of the Siskiyou Mountains. *Ecological Monographs*, 30, 279–338.
- Whittaker, R.H. 1961. Vegetation history of the Pacific Coast States and the “central” significance of the Klamath region. *Madroño*, 16, 5–23.
- Wolf, J.A. 1978. A paleobotanical interpretation of Tertiary climates in the Northern Hemisphere. *American Scientist*, 66, 694–703.
- Westcott, R.L. 1968. A new subfamily of blind beetle from Idaho ice caves with notes on its bionomics and evolution (Coleoptera: Leiodidae). *Los Angeles County Museum Contributions to Science*, 141, 1–14.

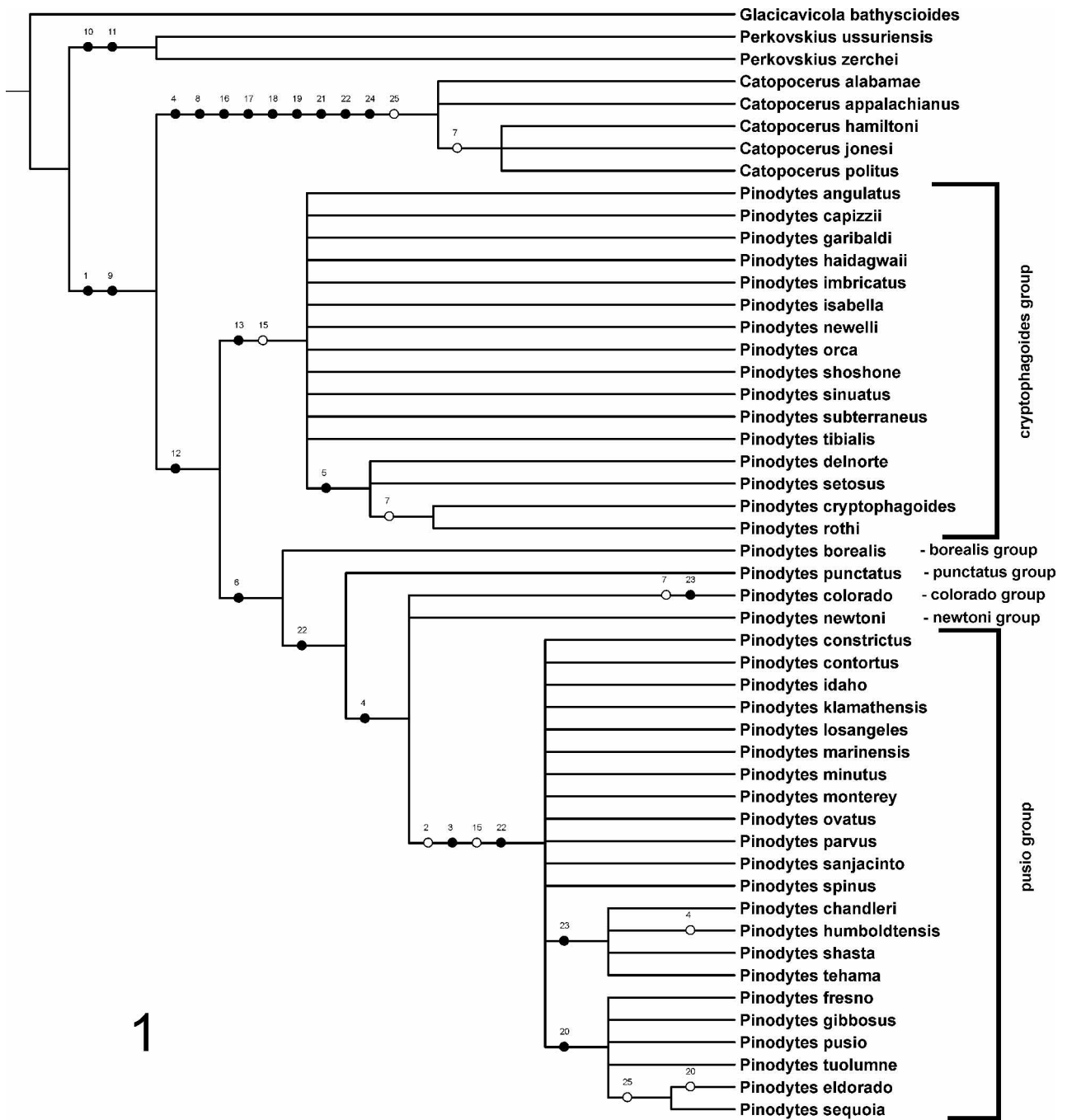


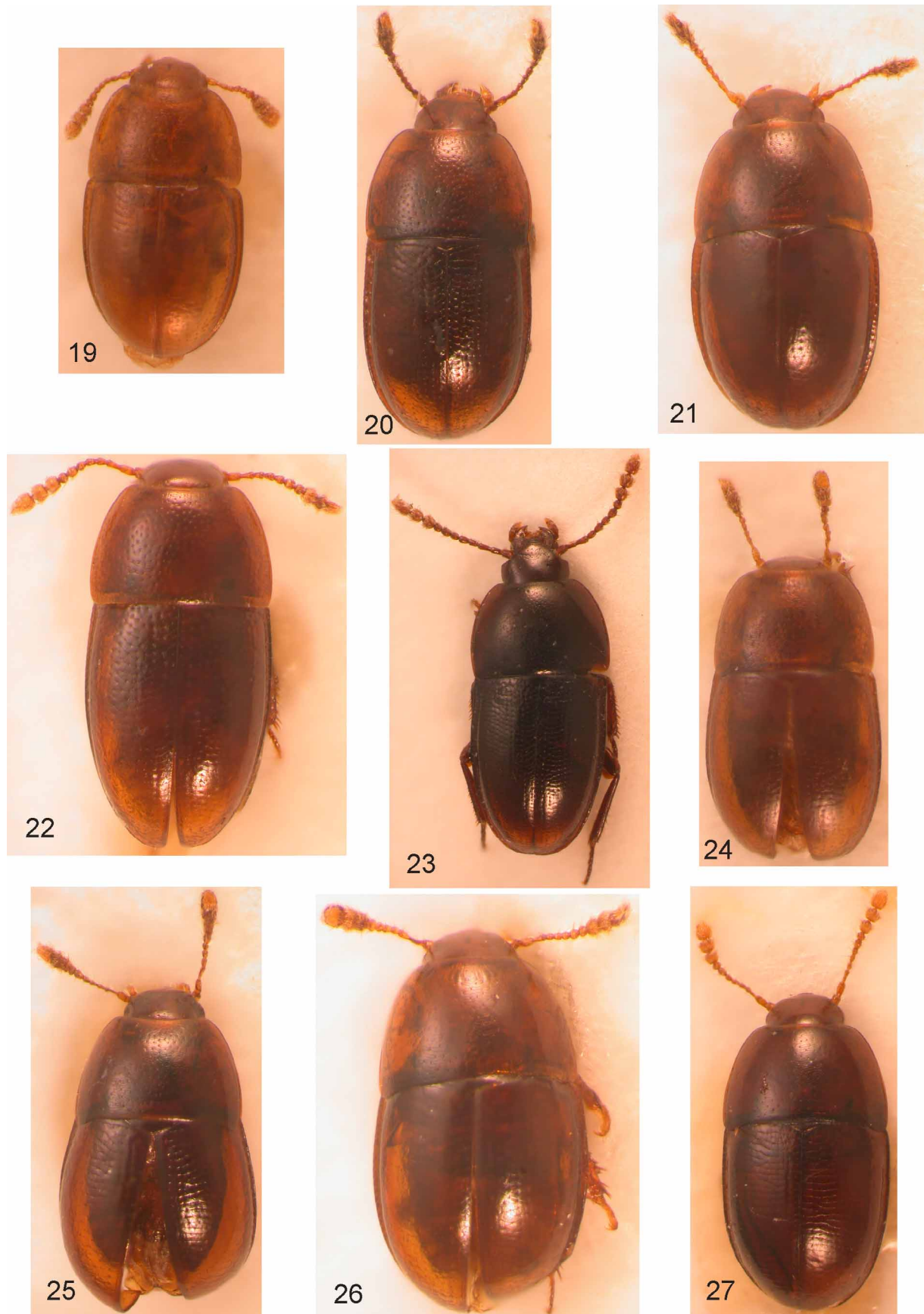
FIGURE 1. Cladogram of relationships of the Nearctic and Palaeartic Catopocerini species. Outgroup is *Glacicavicola bathyscioides*. This is one of 40 equally parsimonious trees derived from a heuristic search using unordered character states and with all characters of equal weight. Character numbers are shown on the branches; black circles indicate nonhomoplasious changes and white circles show homoplasies. Tree length = 38; consistency index = 76; retention index = 95.



FIGURES 2–10. *Pinodytes* habitus photos. 2. *P. newtoni*, total length 1.38 mm. 3. *P. borealis*, total length 2.10 mm. 4. *P. punctatus*, total length 1.36 mm. 5. *P. colorado*, total length 1.66 mm. 6. *P. pusio*, total length 1.54 mm. 7. *P. ovatus*, total length 1.34 mm. 8. *P. chandleri*, total length 1.54 mm. 9. *P. constrictus*, total length 1.48 mm. 10. *P. contortus*, total length 1.16 mm.



FIGURES 11–18. *Pinodytes* habitus photos. 11. *P. eldorado*, total length 1.28 mm. 12. *P. fresno*, total length 1.54 mm. 13. *P. gibbosus*, total length 1.68 mm. 14. *P. humboldtensis*, total length 1.46 mm. 15. *P. idaho*, total length 1.28 mm. 16. *P. klamathensis*, total length 1.34 mm. 17. *P. losangeles*, total length 2.10 mm. 18. *P. marinensis*, total length 1.04 mm.



FIGURES 19–27. *Pinodytes* habitus photos. 19. *P. minutus*, total length 1.08 mm. 20. *P. monterey*, total length 1.52 mm. 21. *P. parvus*, total length 1.22 mm. 22. *P. sanjacinto*, total length 1.60 mm. 23. *P. sequoia*, total length 2.92 mm. 24. *P. shasta*, total length 1.14 mm. 25. *P. spinus*, total length 1.32 mm. 26. *P. tehama*, total length 1.16 mm. 27. *P. tuolumne*, total length 1.64 mm.



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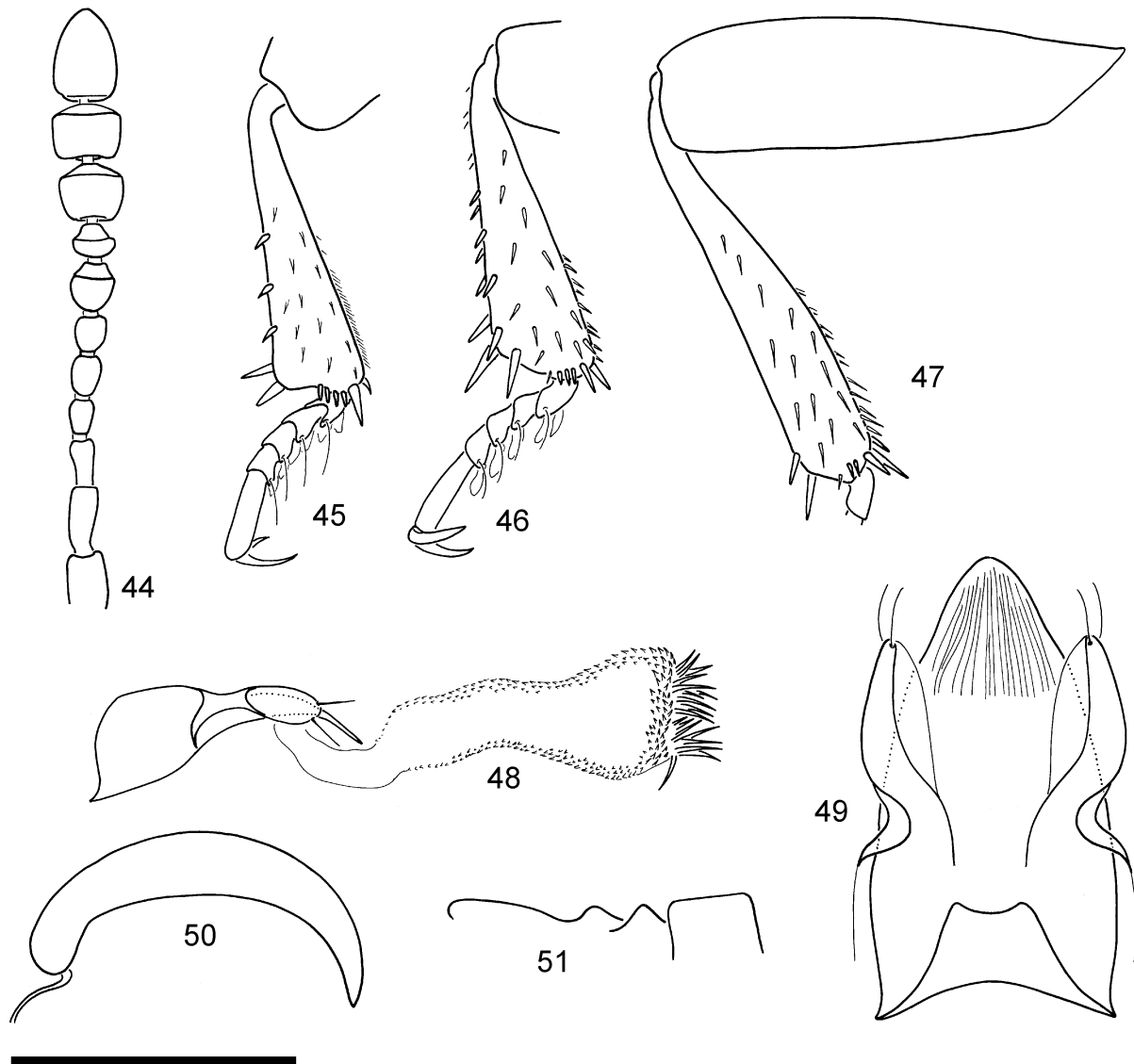


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FIGURES 28–36. *Pinodytes* habitus photos. 28. *P. cryptophagoides*, total length 1.88 mm. 29. *P. subterraneus*, total length 3.48 mm. 30. *P. imbricatus*, total length 3.20 mm. 31. *P. newelli*, total length 2.30 mm. 32. *P. capizzii*, total length 1.64 mm. 33. *P. rothi*, total length 1.58 mm. 34. *P. tibialis*, total length 1.60 mm. 35. *P. angulatus*, total length 1.86 mm. 36. *P. delnorte*, total length 1.72 mm.



FIGURES 37–43. *Pinodytes habitus* photos. 37. *P. garibaldi*, total length 2.80 mm. 38. *P. haidagwii*, total length 3.04 mm. 39. *P. isabella*, total length 2.18 mm. 40. *P. orca*, total length 4.20 mm. 41. *P. setosus*, total length 1.96 mm. 42. *P. shoshone*, total length 2.18 mm. 43. *P. sinuatus*, total length 2.28 mm.



FIGURES 44–51. *Pinodytes newtoni*. 44. Male right antenna, dorsal. 45. Male right protibia and protarsus. 46. Male right mesotibia and mesotarsus. 47. Male right metafemur and metatibia. 48. Aedeagus, lateral. 49. Aedeagus, dorsal. 50. Spermatheca. 51. Mesoventrite, lateral. Scale bar = 0.15 mm (Fig. 50), 0.2 mm (Fig. 49), 0.3 mm (Figs. 45–48, 51), 0.4 mm (Fig. 44).

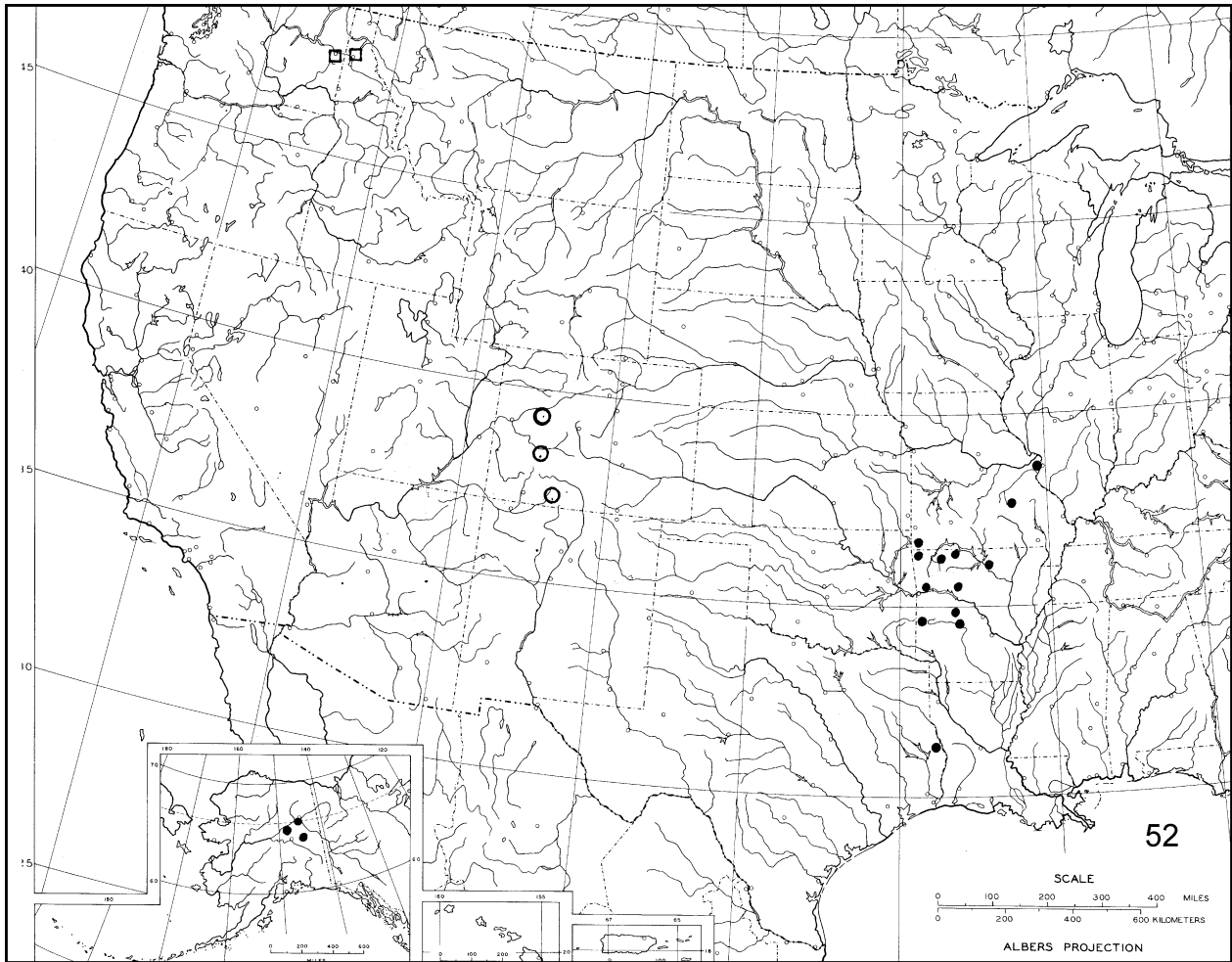
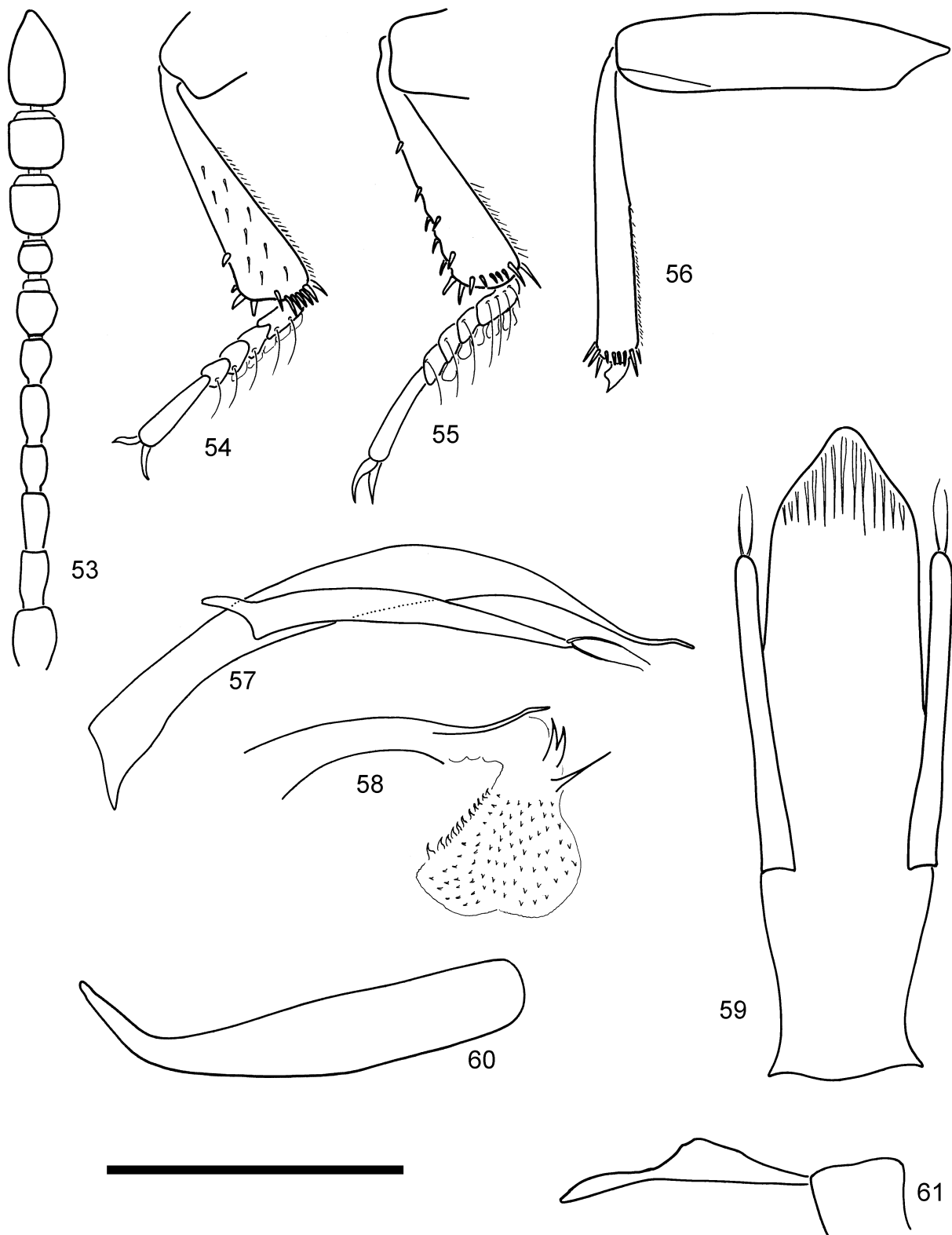
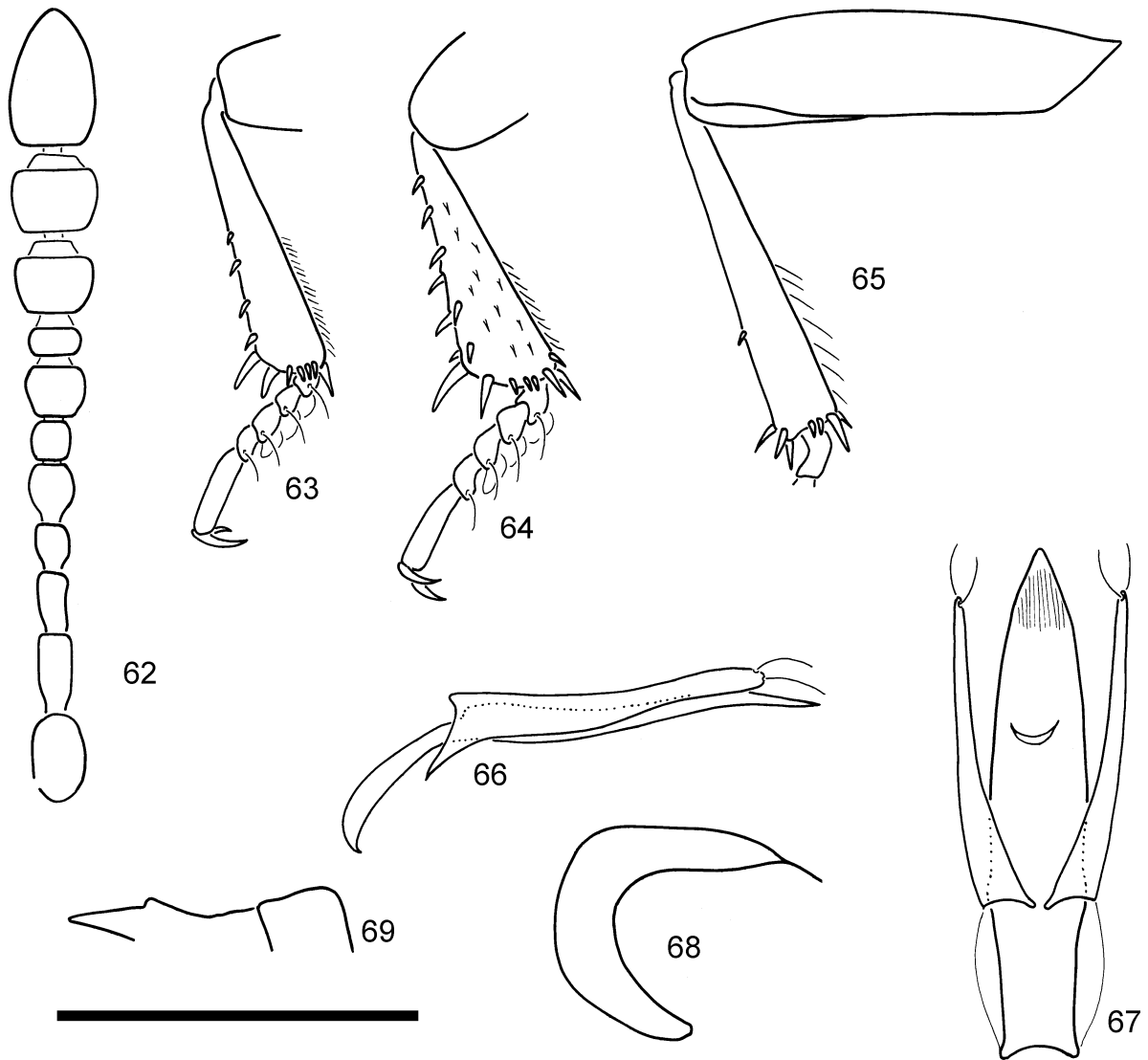


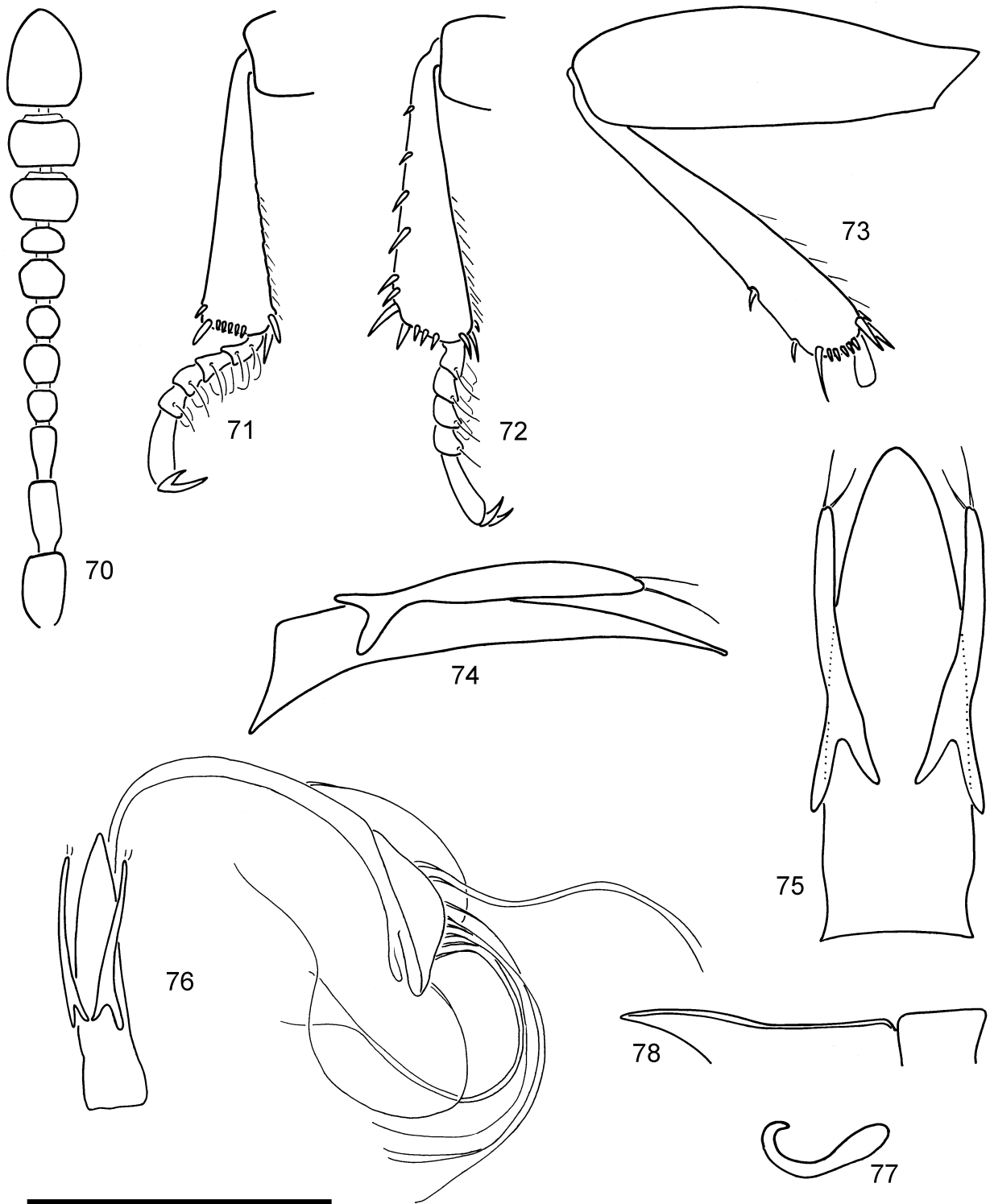
FIGURE 52. Distributions of basal and monobasic species groups of *Pinodytes* in western United States. *P. newtoni*, closed circles in Missouri, Arkansas, and Texas. *P. borealis*, closed circles in inset map of Alaska. *P. punctatus*, open squares in eastern Washington and northern Idaho. *P. colorado*, open circles in western Colorado. Note: in this and all following maps, small open circles represent major cities.



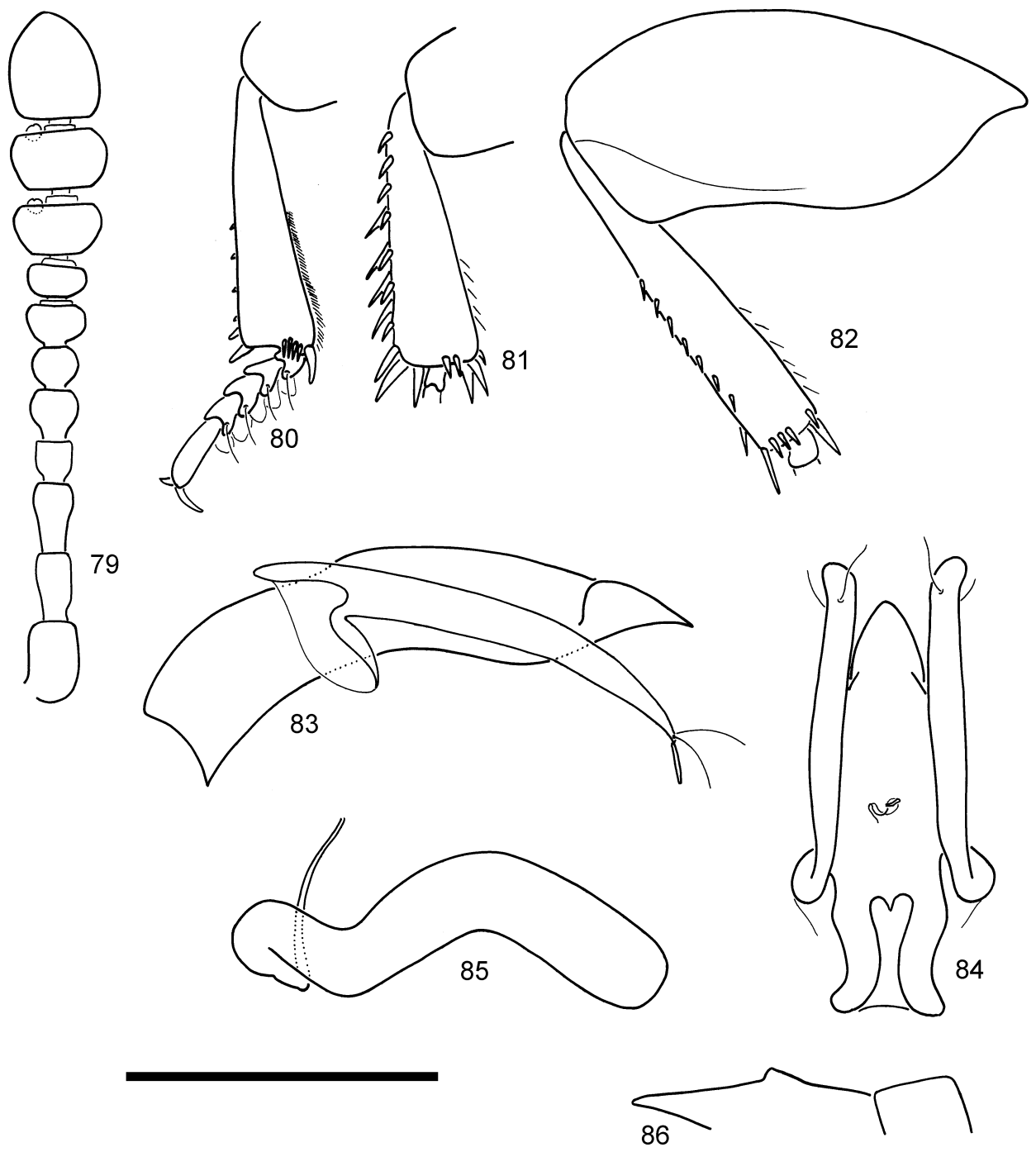
FIGURES 53–61. *Pinodytes borealis*. 53. Male right antenna, dorsal. 54. Male right protibia and protarsus. 55. Male right mesotibia and mesotarsus. 56. Male right metafemur and metatibia. 57. Aedeagus, lateral. 58. Everted internal sac, lateral. 59. Aedeagus, dorsal. 60. Spermatheca. 61. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 60), 0.25 mm (Fig. 61), 0.3 mm (Figs. 57–59), 0.4 mm (Figs. 53–55), 0.5 mm (Fig. 56).



FIGURES 62–69. *Pinodytes punctatus*. 62. Male right antenna, dorsal. 63. Male right protibia and protarsus. 64. Male right mesotibia and mesotarsus. 65. Male right metafemur and metatibia. 66. Aedeagus, lateral. 67. Aedeagus, dorsal. 68. Spermatheca. 69. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 68), 0.3 mm (Figs. 62–67, 69).



FIGURES 70–78. *Pinodytes colorado*. 70. Male right antenna, dorsal. 71. Male right protibia and protarsus. 72. Male right mesotibia and mesotarsus. 73. Male right metafemur and metatibia. 74. Aedeagus, lateral. 75. Aedeagus, dorsal. 76. Everted internal sac. 77. Spermatheca. 78. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 77), 0.2 mm (Figs. 74, 75, 78), 0.3 mm (Figs. 70–73), 0.4 mm (Fig. 76).



FIGURES 79–86. *Pinodytes pusio*. 79. Male right antenna, dorsal. 80. Male right protibia and protarsus. 81. Male right mesotibia. 82. Male right metafemur and metatibia. 83. Aedeagus, lateral. 84. Aedeagus, dorsal. 85. Spermatheca. 86. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 85), 0.3 mm (Figs. 79–84, 86).

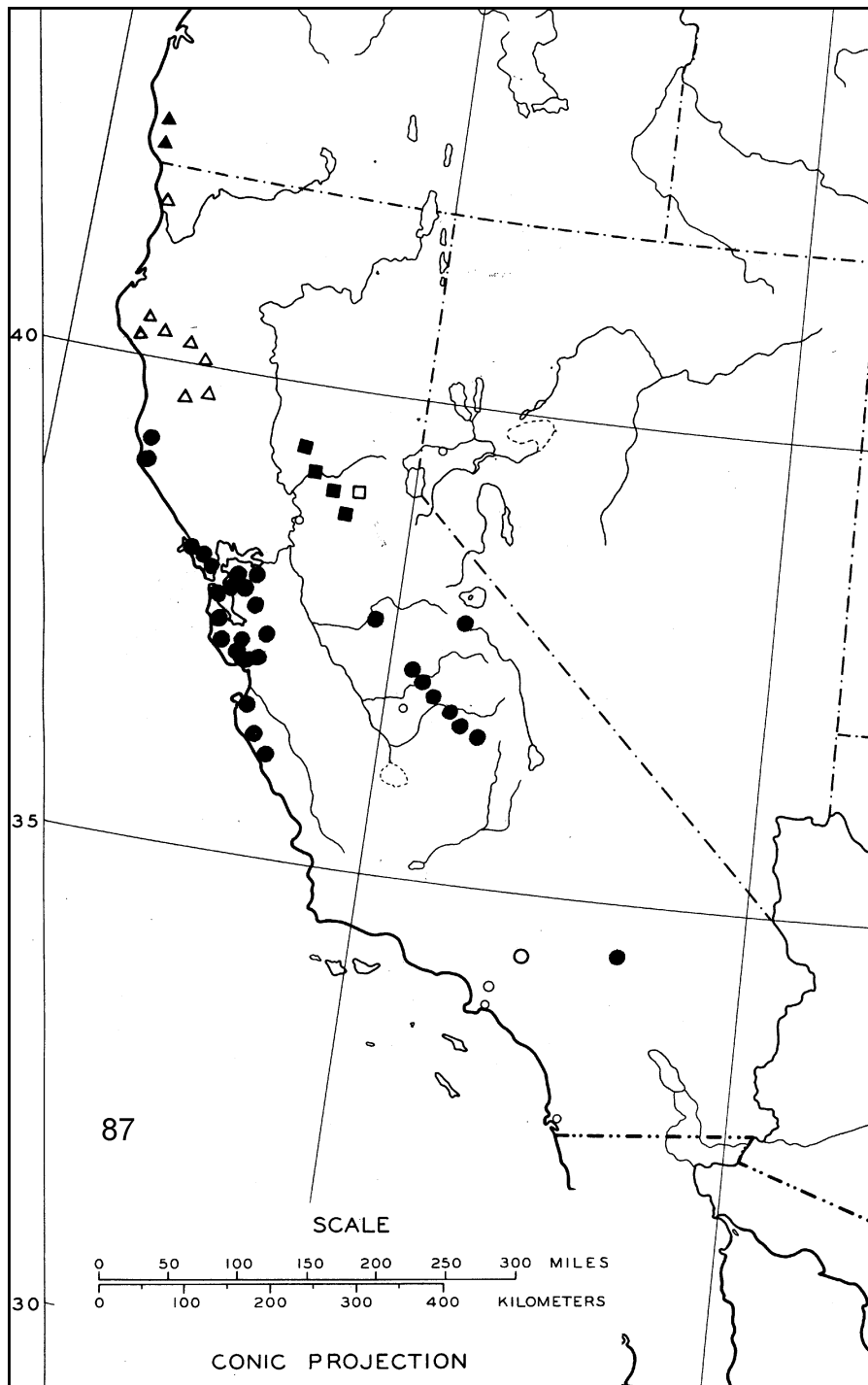
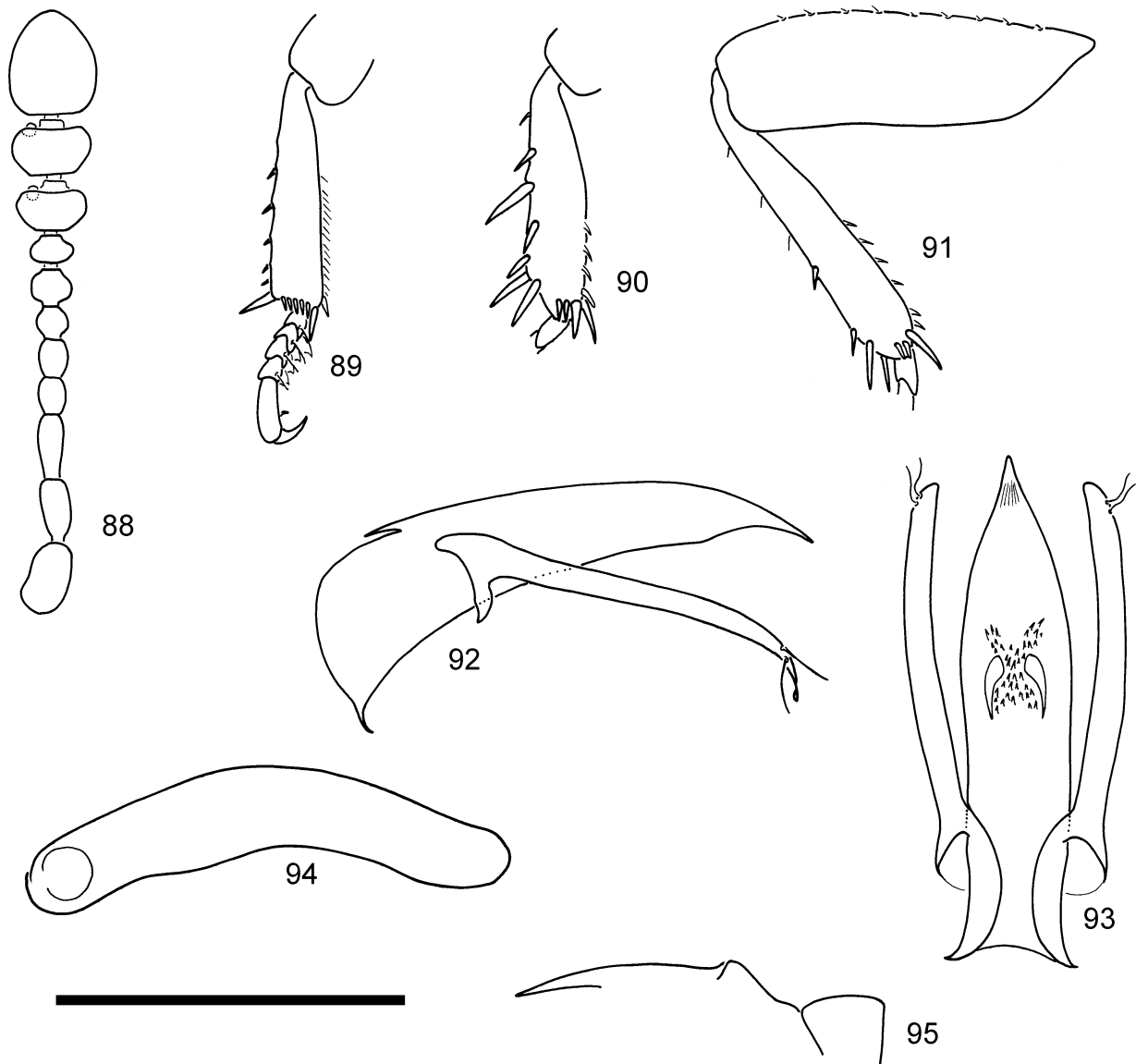
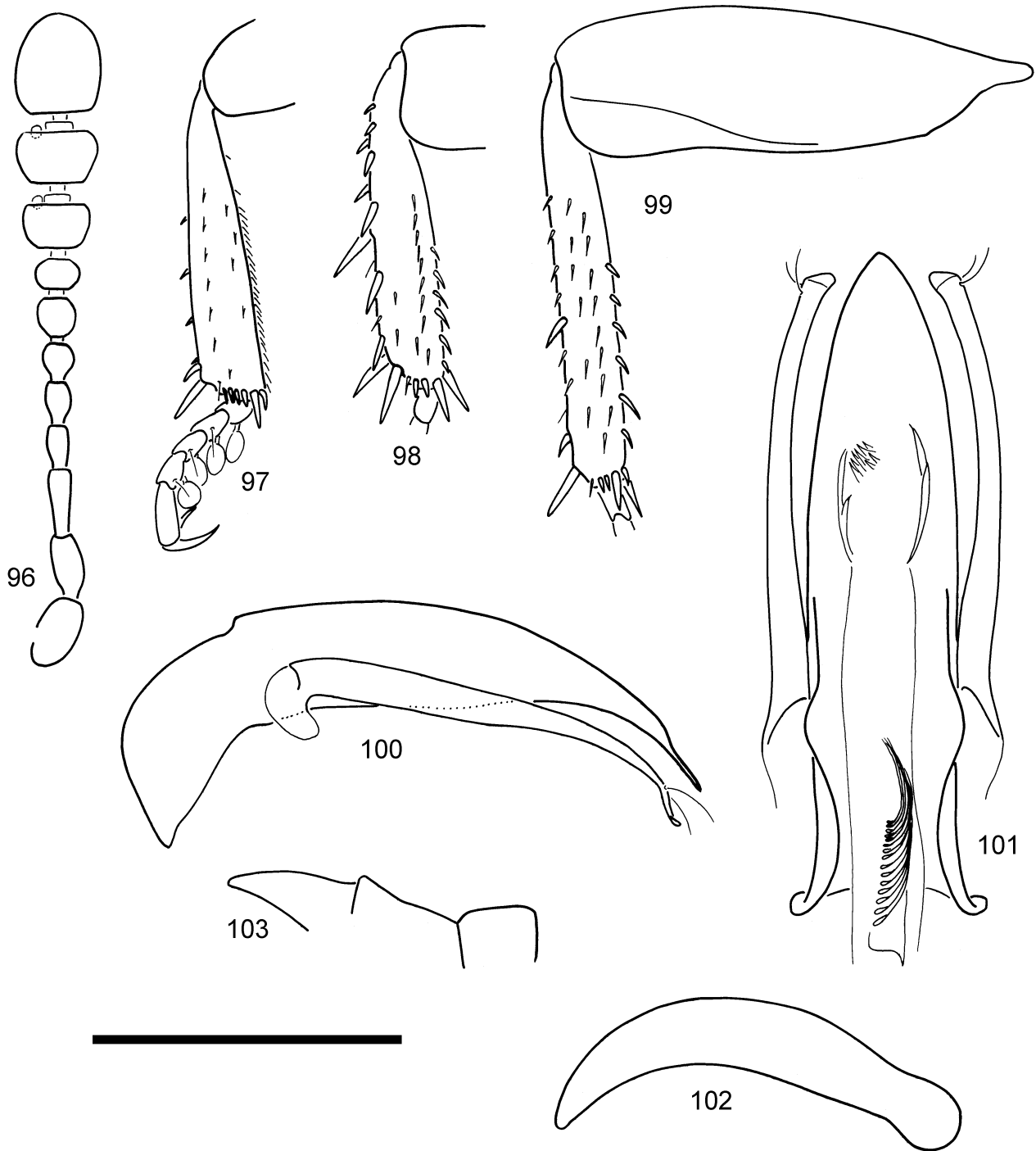


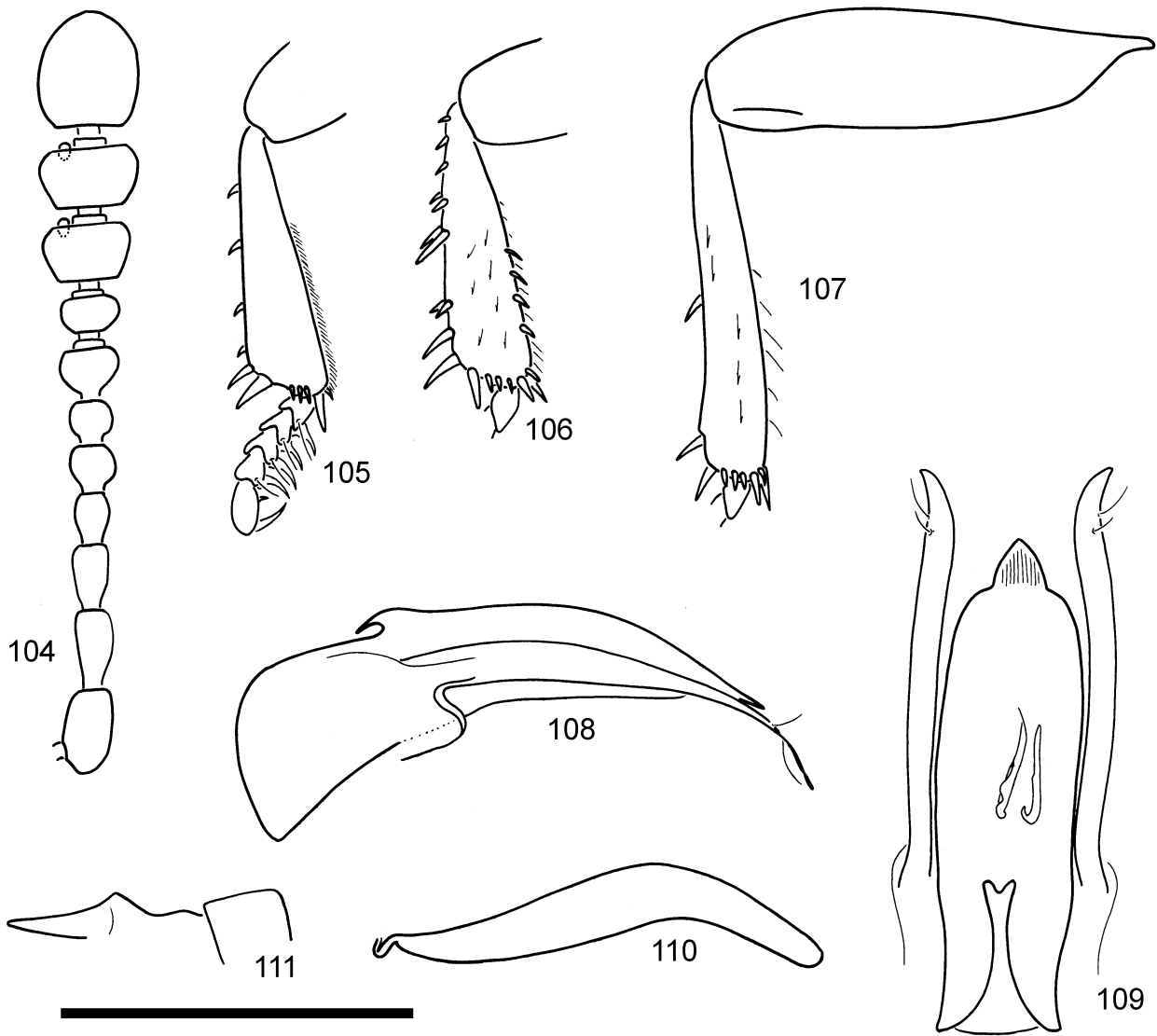
FIGURE 87. Distributions of species in the *Pinodytes pusio* species group in the southwestern United States. *P. pusio*, closed circles in the Sierra Nevada and Coast Range mountains of central and southern California. *P. ovatus*, closed triangles in the Coast Range mountains of southwestern Oregon. *P. chandleri*, open triangles in the Coast Range mountains of northern California. *P. constrictus*, open circle in the transverse mountain ranges north of Los Angeles, California. *P. contortus*, closed square in the northern Sierra Nevada mountains of California. *P. eldorado*, open squares in the the northern Sierra Nevada mountains of California.



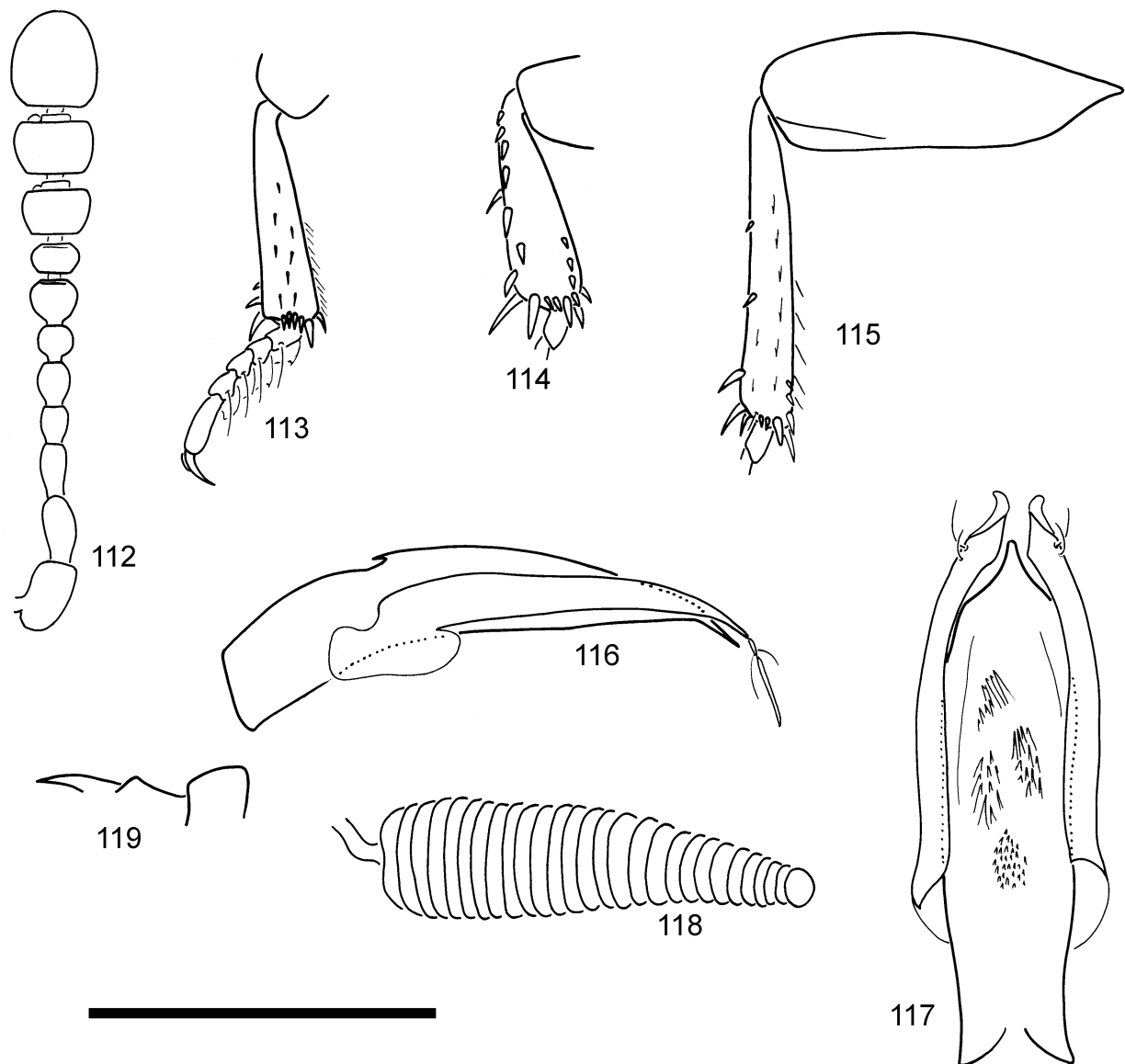
FIGURES 88–95. *Pinodytes ovatus*. 88. Male right antenna, dorsal. 89. Male right protibia and protarsus. 90. Male right mesotibia. 91. Male right metafemur and metatibia. 92. Aedeagus, lateral. 93. Aedeagus, dorsal. 94. Spermatheca. 95. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 94), 0.3 mm (Figs. 88–93, 95).



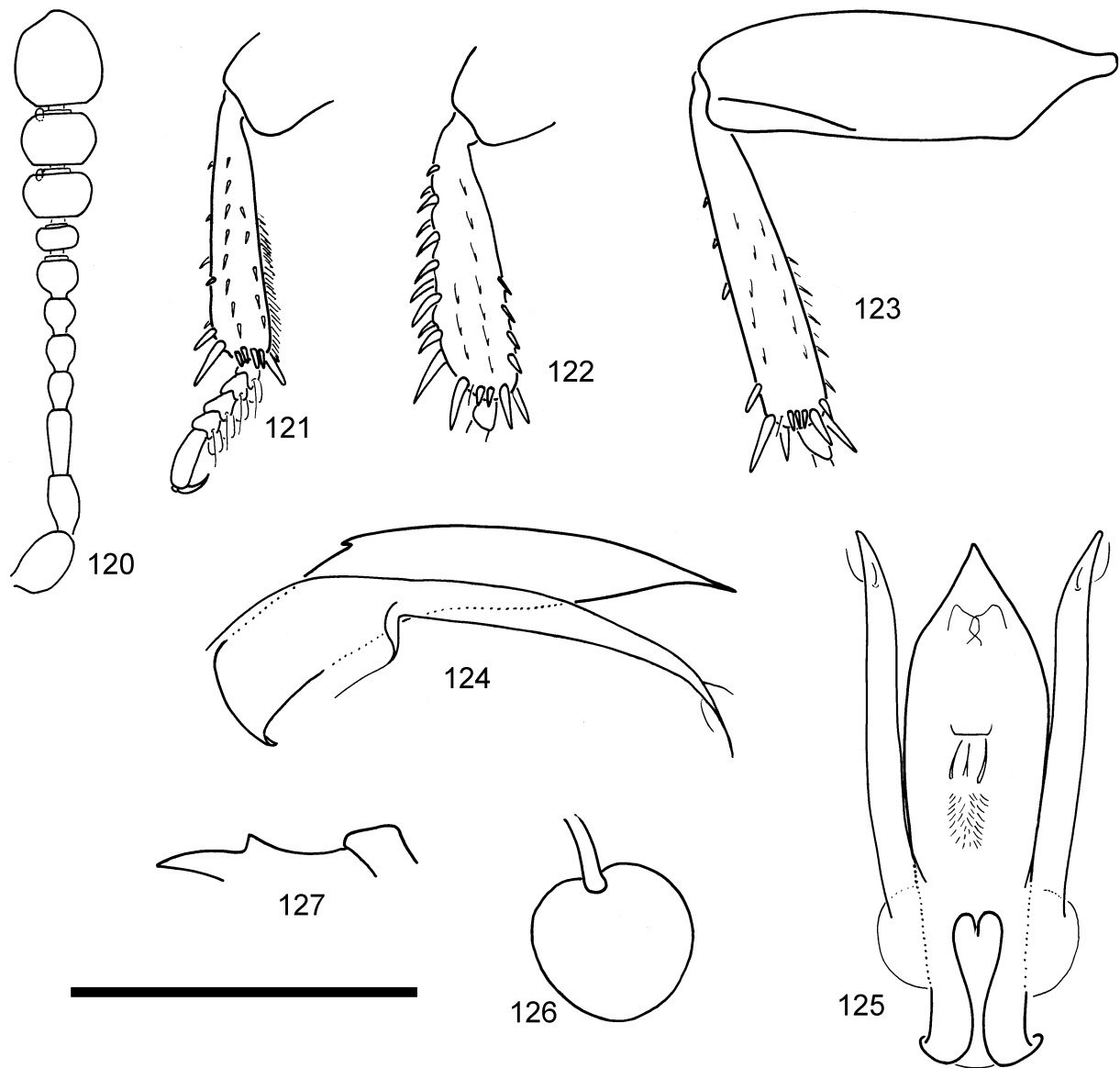
FIGURES 96–103. *Pinodytes chandleri*. 96. Male right antenna, dorsal. 97. Male right protibia and protarsus. 98. Male right mesotibia. 99. Male right metafemur and metatibia. 100. Aedeagus, lateral. 101. Aedeagus, dorsal. 102. Spermatheca. 103. Mesoventrite, lateral. Scale bar = 0.2 mm (Fig. 102), 0.3 mm (Figs. 96–101, 103).



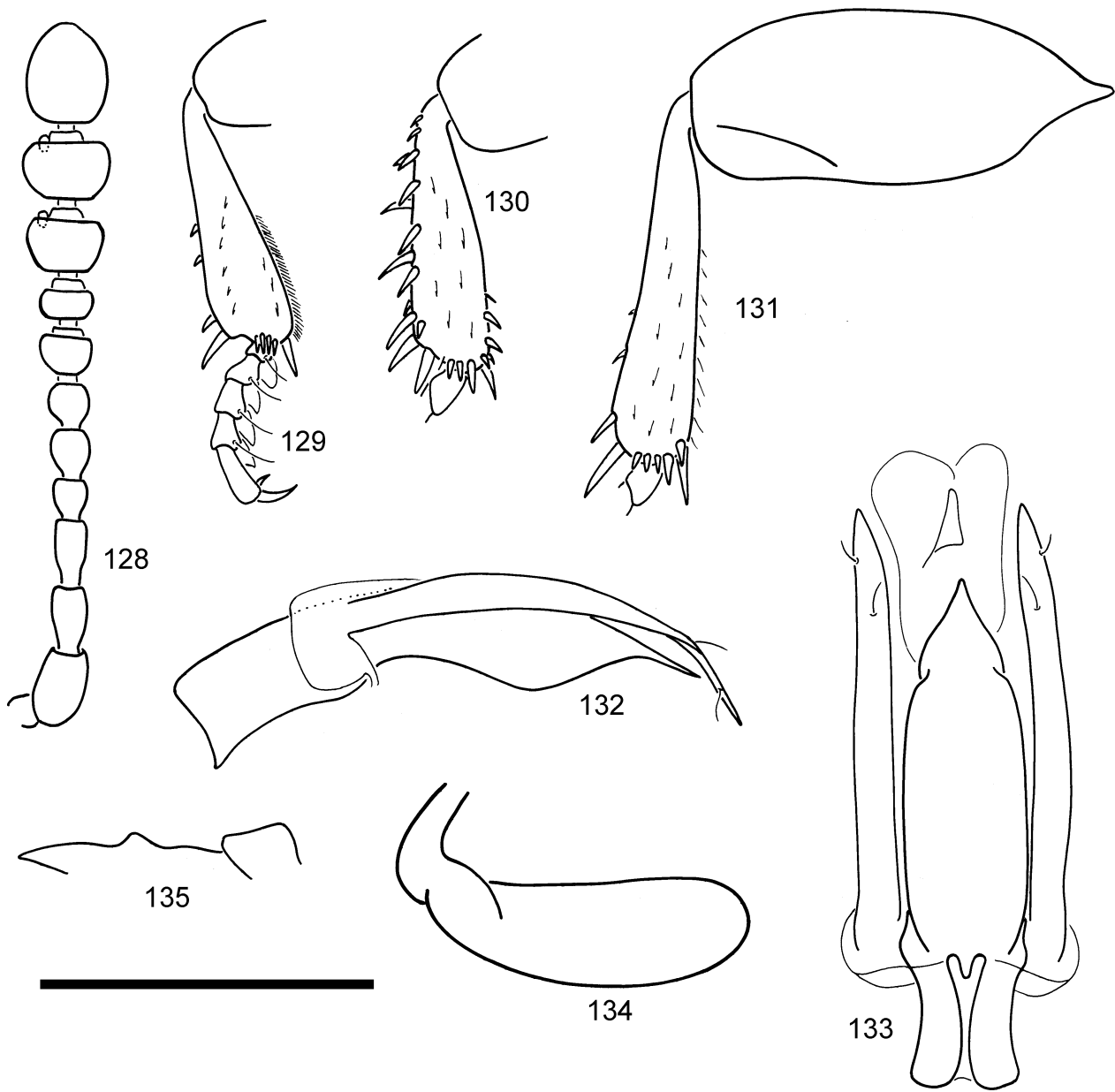
FIGURES 104–111. *Pinodytes constrictus*. 104. Male right antenna, dorsal. 105. Male right protibia and protarsus. 106. Male right mesotibia. 107. Male right metafemur and metatibia. 108. Aedeagus, lateral. 109. Aedeagus, dorsal. 110. Spermatheca. 111. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 110), 0.3 mm (Figs. 104–109, 111).



FIGURES 112–119. *Pinodytes contortus*. 112. Male right antenna, dorsal. 113. Male right protibia and protarsus. 114. Male right mesotibia. 115. Male right metafemur and metatibia. 116. Aedeagus, lateral. 117. Aedeagus, dorsal. 118. Spermatheca. 119. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 118), 0.3 mm (Figs. 112–117, 119).



FIGURES 120–127. *Pinodytes eldorado*. 120. Male right antenna, dorsal. 121. Male right protibia and protarsus. 122. Male right mesotibia. 123. Male right metafemur and metatibia. 124. Aedeagus, lateral. 125. Aedeagus, dorsal. 126. Spermatheca. 127. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 126), 0.3 mm (Figs. 120–125, 127).



FIGURES 128–135. *Pinodytes fresno*. 128. Male right antenna, dorsal. 129. Male right protibia and protarsus. 130. Male right mesotibia. 131. Male right metafemur and metatibia. 132. Aedeagus, lateral. 133. Aedeagus, dorsal. 134. Spermatheca. 135. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 134), 0.3 mm (Figs. 128–133, 135).

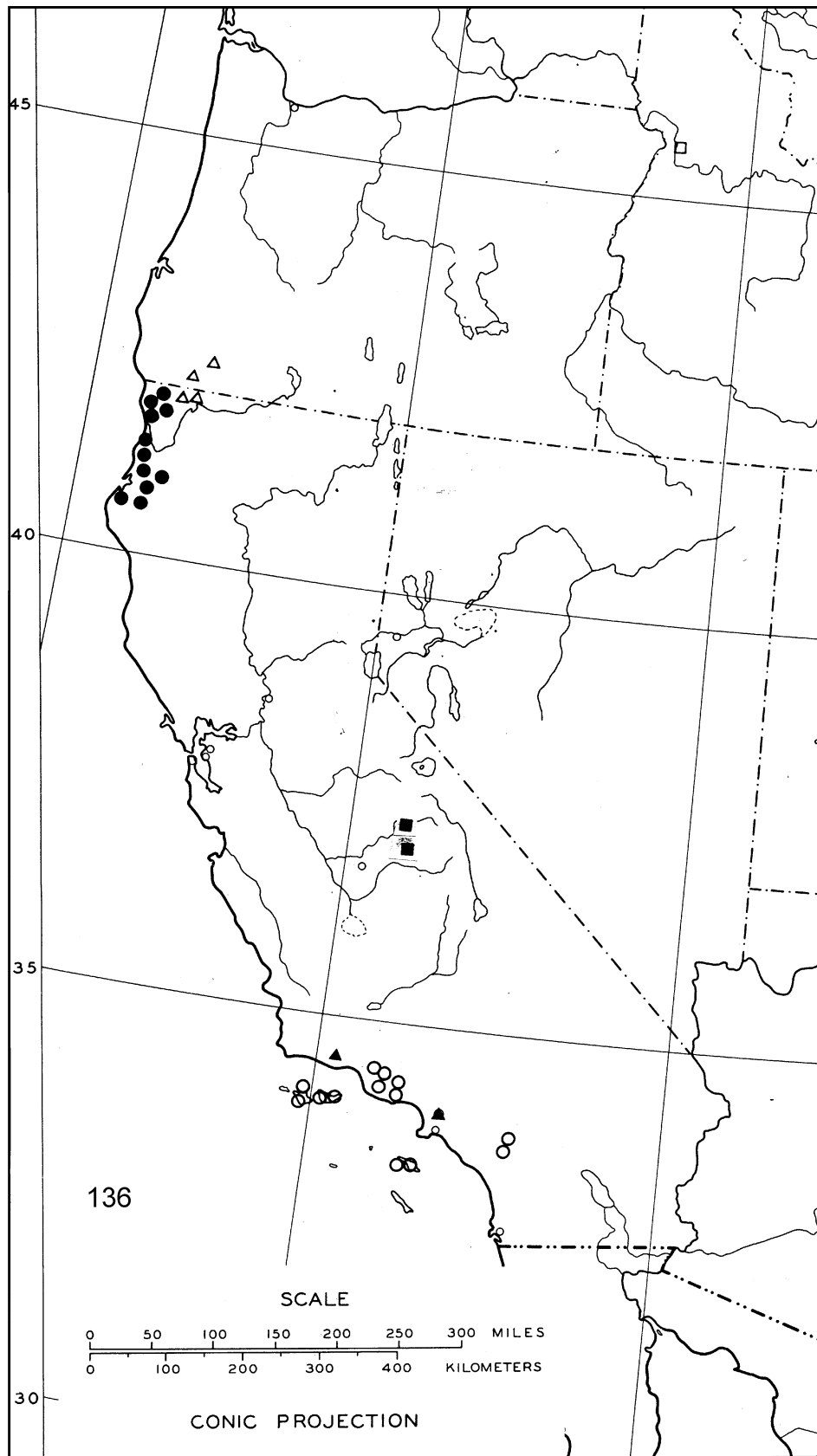
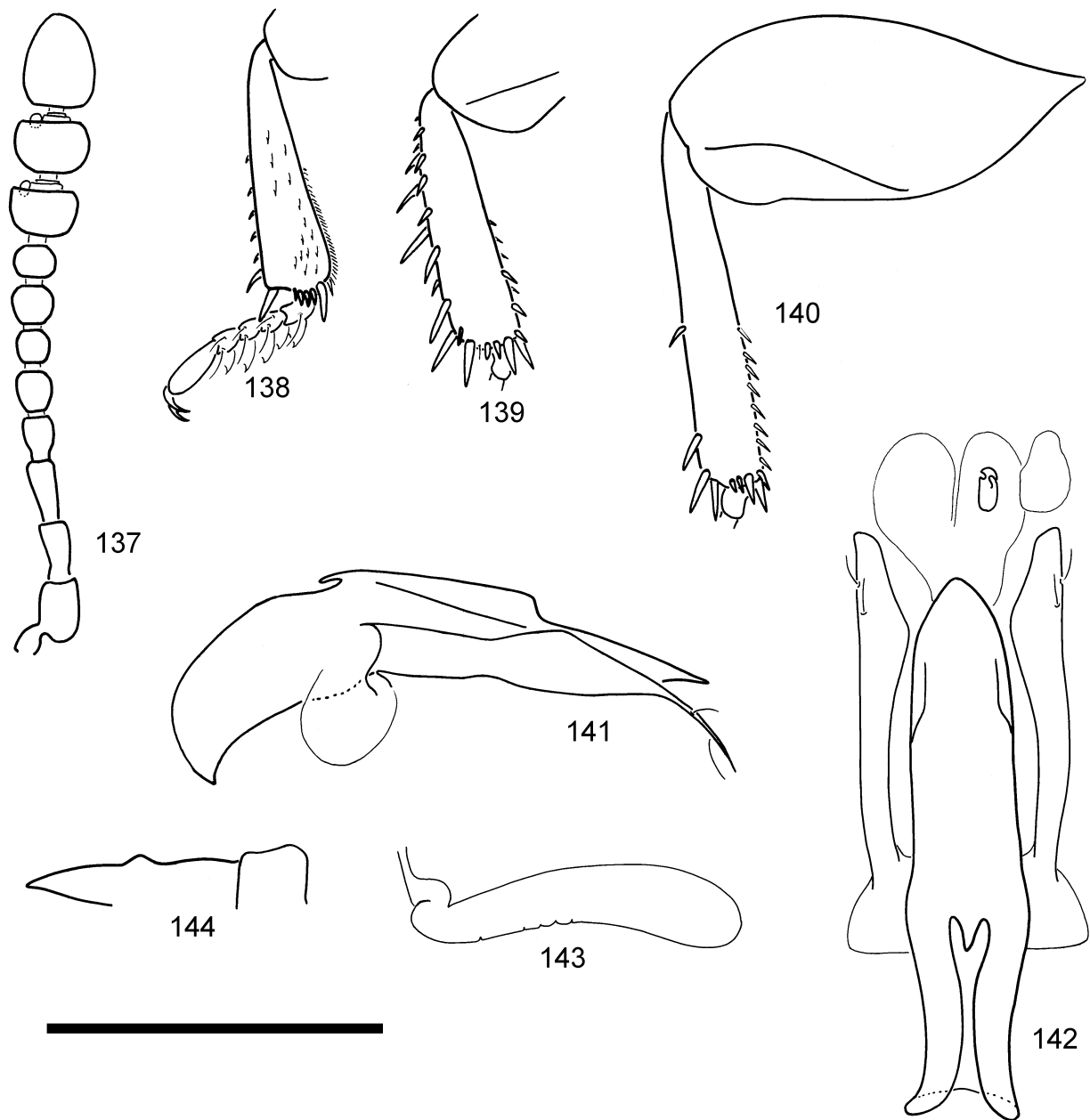
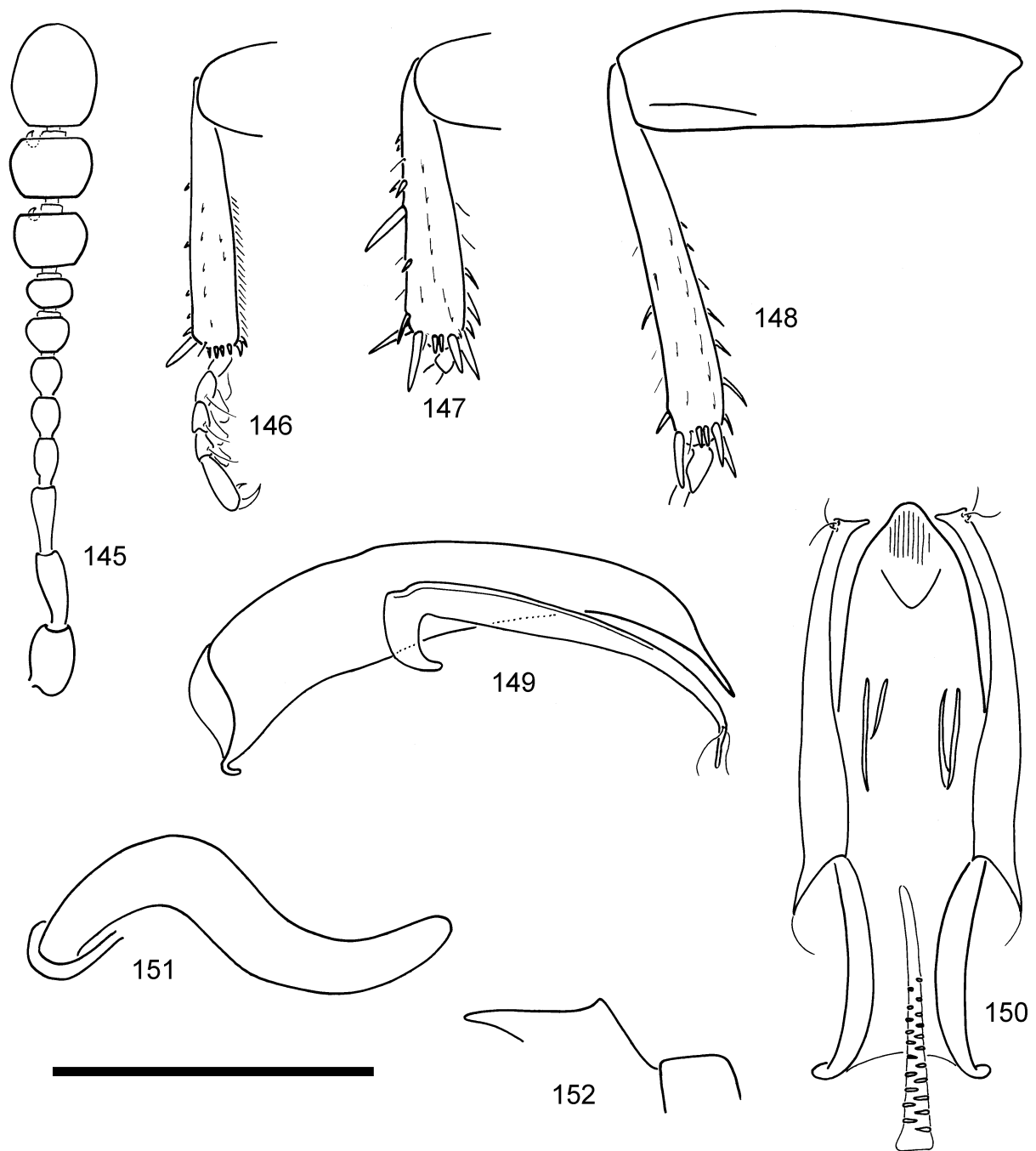


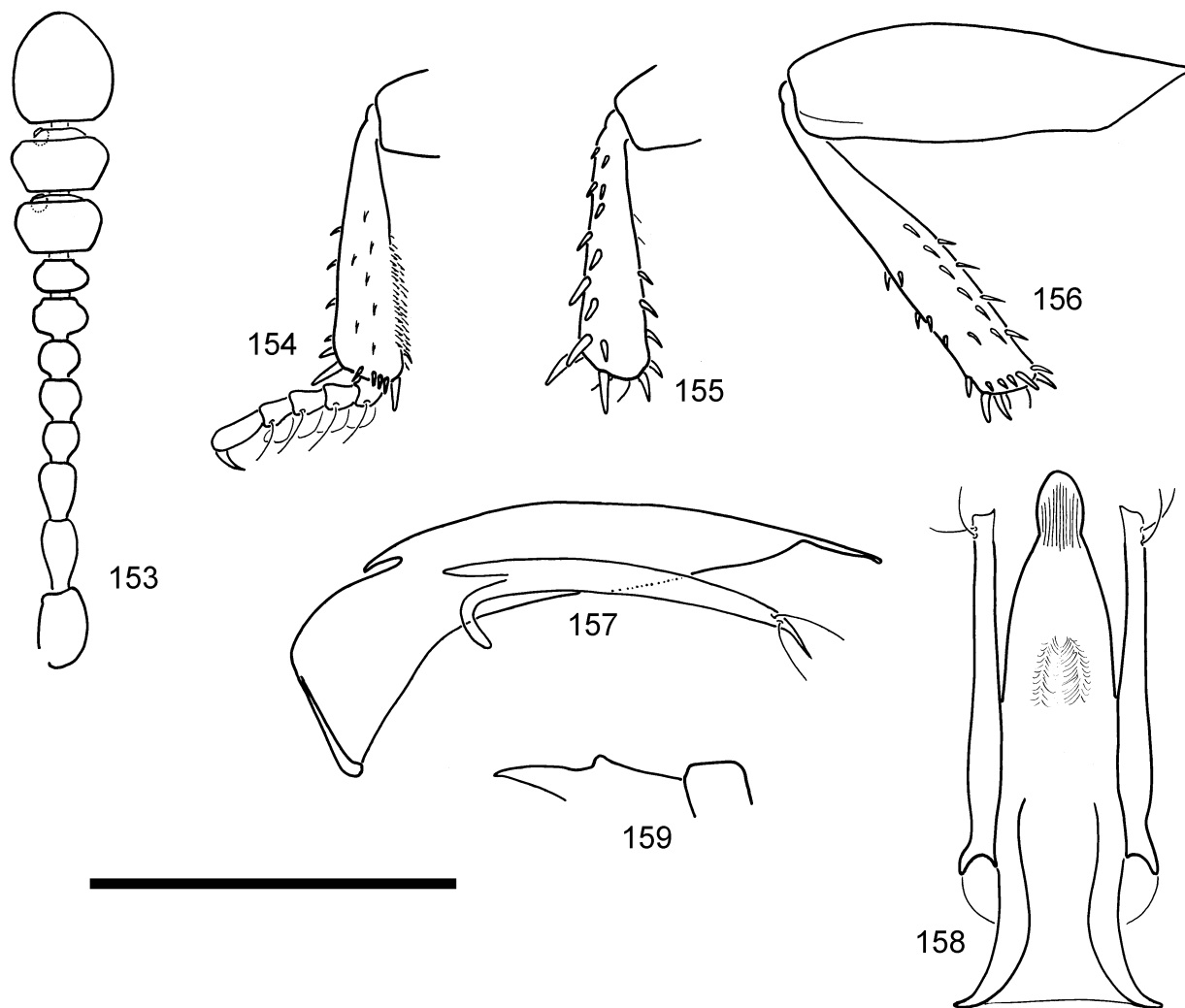
FIGURE 136. Distributions of species in the *Pinodytes pusio* species group in the southwestern United States. *P. fresno*, closed squares in the Sierra Nevada Mountains of central California. *P. gibbosus*, open circles in southern California coastal ranges (Santa Monica Mountains) and the Channel Islands. *P. humboldtensis*, closed circles in the Coastal Ranges of northwestern California. *P. idaho*, open square in west central Idaho. *P. klamathensis*, open triangles in the Klamath mountains of northern California and Southwestern Oregon. *P. losangles*, closed triangles in coastal mountains of southern California.



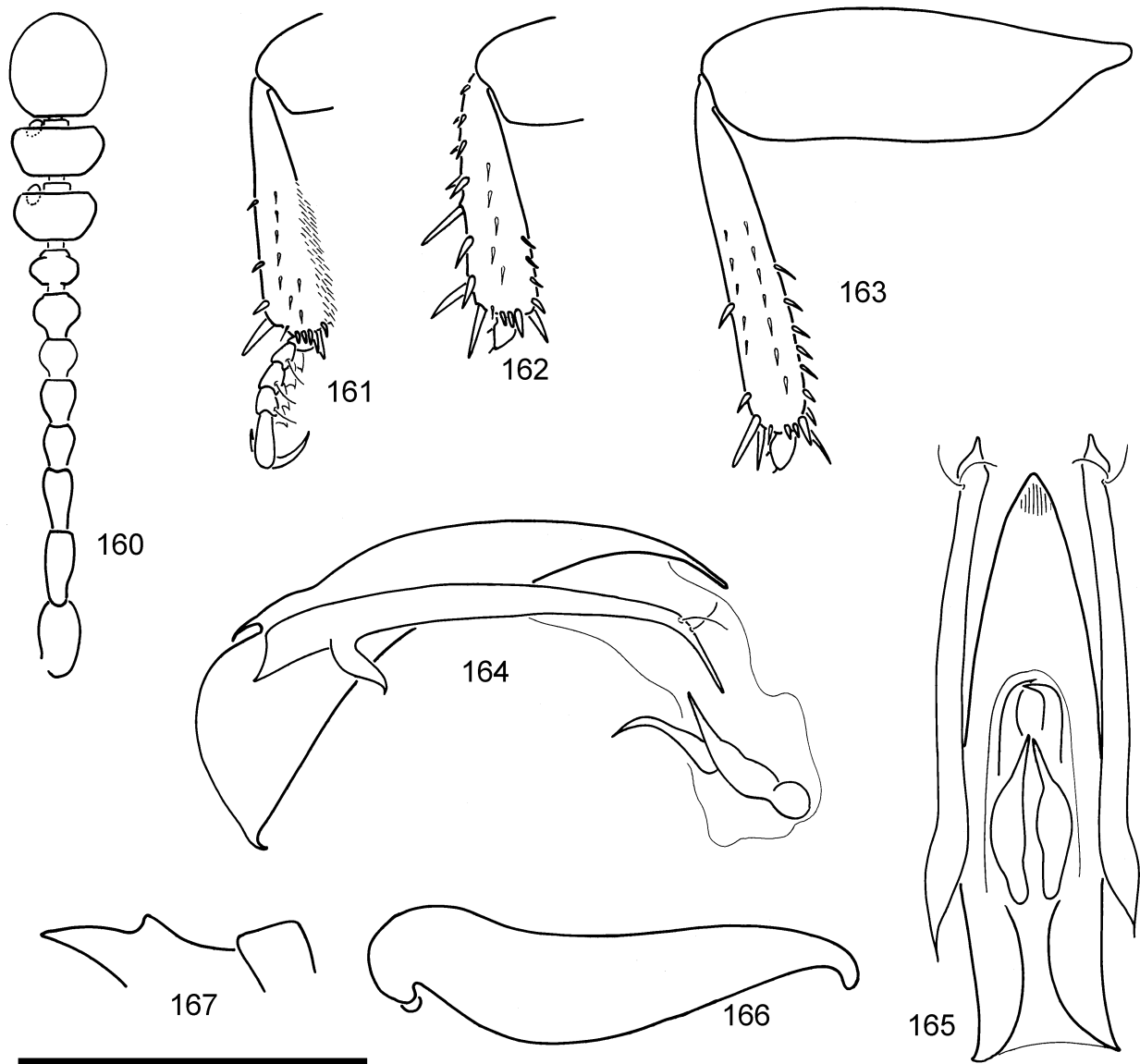
FIGURES 137–144. *Pinodytes gibbosus*. 137. Male right antenna, dorsal. 138. Male right protibia and protarsus. 139. Male right mesotibia. 140. Male right metafemur and metatibia. 141. Aedeagus, lateral. 142. Aedeagus, dorsal. 143. Spermatheca. 144. Mesoventrite, lateral. Scale bar = 0.2 mm (Fig. 143), 0.4 mm (Figs. 137–142, 144).



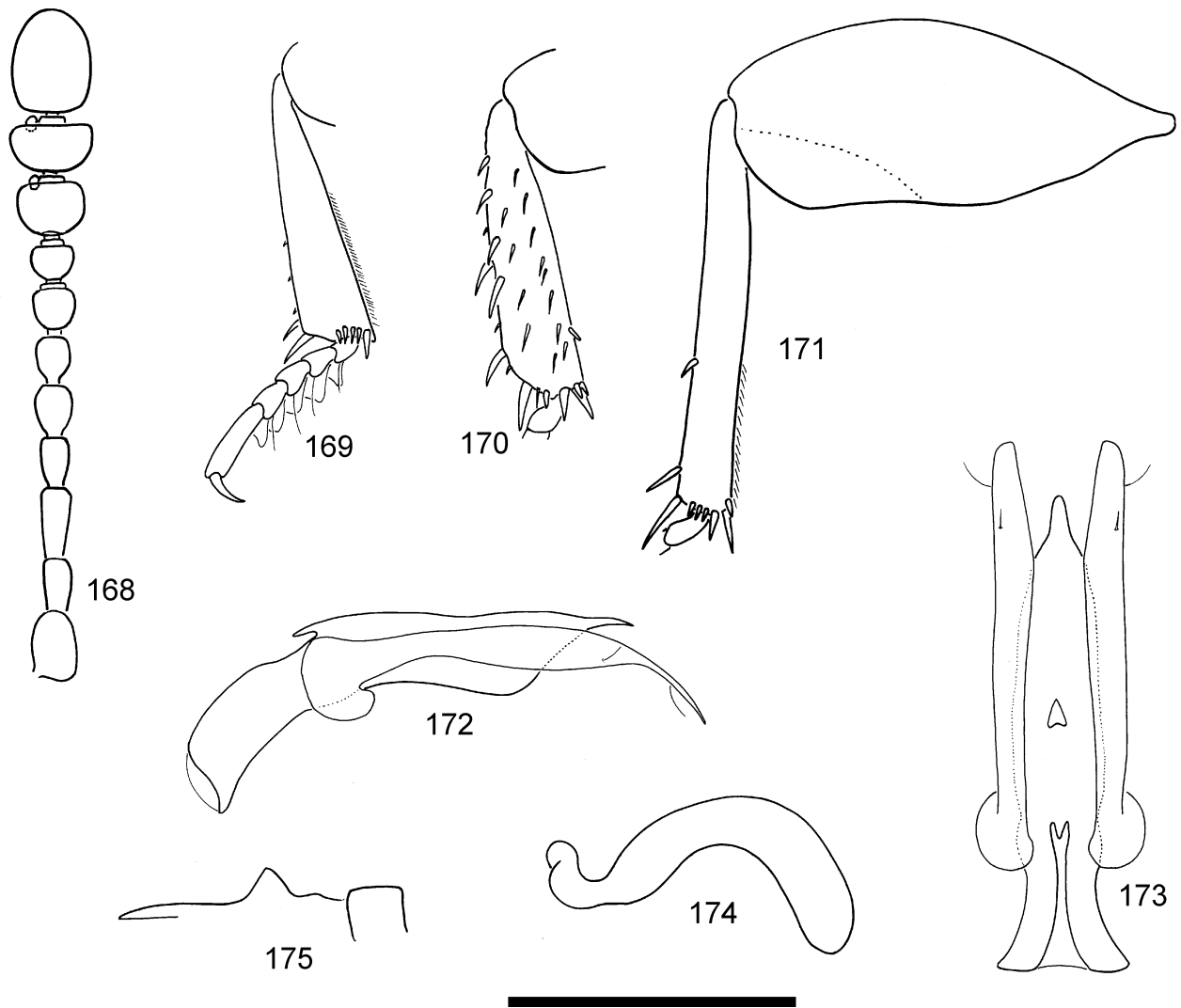
FIGURES 145–152. *Pinodytes humboldtensis*. 145. Male right antenna, dorsal. 146. Male right protibia and protarsus. 147. Male right mesotibia. 148. Male right metafemur and metatibia. 149. Aedeagus, lateral. 150. Aedeagus, dorsal. 151. Spermatheca. 152. Mesoventricle, lateral. Scale bar = 0.1 mm (Fig. 151), 0.3 mm (Figs. 145–150, 152).



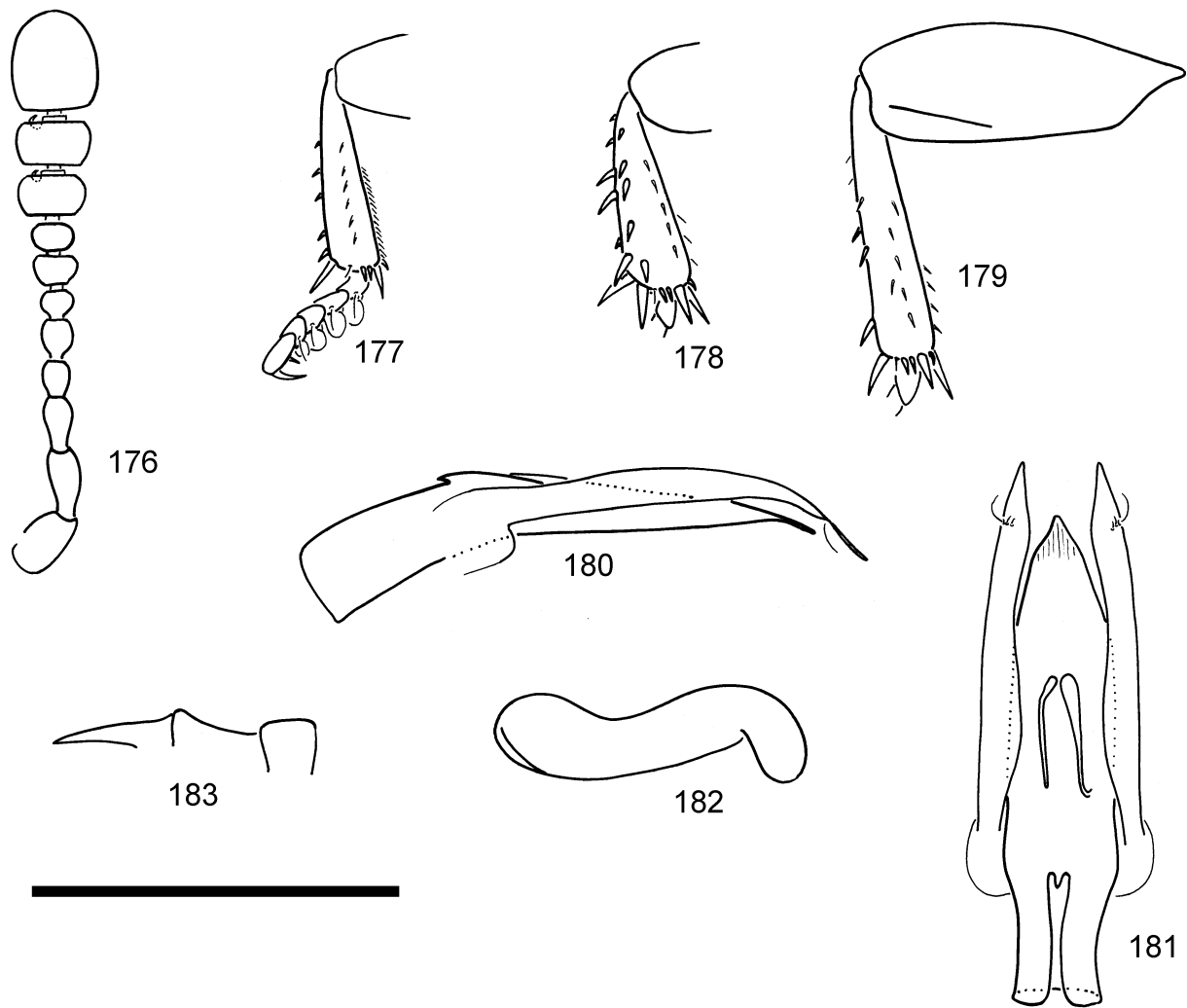
FIGURES 153–159. *Pinodytes idaho*. 153. Male right antenna, dorsal. 154. Male right protibia and protarsus. 155. Male right mesotibia. 156. Male right metafemur and metatibia. 157. Aedeagus, lateral. 158. Aedeagus, dorsal. 159. Mesoventrite, lateral. Scale bar = 0.3 mm.



FIGURES 160–167. *Pinodytes klamathensis*. 160. Male right antenna, dorsal. 161. Male right protibia and protarsus. 162. Male right mesotibia. 163. Male right metafemur and metatibia. 164. Aedeagus, lateral. 165. Aedeagus, dorsal. 166. Spermatheca. 167. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 166), 0.3 mm (Figs. 160–165, 167).



FIGURES 168–175. *Pinodytes losangeles*. 168. Male right antenna, dorsal. 169. Male right protibia and protarsus. 170. Male right mesotibia. 171. Male right metafemur and metatibia. 172. Aedeagus, lateral. 173. Aedeagus, dorsal. 174. Spermatheca. 175. Mesoventrite, lateral. Scale bar = 0.15 mm (Fig. 174), 0.4 mm (Figs. 168–173, 175).



FIGURES 176–183. *Pinodytes marinensis*. 176. Male right antenna, dorsal. 177. Male right protibia and protarsus. 178. Male right mesotibia. 179. Male right metafemur and metatibia. 180. Aedeagus, lateral. 181. Aedeagus, dorsal. 182. Spermatheca. 183. Mesoventrite, lateral. Scale bar = 0.15 mm (Fig. 182), 0.3 mm (Figs. 176–181, 183).

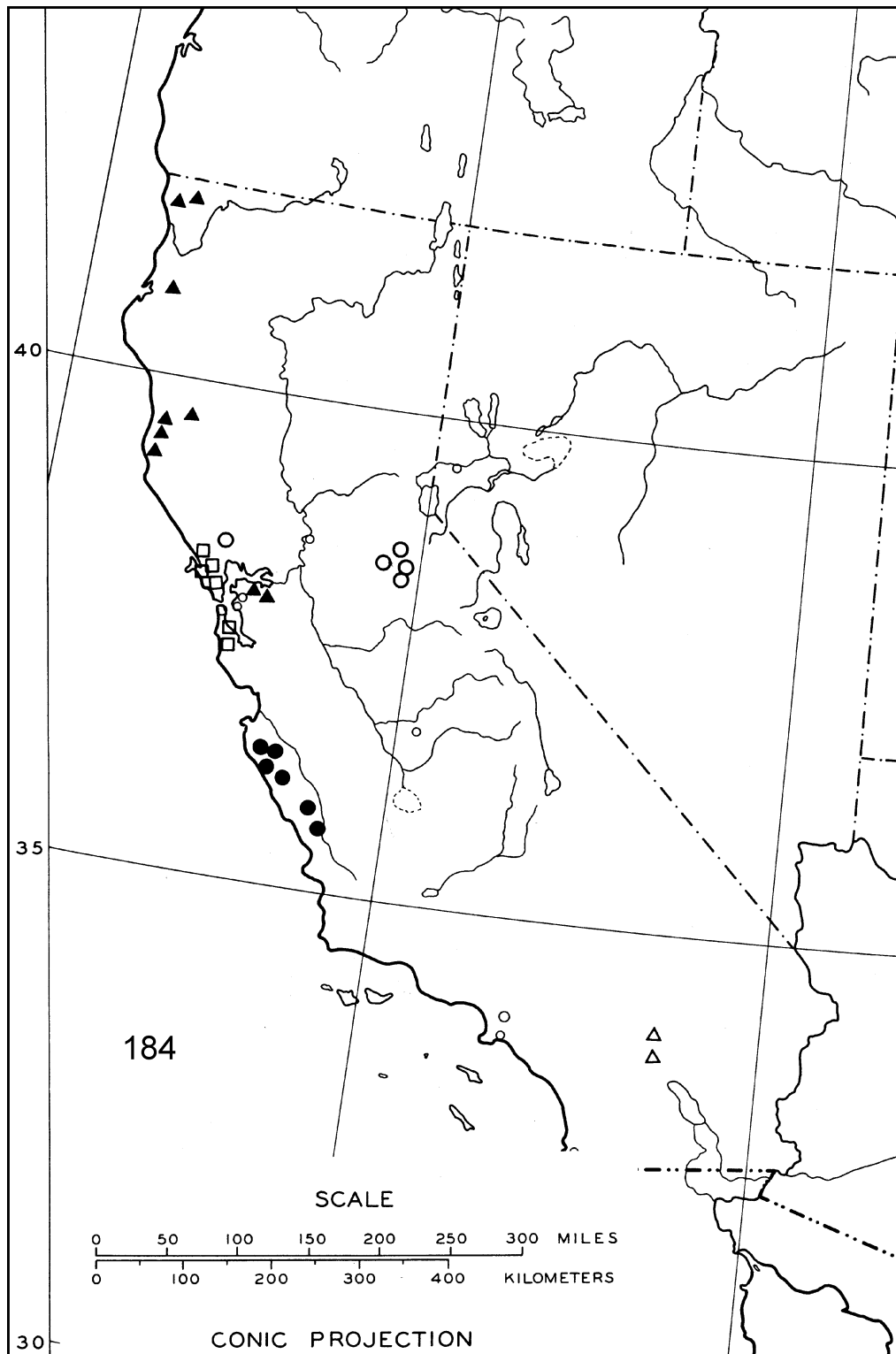
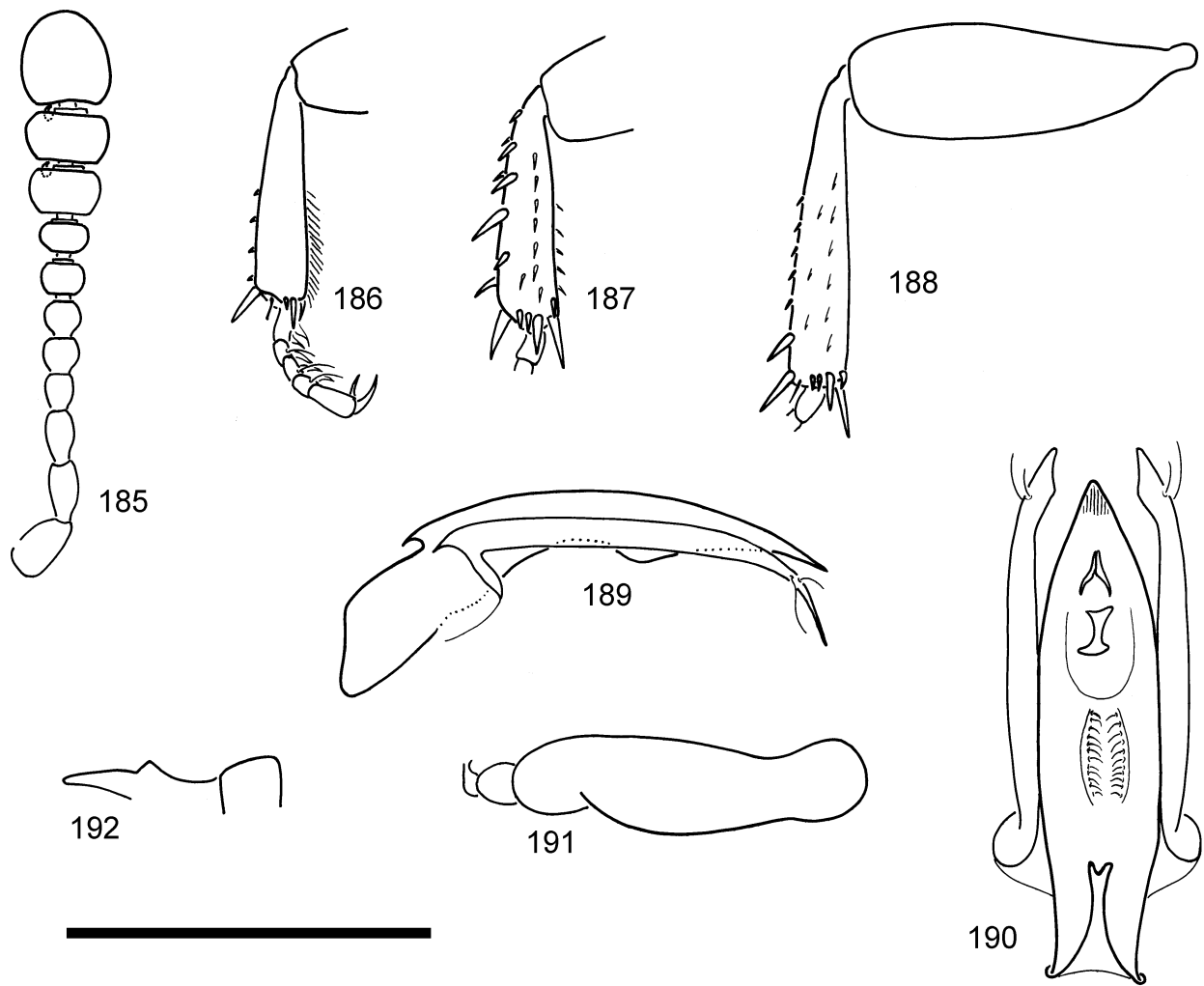
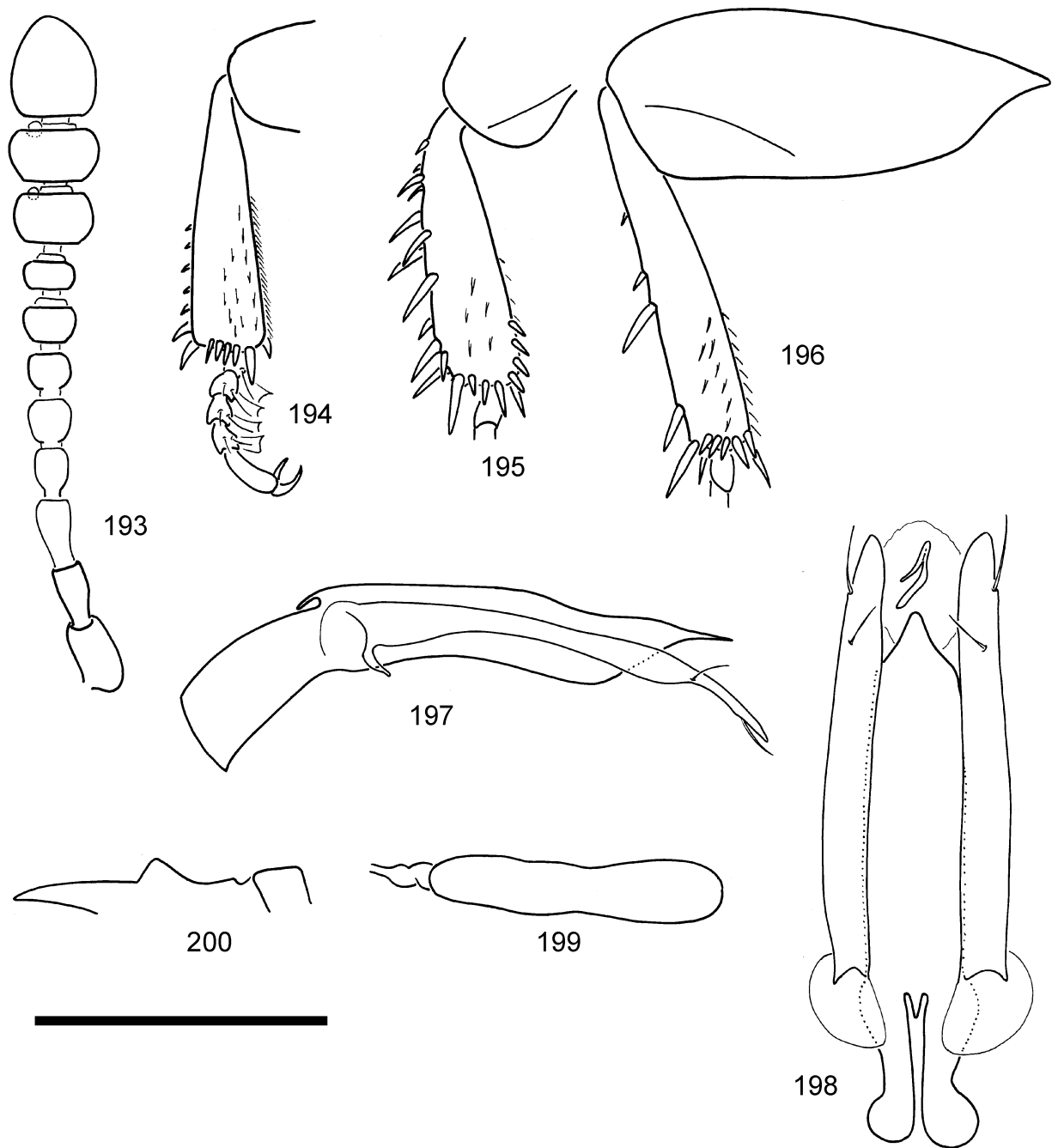


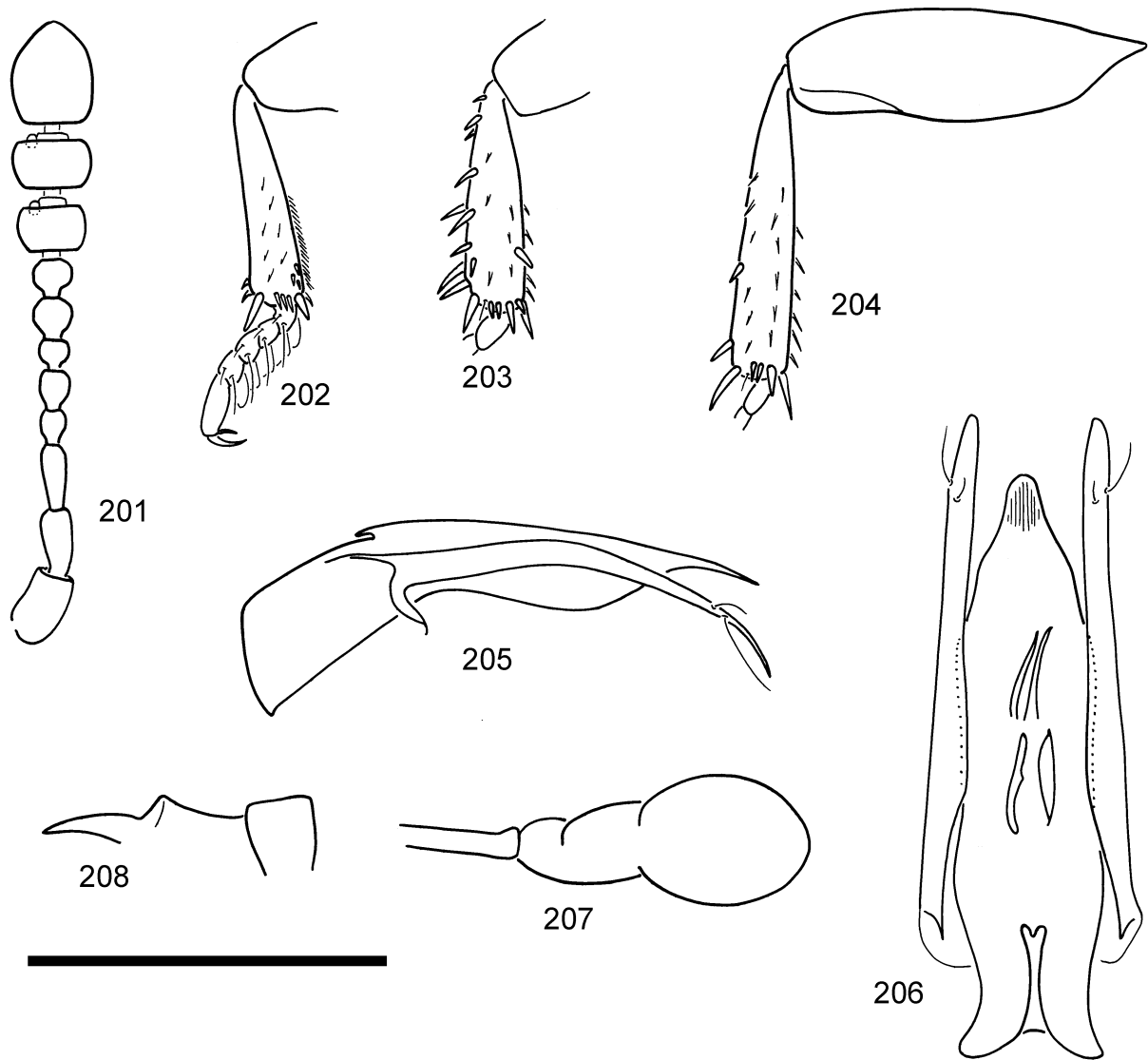
FIGURE 184. Distributions of species in the *Pinodytes pusio* species group in the southwestern United States. *P. marinensis*, open squares in the Coastal Ranges northwest of San Francisco Bay. *P. minutus*, open circles in the Coast and Sierra Nevada Mountains of central California, on both sides of the Napa River Valley. *P. monterey*, closed circles in the coastal Santa Lucia Mountains. *P. parvus*, closed triangles of the Coastal Ranges of northwest California., with disjunct populations west of San Francisco Bay. *P. sanjacinto*, open triangles in the San Jacinto Mountains of southern California.



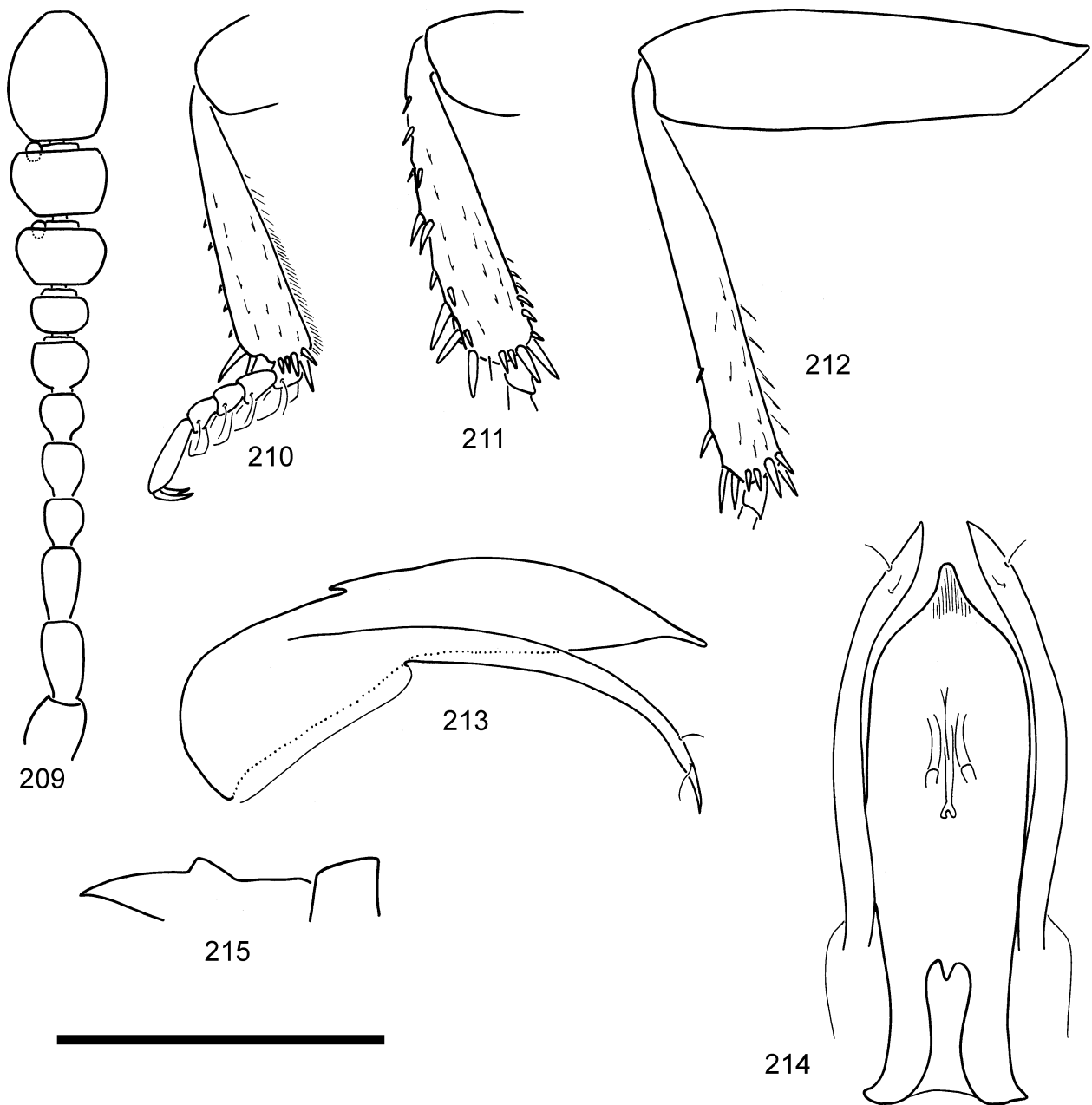
FIGURES 185–192. *Pinodytes minutus*. 185. Male right antenna, dorsal. 186. Male right protibia and protarsus. 187. Male right mesotibia. 188. Male right metafemur and metatibia. 189. Aedeagus, lateral. 190. Aedeagus, dorsal. 191. Spermatheca. 192. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 191), 0.3 mm (Figs. 185–190, 192).



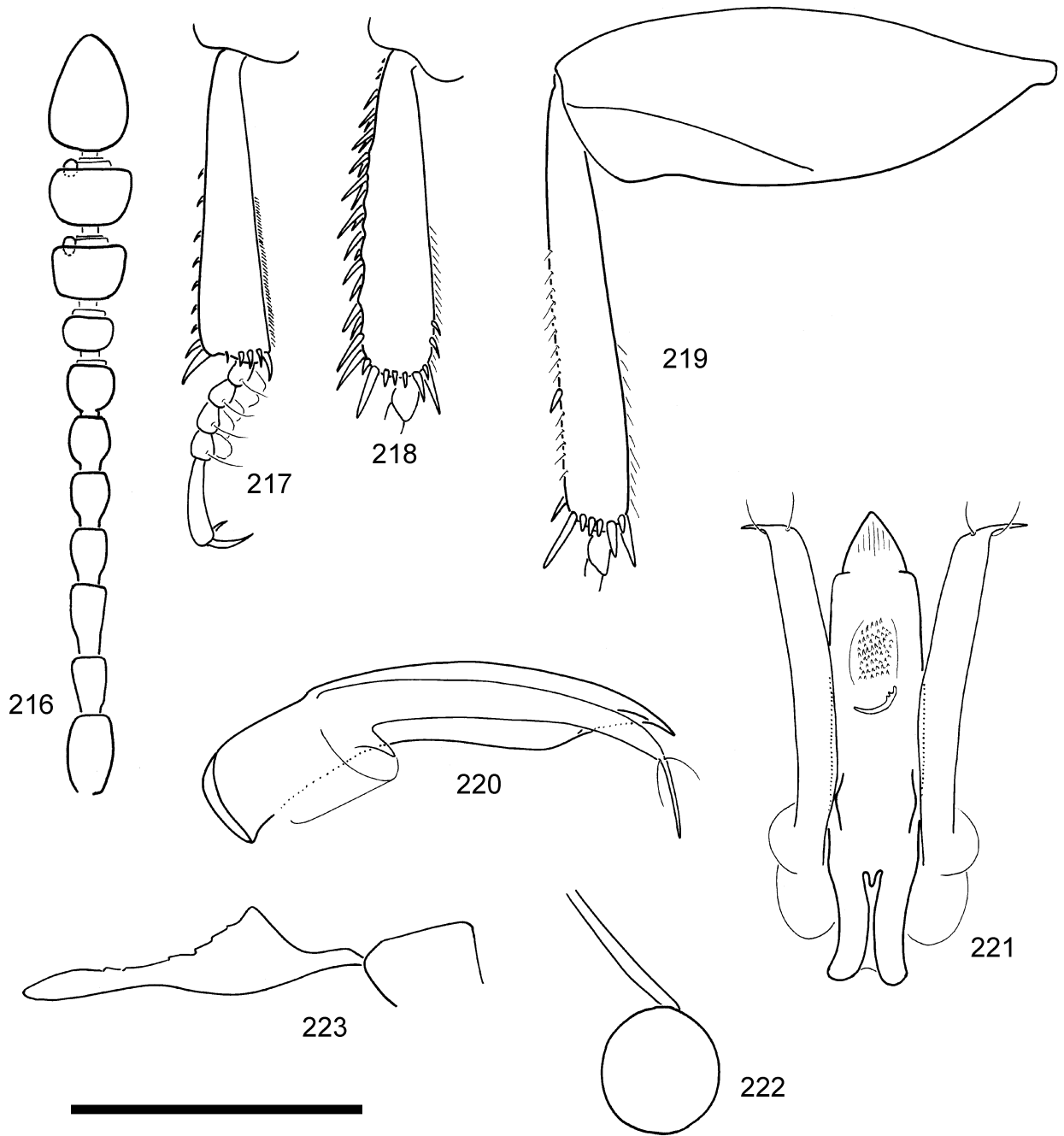
FIGURES 193–200. *Pinodytes monterey*. 193. Male right antenna, dorsal. 194. Male right protibia and protarsus. 195. Male right mesotibia. 196. Male right metafemur and metatibia. 197. Aedeagus, lateral. 198. Aedeagus, dorsal. 199. Spermatheca. 200. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 199), 0.3 mm (Figs. 193–198, 200).



FIGURES 201–208. *Pinodytes parvus*. 201. Male right antenna, dorsal. 202. Male right protibia and protarsus. 203. Male right mesotibia. 204. Male right metafemur and metatibia. 205. Aedeagus, lateral. 206. Aedeagus, dorsal. 207. Spermatheca. 208. Mesoventrite, lateral. Scale bar = 0.15 mm (Fig. 207), 0.3 mm (Figs. 201–206, 208).



FIGURES 209–215. *Pinodytes sanjacinto*. 209. Male right antenna, dorsal. 210. Male right protibia and protarsus. 211. Male right mesotibia. 212. Male right metafemur and metatibia. 213. Aedeagus, lateral. 214. Aedeagus, dorsal. 215. Mesoventrite, lateral. Scale bar = 0.3 mm.



FIGURES 216–223. *Pinodytes sequoia*. 216. Male right antenna, dorsal. 217. Male right protibia and protarsus. 218. Male right mesotibia. 219. Male right metafemur and metatibia. 220. Aedeagus, lateral. 221. Aedeagus, dorsal. 222. Spermatheca. 223. Mesoventrite, lateral. Scale bar = 0.2 mm (Fig. 222), 0.3 mm (Fig. 223), 0.5 mm (Figs. 216–221).

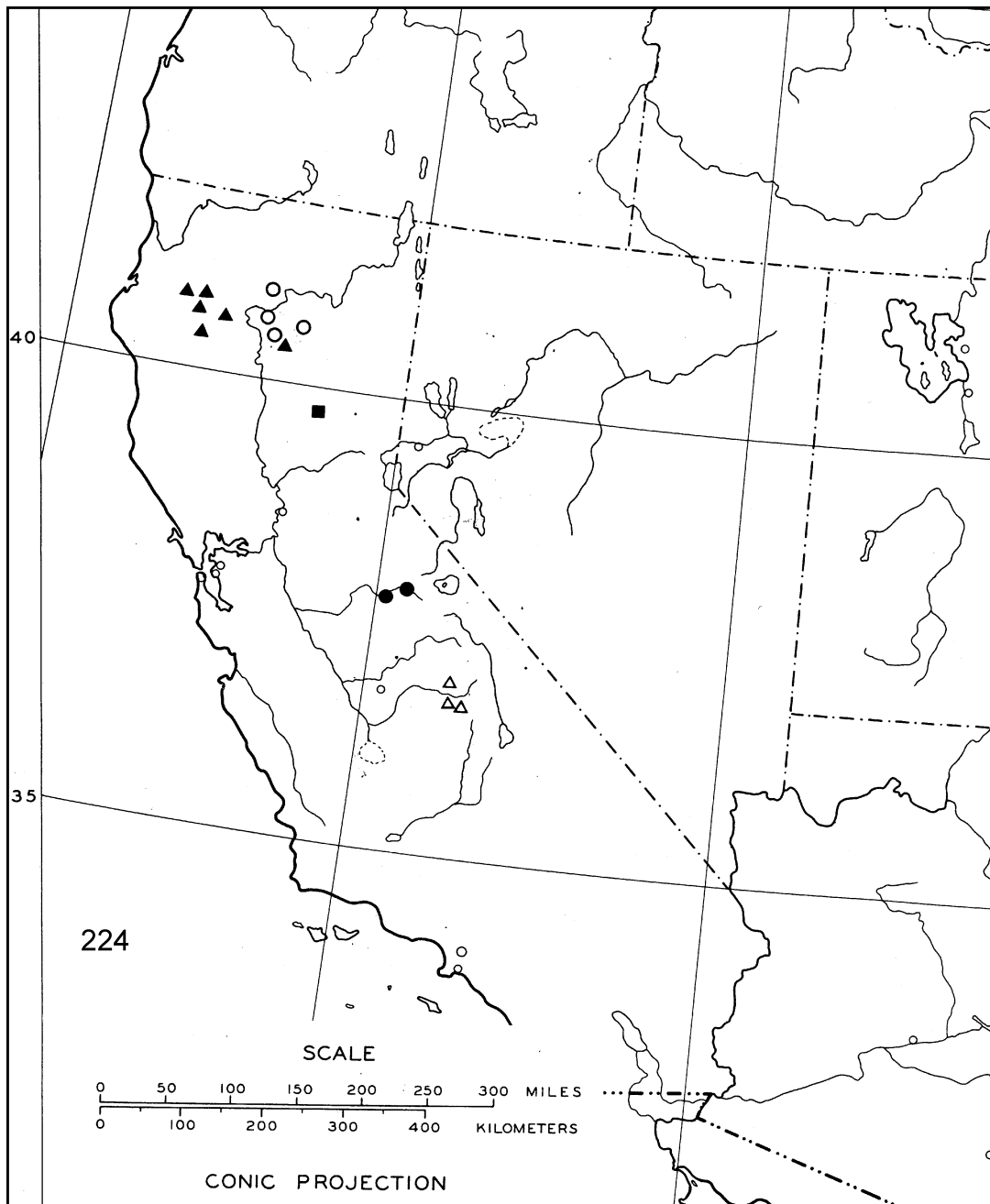
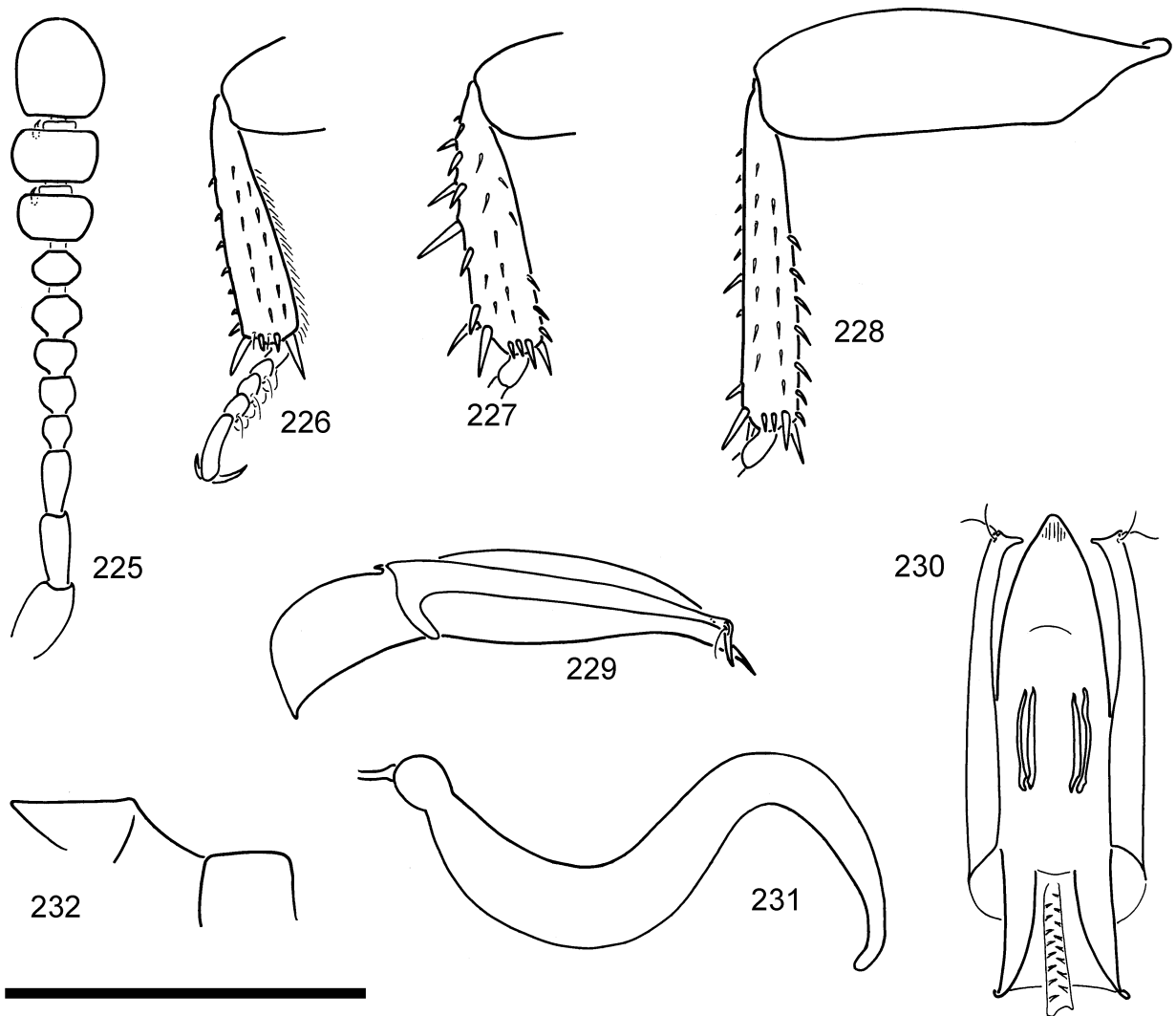
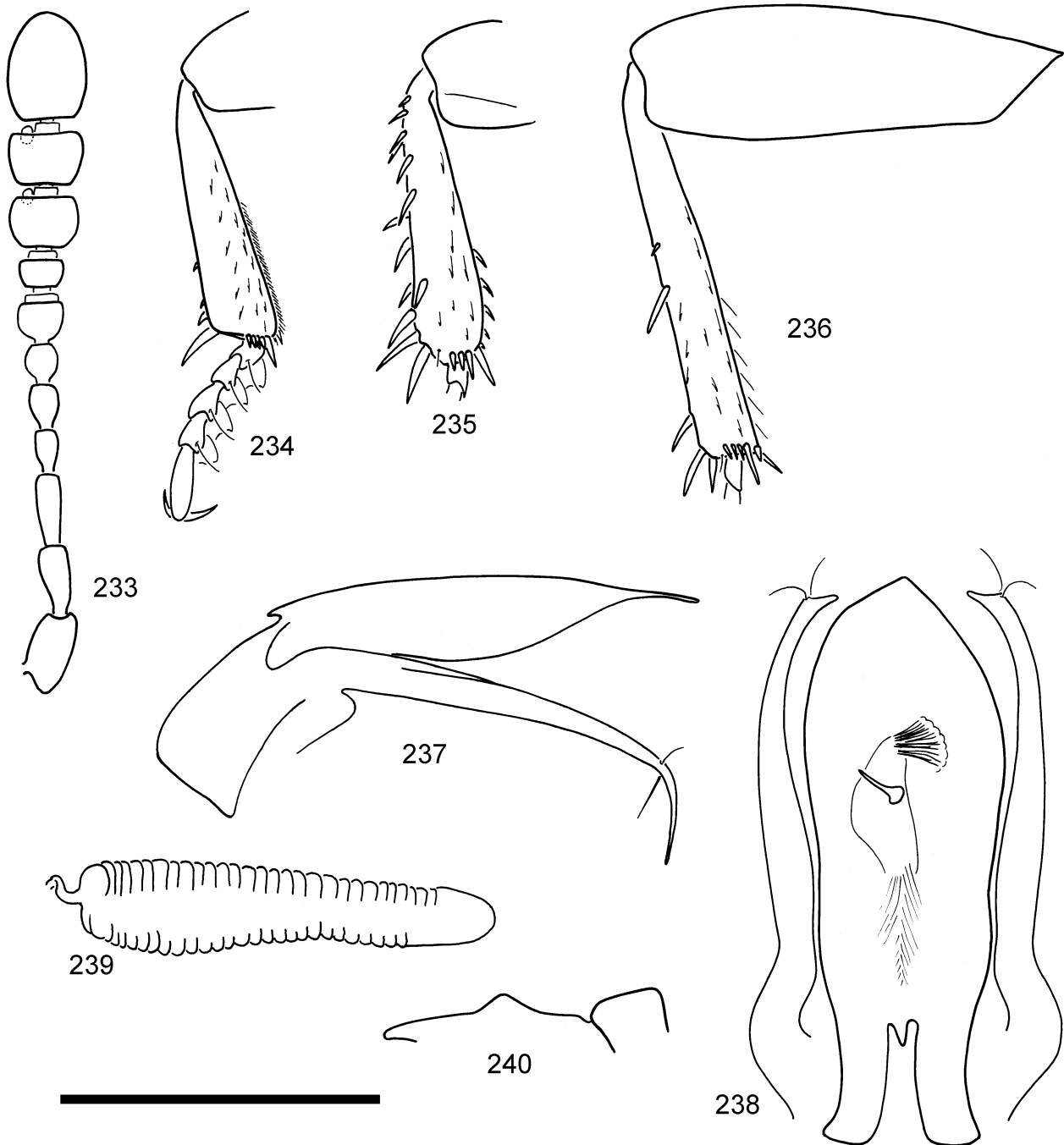


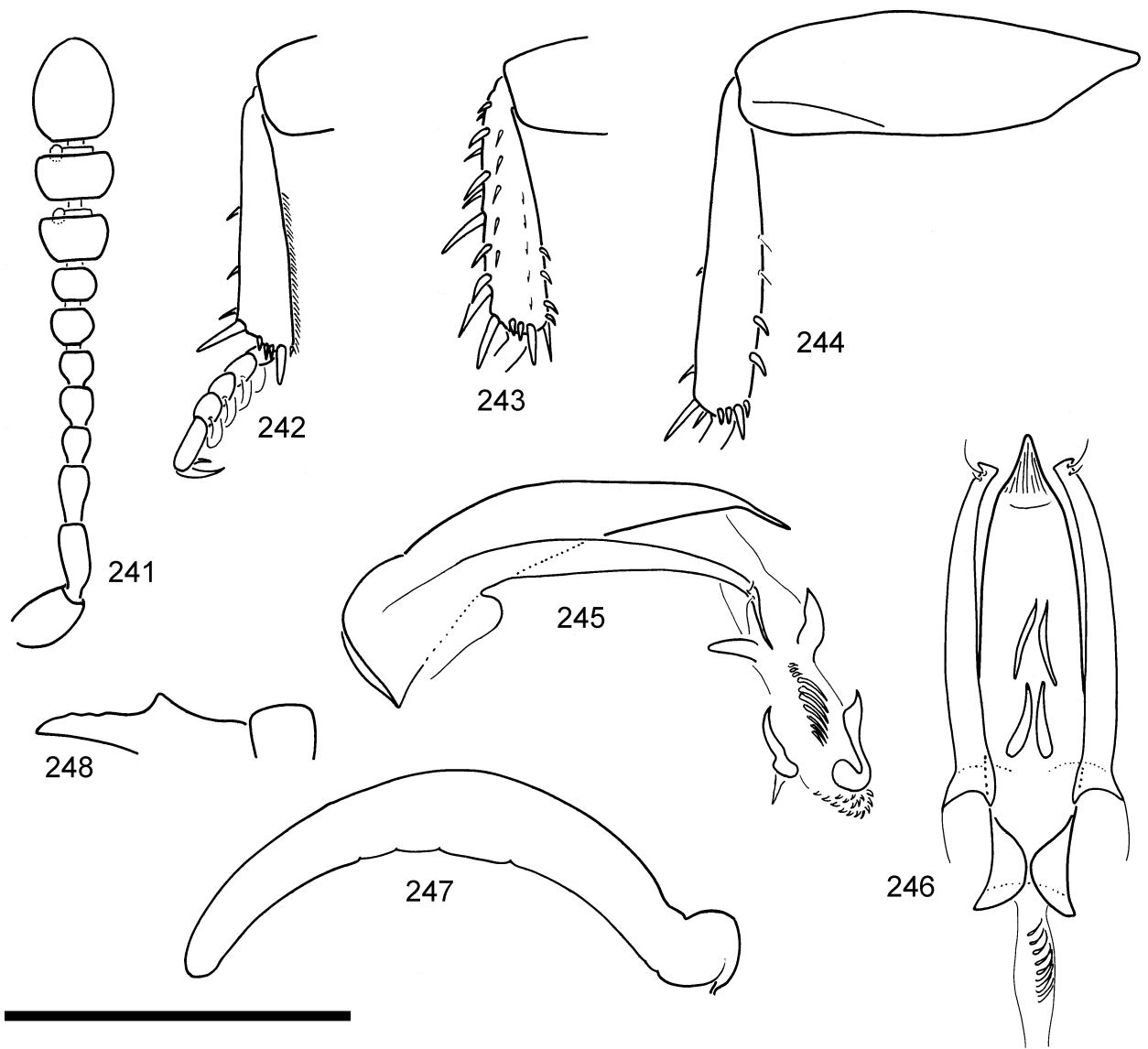
FIGURE 224. Distributions of species in the *Pinodytes pusio* species group in the southwestern United States. *P. sequoia*, open triangles in the southern Sierra Nevada of central California. *P. shasta*, closed triangles in Trinity Alps mountains in north western California. *P. spinus*, solid square, in western foothills of the Sierra Nevada Mountains in northern California. *P. tehama*, open circles at the northern end of the Central Valley and on both sides of the Sacramento River, California. *P. tuolumne*, closed circles on the western slope of the Sierra Nevada mountains, Yosemite National Park.



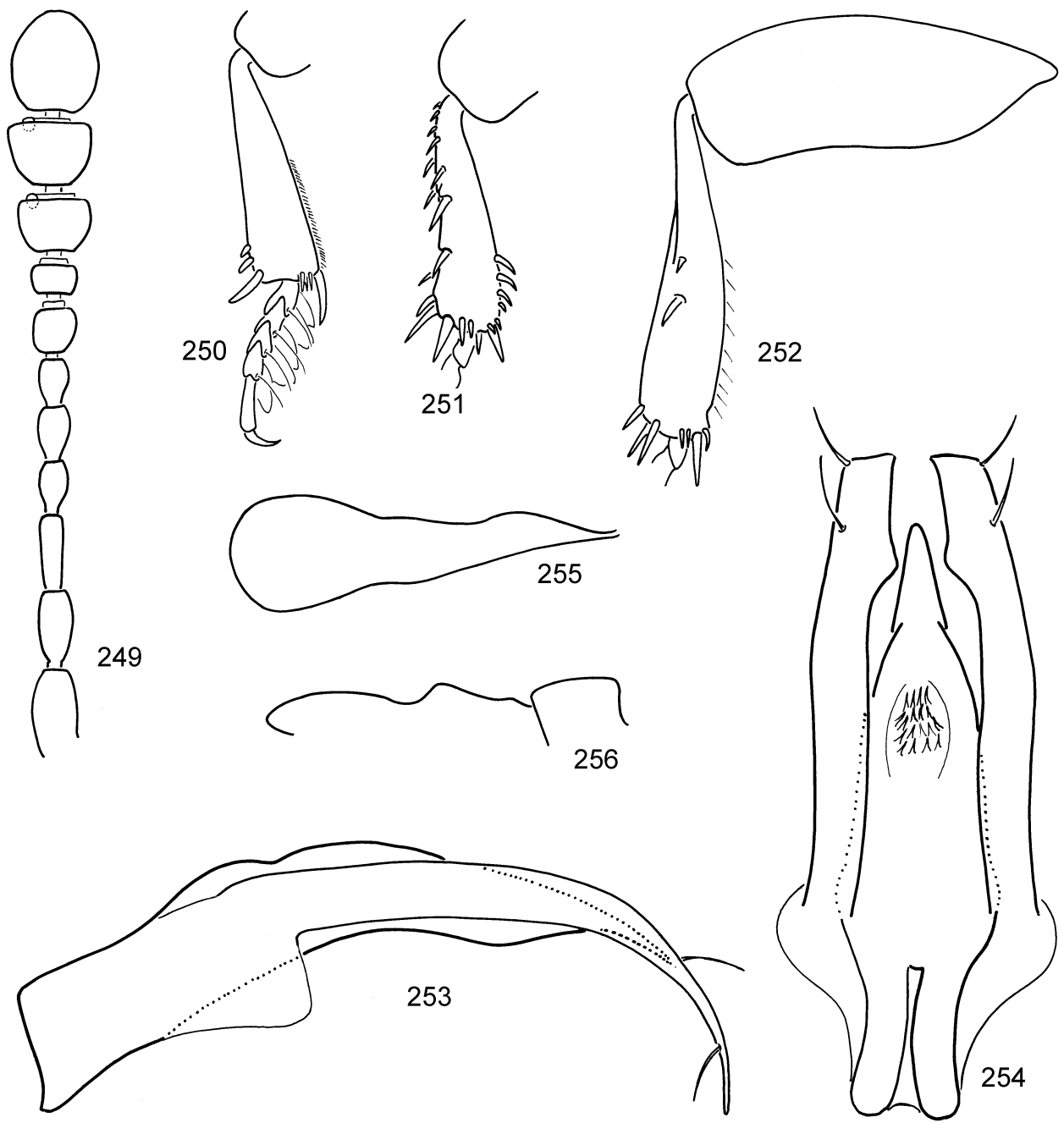
FIGURES 225–232. *Pinodytes shasta*. 225. Male right antenna, dorsal. 226. Male right protibia and protarsus. 227. Male right mesotibia. 228. Male right metafemur and metatibia. 229. Aedeagus, lateral. 230. Aedeagus, dorsal. 231. Spermatheca. 232. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 231), 0.3 mm (Figs. 225–230, 232).



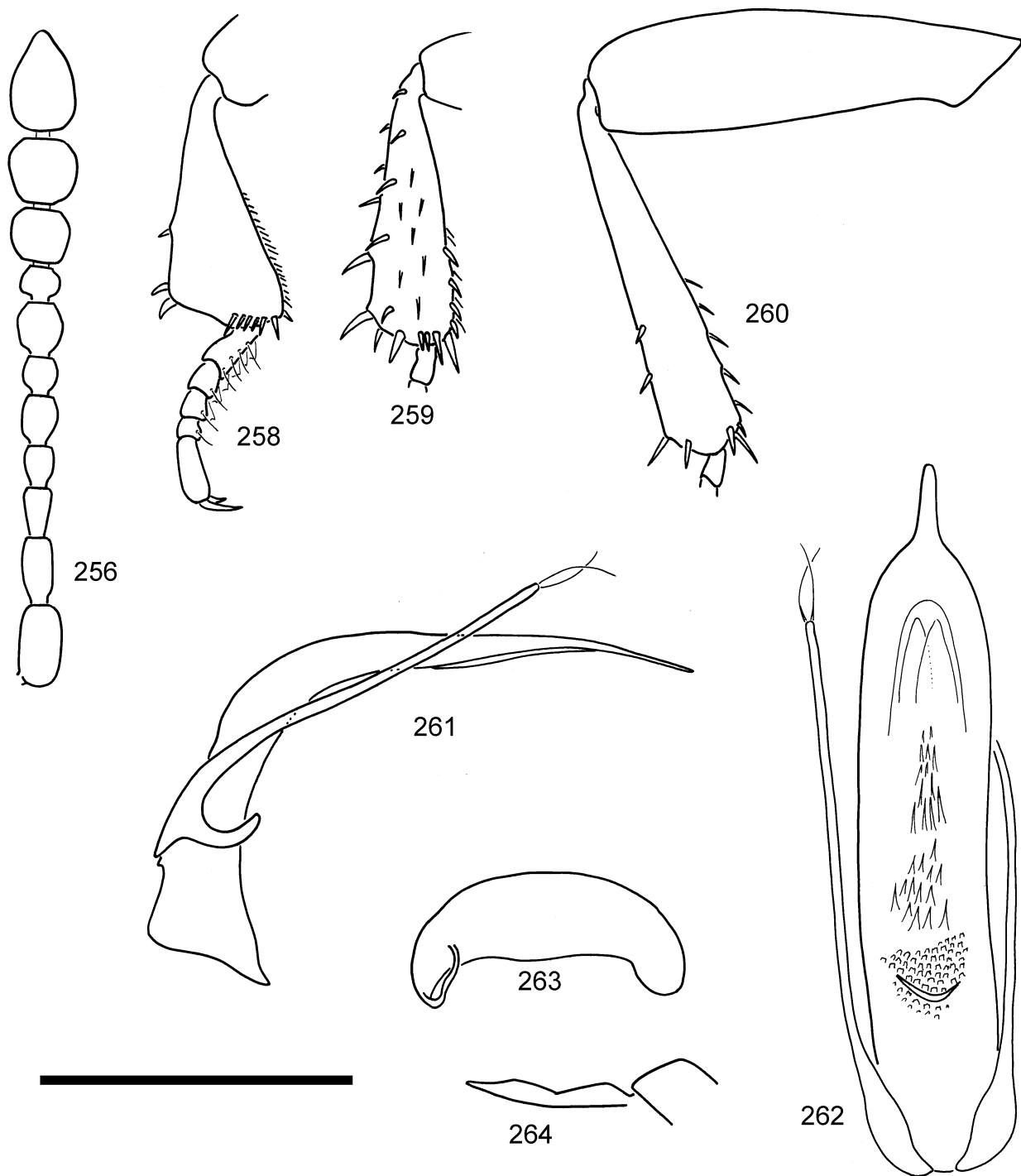
FIGURES 233–240. *Pinodytes spinus*. 233. Male right antenna, dorsal. 234. Male right protibia and protarsus. 235. Male right mesotibia. 236. Male right metafemur and metatibia. 237. Aedeagus, lateral. 238. Aedeagus, dorsal. 239. Spermatheca. 240. Mesoventrite, lateral. Scale bar = 0.15 mm (Fig. 239), 0.3 mm (Figs. 233–238, 240).



FIGURES 241–248. *Pinodytes tehama*. 241. Male right antenna, dorsal. 242. Male right protibia and protarsus. 243. Male right mesotibia. 244. Male right metafemur and metatibia. 245. Aedeagus, lateral. 246. Aedeagus, dorsal. 247. Spermatheca. 248. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 247), 0.3 mm (Figs. 241–246, 248).



FIGURES 249–256. *Pinodytes tuolumne*. 249. Male right antenna, dorsal. 250. Male right protibia and protarsus. 251. Male right mesotibia. 252. Male right metafemur and metatibia. 253. Aedeagus, lateral. 254. Aedeagus, dorsal. 255. Spermatheca. 256. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 255), 0.3 mm (Figs. 249, 253, 254, 256), 0.4 mm (Figs. 250–252).



FIGURES 257–264. *Pinodytes cryptophagoides*. 257. Male right antenna, dorsal. 258. Male right protibia and protarsus. 259. Male right mesotibia. 260. Male right metafemur and metatibia. 261. Aedeagus, lateral. 262. Aedeagus, dorsal. 263. Spermatheca. 264. Mesoventrite, lateral. Scale bar = 0.15 mm (Fig. 263), 0.3 mm (Figs. 262, 264), 0.4 mm (Figs. 257–261).

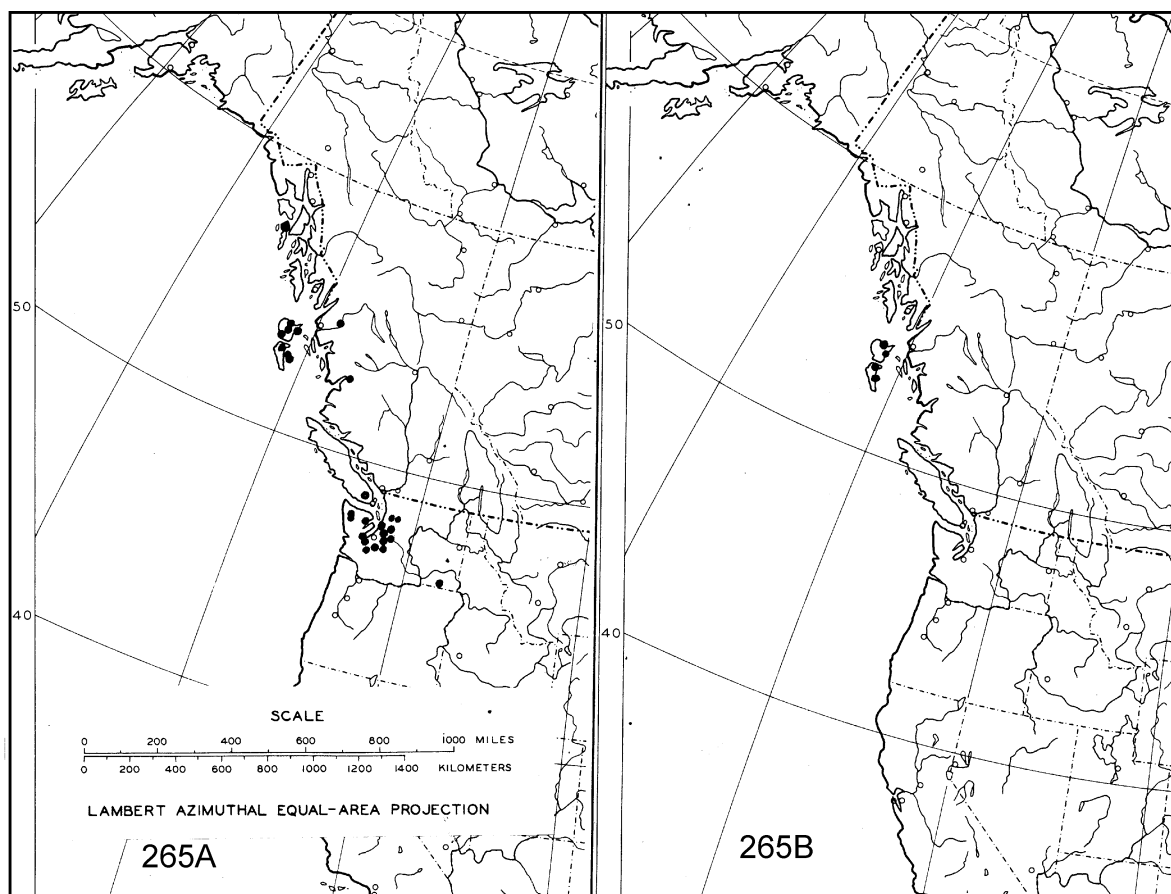
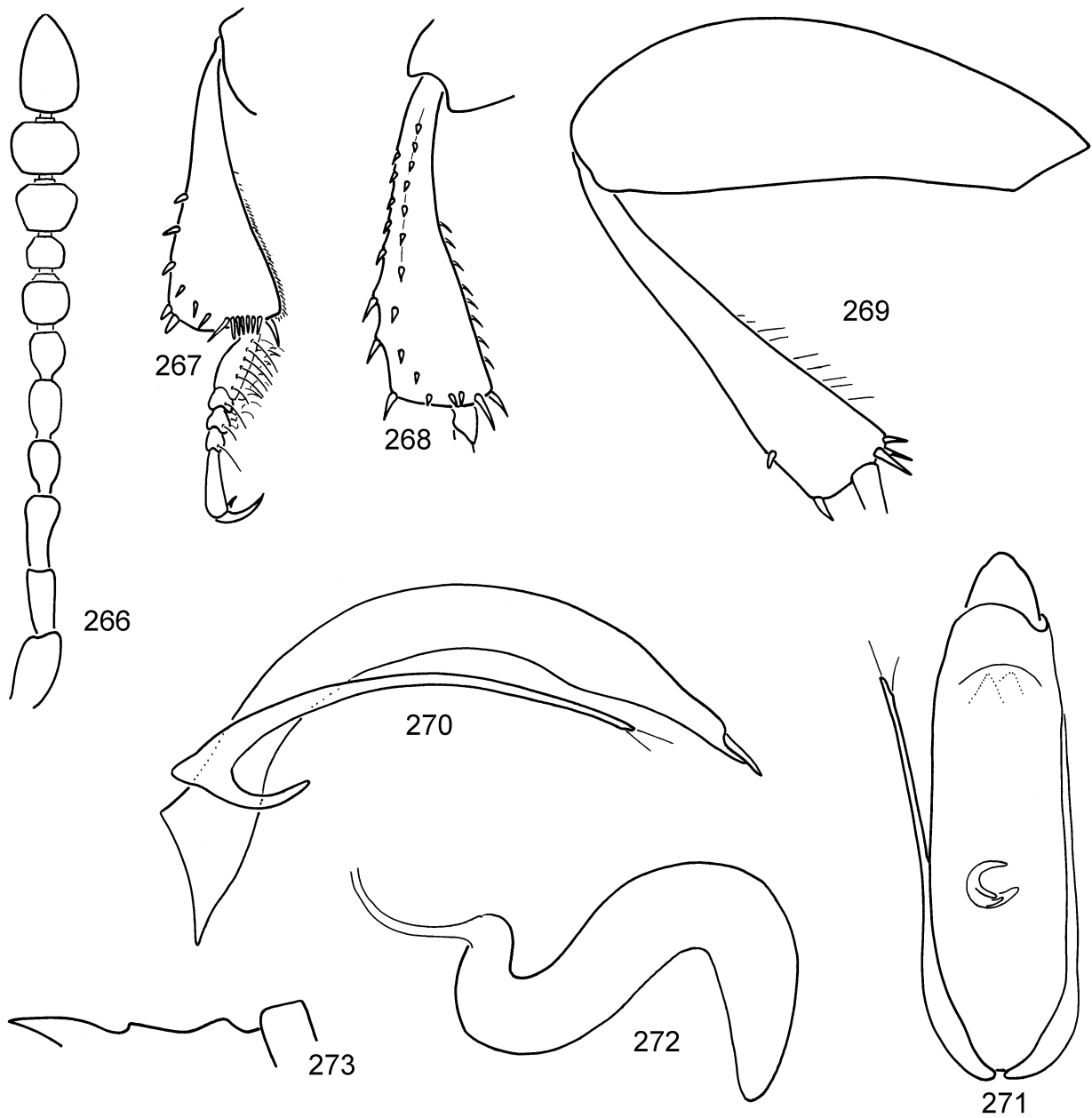


FIGURE 265. Distributions of species in the *Pinodytes cryptophagoides* species group in northwestern North America. Map A. *P. cryptophagoides*, dots, extending from southeastern Washington State, through coastal mainland and insular British Columbia, to Sitka, Alaska. The distribution may have been achieved by coastal currents and dispersal on slide rafts. Map B. *P. haidagwaii*, dots, restricted to the Haida Gwaii (Formerly Queen Charlotte) Islands. This distribution argues for Pleistocene survival on the islands, which served as a Pleistocene refugium, and possibly for a pre-Pleistocene speciation event on the islands.



FIGURES 266–273. *Pinodytes subterraneus*. 266. Male right antenna, dorsal. 267. Male right protibia and protarsus. 268. Male right mesotibia. 269. Male right metafemur and metatibia. 270. Aedeagus, lateral. 271. Aedeagus, dorsal. 272. Spermatheca. 273. Mesoventricle, lateral. Scale bar = 0.2 mm (Fig. 272), 0.45 mm (Figs. 270, 271), 0.6 mm (Fig. 273), 0.7 mm (Figs. 266–269).

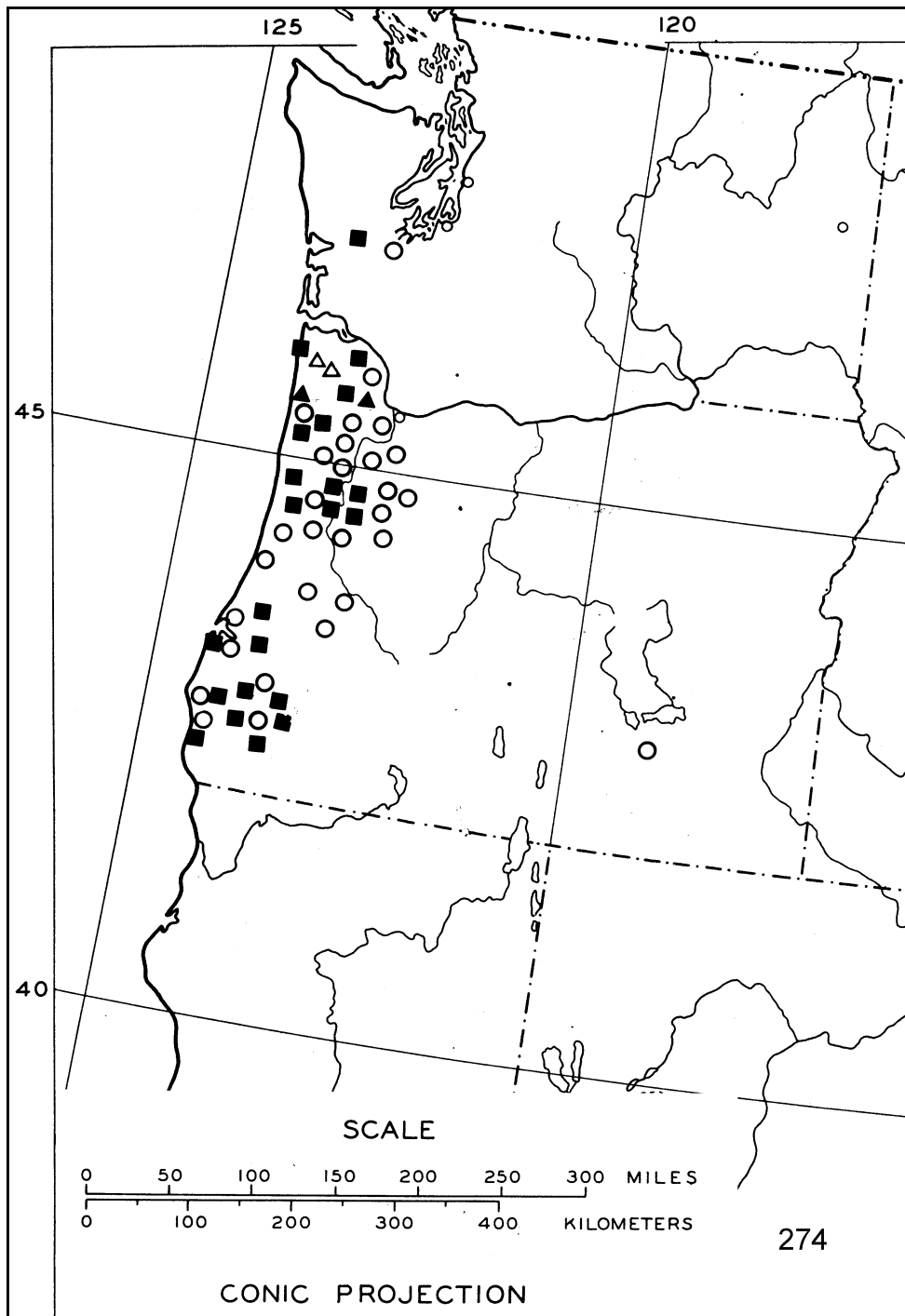
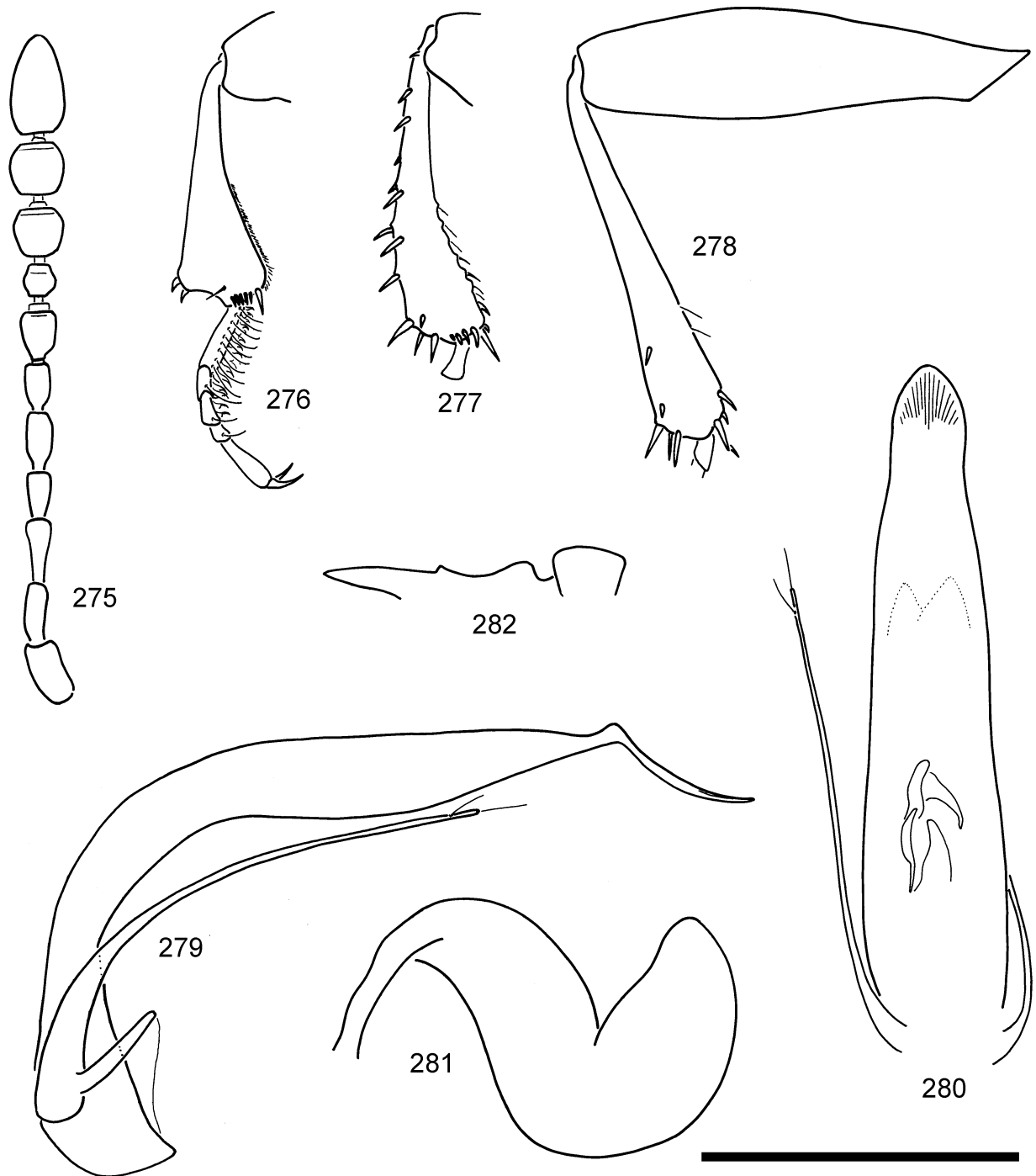
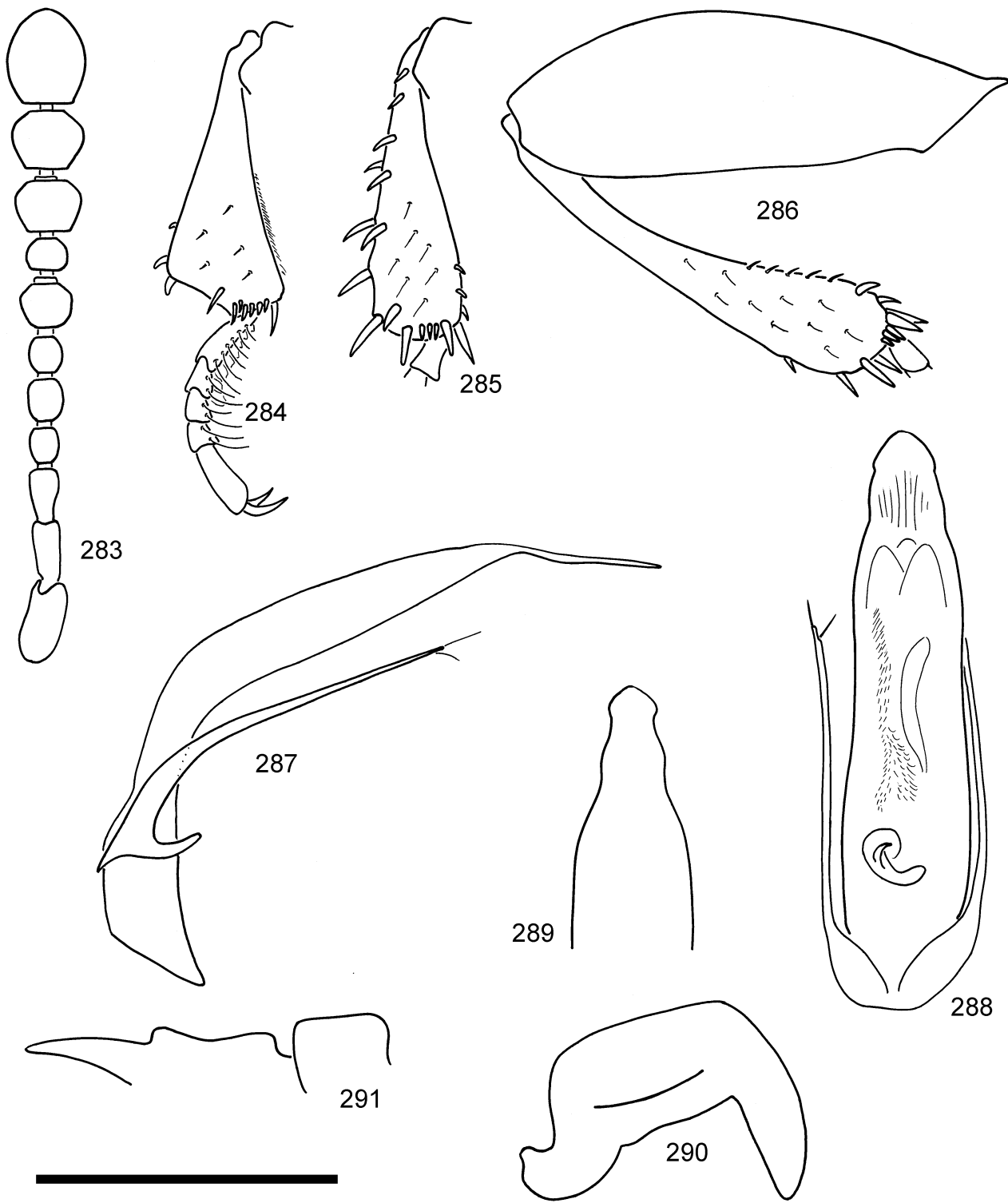


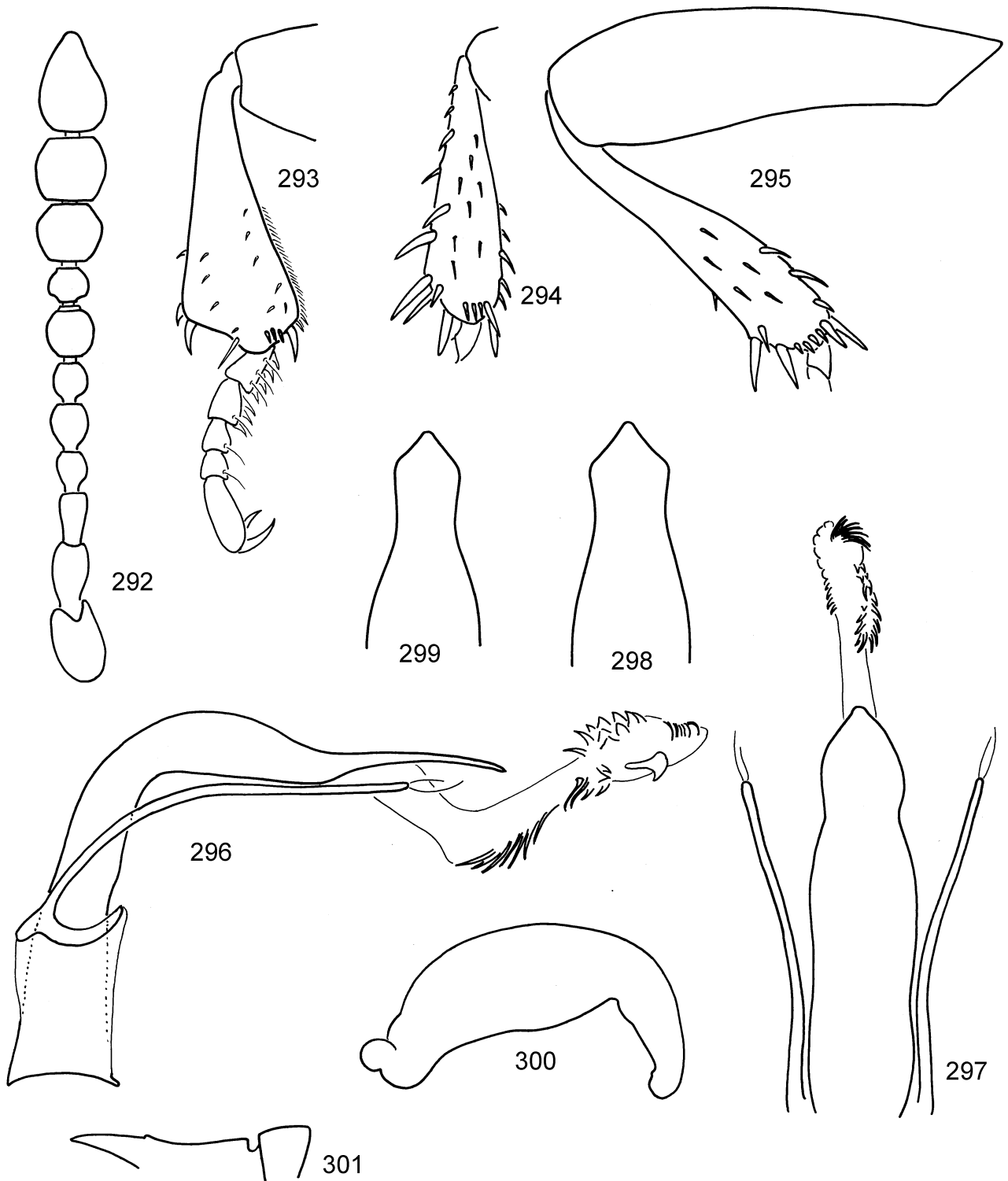
FIGURE 274. Distributions of species in the *Pinodytes cryptophagoides* species group in northwestern United States. *P. subterraneus*, open triangles in northwestern Oregon. *P. imbricatus*, closed triangles in northwestern Oregon. *P. newelli*, closed squares widely distributed from southeastern Oregon along the Coast Ranges to central western Washington. *P. cappizzi*, open circles widely distributed in the Coast Ranges from southeastern Oregon to west central Washington, and east of the volcanic Cascade mountains in southeastern Oregon.



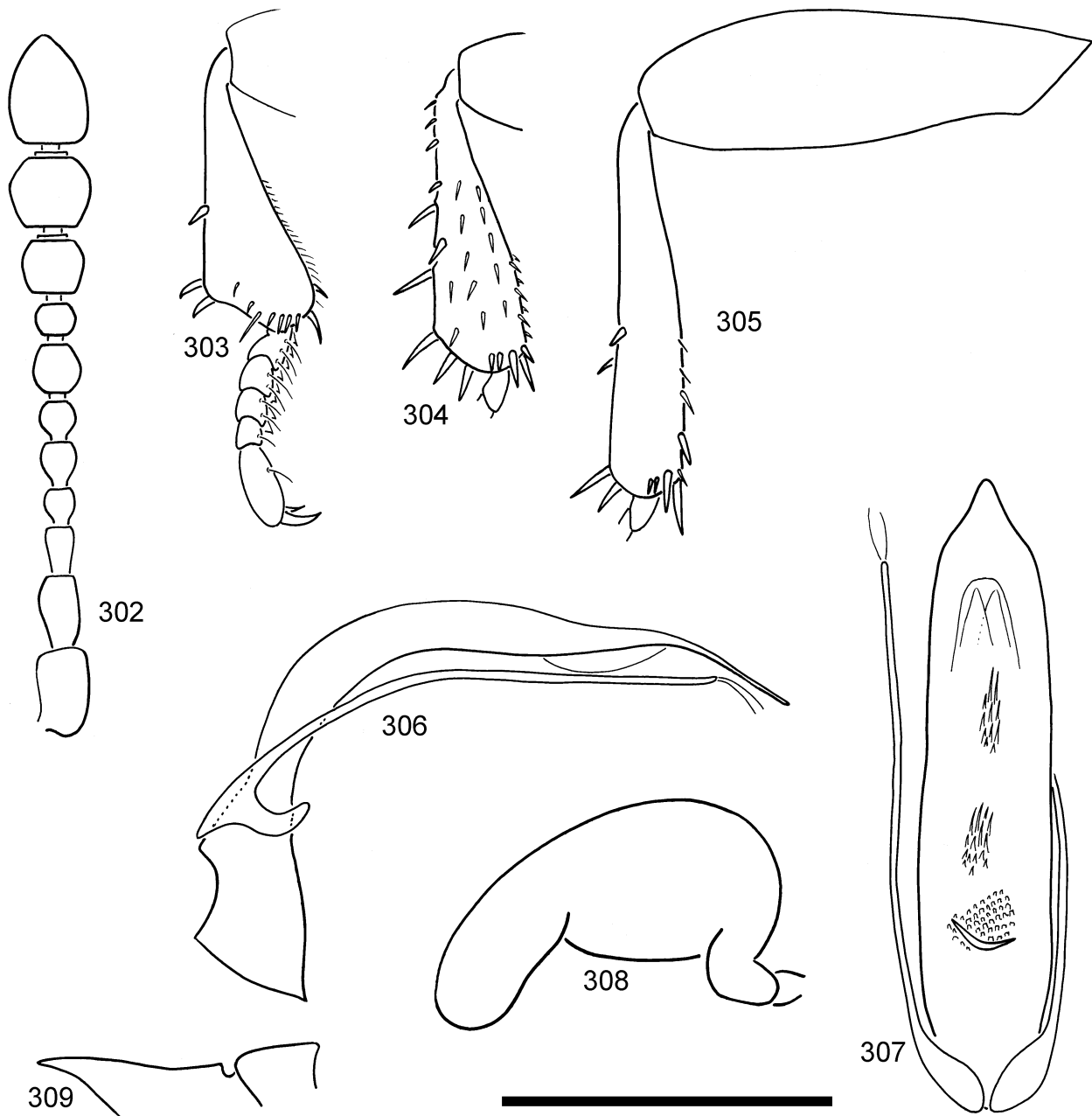
FIGURES 275–282. *Pinodytes imbricatus*. 275. Male right antenna, dorsal. 276. Male right protibia and protarsus. 277. Male right mesotibia. 278. Male right metafemur and metatibia. 279. Aedeagus, lateral. 280. Aedeagus, dorsal. 281. Spermatheca. 282. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 281), 0.6 mm (Figs. 279, 280, 282), 0.7 mm (Figs. 275–278).



FIGURES 283–291. *Pinodytes newelli*. 283. Male right antenna, dorsal. 284. Male right protibia and protarsus. 285. Male right mesotibia. 286. Male right metafemur and metatibia. 287. Aedeagus, lateral. 288. Aedeagus, dorsal. 289. Variation in apex of aedeagus, dorsal (Tillamook Co., Oregon). 290. Spermatheca. 291. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 290), 0.3 mm (Figs. 287–289, 291), 0.4 mm (Figs. 283–286).



FIGURES 292–301. *Pinodytes capizzii*. 292. Male right antenna, dorsal. 293. Male right protibia and protarsus. 294. Male right mesotibia. 295. Male right metafemur and metatibia. 296. Aedeagus, lateral. 297. Aedeagus, dorsal. 298. Variation in apex of aedeagus, dorsal (Lane Co., Oregon). 299. Variation in apex of aedeagus, dorsal (Columbia Co., Oregon). 300. Spermatheca. 301. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 300), 0.3 mm (Figs. 292–299, 301).



FIGURES 302–309. *Pinodytes rothi*. 302. Male right antenna, dorsal. 303. Male right protibia and protarsus. 304. Male right mesotibia. 305. Male right metafemur and metatibia. 306. Aedeagus, lateral. 307. Aedeagus, dorsal. 308. Spermatheca. 309. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 308), 0.3 mm (Figs. 302–307, 309).

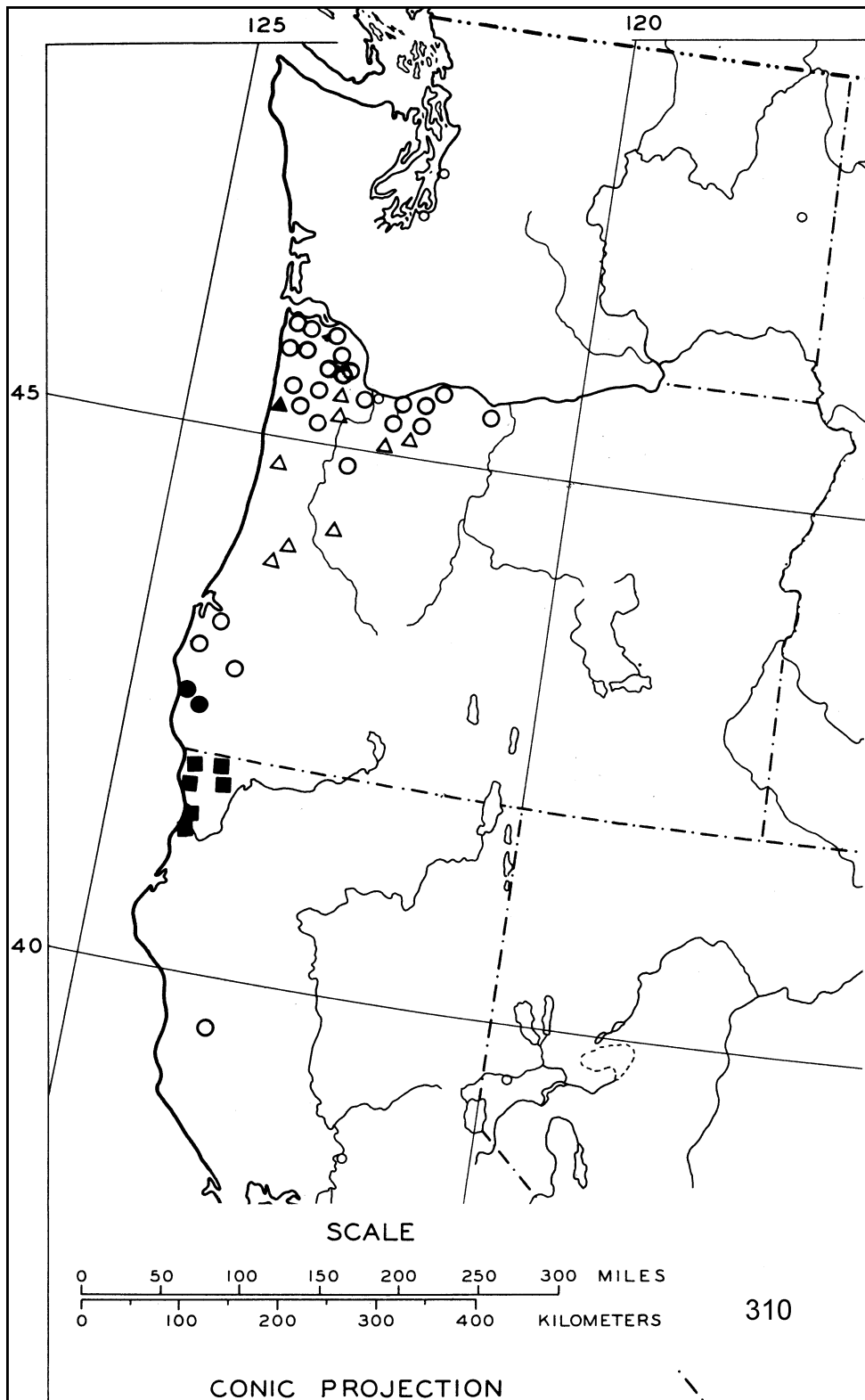
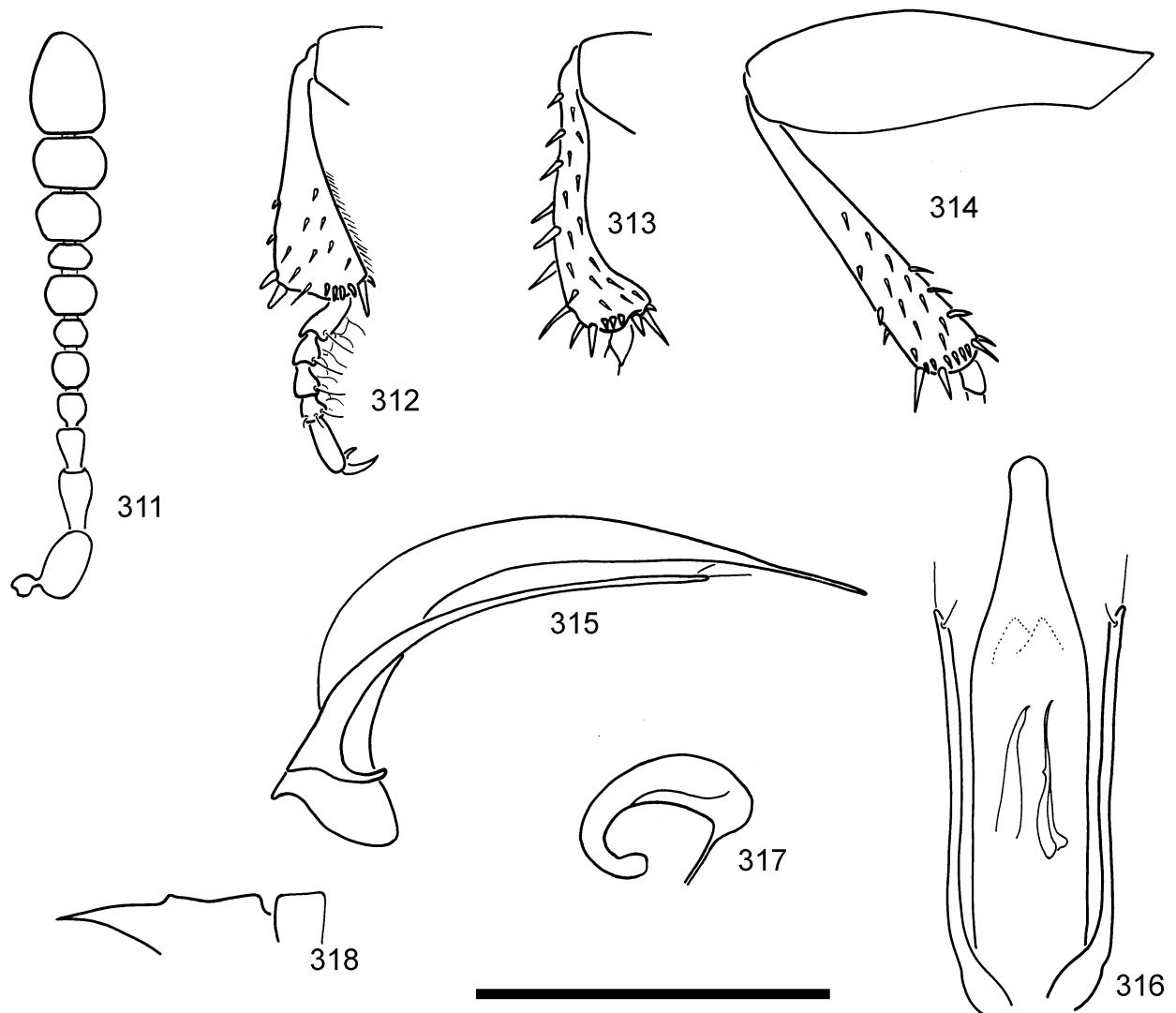
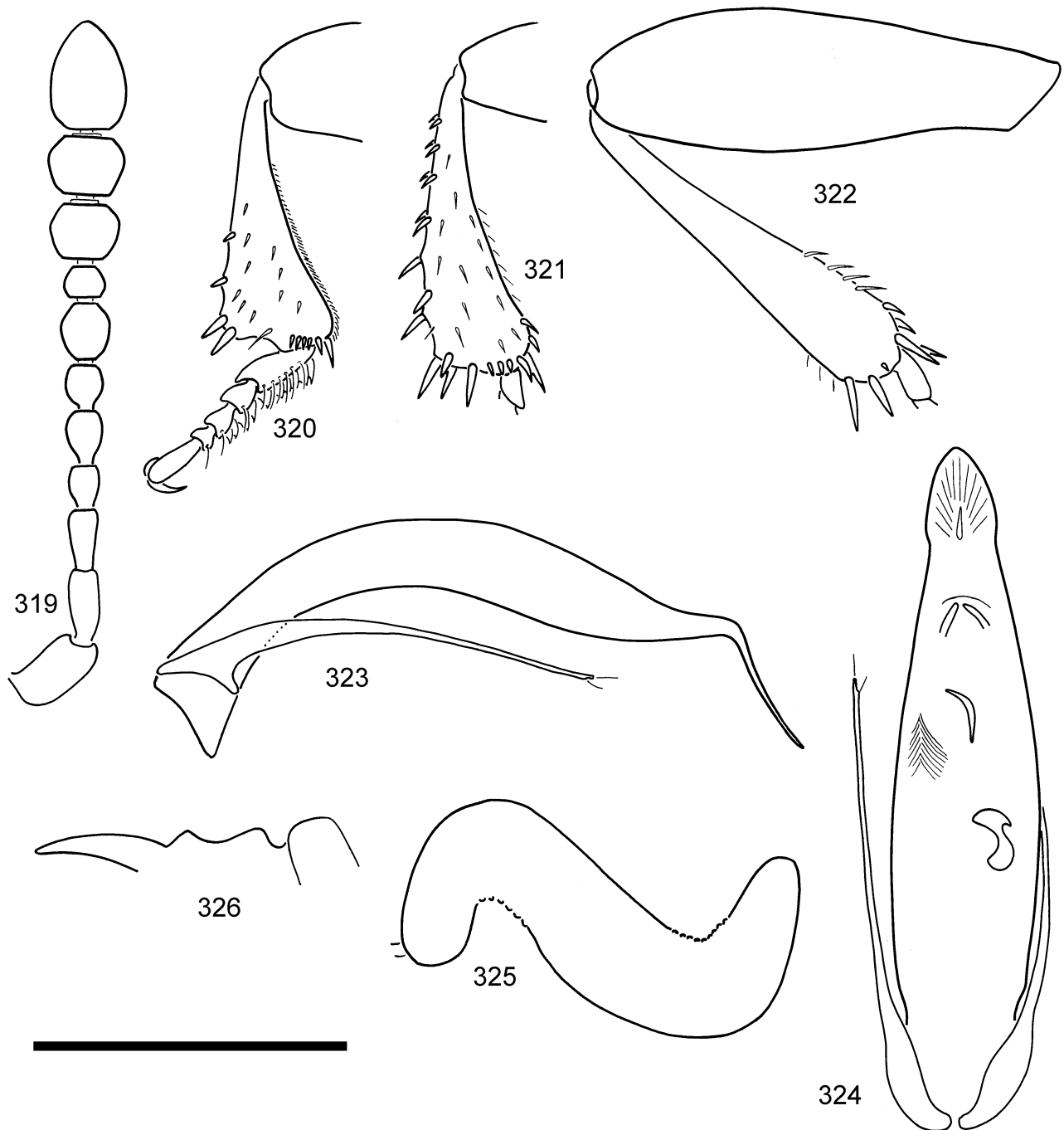


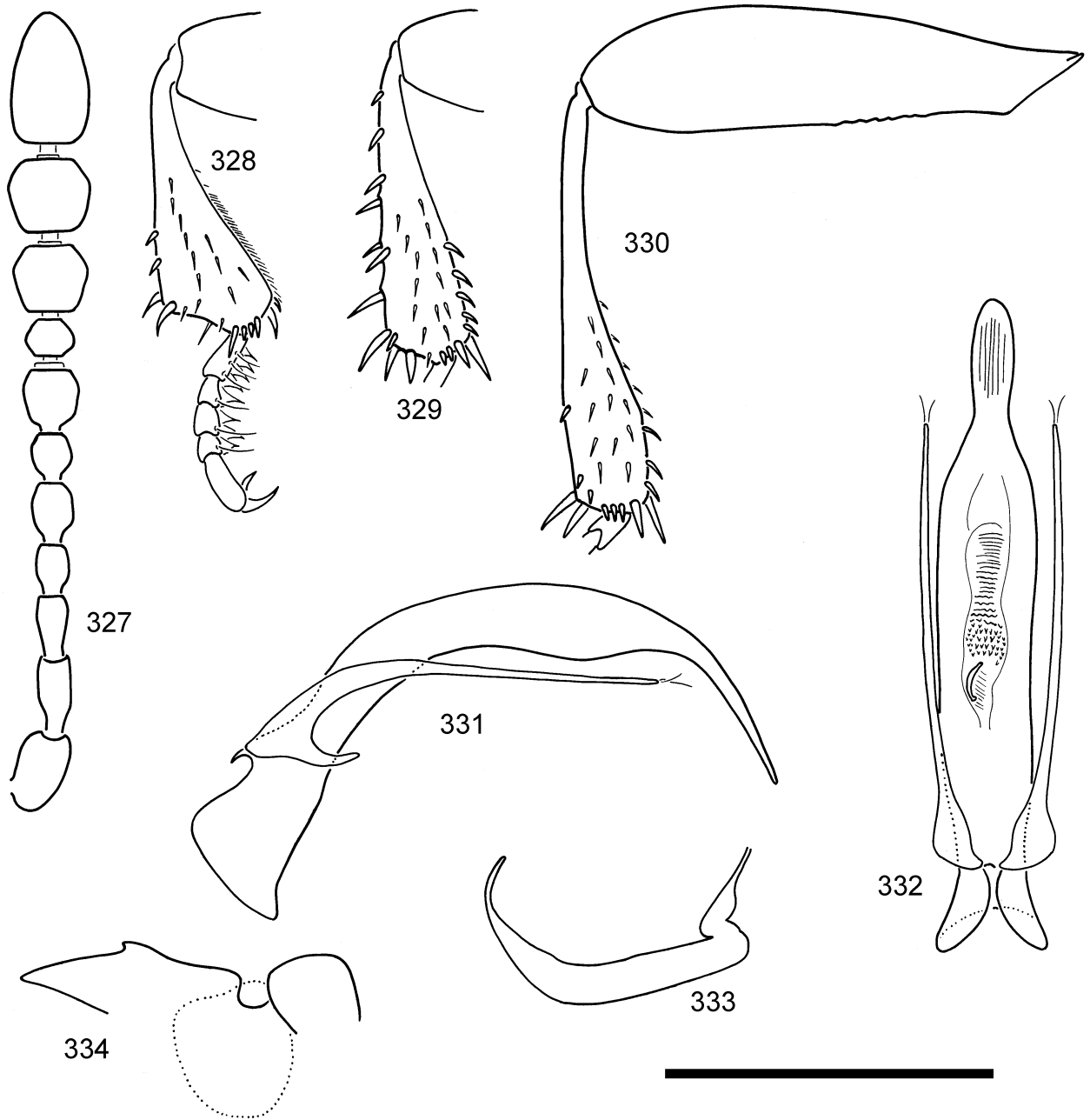
FIGURE 310. Distributions of species in the *Pinodytes cryptophagoides* species group in northwestern United States. *P. rothi*, open circles in northwestern Oregon down Coast Mountains to northern coastal California. *P. tibialis*, closed circles in southwestern Oregon. *P. angulatus*, open triangles in northwestern Oregon. *P. delnorte*, closed squares in northwestern California. *P. garibaldi*, closed triangle in northwestern Oregon.



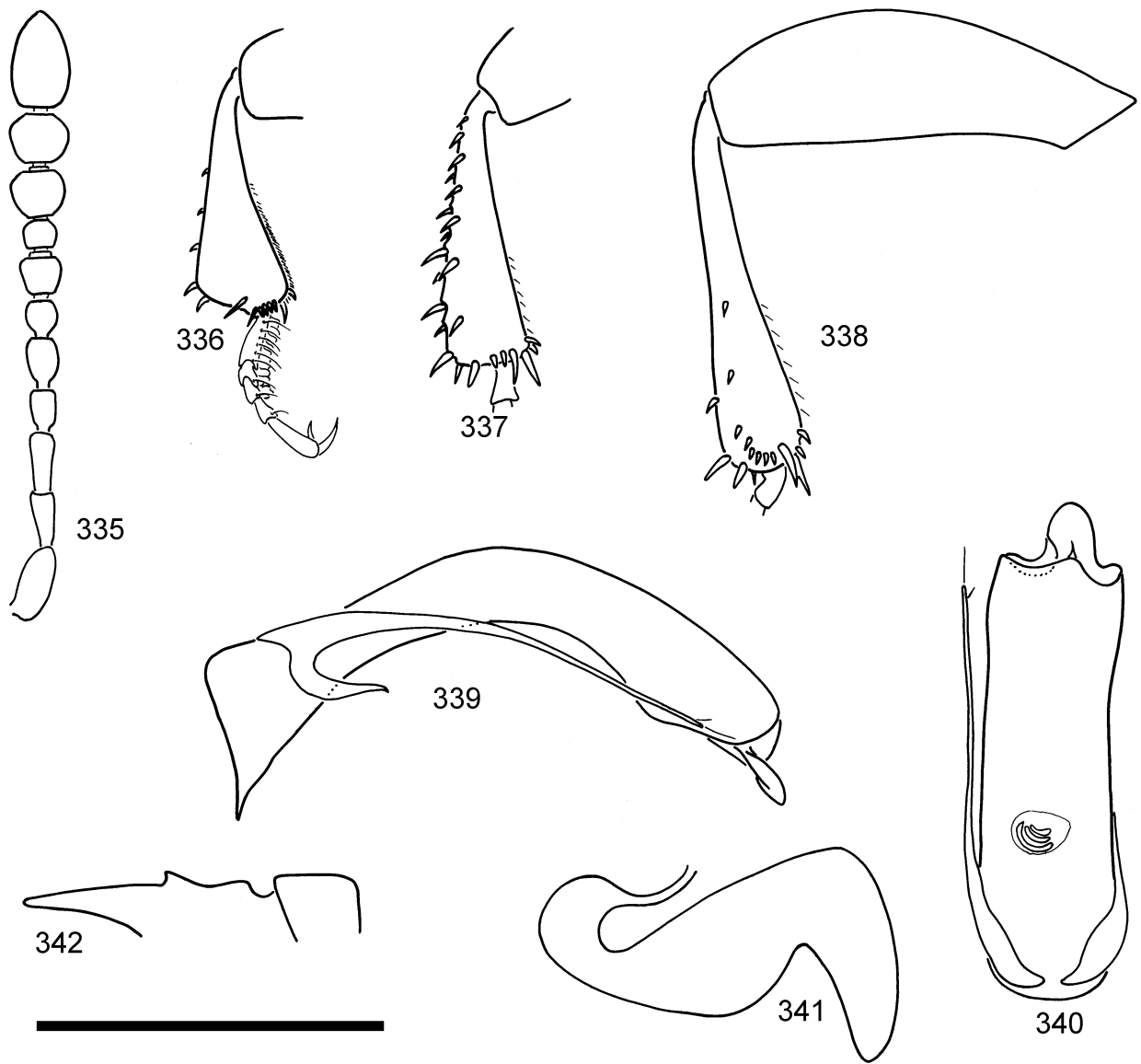
FIGURES 311–318. *Pinodytes tibialis*. 311. Male right antenna, dorsal. 312. Male right protibia and protarsus. 313. Male right mesotibia. 314. Male right metafemur and metatibia. 315. Aedeagus, lateral. 316. Aedeagus, dorsal. 317. Spermatheca. 318. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 317), 0.3 mm (Figs. 315, 316, 318), 0.4 mm (Figs. 311–314).



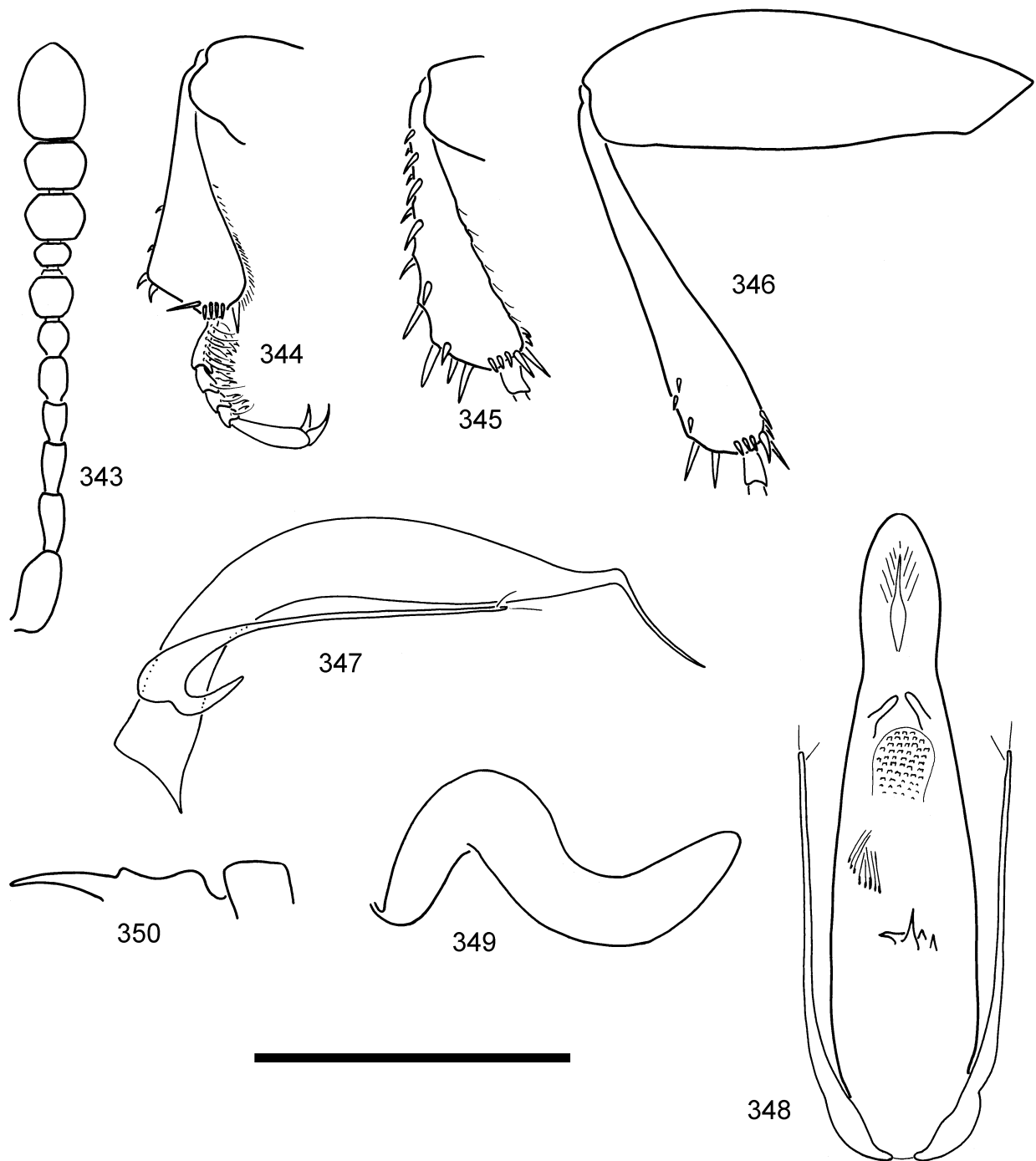
FIGURES 319–326. *Pinodytes angulatus*. 319. Male right antenna, dorsal. 320. Male right protibia and protarsus. 321. Male right mesotibia. 322. Male right metafemur and metatibia. 323. Aedeagus, lateral. 324. Aedeagus, dorsal. 325. Spermatheca. 326. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 325), 0.3 mm (Fig. 326), 0.4 mm (Figs. 319–324).



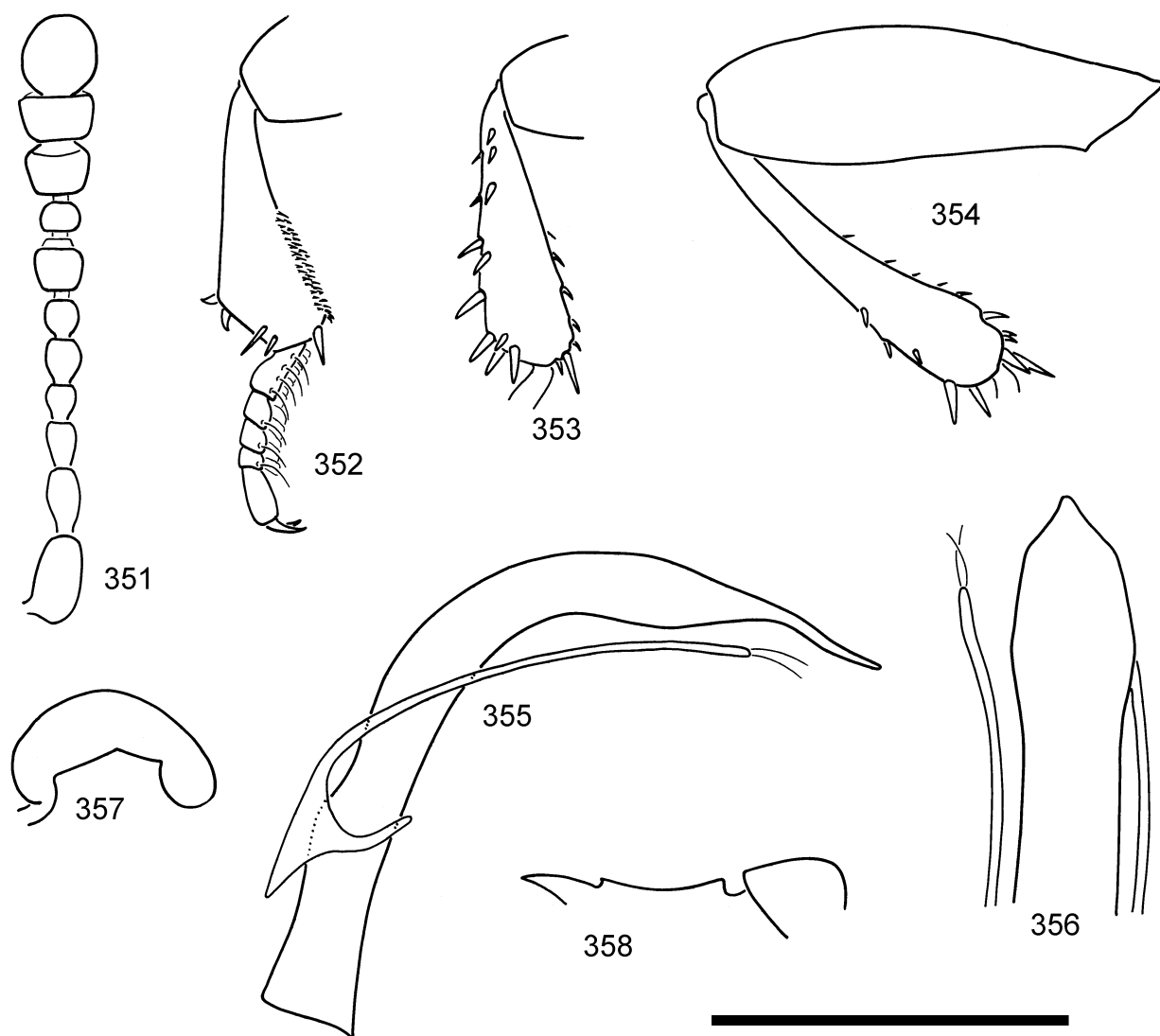
FIGURES 327–334. *Pinodytes delnorte*. 327. Male right antenna, dorsal. 328. Male right protibia and protarsus. 329. Male right mesotibia. 330. Male right metafemur and metatibia. 331. Aedeagus, lateral. 332. Aedeagus, dorsal. 333. Spermatheca. 334. Mesoventrite, lateral; dotted line indicates area of setal patch. Scale bar = 0.1 mm (Fig. 333), 0.3 mm (Figs. 331, 332, 334), 0.4 mm (Figs. 327–330).



FIGURES 335–342. *Pinodytes garibaldi*. 335. Male right antenna, dorsal. 336. Male right protibia and protarsus. 337. Male right mesotibia. 338. Male right metafemur and metatibia. 339. Aedeagus, lateral. 340. Aedeagus, dorsal. 341. Spermatheca. 342. Mesoventrite, lateral. Scale bar = 0.2 mm (Fig. 341), 0.45 mm (Figs. 339, 340), 0.6 mm (Fig. 342), 0.7 mm (Figs. 335–338).



FIGURES 343–350. *Pinodytes haidagwaii*. 343. Male right antenna, dorsal. 344. Male right protibia and protarsus. 345. Male right mesotibia. 346. Male right metafemur and metatibia. 347. Aedeagus, lateral. 348. Aedeagus, dorsal. 349. Spermatheca. 350. Mesoventrite, lateral. Scale bar = 0.2 mm (Fig. 349), 0.45 mm (Fig. 348), 0.5 mm (Figs. 343–347, 350).



FIGURES 351–358. *Pinodytes isabella*. 351. Male right antenna, dorsal. 352. Male right protibia and protarsus. 353. Male right mesotibia. 354. Male right metafemur and metatibia. 355. Aedeagus, lateral. 356. Aedeagus, dorsal. 357. Spermatheca. 358. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 357), 0.3 mm (Figs. 355, 356, 358), 0.4 mm (Figs. 351–354).

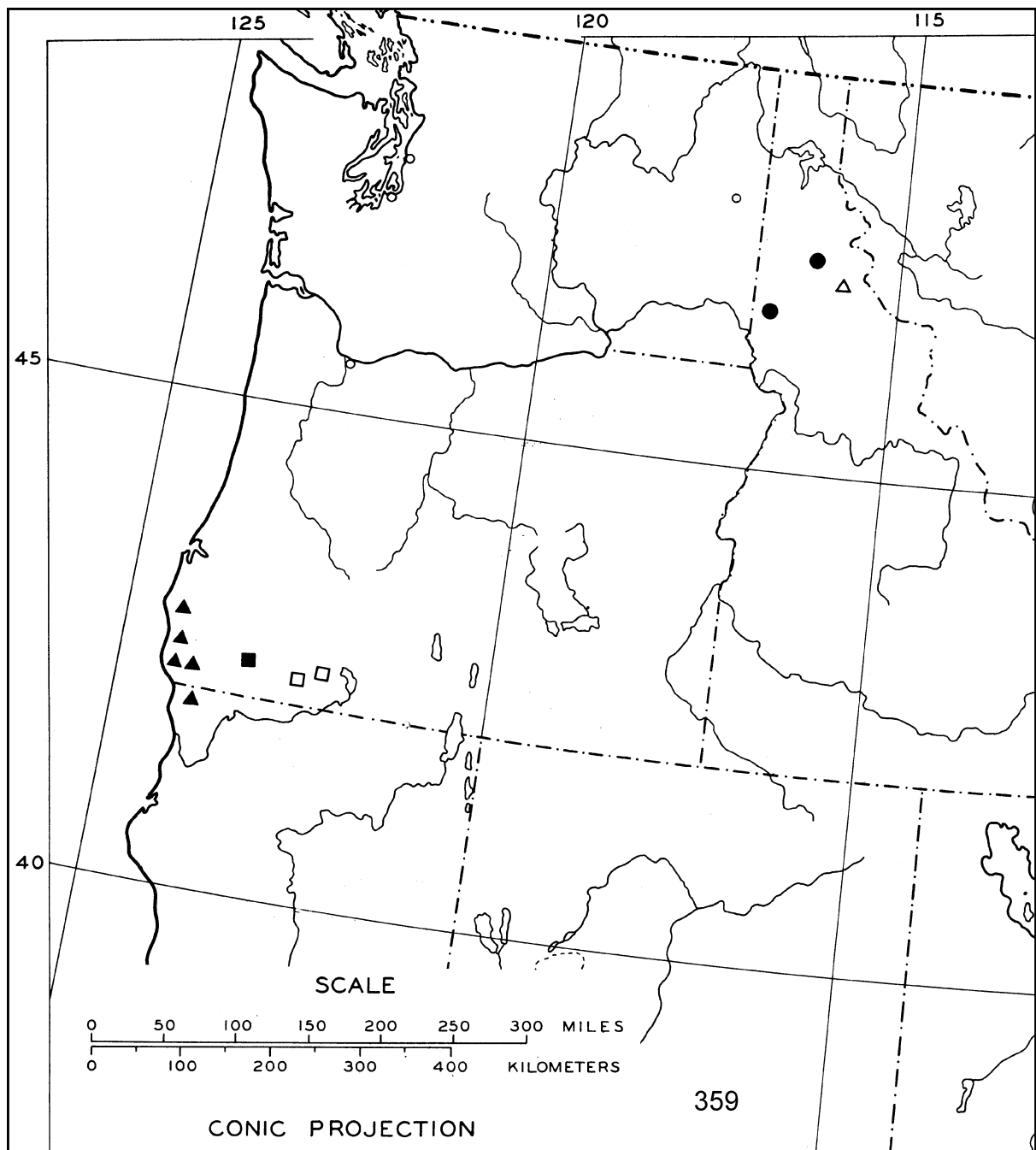
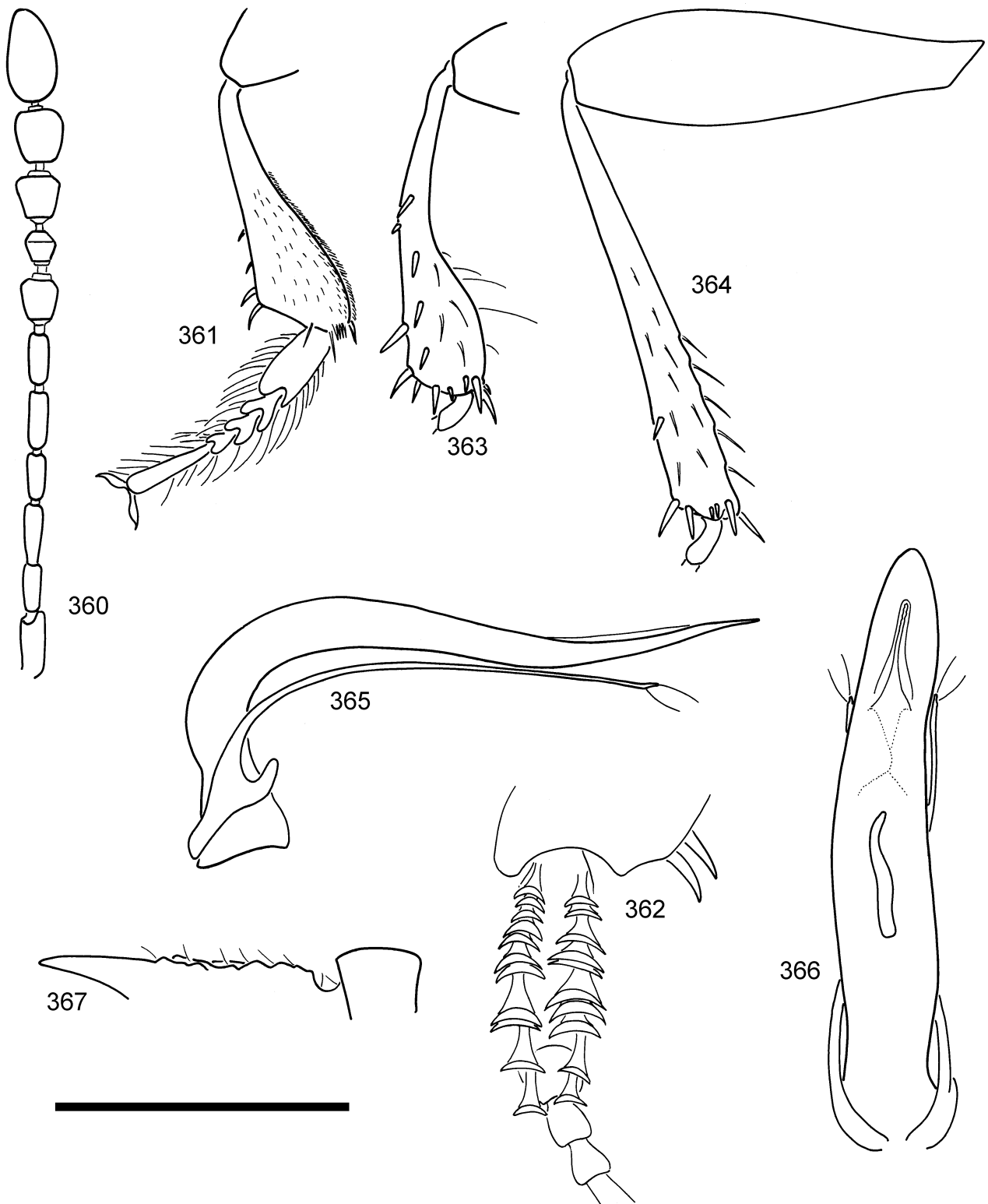
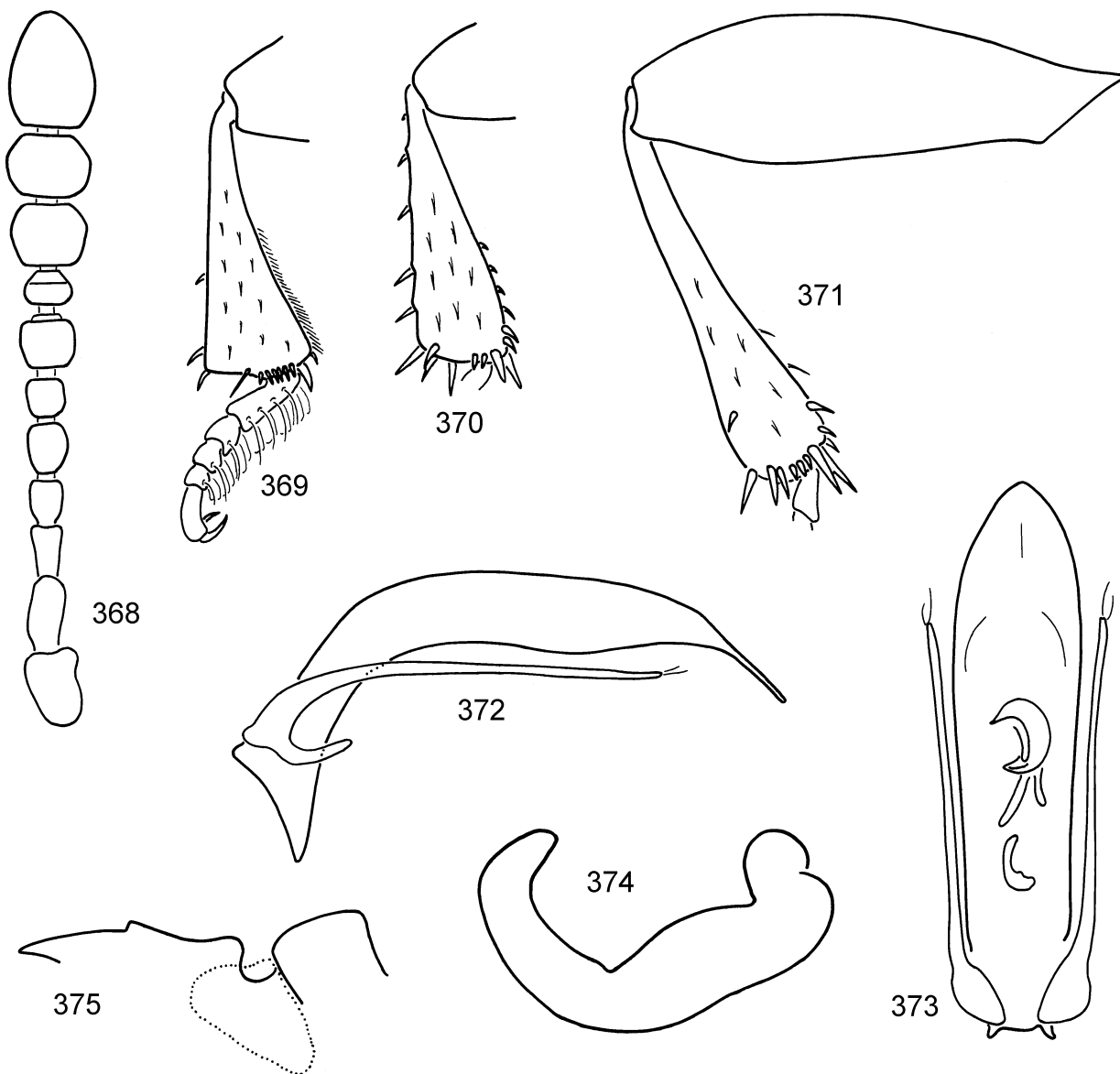


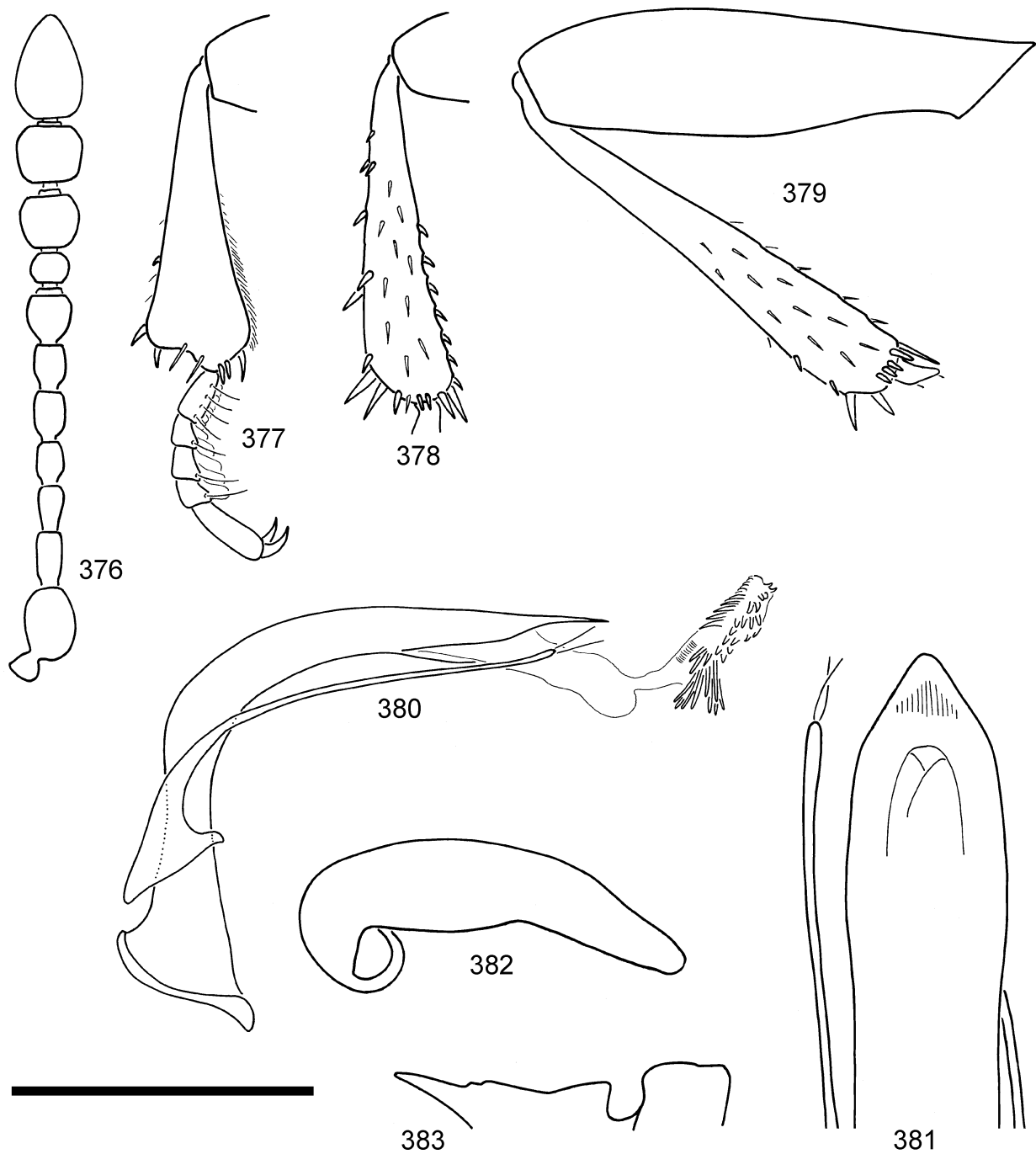
FIGURE 359. Distributions of species in the *Pinodytes cryptophagoides* species group in northwestern United States. *P. isabella*, open triangle in northern Idaho. *P. orca*, closed square in southwestern Oregon. *P. setosus*, closed triangles in southwestern Oregon and northwestern California. *P. shoshone*, closed circles in northern Idaho. *P. sinuatus*, open squares in southwestern Oregon.



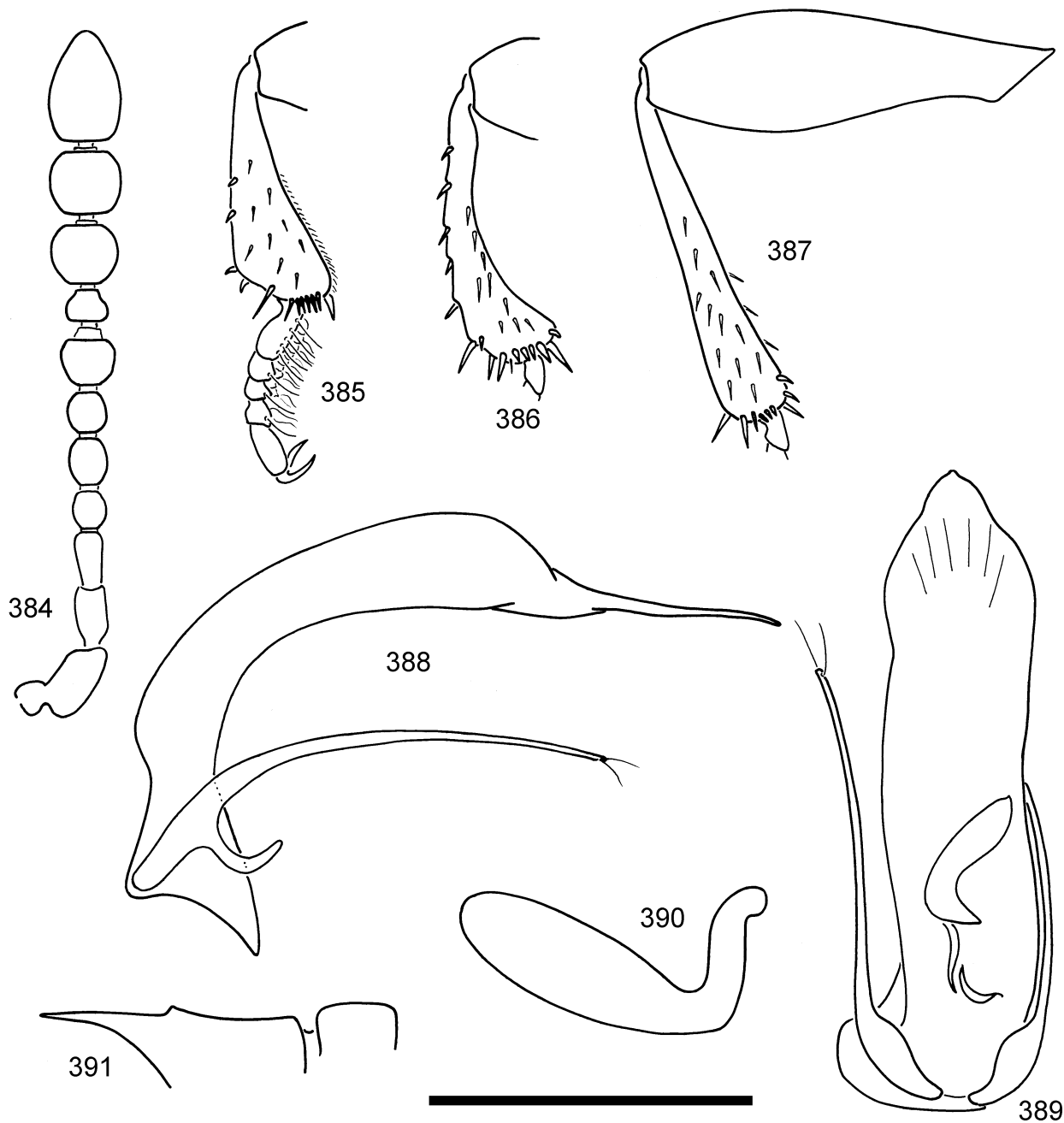
FIGURES 360–367. *Pinodytes orca*. 360. Male right antenna, dorsal. 361. Male right protibia and protarsus, dorsal. 362. Male right protarsus, ventral. 363. Male right mesotibia. 364. Male right metafemur and metatibia. 365. Aedeagus, lateral. 366. Aedeagus, dorsal. 367. Mesoventrite, lateral. Scale bar = 0.4 mm (Fig. 362), 0.5 mm (Fig. 367), 0.7 mm (Figs. 361, 363–366), 1.0 mm (Fig. 360).



FIGURES 368–375. *Pinodytes setosus*. 368. Male right antenna, dorsal. 369. Male right protibia and protarsus. 370. Male right mesotibia. 371. Male right metafemur and metatibia. 372. Aedeagus, lateral. 373. Aedeagus, dorsal. 374. Spermatheca. 375. Mesoventrite, lateral; dotted line indicates area of setal patch. Scale bar = 0.1 mm (Fig. 374), 0.3 mm (Figs. 372, 373, 375), 0.4 mm (Figs. 368–371).



FIGURES 376–383. *Pinodytes shoshone*. 376. Male right antenna, dorsal. 377. Male right protibia and protarsus. 378. Male right mesotibia. 379. Male right metafemur and metatibia. 380. Aedeagus, lateral. 381. Aedeagus, dorsal. 382. Spermatheca. 383. Mesoventrite, lateral. Scale bar = 0.15 mm (Fig. 382), 0.3 mm (Figs. 381, 383), 0.4 mm (Figs. 377–380), 0.45 mm (Fig. 376).



FIGURES 384–391. *Pinodytes sinuatus*. 384. Male right antenna, dorsal. 385. Male right protibia and protarsus. 386. Male right mesotibia. 387. Male right metafemur and metatibia. 388. Aedeagus, lateral. 389. Aedeagus, dorsal. 390. Spermatheca. 391. Mesoventrite, lateral. Scale bar = 0.1 mm (Fig. 390), 0.3 mm (Fig. 391), 0.4 mm (Figs. 384–389).

Appendix. Additional specimens examined.

Pinodytes capizzii (Hatch). UNITED STATES. Oregon: Portland, 23.V, coll. Hubbard & Schwarz, 3, USNM; Portland, 22.V, coll. Hubbard & Schwarz, 2, USNM; Benton Co., 0.5 mi NW Glenbrook, S. fork Alsea R. access road, 4.XII.71, 600', E.M. Benedict, decid. & fir duff, 20, SBPC; Benton Co., 0.5miE Mary's Peak Rd on Hwy US34, 11.VII.1968, J. Cornell & J.A. Wagner, floor litter u oxalis & ferns in ravine, 9, FMNH; Benton Co., 1.4miW Lewisburg, 25.IV.1969, R.L. Westcott, in rotting oak logs, 2, WFBM; Benton Co., 10miW Philomath, 12.V.1983, 1750', D.S. Chandler, sift rotten Douglas fir, 11, UNHC; Benton Co., 10miW Philomath, 7.III.74, 1500', R. Fogel, *Hymen. parksii*, 1, SBPC; Benton Co., 2.3miNW Glenbrook, S. Fork Alsea R., Access Rd., 4.XII.71, 1200', E.M. Benedict, maple, Douglas fir duff, 7, SBPC; Benton Co., 4miW Philomath, 12.V.1983, D.S. Chandler, sift oak & maple leaf litter, 1, UNHC; Benton Co., 5miN Alsea, N. fork Alsea Rat Bailey Ck., 22.III.1966, J. Cornell, D.L. Mays, ex litter, frass u *Acer macrophyllum* logs, 1, JFCC; Benton Co., 6miN Corvallis, 21.III.1970, L. Russell, oak litter, 1, FSCA; Benton Co., 7miW Philomath, 2.II.66, J. & S. Cornell, ex streamside litter, 20, JFCC; Benton Co., 8miW Philomath, 12.V.1983, 1000', D.S. Chandler, sift forest leaf litter, 20, UNHC; Benton Co., 8miW Philomath, 12.V.1983, D.S. Chandler, sift fern & maple litter by stream, 5, UNHC; Benton Co., 8miW Philomath, 12.V.1983, D.S. Chandler, sift vine maple litter, 12, UNHC; Benton Co., 8miW Philomath, 12.V.1983, 1000', D.S. Chandler, fern & maple litter, 11, UNHC; Benton Co., 8miW Philomath, 12.V.1983, 1000', D.S. Chandler, sift fern & maple litter, 10, UNHC; Benton Co., imiSW Philomath, along Wells Creek, 9.VI.1957, H.S. Dybas, conc. floor litter in fir-maple, 12, FMNH; Benton Co., Carey's Grove, 11.VII.1968, J.A. Wagner, 5, FMNH; Benton Co., Corvallis, 22.II.1969, L. Russell, 5, FMNH; Benton Co., Line Hgw 34, 30.X.60, D.R. Malcolm, maple-alder duff, 6, SBPC; Benton Co., MacDonald Forest, Oak Creek, 21.III.1971, D. Carlson, 21, CSCA; Benton Co., MacDonald Forest, Oak Creek, 26.I.1971, D. Carlson, 11, CSCA; Benton Co., Mary's Peak, 15.I.77, L. Russell, 16, SBPC; Benton Co., Mary's Peak, 29.VIII.1968, E.M. Fisher, 1, LACM; Benton Co., Mary's Peak, 17.V.1983, 3000', D.S. Chandler, sift Douglas fir litter, 3, UNHC; Benton Co., Mary's Peak, 17.V.1983, D.S. Chandler, sift rotten Douglas fir log, 6, UNHC; Benton Co., Mary's Peak Campground, 29.VIII.1968, E.M. Fisher, R.L. Westcott, in duff under fir log, 1, WFBM; Benton Co., Mary's Peak Cpgd. below summit, 2.VIII.1968, J.A. Wagner, floor duff, 8, FMNH; Benton Co., Mary's Peak Cpgd. below summit, 19.VII.1968, J. Cornell & J.A. Wagner, litter u nobel firs, 2, FMNH; Benton Co., Mary's Peak, 0.5mi below jct. Hwy 20, ca 20 miSW Philomath, 5.V.1973, 2500', E.M. Benedict, duff, 16, SBPC; Benton Co., Mary's Peak, 0.5mi below jct. Hwy 20, ca 20 miSW Philomath, 5.V.1973, 2500', E.M. Benedict, moss and western hemlock duff, 1, SBPC; Benton Co., McDonald For., 5miN Corvallis, XII.1963, 14, JFCC; Benton Co., McDonald For., Oak Ck., 15.IV.73, G.L. Peters, 9, USNM; Benton Co., McDonald Forest nr. Corvallis, 23.X.1968, R.L. Westcott, in forest stump, 7, WFBM; Benton Co., McDonald Forest nr. Corvallis, 26.II.1969, R.L. Westcott, in rotten stump of Douglas fir, 3, WFBM; Benton Co., McDonald Forest, 5miN Corvallis, I.1973, 9, USNM; Benton Co., McDonald Forest, 8miN Corvallis, 22.XI.1949, V. Roth, in moss, 3, USNM; Benton Co., McDonald Forest, N of Corvallis, 3.XI.1949, V. Roth, 4, USNM; Benton Co., McDonald Forest, nr. Corvallis, 15.IV.1969, E.M. Fisher, 6, CSCA; Benton Co., McDonald Forest, Oak Creek, 21.III.1971, D. Carlson, 2, EMEC; Benton Co., McDonald Forest, Oak Creek area, 18.II.1972, Gary L. Peters, 1, USNM; Benton Co., McDonald Forest, Oak Creek area, 11.II.1972, Gary L. Peters, 3, USNM; Benton Co., McDonalds Forest nr. Corvallis, 4.III.1969, E.M. Fisher, 14, LACM; Benton Co., McDonalds Forest nr. Corvallis, 17.X.1968, E.M. Fisher, 9, LACM; Benton Co., nr. Blodgett on Shot Pouch Cr., 9.VIII.1966, J. York, ex. nest *Aplodontia rufa pacifica*, 5, JFCC; Benton Co., Siuslaw N.F., Mary's Peak, NE side, Chintimini Ck. at For. Rd., 22.VI.2006, 610m, M. Thayer, A. Newton, berl. leaf & log litter, 1, FMNH; Benton Co., Sulphur Springs, 6miN Corvallis, 26.III.1969, E.M. Fisher, 12, CSCA; Benton Co., Summit Mary's Peak, 20 mi SW Philomath, Coast Range, 5.X.1973, 4000', E.M. Benedict, duff, 13, SBPC; Benton Co., Summit Mary's Peak, 20 mi SW Philomath, Coast Range, 5.V.1973, 4000', E.M. Benedict, noble fir duff, 5, SBPC; Benton Co., Waterfalls on Mary's Pk., 20miSW Philomath, 5.V.73, 3500', E.M. Benedict, 16, SBPC; Benton Co., Woods Ck. Rd., 10 mi W Philomath, 22.IX.73, 1500', R. Fogel, *Martellia*, 2, SBPC; Benton Co., Woods Ck. Rd., 10 mi W Philomath, 8.III.73, 1500', R. Fogel, *Hymenogaster parksii*, 1, SBPC; Benton Co., Woods Ck. Rd., 10 mi W Philomath, 26.IX.73, 1500', R. Fogel, *Zelleromyces gilkeyae*, 1, SBPC; Benton Co., Woods Ck. Rd., 10 mi W Philomath, 11.IV.73, 1500', R. Fogel, *Hymenogaster parksii*, 1, SBPC; Benton Co., Woods Ck. Rd., 10 mi W Philomath, 10.VII.73, 1500', R. Fogel, *Hysterangium* sp.n., 3, SBPC; Benton Co., Woods For. Pk., 3.25miE Airlie, 29.III.1972, R. Fogel, hyp. *Hymenogaster parksii*, 1, SBPC; Clackamas Co., 3mi Carver on S. Baker Ferry Rd. & Gerber Rd., 22.IV.72, E.M. Benedict, Western cedar duff, 12, SBPC; Clackamas Co., 3mi Carver on S. Baker Ferry Rd. & Gerber Rd., 22.IV.72, E.M. Benedict, deciduous duff, 20, SBPC; Clackamas Co., 39miSE Estacoda, 9.X.71, 2000', E.M. Benedict, duff, soil, rotted wood, 15, SBPC; Clackamas Co., 3mi Carver on S. Baker Ferry Rd. & Gerber Rd., 22.IV.72, E.M. Benedict, rot. twigs & leaves, 5, SBPC; Clackamas Co., 43miSE Estacoda, For. Service Rd. S-70, 9.X.71, 2500', E.M. Benedict, moss, needles & duff, 4, SBPC; Clackamas Co., 46miSE Estacoda, 9.X.71, 3000', E.M. Benedict, litter, 2, SBPC; Clackamas Co., Barton Co. Park, 0.25miS Barton, 22.IV.72, E.M. Benedict, cone scales duff, 4, SBPC; Clackamas Co., Barton Co. Park, 0.5miS Barton, 22.IV.72, E.M. Benedict, duff, rot. wood, 1, SBPC; Clackamas Co., Hugh Ck., 44miSE Estacoda, 9.X.71, 2500', E.M. Benedict, moss & conifer needles, 8, SBPC; Columbia Co., Old Pittsburg Rd. acr. Baker Pt., 7miE 5miS Pittsburg, 15.IV.1972, E.M. Benedict, maple & fir duff, 3, SBPC; Columbia Co., Old Pittsburg Rd. acr. Baker Pt., 4miE Pittsburg, 15.IV.72, E.M. Benedict, started red cedar bark, 1, SBPC; Coos Co., Charleston woods at Marine Biol. Inst., 10.IV.67, E.M. Benedict, 7, SBPC; Coos Co., Coos Head, 14.IX.1947, L.N. Newell, (note: labelled "Paratype, C. newelli 1954 - M. Hatch"), 1, FMNH; Coos Co., Marine Biol. Stn., 30.IV.1967, E.M. Benedict, 2, UCDC;

Coos Co., Myrtle Grove Park, Millicona R., 2miN 12miE N. Bend, 25.VIII.73, 200', E.M. Benedict, 3, SBPC; Curry Co., 3miS 5miE Port Orford, Middle Elk Rd., 17.V.73, 700', E.M. Benedict, red alder duff, 4, SBPC; Curry Co., 4miS 4miE Port Orford, Middle Elk Rd., 17.V.73, 800', E.M. Benedict, tan oak duff, 10, SBPC; Curry Co., Humbug Mountain, near Port Orford, 19.VIII.1961, W. Suter, fir stump, 1, SBPC; Curry Co., Humbug Mt. S.P., 22.I.1967, J. & S. Cornell, ex decid woods litter, 44, JFCC; Douglas Co., 3.2miNE Scottsburg, 11.XII.1971, 400', E.M. Benedict, red alder duff, rottenwood, 20, SBPC; Douglas Co., Elliot St. For., 1miS 2miW Ash, 11.XII.71, 1100', E.M. Benedict, 4, SBPC; Harney Co., Page Springs Cpgd., 3miE Frenchglen, 8.VIII.71, 4240', E.M. Benedict, alder duff, soil, sticks, 1, SBPC; Lane Co., 1.2miESE Whittaker Ck. Camp, 3miS Anota (Hwy 126), P.J. Johnson, litter at base of old bigleaf maple, 9, FMNH; Lane Co., B & K Dorris St. Pk., 3miE Vida, 13.V.1983, D.S. Chandler, sift fern & vine maple litter, 24, UNHC; Lane Co., Dolly Varden For. Cpgd., 4.III.72, 1100', E.M. Benedict, red alder, cottonwood, vine maple duff on moss, 7, SBPC; Lane Co., Glenda, Vi.1957, H.S. Dybas, forest litter, 2, FMNH; Lane Co., H.J. Andrews Exp. For., 13.V.1983, 1450', D.S. Chandler, sift Douglas fir litter & moss, 7, UNHC; Lane Co., H.J. Andrews Exp. For., 3/4miSE Lookout Mtn., 13.V.1983, 4000', D.S. Chandler, sift rotten wood, 2, UNHC; Lane Co., H.J. Andrews Exp. For., McRae Creek, 13.V.1984, 1800', D.S. Chandler, sift maple, fern & grass litter by stream, 1, UNHC; Lane Co., H.J. Andrews Exp. For., R.S. 7, 13.V.1983, 1450', D.S. Chandler, sift rotten Douglas fir, 1, UNHC; Lane Co., H.J. Andrews Exp. For., Rd. 1506, 17.V.1984, 2700', D.S. Chandler, sift Douglas fir litter by stream, 6, UNHC; Lane Co., H.J. Andrews Exp. For., Rd. 350, 11.V.1984, 3700', D.S. Chandler, sift *Ceanothus* and vine maple litter, 6, UNHC; Lane Co., H.J. Andrews Exp. For., Road 1506, 17.V.1984, 4000', D.S. Chandler, sift silver fir leaf litter, 13, UNHC; Lane Co., H.J. Andrews Exp. For., Road 1506, 15.V.1984, 4000', D.S. Chandler, sift silver fir leaf litter, 2, UNHC; Lane Co., Haight Ck. Pk., 13miW 2miN Lorane, 21.VII.73, E.M. Benedict, tree hollow big leaf maple, 1, SBPC; Lane Co., N end Blue River Res., 13.V.1983, D.S. Chandler, sift bark, alder leaves & mushrooms, 4, UNHC; Lane Co., Triangle Lake, 7.VI.57, H.S. Dybas, maple litter, 1, FMNH; Lincoln Co., 1.4miN Nashville, Yaquina R., 20.XII.71, 600', E.M. Benedict, fir cone scales, litter & duff, 15, SBPC; Lincoln Co., 1.4miN Nashville, Yaquina R., 20.XII.71, 600', E.M. Benedict, 13, SBPC; Lincoln Co., 1miNE Alsea, 15.V.1983, D.S. Chandler, sift maple & fern litter, 6, UNHC; Lincoln Co., 25 mi E Waldport on Hgw 34, 5.X.1973, 400', E.M. Benedict, 11, SBPC; Lincoln Co., 25 mi E Waldport on Hgw 34, 5.V.73, 400', E.M. Benedict, big leaf maple tree hollow, 17, SBPC; Lincoln Co., E of Waldport, Slide Forest Camp, 30.X.60, D.R. Malcolm, alder duff, 6, SBPC; Linn Co., 0.25miE Yellowbottom Rec Site Rd. 1177, 13miN 8miE SweetHome, 29.IV.72, 1400', E.M. Benedict, duff, 6, SBPC; Linn Co., 4miSE Gates, 26.X.1968, R.L. Westcott, forest litter, 12, WFBM; Linn Co., 6 miS Crawfordsville, 15.IX.73, 1200', E.M. Benedict, 4, SBPC; Linn Co., Berlin, 23.IV.54, V.D. Roth, 1, EMEC; Linn Co., H.J. Andrews Exp. For., Rd. 350, 11.V.1984, 4050', D.S. Chandler, sift Douglas fir leaf litter, 1, UNHC; Linn Co., H.J. Andrews Exp. For., Rd. 359, 13.V.1984, 4100', D.S. Chandler, sift alder litter, 1, UNHC; Linn Co., Swamp Mt. Rd., 2miS HgwUS20, 1miS 1miE Cascadia, 29.IV.72, 1700', E.M. Benedict, 10, SBPC; Linn Co., Swamp Mt. Rd., 3miS HgwUS20 Jct. 200 2miS 2miE Cascadia, 29.IV.72, 1900', E.M. Benedict, 8, SBPC; Linn Co., Willamette Nat. For. Rd. 1177, 13miN 23miE SweetHome, 29.IV.72, 1900', E.M. Benedict, duff, 8, SBPC; Linn Co., Willamette Nat. For. Rd. 1177, Green Ck., 14miN 22miE SweetHome, 29.IV.72, 1700', E.M. Benedict, mixed duff, 12, SBPC; Linn Co., Yellowbottom Rec. Site, 13miN 18miE SweetHome, 29.IV.72, 1400', E.M. Benedict, 20, SBPC; Marion Co., 2miW Gates, 9.III.1969, E.M. Fisher, 3, CSCA; Marion Co., 9miS 6miE Silverton, 0.25miE on Rd to Smith Ck Youth Camp, 26.III.72, E.M. Benedict, 39, SBPC; Marion Co., 9miS 6miE Silverton, 0.25miW Silver Ck. Youth Camp, 26.III.72, E.M. Benedict, hemlock, alder duff & soil, 20, SBPC; Marion Co., 9miS 6miE Silverton, 0.25miW Silver Ck. Youth Camp, 26.III.72, E.M. Benedict, hemlock, rotted log hardwood, 3, SBPC; Marion Co., 9miS 6miE Silverton, 0.25miW Silver Ck. Youth Camp, 26.III.72, E.M. Benedict, 6, SBPC; Marion Co., 9miS 6miE Silverton, 0.25miW Silver Ck. Youth Camp, 26.III.72, E.M. Benedict, hemlock duff, 11, SBPC; Marion Co., Canyon Cpgd. BLM, Little N. Santiam Riv. Rd., 5miN Mill City, 17.IX.73, 1000', E.M. Benedict, 15, SBPC; Polk Co., 2.2miW Falls City, 11.VI.73, 800', E.M. Benedict, bigleaf maple duff, 7, SBPC; Polk Co., 2.2miW Falls City, 11.VI.73, 800', E.M. Benedict, pseudo tree hollow big leaf maple, 1, SBPC; Polk Co., 2.2miW Falls City, 11.VI.73, 800', E.M. Benedict, bigleaf maple tree hollow, 5, SBPC; Polk Co., 2miE Valsetz, 20.XI.1968, E.M. Fisher, 7, CSCA; Polk Co., 4.7miE Valsetz, 20.XI.1968, E.M. Fisher, forest litter, 1, LACM; Polk Co., Falls City opposite Riverside Park, 11.VI.73, 400', E.M. Benedict, maple duff, 13, SBPC; Tillamook Co., 19miE Beaver, Nestucca R. access Rd., 12.V.73, 900', E.M. Benedict, big leaf maple duff, 19, SBPC; Tillamook Co., 28miE Beaver, Nestucca R. Access Rd., 12.V.73, 1900', E.M. Benedict, W. red cedar duff, 20, SBPC; Tillamook Co., 4miSE Blaine Suislaw Nat. For. along Nestucca R., 15.III.72, 500', E.M. Benedict, red alder duff, 4, SBPC; Tillamook Co., Rest Area Wilsons R. Hgw, 0.5miS 1miW Lee's Camp, 4.XI.1972, 700', E.M. Benedict, rot. tree hollow, 15, SBPC; Tillamook Co., Rest Area Wilsons R. Hgw, 0.5miS 1miW Lee's Camp, 4.XI.1972, 700', E.M. Benedict, tree hollow debris and maple duff, 10, SBPC; Tillamook Co., Rest Area Wilsons R. Hgw, 0.5miS 1miW Lee's Camp, 5.V.1973, 700', E.M. Benedict, duff, 3, SBPC; Yamhill Co., 2-10-34, E.S. Ross, 1 paratype, 2, CASC; Yamhill Rd., McMinnuille (Peavine Ridge Rd.), 11.VI.57, H.S. Dybas, oak leaf litter nr. log, 1, FMNH; **Washington:** Thurston Co., Puget, 19.VII.1967, E.M. Benedict, 1, SBPC.

***Pinodytes cryptophagoides* (Mannerheim). CANADA. British Columbia:** 43miE Terrace, 22.VI.1977, A.P. Mackie, fir swamp, 1, CNCI; Bella Coola, 14.VII.1988, 3m, S. & J. Peck, forest litter at sea coast, 15, TAMU; Bella Coola Val., Thorson Ck., 14.VII.1977, Lundy & Cornford, conif., 5, CNCI; Bella Coola Val., Thorson Ck., 17.VII.1977, J. Cornford, D. Lundy, hemlock, fir, cedar, 1, CNCI; Charlotte Islands, Graham Island, 1miW Tlell, 27.VI-8.VII.84, R.S. Anderson, Sitka spruce/hemlock forest, 25, SBPC; Massett, Graham Id., III.46, Mrs. Clark, sifting moss, etc., 2, MCZC, 2, USNM; Mas-

sett, Graham Id., III.46, Mrs. Clark, N.M. Downie Coll., 3, FMNH; Massett, Graham Id., III.46, Mrs. Clark, 3, CASC; Massett, Q.C. Is., 1, USNM; Metlaktla, J.H. Keen, 1, USNM; Metlaktla, Rev. Keen, 4, USNM; Queen Charlotte Is., Ghost Creek Drainage, 7.3kmNW Rennell Sd., 21.VIII.1983, J.M. Campbell, 83-103, Berl. moss u decid shrubs around base of cedar, 5, CNCI; Queen Charlotte Is., Graham Is., Mt. Needham, 28.VII.1983, 2600', J.M. Campbell, 83-44, Berlese moss & alder litter, 2, CNCI; Queen Charlotte Is., Kiusta, Graham Is., 18.VIII.1983, J.M. Campbell, 83-97, Berlese of litter at base of large trees, 7, CNCI; Queen Charlotte Is., Kunga Is., N. side, 8.VIII.1983, J.M. Campbell, 83-65, sifting alder litter, 1, CNCI; Queen Charlotte Is., Lyall Is., Gate Cr., 10.VIII.1983, J.M. Campbell, 83-72, sifting wet moss on forest floor, 1, CNCI; Queen Charlotte Is., Lyall Is., Gate Cr., 10.VIII.1983, J.M. Campbell, 83-71, sifting moss at edge of forest and on flowers, 1, CNCI; Queen Charlotte Is., Moresby Is., Kaisun, 1.VIII.1983, 10', J.M. Campbell, 83-47, ex moss at edge of stream & waterfall, 1, CNCI; Queen Charlotte Is., Moresby Is., Mt. Moresby, 26.VII.1983, 2100', J.M. Campbell, 83-39, sifting bear dung, 1, CNCI; Queen Charlotte Is., Moresby Is., Mt. Moresby, 25.VII.1983, 2100', J.M. Campbell, 83-38, sifting moss at edge of forest and on flowers, 2, CNCI; Queen Charlotte Islands, R. Hopping Collection, 1, OSAC; Queen Charlotte Islands, Moresby Is., 3.6miW Sandspit, 5.VII.1984, R.S. Anderson, spruce forest litter, 10, SBPC; Queen Charlotte Islands, Graham Is., 4miS Port Clements, 27.VI-8.VII.84, R.S. Anderson, Sitka spruce/hemlock/cedar forest, 1, SBPC; Robert Creek, 11.3miN Langdale, 17.III.1977, B.D. Ainscough, cedar duff, 1, CNCI; **UNITED STATES. Washington:** Firth Saltwater St. Pk., 18miS Seattle, 15.VIII.61, W. Suter, 3, SBPC; Clallam Co., 3miE LaPush, 23.XI.1981, F.W. Merickel, Ber. funnel hemlock leaf litter, 3, CSCA; Clallam Co., Olympia Hot Springs, Olympia Natl. Park, 18.VI.1957, H.S. Dybas, forest litter, 2, FMNH; Jefferson Co., Olympic N.P., 0-3.4miSW Hoh, 16.VII.1975, 400-500', A. Newton, Berl. leaf & log litter, rain forest, 3, FMNH; King Co., 14kmE North Bend, 4.III.81, R.E. Nelson, 21, SBPC; King Co., 1miE North Bend, 13.V.1983, W.F. Barr, Ber. funnel maple-Doug. fir leaf litter, 3, CSCA; King Co., 1miE North Bend, 13.V.1983, W.F. Barr, Ber. funnel maple leaf litter, 9, CSCA; King Co., 2kmN Preston, 3.X.80, R.E. Nelson, 31, SBPC; King Co., 2miE Black Diamond, 14.VI.57, H.S. Dybas, 57-71, debris in maple crotch, 3, SBPC; King Co., 6miE Issaquah, 19.V.1968, Loren Russell, 8, USMN; King Co., 9.6miE North Bend, 15.X.1980, R.E. Nelson, Berl. ground moss, 5, FMNH; King Co., 9.6miE North Bend, 15.X.80, R.E. Nelson, 15, SBPC; King Co., Issaquah, 5.1968, L. Russell, 14, USNM; King Co., Issaquah, 19.V.1968, L. Russell, 2, FMNH; King Co., Seattle, 17.II.1955, D.W. Boddy, litter & humus, 48, OSAC; King Co., Seattle, 20.IV.1955, D.W. Boddy, cedar litter, 25, OSAC; King Co., Seattle, 15.II.1955, D.W. Boddy, ex alder litter, 8, OSAC; King Co., Seattle, 17.II.1955, D.W. Boddy, ex cedar litter, 58, OSAC; King Co., Seattle, 16.II.1955, D.W. Boddy, ex pine litter, 6, OSAC; King Co., Seattle, 2.VI.1955, D.W. Boddy, leaf litter, 17, OSAC; King Co., Seattle, 19.IV.1955, D.W. Boddy, pine litter, 2, OSAC; King Co., Seattle, 18.II.195, D.W. Boddy, litter & humus, 9, OSAC; King Co., Seattle, 14.IV.1955, D.W. Boddy, ex moss, 1, OSAC; King Co., Seattle, VIII.1911, 2, OSAC; King Co., Seattle, 19.IV.1955, D.W. Boddy, ex moss, 5, OSAC; King Co., Seattle, Carkeek Pk., 20.VI.1955, D.W. Boddy, humus, 14, OSAC; King Co., Seattle, Chase L., 15.VI.57, H.S. Dybas, 57-68, forest floor debris, 3, SBPC; King Co., Discovery Park, 7.II.80, R.E. Nelson, 14, SBPC, 5, FMNH; King Co., Seattle, Discovery Park, 8.XII.79, R.E. Nelson, 17, SBPC, 5, FMNH; King Co., Seattle, Discovery Pk., 20.VII.1979, R.E. Nelson, 5, FMNH; King Co., Seattle, Discovery Pk., 27.X.80, R.E. Nelson, 12, SBPC, 5, FMNH; King Co., Seattle, Discovery Pk., 20.X.79, R.E. Nelson, 11, SBPC; King Co., Seattle, Golden Gardens, 27.IV.1955, D.W. Boddy, litter, 1, OSAC; Mason Co., 1.5 miS Grapeview open, 21.I.68, E.M. Benedict, 20, SBPC; Mason Co., 2.5miN Grant, 21.I.68, E.M. Benedict, 2, SBPC, 3, UCDC; Mason Co., 2miSW Grapeview, 21.I.68, E.M. Benedict, 2, LACM; Mason Co., Grapeview, 21.I.68, E.M. Benedict, 20, UCDC; Mason Co., Kamilche Point, 25.XI.67, E.M. Benedict, 2, LACM; Mason Co., Kamilche Point nr Hgw 101, 25.XI.57, E.M. Benedict, 12, SBPC; Pierce Co., Fairfax, 16.VI.57, H.S. Dybas, 57-73, forest floor debris, 4, SBPC; Pierce Co., Mt. Ranier N.P. at Carbon R., 16.VI.57, H.S. Dybas, 57-65, conc. floor litter, 3, SBPC; Pierce Co., Mt. Ranier N.P. at Carbon R., 16.VI.57, H.S. Dybas, 57-42, conc. litter, 11, SBPC; Pierce Co., Mt. Ranier N.P., 4.7miN Longmire, 20.VII.1975, 2200', A. Newton, Berl. litter mixed conifer forest, 7, FMNH; Pierce Co., Mt. Ranier N.P., 4.7miN Longmire, 20.VII.1975, 2200', A. Newton, leaf litter, conifer forest, 5, FMNH; Pierce Co., Mt. Ranier N.P., Carbon R. at Chennis Falls, 16.VI.57, H.S. Dybas, 57-41, conc. floor litter, 4, SBPC; Pierce Co., Mt. Ranier N.P., Sunrise, 22.VII.1975, 6400', A. Newton, M. Thayer, u stones & boards at timberline, 2, FMNH; Pierce Co., Puyallup, 27.II.29, Wm. W. Baker, leaf mold, 1, WSUC; Pierce Co., Puyallup, 28.II.29, Wm. W. Baker, leaf mold, 3, WSUC; Snohomish Co., Chase Lk., V.1952, W.T. Edmondson, soil, 4, OSAC; Snohomish Co., Edmunds, 15.VI.57, H.S. Dybas, 57-52, conc. floor litter, 4, SBPC; Snohomish Co., Edmunds, 15.VI.57, H.S. Dybas, 57-44, conc. floor litter, 6, SBPC; Thurston Co., 0.25miS Millersylvania St. Pk. at Maytown, 28.X.67, E.M. Benedict, 21, SBPC; Thurston Co., 15miS Olympia, 28.X.67, E.M. Benedict, 2, UCDC; Thurston Co., 15miS Olympia, Hgw 5, 28.X.67, E.M. Benedict, 2, SBPC; Thurston Co., Puget, 19.VII.67, E.M. Benedict, 6, SBPC; Thurston Co., Puget, 28.X.67, E.M. Benedict, 20, SBPC, 1, LACM, 3, UCDC; Mt. Ranier, meadow ck., Mowich L., 16.X.73, 4000', R. Fogel, hypo. *Elaphomyces* sp., 13, SBPC; WallaWalla Co., Kooskoeskie, 27.X.1948, Floyd Jepson, sifting, 3, USNM.

***Pinodytes delnorte* Peck & Cook. UNITED STATES. California:** Del Norte Co., 5miS Gasquet, 7.V.1971, F.G. Andrews, 31, CSCA; Del Norte Co., Crescent City, 22.V.1980, T.R. Haig, Ber. redwood duff, 8, CSCA; Del Norte Co., Crescent City, 27.XI.1985, T.R. Haig, Ber. redwood duff, 35, CSCA; Del Norte Co., Crescent City, 28.III.1990, T.R. Haig, Ber. Sitka spruce duff, 24, CSCA; Del Norte Co., Jeddiah Smith State Pk., 2.I.1981, F.W. Merickel, *Sequoia* litter Ber., 14, WFBM; Del Norte Co., Jeddiah Smith State Pk., 25.XI.1981, F.W. Merickel, *Sequoia* leaf litter Ber., 10, WFBM; Humboldt Co., 3miE Orick, Bald Mt. Road, 7.VII.1978, F.G. Andrews, Ber. moss & fungi, 1, CSCA; Humboldt Co., Orick, 22.II.1978, T.R. Haig, Ber. *Alnus* duff, 1, CSCA; Humboldt Co., Orick, 22.II.1978, T.R. Haig, Ber. redwood duff, 1, CSCA; Humboldt

Co., Orick, 29.IV.1976, T.R. Haig, Ber. redwood duff, 2, CSCA; Humboldt Co., Orick, 2.II.1977, T.R. Haig, Ber. redwood duff, 1, CSCA; Humboldt Co., Prairie Creek Redw. S.P., N41°25' W124°03', M.E. Goethe Grove, 28.V.2003, 160m, S. Peck, 03-86, redwood litter Ber., 4, SBPC; Humboldt Co., Prairie Creek Redwoods SP nr. Orick, 16.VIII.1966, J.&S. Cornell, ex redwood litter, 3, JFCC; Humboldt Co., Redwood NP, Bald Hills Rd., 2.4miSSE Lady Bird Johnson Grove, 17.VI.2006, 560m, A. Newton & M. Thayer, *Pseudotsuga-Picea-Sequoia-Quercus* for. leaf litter Ber., 1, FMNH.

***Pinodytes humboldtensis* Peck & Cook. UNITED STATES. California:** Del Norte Co., Crescent City, 27.XI.1985, T.R. Haig, Ber. redwood duff, 37, CSCA; Del Norte Co., Crescent City, 19.IX.1978, T.R. Haig, Ber. redwood duff, 1, CSCA; Del Norte Co., Crescent City, 22.V.1980, T.R. Haig, Ber. redwood duff, 43, CSCA; Del Norte Co., Crescent City, 16.X.1985, T.R. Haig, Ber. redwood duff, 48, CSCA; Del Norte Co., Crescent City, 28.III.1990, T.R. Haig, Ber. Sitka spruce duff, 7, CSCA; Del Norte Co., Crescent City, 22.V.1980, T.R. Haig, Ber. redwood duff, 28, CSCA; Del Norte Co., Jed Smith Redw. S.P., N41°48' W124°07', 4.VI.2003, 65m, S. Peck, 03-92, redwood for. litter Ber., 1 SBPC; Del Norte Co., Jed Smith Redw. S.P., 10kmN Crescent City, N41°48' W124°09', 27.VI.2003, 70m, S. Peck, 03-84, redwood litter Ber., 3 SBPC; Del Norte Co., Redw. S.P., 10kmS Crescent City, N41°42' W124°08', 2.VI.2003, 300m, S. Peck, 03-91, redwood for. litter Ber., 13 SBPC; Del Norte Co., Redw. N.P., 4kmSE Crescent City, N41°42.79' W124°08', 2.VI.2003, 30m, S. Peck, 03-90, mix. for. litter Ber., 4 SBPC; Humboldt Co., 3miE Orick, Bald Mt. Road, 7.VII.1978, F.G. Andrews, Ber. moss & fungi, 7, CSCA; Humboldt Co., Arcata Comm. Forest, 8.XI.1962, J. Pinto, 30, SBPC; Humboldt Co., Arcata Comm. Forest, 28.VIII.1962, J. Pinto, Berlese, 1, SBPC; Humboldt Co., Arcata Comm. Forest, 30.VII.1962, J. Pinto, Berlese, 4, SBPC; Humboldt Co., Arcata Comm. Forest, 11.X.1962, J. Pinto, Berlese, 1, SBPC; Humboldt Co., Arcata Comm. Forest, 1.IV.1962, J. Pinto, Berlese, 7, SBPC; Humboldt Co., Arcata Comm. Forest, 24.VIII.1962, J. Pinto, Berlese, 2, SBPC; Humboldt Co., Arcata Comm. Forest, 1.VII.1962, J. Pinto, Berlese, 5, SBPC; Humboldt Co., Arcata Comm. Forest, 23.IV.1962, J. Pinto, Berlese, 3, SBPC; Humboldt Co., Arcata Comm. Forest, 27.XI.1962, J. Pinto, Berlese, 4, SBPC; Humboldt Co., Arcata Comm. Forest, 29.IV.1962, J. Pinto, Berlese, 7, SBPC; Humboldt Co., Arcata Comm. Forest, 22.XI.1962, J. Pinto, Berlese, 26, SBPC; Humboldt Co., Arcata Comm. Forest, 9.III.1962, J. Pinto, Berlese, 18, SBPC; Humboldt Co., Arcata Comm. Forest, 13.V.1962, J. Pinto, Berlese, 26, SBPC; Humboldt Co., Arcata Comm. Forest, 17.II.1967, J. Pinto, Berlese, 43, SBPC; Humboldt Co., Arcata Comm. Forest, 20.XII.1962, J. Pinto, Berlese, 23, SBPC; Humboldt Co., Arcata Comm. Forest, 23.I.1963, J. Pinto, Berlese, 6, SBPC; Humboldt Co., Arcata Comm. Forest, 27.V.1962, J. Pinto, Berlese, 9, SBPC; Humboldt Co., Arcata Comm. Forest, 12.VI.1962, J. Pinto, Berlese, 24, SBPC; Humboldt Co., Arcata Comm. Forest, 23.II.1963, J. Pinto, Berlese, 19, SBPC; Humboldt Co., Arcata Comm. Forest, 2.VI.1962, J. Pinto, Berlese, 2, SBPC; Humboldt Co., Arcata Comm. Forest, 25.VII.1962, J. Pinto, Berlese, 6, SBPC; Humboldt Co., Arcata Comm. Forest, 14.II.1963, J. Pinto, Berlese, 3, SBPC; Humboldt Co., Arcata Comm. Forest, 13.XI.1962, J. Pinto, Berlese, 2, SBPC; Humboldt Co., Arcata Comm. Forest, 14.V.1962, J. Pinto, Berlese, 1, SBPC; Humboldt Co., Arcata Comm. Forest, 17.II.1962, J. Pinto, 14, SBPC; Humboldt Co., Arcata Comm. Forest, 31.III.1962, J. Pinto, Berlese, 3, SBPC; Humboldt Co., Arcata Comm. Forest, 3.X.1962, J. Pinto, Berlese, 1, SBPC; Humboldt Co., Arcata Comm. Forest, 20.V.1962, J. Pinto, Berlese, 3, SBPC; Humboldt Co., Arcata Comm. Forest, 14.X.1962, J. Pinto, Berlese, 2, SBPC; Humboldt Co., Arcata Comm. Forest, 19.VIII.1962, J. Pinto, Berlese, 7, SBPC; Humboldt Co., Arcata Comm. Forest, 13.VIII.1962, J. Pinto, Berlese, 3, SBPC; Humboldt Co., Arcata Comm. Forest, 4.XII.1962, J. Pinto, Berlese, 10, SBPC; Humboldt Co., Arcata Comm. Forest, 1.VI.1962, J. Pinto, Berlese, 2, SBPC; Humboldt Co., Arcata Comm. Forest, 22.II.1962, J. Pinto, Berlese, 1, SBPC; Humboldt Co., Arcata Comm. Forest, 26.XII.1962, J. Pinto, Berlese, 1, SBPC; Humboldt Co., Blue Lake, 27.X.1977, T.R. Haig, Ber. redwood duff, 5, CSCA; Humboldt Co., Dry Lagoon, 3.VIII.1976, F.G. Andrews, Ber. leaf litter, 34, CSCA; Humboldt Co., Kneeland, 20.II.1975, T.R. Haig, 12, CSCA; Humboldt Co., Kneeland, 20.II.1975, T.R. Haig, Ber. redwood duff, 2, CSCA; Humboldt Co., Kneeland, 9.I.1980, T.R. Haig, Ber. Douglas fir duff, 12, CSCA; Humboldt Co., Kneeland, 22.II.1978, T.R. Haig, Ber. redwood duff, 7, CSCA; Humboldt Co., Kneeland, 9.I.1980, T.R. Haig, Ber. redwood duff, 62, CSCA; Humboldt Co., Orick, 2.II.1977, T.R. Haig, Ber. redwood duff, 1, CSCA; Humboldt Co., Orick, 20.IV.1976, T.R. Haig, Ber. redwood duff, 107, CSCA; Humboldt Co., Orick, 4.II.1976, T.R. Haig, Ber. redwood duff, 83, CSCA; Humboldt Co., Orick, 24.IV.1980, T.R. Haig, Ber. redwood duff, 21, CSCA; Humboldt Co., Orick, 22.II.1978, T.R. Haig, Ber. redwood duff, 47, CSCA; Humboldt Co., Orick, 22.II.1978, T.R. Haig, Ber. *Alnus* duff, 71, CSCA; Humboldt Co., Prairie Ck. Redw. St. Pk., N41°25' W124°03', 28.V.2003, 160m, S. Peck, 03-86, M.E. Goethe Grove, redwood litter Ber., 8, SBPC.

***Pinodytes imbricatus* (Hatch). UNITED STATES. Oregon:** Tillamook Co., Elk Ck. St. For. Cpgd., 45miNE Lee's Camp, 4.XI.72, 900', E.M. Benedict, 12, SBPC; Tillamook Co., Kiwanda Viewpoint on Cape Lookout, 2.5miN 1.5miW sand Lake, 4.XI.72, 600', E.M. Benedict, EB-102, litter & duff, 1, SBPC.

***Pinodytes marinensis* Peck & Cook. UNITED STATES. California:** Marin Co., Blanchard Coll., 1, MCZC; Marin Co., 1miS Inverness, 31.XII.1958, C.W. O'Brien, 5, EMEC; Marin Co., 1miS S.P. Taylor St. Pk., 5.I.1959, J.R. Powers, 1, EMEC; Marin Co., 2miS Olema, 1.XI.1953, R. Schuster, 4, EMEC; Marin Co., Lily Gulch, W. side Alpine Lake, 37°57'N 122°38'W, 6.XI.1993, 220m, A. Newton, M. Thayer, 937, Winkler extr. for. leaf & log litter, 6, FMNH; Marin Co., Pt. Reyes Nat. Sea., Mt. Vinson overlook, 29.XI.1977, F.G. Andrews, Ber. *Neotoma* nest, 1, CSCA; Marin Co., S.P. Taylor St. Park, 8.V.1976, A. Newton & M. Thayer, litter & duff, redwood for., 10, FMNH; Marin Co., S.P. Taylor St. Pk. entrance, 9.III.1963, 4, EMEC; Marin Co., S.P. Taylor St. Pk., N. Ent., 24.X.1953, V.D. Roth, 3, EMEC; Marin Co., S.P. Taylor St.

Pk., S. Ent., 8.XI.1953, V.D. Roth, 4, EMEC; Marin Co., S.P. Taylor St. Pk., S. Ent., 1.XI.1953, R.O. Schuster, G.A. Marsh, 7, EMEC; San Mateo Co., 19.II.19, L.R. Reynold, 4, SBPC; San Mateo Co., 5miW San Mateo, 18.IV.1954, R.O. Schuster, leaf mold, 5, CSCA; San Mateo Co., 6miSE Half Moon Bay, 5.XII.1953, V.D. Roth, 9, EMEC.

***Pindoytes newelli* (Hatch). UNITED STATES. Oregon:** Corvallis, 10-3-41, in thirps infested lily bulb, labelled "paratype capizzi Hatch", 2, MCZC; Benton Co., 0.5miE Mary's Peak Rd. on Hwy. US34, 11.VII.1968, J. Cornell & J.A. Wagner, FMHD6, Floor litter u oxalis & ferns in ravine, 1, FMNH; Benton Co., 0.5miNW Glenbrook, S. fork Alsea R., access rd., 5.XII.71, 600', E.M. Benedict, decid. & fir duff, 1, SBPC; Benton Co., 10miSW Philomath, 14.IX.74, 1500', R. Fogel, ex *Hysterangium seperabile*, 1, SBPC; Benton Co., 10miSW Philomath, 14.IX.74, 1500', R. Fogel, ex *Truncocolumella citrina* var. *citrina*, 1, SBPC; Benton Co., 10miSW Philomath, Mary's Peak, 21.I.75, 1500', R. Fogel, ex *Hymenogaster parksii*, 1, SBPC; Benton Co., 10miW Philomath, 7.III.74, 1500', R. Fogel, 124 E, *Hymen. parksii*, 2, SBPC; Benton Co., 14miS Corvallis on Bellfountain Rd., 3.VIII.1966, J.F. & S.J. Cornell, *Neotoma fuscipes* nest, 1, JFCC; Benton Co., 20miSW Philomath, Mary's Peak, 5.V.73, 1400', E.M. Benedict, 2, SBPC; Benton Co., 5miN Alsea, N. fork Alsea, Rat Bailey Ck., 27.III.66, J. Cornell, D.L. Mays, ex litter/frass under *Acer macrophyllum* logs, 8, JFCC; Benton Co., 7miSW Philomath, Dinner Ck., 15.V.78, 305m, R. Fogel, ex *Amanita* sp, 5, SBPC; Benton Co., 7miSW Philomath, Dinner Ck., 5.XI.76, 305m, R. Fogel, on *Truncocolumella citrina*, 1, SBPC; Benton Co., 8miN Corvallis, McDonald For., 21.II.73, L. Russell, 1, SBPC; Benton Co., Carey's Grove, 11.VII.1968, J. Wagner, FMHD6, 1, FMNH; Benton Co., Corvallis, 14.XI.50, V. Roth, 1, SBPC; Benton Co., Corvallis, Mary's Peak Microwave Tower Site, 20.IX.66, J.F. Cornell, ex *Abies procera* logs/litter; 6, JFCC; Benton Co., Mary's Peak, 29.VIII.1968, 4000', E.M. Fisher, 5, LACM; Benton Co., Mary's Peak Campground, 29.VIII.1968, 4000', E.M. Fisher, R.L. Westcott, in litter under fir, 6, WFBM; Benton Co., Mary's Peak Campground, 29.VIII.1968, E.M. Fisher, R.L. Westcott, in duff under fir log, 3, SBPC; Benton Co., Mary's Peak, 0.5mi below Jct. Hgw20, 20miSW Philomath, 5.V.73, 2500', E.M. Benedict, duff, 1, SBPC; Benton Co., Mary's Peak, 10miW Philomath, 7.III.74, 1500', R. Fogel, 123 E, *Hysterangium*, 1, SBPC; Benton Co., Mary's Peak, 1miN summit, 30.VI.1968; J.A. Wagner, FMHD6, 2 basal tree holes, 2, FMNH; Benton Co., McDonald Forest nr. Corvallis, 15.IV.69, E.M. Fisher, 9, CSCA; Benton Co., McDonald St. For., 12.IV.75, 305m, R. Fogel, ex *Hymenogaster parksii*, 4, SBPC; Benton Co., nr Blodgett on Shotpouch Ck., 9.VIII.66, J. York, ex nest *Aplodontia rufa pacifica*, 19, JFCC; Benton Co., nr Corvallis, Mary's Peak Summit Cpgd., 16.X.66, J. Cornell, litter under *Abies procera*, 36, JFCC; Benton Co., Summit Mary's Peak, 20miSW Philomath, 5.X.73, 4000', E.M. Benedict, duff, 2, SBPC; Benton Co., Waterfalls on Mary's Peak, 20miSW Philomath, 5.V.73, 3500', E.M. Benedict, 1, SBPC; Benton Co., Wm Finley Ntl. W. Ref., VI.1972, Loren Russell, 9, USNM; Benton Co., Wm Finley Ntl. W. Ref. 20.VI.1972, Loren Russell, 1, FMNH; Benton Co., Woods Ck. Rd. on Mary's Peak, 10miW Philomath, 15.V.74, 460m, R. Fogel, 126 E, *Hysterangium*, 1, SBPC; Benton Co., Woods Ck. Rd. on Mary's Peak, 10miW Philomath, 8.VI.74, 460m, R. Fogel, 130 E, *Hysterangium*, 1, SBPC; Benton Co., Wlids Ck. Rd. on Mary's Peak, 10miW Philomath, 10.V.74, 460m, R. Fogel, 125 E, *Hysterangium*, 1, SBPC; Benton Co., Woods Ck. Rd., 10miW Philomath, 26.IX.73, 1500', R. Fogel, 111 E, *Zelleromyces gilkeyae*, 23, SBPC; Benton Co., Woods Ck. Rd., 10miW Philomath, 15.X.73, 1500', R. Fogel, 110E, *Rhizopogon* sp., 5, SBPC; Benton Co., Woods Ck. Rd., 10miW Philomath, 8.IV.73, 1500', R. Fogel, 105E, *Barssia oregonensis*, 2, SBPC; Benton Co., Woods Ck. Rd., 10miW Philomath, 10.VII.73, 1500', R. Fogel, 104 E, *Barssia oregonensis*, 2, SBPC; Benton Co., Woods Ck. Rd., 10miW Philomath, 15.V.74, 1500', R. Fogel, 128 E, *Hymenog. parksii*, 6, SBPC; Benton Co., Woods Ck. Rd., 10miW Philomath, 14.XI.73, 1500', R. Fogel, ex *Hymenogaster parksii*, 4, SBPC; Benton Co., Woods Ck. Rd., 10miW Philomath, 11.IV.73, 1500', R. Fogel, ex *Hymenogaster parksii*, 1, SBPC; Benton Co., Woods Ck. Rd., 10miW Philomath, 15.X.73, 1500', R. Fogel, *Truncocolumella citrina*, 1, SBPC; Benton Co., Woods Ck. Rd., 10miW Philomath, 22.IX.73, 1500', R. Fogel, 107 E, *Martellia*, 5, SBPC; Benton Co., Woods For. Pk., 3.25miE Airlie, 25.IV.72, 152m, R. Fogel, 12E, *Hymenogaster parksii*, 1, SBPC; Benton Co., Woods For. Pk., 3.25miE Airlie, 19.IV.72, 152m, R. Fogel, 14E, *Hymenogaster parksii*, 3, SBPC; Benton Co., Woods For. Pk., 3.25miE Airlie, 29.III.1972, 152m, R. Fogel, 11 E, hyp. *Hymenogaster parksii*, 6, SBPC; Benton Co., Woods For. Pk., 3miE Airlie, 18.IV.72, R. Fogel, 13E, *Barssia oregonensis*, 1, SBPC; Clatsop Co., Seaside, 7.IV.1955, V. Roth, moss, rot. wood, 1, OSAC; Columbia Co., Old Pittsburg Rd. acr. Baker Pt., 2miE Pittsburg, 15.IV.72, E.M. Benedict, Douglas fir duff, 2, SBPC; Columbia Co., Old Pittsburg Rd. acr. Baker Pt., 2miE Pittsburg, 15.IV.72, E.M. Benedict, duff, Douglas fir needles, 2, SBPC; Coos Co., 2miS 10miE Allegany, Weyerhaeuser Tree Farm Comp. Rd. 5046, 21.XI.71, E.M. Benedict, rotted wood, 19, SBPC; Coos Co., 2miS 14miE Allegany, Weyerhaeuser Tree Farm Comp. Rd. 6000, 21.XI.71, E.M. Benedict, moss, 1, SBPC; Coos Co., 5miN 3miE Langlois, Lower Fow [Four?] Mile Rd., 18.V.73, 100', E.M. Benedict, shore pine duff, 3, SBPC; Coos Co., Charleston, Sunset Bay St. Pk., 14.VII.1968, J.A. Wagner, FMHD6, sift deep root mat, 1, FMNH; Coos Co., Coos Head, 14.IX.1947, I.M. Newell, 3 paratypes, FMNH; Coos Co., Coos Head, 14.IX.1947, I.M. Newell, allotype, female, OSAC; Curry Co., Gold Beach, 21.VI.1955, J. Capizzi, Doug. fir duff, 1, OSAC; Douglas Co., 11miN 5miE Tiller, Quartz Ck bridge on Umpqua Nat. For. Rd. 284, 11.IX.72, 1800', E.M. Benedict, moss & duff, 3, SBPC; Douglas Co., 2miN Melrose, Melrose to Umpqua Rd. nr Umpqua River, 7.II.72, 400', E.M. Benedict, madrone, maple, oak, 1, SBPC; Douglas Co., 4miW Glide, N. Umpqua Hgw. 138, 1.IV.72, 700', E.M. Benedict, black oak & fir debris, 1, SBPC; Douglas Co., 5miE 4miN Tiller, S. Umpqua River, 11.XI.1972, 1200', E.M. Benedict, duff, madrone, 1, SBPC; Douglas Co., 6.5miNE Idleld Park on Rock Ck. Rd., Rock Ck. Pk., 1.IV.1972, 1000', E.M. Benedict, tree hollow rotted wood, 2, SBPC; Douglas Co., 6.5miNE Idleld Park on Rock Ck. Rd., Rock Ck. Pk., 1.IV.1972, 1000', E.M. Benedict, duff, 2, SBPC; Douglas Co., 8miS 17miE Steamboat, Umpqua Nat. For. Rd. 2734, 21.X.72, 3300', E.M. Benedict, white pine litter & duff, 1, SBPC; Douglas Co., 8miS 17miE Steamboat, Umpqua Nat. For.

Rd. 2734, 21.X.72, 3300', E.M. Benedict, deciduous & pine duff, 2, SBPC; Douglas Co., 9miN 12miE Tillers Entr. to S. Umpqua Guard Sta., 11.XI.72, 1600', E.M. Benedict, Douglas fir duff, 2, SBPC; Douglas Co., 9miS 15miE Steamboat, Umpqua Nat. For. Rd. 2600, 21.X.1972, 3000', E.M. Benedict, 4, SBPC; Douglas Co., 9miS 15miE Steamboat, Umpqua Nat. For. Rd. 2600, 21.X.1972, 3000', E.M. Benedict, willow duff, 1, SBPC; Douglas Co., 9miS 6miE Steamboat, Umpqua Nat. For. Rd. Jct. 260 & 2600, 21.X.72, 3200', E.M. Benedict, service berry duff, 2, SBPC; Douglas Co., 9miS 6miE Steamboat, Umpqua Nat. For. Rd. Jct. 260 & 2600, 16.X.72, 3200', E.M. Benedict, bark & debris, 3, SBPC; Douglas Co., 9miS 6miE Steamboat, Umpqua Nat. For. Rd. Jct. 260 & 2600, 21.X.72, 3200', E.M. Benedict, bark & debris, 1, SBPC; Douglas Co., Elliol St. For., 1miS 2miW Ash, 11.XII.71, E.M. Benedict, mixed deciduous, myrtle litter & duff, 1, SBPC; Douglas Co., Elliol St. For., 1miS 2miW Ash, 11.XII.71, E.M. Benedict, 1, SBPC; Douglas Co., Island Cpgd., 0.5miS 1miE Steamboat, N. Umpqua R. Hgw. 138, 30.X.71, 1200', E.M. Benedict, 1, SBPC; Douglas Co., rest stop on Hgw. 38, 0.7miW Scottsburg, Umpqua River, 11.XII.71, 300', E.M. Benedict, rot. heart wood, 6, SBPC; Lane Co., 0.3miS Pine Creek, 14miS Oakridge, 4.III.72, 1800', E.M. Benedict, moss & coniferous duff, 1, SBPC; Lane Co., 1.2miESE Whittaker Ck. Camp along WC road, 3miS Anota, 350', P.J. Johnson, ex litter at base of old bigleaf maple, 3, FMNH; Lane Co., Andrews Exp. For., 8miNE Blue River, 2.XI.72, 2100', R. Fogel, 20E, *Rhizopogon parksii*, 1, SBPC; Lane Co., Cox Butte Rd., 4miNE Cheshire, 4.XII.71, 400', E.M. Benedict, oak duff & soil, 7, SBPC; Lane Co., Creswell Camas Swale Rd., 21.VII.73, 800', E.M. Benedict, 4, SBPC; Lane Co., Puma Ck. Nat. For. Cpgd., 4miN 13miE Lowell, Willamette Nat. For., 4.III.72, 1200', E.M. Benedict, tree hollow rotted wood, 1, SBPC; Lane Co., Puma Ck. Nat. For. Cpgd., 4miN 13miE Lowell, Willamette Nat. For., 4.III.72, 1200', E.M. Benedict, rotted wood, 3, SBPC; Lane Co., Suislaw Falls Co. Pk., 1miN 6miW Lorane, 21.VII.73, 800', E.M. Benedict, nest pack-rat (?), 2, SBPC; Lane Co., Triangle Lake, 7.VI.57, maple litter, 1, SBPC; Lincoln Co., 25miE Waldport on Hgw 34, 5.V.1973, 400', E.M. Benedict, big leaf maple tree hollow, 1, SBPC; Lincoln Co., 25miE Waldport on Hgw 34, 5.X.1973, 400', E.M. Benedict, 7, SBPC; Lincoln Co., Cascade Head Exp. For., 20.XI.72, J.M. Trappe, 18E, *Hymenogaster* sp., 1, SBPC; Lincoln Co., N. Lincoln City, Cascade Head Exp. For., 3.IV.75, R. Fogel, ex *Elaphomyces* sp., 16, SBPC; Lincoln Co., N. Lincoln City, Cascade Head Exp. For., 3.IV.75, 31m, R. Fogel, ex *Elaphomyces* sp., 7, SBPC; Lincoln Co., Suislaw N.F., Cummins Ck.Tr., 44°16.065'N 124°05.89'W, 20.VI.2006, 30–50m, M. Thayer & A. Newton, old-growth *Picea sitchensis* forest, 3, FMNH; Tillamook Co., 19miE Beaver Nestucca Riv. Access Rd., 12.V.73, 900', E.M. Benedict, bigleaf maple duff, 1, SBPC; Tillamook Co., 1miN Woods, 1.X.73, 200', R. Fogel, 112E, *Zelleromyces gilkeyae*, 7, SBPC; Tillamook Co., 28miE Beaver Nestucca Riv. Access Rd., 12.V.73, 1900', E.M. Benedict, duff vine maple, 1, SBPC; Tillamook Co., 4miSE Blaine Suislaw Nat. For. along Nestucca R., 15.III.72, 500', E.M. Benedict, red alder duff, 11, SBPC; Tillamook Co., Cape Lookout St. Pk., 11.XI.76, R. Fogel, ex *Hydnotria cerebriformis*, 1, SBPC; Tillamook Co., Elk Ck. St. For. Cpgd., 4.5miNE Lee's Camp, 4.XI.72, 900', E.M. Benedict, moss, rot. wood & duff, 1, SBPC; Tillamook Co., Garibaldi, 2miN, 15.III.1955, V. Roth, duff, rotting wood, 14, OSAC; Tillamook Co., Kiwanda Viewpoint on Cape Lookout, 2.5miN 1.5miW Sandlake, 4.XI.72, 600', E.M. Benedict, litter & duff, 4, SBPC; Tillamook Co., Kiwanda Viewpoint on Cape Lookout, 2.5miN 1.5miW Sandlake, 4.XI.72, 600', E.M. Benedict, duff, 6, SBPC; Tillamook Co., N. Pacific City, 11.XI.76, R. Fogel, ex *Martellia* sp., 3, SBPC; Tillamook Co., rest area Wilson River Hgw, 0.5miS 1miW Lee's Camp, 4.XI.72, 700', E.M. Benedict, tree hollow debris & maple duff, 17, SBPC; Tillamook Co., rest area Wilson River Hgw, 0.5miS 1miW Lee's Camp, 4.XI.72, 700', E.M. Benedict, rot. tree hollow, 2, SBPC; Washington Co., 6miN Buxton, 6.IV.1955, V. Roth, ex duff, 1, OSAC; **Washington:** Grays Harbor Co., 7.5miN Neilton, 23.XI.1981, F.W. Merickel, hemlock leaf litter Ber. funnel, 9, SBPC.

***Pinodytes ovatus* (Hatch). UNITED STATES. Oregon:** Curry Co., 14kmNE Brookings, N42°07.127', W124°11.749', 5.VI.2003, 30m, S. Peck, 03–95, mix. for. log-side litter Ber., 1, SBPC; Curry Co., 3miS 5miE Port Orford, Middle Elk Rd., 17.V.1973, 700', E.M. Benedict, red alder duff, 1, SBPC; Curry Co., 4miS 4miE Port Orford, Middle Elk Rd., 17.V.1973, 700', E.M. Benedict, tan oak duff, 3, SBPC; Curry Co., 5miS 3miE Port Orford, Middle Elk Rd., 17.V.1973, 700', E.M. Benedict, debris, 1, SBPC; Curry Co., 7miN Gold Beach, 19.VIII.1961, W. Suter, floor, 3, SBPC; Curry Co., Cape Sebastian, 6miS Gold Beach, 3.I.1981, P.J. Johnson, Sitka spruce, 2, FMNH; Curry Co., Gold Beach, 11.V.1955, J. Capizzi, Doug. fir duff, 3, OSCU; Curry Co., Gold Beach, 5miN, 11.V.1955, J. Capizzi, myrtle duff, 4, OSAC; Curry Co., Gold Beach, 5miN, 11.V.1955, J. Capizzi, myrtle duff, Allotype, OSAC; Curry Co., Humbug Mt., 11.V.1955, J. Capizzi, Paratype, 1, CASC; Curry Co., Humbug Mt., 11.V.1955, J. Capizzi, 1, OSAC; Curry Co., Opp. Jct. of FS Rd. 3506 and FS Rd. 333, 13miE Gold Beach, 10.III.1972, 600', E.M. Benedict, alder duff, 3, SBPC; Curry Co., Rogue R. Hiway Trailer Pk., 10.III.1972, 600', E.M. Benedict, rotted wood, 7, SBPC; Curry Co., Rogue R. Hiway Trailer Pk., 10.III.1972, 600', E.M. Benedict, mixed duff, 3, SBPC; Curry Co., Rogue R. Hiway Trailer Pk., 10.III.1972, 600', E.M. Benedict, red alder duff, 3, SBPC; Curry Co., Siskiyou Nat. For., 28miE Gold Beach, 10.III.1972, 600', E.M. Benedict, fir, 5, SBPC.

***Pinodytes pusio* Horn. UNITED STATES. California:** leg. Wickham, 1, CASC; Liebeck Collection, 1, UCDC; Hills back of Oakland, 19.II.1911, 11, CASC; Northfork, 7.III.1920, H. Dietrich, 3, CUIC; Northfork, 13.III.1920, H. Dietrich, 1, CUIC; Northfork, 7.XII.1919, H. Dietrich, 1, CUIC; Northfork, 7.III.1920, H. Dietrich, 1, CASC; Northfork, 14.III.1920, H. Dietrich, 1, CUIC; S. Cal, Wickham, 1, CNCI; Santa Clara, C. Fuchs, 1, CASC; Alameda Co., 16.XI.1902, 4, CASC; Alameda Co., 1, UCDC; Alameda Co., June, A. Koebele, 8, USNM; Alameda Co., A. Koebele, 1, USNM; Alameda Co., Fuchs, 2, CNCI; Alameda Co., 2, CASC; Alameda Co., June, 4, CASC; Alameda Co., Berkeley, VI.1930, L.W. Saylor Collection, 1, USNM; Alameda Co., Berkeley, 5.V.1930, L.W. Saylor Collection, 4, USNM; Alameda Co., Berkeley, 14.III.1932, L.W. Saylor, 1, CASC; Alameda Co., Berkeley, 23.II.1962, J.F. Lawrence, duff, 1, CNCI; Alameda Co.,

Berkeley, H.P. Chandler, 4, CASC; Alameda Co., Berkeley, 1.IV.1930, 1, CASC; Alameda Co., Leona Heights, 10.V.1892, Fuchs, 2, CASC; Alameda Co., Oakland, E.S. Ross, 1, CASC; Alameda Co., Oakland, 12.II.1953, R. Schuster, 1, EMEC; Alameda Co., Oakland, 2.II.1953, R. Schuster, 2, EMEC; Alameda Co., Oakland Hills, 9.I.1954, J.R. Helfer, 1, UCDC; Alameda Co., Redwood Reg. Pk., 28.I.1978, D.S. Chandler, sift redwood duff, 1, CUIC; Alameda Co., Redwood Regional Park, Redwood Rd., 7.II.1976, J. Doyen, Ber. *Sequoia sempervirens* litter, 3, EMEC; Alameda Co., U.C. Berkeley, H.P. Chandler, 3, CASC; Contra Costa Co., Briones Reg. Park, 10.I.1976, J. Doyen, Ber. *Umbellularia arbutus* litter, 1, EMEC; Contra Costa Co., Redwood Canyon, 1-10-15, F.E. Blaisdell, 1, CASC; Contra Costa Co., Redwood Park, 28.X.1953, E.E. Gilbert, 1, EMEC; Contra Costa Co., Richmond, El Cerrito Hills at Rifle Range Rd., 27.XI.1975, J. Doyen, Ber. *Quercus agrifolia* litter, 6, EMEC; Fresno Co., 36.8238N 118.9561W, Sequoia NF, Boole Tree Tr., 8.VI.2006, Caterino & Chatzimanolis, *Pinus* litter, 10, SBMN; Fresno Co., 5miNE Auberry, Jose Basin Rd., 2.I.1981, N. Smith & A. Gilbert, 1, CSCA; Fresno Co., Dinky Creek, 5.IV.1970, T.R. Haig, pine leafmold Ber., 5, CSCA; Fresno Co., Panoche Crk. at County line, 25.I.1976, J. Doyen, Ber. *Ephedra* litter, 1, EMEC; Marin Co., 1miS Olema, 18.III.1983, D.S. Chandler, sift laurel litter, 4, UNHC; Marin Co., 1miS S.P. Taylor State Pk., 5.I.1959, J.R. Powers, 1, EMEC; Marin Co., 1miSE Inverness, 3.III.1963, C.W. O'Brien, 4, EMEC; Marin Co., 1miSE Inverness, 2-7-62, C.W. O'Brien, Bishop pine duff, 1, CNCI; Marin Co., 1miSE Inverness, 1-7-62, C.W. O'Brien, Bishop pine duff, 1, CNCI; Marin Co., 1miW Inverness, 22.VI.1976, J.T. Doyen & P. Rude, Ber. *Alnus rubra* litter, 15, EMEC; Marin Co., 1miW Olema, 28.II.1976, J. Doyen, Ber. *Lithocarpus densifloris* litter, 7, EMEC; Marin Co., 5miNE Stinson Beach, 17.X.1975, F.G. Andrews, K.S. Corwin, Ber. redwood duff, 2, CSCA; Marin Co., Alpine Lake, 18.VI.1953, C.D. MacNeill, R. Schuster, 1, EMEC; Marin Co., Berkeley, 5-9-47, H.P. Chandler, 1, EMEC; Marin Co., Carson Roc., 20.XI.1959, D.C. Rentz, 1, CASC; Marin Co., Inverness, 8.XI.1953, G.A. Marsh, 1, EMEC; Marin Co., Inverness, 12.I.1963, C.W. O'Brien, *Pinus* duff, 3, EMEC; Marin Co., Inverness, 16.V.1952, H.S. Dybas, 2, SBPC; Marin Co., Mt. Tamalpais, 15.I.1961, C.W. O'Brien, *Manzanita* duff, 1, CNCI; Marin Co., Port Reyes, Bear Valley, N38°02.917' W122°48.305', 15.VI.2003, 15m, S. Peck, 03-101, Bay myrtle log-side litter Ber., 2, SBPC; Marin Co., Port Reyes, Five Brooks Trail, N37°59.844' W122°45.492', 16.VI.2003, 15m, S. Peck, 03-102, Bay myrtle litter Ber., 3, SBPC; Marin Co., Port Reyes, Inverness, N38°06.244' W122°54.169', 14.VI.2003, 15m, S. Peck, 03-100, Alder thicket leaf litter Ber., 5, SBPC; Marin Co., Pt. Reyes, Mt. Vinson, 31.III.1976, F.G. Andrews, Ber. *Neotoma* nest, 5, CSCA; Marin Co., S.P. Taylor St. Pk., 8.V.1976, A. Newton, M. Thayer, litter & duff, redwood for., 3, FMNH; Marin Co., S.P. Taylor St. Pk., N38°03' W122°04', 11.VI.2003, 70m, S. Peck, 03-97, mixed forest litter Ber., 1, SBPC; Marin Co., Sausalito, 23.III.1934, 1, CASC; Marin Co., Sausalito, 23.III.1934, from *Cineraria* roots, 1, CSCA; Marin Co., Tocaloma, 18.V.1952, H.S. Dybas, Ber. *Neotoma* debris pile, 1, SBPC; Mariposa Co., 3miN Nipinnawasee, 15.XI.1984, A.J. Gilbert, Ber. *Arctostaphylos* litter, 3, CSCA; Mendocino Co., Caspar, 7.III.1954, J. Helfer, 2, EMEC; Mendocino Co., Mendocino, 9.I.1955, J. Helfer, 1, EMEC; Monterey Co., Asilomal, 15.VI.1980, R.B. Kimsey, 3, UCDC; Monterey Co., Big Sur, 16.VI.1969, K. Stephan, 3, FSCA; Monterey Co., Monterey, June, 2, CASC; Monterey Co., Pt. Cypress, 4miN Carmel, 22.II.1957, G.A. Marsh, 3, FMNH; Monterey Co., W. of Bottchers Gap, 3kmE Rt. 1 Palo Colorado Rd., 10kmN Big Sur, 26.II.1999, 100m, S. & J. Peck, 99-70, redwood & oak litter, 8, SBPC; San Bernadino Co., 34.1454N 116.9775W, SBNF, Angelus Oaks, 14.I.2006, Caterino & Chatzimanolis, 1, SBMN; San Francisco Co., 19.XI.1911, 3, CASC; San Mateo Co., 5miS Loma Mar, 29.IV.1970, T.R. Haig, Ber. fern litter, 2, CSCA; San Mateo Co., 6miSE Half Moon Bay, 5.XII.1953, V.D. Roth, 7, EMEC; San Mateo Co., Alpine Creek, SE of La Honda, 37°18'N 122°15'W, 7.XI.1993, 180m, A. Newton, M. Thayer, ex mushrooms, *Pseudotsuga-Acer-Alnus* for. along creek, 2, FMNH; San Mateo Co., LaHonda, 18.IV.1981, D.S. Chandler, sift redwood litter, 1, UNHC; San Mateo Co., Redwood City, 20.XII.1943, Paul H. Arnaud, 1, CASC; Santa Clara Co., Fall Coll., 2, MCZC; Santa Clara Co., C. Fuchs, 2, CNCI; Santa Clara Co., 2.7miSW Los Gatos, 25.V.1976, S.C. Kuba, Ber. oak litter, 3, CSCA; Santa Clara Co., 4miS Palo Alto, 18.IV.1976, F.G. Andrews, Ber. oak litter, 2, CSCA; Santa Clara Co., Mt. Madonna, 1-2-54, D. Burdick, 3, EMEC; Santa Cruz Co., XI.36, E.S. Ross, 1, CASC; Santa Cruz Co., 11miNE Boulder Creek, 18.V.1976, S.C. Kuba, Ber. oak litter & madrone; 1, CSCA; Santa Cruz Co., 1miE Big Basin, 18.V.1976, S.C. Kuba, Ber. unidentified litter, 1, CSCA; Santa Cruz Co., 3miNNE Soquel, 22.IV.1972, 130-400', E.I. Schlinger, 1, EMEC; Santa Cruz, 7.5miS Los Gatos, Santa Cruz Mts., 23.II.1963, Irwin Westcott, 3, CSCA; Santa Cruz Co., Ben Lomond, 29.XII.1964, J.S. Buckett, 1, UCDC; Santa Cruz Co., Ben Lomond, XII.31, 6, LACM; Santa Cruz Co., Ben Lomond, 21.VI.1953, C.D. MacNeill, *Pseudotsuga taxifolia*, 4, EMEC; Santa Cruz Co., Big Basin, 18.V.1976, S.C. Kuba, Ber. redwood & madrone litter, 5, CSCA; Tulare Co., 18th Hole Cave, 12.V.2004, J. Krejca, et al, 1, SBPC; Tulare Co., 35.8269N 118.4592W, Sequoia NF, Hospital Flat, 12.I.2006, Caterino & Chatzimanolis, 1, SBMN; Tulare Co., 36.7182N 118.8409W, Sequoia NF, Big Mdws., 9.VI.2006, Caterino & Chatzimanolis, *Pinus* litter, 3, SBMN; Tulare Co., 36.7194N 118.8501W, Sequoia NF, F.S. 13S04, 10.VI.2006, Caterino & Chatzimanolis, *Pinus* litter, 7, SBMN; Tulare Co., Pet Cemetery Cave, 11.V.2004, J. Krejca, et al, 1, SBPC; Tulare Co., Sequoia N.P., 9.2miS Kaweah Camp, 13.V.1976, A. Newton, M. Thayer, Ber. litter mixed hdwd-*Libocedrus*, 14, FMNH.

***Pinodytes rothi* (Hatch).** UNITED STATES. **California:** Mendocino Co., Ukiah, 21.XII.1934, N.G. Buhn, ex *Lilium*, 2, CSCA; **Oregon:** Portland, 18.IV.1955, F.P. Larson, forest duff, 2, OSAC; Portland, 11.V.1955, V. Roth, forest duff, 10, OSAC; Clackamas Co., 4miN Sandy, 23.XI.68, E.M. Benedict, 2, UCDC, 1, LACM; Clackamas Co., Barton Co. Park, 0.25miS Barton, 22.IV.72, E.M. Benedict, cone scales duff, 42, SBPC; Clackamas Co., Barton Co. Park, 0.5miS Barton, 22.IV.72, E.M. Benedict, duff, rot. wood, 14, SBPC; Clackamas Co., Colton, 21.X.1968, E.M. Fisher, 17, LACM, 15, CSCA; Clackamas Co., Mt. Hood Nat. For. Rd. S57, 30miSE Estacoda, 26.V.72, 2000', E.M. Benedict, duff, 7, SBPC; Mt. Hood Nat. For. Rd. S57, 30miSE Estacoda, 26.V.72, 2000', E.M. Benedict, fern debris, 9, SBPC; Mt. Hood Nat. For. Rd.

S57, 30miSE Estacoda, 26.V.72, 2000', E.M. Benedict, 20, SBPC; Clackamas Co., Outlook, 29.II.1969, R.L. Westcott, forest litter, 8, CSCA; Clackamas Co., Roaring River Cpgd., 20miSE Estacoda, 3.X.71, 1000', E.M. Benedict, maple duff, 1, SBPC; Clatsop Co., 2.6miE Astoria, Emerald Heights, 4.IV.76, 200', H. Ramsey, 20, SBPC; Clatsop Co., 3miN 11miW Elsie, 13.VII.73, 200' E.M. Benedict, alder-conifer duff, 5, SBPC; Clatsop Co., 3miN 1miW Elsie, beside gravel pit on USHgw 26, 15.III.72, 700', E.M. Benedict, mixed duff, 14, SBPC; Clatsop Co., 3miSE Olney, 27.XI.71, 400', E.M. Benedict, moss from maple trunk, 14, SBPC; Clatsop Co., Astoria, 24.V, coll. Hubbard & Schwarz, 3, USNM; Clatsop Co., Astoria, 25.V, coll. Hubbard & Schwarz, 1, USNM; Clatsop Co., Fort Clatsop Nat. Mem., 23.I.2003, R. Turnbow, 2, RHTC; Clatsop Co., Saddle Mt. Rd., 5miN 7miW Elsie, 13.VII.73, 700', E.M. Benedict, 11, SBPC; Clatsop Co., Saddle Mt. Rd., 5miN 7miW Elsie, 13.VII.73, 700', E.M. Benedict, duff & moss, 4, SBPC; Clatsop Co., Saddle Mt. Rd., 5miN 7miW Elsie, 13.III.72, 700', E.M. Benedict, alder, hemlock duff, soil, 20, SBPC; Clatsop Co., Saddle Mt. Rd., 5miN 7miW Elsie, 13.III.72, 700', E.M. Benedict, duff & rotten wood from tree hollow, 2, SBPC; Clatsop Co., Saddle Mt. Rd., 5miN 7miW Elsie, 13.III.72, 700', E.M. Benedict, duff & moss, 20, SBPC; Clatsop Co., Saddle Mt., base, 5.VI.1955, V. Roth, 16, OSAC; Clatsop Co., Seaside, 7.IV.1955, V. Roth, moss, rot. wood, 29, OSAC; Columbia Co., 3miSW Clatskanie Hill Rd. on Murray Hill, 8.I.72, 300', E.M. Benedict, red alder litter & duff, 2, SBPC; Columbia Co., 3miSW Clatskanie Hill Rd. on Murray Hill, 8.I.72, 300', E.M. Benedict, red cedar duff, 20, SBPC; Columbia Co., Old Pittsburg Rd. acr. Baker Pt., 2miE Pittsburg, 15.IV.72, E.M. Benedict, duff, Douglas fir needles, 21, SBPC; Columbia Co., Old Pittsburg Rd. acr. Baker Pt., 2miE Pittsburg, 15.IV.72, E.M. Benedict, bark & rotted wood, 1, SBPC; Columbia Co., Old Pittsburg Rd. acr. Baker Pt., 2miE Pittsburg, 15.IV.72, E.M. Benedict, Douglas fir duff, 19, SBPC; Columbia Co., Old Pittsburg Rd. acr. Baker Pt., 4miE Pittsburg, 15.IV.72, E.M. Benedict, red cedar duff, 36, SBPC; Columbia Co., Old Pittsburg Rd. acr. Baker Pt., 5miE Pittsburg, 15.IV.72, E.M. Benedict, western hemlock duff, 15, SBPC; Columbia Co., Old Pittsburg Rd. acr. Baker Pt., 4miE Pittsburg, 15.IV.72, E.M. Benedict, started red cedar bark, 20, SBPC; Columbia Co., Old Pittsburg Rd. acr. Baker Pt., 7miE 0.5miS Pittsburg, 15.IV.72, E.M. Benedict, maple & fir duff, 14, SBPC; Columbia Co., Old Pittsburg Rd. acr. Baker Pt., 7miE 0.5miS Pittsburg, 15.IV.72, E.M. Benedict, grass & duff, 11, SBPC; Columbia Co., Old Pittsburg Rd. acr. Baker Pt., 7miE 5miS Pittsburg, 15.IV.72, E.M. Benedict, red alder duff, 4, SBPC; Coos Co., 10miE 2miS Weyerhaeuser Co. Millicoma Tree Farm Camp Rd. 5046, 21.XI.71, E.M. Benedict, rotted wood, 1, SBPC; Coos Co., 3miE Langlois, 18.V.73, 100', E.M. Benedict, 1, SBPC; Coos Co., 5miN 3miE Landlois, Lower Fow Mile Rd., 18.V.73, 100', E.M. Benedict, shore pine duff, 6, SBPC; Douglas Co., 2miN Melrose, Melrose to Umpqua Rd. nr Umpqua R., 7.II.72, 400', E.M. Benedict, big leaf maple duff, 20, SBPC; Douglas Co., Camas Val., 3miNE, 24.X.62, J.F. Lawrence, ex *Fomes applanatus*, 1, SBPC; Hood River Co., 1.5miSW Cascade Locks, 24.X.1968, E.M. Fisher, 17, LACM; Marion Co., 9miS 6miE Silvertown, 25miE on rd to Smith Ck. Youth Camp, 26.III.72, E.M. Benedict, 2, SBPC; Multnomah Co., 4miE Gresham, 30.XII.67, E.M. Benedict, 1, SBPC, 2, LACM, 3, UCDC; Multnomah Co., Ainsworth St. Pk., 15.XI.67, E.M. Benedict, maple, fern duff, 2, SBPC; Multnomah Co., Ainsworth St. Pk., 15.XI.67, E.M. Benedict, 1, UCDC; Multnomah Co., Larch Mt., 9miN 6miE Sandy, 27.IX.72, 2300', E.M. Benedict, 7, SBPC; Multnomah Co., Larch Mt., Mt. Hood Nat. For., 10miN 7miE Sandy, 27.IX.72, 3000', E.M. Benedict, fir debris, 21, SBPC; Multnomah Co., Larch Mt., Mt. Hood Nat. For., 10miN 7miE Sandy, 27.IX.72, 3000', E.M. Benedict, W. hemlock duff, 20, SBPC; Multnomah Co., Larch Mt., Mt. Hood Nat. For., 10miN 7miE Sandy, 27.IX.72, 3000', E.M. Benedict, 40, SBPC; Multnomah Co., Larch Mt. at edge of Mt. Hood Nat. For., 9miN 6miE of Sandy, 27.IX.72, 2300', E.M. Benedict, moss & hemlock duff, 20, SBPC; Multnomah Co., Mt. Hood Natl. For., 10miN 7miE Sandy, 27.IX.72, 3000', E.M. Benedict, maple, 6, SBPC; Multnomah Co., Mt. Hood Natl. For., Larch Mtn., 27.IX.72, 4000', E.M. Benedict, 3, SBPC; Multnomah Co., Onenota Falls, 1miSE Onenota, 15.XI.67, E.M. Benedict, 2, UCDC; Multnomah Co., Onenota Trail, falls, 15.XI.67, E.M. Benedict, fir, maple, alder duff, 19, SBPC; Multnomah Co., Shepherd's Dell St. Pk., 16.VI.68, J. & S. Cornell, ex litter Douglas fir, 1, JFCC; Multnomah Co., Summit Larch Mt., Mt. Hood Nat. For., 9miN 8miE Sandy, 27.IX.72, 4000', E.M. Benedict, hemlock duff, 20, SBPC; Multnomah Co., Summit Larch Mt., Mt. Hood Nat. For., 9miN 8miE Sandy, 27.IX.72, 4000', E.M. Benedict, hemlock debris & duff, 20, SBPC; Multnomah Co., Summit Larch Mt., Mt. Hood Nat. For., 9miN 8miE Sandy, 27.IX.72, 4000', E.M. Benedict, fir duff, 18, SBPC; Polk Co., 2.2miW Falls City, 11.VI.73, 800', E.M. Benedict, pseudo tree hollow big leaf maple, 8, SBPC; Polk Co., 2.2miW Falls City, 11.VI.73, 800', E.M. Benedict, big leaf maple duff, 12, SBPC; Tillamook Co., 28miE Beaver, Nestucca Riv. access rd., 12.V.73, 1900', E.M. Benedict, W. red cedar duff, 12, SBPC; Tillamook Co., 28miE Beaver, Nestucca Riv. access rd., 12.V.73, 1900', E.M. Benedict, duff vine maple, 19, SBPC; Tillamook Co., 28miE Beaver, Nestucca Riv. access rd., 12.V.73, 1900', E.M. Benedict, spruce duff, 11, SBPC; Tillamook Co., 7miSE Blaine, Suislaw Nat. For., 15.III.72, 1400', E.M. Benedict, 18, SBPC; Tillamook Co., Cape Falcon Cave, 5miN Manzanita, 13.VII.73, 100', E.M. Benedict, duff, 2, SBPC; Tillamook Co., East Kansas Creek Rd., 2miS Hwy. 6, 13.XI.66, E.M. Benedict, 1, LACM; Tillamook Co., Elk Ck. St. For. Cpgd., 4.5miNE Lee's Camp, 4.XI.72, 900', E.M. Benedict, duff, 17, SBPC; Tillamook Co., Elk Ck. St. For. Cpgd., 4.5miNE Lee's Camp, 4.XI.72, 900', E.M. Benedict, rotted wood, 3, SBPC; Tillamook Co., Garibaldi, 2miS, 15.III.1955, V. Roth, duff, rotting wood, 9, OSAC; Tillamook Co., Garibaldi, 2miS, 15.III.1955, V. Roth, ex moss, 15, OSAC; Tillamook Co., Rest Area, Wilson R. Hgw., 0.5miS 1miW Lee's Camp, 4.XI.72, 700', E.M. Benedict, rot. tree hollow, 13, SBPC; Tillamook Co., Rest Area, Wilson R. Hgw., 0.5miS 1miW Lee's Camp, 4.XI.72, 700', E.M. Benedict, tree hollow debris and maple duff, 15, SBPC; Tillamook Co., Rest Area, Wilson R. Hgw., 0.5miS 1miW Lee's Camp, 4.XI.72, 700', E.M. Benedict, duff, 20, SBPC; Wasco Co., 7miSW The Dalles, 23.X.68, E.M. Fisher, 60, CSCA, 3, LACM; Washington Co., 1.7miSW Timber, 13.VII.73, 900', E.M. Benedict, red alder duff, 16, SBPC; Washington Co., 1.7miSW Timber, 13.VII.73, 900', E.M. Benedict, big leaf maple duff, 4, SBPC; Washington Co., 10miN Forest Grove, 9.IV.67, E.M. Benedict, 1, LACM; Washington Co., 2miE Wash.-Tillamook

Co. line, 4.2miNW Timber, Sunset Hgw 26, 13.VII.73, 900', E.M. Benedict, fir duff, fern, 4, SBPC; Washington Co., 2miE Wash.-Tillamook Co. line, 4.2miNW Timber, Sunset Hgw 26, 13.VII.73, 900', E.M. Benedict, rott. wood stump, 2, SBPC; Washington Co., 2miN Helvetia, 30.XI.67, E.M. Benedict, 1, LACM; Washington Co., 2miN Helvetia, 21.I.68, E.M. Benedict, 2, UCDC; Washington, 2miN Helvetia, 21.I.68, D.R. Malcolm, cedar, fir, etc, duff, 20, SBPC; Washington Co., 3miN Forest Grove, 30.X.66, E.M. Benedict, litter, 2, SBPC; Washington Co., 3miSW Tualatin, 1.I.72, 280', E.M. Benedict, madrone, shrubby duff, 11, SBPC; Washington Co., 3miSW Tualatin off SW Tonquin Rd. nr gravel pit, 1.I.72, 200', E.M. Benedict, duff & moss, 20, SBPC; Washington Co., 7miN Forest Grove, 9.IV.67, E.M. Benedict, 7, UCDC; Yamhill Co., 20.II.34, E.S. Ross, 1, OSAC; Yamhill Co., 2miS Carlton, McBride Cemetery Rd., 1.I.72, 200', E.M. Benedict, duff & moss, 32, SBPC; Yamhill Co., 3miS Wapato, 2.X.71, E.M. Benedict, D. fir needles, hazel, maple, thimbleberry litter, duff, soil, 14, SBPC; Yamhill Co., 6miSW Carlton, 1.I.72, 500', E.M. Benedict, Douglas fir duff & moss, 6, SBPC.

***Pinodytes subterraneus* (Hatch). UNITED STATES. Oregon:** Clatsop Co., Saddle Mt., base, 5.VI.1955, V. Roth, 1, OSAC; Clatsop Co., Seaside, 28.VI.1933, M.C. Lane, 1, OSAC; Clatsop Co., Seaside, 7.IV.1955, V. Roth, rot-wood, 1, OSAC.

***Pinodytes tehama* Peck & Cook. UNITED STATES. California:** Shasta Co., 4miSE Whitmore, South Cow Creek, 16.III.2001, 2650', D.S. Chandler, Douglas fir leaf litter, 1, UNHC; Shasta Co., 4miSE Whitmore, South Cow Creek, 16.III.2001, 2650', D.S. Chandler, maple etc. leaf litter, 14, UNHC; Shasta Co., Redding, 4.I.1984, T.R. Haig, ex. live oak duff, 2, CSCA; Shasta Co., Redding, 1.III.1979, T.R. Haig, Ber. oak duff, 23, CSCA; Shasta Co., Redding, 2.I.1978, T.R. Haig, Ber. pine duff, 17, CSCA; Tehama Co., 12miSE Paynes Ck., N Fk. Antelope Ck. Cyn, S side Ponderosa Way, 12.XI.1996, 3100', D.S. Chandler, leaf litter by creek, 1, UNHC; Tehama Co., 12miSE Paynes Ck., N Fk. Antelope Ck. Cyn, S side Ponderosa Way, 12.XI.1996, 3100', D.S. Chandler, black & live oak leaf litter by creek, 1, UNHC; Tehama Co., 12miSE Paynes Ck., N Fk. Antelope Ck. Cyn, S side Ponderosa Way, 12.XI.1996, 3100', D.S. Chandler, black oak & Doug. fir leaf litter, 5, UNHC; Tehama Co., 13miSE Paynes Ck., Shelton Ridge, Ponderosa Way, 3.XI.1998, 3200', D.S. Chandler, live oak leaf litter, 5, UNHC; Tehama Co., 14miSE Paynes Ck., M Fk. Antelope Ck. Cyn, S side Ponderosa Way, 9.XI.1998, 3100', D.S. Chandler, bigleaf maple leaf litter, 2, UNHC; Tehama Co., 14miSE Paynes Ck., M Fk. Antelope Ck. Cyn, S side Ponderosa Way, 9.XI.1998, 3100', D.S. Chandler, live oak & Doug. fir leaf litter, 1, UNHC; Tehama Co., 13miSE Paynes Ck., S Fk. Antelope Ck. Cyn, S side Ponderosa Way, 13.XI.1998, 3100', D.S. Chandler, dogwood, Doug. fir, bigleaf maple leaf litter, 1, UNHC; Tehama Co., 18miSE Paynes Ck., S Fk. Antelope Ck. Cyn, S side Ponderosa Way, 9.I.2000, 2900', D.S. Chandler, bigleaf maple etc. leaf litter, 4, UNHC; Tehama Co., 18miSE Paynes Ck., S Fk. Antelope Ck. Cyn, S side Ponderosa Way, 27.V.2000, 2900', D.S. Chandler, sift Doug. fir litter, dry creek bed, 1, UNHC; Tehama Co., 18miSE Paynes Ck., S Fk. Antelope Ck. Cyn, S side Ponderosa Way, 13.XI.1996, 3100' D.S. Chandler, sift live oak leaf litter, 2, UNHC; Tehama Co., 18miSE Paynes Ck., S Fk. Antelope Ck. Cyn, S side Ponderosa Way, 8.I.2000, 3200', D.S. Chandler, rotten live oak, leaf litter, 4, UNHC; Tehama Co., Lassen Nat. For., 19miSE Paynes Ck., Ponderosa Way, 16.III.2000, 3250', D.S. Chandler, pine & black oak litter, 3, UNHC; Tehama Co., Lassen Nat. For., 1miN Jct. Hwys. 36 & 89, 24.V.2000, 6050', D.S. Chandler, sift conifer leaf litter, 1, UNHC; Tehama Co., Snoqualmie Gulch, 10miSE Manton, 1.XII.1986, 2850', D.S. Chandler, sift leaf litter by stream, 3, UNHC; Tehama Co., Snoqualmie Gulch, 10miSE Manton, 1.XII.1986, 2850', D.S. Chandler, sift live oak leaf litter, 9, UNHC.

***Pinodytes tibialis* (Hatch). UNITED STATES. Oregon:** Curry Co., Cape Sebastian, 6miS Gold Beach, 3.I.1981, P. Johnson, Sitka spruce duff, 2, FMNH; Curry Co., Gold Beach, 21.VI.1955, J. Capizzi, Douglas fir duff, 81, OSAC; Curry Co., Gold Beach, 21.VI.1955, J. Capizzi, Douglas fir duff, 1, allotype (note: this specimen is male), OSAC; Curry Co., Gold Beach, 21.VI.1955, J. Capizzi, Douglas fir duff, paratype, 1, OSAC, 2, CASC; Curry Co., Gold Beach, 19.VIII.1961, W. Suter, floor litter, 3, SBPC.