

**REVISIONS OF THYCE LeCONTE
AND RELATED GENERA
(COLEOPTERA: SCARABAEIDAE)**

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REVISIONS OF *THYCE* LeCONTE AND RELATED GENERA
(COLEOPTERA: SCARABAEIDAE)

by

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INTRODUCTION

The genera related to *Thyce* have had a varied history. *Thyce* was described by LeConte in 1856 in his Revision of the Melolonthidae of North America, and included a single species, *squamicollis*. Horn (1867) described the genus *Plectrodes* for the species *P. pubescens*. Additional species were described by both LeConte (1876) and Horn (1880) in the genus *Plectrodes*. Casey, in subsequent papers, described a related genus *Dinacoma* (1889), described a number of additional species in *Thyce*, and transferred most of the species formerly placed in *Plectrodes* to *Thyce*. Fall (1908, 1932), Van Dyke (1943), and Cartwright (1967) more recently described species which have been placed in *Thyce*. Howden (1968) discussed the generic relationships of the Melolonthini in America north of Mexico, relating *Polyphylla*, *Plectrodes*, *Dinacoma*, *Thyce* and *Hypotrachia*, and describing a new genus, *Hypothyce*, based upon a single species, *H. mixta*, from Texas.

Much of the work by Howden indicated the necessity for a revision of the genus *Thyce*, which was the original intent of this paper. However, implications early in this study indicated a look at the genera *Polyphylla*, *Plectrodes*, *Hypothyce*, *Dinacoma*, and *Hypotrachia*, in addition to *Thyce*, was in order.

GENERIC RELATIONSHIPS

The tribe Melolonthini in America north of Mexico, as defined by Dalla Torre, includes the native genera *Diploptaxis*, *Polyphilla*, *Phyllophaga* (sensu lato), *Dinacoma* and *Thyce*. An additional genus, *Rhizotrogus* (*Amphimallon*)* has been introduced from Europe. Dalla Torre placed the North American genera *Hypotrachia* and *Plectrodes* in the Liparetrini. Since Dalla Torre's catalog, Howden (1968) has described the genus *Hypothyce*.

The Liparetrini of Dalla Torre included 42 genera from Australia, one from China, 13 from New Zealand, two from the New Caledonian area, four from South America, and two from North America (*Hypotrachia* and *Plectrodes*). American authors have generally placed *Plectrodes* in the Melolonthini (near *Thyce*).

Britton, in his revision of the Australian Melolonthinae, treats 13 tribes, 10 described as new. The tribe Liparetrini does not appear in his key or table of tribes, but Britton (in litt.) states that Colpochilini (Britton) in the key should be Liparetrini, and that Liparetrini is probably limited to Australia, New Zealand and southern South America.

Howden suggests that *Hypotrachia* is actually a representative of the Melolonthini, stating, (1968:546) "... if body shape (a character largely ignored because of the difficulty of description) is also considered, *Hypotrachia* undoubtedly should be placed with the other genera (*Thyce*, etc.) in the Melolonthini." Howden further states that *Hypothyce* indicates "... the close relationship between *Hypotrachia* and *Thyce*." *Hypotrachia* may be more distantly related to *Thyce* than Howden suggests [see discussion under *Hypotrachia*].

The placement of *Hypothyce* then comes into question. Howden relates *Hypothyce* to *Hypotrachia* largely on the basis of the length of the antennal club and the size and structure of the head and legs, but does indicate differences in the shape of the clypeus, the fusion of the abdominal segments and the shape of the tarsal claws. He also relates *Hypothyce* to *Thyce osburni* Cartwright and cites similarities in the length of the antennal club, the fusion of the abdominal segments, and the enlarged hind femora. *Hypothyce mixta* and *Thyce osburni* are similar, and examination indicates that these species should be placed in the same genus. This would necessitate a slight redefinition of the genus *Hypothyce*.

* Recent European workers treat *Amphimallon* as a subgenus of *Rhizotrogus*. Paulian (1959:199) states: "La separation des genres *Amphimallon* et *Rhizotrogus*, qui n'est basee que sur le nombre d'articles des antennes, ne correspond pas a un groupement naturel des especes..." It thus seems reasonable to follow this practice in this country.

Studies of the genera related to *Thyce* show that there are a number of distinct assemblages which deserve generic status: *Hypothyce*, including the species discussed above; the monotypic *Plectrodes*; and two assemblages presently under the generic name *Thyce*. Of the assemblages under *Thyce*, one includes two species, *T. squamicollis* of LeConte and a species described below (since the type species of the genus *Thyce* is *squamicollis*, the generic name *Thyce* should be restricted to these two species). The other includes the bulk of species placed in *Thyce*. If these assemblages are given generic status then the status of several other groups should be considered. For instance, the genus *Dinacoma*, including two species, would need redefinition, as would the genus *Polyphylla*, as the result of confusion created by the seeming relationship of *Polyphylla pubescens* Cart. to the *Hypothyce* complex.

UTILIZED MORPHOLOGICAL CHARACTERISTICS

In the course of this study, a search for characters that would prove useful in structuring the higher classification of the species treated below was made. A number of characters previously used in the classification of one or a few genera were examined for the potential of a broader utilization. It was discovered that some characters varied from genus to genus, and even within genera. Some of the results are discussed below.

Females were found to differ from the males in a number of ways. Generally females tend to be larger and more heavily bodied than males of the same species. A generally uniform difference can be observed in the antennal club, which is longer in the male. In some genera, the posterior femora of the female is enlarged, and the male is of normal development, while in other genera, both sexes have expanded femora [see species treatments below]. Sexual dimorphism is perhaps most evident and varied in the genus *Parathyce*. The sexes of this genus differ in the dentation of the anterior tibiae, size of the maxillary palps, shape of the clypeus, development of the posterior femora, presence of a swelling on the vertex, and body size. Of the 15 species treated in detail below, females were not available or were unknown for five (*Hypothyce osburni* (Cart.), *Parathyce riversi* (Casey), *Thyce squamicollis* (LeC.), *Dinacoma marginata* (Casey), and *Dinacoma caseyi* Blaisd.).

Preliminary evidence from an examination of the flight wings indicates potential use in the placement of genera. In those groups examined, the Melolonthini, for the most part, have characteristically shaped basal cells, which differ from those of the Sericini and other tribes. The genus *Hypotrichia* has this distinctive cell shape, and thus does seem to belong with the genera placed in the Melolonthini. Specifics of the characteristics of this brief study are not further utilized, however, since these investigations have not been completed. Presence or absence of pigmentation of the wing membrane is an easily utilized characteristic, which is employed below.

Male genitalia vary slightly among species, but are similar enough as not to be easily utilized. Genitalic differences among genera are slightly more pronounced, but are unnecessary for the recognition of groups.

7. Outer tarsal claw of each leg with acute basal tooth; hind femora slender; dorsally with many recumbent scale-like hairs; mentum quadrate; over 15 mm *Plectrodes* Horn
 Outer tarsal claw of front and middle legs with a large oval basal lobe; hind femora greatly enlarged; dorsally pubescent with many recumbent hairs; mentum acute; under 15 mm
 *Hypotrichia* LeConte
8. Posterior femora of males enlarged 9
 Posterior femora of males narrow, not noticeably enlarged 10
9. Dorsally pubescent, lacking scales or scale-like hairs; clypeal angles rounded *Hypothyce* Howden
 Dorsally with at least some scales or scale-like hairs; clypeal angles acute *Thyce* LeConte
10. Length of antennal club (males) subequal to twice basal antennal segment length; body with numerous white scales; clypeal angles acute, sharp; anterior tibiae tridentate; Southern California
 *Dinacoma* Casey
 Length of antennal club (males) subequal to basal antennal segments; body with numerous white, tan or yellow scales; clypeal angles acute or rounded; anterior tibiae unidentate, bidentate, or tridentate; California and Baja California
 *Parathyce*, new genus

POLYPHYLLA HARRIS

Polyphylla Harris 1842:30.

Type species: *Melolontha fullo* Linnaeus.

25+ North American species.

Antenna 10 segmented, club in male with 7 segments, in female with 5; antennal club of males from 1½ to 2½ times the length of basal segments. Labial palp less than ¼ length of male antennal club. Clypeal corners rounded to squared, either gradually expanded anteriorly or sides subparallel. Body surfaces with both pubescence and scales. Anterior tibiae unidentate, bidentate or tridentate in males, bidentate or tridentate in females. Mesotarsi shorter than tibia. Posterior femora not or slightly (*P. occidentalis*) enlarged in males, often well enlarged in females. All tarsal claws toothed. Male genitalia symmetrical. Wing membranes not pigmented.

REMARKS

In his recent paper treating the *diffracta* complex of *Polyphylla*, Young (1967:284) breaks the genus into four species groups or complexes. One of these, the *occidentalis* complex, is defined to include five eastern species (*P. occidentalis* (L.), *P. variolosa* (Hentz), *P. gracilis* Horn, *P. comes* Casey, and *P. pubescens* Cartwright), based upon the shape of the male genitalia

(Figs. 1–5), which is stated to be “. . . cleft for much less than half its length, and the unique lateral groove on the distal one-half to one-third of the aedeagus” [Young notes that *P. gracilis* Horn does not exactly fit this description].

Howden (1968:547) comments upon the similarity of one of the included species, *Polyphylla pubescens* Cartwright, to some species of *Thyce* (sensu Casey and others). A careful study of the relationships of this species to other *Polyphylla*, and especially those of Young's *occidentalis* complex, has convinced me that this species does not [in fact] belong in *Polyphylla*, and is here transferred to *Polylamina*, new genus, described below.

POLYLAMINA NEW GENUS

[polys (Gr., many); lamina (L., a thin plate)]

Type species: *Polyphylla pubescens* Cartwright

1 North American species

Antenna 10 segmented, club 7 segmented in males, 5 segmented in females, club in males approximately $1\frac{1}{2}$ times length of basal segments. Labial palp $\frac{1}{4}$ to $\frac{1}{3}$ length of antennal club (males). Anterior clypeal angles rounded, sides subparallel. Entirely without scales, although densely pubescent. Anterior tibia bidentate in males, tridentate in females. Mesotarsi slightly shorter than tibiae. Posterior femora enlarged. All tarsal claws toothed. Male genitalia symmetrical. Wings pigmented.

REMARKS

This genus differs substantially from *Polyphylla* in a number of important and obvious characters. The original placement of the included species was undoubtedly governed by the number of segments in the antennal club, which does coincide with those of *Polyphylla*. In the Old World, however, other genera related to *Polyphylla* have additional segments in the antennal club. (*Exolontha*, males and females both with 7 segments; *Hoplosternus* and *Melolontha*, males with 7, females with 6 segments; *Granida*, males with 7, females with 5 segments, etc.) Were it not for the number of antennal segments, the shape of the genitalia, etc., this would easily pass for a *Hypothyce* (see further discussion under *Hypothyce*).

POLYLAMINA PUBESCENS (CARTWRIGHT) NEW COMBINATION

(Figs. 5, 20, 21 and 22. Map 6)

Polyphylla pubescens Cartwright 1939:362; Young 1967:284; Howden 1968:547. Type, USNM, male. “4.7 mi. W. Niceville, Florida” [not examined].

Male: (Figs. 20 and 22) Length 15.3 mm to 17.5 mm; width 6.9 mm to 7.4 mm; head and prothorax piceous, densely covered with recumbent, white hairs; the elytra testaceous, with many recumbent, short, testaceous

hairs. Ventral surfaces testaceous; thorax ventrally with long, erect, white hairs. *Head*: Clypeus with anterior edge slightly reflexed, parallel sided; disk with close, coarse punctures, becoming contiguous and smaller laterally and anteriorly, each puncture provided with a single hair. Vertex closely punctuate with medium punctures. Clypeal corners rounded. Antenna with 7 segmented club (Fig. 21). Mentum quadrate. *Thorax* margined laterally and posteriorly; posterior margin faint medially; closely punctuate with fine punctures, each provided with a single seta. Anterior and posterior prothoracic angles sharp; anterior angles obtuse; posterior angles approaching right angle. *Scutellum* densely provided with semirecumbent, pale hairs arising from close, contiguous rugae-appearing punctures. *Elytra* margined laterally, margin fading near apex. Disk with scattered, fine punctures. Striae obsolete. *Pygidium* with lateral margins reflexed; provided with scattered, medium punctures, each puncture with a single, erect, pale hair. Pygidium disk smooth and glabrous medially. *Ventral abdominal sternites* 2, 3, 4 and 5 fused medially; laterally with short, scattered, recumbent hairs. *Legs*: Anterior tibia bidentate; posterior tibial spur exceeding the length of the first two tarsal segments; all tarsal claws equally toothed basally. *Wings* pigmented. *Male genitalia* Fig. 5.

Female: Length 19.5 mm; width 8.4 mm. Differs from male in the following respect: Clypeal margin slightly reflexed; clypeus with scattered, medium punctures; clypeus narrowing apically. Antennal club with five segments. Prothorax less densely pubescent. Pygidium wider basally. Anterior tibiae tridentate. Body form more globose.

Distribution: Map 6. 12 specimens examined (11 males, 1 female).

FLORIDA: St. Andrews Park [not located]. Bay Co.; Sunnyside. Okaloosa Co.; Ft. Walton Beach.

May (10), June (2).

HYPOTHYCE HOWDEN

Hypothyce Howden 1968:542.

Type species: *Hypothyce mixta* Howden.

2 North American species.

Antennae 10 segmented, club 3 segmented, subequal to basal segments or slightly longer (males). Labial palp approximately 1/3 length of antennal club (males). Anterior clypeal angles rounded (may be marginate), clypeus expanded anteriorly. Body without scales, although many scale-like hairs present. Anterior tibiae bidentate to tridentate, proximal (3rd) tooth varying in development. Mesotarsi subequal to tibia. Posterior femora enlarged. All tarsal claws toothed. Male genitalia symmetrical. Wings with membrane pigmented.

REMARKS

Hypothyce was originally differentiated (Howden, 1968:546) by characters which now have proved to be of only specific value.

In the original description, this genus was related to *Polyphylla* (through *Polyphylla pubescens* Cart.), *Thyce* (through *Thyce osburni* Cartwright) and to *Hypotrichia*. The present study indicates that *Hypothyce mixta* Howden is in fact congeneric with *Thyce osburni*. The two species share the swollen posterior femora, lack of scales, similar body shape and coloration, antennal club configuration, and similar male genitalia. *Thyce osburni* is therefore transferred to *Hypothyce*, below.

Hypothyce is more distantly related to *Thyce* (sensu Casey, presently *Thyce* and *Parathyce* n. genus), and differs in the shape of the posterior femora, the lack of modifications of the maxillary palps, and the pigmentation of the wing membrane. Ritcher (1973:113) states that there are distinct differences between the larvae of *Hypothyce mixta* and *Parathyce harfordi*, indicating a generic separation.

The relationship of this genus to *Polylamina pubescens* (Cart.) (formerly *Polyphylla*) is more obscure. *Polylamina* shares the general body shape, the coloration, the swollen posterior femora, the dentation of the tarsal claws, and the pigmentation of the wing membrane. The two genera differ in the number of segments of the antennal club and the form of the male genitalia. It would be easy to place *pubescens* in *Hypothyce*; however, these two differences seem to be of major significance.

The case of convergence in either body form, coloration, femoral shape, and wing membrane pigmentation (with *Hypothyce*) or antennal club segment number (with *Polyphylla*) seems difficult to reconcile. It would perhaps seem more reasonable to hypothesize an independent (although perhaps close) origin for *Polylamina*, which is indicated by the unique form of the male genitalia.

Hypothyce is similar to *Hypotrichia* in a number of ways (enumerated by Howden, 1968), but does differ in at least two major characteristics. The mentum in *Hypothyce* is quadrate, and noticeably broad apically, as is the case with most of the genera treated here, while *Hypotrichia* has a pointed mentum. The transparent wing membrane and the unique lobed condition of the tarsal claws of *Hypotrichia* would also seem to indicate this genus is more distantly related to *Hypothyce* than was originally indicated.

Key to the Species of Hypothyce

1. Posterior tibial spur longer than two basal tarsal segments; anterior tibiae clearly tridentate; Texas *H. mixta* Howden
Posterior tibial spur shorter than two basal tarsal segments; anterior tibiae with basal tooth poorly developed, giving a bidentate appearance; Georgia *H. osburni* (Cartwright)

HYPOTHYCE MIXTA HOWDEN

(Figs. 6, 23 and 24. Map 6)

Hypothyce mixta Howden 1968:543; Ritcher 1973:113 [larva] Type, CNC No. 9681, male. "Tennessee Colony, Anderson Co., Texas." [not examined]

Larvae: Ritcher 1973:113.

Male: Figures 23 and 24. Length 14.8 mm to 18.9 mm; width 5.9 mm to 7.8 mm. Head, prothorax, and elytra piceous to rufo-piceous. Head, prothorax, elytra, and ventral abdominal sternites with short, recumbent, pale seta-like hairs. Ventral surfaces of thorax with long, erect, white hairs. *Head*: Clypeus gradually expanded apically. Anterior margin strongly reflexed. Clypeal corners emarginate. Clypeus and vertex with close, medium punctures. Apical segment of maxillary palp less than half the length of the antennal club. Mentum quadrate. *Thorax* with thin, lateral margins; entire prothoracic surface provided with close, fine punctures. Anterior and posterior thoracic angles rounded. *Elytra*: Lateral margin reflexed, disappearing apically. Entire surface of elytra closely provided with fine punctures. Elytral striae not evident. *Pygidium* with close, fine punctures. *Legs*: Anterior tibiae tridentate. Posterior femora with longest spur longer than two basal tarsal segments. All tarsal claws toothed. Outer claws with tooth more strongly developed than inner claw. *Wings* pigmented. *Male genitalia*: (Fig. 6).

Female: Length 15.6 mm; width 6.4 mm. Differs from the male in the following: Body less pubescent; elytra nearly glabrous; abdomen enlarged; apical segment of maxillary palp greater than half the length of the antennal club. Anterior tibiae more strongly tridentate. Teeth of tarsal claws less well developed than in male.

Diagnosis: See key characters.

Distribution: Map 6. 14 specimens examined (13 males, including one paratype, 1 female paratype).

TEXAS: *Gonzales Co.*; Palmetto State Park; *Nacogdoches Co.*; near Garrison, Camp Whispering Pines; 15 mi. E. Nacogdoches.

May (1); June (7); July (5).

***HYPOTHYCE OSBURNI* (CARTWRIGHT) NEW COMBINATION** (Figs. 7, 25 and 26. Map 6)

Thyce osburni Cartwright 1967:238; Howden 1968:547. Type, USNM. "Georgia, Dougherty Co.; 4¾ mi. S.E. Albany" [not examined].

Male: Figures 25 and 26. Length 19.5 mm to 20.8 mm; width 8.5 mm. Head and prothorax rufous to rufo-piceous. Elytra testaceous; ventral surfaces ferruginous. Head, prothorax and scutellum provided with short, testaceous, recumbent hairs intermixed with scattered, erect hairs. Elytra with short, recumbent hairs. *Head*: Clypeus expanded anteriorly, lateral and apical margins reflexed; clypeal corners rounded; clypeus and vertex with contiguous medium punctures. Apical segment of maxillary palpi less than half the length of the antennal club. Mentum quadrate. *Thorax*: Prothorax with reflexed margin laterally and basally. Prothorax uniformly punctate with medium punctures. Anterior and posterior prothoracic angles rounded. Elytra with reflexed lateral margin, this margin fading

apically. Elytral surface with scattered, fine punctures. Elytral striae not evident. *Pygidium*: with close, fine punctures, each puncture provided with a pale, recumbent hair. *Ventral surfaces* densely clothed with pale, erect hairs. Abdominal sternites with short, recumbent, pale hairs. *Legs*: Anterior tibiae bidentate, third tibial tooth very weakly indicated. Posterior femora with longest spur less than length of the first two tarsal segments. Tarsal claws toothed; inner tooth less well developed than outer tooth. *Wings* pigmented. *Male genitalia* (Fig. 7).

Female unknown.

Easily diagnosed by the characters presented in the key.

Distribution: Map 6. Specimens examined 3 (male paratypes).

GEORGIA: *Dougherty Co.*; 5 mi. SE Albany.

May (3).

PLECTRODES HORN

Plectrodes Horn 1867:166.

Type species: *Plectrodes pubescens* Horn.

1 North American species.

Antennae 10 segmented, 3 segmented club; club subequal to basal segments in length. Labial palp approximately 1/2 length of antennal club in males. Clypeal corners rounded, expanded anteriorly. Body surfaces provided with long hair-like scales and dense pubescence. Anterior tibiae tridentate in both sexes. Mesotarsi subequal to tibiae. Posterior femora not enlarged in males, enlarged in females. Outer tarsal claw toothed, inner claw with faint tubercle. Male genitalia symmetrical, wings not pigmented. Abdominal sternites fused, flexible, apparently segmented.

REMARKS

Plectrodes has been maintained as a separate genus, largely on the basis of the separation of the ventral abdominal segments of the abdomen in the male. Casey (1914:321) noted the females of *Thyce harfordi* (now *Parathyce*) have incompletely connate abdominal segments. Female specimens of *Plectrodes* exhibit varying degrees of fusion of the ventral abdominal sternites. One specimen examined by me has four segments partially fused; however, the majority of specimens are well fused only between the fifth and sixth sternites. Females of *Thyce harfordi* examined show varying degrees of fusion. In some examples, the last four abdominal segments were fused; and in others the fusion is weaker and only the last three are definitely fused.

A careful dissection of the abdomen of *Plectrodes* reveals a complete fusion of the abdominal sternites, which have become flexible and apparently thinner, and have allowed a "secondary segmentation," so that the abdomen is flexible and segmented, while the original segments are, in fact, fused. This fusion removes all question that *Plectrodes* should be in

the Melolonthini. With the exception of the apparently free abdominal sternites, there is no question that *Plectrodes pubescens* would be placed in the genus *Parathyce*.

PLECTRODES PUBESCENS HORN

(Figs. 14, 27 and 28. Map 1)

Plectrodes pubescens Horn 1967:167; 1880:145; 1885:146; LeConte 1876:516; Casey 1889:170; 1914: 307. Type, male. Phila. Academy of Nat. Sci. No. 3663. "California, Visalia."

Male: Figures 27 and 28. Length 15.2 mm to 21.4 mm; width 7.2 mm to 9.7 mm. Body uniformly testaceous. Head, prothorax, elytra, and ventral surface with intermixed, recumbent, hair-like scales and erect, testaceous hairs. **Head:** Clypeus reflexed anteriorly, expanded apically, anterior margin straight; angles rounded; disk with scattered, fine to medium punctures; vertex with close-set, medium punctures. Apical segment of maxillary palp less than half the length of the antennal club. Mentum quadrate. **Thorax** margined laterally; disk angles rounded. Thorax with scattered to close, medium to fine punctures. **Scutellum** with close, fine punctures. **Elytra** with lateral margin reflexed, fading near outer, apical corner. Elytral striae faintly indicated by smooth areas. Intervals with scattered to close, fine punctures. **Pygidium** margined laterally and apically with close, fine punctures. **Legs:** Anterior tibia tridentate; posterior tibial spur less than length of two basal tarsal segments. Outer claw on prothoracic and mesothoracic tarsi strongly toothed basally. Inner claw on prothoracic and mesothoracic tarsi and both claws on metathoracic tarsi weakly toothed basally. **Wing** membrane not pigmented. **Male genitalia** (See Fig. 14).

Female: Length 16.2 mm to 22.0 mm; width 7.2 mm to 9.5 mm. differs from the male in the following: Clypeus with apex much more strongly reflexed, shorter, ventral surface visible from above, vertex markedly tumid medially. Apical segment of maxillary palp subequal to half the length of the antennal club. Body much less vittate; pubescence thinner; anterior tibiae strongly tridentate; posterior femora much more noticeably swollen.

Distribution: Map 1. Specimens examined 213 (190 males, 23 females).

CALIFORNIA: *Contra Costa Co.*; Antioch. *Fresno Co.*; Clovis, Fowler, Fresno, Selma. *Kern Co.*; Arvin, Bakersfield, Shafter. *Kings Co.*; Hanford, Hardwick, Lemoore. *Los Angeles Co.*; Mint Canyon [?], Whittier. *Merced Co.*; Ballico, Dos Palos. *San Joaquin Co.*; Lodi. *Stanislaus Co.*; Patterson, Turlock. *Tulare Co.*; Dinuba, Exeter, Porterville, Terra Bella, Visalia, Wood Lake.

April (7), May (58), June (113), July (11), August (3).

PARATHYCE NEW GENUS

[Para (Gr., near, beside) Thyce]

Type species: *Plectrodes carpenteri* LeConte

6 North American species.

Antennae 10 segmented, 3 segmented club (segments 4 and 5 may be fused in some individuals, giving an apparent 9 segments); club subequal to basal segments in length. Labial palp from approximately 1/3 to well over the length of the antennal club, specifically differing. Clypeal corners rounded to subangular, clypeus gradually expanded apically. Body surfaces provided with both dense scales and hairs. Anterior tibia unidentate to tridentate (in males, bidentate to tridentate in females, specifically varying). Mesotarsi equal to, or less than length of tibiae. Posterior femora not enlarged in males, enlarged in females. Outer claws toothed, inner claws toothed or feebly tuberculate, specifically varying. Male genitalia symmetrical, wings not pigmented.

REMARKS

Evidently both LeConte and Horn did not consider the apparently free abdominal sternites of *Plectrodes* as significant. Descriptions of several species in *Plectrodes* by both LeConte and Horn seem to indicate that their concept of *Thyce* was different from that employed by subsequent workers (Casey, etc.). Apparently *Plectrodes* was envisioned as a group of more ovoid appearance than *Thyce*, which is more parallel sided. Horn, in the original description of *Plectrodes*, indicates its placement in the Sericoidini, which would indicate he may have considered the significance of the abdominal sternites, while in this and a later paper (Horn 1880) he remarks upon the possibility that this genus belongs in the "Clavipalpides" of Lacordaire (1856), based upon the shape of the tarsal claws and maxillary palps.

LeConte (1876:516) does not mention the difference in abdominal sternites in his description of *Plectrodes carpenteri* (now *Parathyce*), although stating that it "... differs from *P. pubescens* Horn ... only by the characters mentioned above." Dalla Torre (1912) places *Plectrodes* and *Hypotrichia* in the Liparetrini (Sericoidini). Casey (1914) moved the species *carpenteri* (LeConte) and *palpalis* (Horn) to the genus *Thyce*, and in addition named numerous taxa in *Thyce*. These species have been moved, below, into *Parathyce*, which differs from *Plectrodes* in the form of the abdominal sternites, and from *Thyce* in the form of the posterior femora and general body shape.

Key to the Species of Parathyce

- 1. Males 2
 - Females * 7
 - 2. Front tibia unidentate (with only apical tooth, shaft edentate) (Fig. 53) *P. fieldi* (Fall)
 - Front tibia bidentate or tridentate 3
- * Females of *P. riversi* not presently associated.

3. Front tibia bidentate (Fig. 54) *P. bidentata* (Fall)
 Front tibia tridentate (Figs 55–58) 4
4. Last segment of maxillary palpus greater than 1/2 the greatest length
 of the antennal club 5
 Last segment of maxillary palpus less than 1/2 the greatest length of
 the antennal club 6
5. Last segment of maxillary palpus greater than the length of the
 antennal club (Fig. 66) *P. harfordi* (Casey)
 Last segment of maxillary palpus less than or subequal to the length
 of the antennal club (Fig. 65) *P. palpalis* (Horn)
6. Last segment of maxillary palpus teardrop shaped, broadest
 proximally, gradually tapering to an apical point (Fig. 64); scales
 usually white, rarely some other color *P. carpenteri* (LeConte)
 Last segment of maxillary palpus fusiform, or broadest apically,
 never widest basally nor teardrop shaped (Fig. 63); dorsal scales
 reddish tan *P. riversi* (Casey)
7. Anterior tibiae bidentate (Fig. 59) *P. fieldi* (Fall)
 Anterior tibiae tridentate (Fig. 60) 8
8. Last segment of maxillary palpus subequal to antennal scape in
 length, or longer, never teardrop shaped, clypeus normal (Figs.
 69, 71, 72) 9
 Last segment of maxillary palpus much shorter than antennal scape;
 usually teardrop shaped; underside of clypeus produced
 anteriorly (Figs. 67, 70) 10
9. From San Francisco Bay area *P. harfordi* (Casey)
 From Southern California *P. palpalis* (Horn)
10. Apical margin of clypeus sinuate to emarginate (Fig. 67); from
 northern Kern Co., Southern California *P. bidentata* (Fall)
 Apical margin of clypeus evenly arcuate (Fig. 70); from Los Angeles
 area (See maps) *P. carpenteri* (LeConte)

PARATHYCE FIELDI (FALL) NEW COMBINATION

(Figs. 8, 29, 30, 53, 59, 61 and 69. Map 1)

Thyce fieldi Fall 1908:160; 1932:203; Casey 1914:318. Type MCZ No. 24860, male. "Southern part of San Diego Co., Calif." [near Jacumba?]

Thyce simplicipes Casey 1914:319; Fall 1932:203. Type, USNM No. 35883, male. "Southern California" [Label reads 'S. Cal. Rivers.'] NEW SYNONYMY.

Thyce angusticollis Casey 1914:320; Fall 1932:203. Type, USNM No. 35884, male. "S. Barbara Co. Cal." NEW SYNONYMY.

Males: Figures 29 and 30. Length 19.7 mm to 24.9 mm. Width 8.1 mm to 10.0 mm. Body color rufotestaceous, provided with scales and long,

pale hairs. *Head*: Clypeus with anterior margin slightly sinuate, nearly straight, reflexed laterally and apically. Clypeal corners right angled, rounded; clypeus gradually expanded apically. Clypeus provided with long, white hairs intermixed with short, recumbent, white to yellow scales. Clypeus with large, contiguous, well-defined punctures becoming gradually larger and shallower toward vertex. Front and vertex provided with many white to yellow, recumbent scales. Terminal segment of maxillary palp elongate, over half the length of the antennal club, with a deep, longitudinal groove on the outer surface. (Fig. 61). Mentum large and quadrate. *Thorax*: faintly margined laterally and laterally posteriorly, marginal bead missing medially on posterior margin and on anterior margin. Anterior angles obtuse, posterior angles rounded; lateral edges serrate. Prothorax with scattered to contiguous medium to large punctures. Anteriorly with long, erect, scattered hairs. In fresh specimens, prothorax with many recumbent white to yellow scales. *Scutellum* provided with many contiguous fine punctures. In fresh specimens, the punctures provided with recumbent, white scales. *Abdomen*: Pygidium apically pointed, with many fine, poorly defined rugae. In fresh specimens, pygidium entirely clothed with recumbent, white to yellow scales. Abdominal sternites two to five, fused, sutural lines present. Sternites with many fine rugae. In fresh specimens, completely clothed with recumbent, white scales. *Legs*: Anterior tibia with only one apical tooth, unidentate (Fig. 53); femora, tibiae, and tarsi provided with scattered, recumbent white scales. All tarsal claws toothed. Tooth on interior claw stouter than tooth on outer claw. *Genitalia* symmetrical (See Figure 8).

Females: Length 20.3 mm to 24.9 mm, width 9.2 mm to 10.9 mm. Differs from male in the following: clypeus less elongate, angles more rounded. Antennae and palps less well-developed, last segment of maxillary palp greater than half the length of the antennal club (Fig. 69). Anterior tibiae bidentate (Fig. 59). Posterior femora enlarged; body more globose.

Diagnosis: This species is easily distinguished from others in this genus by the unidentate anterior tibia of the males and the bidentate anterior tibia of the females (See Figs. 53 and 59). A very variable form as far as scalation and color.

Distribution: Map 1. Specimens examined 183 (169 males, 14 females).

CALIFORNIA: *Riverside Co.*; Anza; Ranch near Anza; Idyllwild; Keen Camp, San Jacinto Mtns.; Mountain Center, San Jacinto Mtns.; Palm Springs, Santa Rosa Peak, 8000 ft. *San Diego Co.*; Boulder Oaks; Boulevard; Cuyamaca; Jacumba; Julian; 3 mi. S. Julian; Laguna Mtns.; Mt. Laguna; La Puerta Valley [not located]; Near Newton [not located]; Oak Grove; Oceanside; Pine Valley; San Diego; "Thyce Camp" [near Jacumba?]; Warners; Wynola [?]. *Santa Barbara Co.*; Santa Barbara [?].

MEXICO: *Baja California Norte*; 3.6 mi. SE El Rayo, Sierra Juarez; 9 mi. SE El Rayo, Sierra Juarez; Laguna Hanson, 5500 ft., Sierra Juarez; 3.2 mi. S. Laguna Hanson, Sierra Juarez; La Joya, Sierra San Pedro Martir;

18 mi. E. Meling Ranch, Sierra San Pedro Martir; Oak Pasture, Sierra San Pedro Martir.

May (1), June (13), July (139), August (12).

REMARKS

Fall listed the type locality of this species as the "southern part of San Diego County." Specimens from the California Academy of Science collection bearing the label "Topotype" have, in addition, a label evidently written by the collector George Field, stating that the specimen was collected at Jacumba, San Diego County. Additional specimens also collected by Field bear the collection locale as Jacumba. It thus seems probable that the type locality for this species is near Jacumba. Data on a number of Casey's specimens in this group are questionable, and apparently in error (see Remarks under *P. harfordi*). In addition to the type, I have seen two specimens bearing only the data "Santa Barbara County, California" (the type locality for *Thyce angusticollis* Casey). I would be suspicious of these records, and doubt the Santa Barbara Co. records are valid.

PARATHYCE BIDENTATA (FALL) NEW COMBINATION

(Figs. 9, 31, 32, 54, 62, 67 and 68. Map 3)

Thyce bidentata (Fall 1932:201. Type, MCZ No. 24859, male.
"California, Kern Co.")

Males: Figures 31 and 32. Length 16.7 mm to 20.6 mm; width 6.7 mm to 9.0 mm. Basal color rufotestaceous, provided with both recumbent scales and long, pale hair. *Head*: Clypeus reflexed anteriorly and laterally. Anterior edge nearly straight, slightly emarginate medially; some examples with a slight emargination laterally just behind anterior angles. Clypeus with contiguous to scattered fine punctures. Provided with recumbent, white scales. Front with contiguous fine punctures becoming larger and deeper toward vertex. Maxillary palp with apical segment fusiform, with a well-defined impression on outer edge. Apical maxillary palpal segment short, less than half the length of the antennal club (Fig. 62). *Thorax*: With poorly defined margin laterally. Lateral edges slightly serrate. Dorsally with scattered, long, pale hairs anteriorly and medially. Dorsal surface with contiguous medium punctures, each puncture provided with a recumbent yellow to cream colored scale. Posterior thoracic margin provided with a dense brush of fine, white hairs. Anterior corners obtuse, rounded; posterior corners rounded. Ventral surfaces of thorax with dense, long, white hairs and provided with many white, recumbent scales. *Scutellum*: with contiguous, fine punctures. In fresh specimens, provided with dense, recumbent, white scales. *Elytra*: with lateral margin which fades and disappears on posterior lateral corners. Elytra without definite striae, with scattered fine punctures, each puncture provided with a thin, small, recumbent cream colored to white scale. Sutural margin with short, white hairs. *Abdomen*: Pygidium acute, rounded apically. With close-set to contiguous fine punctures, each puncture provided with a recumbent cream

to white scale. Abdominal segments 2 to 5 connate. Sutures evident, provided with many recumbent white to yellow scales. *Legs*: Anterior tibiae bidentate, second tooth occasionally poorly developed (Fig. 54). All femora and tibiae and some tarsal segments with scattered, recumbent, white scales. All tarsal claws with median tooth. Inner claw with tooth more strongly developed than outer claw. *Genitalia*: symmetrical (See Fig. 9).

Females: Length 18.6 mm to 22.1 mm; width 8.1 to 10.0 mm. Differ from males in following: Clypeus strongly reflexed; reflexed margin thickened, bilobed, less elongate than males; ventral surface easily visible from above (Figures 67 and 68). Vertex with pronounced hump. Antennal club and apical segment of maxillary palpi small, poorly developed. Anterior tibiae tridentate. Posterior femora enlarged. Claws apparently as in the males. General aspect more globose.

Diagnosis: Easily distinguished from males of other species in the genus by the bidentate anterior tibiae (Fig. 54). This species is similar to *Parathyce riversi*, which has a well-defined, tridentate anterior tibia; and to *Plectrodes pubescens*, from which it may be easily distinguished by the clearly fused abdominal sternites, as opposed to the apparently free sternites in that species. Females with sinuate to emarginate anterior clypeal edge, well rounded clypeal angles, and the anteriorly projected lower clypeal surface, which is visible from above (Figs. 67 and 68). Also diagnosed on basis of distribution.

Distribution: Map 3. 62 specimens examined (59 males, 3 females).

CALIFORNIA: "Kermit" [not located]. Kern Co.; Kernville; Wofford Heights.

June (50)

PARATHYCE RIVERSI (CASEY) NEW COMBINATION

(Figs. 10, 33, 34, 55 and 63. Map 1)

Thyce riversi Casey 1895:608; 1914:309; Fall 1932:203. Type, male, USNM No. 35866. "California, Los Angeles."

Males: Figures 33 and 24. Length 15.7 mm to 22.7 mm; width 6.9 to 10.1 mm. Color rufotestaceous; head, anterior portion of prothorax, and ventral surface densely clothed with long, ferruginous hairs. *Head*: Clypeus rounded, apex concave, slightly reflexed, clypeal corners rounded, clypeus with poorly defined, medium punctures; vertex with close to confluent, fine punctures, each puncture provided with a long hair. Apical segment of maxillary palp less than half the length of the antennal club, flattened dorsoventrally; dorsal surface with a large, shallow depression (Fig. 63). Mentum quadrate. *Prothorax* margined faintly laterally, margin slightly serrate; anterior and posterior margins smooth without marginal beads. Prothorax with scattered to close medium punctures, each puncture provided with a long, erect hair. Occasional specimens with flattened, recumbent hair medially and scattered on disc. Posterior prothoracic margin provided with long, very dense hair. Posterior prothoracic angles

well-defined. *Scutellum* provided with recumbent, flattened hairs intermixed with longer, erect hairs. *Elytra* margined laterally, margin fading at outer apical angles. Striae not divided, with scattered medium punctures on disc; scattered, short, recumbent hairs on disc. *Pygidium* with short, semi-recumbent scale-like hairs. *Abdomen* clothed with numerous recumbent hairs. Ventral sternites 2, 3, 4 and 5 fused along midline. *Legs*: Anterior tibiae tridentate (Fig. 55); larger posterior tibial spur subequal to length of first two tarsal segments. Tarsal claws toothed basally, poorly defined on outer claw of each pair. *Genitalia* symmetrical (Fig. 10).

Females unknown.

Diagnosis: Easily diagnosed from other species in this genus by the following combination of characters: length of the apical segment of the maxillary palp less than half the length of the antennal club; the tridentate anterior tibiae; the rufous ground color; and the long, dense fringe of hair on the posterior margin of the prothorax; the shape of the apical segment of the maxillary palps is also distinctive (See Fig. 63).

Distribution: Map 1. 356 specimens examined (males).

CALIFORNIA: *Los Angeles Co.*; Claremont; "Los Angeles"; "Mt. Baldy"; Pomona. *Riverside Co.*; Banning, Beaumont; Coachella; Riverside. *San Bernardino Co.*; Alta Loma; SE Chino; Loma Linda; Mentone; Ontario; Rialto; San Bernardino; Upland.

April (2), May (184), June (96), July (51).

PARATHYCE CARPENTERI (LeCONTE) NEW COMBINATION

(Figs. 11, 35, 36, 56, 60, 64 and 70. Map 2)

Plectrodes carpenteri LeConte 1876:516; Horn 1880:145. Type, male, MCZ No. 8071. "Los Angeles"*

Thyce carpenteri (LeConte); Casey 1889:170; 1914:308; Fall 1932:203.

Thyce crinicollis Casey 1914:310. Type, female, USNM No. 35876. "Los Angeles Co. Cal." NEW SYNONYMY

Thyce crenicollis Casey; Fall 1932:203 [lapsus].

Thyce pistoria Casey 1895:607; 1914:310; Fall 1932:203. Type, male, USNM No. 35868. "Los Angeles."

Males: Figures 35 and 36. Length 16.5 mm to 23.5 mm; width 8.4 mm to 11.0 mm. Ground color rufotestaceous. *Head*: Anterior edge of clypeus straight and slightly emarginate; anterior and lateral margins slightly reflexed; outer angles rounded; clypeus and vertex with dense, recumbent, white to light brown hairlike scales intermixed with erect, light brown hairs. Apical segment of maxillary palp teardrop shaped, less than half the length of antennal club; flattened; upper surface with well defined, oval depression (Fig. 64). *Thorax* faintly margined laterally; lateral margins

* As here restricted. Male specimen bears "Type" label and is without data. Female has "Mojave Desert" label. Male (type) must therefore be Los Angeles specimen.

serrate; posterior prothoracic angles broadly rounded; prothorax with scattered to dense, recumbent, pale scalelike hairs intermixed with long, erect, pale hairs; posterior prothoracic margin with dense brush of short to medium, pale hairs, these hairs rarely reaching beyond mid-point of scutellum. *Scutellum* densely covered with recumbent, white to pale brown scalelike hairs intermixed basally with scattered, erect, pale hairs. *Elytra* margined laterally, margin fading at outer apical angle; without obvious striae, covered with scattered to close-set, pale, recumbent scale-like hairs. *Pygidium* with dense, recumbent, pale scales; poorly margined, with two depressions at dorsolateral angles; ventral surfaces provided with long, erect, pale hairs. *Abdomen*: Abdominal sternites densely clothed with recumbent, white scales. Segments 2 to 5 fused along midline. *Legs*: Anterior tibiae tridentate basally to often weakly developed (Fig. 56). Spur on posterior tibia longer than first tarsal segment; not reaching apex of second tarsal segment. Pro- and mesothoracic tarsal claws with well developed medial tooth on interior claw; outer claw with tooth not developed; metatarsi with both claws equally toothed. *Genitalia* symmetrical (See Fig. 11).

Females: Length 18.2 mm to 25.4 mm; width 8.2 mm to 11.5 mm. Differs from the male in the following respects: clypeal margin slightly reflexed; anterior edge straight to evenly arcuate. Under surface of clypeus produced, visible from above (Fig. 70). Apical segment of maxillary palp and antennal club smaller than male; scale-like hairs more poorly developed in female than in male.

Diagnosis: Males of this species most easily separated from other species of *Parathyce* on the basis of the tridentate anterior tibiae in conjunction with the short apical segment of the maxillary palp, which is less than half the length of the antennal club and is teardrop shaped (Fig. 64). Females are most easily diagnosed on the size and shape of the apical segment of the maxillary palp and the shape of the clypeus, which is broadly rounded with the underside produced anteriorly, so that it is readily visible from above (Fig. 70).

Distribution: Map 2. 287 specimens examined (252 males, 35 females).

CALIFORNIA: "Cal.", "S. Cal.": *Fresno Co.*; Fresno, Pinedale. *Kern Co.*; Kernville. *Los Angeles Co.*; Burbank, Covina, Glendale, Hermosa Beach, Los Angeles, Mint Canyon, Olive View, Pacific Palisades, Pasadena, Playa Del Rey, Redondo Beach, Santa Monica, Sylmar, Topanga Canyon, Van Nuys, Venice. *Madera Co.*; 3 mi. W. Chowchilla, 6 mi. W. Chowchilla. *Orange Co.*; Fountain Valley, Santa Ana, Santa Ana Canyon, Villa Park. *Riverside Co.*; Bautista Canyon, Cajalco, Gilman Hot Springs, near Hemet, Palm Springs, Reche Canyon, Riverside, Santa Ana River. *San Bernardino Co.*; Barstow, Chino, Cajon Pass, Joshua Tree, Redlands, Victorville, Yermo. *San Diego Co.*; San Diego [?]. *Ventura Co.*; Santa Paula, "Satico" [Saticoy?].

March (2), April (4), May (13), June (103), July (35), August (4), September (3).

PARATHYCE PALPALIS (HORN) NEW COMBINATION

(Figs. 12, 37, 38, 57, 65 and 71. Map 2)

Plectrodes palpalis Horn 1880:146; 1885:119. Type, male. Philadelphia Academy of Nat. Sci. No. 3664 "Cal."

Thyce palpalis (Horn); Casey 1889:170; 1914:321; Fall 1932:202.

Thyce rotundicauda Casey 1914:311; Fall 1932:203. Type, male, USNM No. 35869. "Los Angeles Co. Calif." NEW SYNONYMY.

Thyce vestita Casey 1914:312; Fall 1932:202. Type, male, USNM No. 35872. "Los Angeles Co. Calif."

Thyce blaisdelli Casey 1891:19; 1914:312; Fall 1932:203; Van Dyke 1943:106. Type, male, USNM No. 35870. "Coronado, S.D.Cal."

Thyce blaisdelli nitidula Casey 1914:313. Type, female, USNM No. 35871. "Los Angeles Co. Calif."

Thyce fossiger Casey 1889:172; 1891:19; 1914:313; Fall 1932:202; Van Dyke 1943:106. Type, male, USNM No. 35873. "California, Los Angeles Co."

Thyce fossiger brevitarsis Casey 1914:314. Type, male, USNM No. 35874. "California, Los Angeles Co."

Thyce fossiger ochreatea Casey 1914:314. Type, male, USNM No. 35870. "California, Los Angeles Co."

Thyce fossiger aperta Casey 1914:314. Type, male, USNM No. 35875. "California, Los Angeles Co."

Thyce angustula Casey 1914:315; Fall 1932:202. Type, male, USNM No. 35877. "California, Los Angeles Co."

Thyce pulverea Casey 1889:171; 1914:315; Fall 1932:203. Type, male, USNM No. 35878. "California, Los Angeles Co."

Thyce aurata Van Dyke 1943:105. Type, male, CAS No. 5339. "San Diego Co." NEW SYNONYMY.

Thyce cinerea Van Dyke 1943:106. Type, male, CAS No. 5340. "Balboa, Calif." NEW SYNONYMY.

Thyce clypeata Van Dyke 1943:107. Type, male, CAS No. 5341. "Petaluma, Calif." NEW SYNONYMY.

Male: Figures 37 and 38. Length 16.2 mm to 24.4 mm; width 7.2 to 10.3 mm. The basal color is rufocastaneous. *Head*: Clypeus with apical margin bisinuate; emarginate medially; anterior margin reflexed; lateral margins slightly reflexed; clypeal angles from well-defined to rounded. Clypeus and vertex provided with dense, recumbent, white, golden, or brown scales intermixed with erect, pale hair. Apical segment of maxillary palp greater than half the length of the antennal club but not exceeding the length of the antennal club. Upper, outer surfaces of palpal segment with a deep, well-defined groove, occasionally a depression (Fig. 65). *Thorax* with margin poorly defined; lateral edges serrate; posterior angles rounded, reflexed; dorsal surface with close-set, medium to fine punctures;

entire surface with close, recumbent, white, golden, or brown scales, intermixed with erect, pale hairs; posterior prothoracic margin densely provided with pale hairs which do not reach beyond midpoint of scutellum. *Scutellum* densely covered with recumbent, white, golden, or brown scales; occasionally with a few erect, pale hairs. *Elytra* margined laterally; this margin fading apically; elytra densely covered with small, recumbent, white, golden, or tan scales. *Pygidium* densely covered with recumbent, white, golden, or brown scales intermixed with short, erect hairs. *Thorax* ventrally with long, erect, pale hairs. *Abdomen*: Abdominal segments 2 to 5 fused along midline; ventral surface of abdomen densely covered with recumbent, white scales. *Legs*: Anterior tibiae tridentate (Fig. 57); posterior tibial spur longer than first tarsal segment, not exceeding the length of second tarsal segment; all tarsal claws with well-defined, basal teeth; anterior tibiae with outer claw not as well developed as interior claw; femora and tibiae provided with scattered, recumbent, white scales, intermixed with scattered, erect, pale hairs. *Genitalia* symmetrical (See Fig. 12).

Females: Length 18.2 mm to 26.4 mm; width 7.3 to 11.3 mm. Differs from male in the following respects: clypeal angles well reflexed, well rounded (Fig. 71); vertex with well-developed, conspicuous bump; scales thinner, sparser, and less conspicuous on females.

Diagnosis: This species is most easily diagnosed in the males by the tridentate anterior tibia and the elongate apical segment of the maxillary palp, which is less than the length of the antennal club but greater than half the length of the antennal club (Fig. 65). Females are most easily separated from the females of the related sympatric species on the basis of the ratio of the length of the apical segment of the maxillary palp to the antennal club and the emarginate to straight anterior margin of the clypeus (Fig. 71).

Distribution: Map 3. 1388 specimens examined (1171 males, 217 females).

CALIFORNIA: *Channel Islands*; San Nicolas Island, San Clemente Island. *Imperial Co.*; La Puerta [?]. *Kern Co.*; Red Rock Canyon. *Los Angeles Co.*; Alhambra, Arcadia, Arroyo Seco, Arroyo Seco Canyon, 2000 ft., Atwood, Baldwin Park, Bellflower, Burbank, Chatsworth, Downey, Eagle Rock, El Monte, Glendale, Glendora, Huntington Park, Hynes [not located], Inglewood, La Canada, La Mirada, Long Beach, Los Angeles, Lynwood, Monrovia, North Hollywood, Pacific Palisades, Pacoima, Palos Verdes, Paramount, Pasadena, Pomona, Redondo, Rivera, San Gabriel, San Marino, San Pedro, Santa Monica, Southgate, Topanga Canyon, Torrance, Van Nuys, Verdugo, Vincent, Westwood Hills, Whittier. *Orange Co.*; Anaheim, Balboa, Costa Mesa, Cypress, Fountain Valley, Fullerton, Garden Grove, Huntington Beach, Irvine Park, Laguna, La Habra, Newport Beach, San Juan Capistrano, Santa Ana, Santa Ana Canyon, Seal Beach, Trabuco Canyon, Villa Park. *Riverside Co.*; Banning, Riverside, Santa Ana River. *San Bernardino Co.*; Chino, Colton, Loma Linda, Lucerne Valley, San Bernardino, "San Juan Bat." *San Diego Co.*; Bonita, Carlsbad, Chula Vista, Coronado,

Cuyamaca, Fallbrook, La Jolla, La Mesa, Laguna Mtns., Mission Valley, San Diego, Silver Strand, Stardust C.C. [not located]. *Ventura Co.*; Montalvo, Oxnard, Santa Paula, Ventura.

January (1), February (1), March (2), April (8), May (99), June (555), July (450), August (88), December (4).

REMARKS

The Van Dyke species *clypeata* is listed as from "Petaluma, Calif." (Sonoma Co.). Since Van Dyke's specimen is clearly an example of the Southern California *palpalis* (Horn), and since no other examples of this species have been recorded near this area, I assume the original data to be in error.

***PARATHYCE HARFORDI* (CASEY) NEW COMBINATION**

(Figs. 13, 39, 40, 58, 66 and 72. Map 3)

Thyce harfordi Casey 1889:173; 1891:20; 1914:317; Fall 1932:203; Van Dyke 1943:107; Erwin 1970:50. Type, male, USNM No. 35880. "California, Alameda Co."

Thyce harfordi nanella Casey 1914:318. Type, male, USNM No. 35881. "California, Alameda Co." NEW SYNONYMY.

Thyce squamosa Casey 1891:20; 1914:318; Fall 1932:203. Type, male, USNM No. 35882. "Calif. San Luis Obispo Co." NEW SYNONYMY.

Thyce longipalpis Casey 1914:316; Fall 1932:203. Type, male, USNM No. 35879. "California (Shasta) and Oregon (Clackamus Co.)" [Type label on Shasta specimen.] NEW SYNONYMY.

Larvae: Erwin 1970:50.

Male: Figures 39 and 40. Length 16.5 mm to 23.6 mm; width 7.5 mm to 9.7 mm. Color rufopiceous. *Head*: Clypeus with anterior edge reflexed; lateral margins slightly reflexed; anterior edge of clypeus bisinuate, emarginate, clypeal angles sharp, well-defined; clypeal surface and vertex provided with scattered to coarse, recumbent, white scales, intermixed with dense, erect, pale brown hairs. Apical segment of maxillary palp elongate, longer than length of antennal club; outer surface provided with a deep, longitudinal groove (Fig. 66). *Mentum* quadrate. *Prothorax*: Laterally slightly serrate, lacking well-defined marginal bead, with scattered to close, well-defined, medium punctures, these punctures provided with scattered to close, recumbent, white scales intermixed with erect, pale to pale brown hairs; the posterior corners broadly rounded, not well-defined; posterior corners slightly reflexed; posterior prothoracic margin provided with dense, white hairs; these hairs seldom reaching beyond half the length of the scutellum. Scutellum with recumbent, dense, white scales, sparsely intermixed with erect white hairs. *Elytra* margined laterally, marginal bead fading at outer apical angle. Striae not defined; elytral surface with scattered, shallow, poorly defined punctures; these punctures provided with recumbent white scales. *Pygidium* densely covered with recumbent white scales, intermixed with scattered, erect,

pale hairs. *Thorax*: Ventral surface of thorax provided with dense, long, erect, pale hairs. *Abdomen*: Ventral surfaces of abdomen with dense, recumbent, white scales. Abdominal segments 2 to 5 fused along midline. *Legs*: Anterior tibiae tridentate (Fig. 58); posterior tibial spur longer than first tarsal segment, not reaching apex of second tarsal segment. All tarsal claws with well-defined basal teeth; surfaces of femora and tibiae provided with scattered, recumbent, white scales and long, erect, pale hairs. *Genitalia* symmetrical (See Fig. 13).

Females: Length 18.7 mm to 25.2 mm; width 7.3 mm to 10.1 mm. Differing from males in following respect: Clypeal margin most noticeably reflexed at outer apical angles; these angles rounded. Apical segment of maxillary palp more than half the length of the antennal club, occasionally equal in length to antennal club; usually teardrop shaped (Fig. 72); vertex with well-defined, medial bump; body surfaces with scales sparser and thinner than those of male.

Diagnosis: This species is most easily diagnosed on the basis of the extremely elongate apical segment of the maxillary palp in the male (Fig. 66). Female is best diagnosed on the basis of distribution, coupled with the elongate apical maxillary palpal segment (Fig. 72).

Distribution: Map 3. 265 specimens examined (220 males, 45 females).

CALIFORNIA: *Alameda Co.*; Alameda City, Oakland, San Leandro. *Monterey Co.*; Carmel, Fort Ord, Marina, Pacific Grove, Paraiso Springs. *San Francisco Co.*; San Francisco. *San Luis Obispo Co.*; Shandon [?]. *San Mateo Co.*; San Mateo. *Santa Clara Co.*; Gilroy, San Jose. *Santa Cruz Co.*; Soquel, Watsonville. *Sonoma Co.*; Sonoma. *Yolo Co.*; Davis, 9 mi. N. Woodland. *Stanislaus Co.*; Westley.

April (3), May (21), June (50), July (66), August (25), September (5).

REMARKS

The specimens of *longipalpis* of Casey (synonymized above) are typical *harfordi*, and thus the distributions cited by Casey (Shasta, Calif. and Clackamas Co., Ore.) come into question. P. Ritcher (in litt.) thinks the Oregon record in error, and lack of additional material from Shasta seems to indicate these records should be considered incorrect.

THYCE LeCONTE

Thyce LeConte 1956:232.

Type species: *Thyce squamicollis* LeConte.

2 North American species.

Antennae 10 segments, club 3 segmented, club subequal to basal segments (males). Labial palp equals approximately 1/2 length of antennal club (males). Anterior angles of clypeus squared, sides very slightly expanding anteriorly; body surfaces provided with hairs and few scattered scales. Anterior tibiae tridentate. Mesotarsae greater in length than tibiae. Posterior femora enlarged. All tarsal claws toothed. Male genitalia

symmetrical. Wings not pigmented.

REMARKS

Thyce shows affinities with *Polyphylla* and *Dinacoma*. *Polyphylla* have the outer apices of the clypeus rounded, while in others these clypeal angles are quite sharp and well defined, as in *Thyce* and *Dinacoma*. *Thyce deserta* is at first glance very similar to some species of *Polyphylla* from which it differs by the number of segments and length of the antennal club. It has, however, the elongate, subparallel body shape of *Polyphylla*. *Thyce* differs from either *Polyphylla* or *Dinacoma* by a complete absence of dorsal vittae and an extreme reduction in the numbers of dorsal scales.

Key to the Species of *Thyce*

- 1. Prothorax with deep, close set, round punctures; posterior prothoracic margin usually provided with short, light hairs, occasionally with longer, testaceous hairs medially; however, these hairs seldom reaching much beyond midpoint of scutellum; clypeal angles usually not emarginate laterally; Texas and New Mexico
 *T. squamicollis* LeConte
- Prothorax with shallow, less well defined, close set punctures; posterior prothoracic margin provided with dense, testaceous hairs, usually nearly reaching apex of scutellum; clypeal angles usually slightly emarginate laterally; California *T. deserta* n. sp.

THYCE DESERTA HARDY NEW SPECIES

(Figs. 18, 41, 42, 43 and 44. Map 5)

Thyce squamicollis LeConte; Van Dyke 1928:174.

Holotype male: Length 23.5 mm; width 9.4 mm. Head rufous with recumbent, pale hair-like scales intermixed with scattered, erect, testaceous hairs. Clypeus with anterior margin strongly reflexed; clypeal angles strongly emarginate; clypeus and vertex with close, medium punctures. Apical segment of maxillary palp half the length of the antennal club. Mentum quadrate. Thorax margined laterally; lateral margins serrate. Thoracic disk with scattered to close, medium punctures. Prothorax with scattered, recumbent, scale-like hairs. *Ventral sternites* with scattered, small, pale scales. Ventral surface of thorax and femora and tibiae provided with fine, dense, erect, testaceous hairs. *Legs*: Anterior tibiae tridentate; posterior tibiae with longest spur nearly as long as the two basal tarsal segments. All tarsal claws toothed; interior claw of meso and metatibiae less developed than outer claw. *Wings* with membrane not pigmented. *Male genitalia* (Fig. 18).

Allotype female: length 24.3 mm; width 9.9 mm. Differs from holotype in the following: Antennal club and apical segment of maxillary palp less well developed, more globular. Basal tooth of anterior tibiae more strongly developed. Pygidium wider than that of the male.

Variation in paratypal series: Male: Figures 41 and 42. Length 21.8 mm to 25.0 mm; width 8.9 to 11.6 mm. Female: Figures 43 and 44; length 24.6 mm to 24.9 mm; width 9.7 to 9.8 mm. Paratypes agree well with primary types.

Distribution: Map 5. 19 specimens examined (16 males, 3 females).

Holotype male: (CAS 11,772) Coachella Cal., May 13, 1917, E. P. Van Duzee Collector. Allotype female: Brawley, Imperial Co., Calif., May 2, 1960, C. R. Wagner Collr. (From CDA Colln, gift to CAS). Nine male paratypes: Coachella Calif. [Riverside Co.]. May 25, 1928, Van Duzee (CAS 2); May 9, 1927, Wymore Collector (CAS 1); April 13, 1927 (CNC 1); May 11, 1927 (CNC 1); April 10, 1927, F. A. Haasis Collr. (4) (USNM, UCD, AMHN) 2 males, Brawley, Imperial Co. Calif. April 27, 1961, Argon Light Trap, J. Knight Collr. (1, CDA); May 2, 1960, C. R. Wagner Collr. (1, CDA); 1 male, Calif. Riverside Co., 10 mi. S. Indio, May 18, 1970 (ARH). 1 male, Calif. Riverside Co., Thermal, May 10, 1963, Lite Trap, E. Asker Collr (CDA) 2 males, 1 female, Calif. Riverside Co., Indio, May 18, 1967, Lite Trap, Kaninskas Collr. (ARH, Riv. Co. Dept. Agric.), 1 female, Ariz., Yuma Co. Wellton, April 18, 1972 (found dead) (ARH).

THYCE SQUAMICOLLIS LeCONTE

(Figs. 17, 45 and 46. Map 5)

Thyce squamicollis LeConte 1856:232; Casey 1889:170; 1914:30; Fall 1932:203. Type, female, MCZ No. 3974. "New Mexico, Albuquerque." [not examined].

Male: Figures 45 and 46. Length 18.3 mm to 22.7 mm; width 7.6 mm to 9.2 mm. Body entirely testaceous. Head, prothorax, and scutellum with recumbent, hair-like, white scales, with scattered to dense, erect, testaceous hairs. Elytra with scattered, hair-like scales; ventral surface of thorax with long, erect, pale hairs. *Head:* Clypeus with apex reflexed, clypeal angles weakly emarginate to entire; clypeus and vertex with close, fine punctures. Apical segment of maxillary palp slightly greater than half the length of the antennal club. Mentum quadrate. *Thorax* with reflexed lateral margins; lateral margins serrate. Prothorax with faint basal margin; not margined anteriorly. Prothorax with close, medium to coarse punctures. Elytra margined laterally, margin fading near sutural angle; striae faint, barely discernable. Elytral surface with scattered, fine to medium punctures. *Pygidium* with recumbent, small scales arising from close, medium punctures. *Legs:* Anterior tibiae tridentate; longer spur on posterior tibiae not as long as two basal tarsal segments. All tarsal claws toothed medially; inner and outer tooth of equal development. *Wings* with membrane not pigmented. *Male genitalia:* (Fig. 17).

Female: unavailable.

Distribution: Map 5. 19 specimens examined (males).

NEW MEXICO: *Dona Ana Co.*; Las Cruces, Mesilla Park, Mesquite.

TEXAS: *El Paso Co.*; El Paso. *Nueces Co.*; Corpus Christi. *Reeves Co.*; Pecos.

MEXICO: Chihuahua; no other data.

June (5), July (7), August (6).

DINACOMA CASEY

Dinacoma Casey 1889:174.

Type species: *Thyce marginata* Casey.

2 North American species.

Antennae 10 segmented, club 3 segmented; club nearly twice length of basal segments (males). Labial palp is less than length of antennal club (males). Anterior angles of clypeus squared, sharp. Sides subparallel. Body surfaces with abundant hairs and densely scaly. Anterior tibia bidentate, or at most with poorly developed third tooth. Mesotibia subequal to tarsi. Posterior femora not enlarged. All tarsal claws toothed. Male genitalia symmetrical. Wings unpigmented.

Key to the Species of *Dinacoma*

1. Elytra with all scales a uniform white color; body surfaces pale testaceous; squamous vestiture not extremely dense on sterna and abdomen *D. caseyi* Blaisdell
Elytra with scales near suture a pure white, those laterally and apically golden-brown; body surfaces rufo-testaceous; squamous vestiture extremely dense on sterna and abdomen *D. marginata* (Casey)

DINACOMA MARGINATA (CASEY)

(Figs. 15, 47 and 48. Map 4)

Polyphylla marginata Casey 1885:285, 336 [nomina nuda].

Thyce marginata Casey 1886:39. Type, male, USNM. "California, San Diego Co." [Restricted by Blaisdell (1930:173) to Ocean Beach.] [Type not examined]

Dinacoma marginata (Casey); Casey 1889:174; Blaisdell 1930:172.

Male: Figures 47 and 48. Length 15.1 mm to 21.1 mm; width 5.6 mm to 9.0 mm. Head and prothorax piceous to rufopiceous. Elytra, ventral surface, and legs rufopiceous. Head, prothorax, and ventral surface provided with scattered to dense, white scales intermixed with scattered to dense, long, fine, erect, pale hairs. Elytra with scattered, white scales medially, becoming yellowish laterally without hairs. *Head:* Anterior and lateral margins of clypeus reflexed; anterior corners acute, sharp; emarginate medially; clypeus and vertex with close, medium punctures. Antennal club 3-segmented; segments long and flattened. Apical segment

of maxillary palp less than one-fourth length of the antennal club. Mentum quadrate. *Prothorax* weakly margined laterally. Disk with close to contiguous, coarse punctures, each puncture usually with a single, recumbent, white scale. Prothorax appearing trivittate. Prothoracic angles rounded. *Scutellum* densely clothed with recumbent, white scales. *Elytra* margined laterally, margin fading near outer, apical angle. Elytra with striae and intervals faintly indicated by faintly vittate scale pattern. *Pygidium* with white scales. Lateral margin faintly reflexed. *Legs*: Anterior tibia tridentate; posterior tibial spur longer than first tibial segment. All tarsal claws toothed basally. *Wings* not pigmented. *Male genitalia* (Fig. 15).

Female: unknown.

Distribution: Map 4. 301 specimens examined (males).

CALIFORNIA: *Los Angeles Co.*; Glendale. *Riverside Co.*; Bautista Canyon, Hemet. *San Diego Co.*; Del Mar, Ocean Beach, 5.5 mi. NW Scissors Crossing.

June (291), July (9), August (1).

DINACOMA CASEYI BLAISDELL

(Figs. 16, 49 and 50. Map 4)

Dinacoma caseyi Blaisdell 1930:174. Type, male, CAS No. 2650. "Palm Springs, Imperial Co., California." [Palm Springs is in Riverside Co., Calif.]. [Type not examined.]

Male: Figures 49 and 50. Length 14.3 mm to 17.8 mm; width 6.4 to 7.3 mm. Head, prothorax, elytra, and ventral surfaces testaceous; provided with dense, white scales intermixed on head, prothorax, scutellum, and ventral surfaces with erect, fine, white hairs. *Head*: Clypeus with anterior margin slightly reflexed; clypeal corners sharp, acute; clypeus emarginate medially; clypeus and vertex with scattered, medium punctures; antenna with 3 segmented club; apical segment of maxillary palp less than one-fourth the length of the antennal club; mentum quadrate. *Prothorax* faintly margined near posterior, lateral angle; prothoracic angles rounded; prothorax with close, coarse punctures; each puncture with a single, recumbent, white scale, giving a trivittate appearance. *Elytra* faintly margined laterally, margin fading near midpoint of elytra; elytra with scattered, recumbent, white scales; first elytral interval evident as a single, more pronounced vitta. *Pygidium* densely clothed with recumbent, white scales. *Ventral surface*, including femora and tibiae, with recumbent, white scales. *Legs*: Anterior tibia bidentate to tridentate. Tibial spur on posterior leg longer than first tarsal segment. Tarsal claws all weakly toothed basally. *Wings* not pigmented. *Genitalia* (See Fig. 16).

Female: unknown.

Distribution: Map 4. 25 specimens examined (males).

CALIFORNIA: *Riverside Co.*; "Colorado Desert," Palm Canyon, Palm Springs.

April (18), May (2), June (3).

HYPOTRICHIA LeCONTE

Hypotrichia LeConte 1862:137.

Type Species: *Hypotrichia spissipes* LeConte.

1 North American species.

Antennae 10 segmented, club 3 segmented, club subequal to basal segments (males). Labial palp 1/3 to 1/2 length of club (males). Anterior clypeal angles subacute, clypeus expanded anteriorly. Body without scales, provided with many dense hairs. Anterior tibia bidentate in males, tridentate in females. Mesotibiae subequal to tibia. Posterior femora enlarged. All outer tarsal claws lobed, although posterior claws less well developed; inner claws simple. Male genitalia symmetrical. Wing membrane with slight pigmentation.

HYPOTRICHIA SPISSIPES LeCONTE

(Figs. 19, 51 and 52. Map 6)

Hypotrichia spissipes LeConte 1962:137; Horn 1867:166, 170, plate; Hubbard 1884:215; Howden 1968:542. Type, male, MCZ No. 3749. "Florida." [Not examined].

Male: Figures 51 and 52. Length 12.4 mm to 12.6 mm; width 5.3 to 5.6 mm. Prothorax and scutellum piceous, densely provided with recumbent to erect, testaceous hairs. Elytra rufopiceous, provided with short, recumbent, testaceous hairs. Ventral surfaces and legs densely clothed with pale, erect hairs. *Head:* Anterior margin of clypeus strongly reflexed, retracted, exposing ventral surface in a broad, anterior roll; slightly expanded apically. Clypeal disk closely punctate with fine punctures; vertex densely punctate with fine punctures. Antennal club 3-segmented. Apical segment of maxillary palp less than half the length of the antennal club. Mentum narrowed apically. *Thorax* margined laterally and posteriorly; anterior and posterior angles rounded. Prothoracic surface densely, closely punctate with medium punctures, each puncture provided with a single seta. *Scutellum* densely punctate with fine punctures. *Elytra* margined laterally, margin fading slightly behind midpoint. Elytral surface plane; striae not evident; elytral surface granulate to punctate. *Pygidium* with lateral and apical margins strongly reflexed; surface densely punctate with fine punctures, each puncture provided with a single, semi-erect seta. *Abdominal segments* 4, 5, and 6 fused medially. *Legs:* Anterior tibia bidentate; posterior tibial spur shorter or subequal to length of first two tarsal segments; tarsal claws with outer claw on prothoracic and mesothoracic legs lobed beneath; inner claw on prothoracic and mesothoracic legs and both claws on metathoracic legs faintly toothed beneath. *Wing membrane* pigmented apically. *Male genitalia* (See fig. 19).

Female: Length 14.0 mm to 16.0 mm; width 5.2 mm to 6.6 mm. Differs from the male in the following characters: Anterior tibiae tridentate; 3rd, 4th and 5th ventral abdominal sternites fused; form more globose.

Distribution: Map 6. 8 specimens examined (6 males, 2 females).

FLORIDA: *Alachua Co.*; Gainesville. *Highlands Co.*; Archbold Biological Station. *Orange Co.*; Orlando.

May (1), June (1), September (5).

REMARKS

Correct placement of *Hyotrichia* has been somewhat uncertain. Howden (1968:546) suggests that *Hypotrichia* should be placed in the Melolonthini. *Hypotrichia* does superficially resemble other genera in the Melolonthini, and, in the Key to Australian Tribes presented by Britton, does key to the Melolonthini. Howden (1968) relates *Hypotrichia* to *Hypothyce* and *Thyce* and states that *Hypothyce* illustrates the close relationship between *Hypotrichia* and *Thyce*.

Hypotrichia, in the shape of the mentum and the tarsal claw, would seem to have a more distant relationship to *Thyce* than Howden suggests. Other North American Melolonthini have the mentum large, quadrate, with the labial palps widely separated, placed near the outer, apical corners. In *Hypotrichia*, the mentum is narrow, the apex is rounded, and the labial palps are closely set. The large inner lobe of the tarsal claws is apparently unique in the Melolonthinae.

Hubbard (1884:217) indicates supposed affinities with *Pleocoma*.

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Figures 1–7, Male genitalia, Melolonthini. Fig. 1, *Polyphylla occidentalis*. Fig. 2, *Polyphylla variolosa*. Fig. 3, *Polyphylla comes*. Fig. 4, *Polyphylla gracilis*. Fig. 5, *Polylamina pubescens*. Fig. 6, *Hypothyce mixta*. Fig. 7, *Hypothyce osburni*. All figures to same scale, scale equals 5 mm.

Figures 8–14, Male genitalia, Melolonthini. Fig. 8, *Parathyce fieldi*. Fig. 9, *Parathyce bidentata*. Fig. 10, *Parathyce riversi*. Fig. 11, *Parathyce carpenteri*. Fig. 12, *Parathyce palpalis*. Fig. 13, *Parathyce harfodi*. Fig. 14, *Plectrodes pubescens*. All figures to same scale, scale equals 5 mm.

Figures 15–19, Male genitalia, Melolonthini. Fig. 15, *Dinacoma marginata*. Fig. 16, *Dinacoma caseyi*. Fig. 17, *Thyce squamicollis*. Fig. 18, *Thyce deserta*. Fig. 19, *Hypotrichia spissipes*. All figures except 19 to same scale, scale equals 5 mm. For fig. 19, scale equals 2.5 mm.

Figures 20–24, Adult male Melolonthini. Figs. 20, 21 and 22, *Polylamina pubescens*. Figs. 23 and 24, *Hypothyce mixta*. All figs. except 21, scale equals 1 cm.

Figures 25–28, Adult male Melolonthini. Figs. 25 and 26, *Hypothyce osburni*. Figs 27 and 28, *Plectrodes pubescens*. Scale equals 1 cm.

Figures 29–32, Adult male *Parathyce*. Figs. 29 and 30, *P. fieldi*. Figs. 31 and 32, *P. bidentata*. Scale equals 1 cm.

Figures 33–36, Adult male *Parathyce*. Figs 33 and 34, *P. riversi*. Figs. 35 and 36, *P. carpenteri*. Scale equals 1 cm.

Figures 37–40, Adult male *Parathyce*. Figs 37 and 38, *P. palpalis*. Figs. 39 and 40, *P. harfodi*. Scale equals 1 cm.

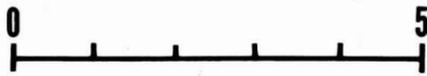
Figures 41–44, Adult *Thyce deserta*. Figs 41 and 42, male. Figs. 43 and 44, female. Scale equals 1 cm.

Figures 45–48, Adult male Melolonthini. Figs 45 and 46, *Thyce squamicollis*. Figs. 47 and 48, *Dinacoma marginata*. Scale equals 1 cm.

Figures 49–52, Adult male Melolonthini. Figs 49 and 50, *Dinacoma caseyi*. Figs. 51 and 52, *Hypotrichia spissipes*. Scale equals 1 cm.

Figures 53–64, *Parathyce* spp. Figs. 53–60, Anterior tibiae. Fig. 53, *P. fieldi*, male. Fig. 54, *P. bidentata*, male. Fig. 55, *P. riversi*, male. Fig. 56, *P. carpenteri*, male. Fig. 57, *P. palpalis*, male. Fig. 58, *P. harfordi*, male. Fig. 59, *P. fieldi*, female. Fig. 60, *P. carpenteri*, female. Figs. 61–64, head details. Fig. 61, *P. fieldi*, male. Fig. 62, *P. bidentata*, male. Fig. 63, *P. riversi*, male. Fig. 64, *P. carpenteri*, male. Figures not to scale.

Figures 65–72, *Parathyce* spp. Head details. Fig. 65, *P. palpalis*, male. Fig. 66, *P. harfordi*, male. Figs. 67 and 68, *P. bidentata*, female (arrow indicates face of clypeus visible from above). Fig. 69, *P. fieldi*, female. Fig. 70, *P. carpenteri*, female. Fig. 71, *P. palpalis*, female. Fig. 72, *P. harfordi*, female. Figures not to scale.



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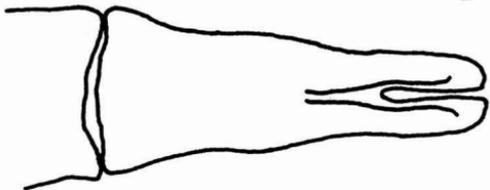
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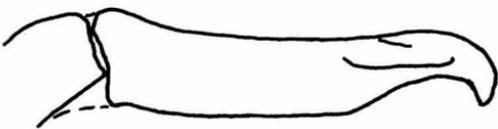
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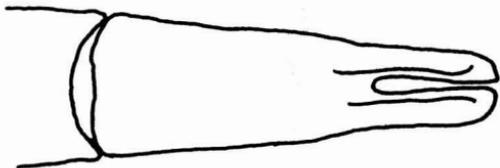
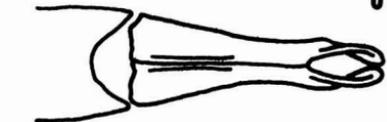
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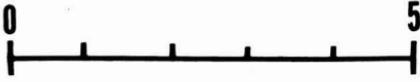


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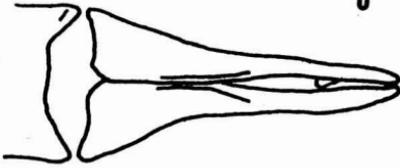


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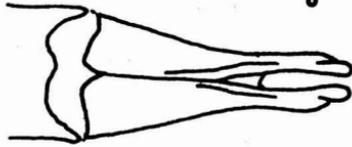




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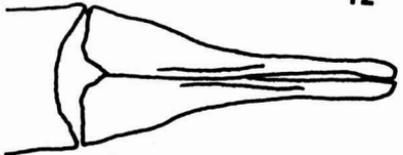
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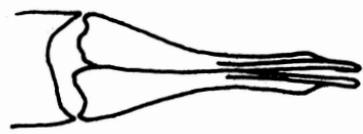




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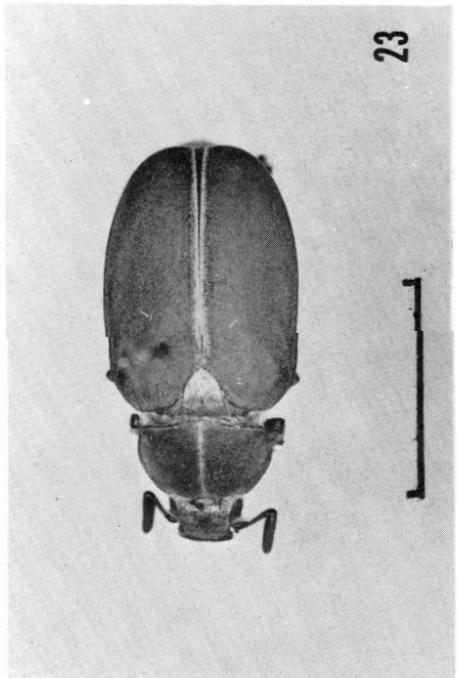
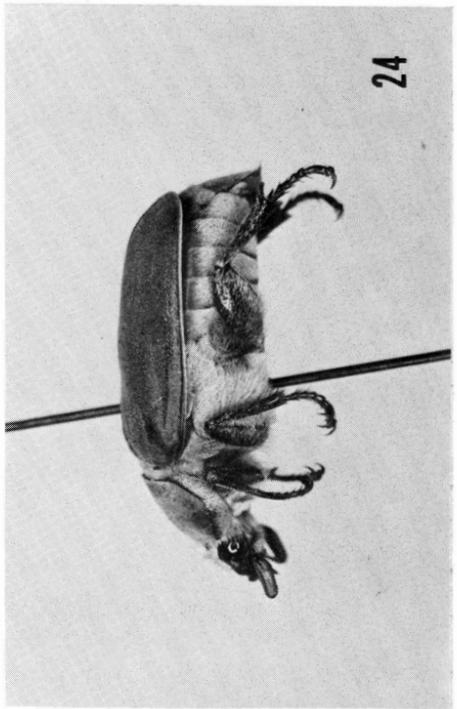
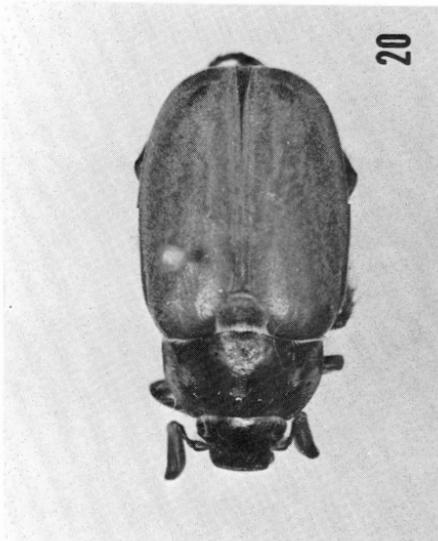
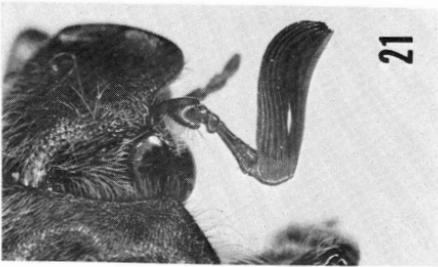
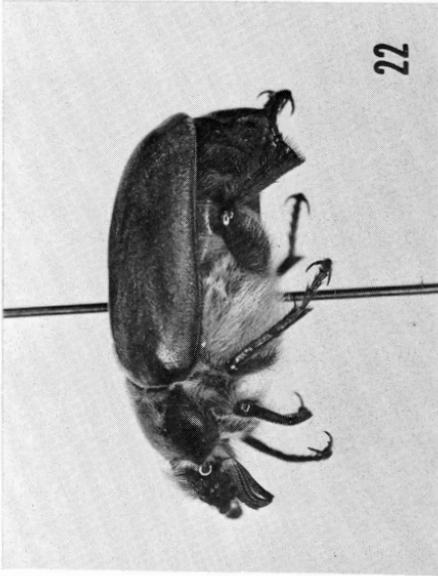


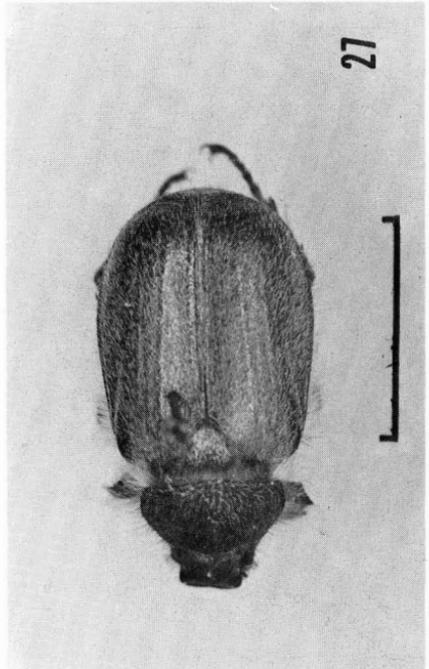
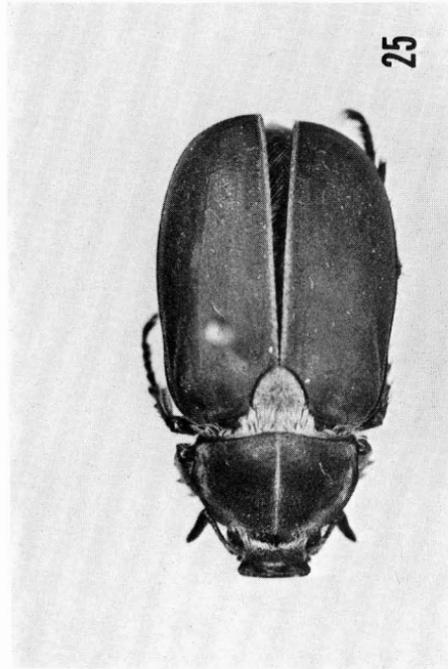
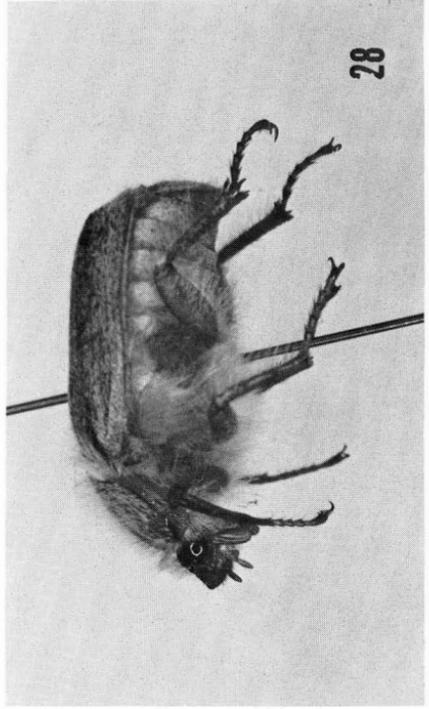
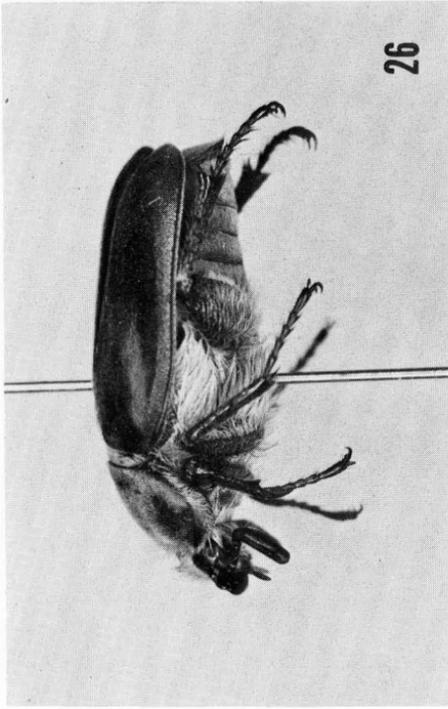
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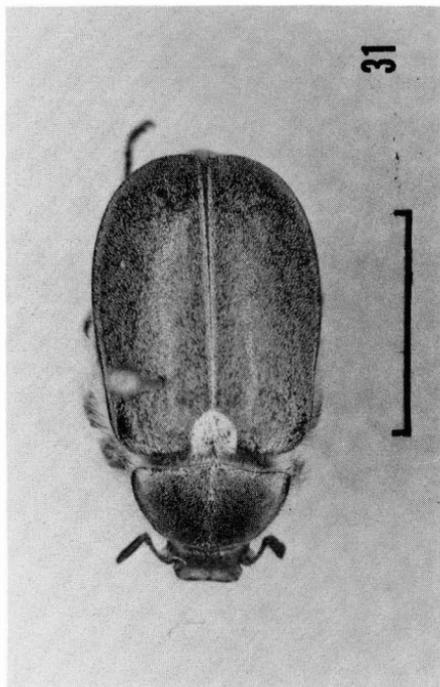
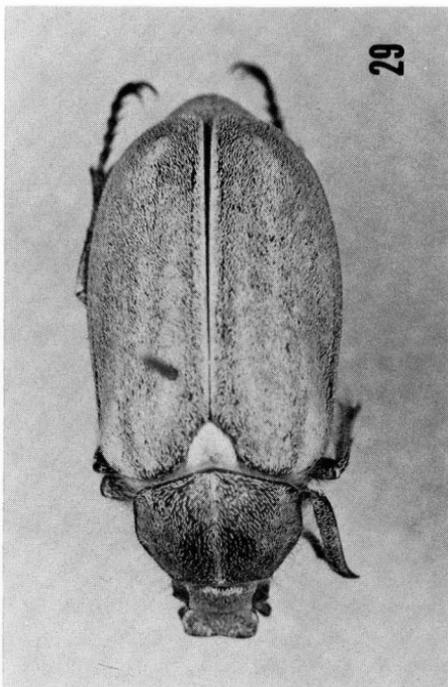
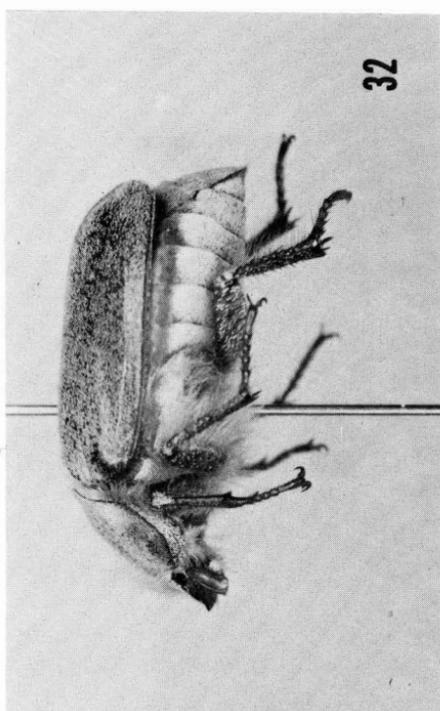
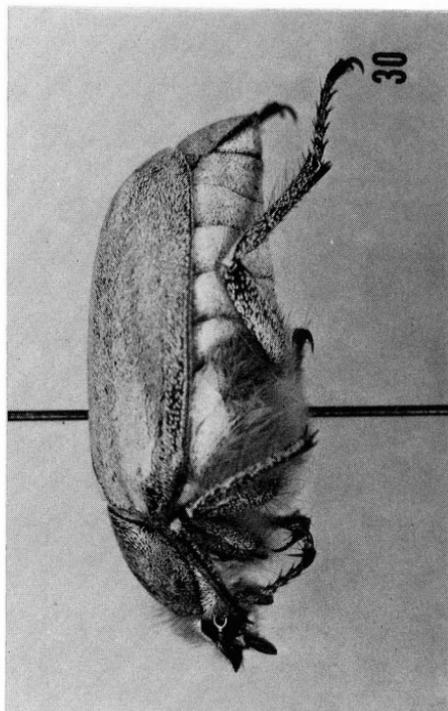


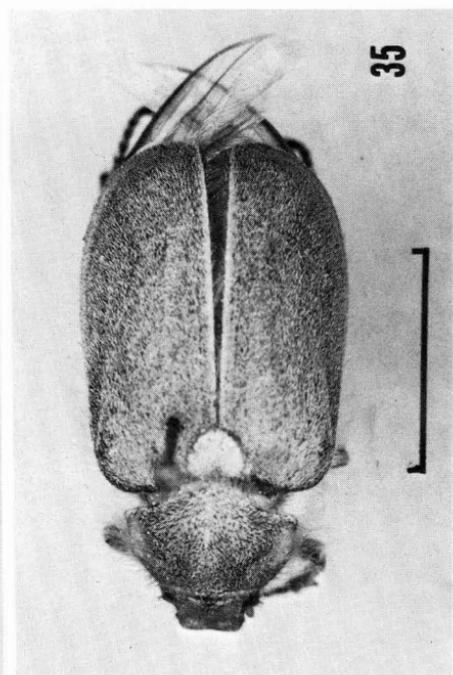
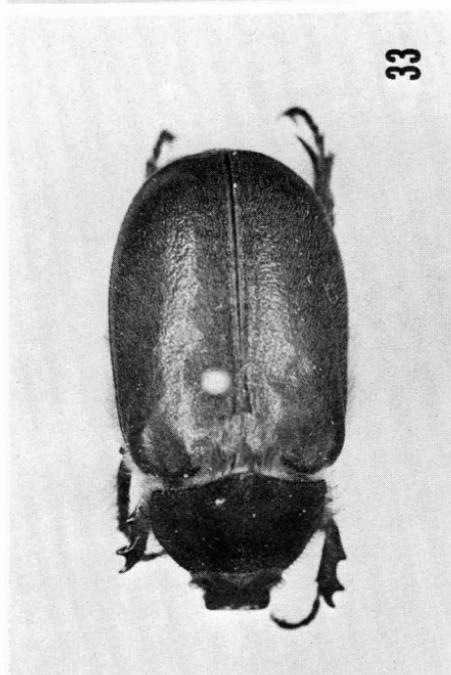
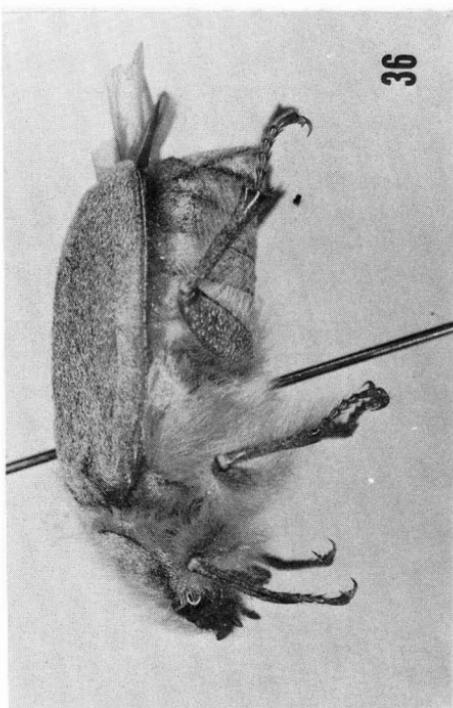
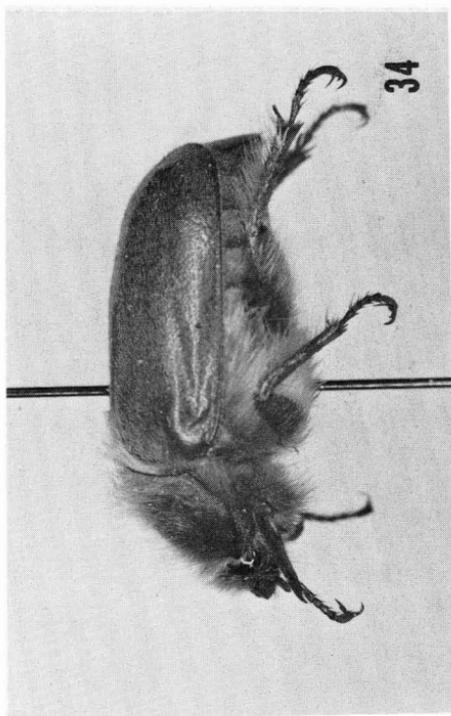
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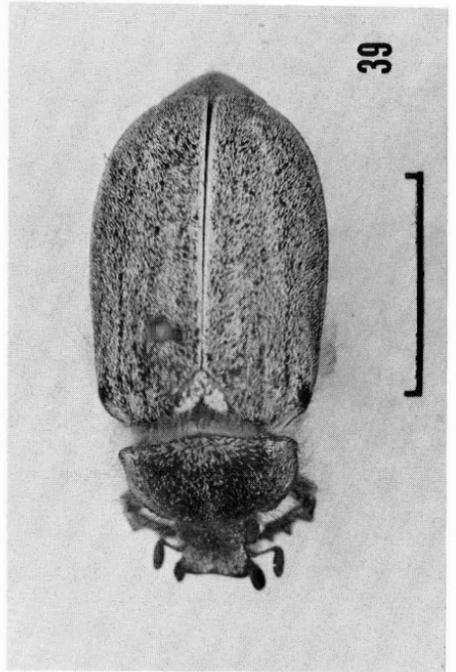
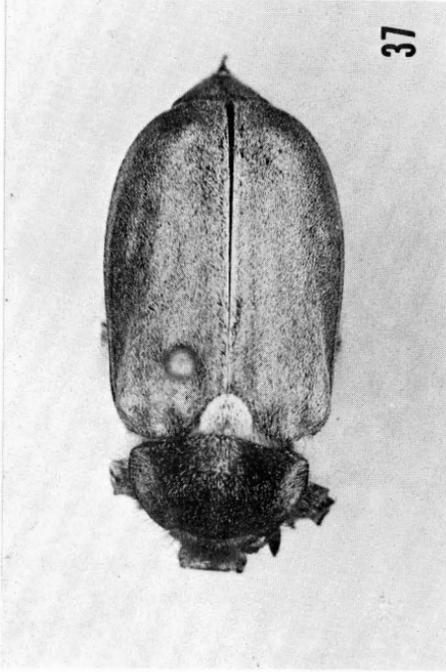
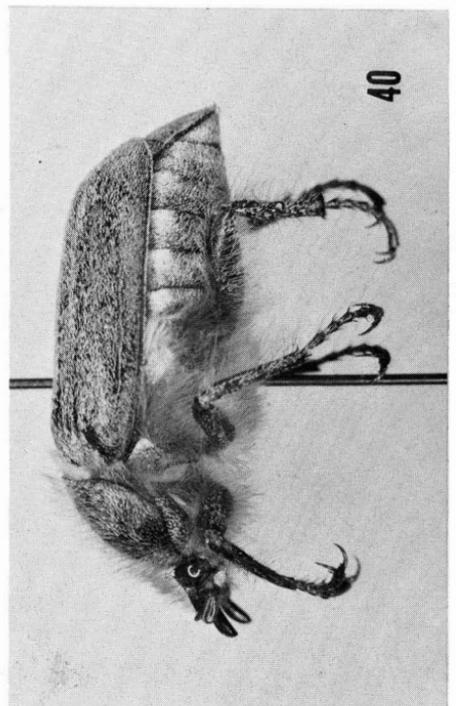
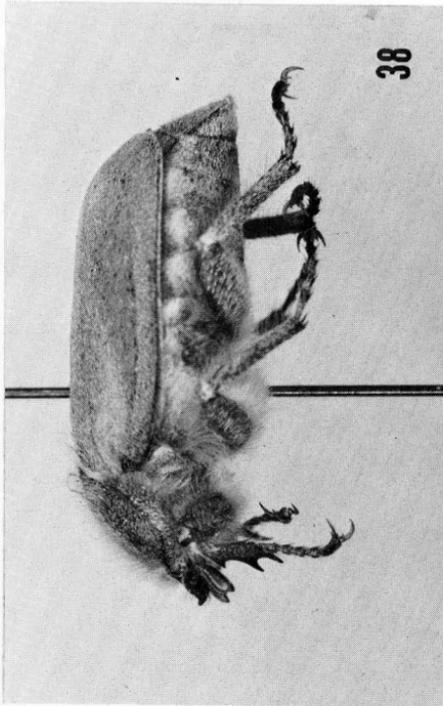


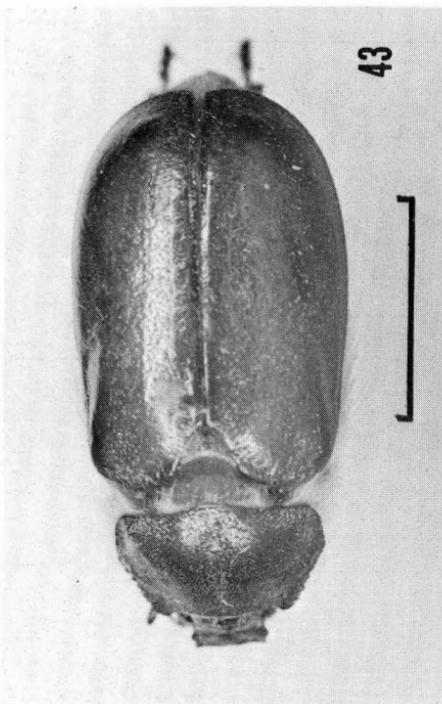
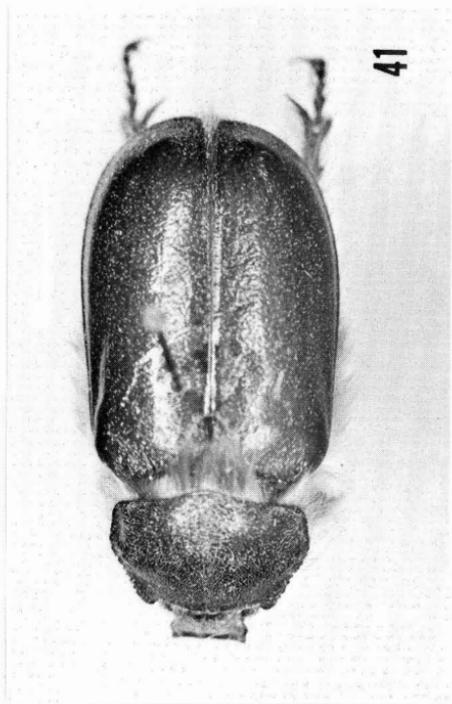
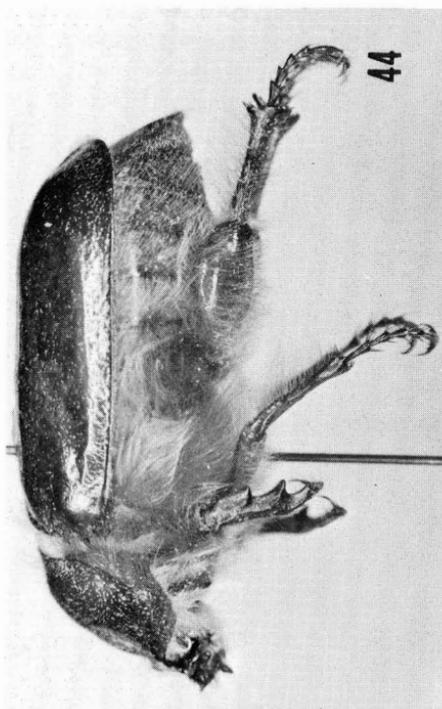
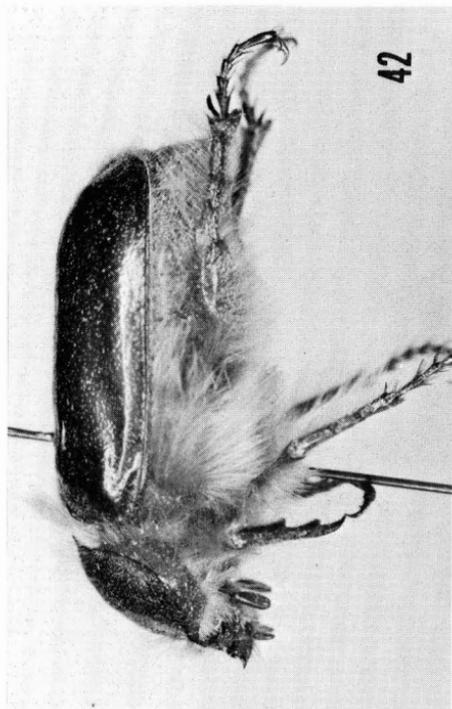


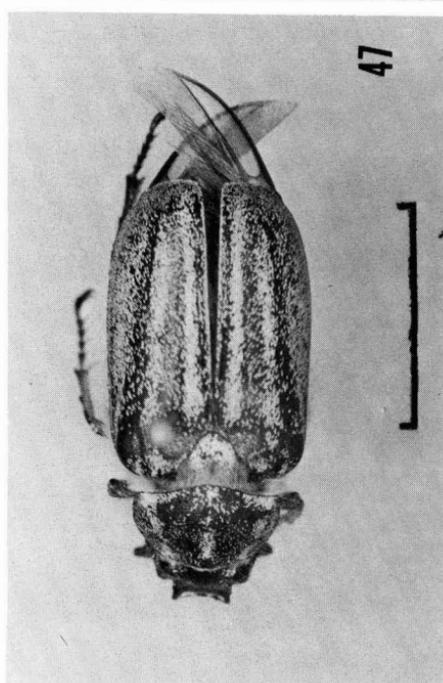
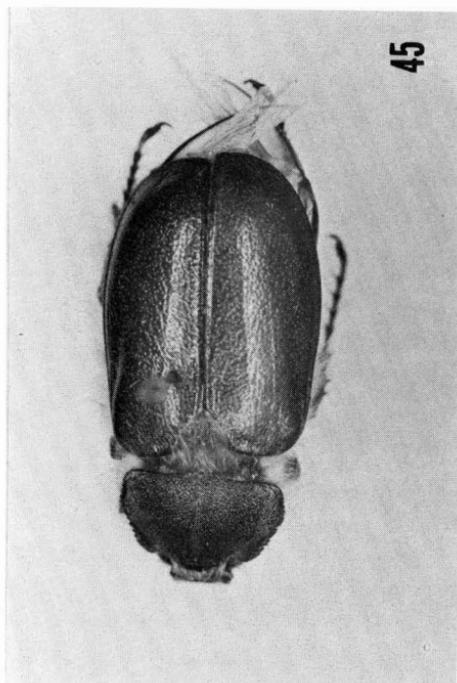
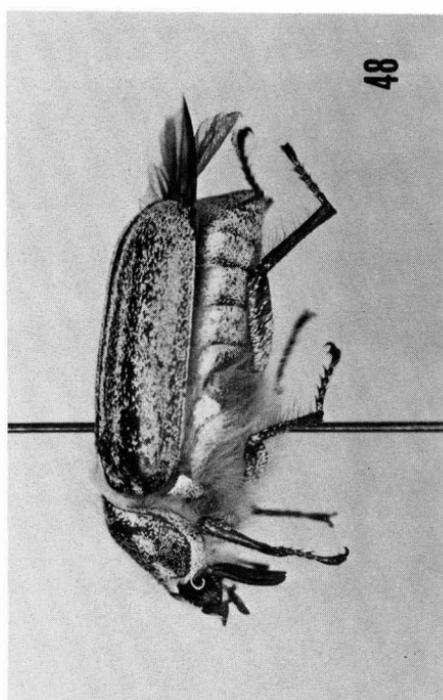
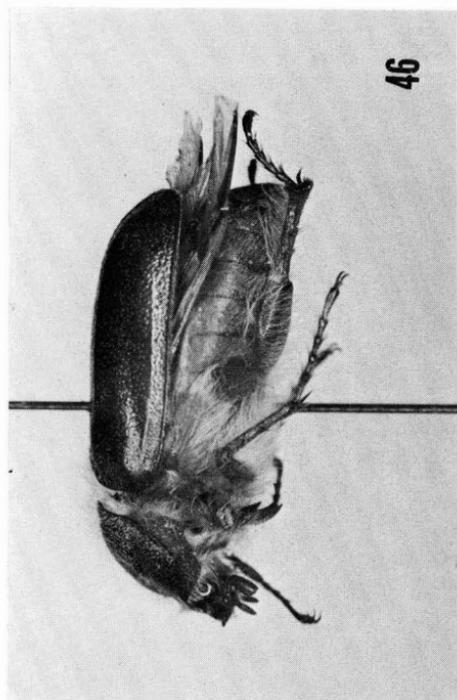


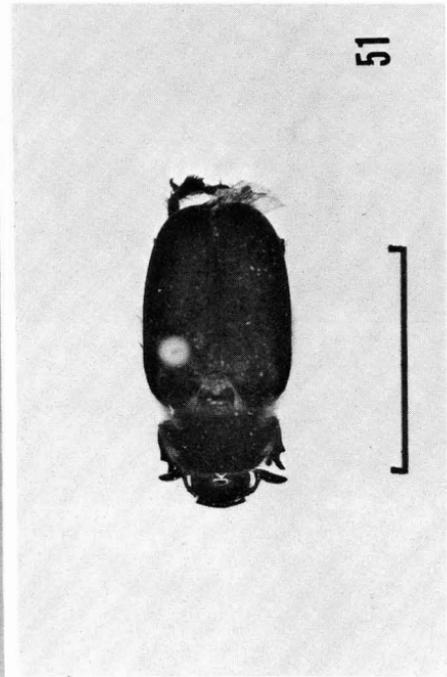
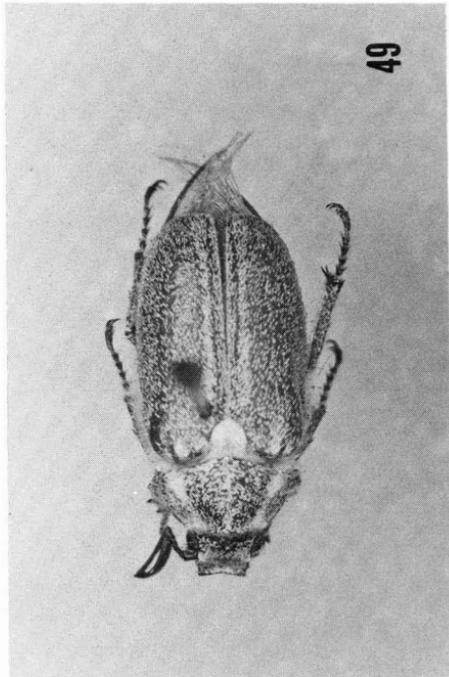
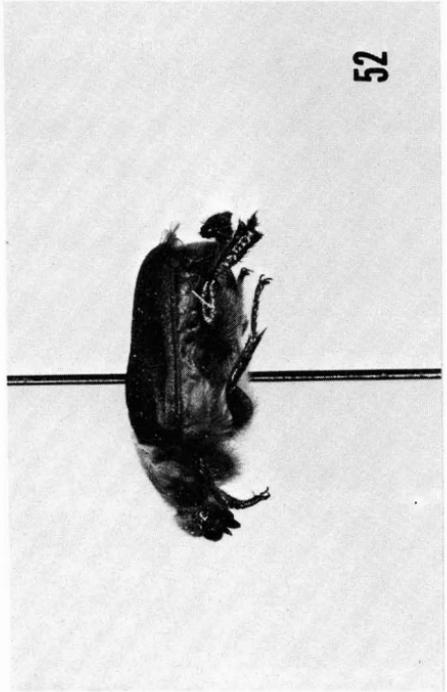
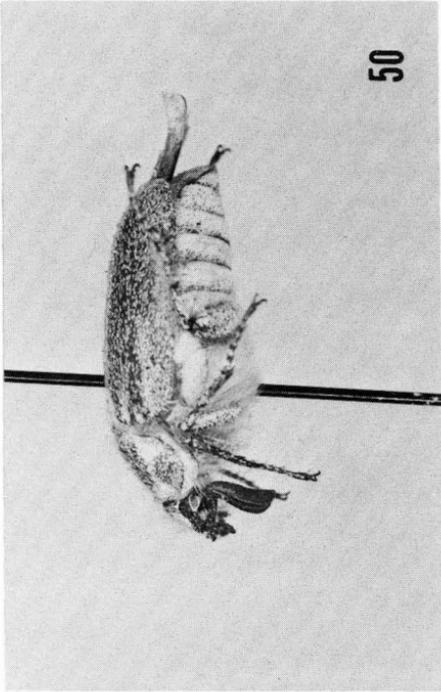


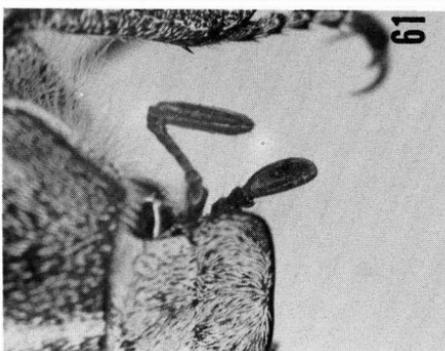
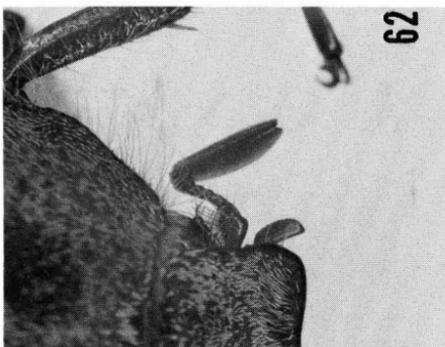
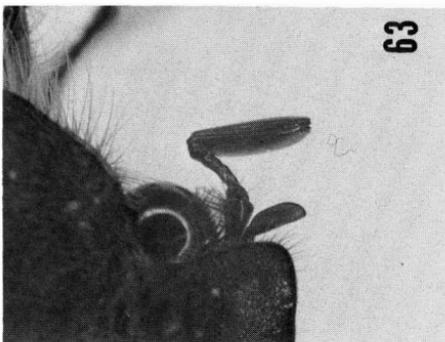
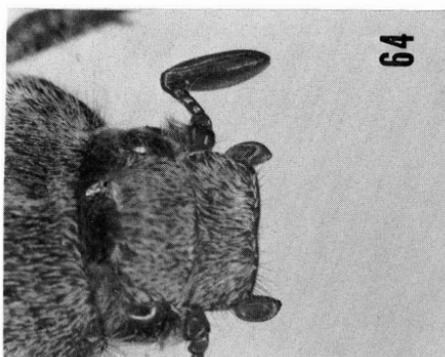
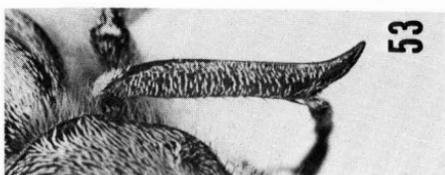
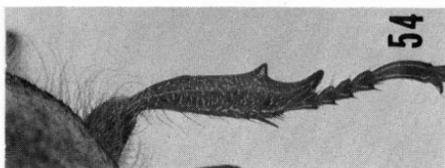
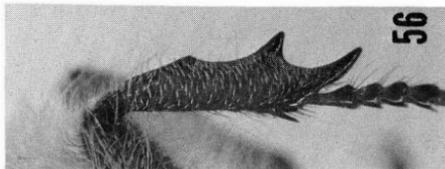
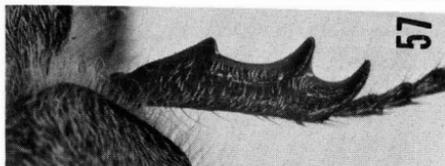
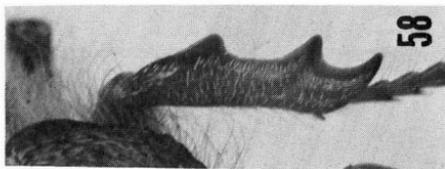
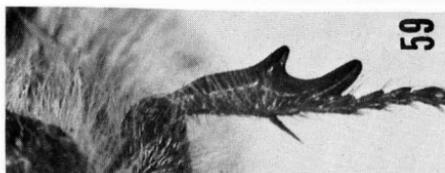
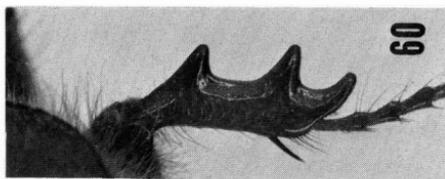


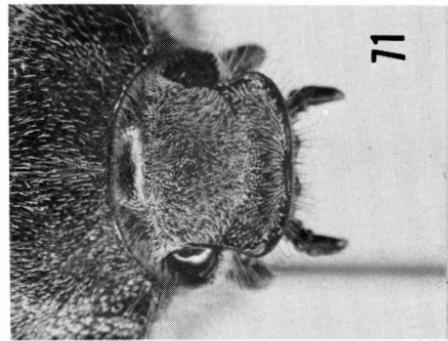
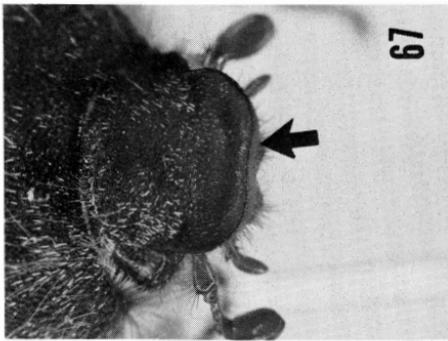
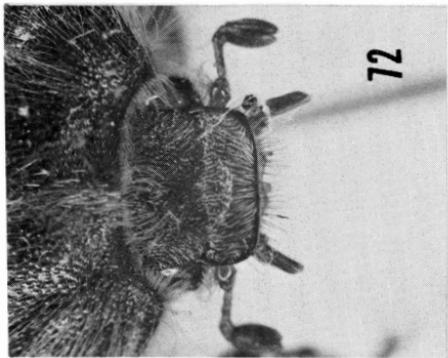
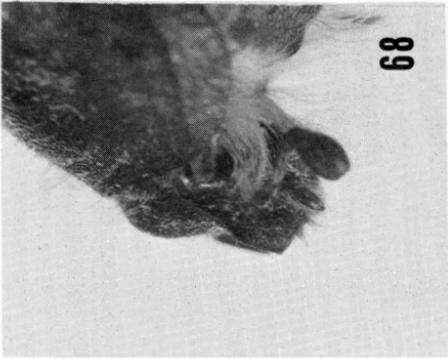


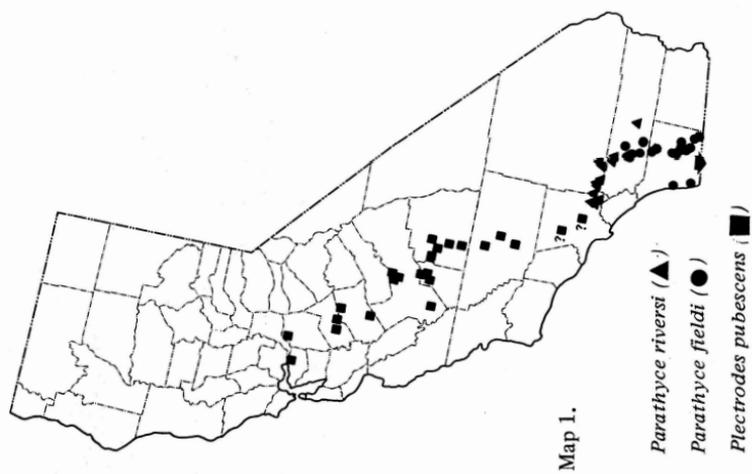
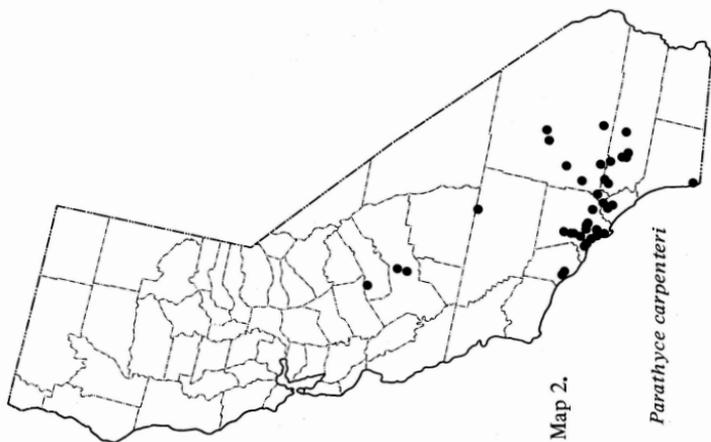
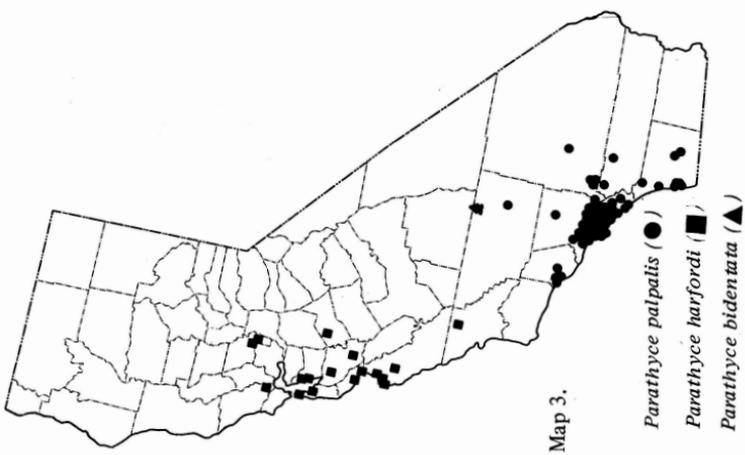


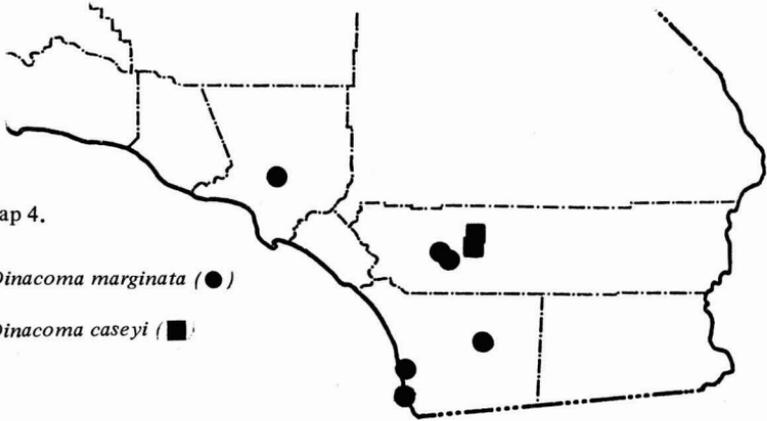








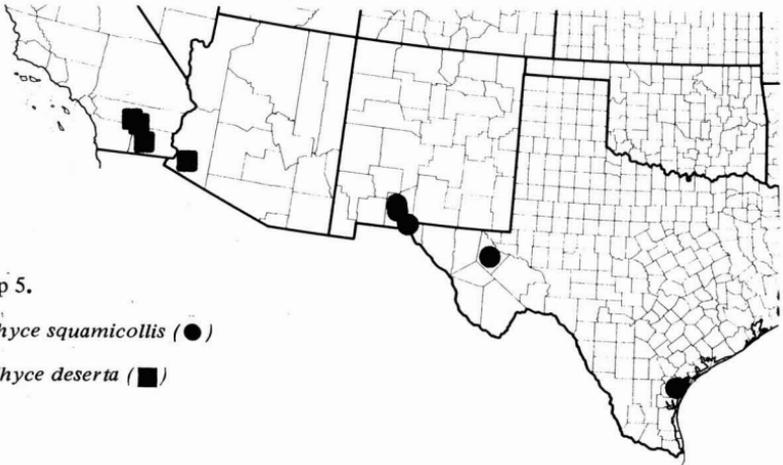




Map 4.

Dinacoma marginata (●)

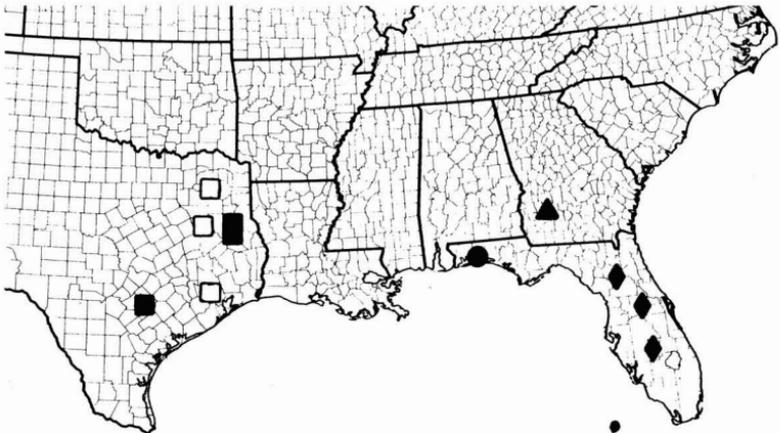
Dinacoma caseyi (■)



Map 5.

Thyce squamicollis (●)

Thyce deserta (■)



Map 6. *Polylamina pubescens* (●); *Hypothyce mixta* (■); *Hypothyce osburni* (▲)
Hypotrachia spissipes (◆). Hollow symbols represent literature records.