

SCREENING AID FOR THE CERAMBYCIDAE OF THE WESTERN U.S.A.

Version 032315

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Contributions and Acknowledgements

James R. LaBonte, ODA (Oregon Department of Agriculture: Design and compilation of the screening aid.

Steven A. Valley, ODA: Acquisition of most of the images.

Thomas E. Valente, ODA: Acquisition of some of the images.

Joshua J. Vlach, ODA. Design of screening aid, specimen preparation.

Christine Niwa, USDA FS: Alpha testing of the screening aid and administration of the grant.

ODA: Use of the imaging system, the entomology museum, and general support.

USDA Forest Service for funding of this project and USDA APHIS for the acquisition of the imaging system.




Introduction

This screening aid is not a comprehensive treatment of western North American Cerambycidae (roundheaded or longhorned wood borers). It is designed to enable efficient sorting and identification of the most abundant species found in wood boring insect trap samples from surveys conducted by the ODA and the USDA FS in the Pacific Northwest and the West over the past ten years. Several exotic pest species are also included. *This aid will be most reliable in the conifer forest regions west of the Rocky Mountains. It may not function well with species found in the desert West and east of the Rockies.

This screening aid is designed to be used by individuals with a wide range of taxonomic expertise. Images of all character states are provided. **It is not intended to operate completely independently of support by a taxonomist but with training, such as at a workshop.



Use of This Screening Aid: I

The screening aid functions much like the traditional dichotomous key, with couplets. However, PowerPoint navigational features have been used for efficiency. Buttons linking non-sequential couplets and enabling return to an originating couplet are indicated by . All slides have this button, , to move immediately to the beginning of the key. This button, , returns to the appropriate Index page from a portrait slide.

If there are more images than can fit on a single slide, the multiple slides for the couplet are indicated by “Part I”, “Part II”, etc., following the couplet number at the top of the slide.

Taxonomic jargon has been kept to a minimum. Most terms and character states are explained via the images and associated labels. The first several slides following the introduction illustrate the basic body parts of cerambycids and the terms applied

Use of This Screening Aid: II

to them. Several slides illustrating families that are frequently confused with cerambycids and some key differentiating features are included thereafter. A single slide explaining a few technical terms follows those. Index slides with images of all the target exotic species and screening aid target species are after these introductory slides. The screening aid key follows. Couplets dealing with exotic species have text in white and an asterisk following the species name.

THIS IS VERY IMPORTANT!

This aid is designed so that specimens not keying to screening targets will end at a couplet half with “FTT”, which stands for “Forward To Taxonomist”. These specimens are NOT unimportant nor should they be discarded - quite the opposite! Any specimen that does not appear to be a screening target should be forwarded to a cooperating taxonomist for further identification.



Use of This Screening Aid: III

Realistic limitations and expectations:

It is likely that native species not treated in this screening aid, particularly in the southern border states, will be encountered, given the great diversity of Cermabycidae. Furthermore, the influx of exotic cerambycids continues and exotics new to the U.S. and North America are being found with dismaying frequency. Specimens from either set of species may not key readily and may not even end up at “FTT”.

Monochamus and *Tetropium* are two genera which include exotic species that are known to be or could be destructive. Unfortunately, the characters distinguishing species are often subtle and variable. Any specimen that doesn't readily key out to a native species or that looks unusual should be treated as an “FTT”.

A Few Technical Terms

Acuminate: strongly and abruptly tapered to a narrow apex

Arcuate: arched

Carina: an elevated ridge (plural is “Carinae”)

Elytral: of or on an elytron or the elytra

Emarginate: broadly notched

Pubescence: short, fine, closely set hair-like structures

Pubescent: covered with pubescence

Punctate: with punctures

Rugae: ridges or wrinkles

Rugose-punctate: with ridges and punctures

Scape: the first antennal segment

Serrate: with notched edges like the teeth of a saw

Seta: relatively long, stiff hair-like structures (plural is “Setae”)

Setose: covered with setae

Sinuate: winding or wavy

Strigae: fine, impressed lines or streaks. “Strigate” = with strigae.

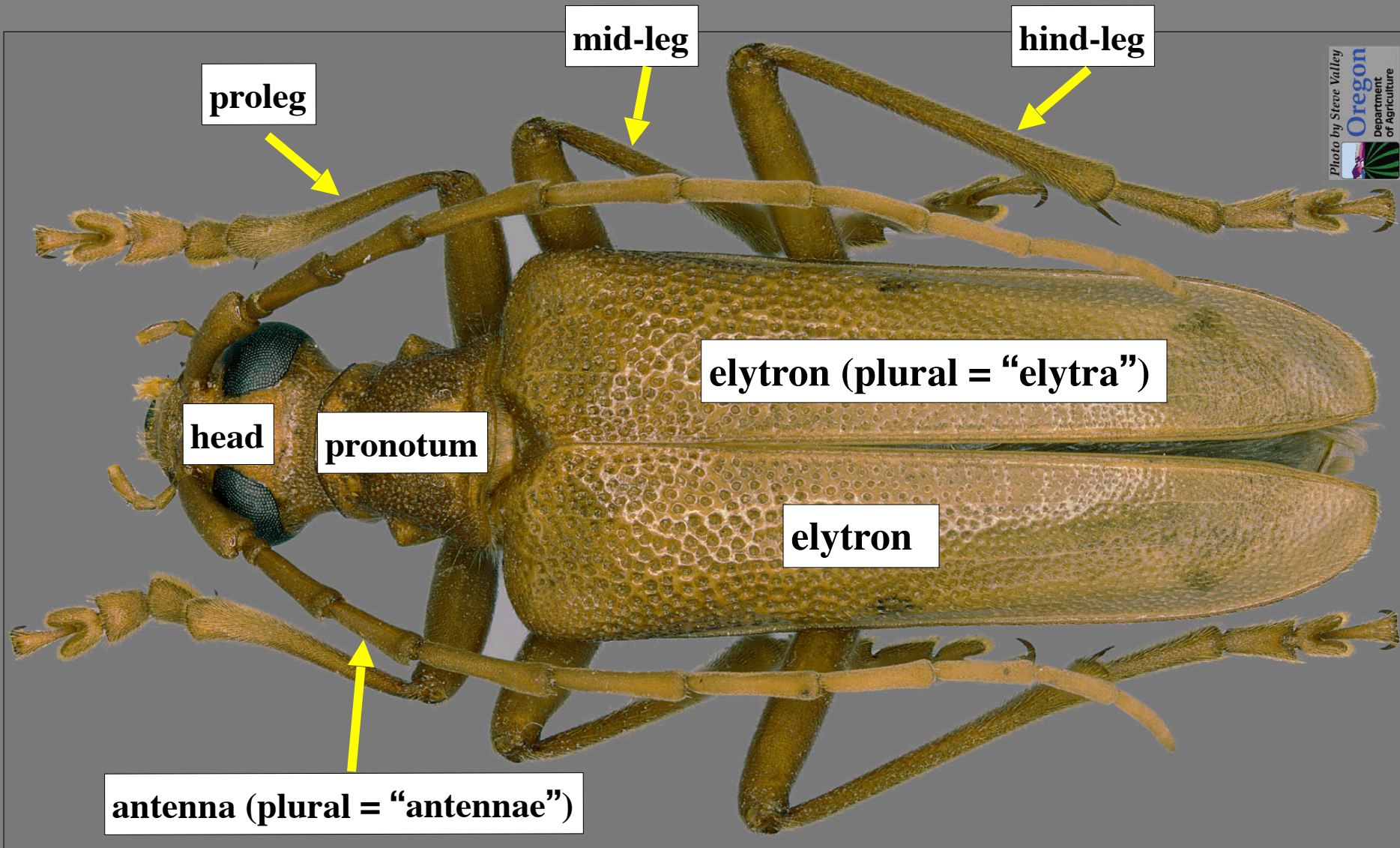
Transverse: running across the longitudinal axis at right angles

Truncate: squared off

Venter: underside. “Ventral” = on venter.

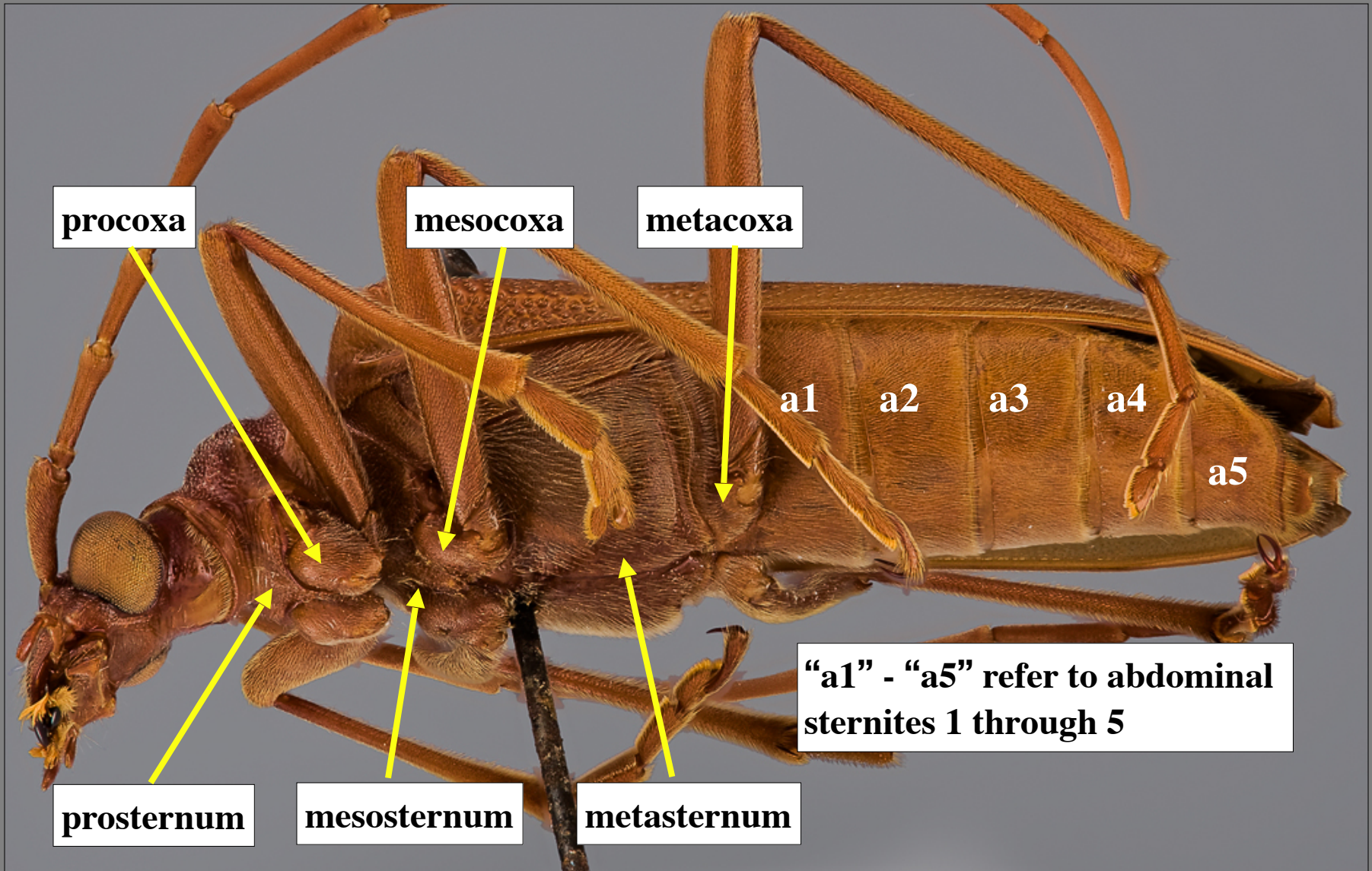


Basic Body Parts of Cerambycidae: Dorsum



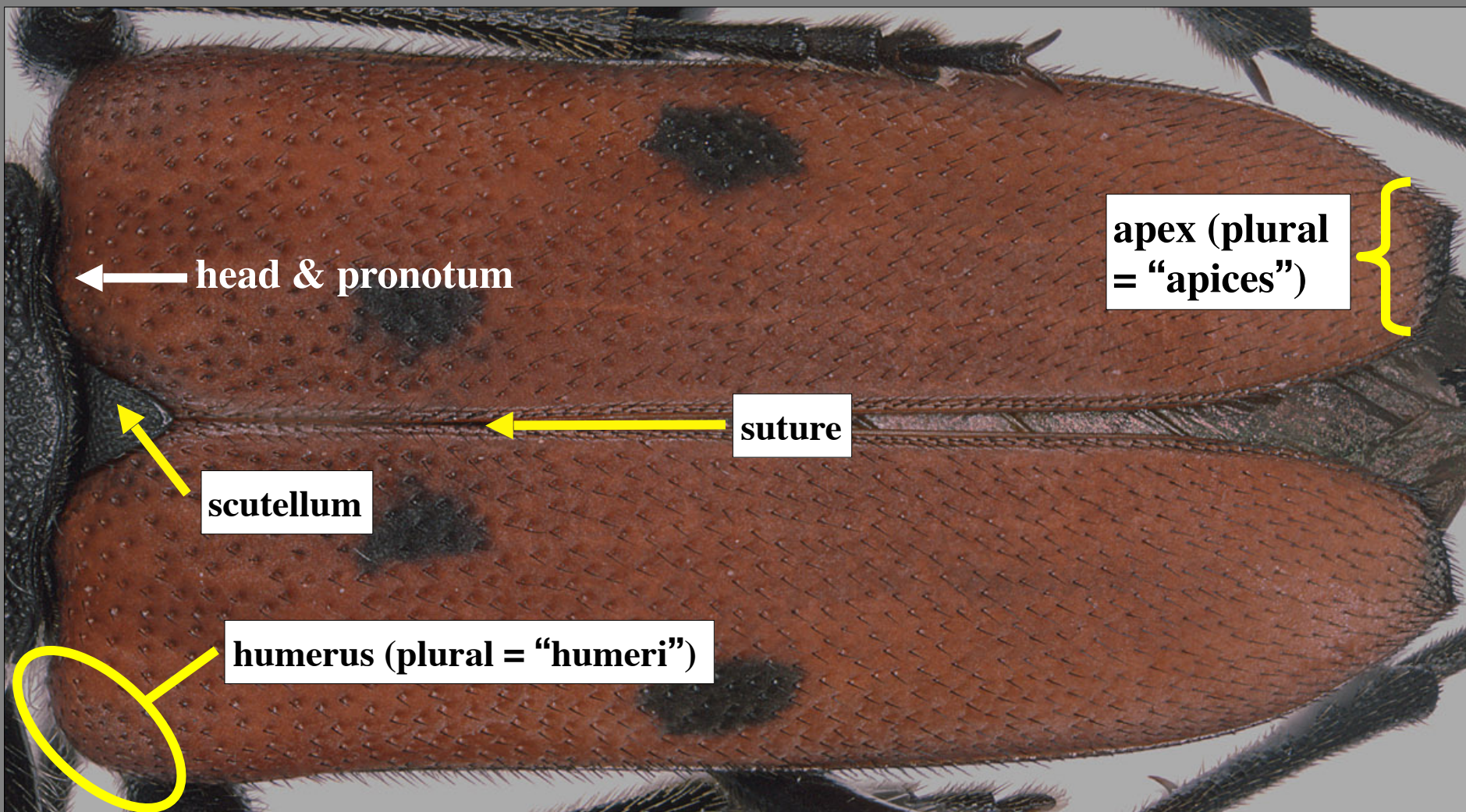


Basic Body Parts of Cerambycidae: Venter



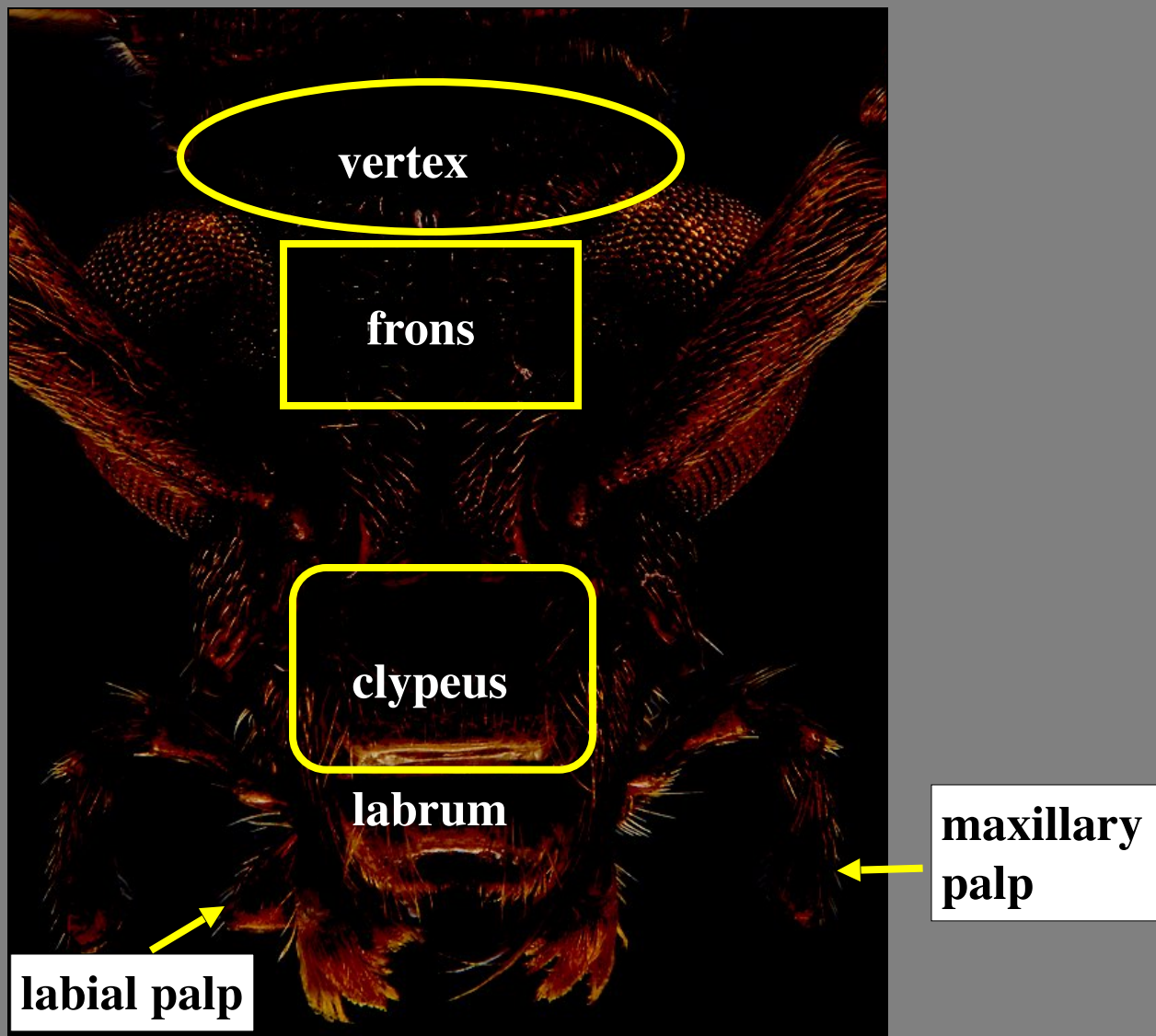


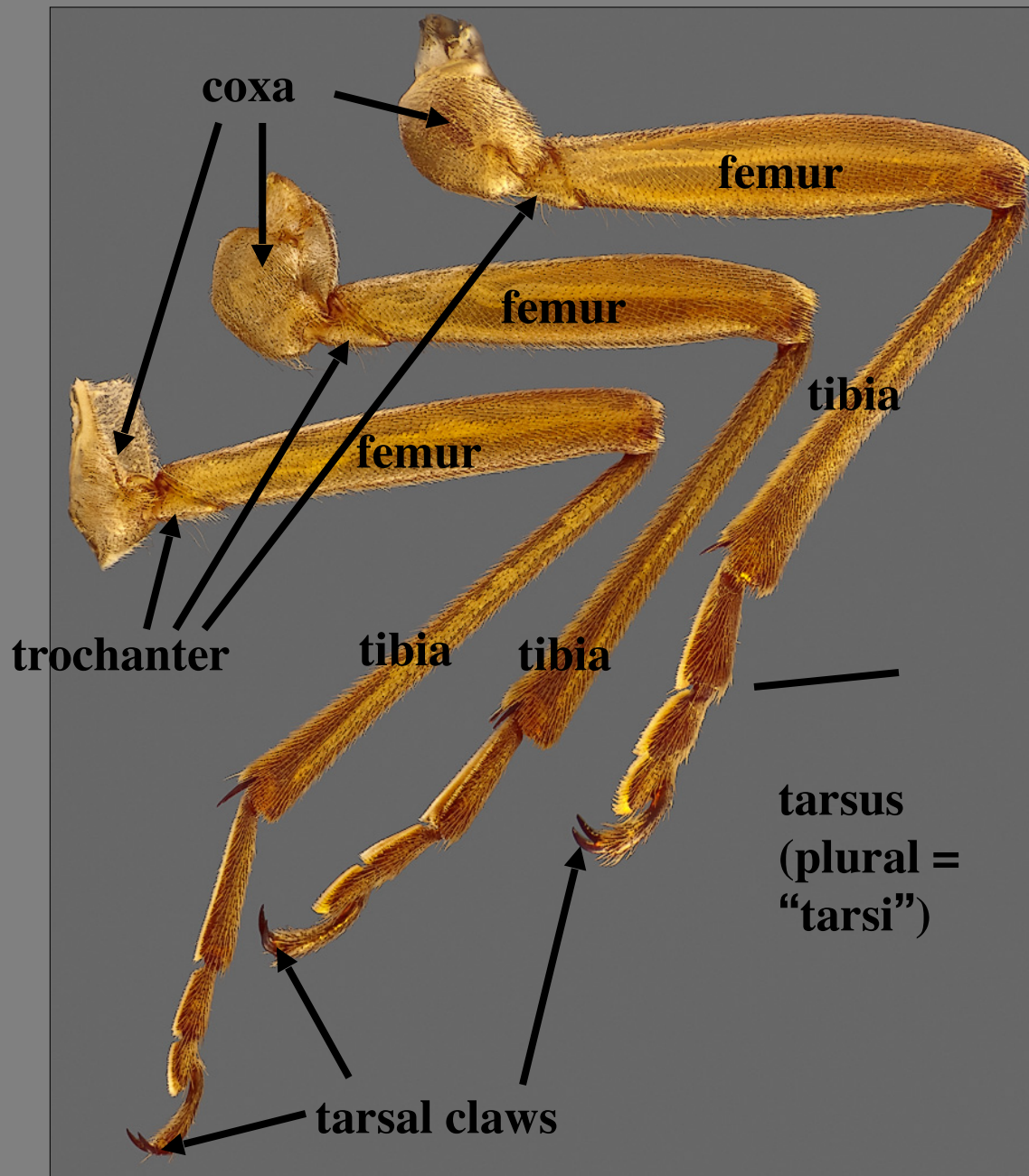
Basic Body Parts of Cerambycidae: Elytra





Basic Body Parts of Cerambycidae: Head



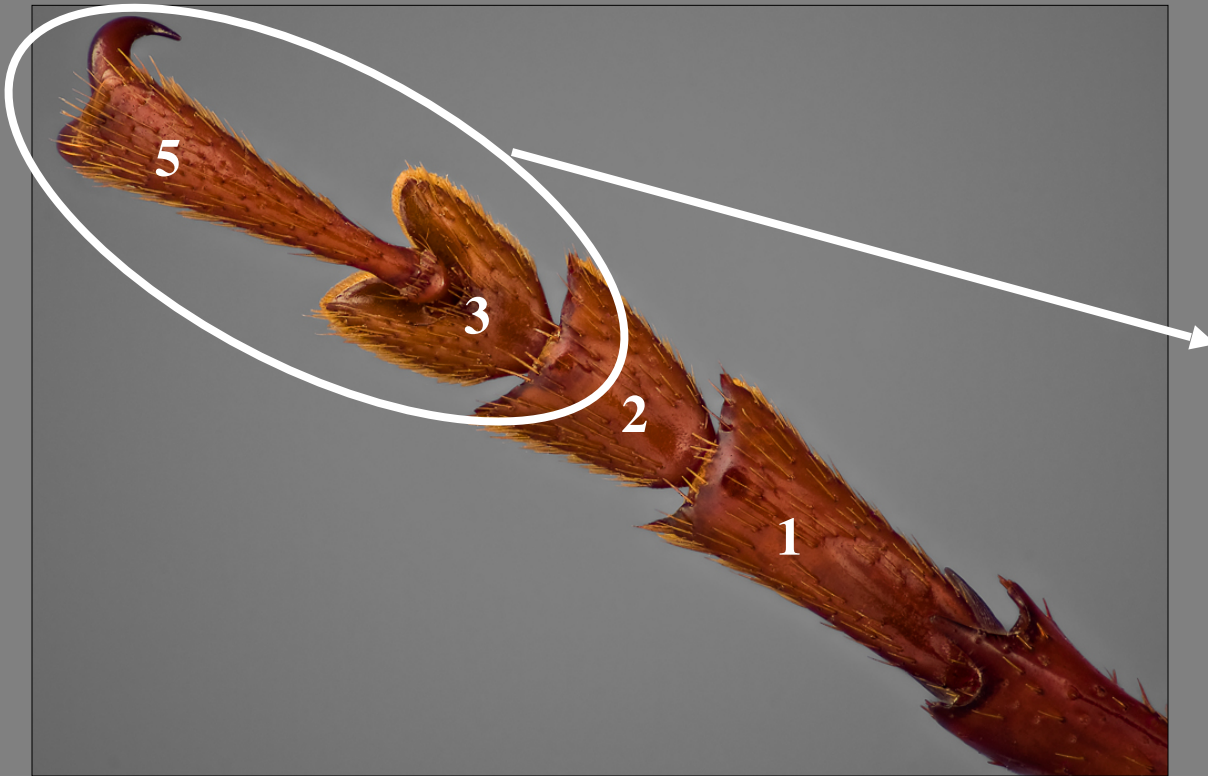


Basic Body Parts of Cerambycidae: Legs



Features Typical of Cerambycids: I

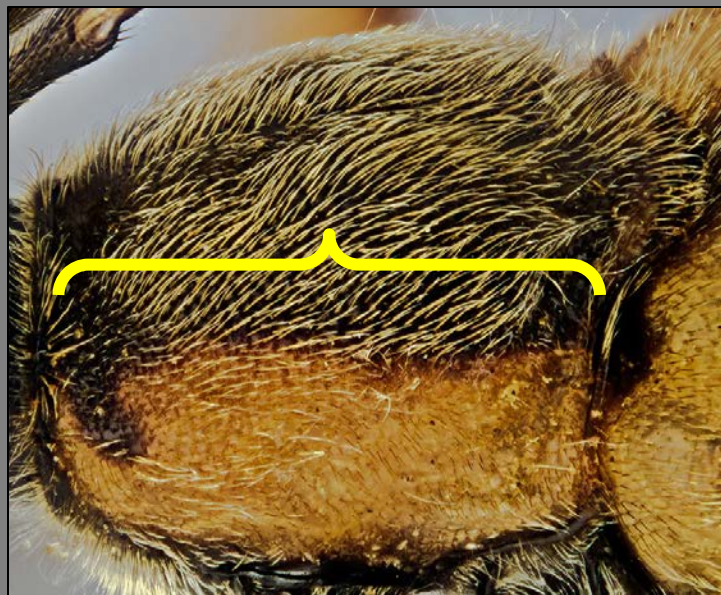
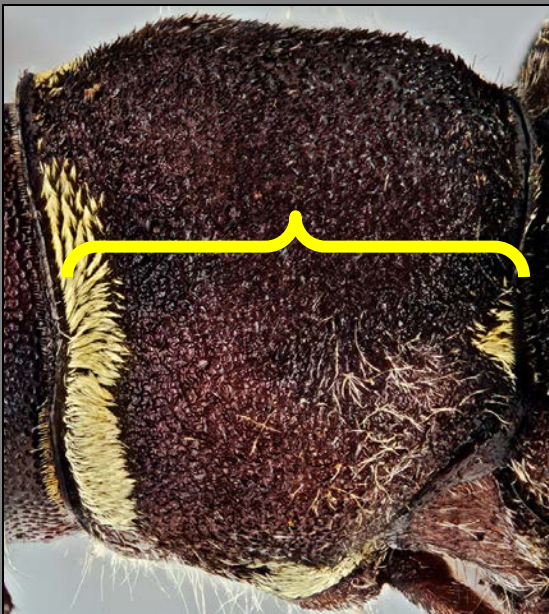
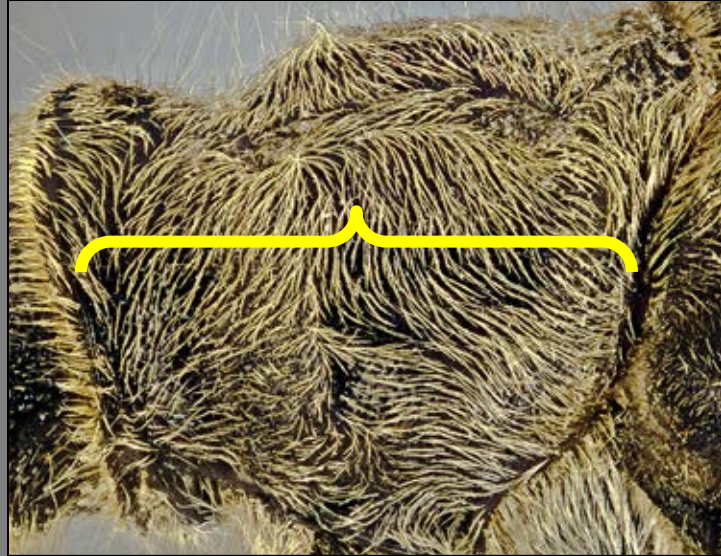
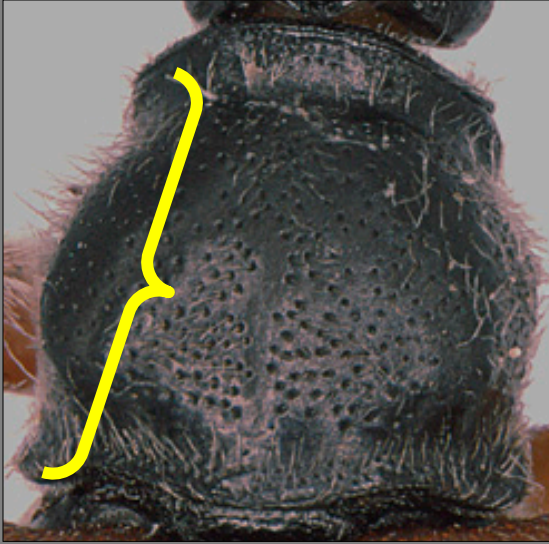
All 3 sets of tarsi appear to be comprised of 4 segments each (except for a few very primitive cerambycids which have all tarsi clearly composed of 5 segments). In cerambycids, each tarsus really has 5 segments, but the 4th is very small and hidden between the lobes of the 3rd segment.





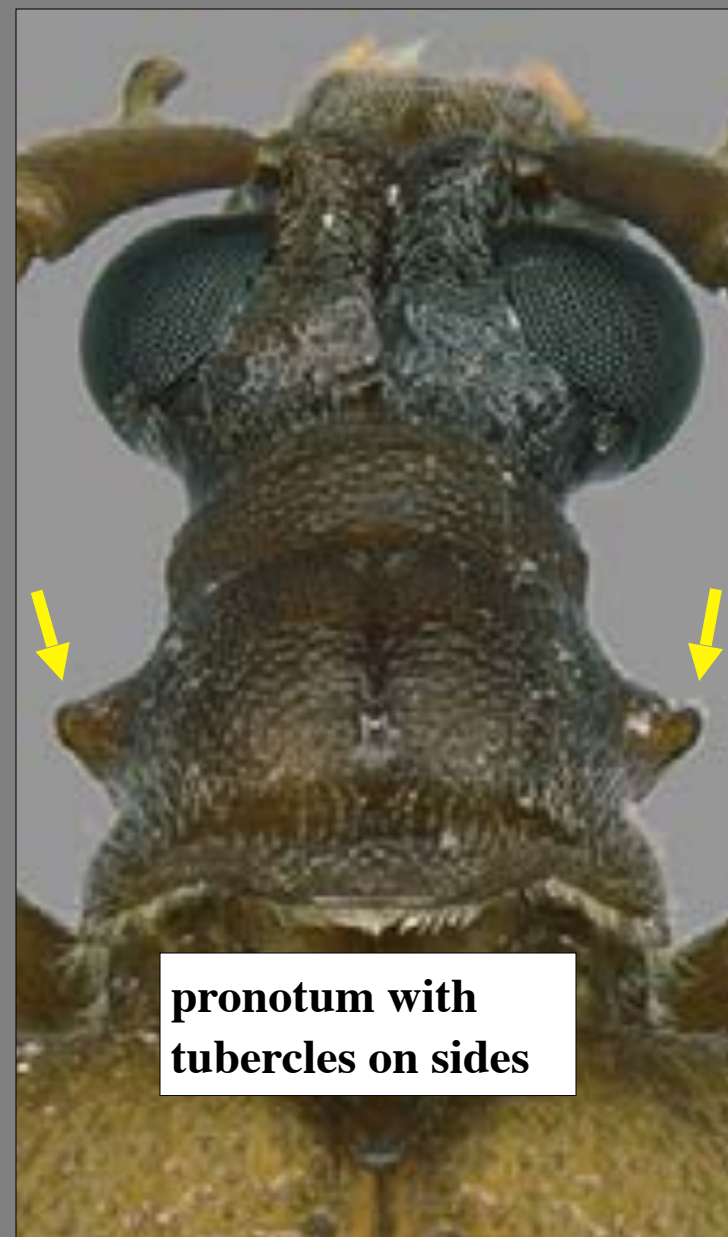
Features Typical of Cerambycids: II

Pronotum without sharp lateral margins





Features Typical of Cerambycids: III





Features Typical of Cerambycids: IV

Antennae long and slender, extending beyond the hind margin of the pronotum



Photo by Steve Valley
Oregon
Department
of Agriculture



Cerambycid with
atypically short antennae



Features Typical of Cerambycids: V

Elytra generally lack distinct striae (thin carinae may be present)





Features Typical of Cerambycids: VI

Antennae are inserted on prominences





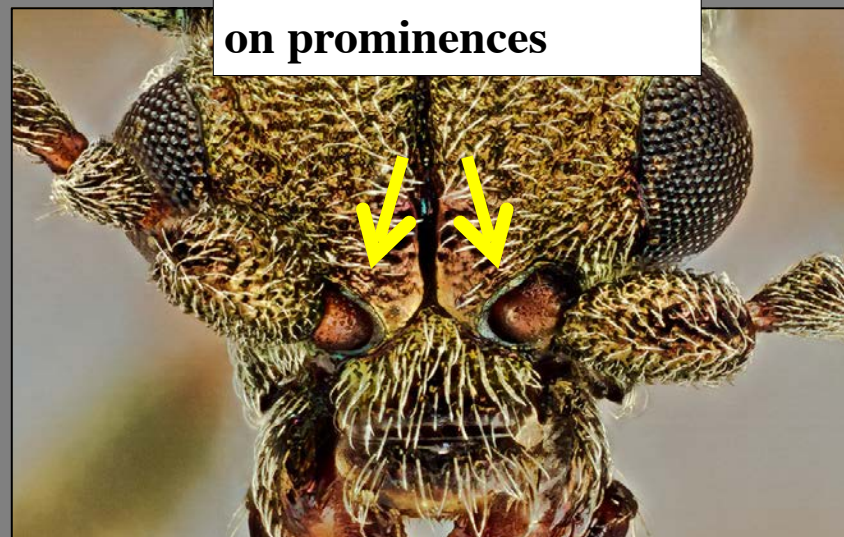
Non-Cerambycids: Chrysomelidae

All tarsi 5-segmented
with a hidden 4th segment
(like Cerambycidae)

Antennae shorter than
half length of body



Antennae not inserted
on prominences





Non-Cerambycids: Cantharidae

All tarsi clearly 5-segmented



Lateral margins of pronotum sharp, carinate





Non-Cerambycids: Cleridae

All tarsi are clearly 5-segmented



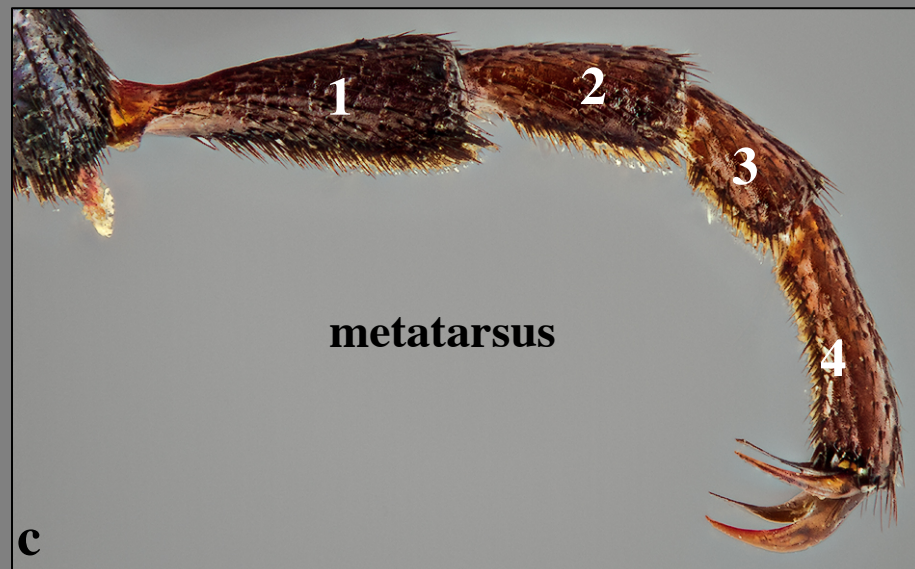
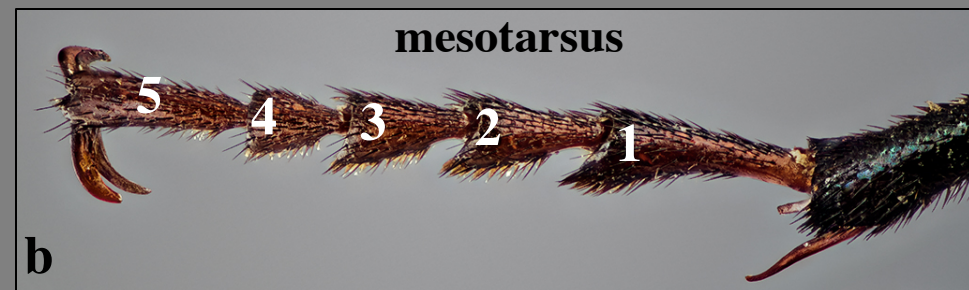
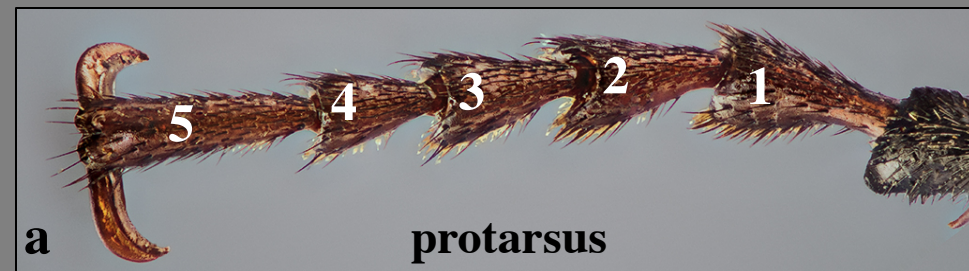
Most Cleridae antennae are short & clubbed





Non-Cerambycids with 5-segmented pro- and mesotarsi and 4-segmented metatarsi (5-5-4)

There are several common beetle families that can be confused with Cerambycidae that all have 5-segmented pro- and mesotarsi (a-b) and 4-segmented metatarsi (c). These include Meloidae, Oedemeridae, Pyrochroidae, and Stenotrachelidae.





Begin key

**Non-Cerambycids with 5-5-4 tarsi:
Meloidae**



**Posterior margin of
head truncate**



Split tarsal claws





**Non-Cerambycids with 5-5-4 tarsi:
Oedemeridae**



Begin key

**Non-Cerambycids
with 5-5-4 tarsi:**



Begin key

**Sides of the head behind
the eyes are convergent**

**Non-Cerambycids
with 5-5-4 tarsi:**

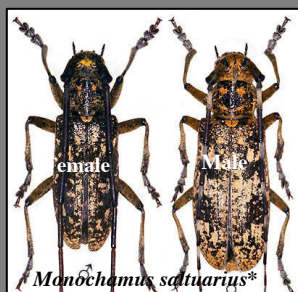
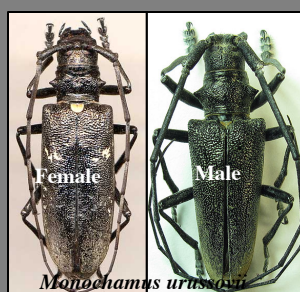
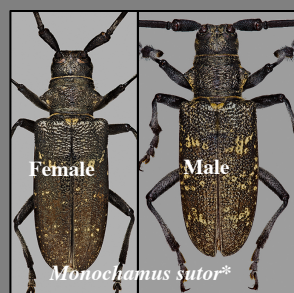




Begin key

Exotic Cerambycid Species Target Index

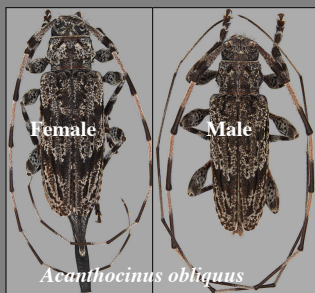
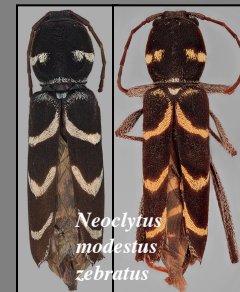
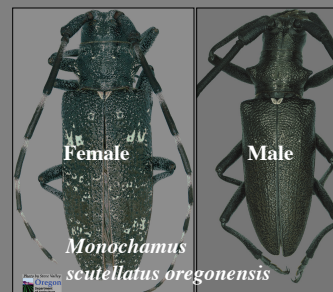
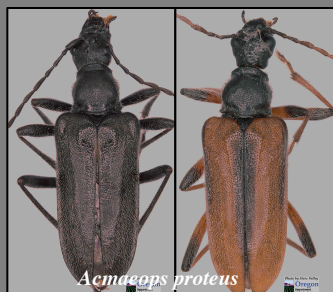
Click picture for direct link to species page





Cerambycid Screening Species Target Index: I

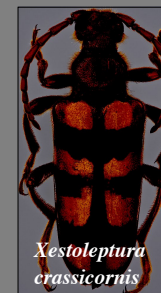
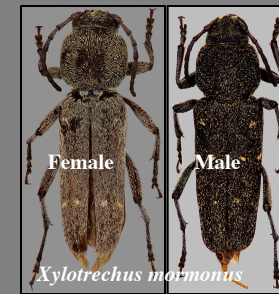
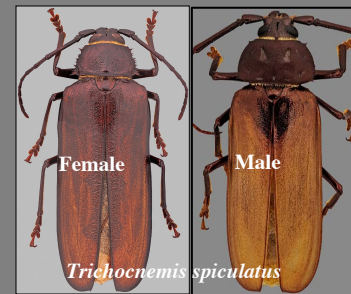
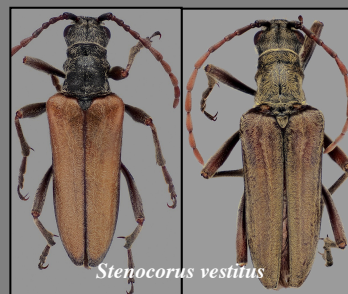
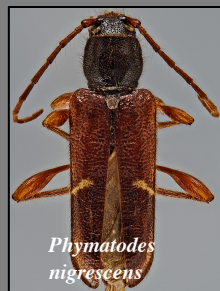
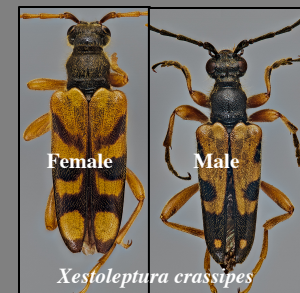
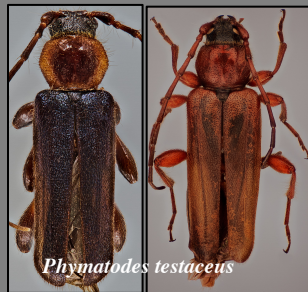
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Cerambycid Screening Species Target Index: II

Click picture for direct link to species page

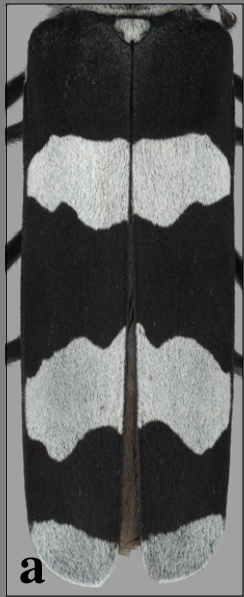


1: Part I

Elytra with broad bands of black and white (a); pronotum white with a large central black dot (d); portrait (h).....*Rosalia funebris* Motschulsky*

*This species is not common in traps but is often submitted for identification, particularly as a possible Asian longhorned beetle.

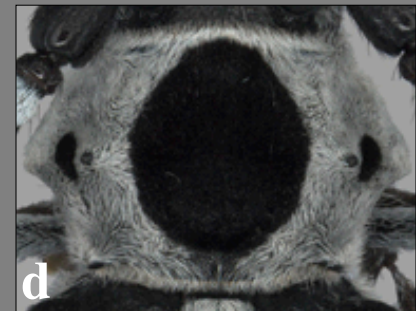
Elytra without broad bands of black and white - may have white spots or patches on a black background; pronotum never white with a large central black dot.....2



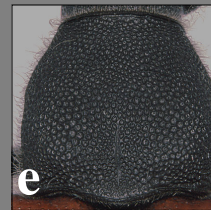
Elytra broadly banded black and white.



Elytra at most with white patches or speckles.



Pronotum white with a central black dot.



Pronotum never white with a central black dot.



1: Part II



Rosalia funebris
Motschulsky

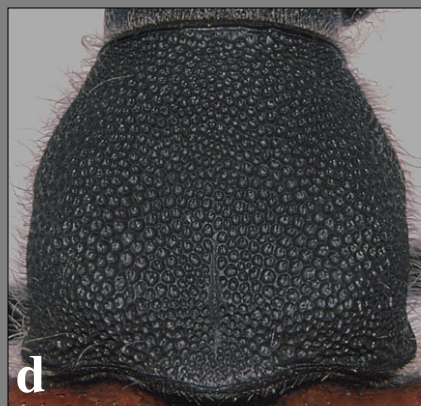
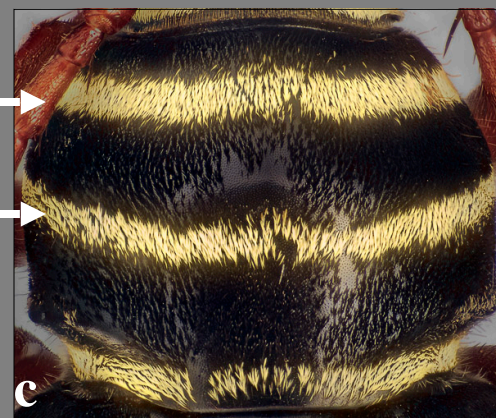
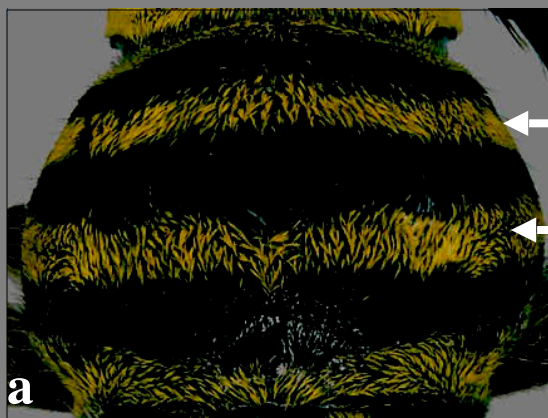




2 (1)

Pronotum with complete antemedian and median bands of yellow pubescence (a-c).....3

Pronotum lacking bands of pale pubescence (d); with bands of pale pubescence along anterior and/or posterior margins (e); with additional incomplete median band of pale pubescence (f); or with longitudinal or oblique markings (g).....6

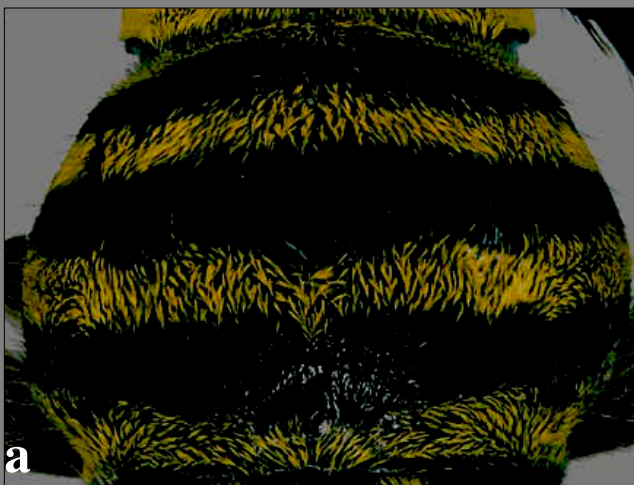




3 (2)

Pronotum with bands of pale pubescence narrow (a-b).....4

Pronotum with bands of pale pubescence broad (c).....FTT

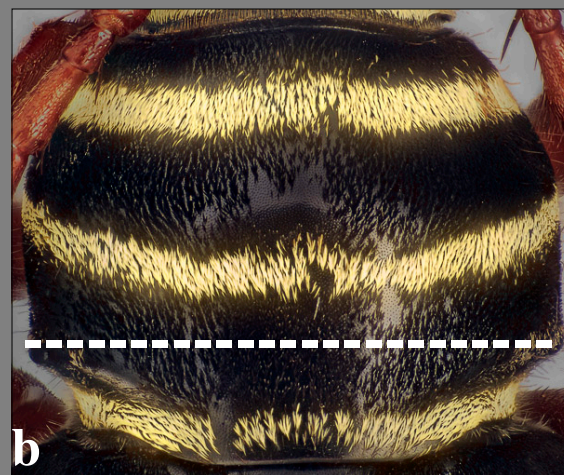
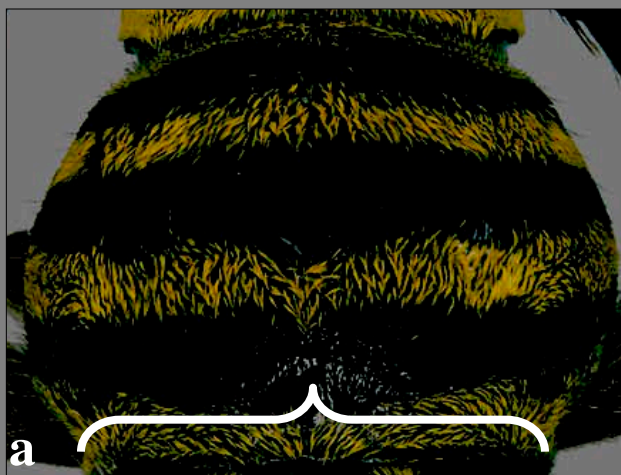




4 (3)

Pronotum with posterior margin truncate (a); if elytral apices are pointed, the points are short (c).....5

Pronotum with posterior margin lobed at middle (b); elytral apices with long points (d).....FTT

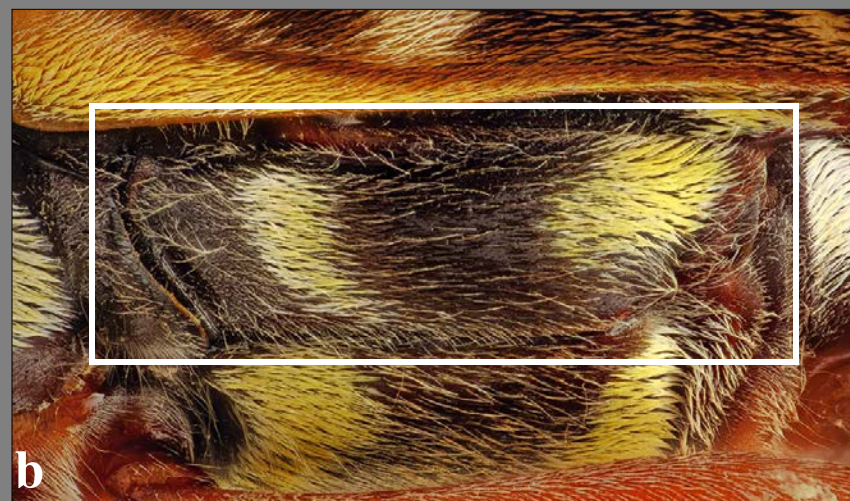
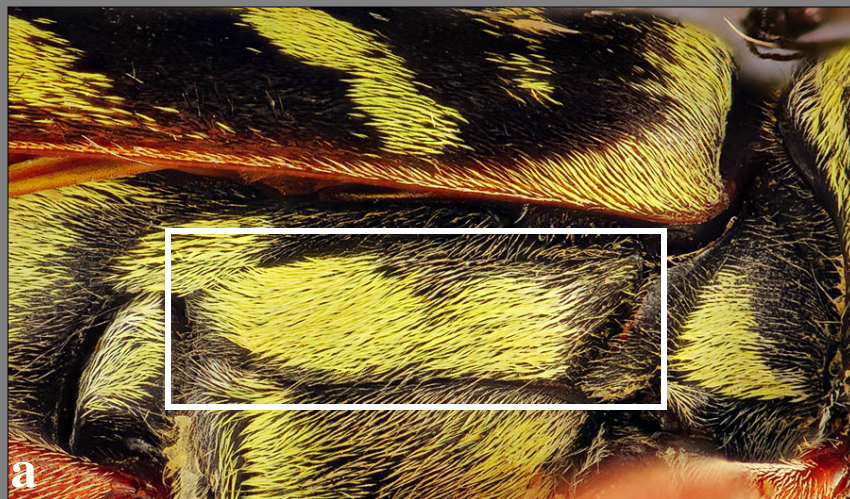




5 (4): Part I

Pale pubescence on metaepisternum continuous or at most separated by a narrow bare spot at middle (a); portrait (c)....*Megacyllene robiniae* (Forster)

Pale pubescence on metaepisternum widely split into anterior and posterior spots by a broad bare area at middle (b).....FTT





5 (4): Part II



*Megacyllene
robiniae* (Forster)

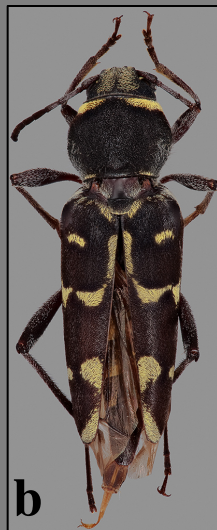




6 (2)

Elytra covering more than half of abdomen (a-e).....7

Elytra covering half or less of abdomen (f-g) or very slender in posterior half, exposing much of the abdomen (h).....FTT

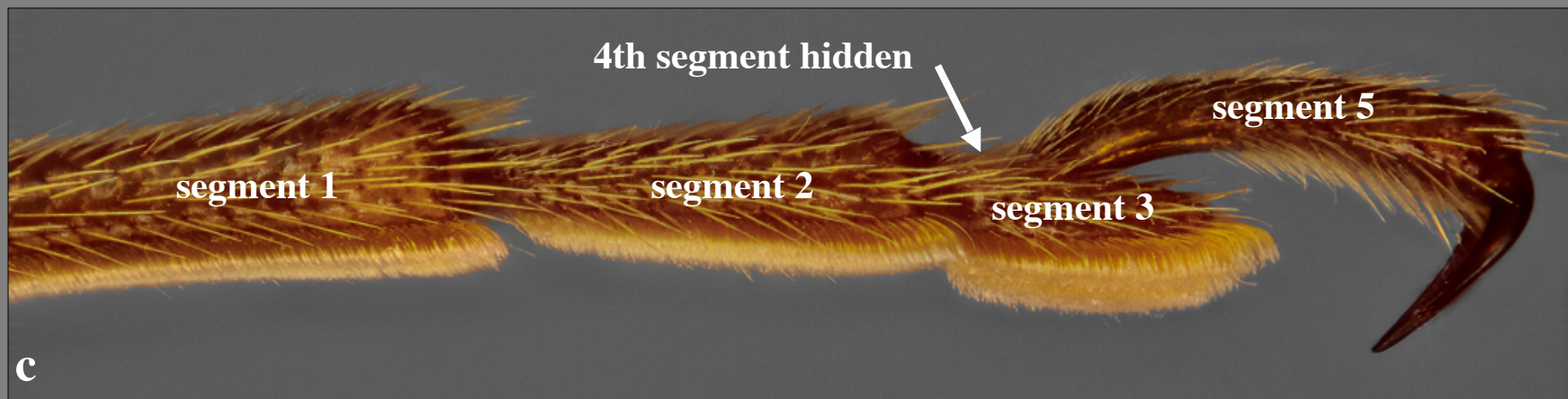
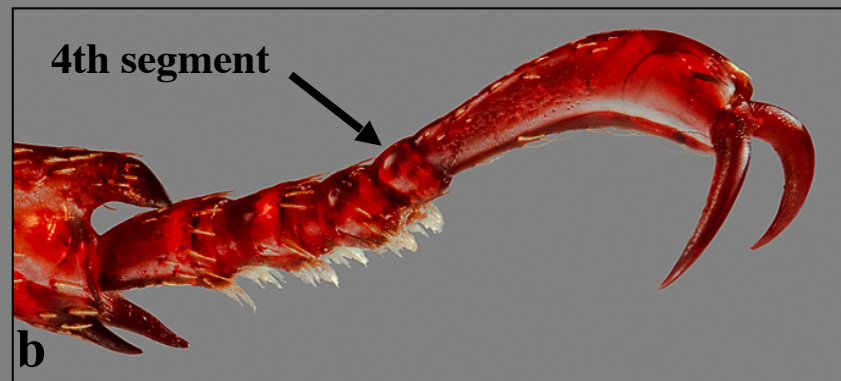
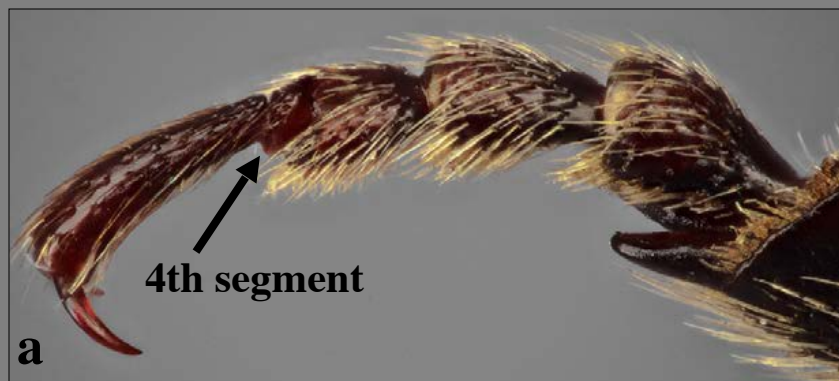




7 (6)

Tarsi with five easily seen segments – the 4th segment is smaller but not hidden within the lobes of the 3rd segment (a-b).....8

Tarsi with only four easily seen segments – the 4th segment is very small and hidden within the lobes of 3rd (c).....9



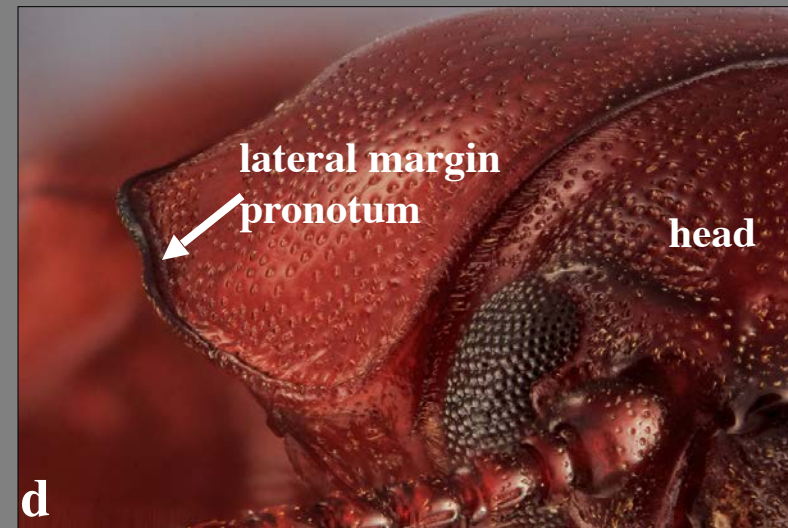
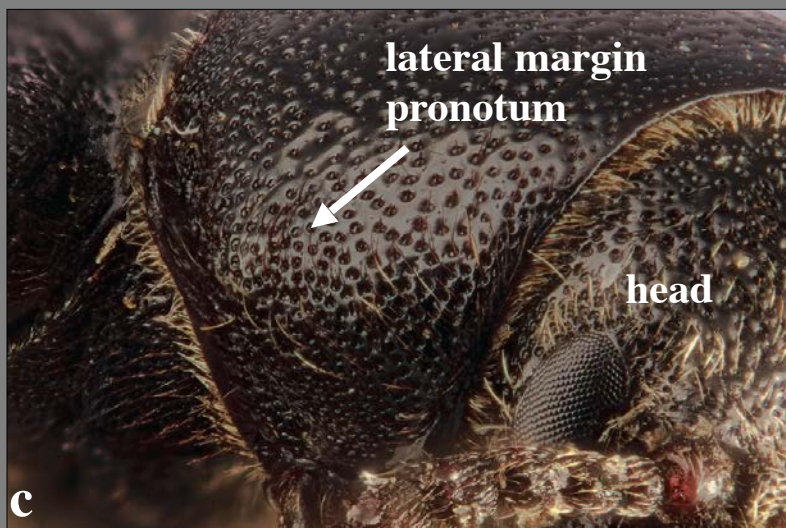
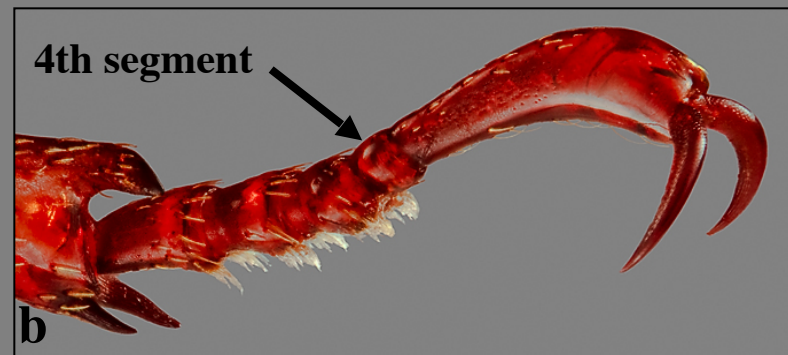
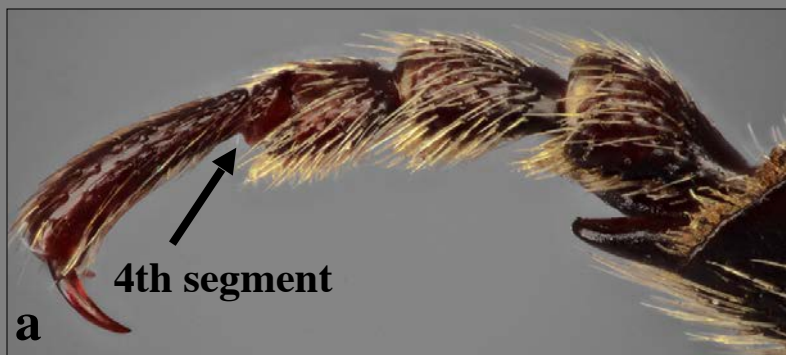


8 (7): Part I

Tarsi with 4th segment small, between lobes of 3rd (a); lateral margins of pronotum without raised ridge (c); portrait (e).....

.....*Neospondylis upiformis* (Mannerheim)

Tarsi with 4th segment larger, not between lobes of 3rd (b); lateral margins of pronotum with raised ridge (d).....FTT





8(7): Part II



Neospondylis upiformis (Mannerheim)

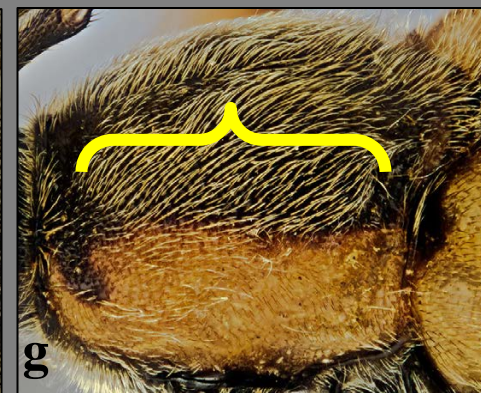
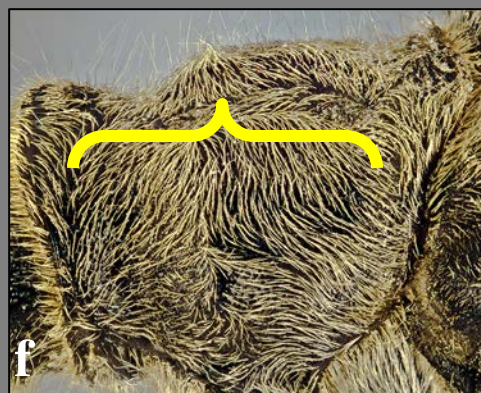
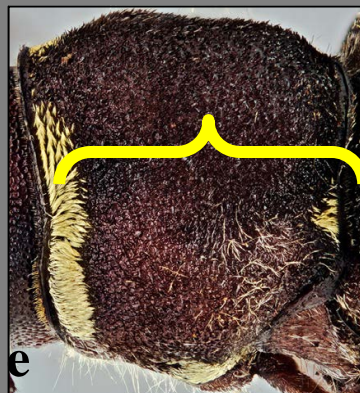
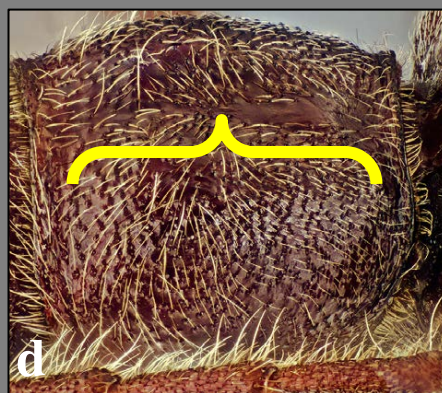
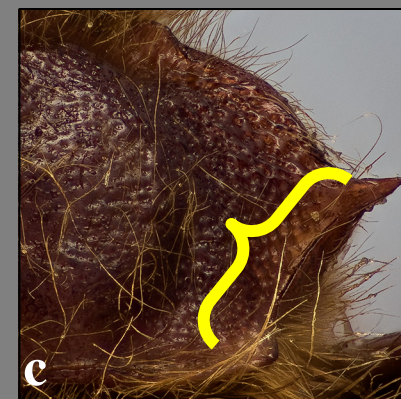
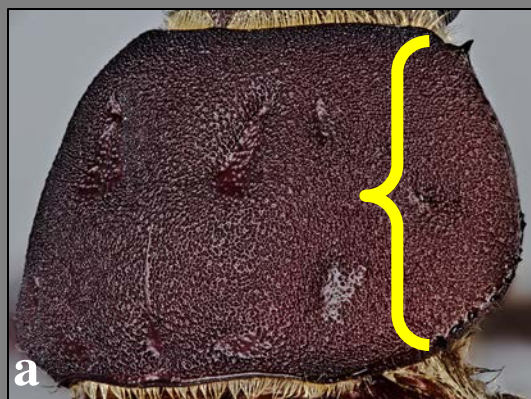




9 (7)

Each lateral margin of pronotum with either a raised ridge over the entire length (a-b) or at least in the posterior half (c).....10

Lateral margins of pronotum without raised ridges (d-g).....16

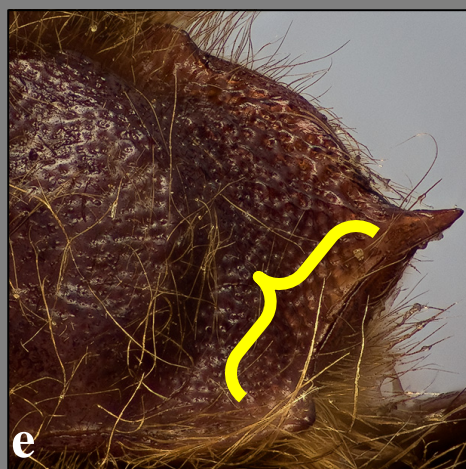
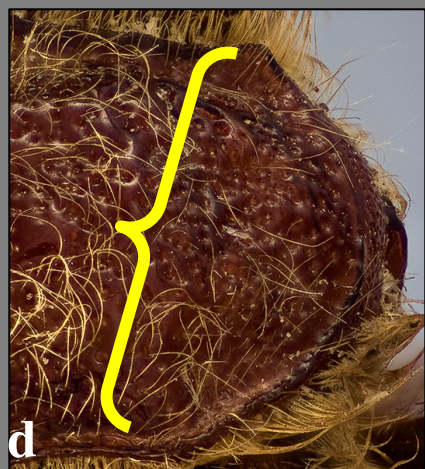
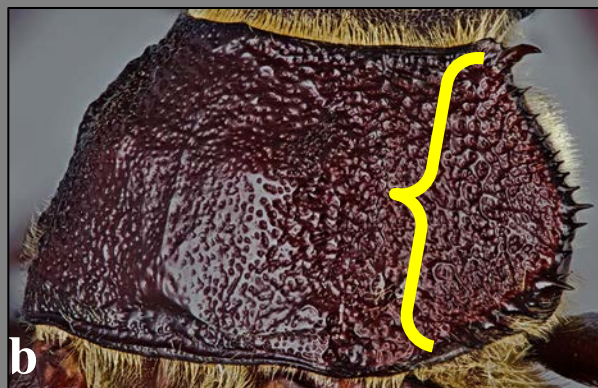
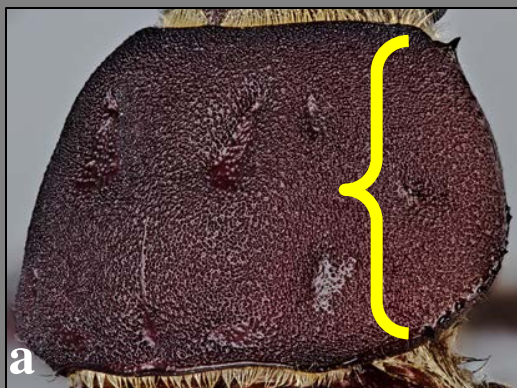




10 (9): Part I

Pronotum with complete lateral margins (a-c) and usually without long dorsal pubescence and usually with at least two spines on each lateral margin (g-j) (some male *Prionus* spp. have long pronotal pubescence and no more than two spines per side).....11

Pronotum with strong lateral margins only in posterior half, margins in anterior half weak at most (d-e), with long dorsal pubescence (f) and with no more than two spines (sometimes none) on each lateral margin (k-m).....FTT



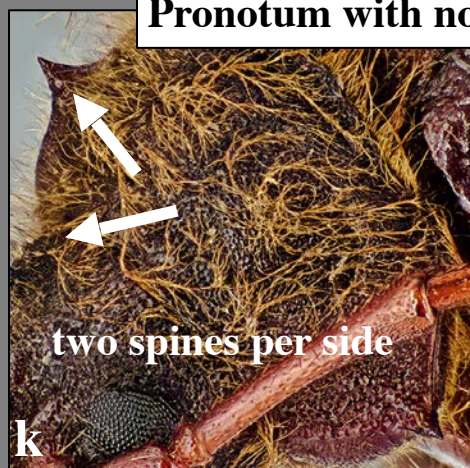


10 (9): Part II

Pronotum with at least two spines on each lateral margin



Pronotum with no more than two spines on each lateral margin

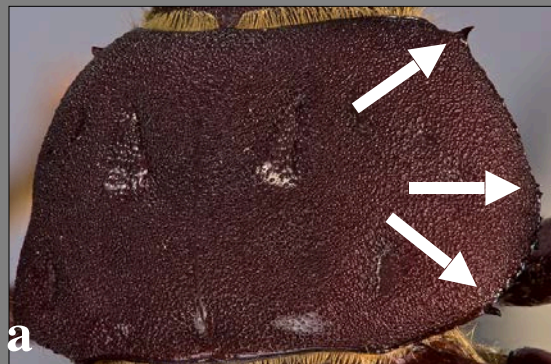




11 (10)

Spines on lateral margins of pronotum small (a-c).....12

Spines on lateral margins of pronotum large (d, e).....13



Pronotum with small spines on lateral margins



Pronotum with large spines on lateral margins



12 (11): Part I

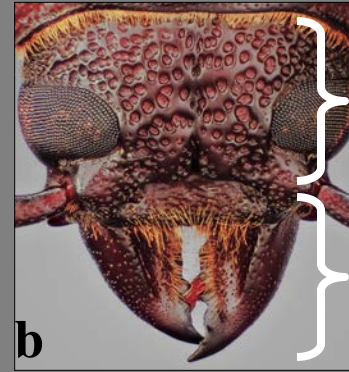
Mandibles much shorter than head (a); spines on lateral margin of pronotum very fine spinules (d, e); portrait (f, g).....*Trichocnemis spiculatus* LeConte

This species is not common in traps but is frequently submitted for identification.

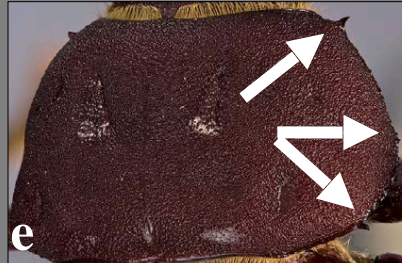
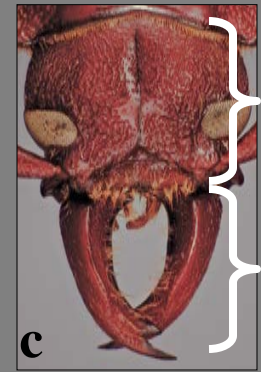
Mandibles as long or longer than head (b, c); spines on lateral margin of pronotum larger (e).....FTT



Mandibles much shorter than head



Mandibles as long or longer than head



Pronotum with very fine spines on lateral margins



Pronotum with larger spines



Begin key



Index

12 (11):

Part II

*Trichocnemis
spiculatus*
LeConte



f. Female



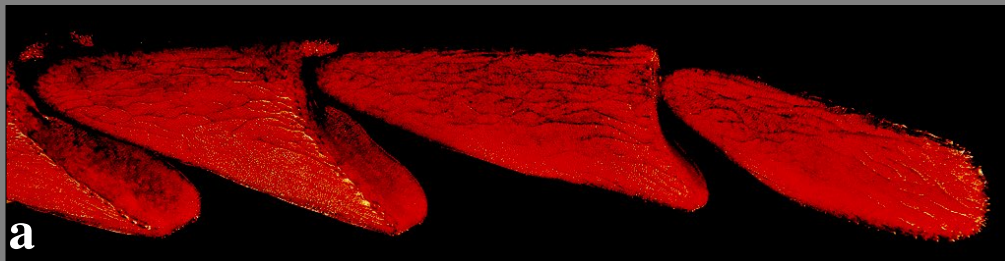
g. Male



13 (11)

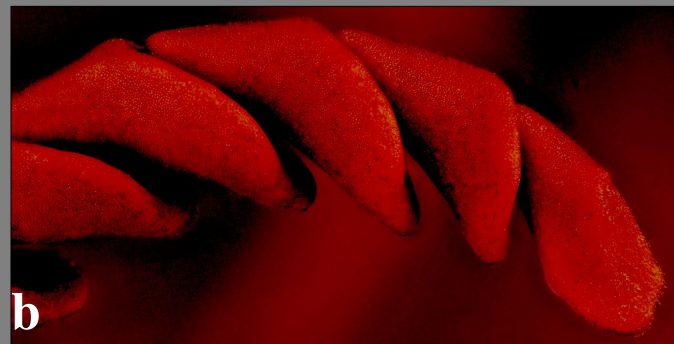
Antennal segment surface comprised of very fine, irregular wrinkles (a)
OR very small pores (b).....14

Antennal segment surface with fine longitudinal ridges (c).....FTT



a

Antennal segments wrinkled or with fine pores



b



c

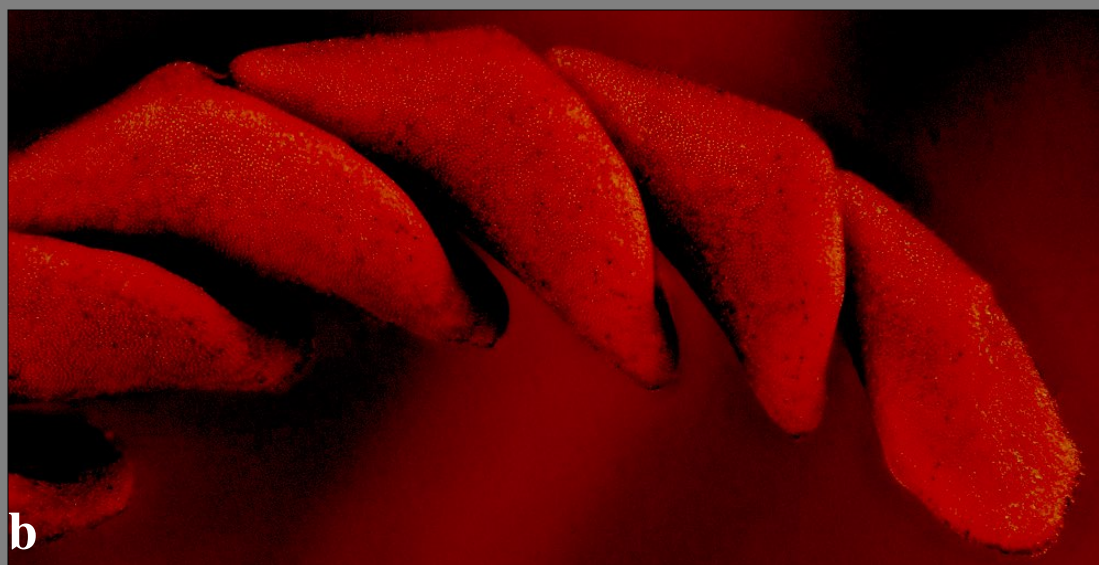
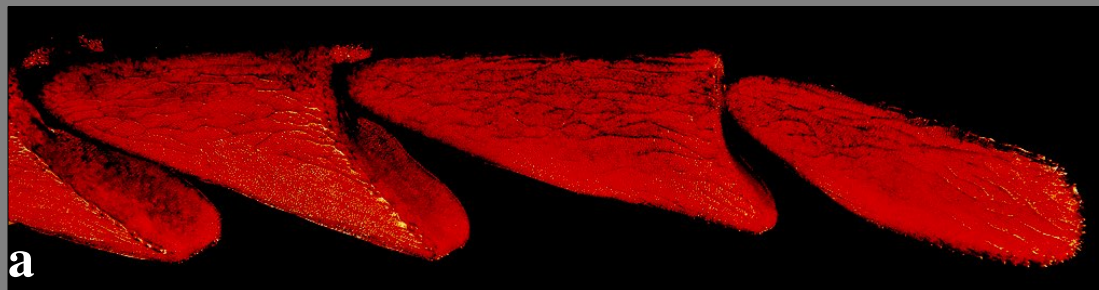
Antennal segments with fine longitudinal ridges



14 (13)

Antennal segments shiny, with network of fine wrinkles - most obvious on outer segments and underneath (a).....15

Antennal segments dull, with no network of wrinkles - most obvious on outer segments and underneath (b).....FTT





15 (14): Part I

Antennae with twelve segments (a).....*Prionus californicus* Motschulsky*

*This species is not common in traps but is frequently submitted for identification. Large, broad specimens from Arizona, Colorado, and New Mexico may be *P. heroicus* Semenov.

Antennae with thirteen segments (b).....FTT





Begin key



Index

15 (14): Part II

Prionus
californicus
Motschulsky



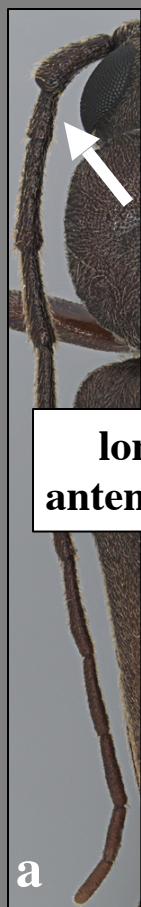
c



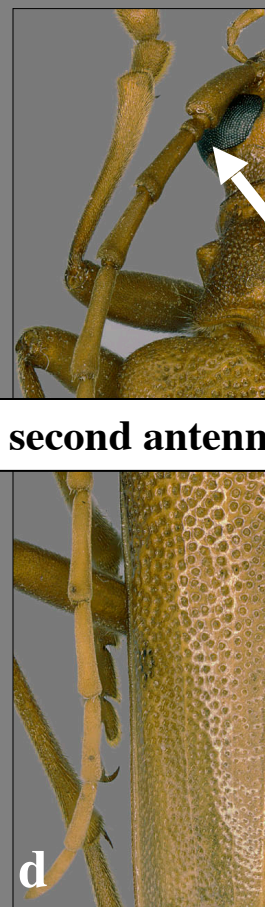
16 (9): Part I

Second antennal segment (indicated by arrow) almost half as long as scape or longer (a-b); brown or black beetles without metallic or brightly contrasting colors (f-j).....17

Second antennal segment much less than half as long as scape (c-e); body often with metallic or brightly contrasting colors (k-o).....27



long second
antennal segment



short second antennal segment



16 (9): Part II

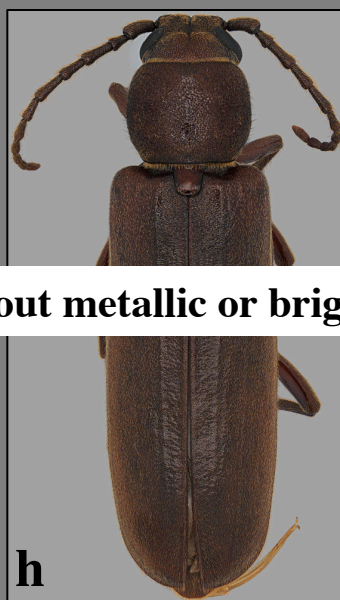


f



g

Photo by Steve Valley
Oregon
Department
of Agriculture



h



i



j

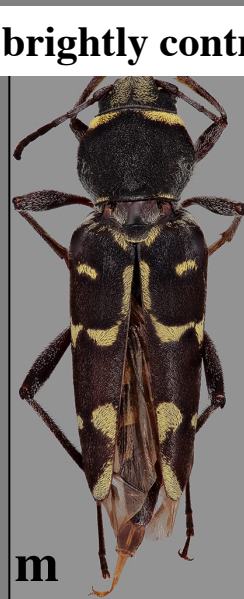
Brown or black beetles without metallic or brightly contrasting coloration



k



l



m



n

Beetles with metallic or brightly contrasting coloration



o

Photo by Steve Valley
Oregon
Department
of Agriculture



Begin key

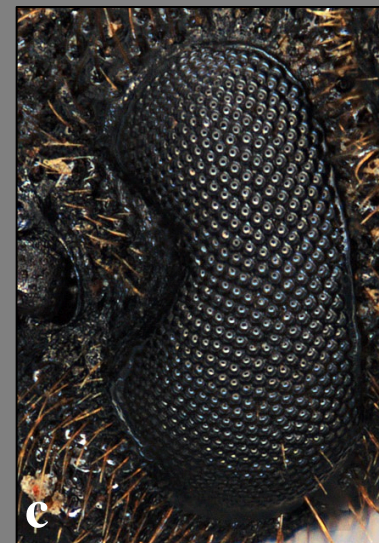
17 (16)

Eyes completely divided into separate dorsal and ventral lobes (a)....18

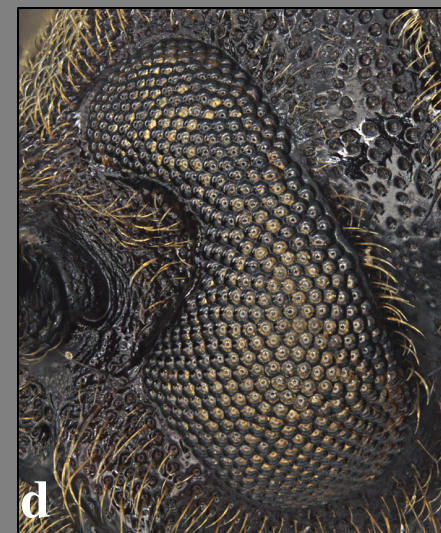
Eyes not divided into separate dorsal and ventral lobes (b-d).....22



completely divided eye



emarginate,
but not
divided eyes

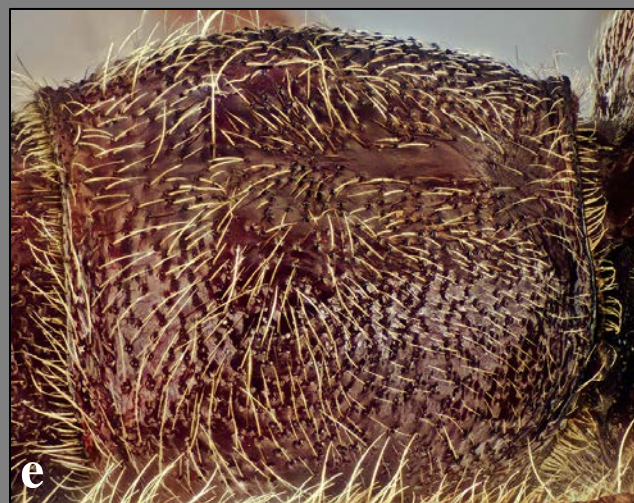




18 (17)

Dorsum of pronotum punctate and/or with a few irregular large granules (a-d).....19

Dorsum of pronotum with many small granules (e).....FTT





19 (18)

Dorsum of pronotum with irregularly distributed punctures, often with shiny and smooth bare patches (a-c).....20

Dorsum of pronotum finely, densely, more-or-less uniformly punctate (d).....FTT

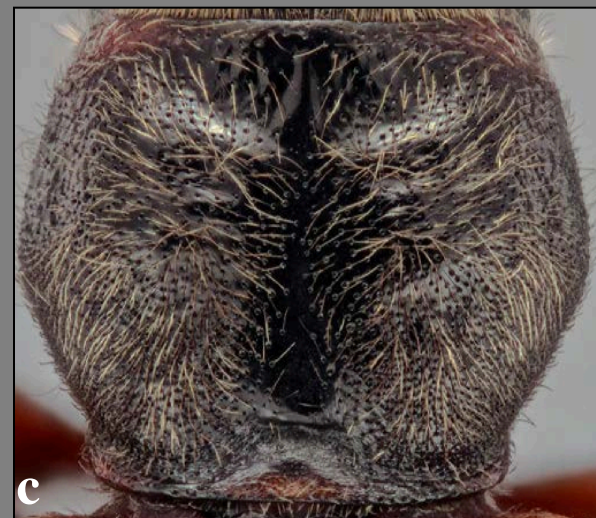




20 (19): Part I

Dorsum of pronotum roughly, rugosely punctate (a); portrait (d)...
.....*Tetropium fuscum* (Fabricius)*

Dorsum of pronotum not roughly, rugosely punctate (b-c).....21





20 (21): Part II



Tetropium fuscum (Fabricius)*





21 (20): Part I

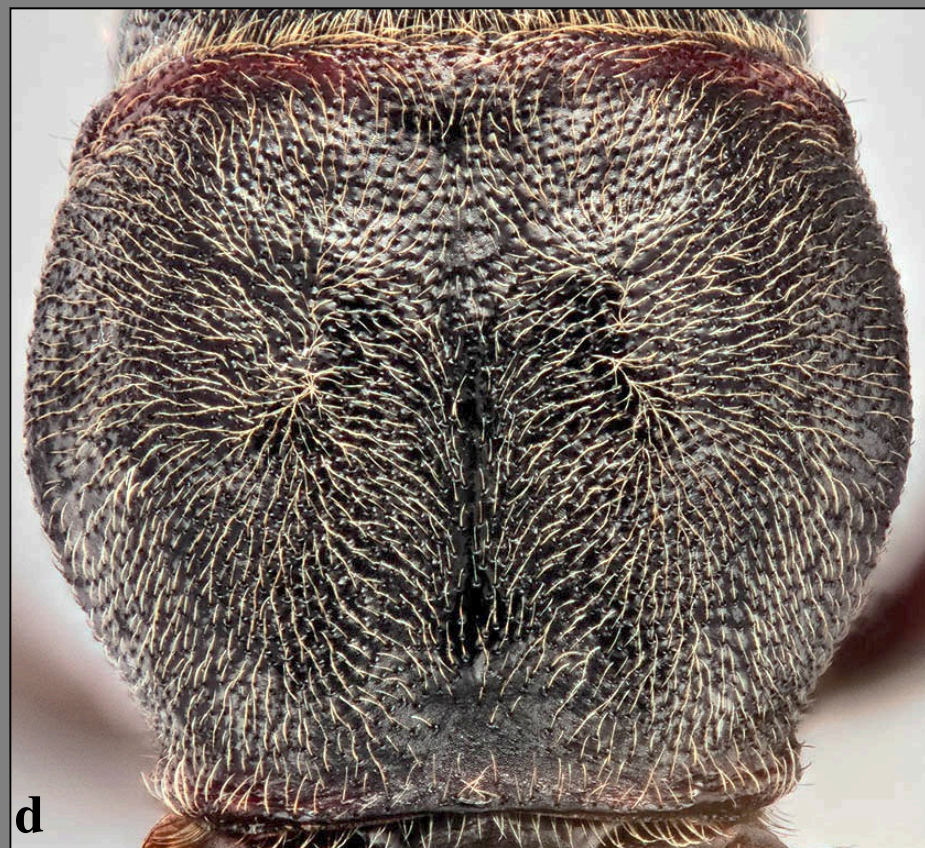
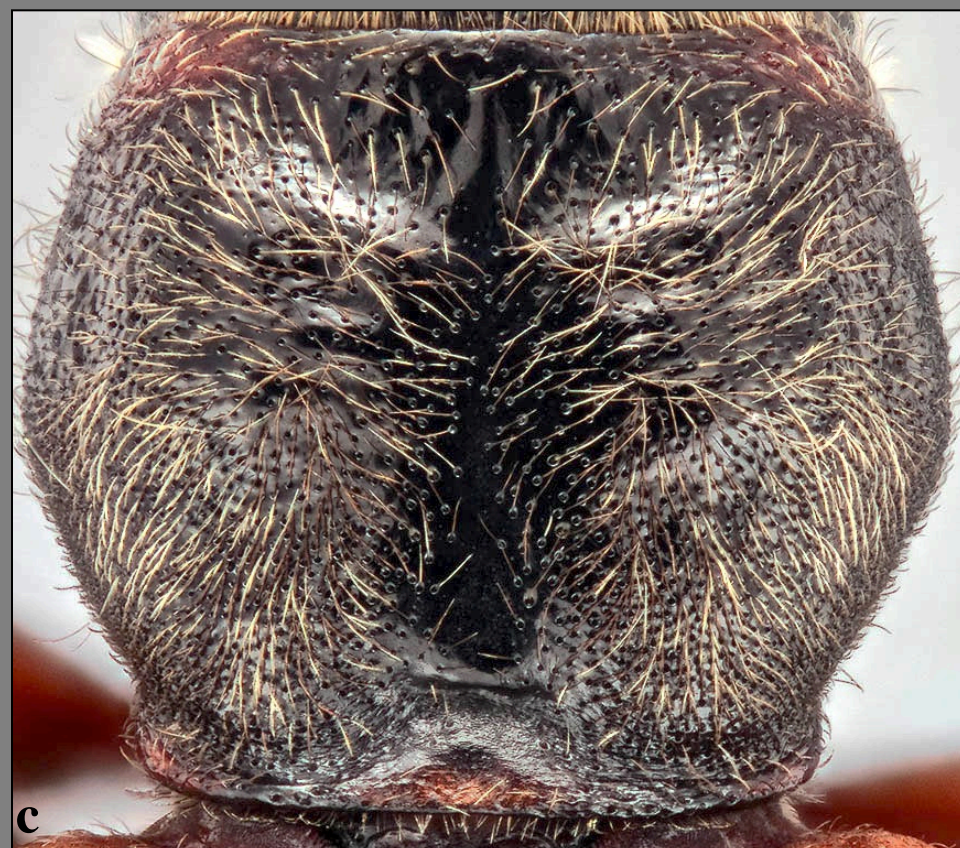
Dorsum of pronotum with punctures in central area larger, more widely spaced, not densely and rugosely punctate in lateral (especially posterolateral) areas, shiny between punctures (a).....*Tetropium castaneum* (Linnaeus)*



21 (20): Part II

Dorsum of pronotum with smaller and more densely spaced punctures, very dense and more-or-less rugose in lateral (especially posterolateral) areas, dull between punctures in latter regions....*Tetropium cinnamopterum* Kirby

*These pronotal characters can be subtle and variable. Any specimens keying here should be forwarded to a taxonomist as a precaution.





21 (20): Part III



Tetropium castaneum (Linnaeus)*





21 (20): Part IV



Tetropium cinnamopterum Kirby





22 (17): Part I

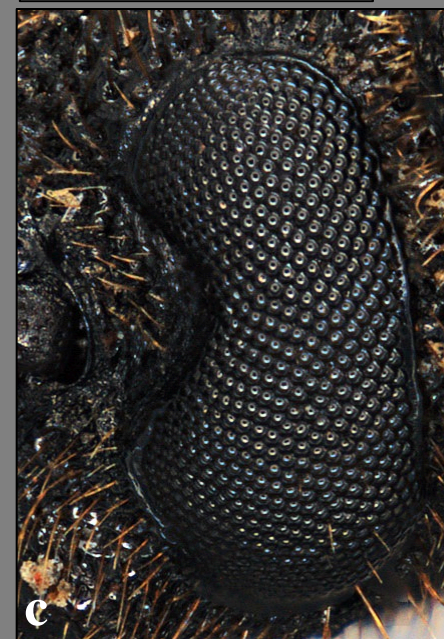
Eyes deeply emarginate (a); portrait (d)....*Megasemum asperum* (LeConte)

Eyes only shallowly emarginate (b-c).....23

deeply emarginate eye



shallowly
emarginate eyes





22 (17): Part II

Megasemum asperum (LeConte)



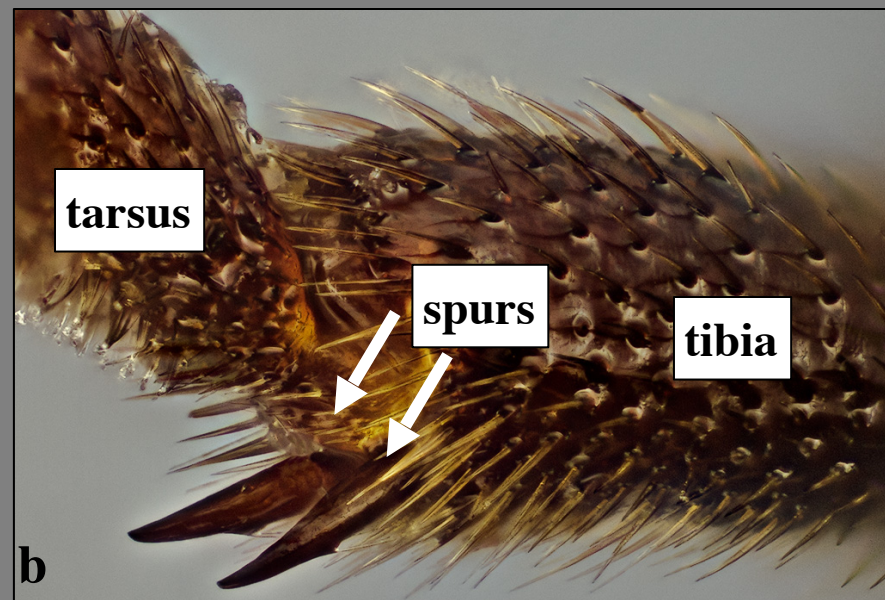
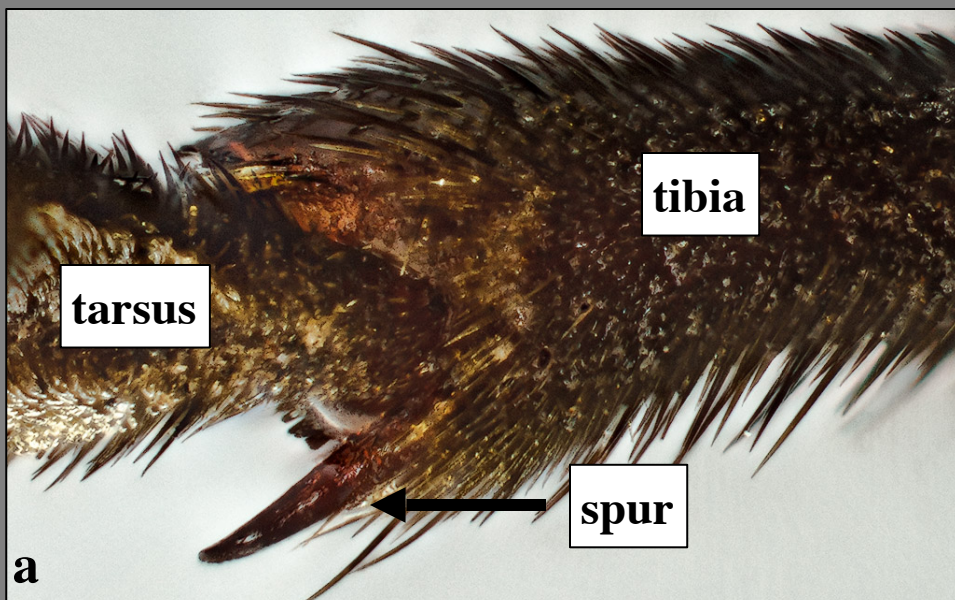
d



23 (22)

Each protibia with one spur at the apex (a).....24

Each protibia with two spurs at the apex (b).....26





24 (23): Part I

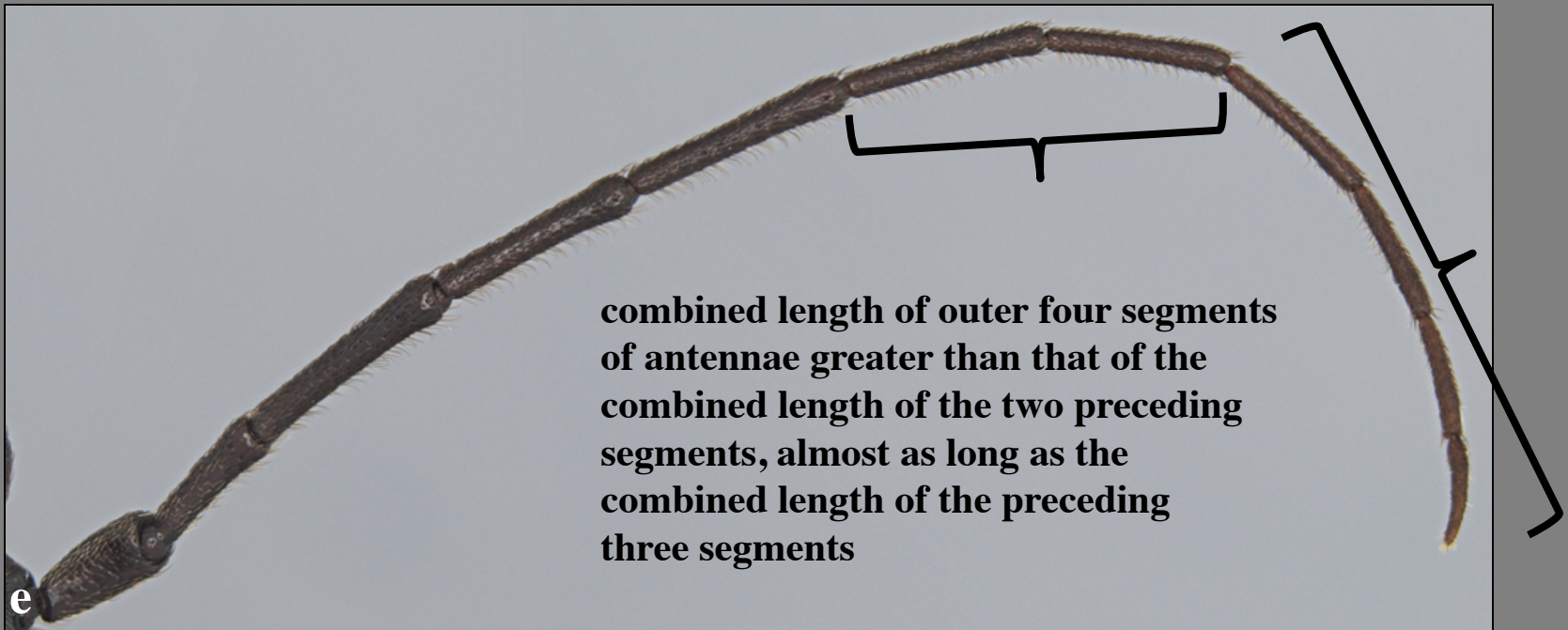
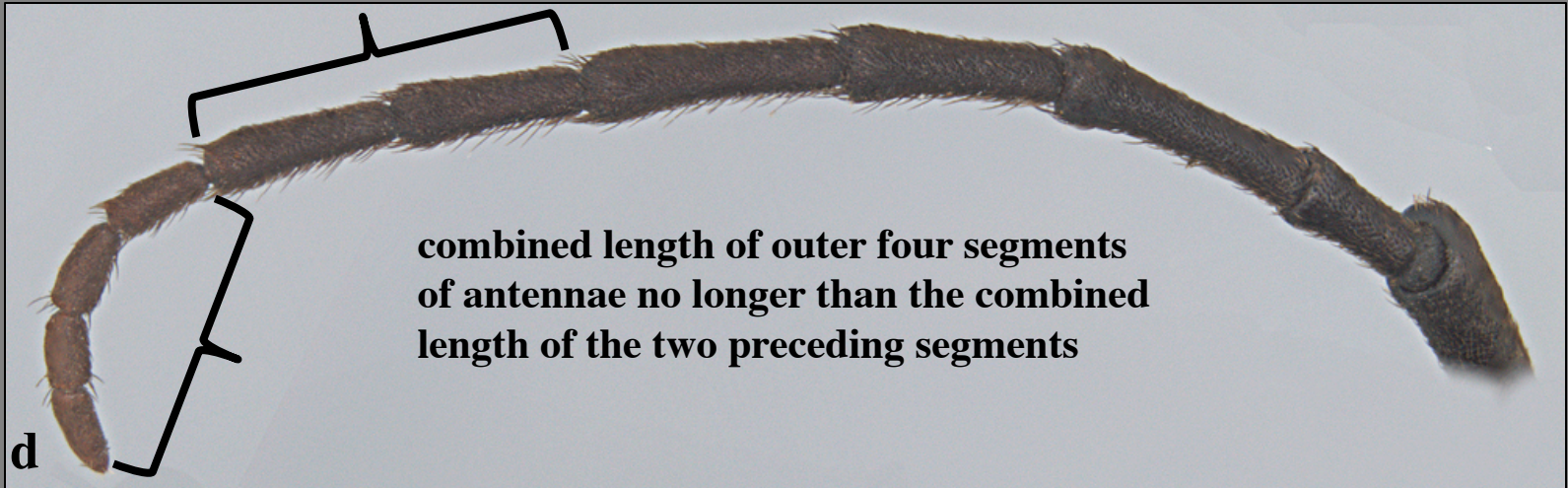
Pronotum distinctly wider than long, with angulate sides (a); combined length of outer four segments of antennae no longer than the combined length of the two preceding segments (d); portrait (f).....
.....*Arhopalus asperatus* (LeConte)

Pronotum about as wide as long, with rounded sides (b-c); combined length of outer four segments of antennae greater than that of the combined length of the two preceding segments and almost as long as the combined length of the preceding three segments (e).....25





24 (23): Part II





24 (23): Part III



Arhopalus asperatus (LeConte)



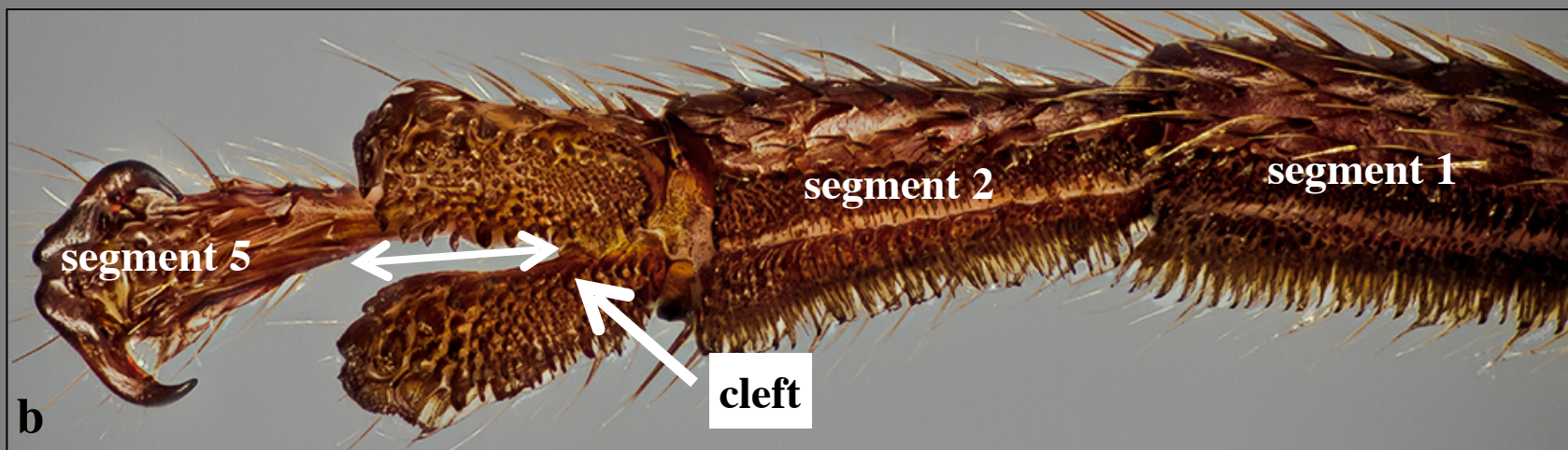
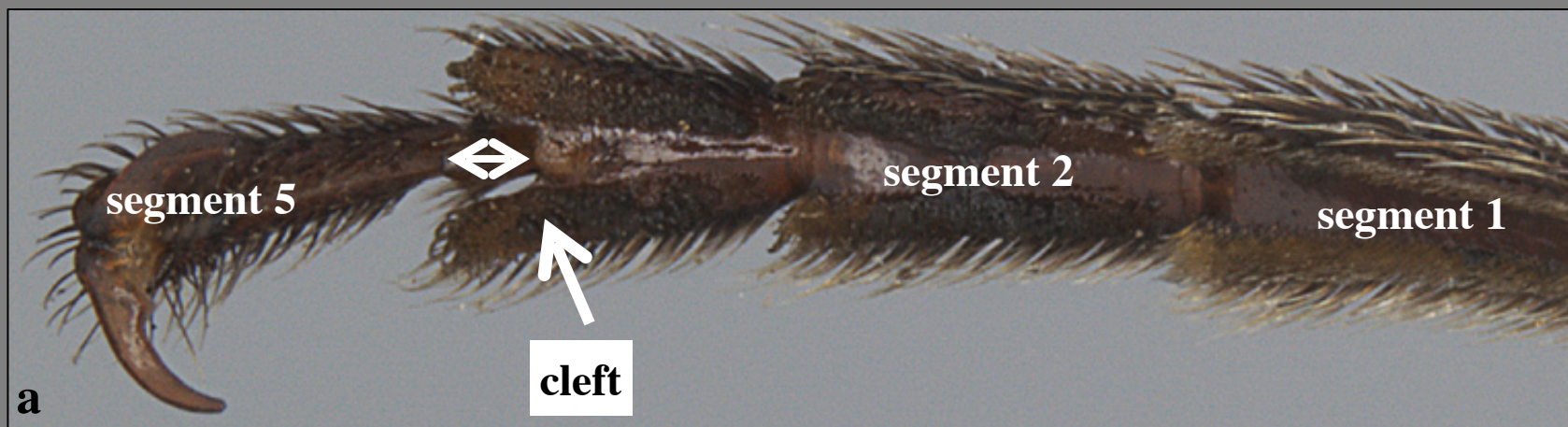
f



25 (24): Part I

Third segment of metatarsus cleft for no more than about half its length (best seen from a ventral position) (a); portrait (c)...*Arhopalus productus* (LeConte)

Third segment of metatarsus cleft almost its entire length (b).....FTT





25 (24): Part II



Arhopalus productus (LeConte)





26 (23): Part I

Basal antennal segments broad, with antennal segments becoming narrower toward the apex (a); portrait (c)...*Asemum nitidum* LeConte

Basal antennal segments at most slightly broader than the following segments, antennae overall narrow and cylindrical throughout their length (b).....FTT





26 (24): Part II

Asemum nitidum LeConte





27 (16): Part I

Apex of terminal palpi tapering (a); frons (in profile) ~vertical to posteriorly directed (c).....28

Apex of terminal palpi exanded and broadly rounded or blunt (b); frons subvertical to anteriorly oblique (d).....39



terminal palpi tapering to apex



terminal palpi broad at apex

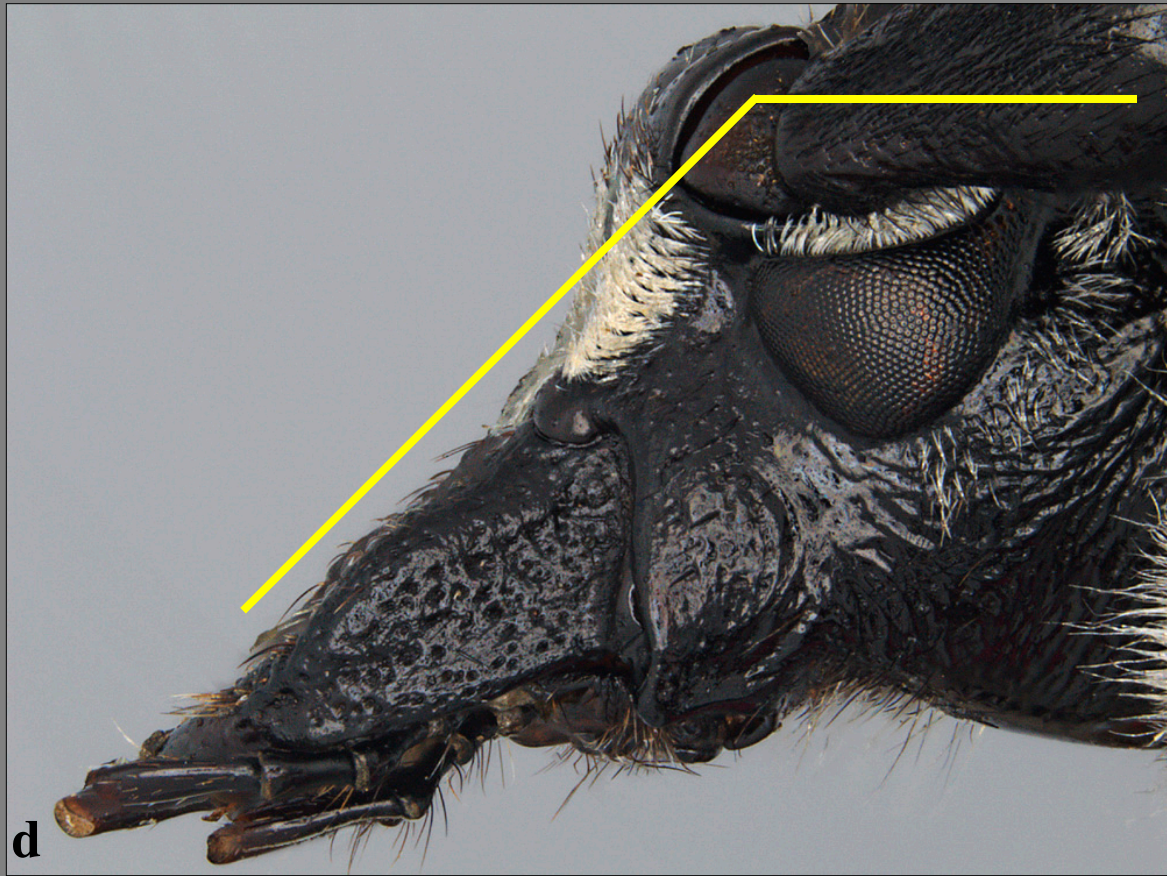


27 (16): Part II

frons ~vertical



frons anteriorly oblique





28 (27): Part I

Each side of pronotum with tubercles or spines (a-e).....28A

Each side of pronotum convex but without tubercles or spines (f-g).....FTT



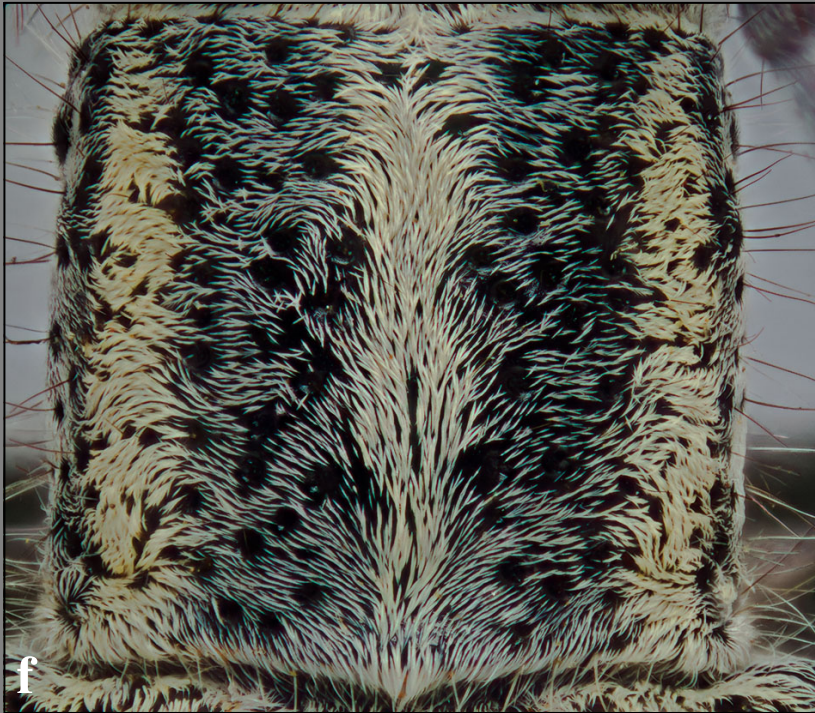
pronota with lateral spines or tubercles





28 (27): Part II

pronota without lateral spines or tubercles





28A (28)

Horizontal welt on scape (a).....29



No horizontal welt on scape (b).....37

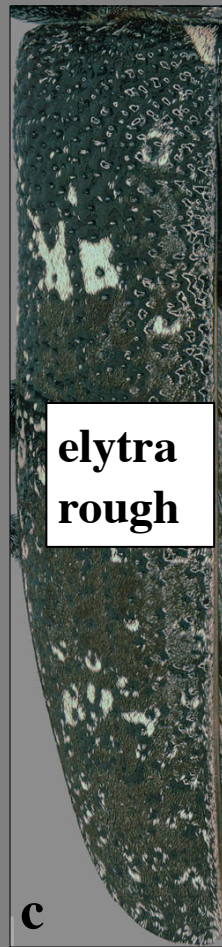




29 (28)

Elytra either entirely smooth (a) or granulate only in anterior third (b); scutellum may lack pubescence (d);.....29A

Elytra rugose throughout length (c); scutellum usually with at least some pale pubescence (e-f).....30

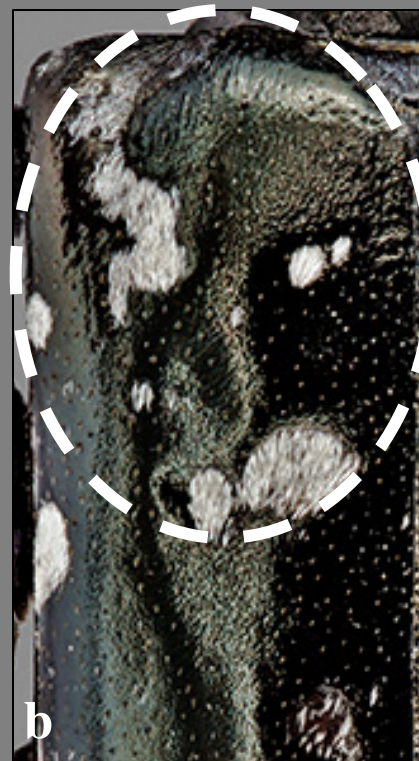




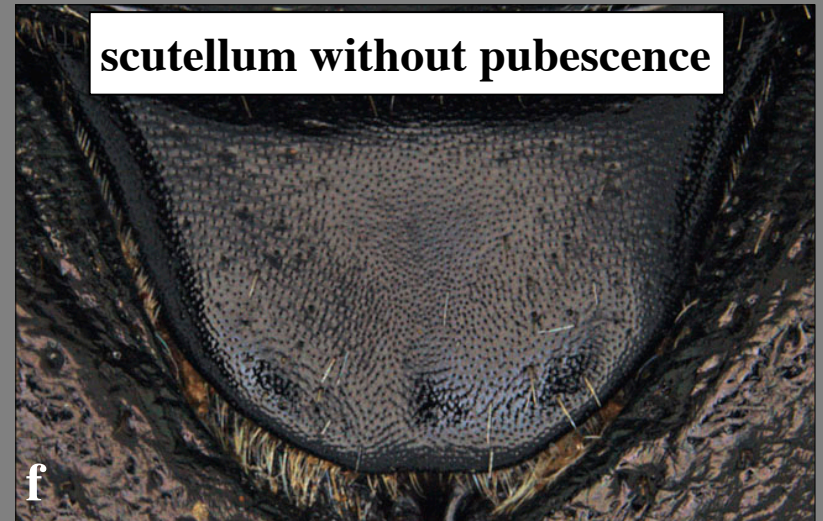
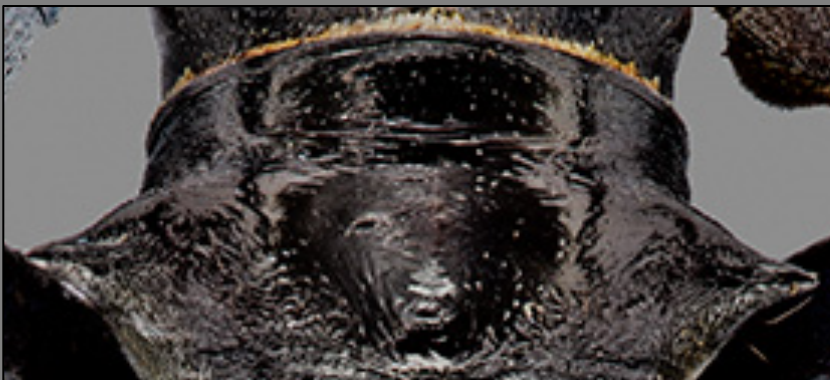
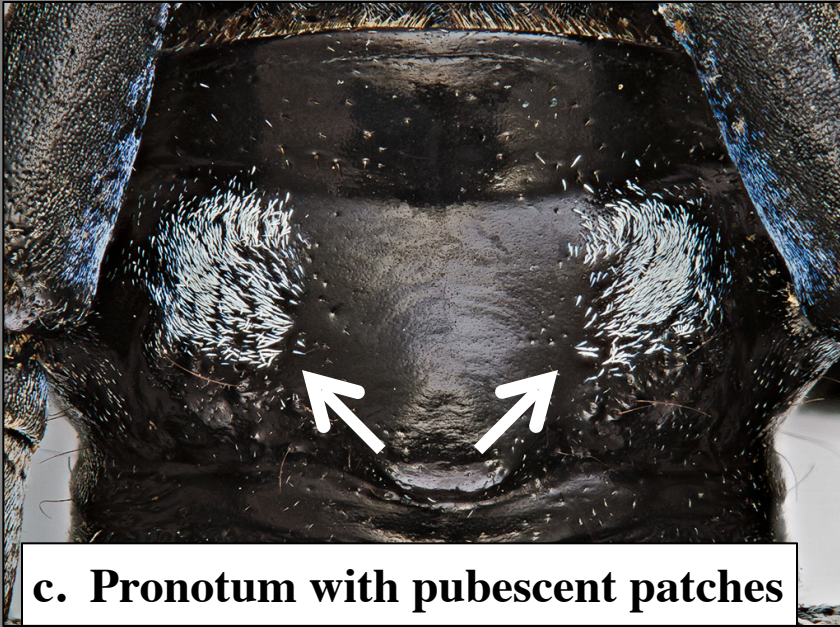
29A (29): Part I

Elytra with granules in anterior third (a); pronotum with a patch of pale pubescence on either side of middle (c); scutellum with dense pubescence (e); portrait (g).....*Anoplophora chinensis* Forster* - Citrus longhorned beetle

Elytra entirely smooth (b); pronotum without patches of pale pubescence (d); scutellum without pubescence (f); portraits (h-i).....*Anoplophora glabripennis* (Motschulsky)* - Asian longhorned beetle



29A (29): Part II





Begin key



Index

29A (29): Part III

Anoplophora
Chinensis
Forster*



g. Male



Begin key

29A (29): Part IV



Index

Anoplophora glabripennis (Motschulsky)*

***Important note:**

The number and size of spots on the elytra can vary. Also, a yellow-spotted variety exists in Asia, although it is not known from North America.



h. Female



i. Male



30 (29): Part I

Elytral apices with small projections at suture (a); portrait (d).....*Monochamus clamator* (LeConte)

Elytral apices broadly rounded to suture (b) or slightly truncate (c).....31

apices with small
projections at suture

apices rounded

apices slightly truncate





30 (29): Part II



Monochamus clamator (LeConte)



d

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Oregon
Department
of Agriculture



31 (30)

Base color of elytra reddish brown (a-b).....32

Base color of elytra black (c-d).....33



a



b

base color of elytra black



c



d

base color of elytra reddish brown



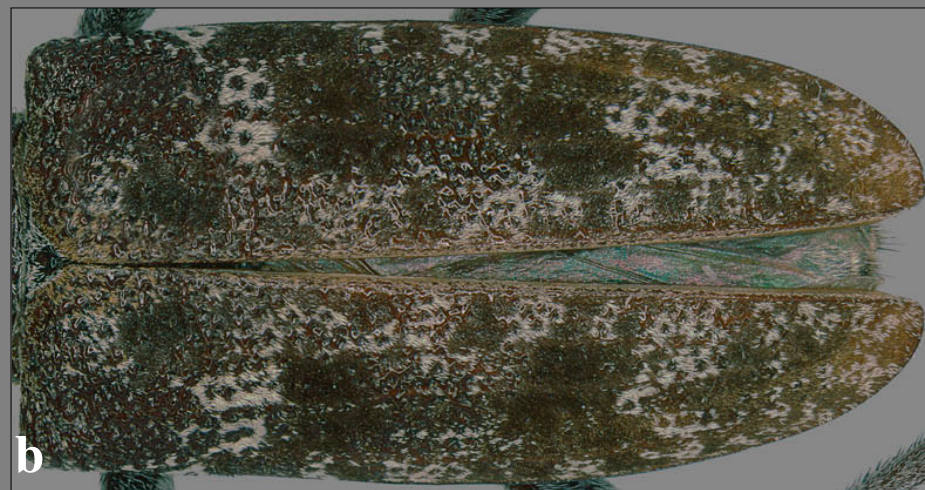
32 (31): Part I

Elytra with interrupted stripes of black and white pubescence alternating with orange pubescent stripes (a); scutellum densely and completely covered by pubescence (c); pronotum with orange pubescence (e); portrait (g).....*Monochamus alternatus* Hope*

Elytra with interrupted bands of pubescence that is only brown and white (b); scutellum mostly bare of pubescence (d); pronotum with creamy or yellowish pubescence (f); portrait (h).....*Monochamus obtusus* Casey



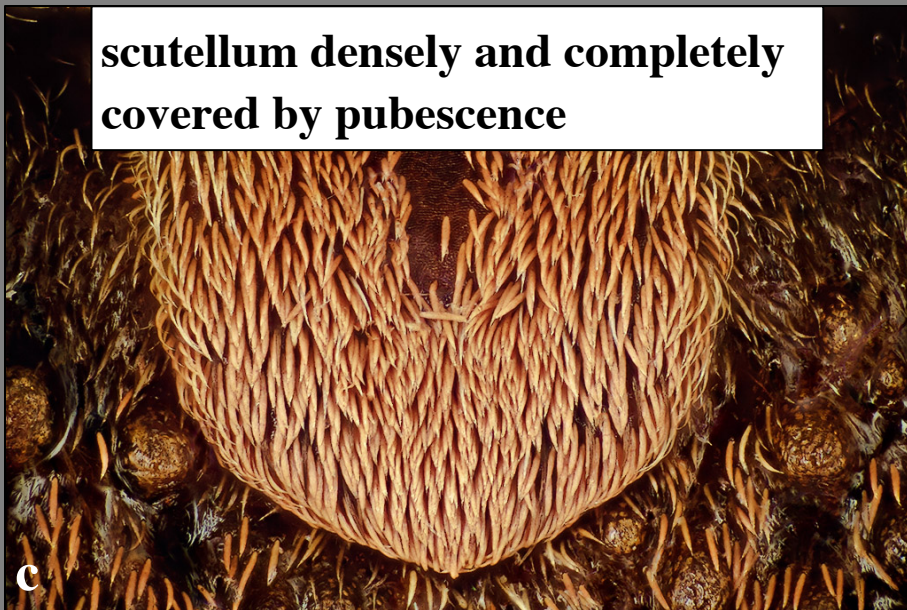
elytra with interrupted stripes of black and white pubescence alternating with orange pubescent stripes



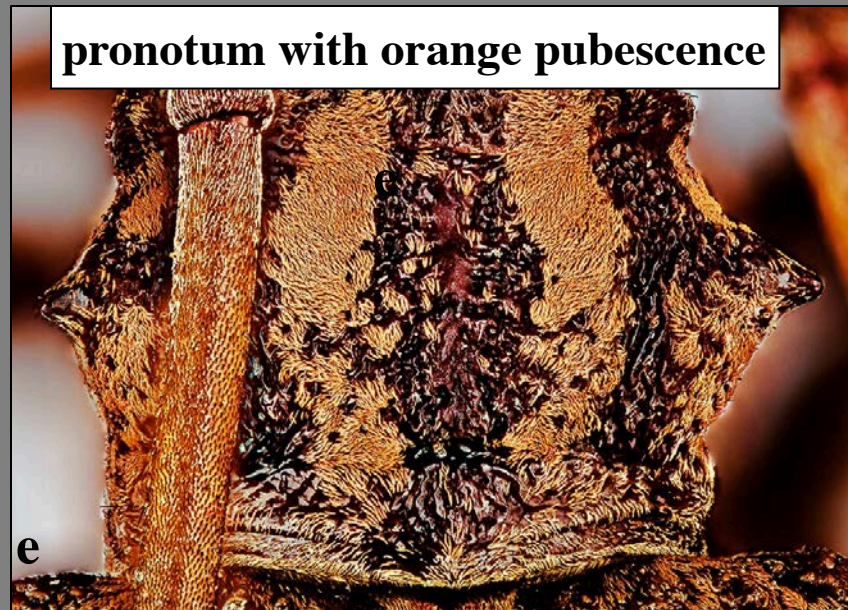
elytra with interrupted bands of pubescence that is only brown and white

32 (31): Part II

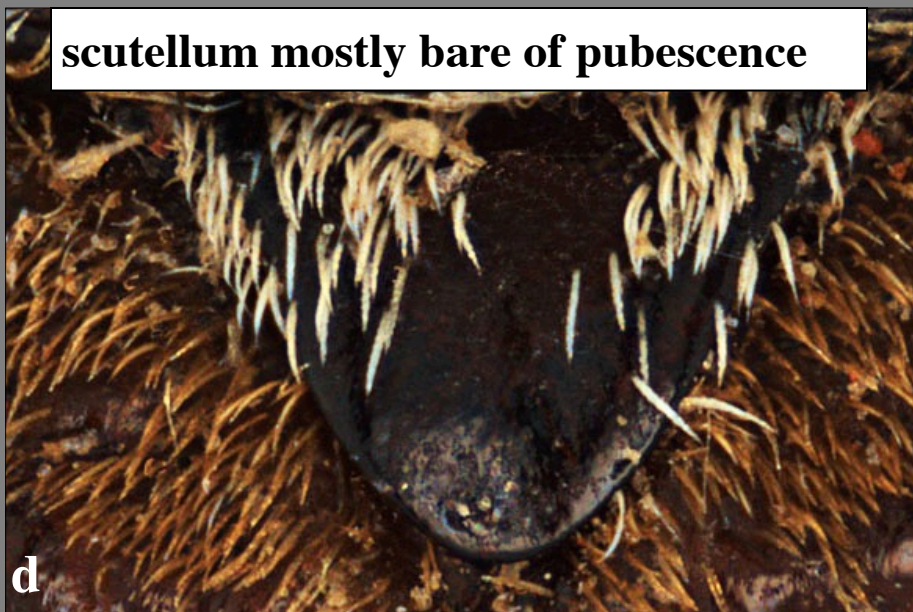
scutellum densely and completely covered by pubescence



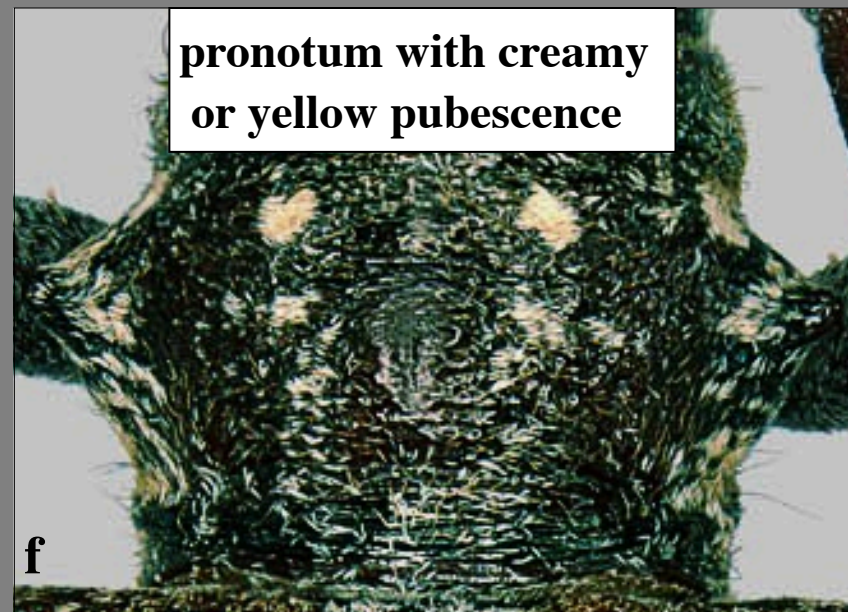
pronotum with orange pubescence



scutellum mostly bare of pubescence



pronotum with creamy or yellow pubescence





32 (31): Part III



Monochamus alternatus Hope*





32 (31): Part IV

Monochamus obtusus Casey



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of Agriculture

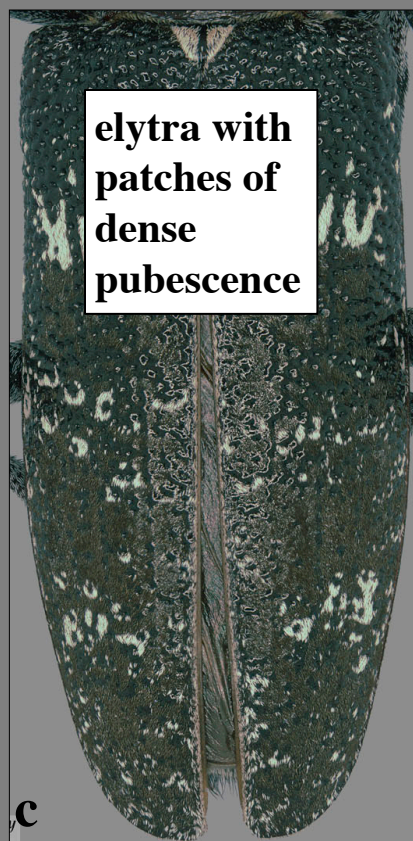
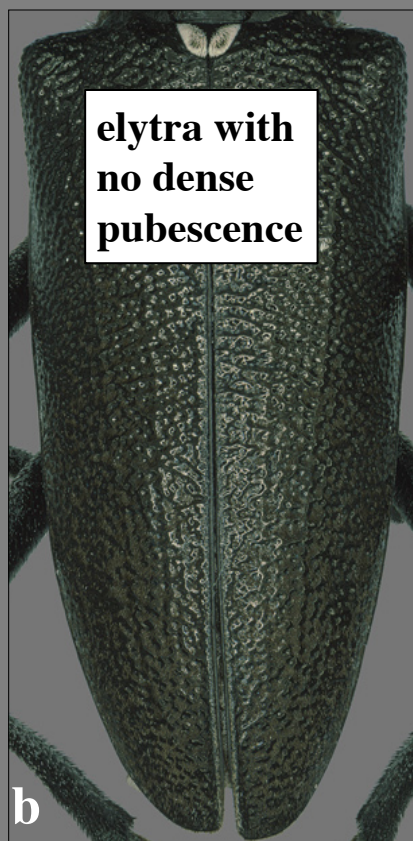
h



33 (31): Part I

Posterior quarter of each elytron with even coat of dense, fine pubescence (a);
scutellum densely and completely covered by pubescence (d); portraits (f-g).....
.....*Monochamus urussovii* (Fischer)

Elytra without evenly dense, fine pubescence (b-c), although there may be patches of
dense pubescence (c); scutellum may be densely and completely covered by
pubescence or with a bare anterior spot or narrow bare median line (e).....34





33 (31): Part II

Monochamus urussovii (Fischer)





34 (33): Part I

Scutellum completely covered by dense pubescence (a); elytra with more evenly distributed, sparse, semi-erect, relatively long, curved pubescence (easily seen along lateral margins) (c); portrait (e).....*Monochamus sartor* (Fabricius)*

Scutellum with a bare anterior spot and/or a narrow bare median line (b); elytra with unevenly distributed, prostrate, short pubescence (d).....35





34 (33): Part II





Begin key

34 (33): Part II



Index

Monochamus sartor (Fabricius)*



e



Begin key

35 (34): Part I

Elytra with distinct, deeply impressed, and large punctures only in anterior quarter, punctures in posterior quarter small, shallow, and sparse (a); portrait (c).....*Monochamus saltuarius* Gebler*

Elytra with distinct, deeply impressed, and large punctures throughout length (b).....36





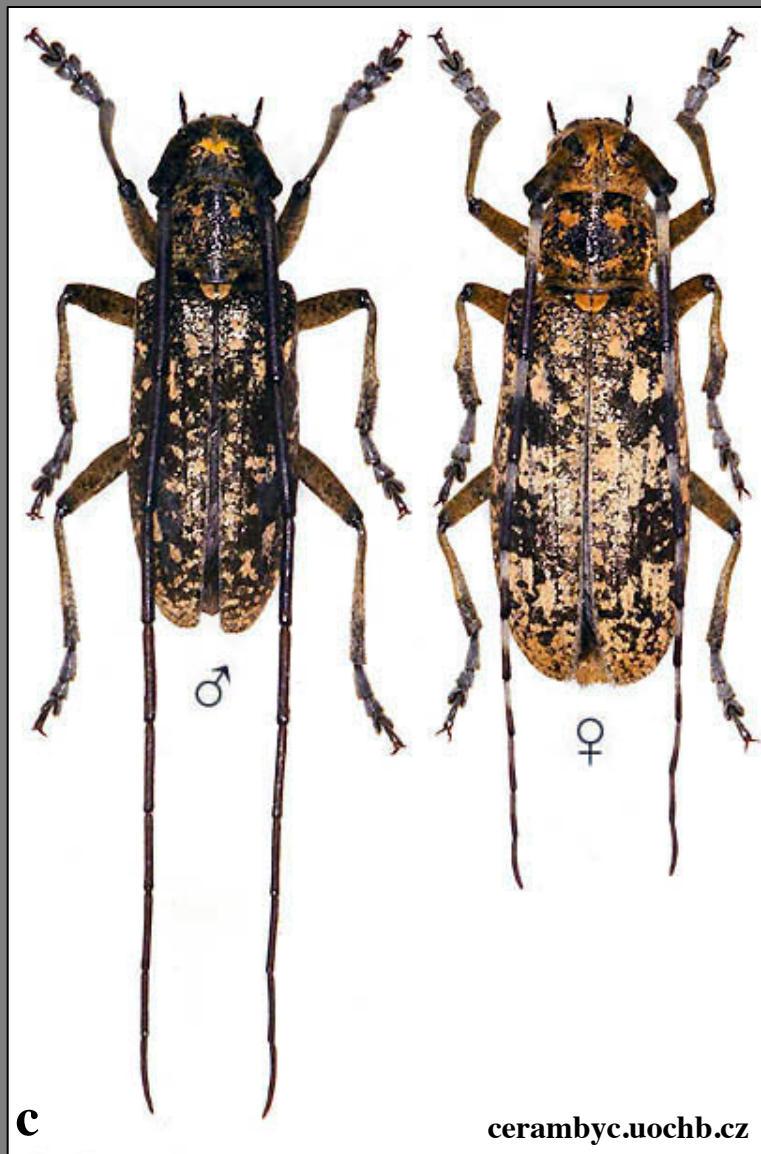
Begin key



Index

35 (34): Part II

Monochamus saltuarius Gebler*



C

cerambyc.uochb.cz



36 (35): Part I

Elytra with large punctures separated by shiny ridges throughout elytral length (a); portraits (c-d).....*Monochamus scutellatus oregonensis* LeConte

Elytra with large punctures separated by shiny ridges almost completely confined to anterior half, punctures in posterior half smaller and not separated by shiny ridges (this characteristic is most easily assessed on either side of the suture) (b); portraits (e-f)..... *Monochamus sutor* (Linnaeus)*





Begin key



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36 (35): Part II

Monochamus scutellatus oregonensis LeConte



Photo by Steve Valley
Oregon
Department
of Agriculture

c. Female



Photo by Steve Valley
Oregon
Department
of Agriculture

d. Male



36 (35): Part III



Monochamus sutor (Linnaeus)*





36 (35): Part III



Monochamus sutor (Linnaeus)*

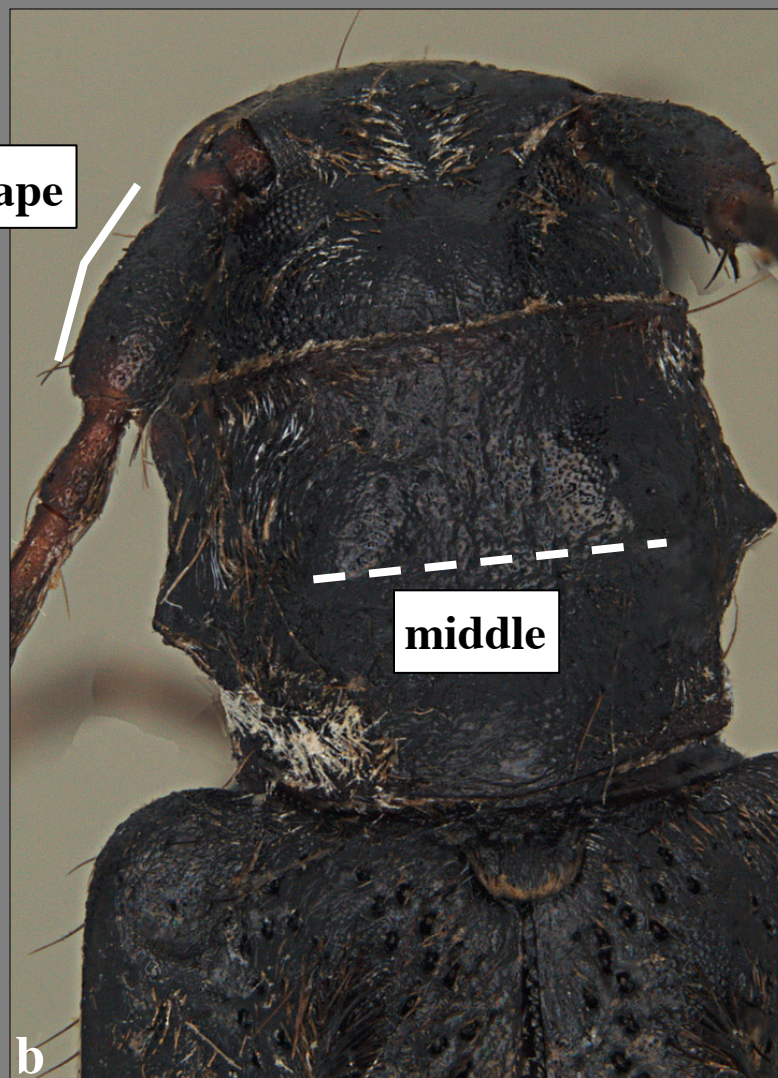
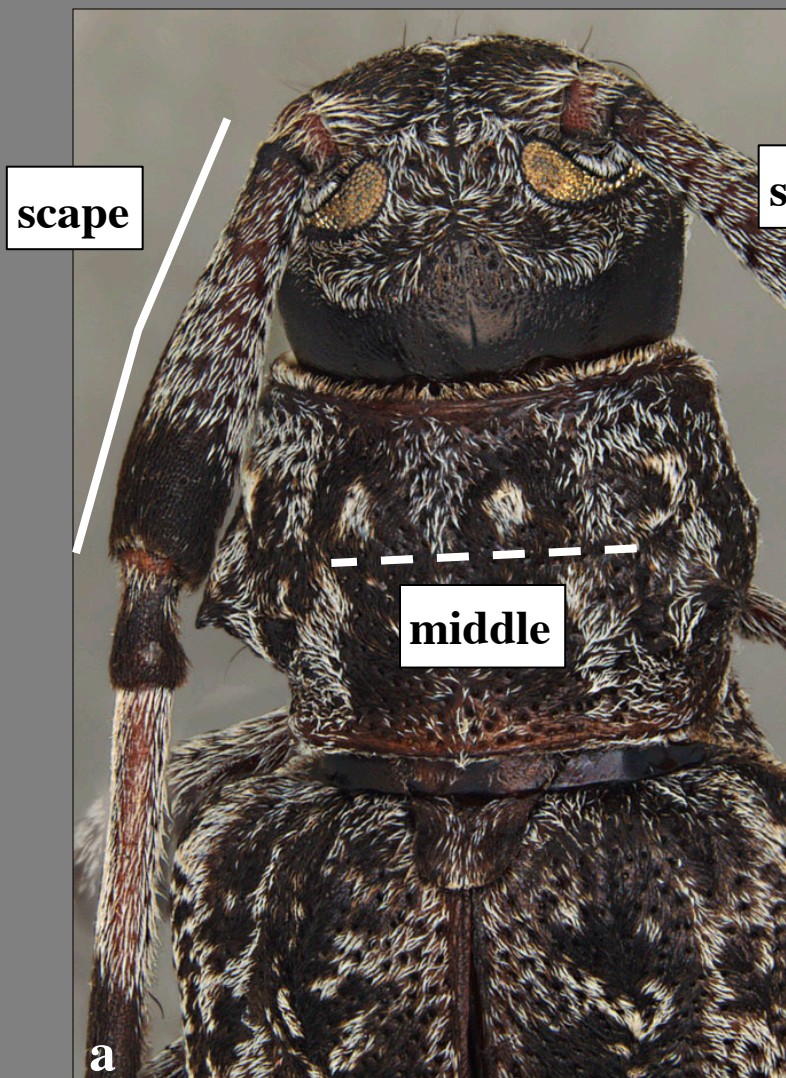




37 (28)

When retracted, scape reaches the middle of the pronotum (a).....38

When retracted, scape doesn't reach the middle of the pronotum (b)...FTT





38 (37): Part I

Anterior region of elytra simply punctured (a); portraits (c, d)
.....*Acanthocinus obliquus* (LeConte)

Anterior region of elytra punctured and granulate (b).....FTT





38 (37): Part II



Acanthocinus obliquus (LeConte)

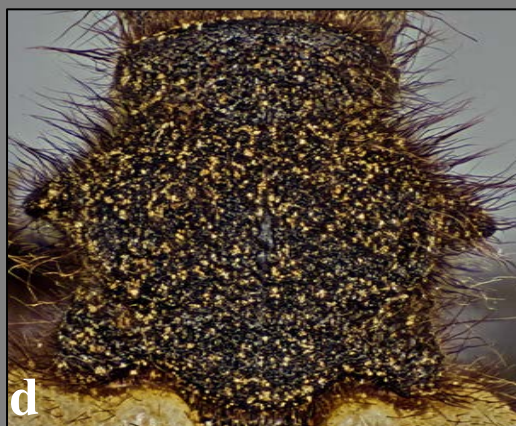
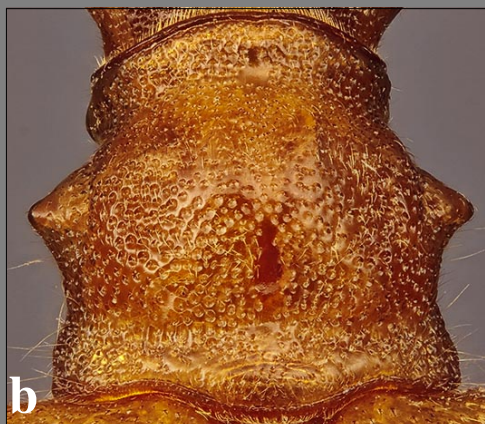




39 (27): Part I

Each side of pronotum with distinct tubercles or spines (a-e).....40

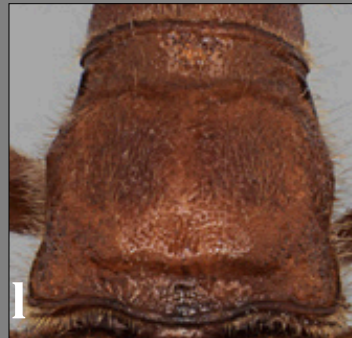
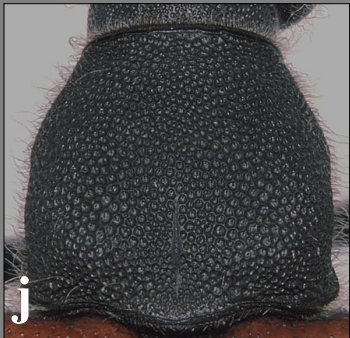
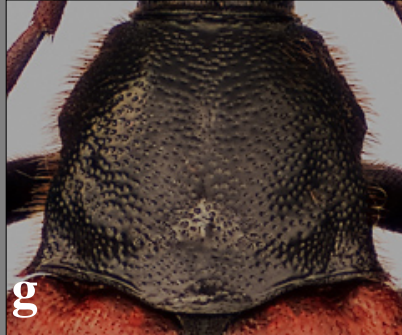
Each side of pronotum convex but without distinct tubercles or spines
(sides may be angulate, as in figures f-h (f-s)).....47





39 (27): Part II

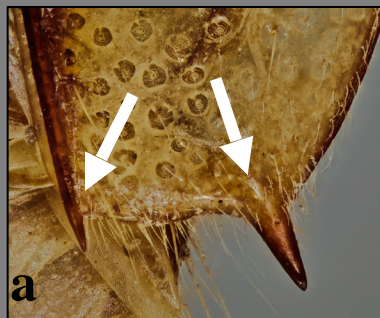
Each side of pronotum convex but without distinct tubercles or spines
(sides may be angulate, as in figures f-h).



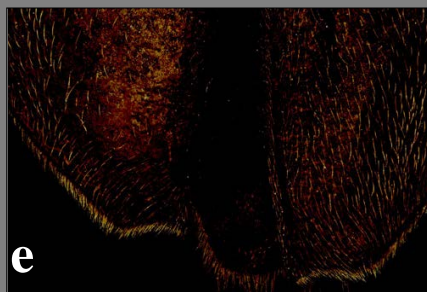
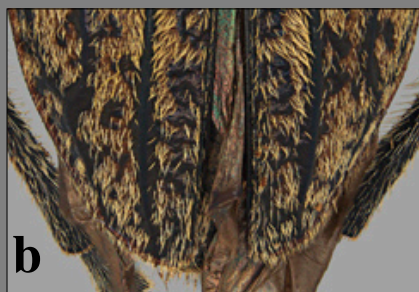


40 (39): Part I

Elytral apices each with a pair of spines (a); each antennal segment with a spine and distinctive body colors (see 41d and 41e).....41



Elytral apices each without spines (b-f), although some apices may be concave and pointed at the angles (e-f); antennal segments without spines and color not as in 41c and 41d (g-m).....42



40 (39): Part II

Antennal segments without spines and color unlike 41c and 41d.



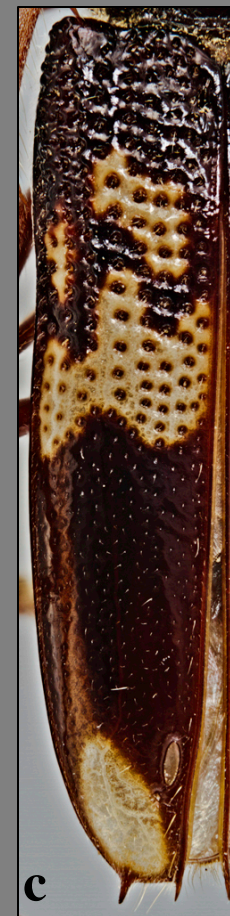


41 (40): Part I

Each elytron with a single small median dot anterior to the post-median dark band (a); portrait (d).....*Phoracantha recurva* Newman*

Each elytron with a band anterior to the post-median dark band, which may be an oblique bar (b) or a sinuate band reaching the suture (c); portrait (e).....*Phoracantha semipunctata* (Fabricius)*

Note: there are many species of cerambycids that have spines on the antennae and with a pair of spines on the apex of the elytra. However, most of these are in the eastern and southwestern United States and none closely resemble these two species of *Phoracantha*.





41 (40): Part II



Phoracantha recurva Newman*



d



Begin key

41 (40): Part III



Index

Phoracantha semipunctata (Fabricius)*



e



42 (40): Part I

Thick longitudinal ridges running length of elytra, elytral color mottled black and yellowish orange-red (a); portrait (e).....*Rhagium inquisitor* (Linnaeus)

Elytra without thick longitudinal ridges running length of elytra, elytral color not mottled (b-d).....43





42 (40): Part II

Rhagium inquisitor (Linnaeus)





43 (42)

Body color nearly uniform tan or light brown, usually with a single, small, dark, spot at the midpoint of each elytral margin (a).....44

Body color otherwise (b-g).....FTT





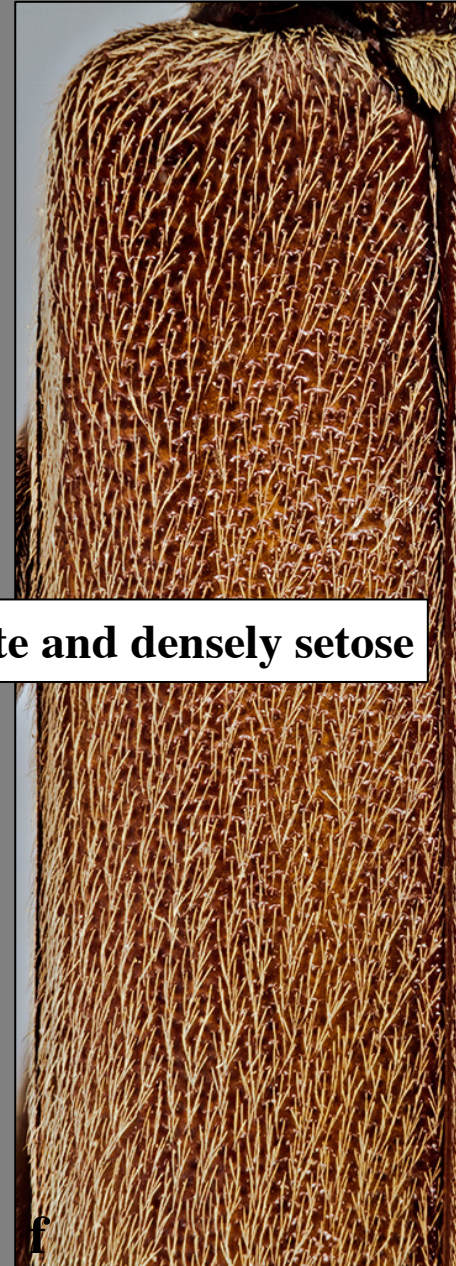
44 (43): Part I

Pronotum dorsally coarsely punctate (a) and elytra coarsely, densely punctate in anterior half (d); dorsal surface sparsely pubescent on pronotum (a) and elytra (d)45

Pronotum dorsally finely punctate (b-c) and elytra finely, more sparsely punctate in anterior half (e-f); dorsal surface densely pubescent on pronotum (b-c) and elytra (e-f).....FTT



44 (43): Part II

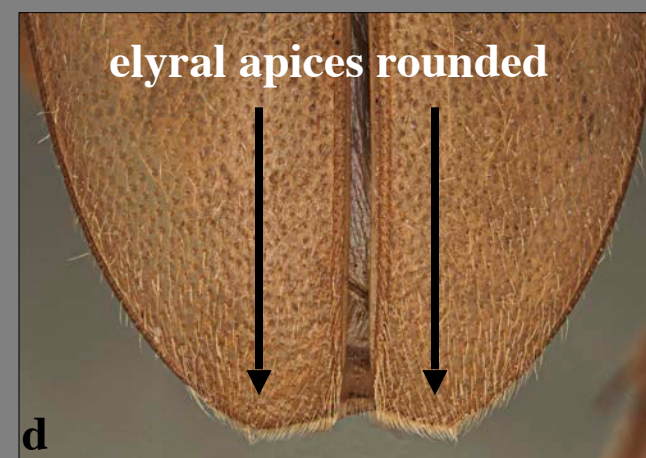
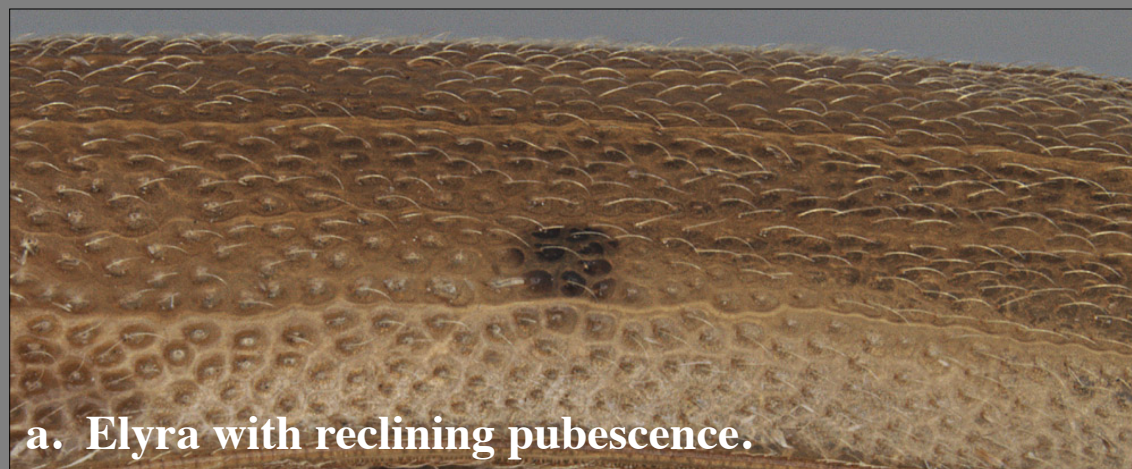




45 (44): Part I

Elytra with reclining pubescence (a), elytral apices often with sutural spurs (c); portrait (e)...*Centrodera spurca* (LeConte)

Elytra with suberect pubescence (b), elytral apices narrowly rounded, without sutural spurs (d).....46





45 (44): Part II

Centrodera spurca (LeConte)



e

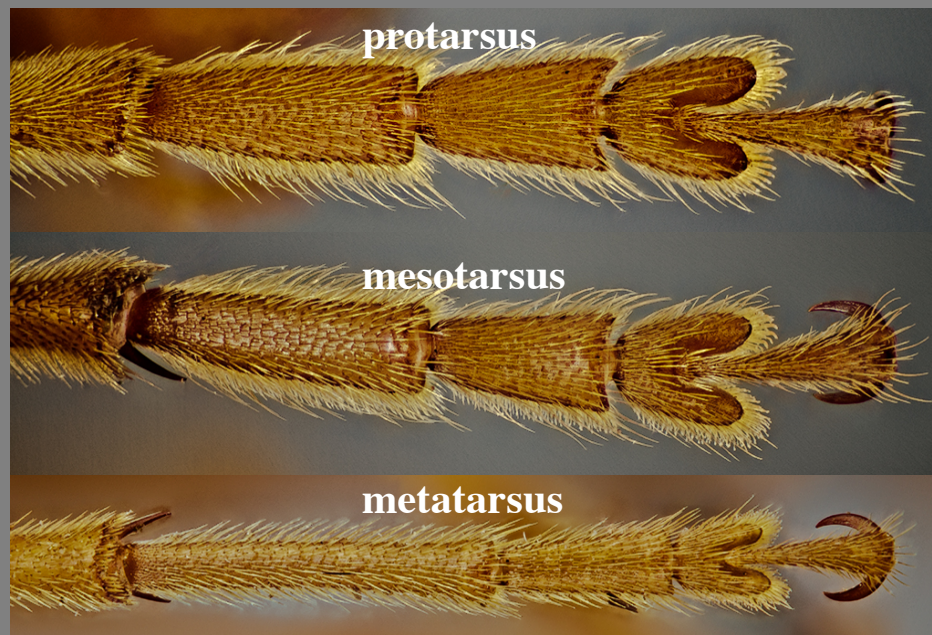
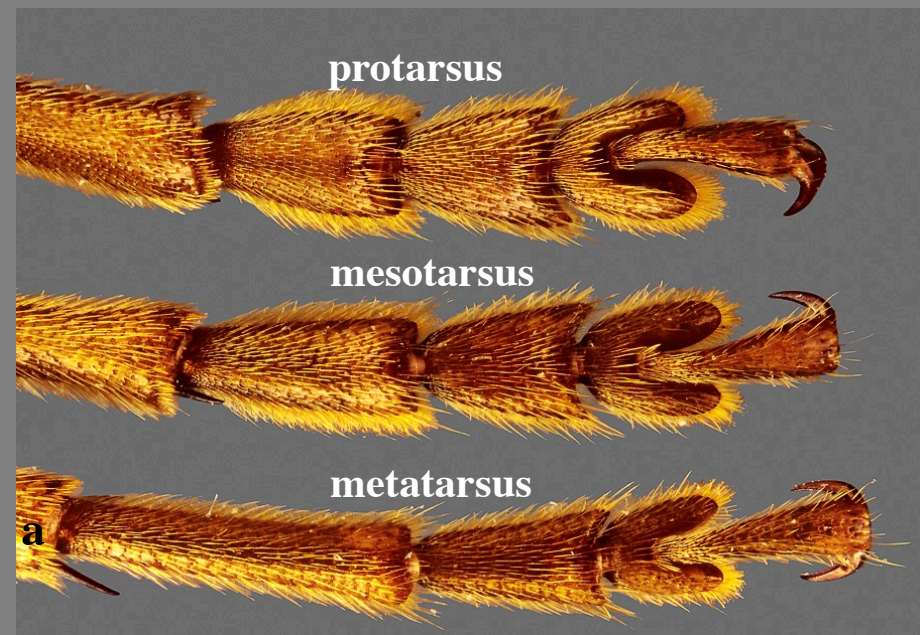
Photo by Steve Valley
Oregon
Department
of Agriculture



46 (45): Part I

Pro- and metatarsi short and broad (a); portrait (c).....*Centrodera dayi* Leech

Pro- and metatarsi elongate (b).....FTT





46 (45): Part II

Centrodera dayi Leech



c

Photo by Steve Valley
Oregon
Department
of Agriculture

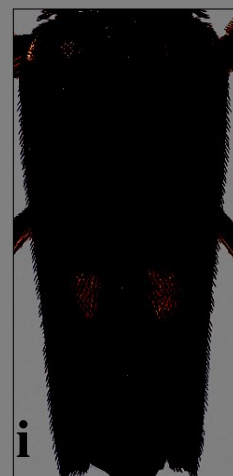
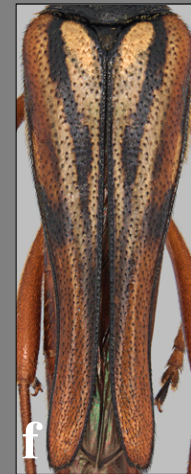


47 (39): Part I

Elytra black with reddish-orange margins (a); portrait (l).....

.....*Holopleura marginata* LeConte

Elytral color otherwise (b-k).....48





47 (39): Part II



Holopleura marginata LeConte



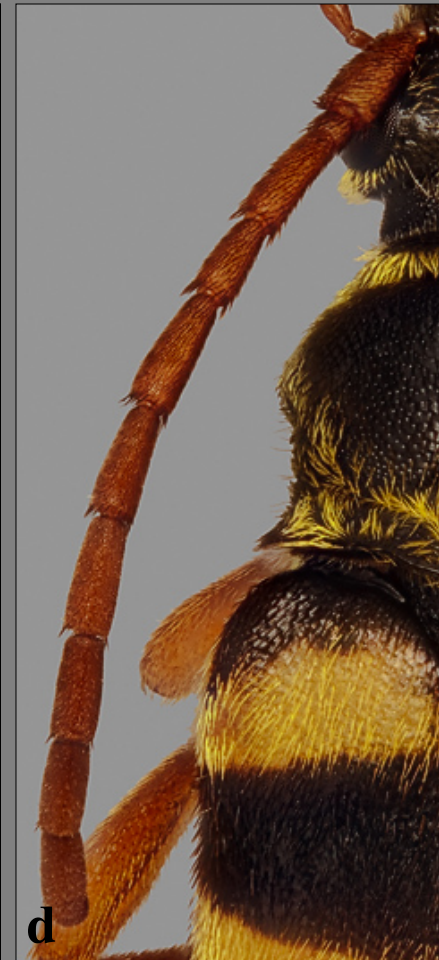


Begin key

48 (47): Part I

Antennae distinctly banded and with segments 4-8 triangular (a); portraits (e-f).....*Stictoleptura canadensis* (Olivier)

If antennae distinctly banded, no segments are triangular (b), otherwise unbanded (c-d).....49





Begin key

48 (47): Part II



Index

Stictoleptura canadensis (Olivier)

red
morph



e

black
morph



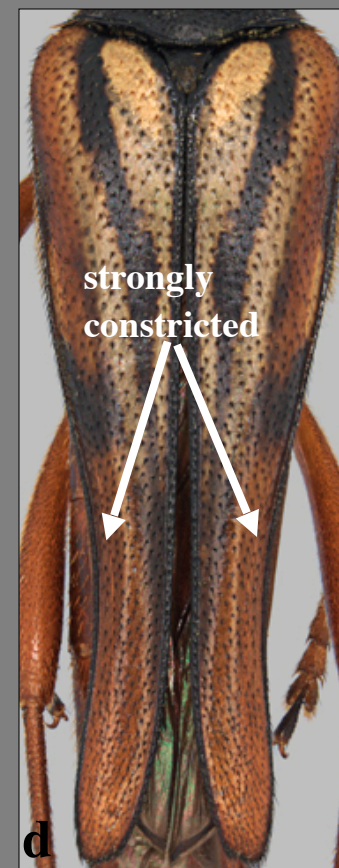
f



49 (48)

Elytra not strongly constricted behind middle (a-c).....50

Elytra strongly constricted behind middle (d).....FTT

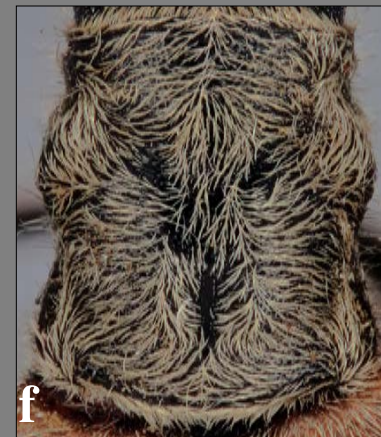
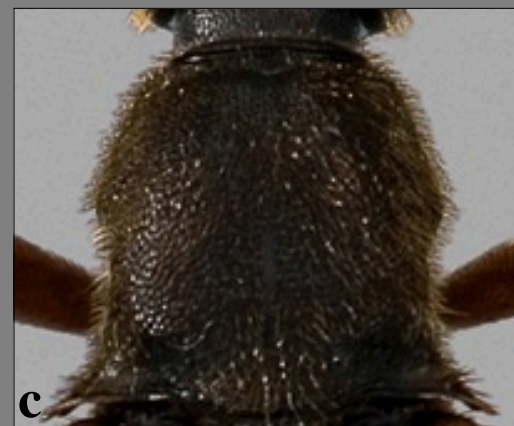
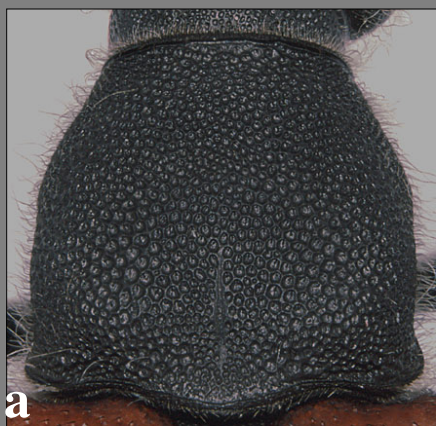




50 (49)

Pronotum bell-shaped, with posterior margin broader than anterior margin (a-c).....51

Pronotum widest at middle, with anterior and posterior margins about the same width (d-f).....69

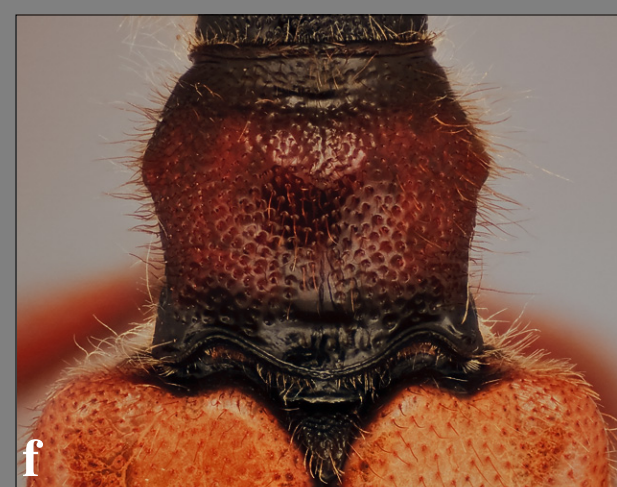
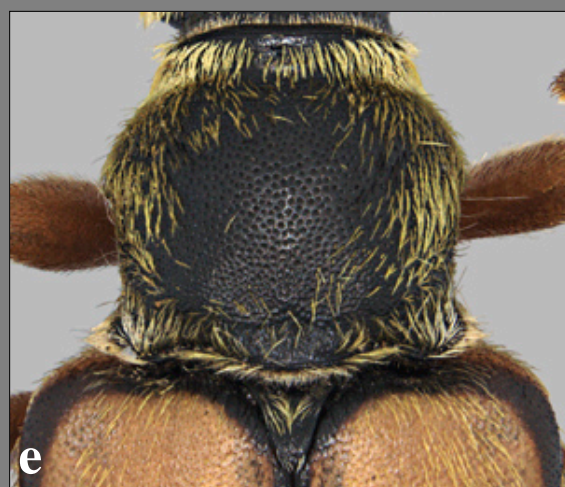
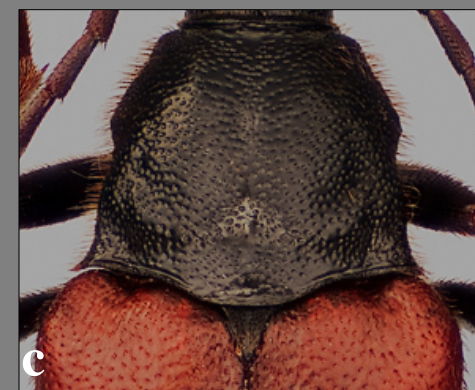




51 (50)

Posterior angles of pronotum sharp, at least partially covering anterior margins of humeri (a-c).....52

Posterior angles of pronotum not sharp, covering none of anterior anterior margins of humeri (d-f).....61





52 (51)

Elytra pale with dark bands or blotches (a-d).....53

Elytra more or less one color (e-i) or with color on margins contrasting with color on central area (j-k).....57





53 (52)

Elytral apex emarginate, with outer angle pointed (a).....54

Elytral apex rounded (b) or truncate (c), outer angle not pointed.....55





54 (53): Part I

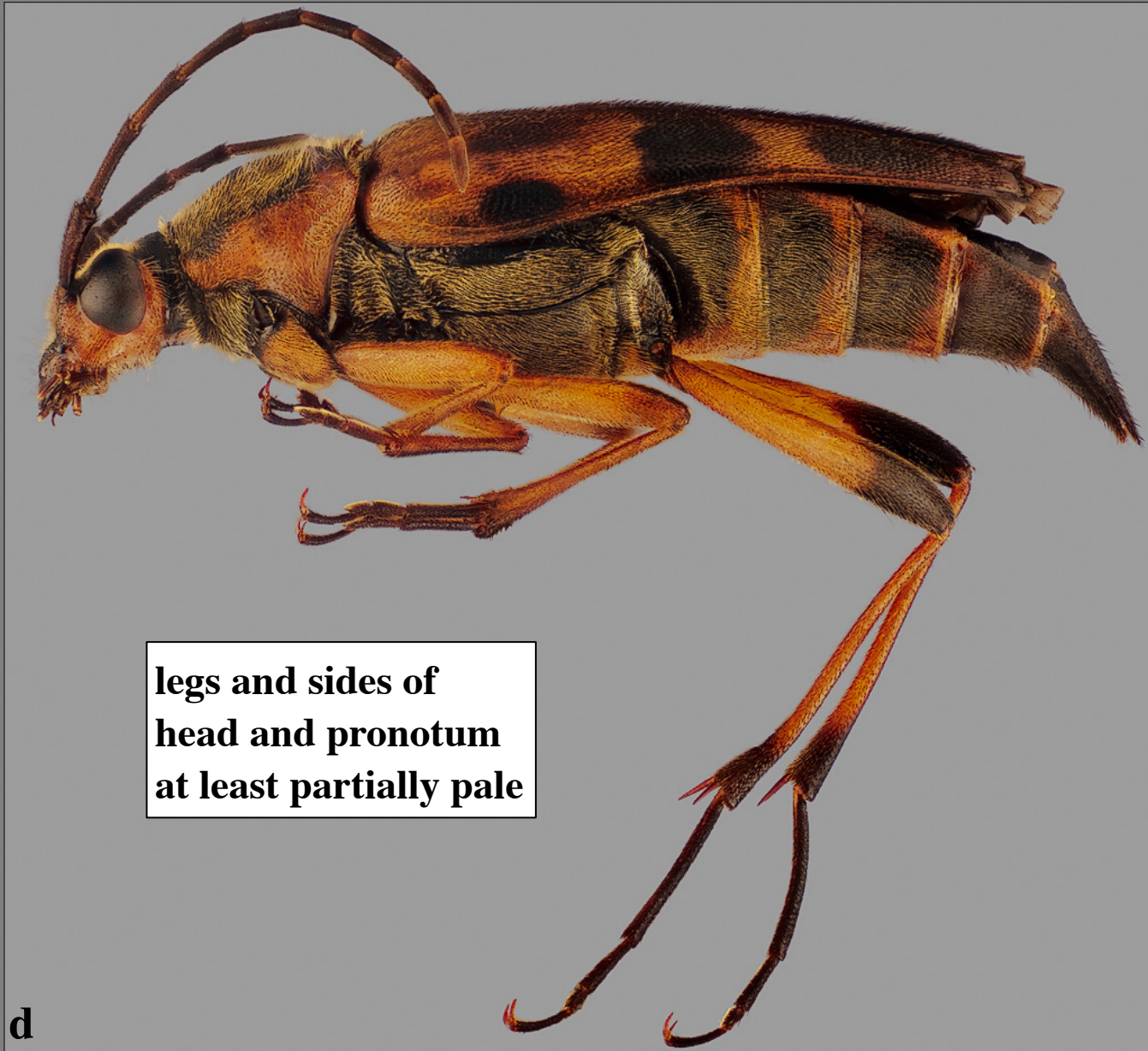
Elytron normally with a large, dark oblique spot in anterior half and with a large, dark postmedian band (a); legs and sides of head and pronotum at least partially pale (d); portrait (f).....*Leptura oblitterata* (Haldeman)

Elytron without an oblique spot in anterior half and without a postmedian band; legs, head, and pronotum all dark (b-c, e).....FTT





54 (53): Part II



legs and sides of
head and pronotum
at least partially pale

d



54 (53): Part III





54 (53): Part IV



Leptura obliterata (Haldeman)





55 (53)

Elytral apex narrowly rounded (a); body stout (d-e).....56

Elytral apex broadly rounded or truncate (b-c); body narrow (f-g)....FTT





56 (55): Part I

Pronotum with long pubescence; deep , horizontal groove just behind anterior margin (a); portrait (c).....*Judolia instabilis* (Haldeman)

Pronotum with short pubescence; deep , horizontal groove well behind anterior margin (b).....FTT





Begin key

56 (55): Part II



Index

Judolia instabilis (Haldeman)

Note: In this species,
the dark spots
on the elytra vary
greatly in their size
and shape.



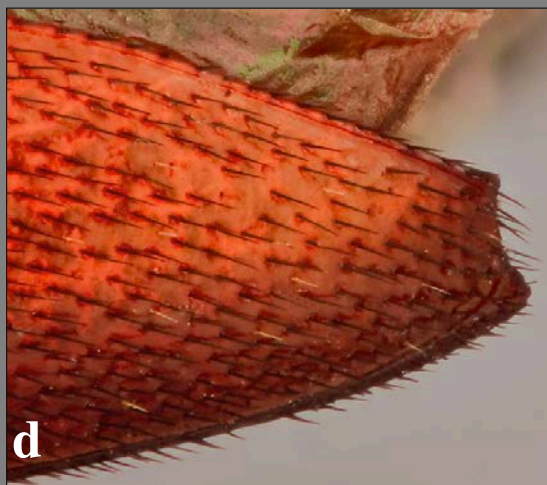
c



57 (52)

Elytral apex rounded (a) or slightly truncate (b).....58

Elytral apex strongly squarely (c) or obliquely truncate (d).....FTT





58 (57)

Elytra dark (a-b).....59

Elytra reddish-brown (c) or dark with pale margins (d).....FTT





59 (58)

Body color not metallic (a).....60

Body color metallic bluish or greenish (b).....FTT

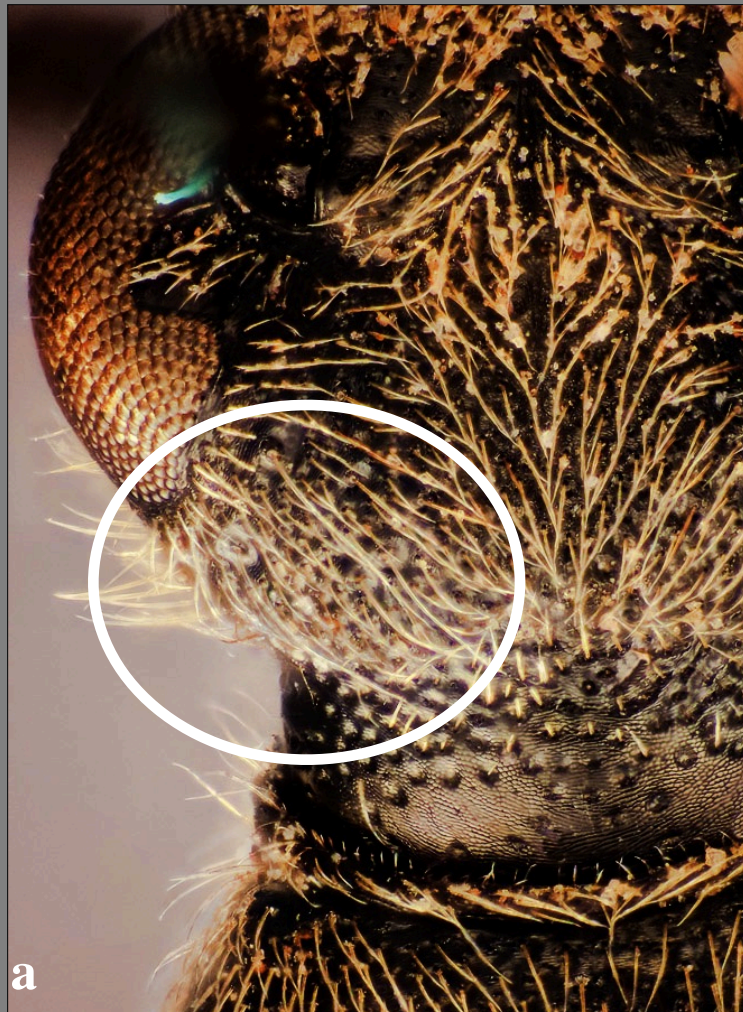




60 (59): Part I

Tempora strongly rounded (a); portrait (c)...*Grammoptera subargentata* (Kirby)

Tempora oblique or more-or-less parallel (b).....FTT





60 (59): Part II



Grammoptera subargentata (Kirby)



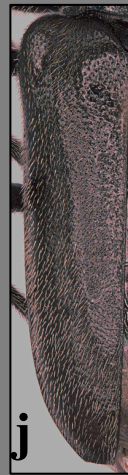
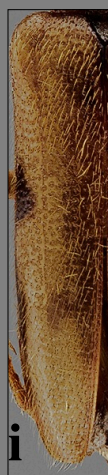
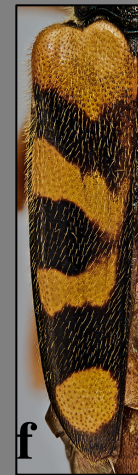
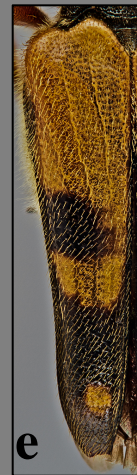
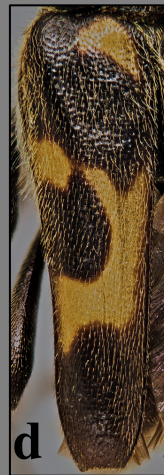
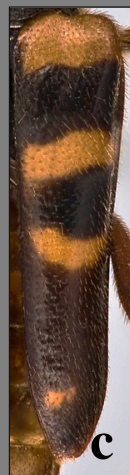
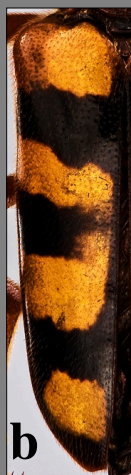
c



61 (51)

Elytra banded or with large spots (a-g).....62

Elytra without bands or large spots (h-k).....68 

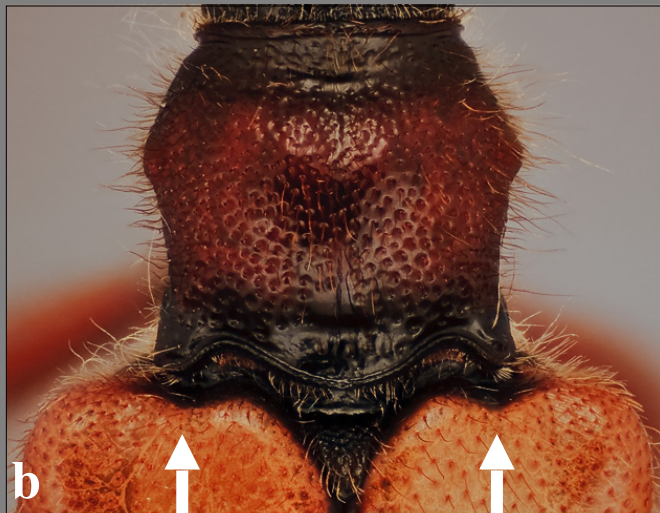




62 (61)

Pronotum with posterior margin weakly sinuate; anterior margin of elytron not sinuate (a).....63

Posterior margin of pronotum strongly sinuate; anterior margin of elytron sinuate (b-c).....64

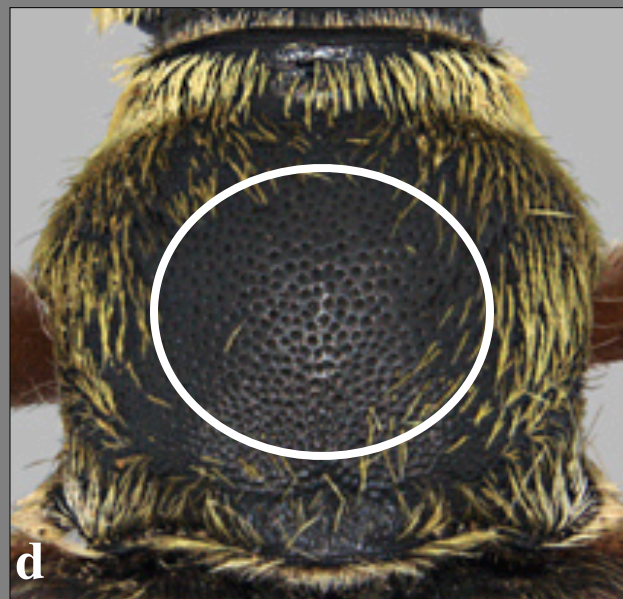




63 (62): Part I

Anterior dark elytral band transverse (a); pronotum with center obscured by dense pubescence (c); portrait (e).....*Strophiona laeta* (LeConte)

Anterior dark elytral band oblique (b); center of pronotum with at most sparse pubescence (d).....FTT





63 (62): Part II

Strophiona laeta (LeConte)

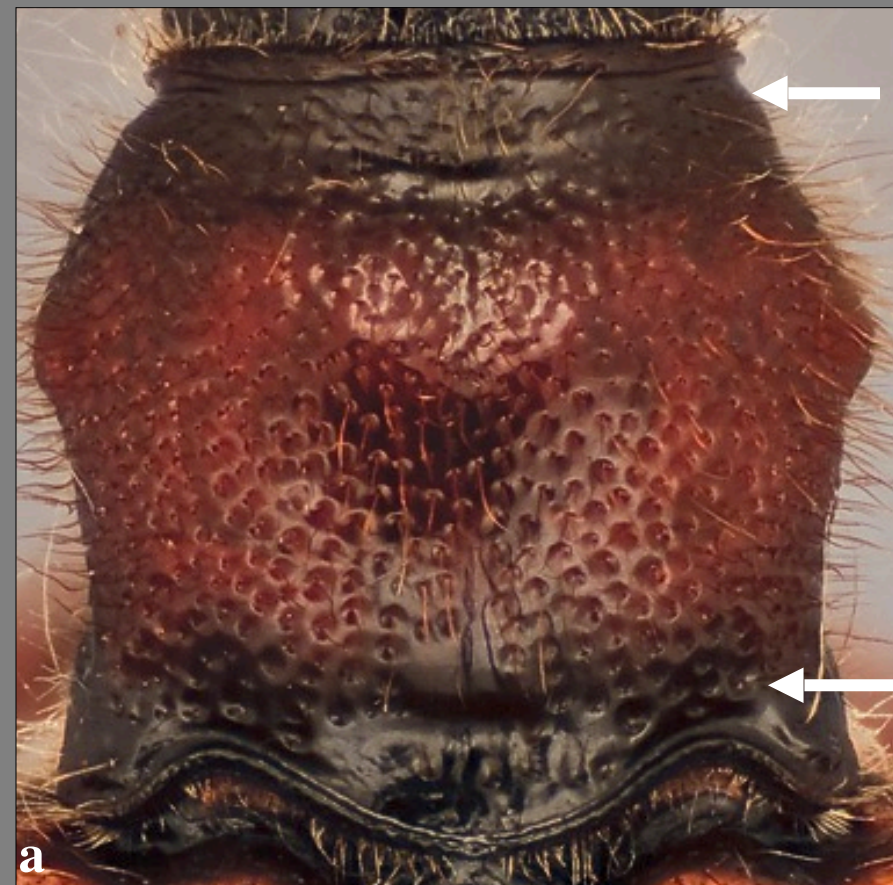




64 (63)

Pronotum deeply and broadly impressed at both anterior and posterior margins (a).....65

Pronotum at most shallowly impressed at both anterior and posterior margins (b).....FTT

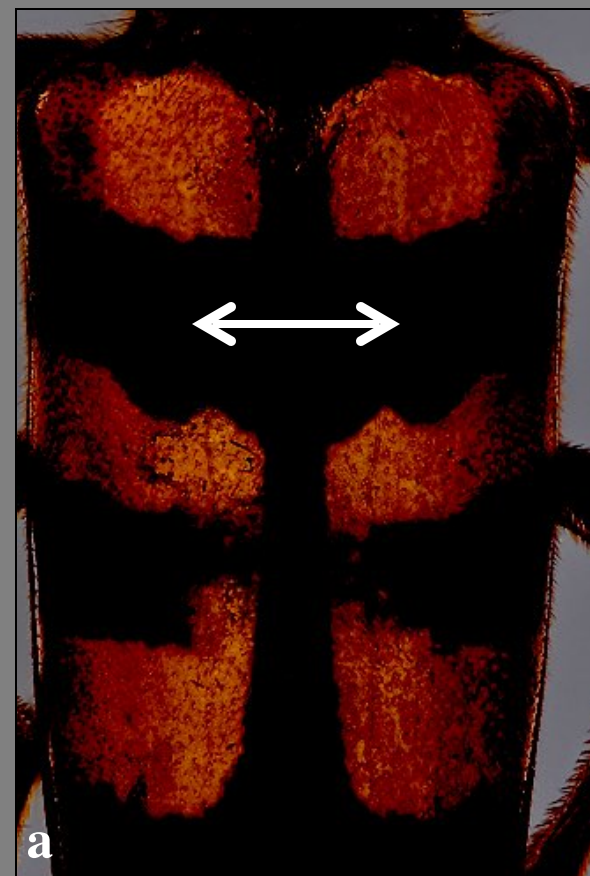




65 (64): Part I

Elytron with anterior dark band always present and transverse (a); portrait (d).....*Xestoleptura crassicornis* (LeConte)

If elytron has an anterior dark band, it is oblique (b-c).....66





Begin key

65 (64): Part II



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Xestoleptura crassicornis (LeConte)



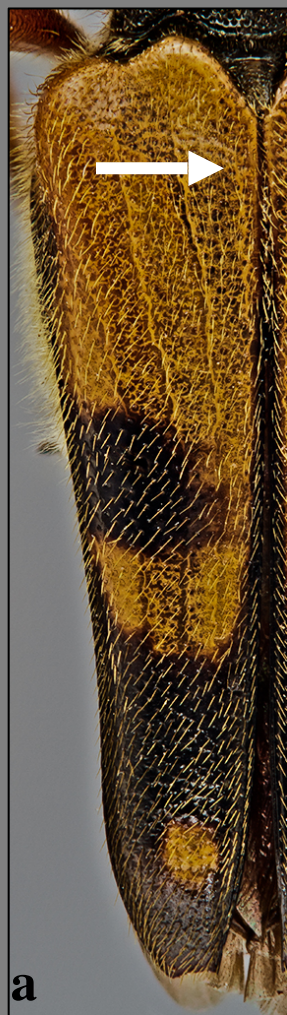
d



66 (65)

Elytral suture is pale anterior of anterior dark band (a-c).....67

Elytral suture is dark anterior of anterior dark band (d).....FTT





67 (66): Part I

Legs pale (a); portraits (c-d).....*Xestoleptura crassipes* (LeConte)

Legs with at least femora dark (b).....FTT





Begin key



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67 (66): Part II

Xestoleptura crassipes (LeConte)



c. Female



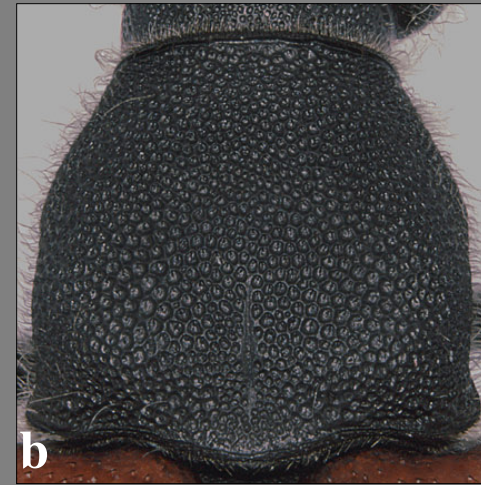
d. Male



68 (61): Part I

Pronotum with median area strongly flattened and with a broad elevated tubercle on either side (a).....*Acmaeops proteus* (Kirby)

Dorsum of pronotum more evenly convex in median area (b-d).....FTT





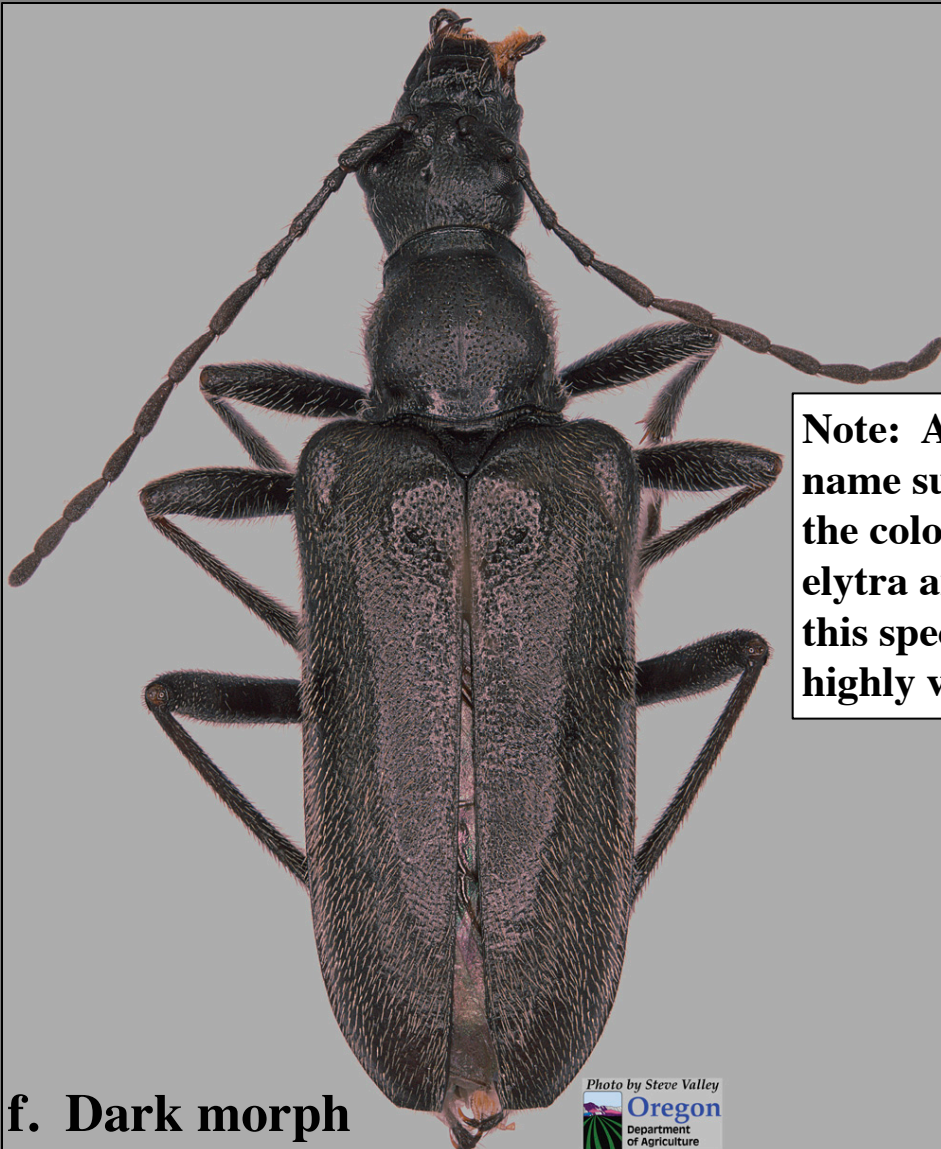
Begin key



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68 (61): Part II

Acmaeops proteus (Kirby)



f. Dark morph

Photo by Steve Valley
Oregon
Department
of Agriculture



g. Light morph

Photo by Steve Valley
Oregon
Department
of Agriculture

Note: As the name suggests, the color of the elytra and legs of this species are highly variable.



69 (50)

Pronotum elongate, lateral margins more-or-less parallel except for rounded median tubercles (a-b).....70

Pronotum rounded, lateral margins arcuate (c-f).....74



a

b



c

d

e

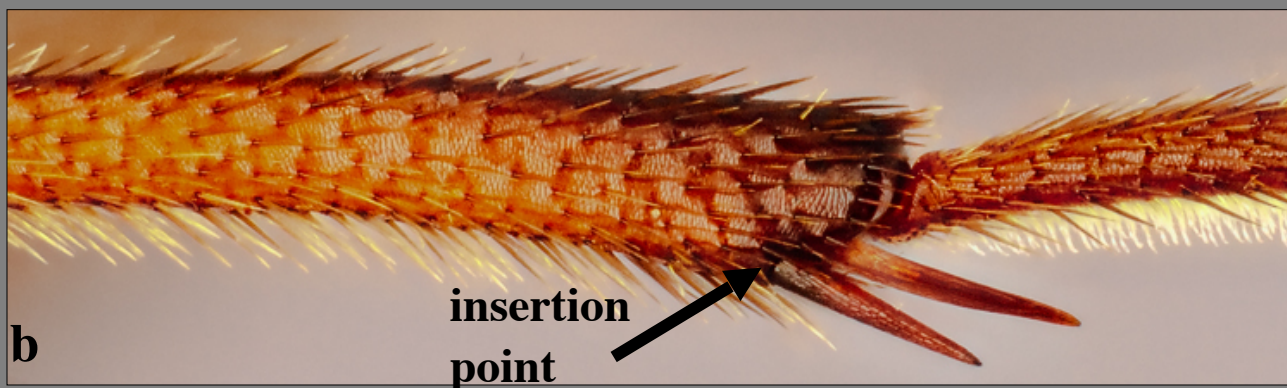
f



70 (69)

Tibial spurs inserted before tibial apex (a).....71

Tibial spurs inserted at tibial apex (b).....FTT





71 (70)

Elytra not striped (a-b).....72

Elytra striped (c-d).....FTT



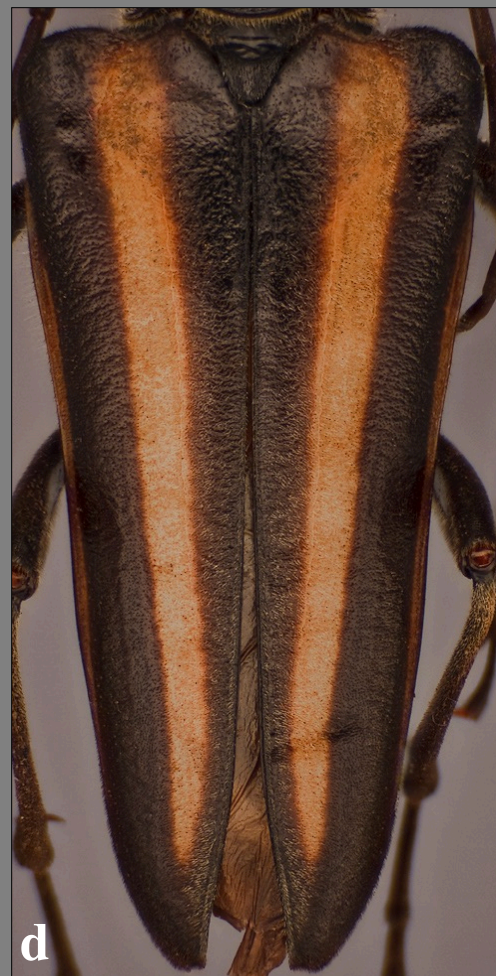
a



b



c



d



Begin key

72 (71)

Pronotum with dense pubescence obscuring the surface (a); at least the inner half of the length of the elytron with dense, prostrate pubescence obscuring the surface (c-d).....73

Pronotum with sparse pubescence not obscuring the surface (b); surface of elytron visible through uniformly sparse, short pubescence (the example shown is striped – no unstriped example was available) (e).....FTT

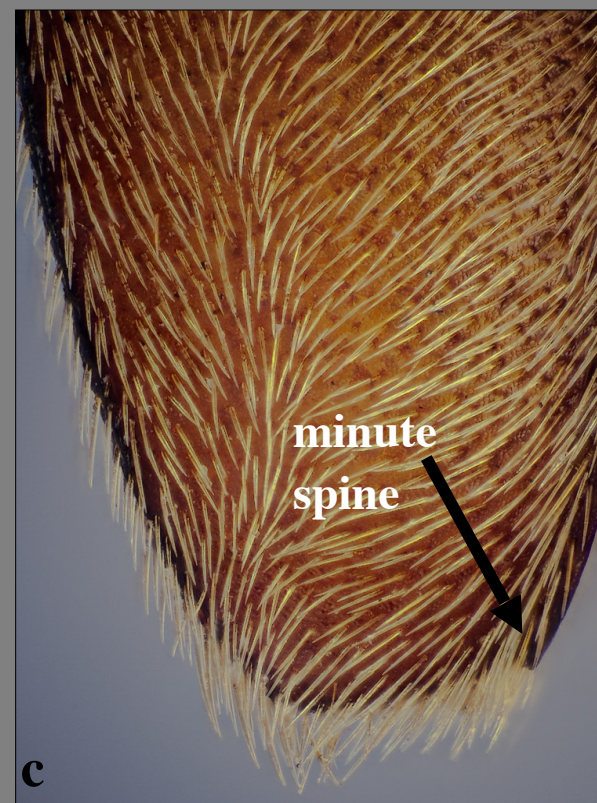
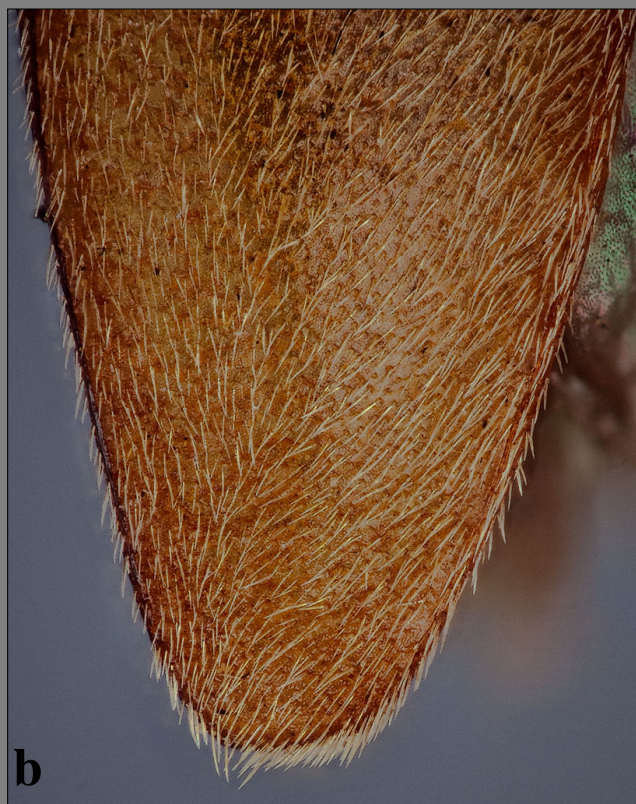
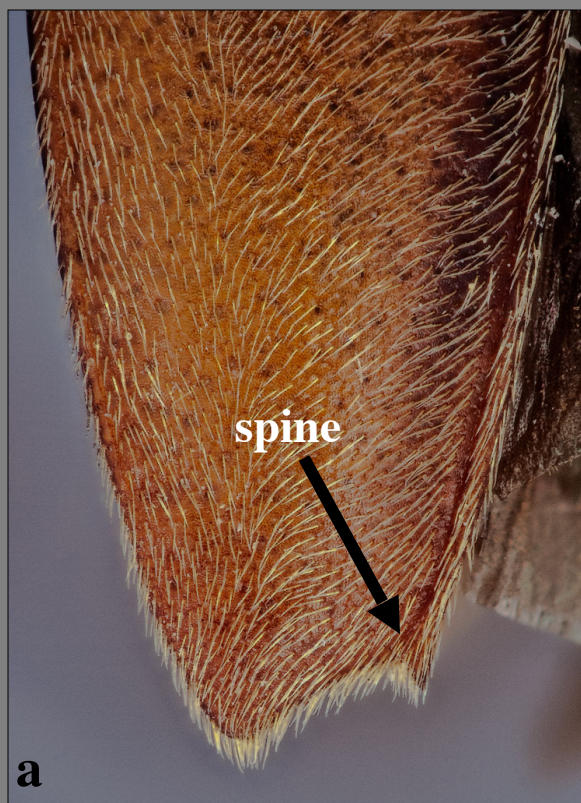




73 (72): Part I

Apex of elytron obliquely truncate with a distinct spine at the end of the suture (a); portraits (d-e).....*Stenocorus nubifer* (LeConte)

Apex of elytron rounded (b) or very slightly truncate (c), with at most a very small and obscure spine at the end of the suture; portraits (f-g).....*Stenocorus vestitus* (Haldeman)





73 (72): Part II

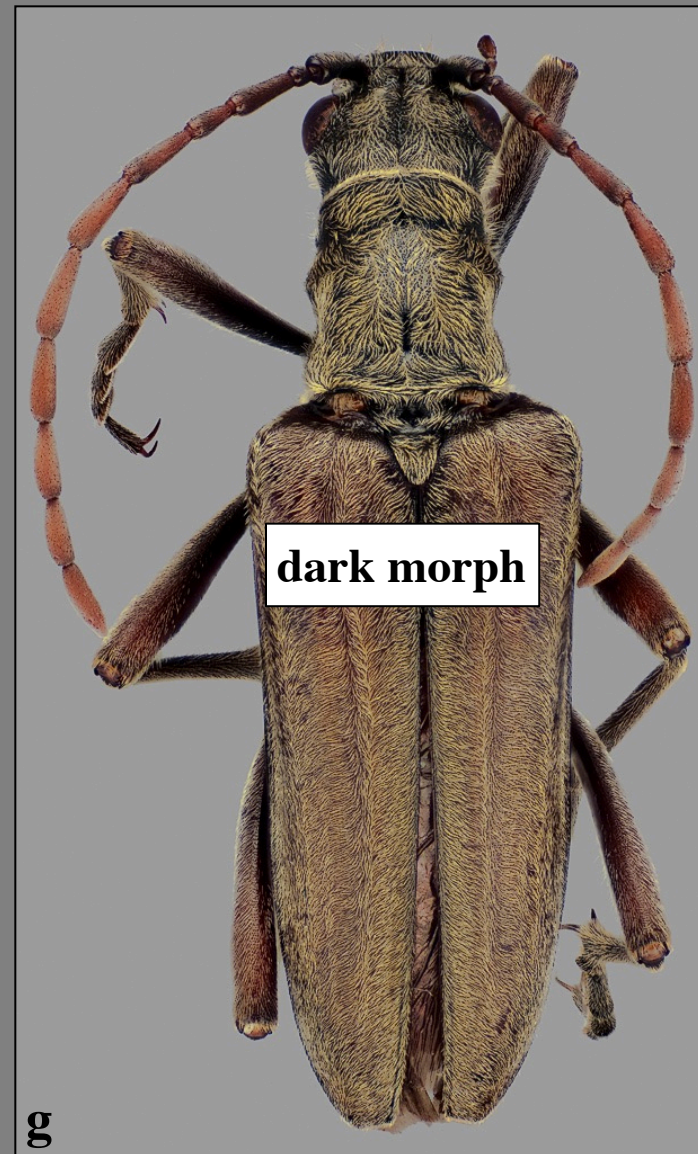
Stenocorus nubifer (LeConte)





73 (72): Part III

Stenocorus vestitus (Haldeman)

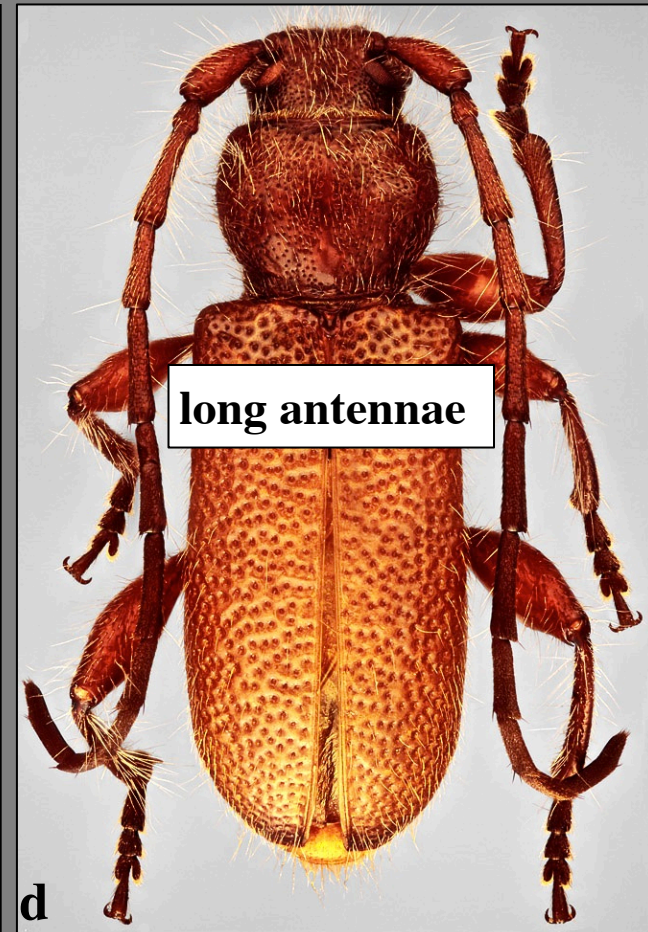
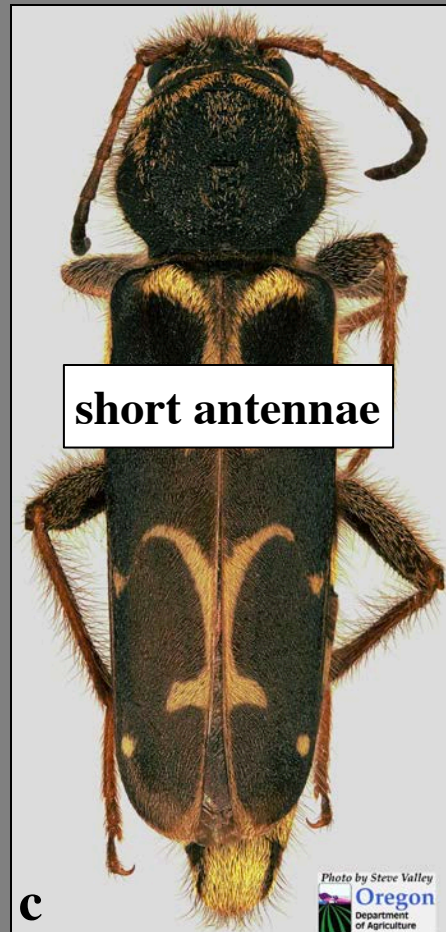




74 (69)

Lateral procoxal cavities rounded (a); antennae often, but not always, short, barely reaching elytral humeri (c).....75

Lateral procoxal cavities angulate (b); antennae always long, extending well past elytral humeri (d)90

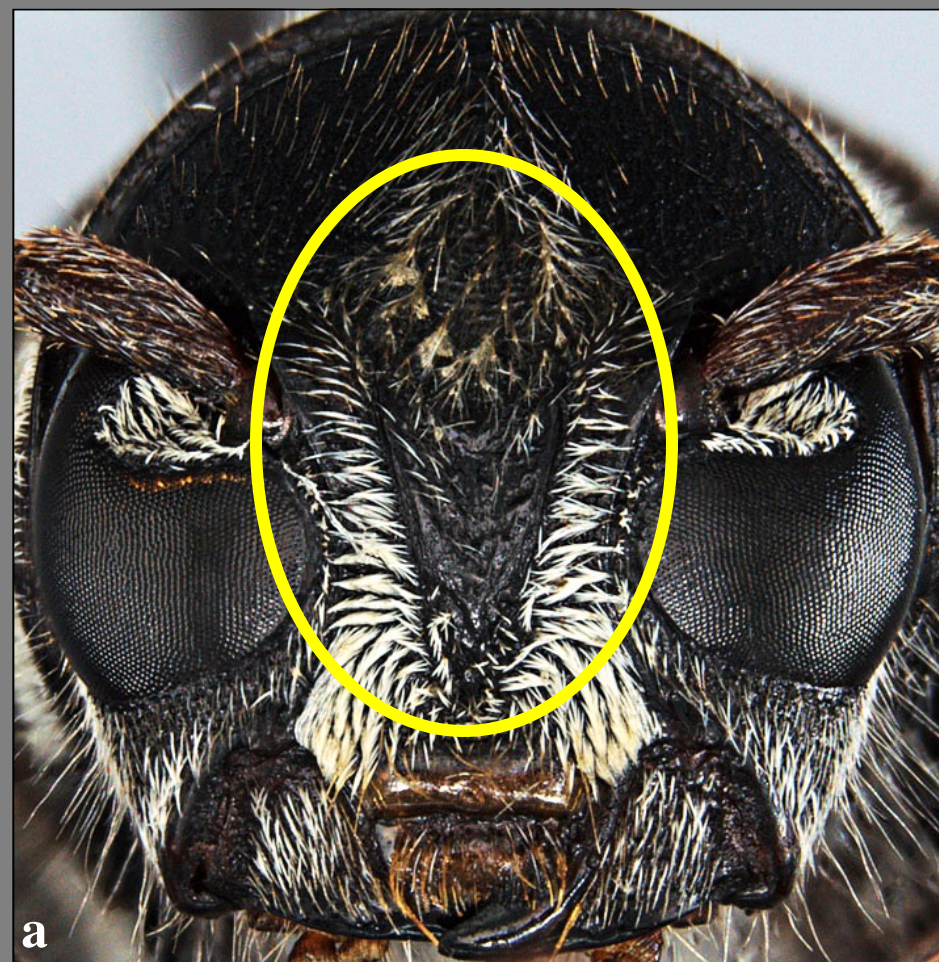




75 (74): Part I

Frons with a “V” (a) or “Y” (b) shaped carina.....76

Frons without a “V” or “Y” shaped carina (c-h).....81



75 (74): Part II



Frons without a "V" or "Y" shaped carina.

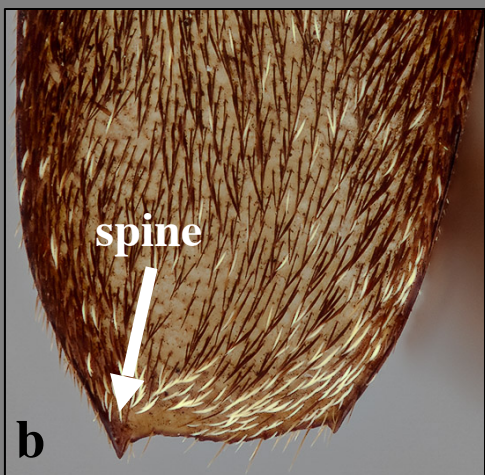
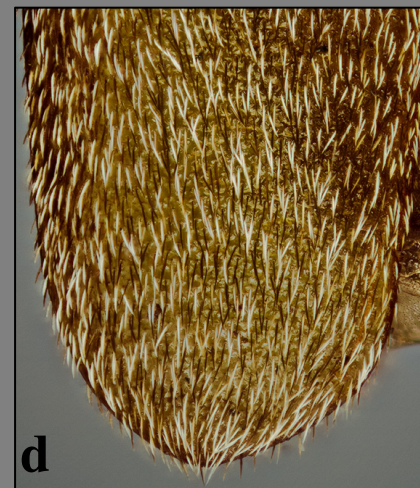
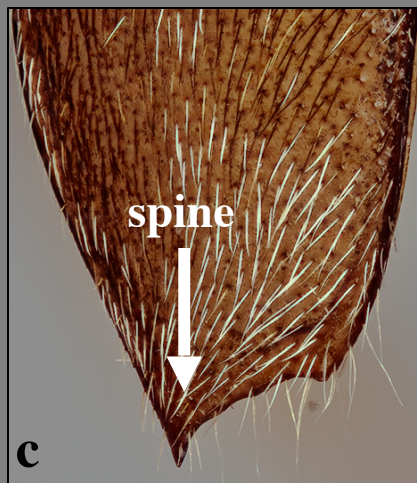
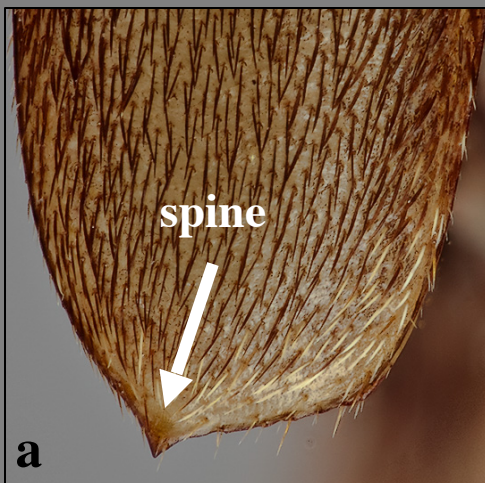




76 (75)

Elytral apex with distinct, sharp, spine at outer angle (a-c).....77

Elytral apex rounded (d) or obliquely truncate (e), without spine at outer angle.....78

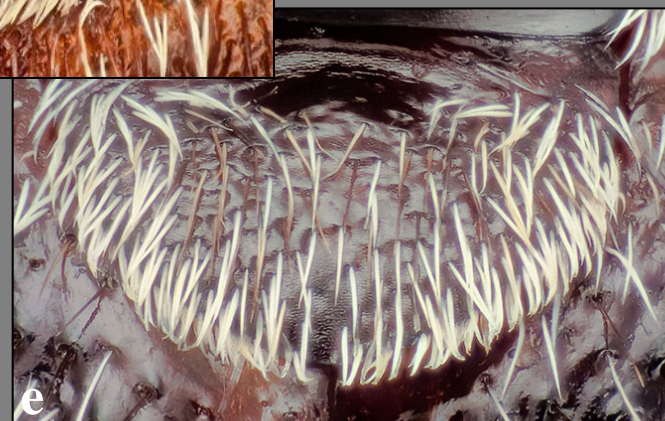
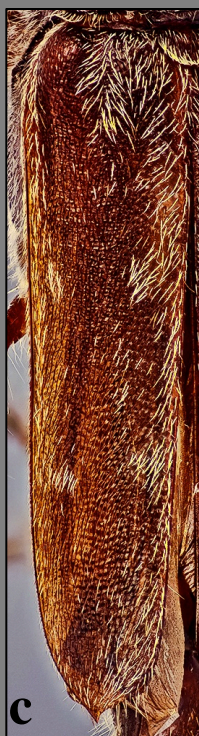




77 (76): Part I

Elytra with distinct, undulating pale pubescent bands, without pale pubescence along suture (a); scutellum with a fringe of pale pubescence along posterior margin but otherwise with dark pubescence (d); portrait (e).....*Rusticoclytus nauticus* (Mannerheim)

Elytra with at most broken bands of pale pubescence, with pale pubescence concentrated along suture (b-c); scutellum with predominantly pale pubescence (e).....FTT





77 (76): Part II



Rusticoclytus nauticus (Mannerheim)



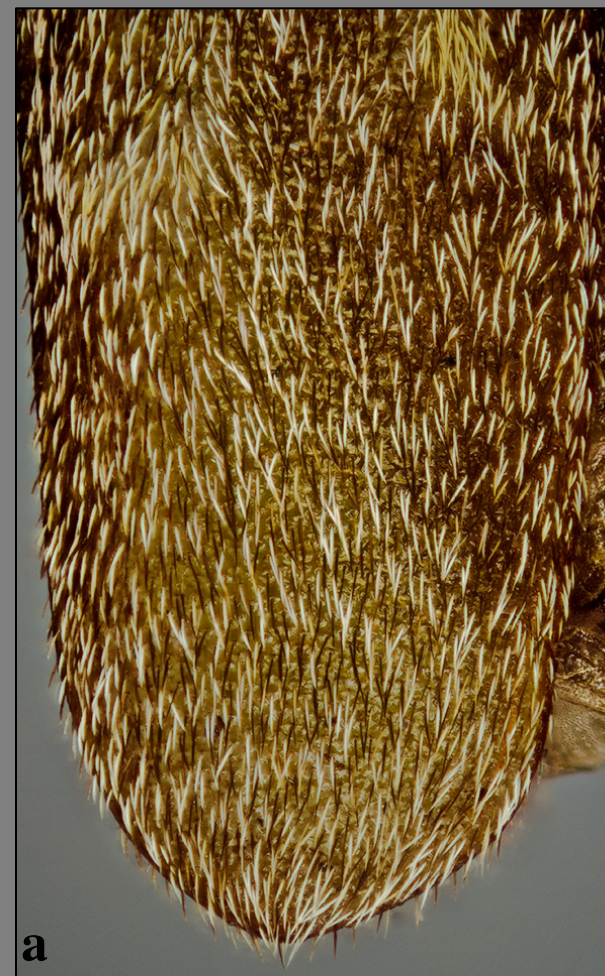
f



78 (76)

Elytral apices rounded (a).....79

Elytral apices obliquely truncate (b-c).....80

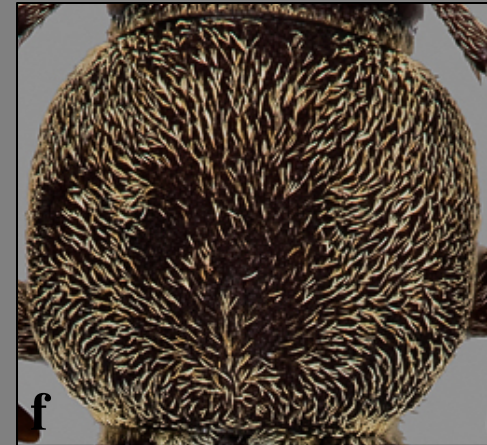




79 (78): Part I

All the pale markings on elytra are in the form of dots, not bands (a-b); pronotum never with pale anterior and posterior marginal markings; portraits (g-h).....
.....*Xylotrechus mormonus* (LeConte)

At least some of the pale elytral markings are in the form of bands (c-e) – sometimes these are very faint (e); pronotum sometimes with pale markings (f-g).....FTT





79 (78): Part II



Xylotrechus mormonus (LeConte)

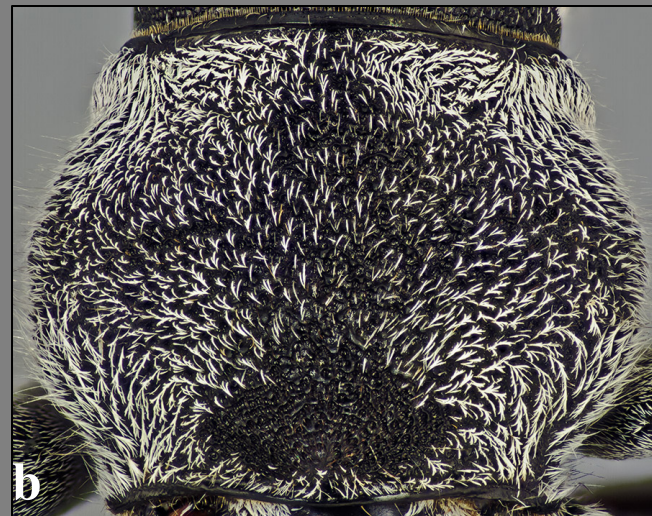


80 (78): Part I

Pronotum with distinct, sharply defined, pale pubescent markings at both anterior and posterior margins and without abundant pale pubescence scattered through dark medial area (a); dark areas on elytra without abundant scattered pale pubescence (c); portraits (e-f).....*Xylotrechus longitarsis* Casey

Note: It is rarely possible to distinguish specimens of *X. longitarsis* from *X. undulatus* (Say). Specimens from west of the Rocky Mountains are normally assigned to *X. longitarsis* and specimens from Alaska and east of the Rockies are normally assigned to *X. undulatus*.

Pronotum without distinct, sharply defined, pale lateral pubescent markings at both anterior and posterior margins and with abundant pale pubescence scattered throughout the dark medial area (b); dark areas on elytra with abundant scattered pale pubescence (d).....FTT

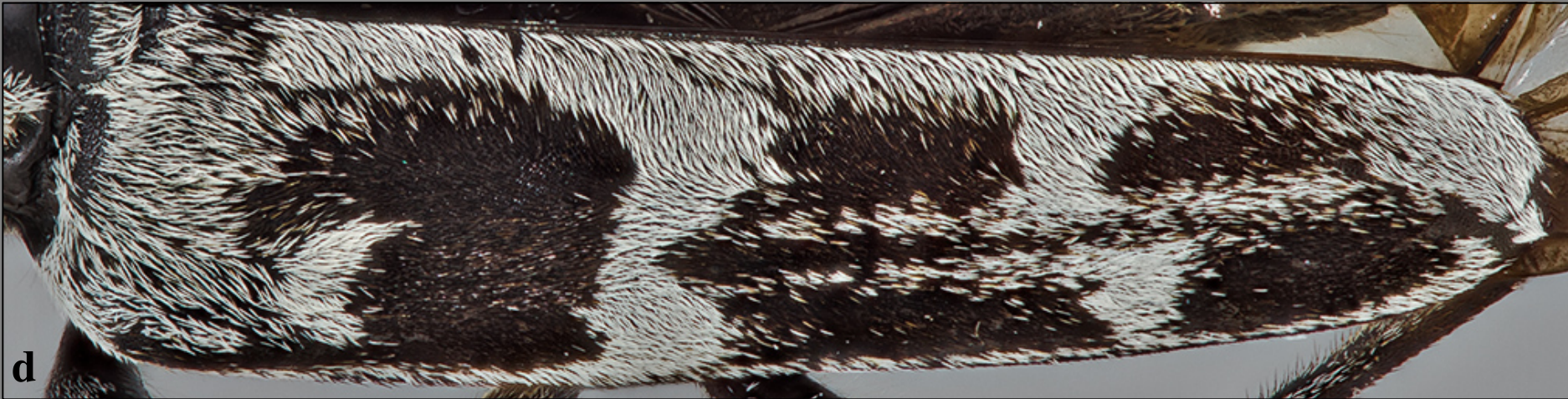




80 (78): Part II



dark areas on elytra without abundant scattered pale pubescence



dark areas on elytra with abundant scattered pale pubescence



Begin key



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80 (78): Part III

Xylotrechus longitarsis Casey

normal elytral
markings



e

reduced elytral
markings



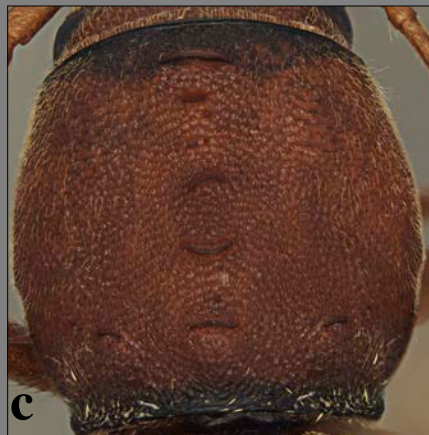
f



81 (75)

Pronotum with median row of transverse carinae (a-d).....82

Pronotum without median row of transverse carinae (e-g).....86

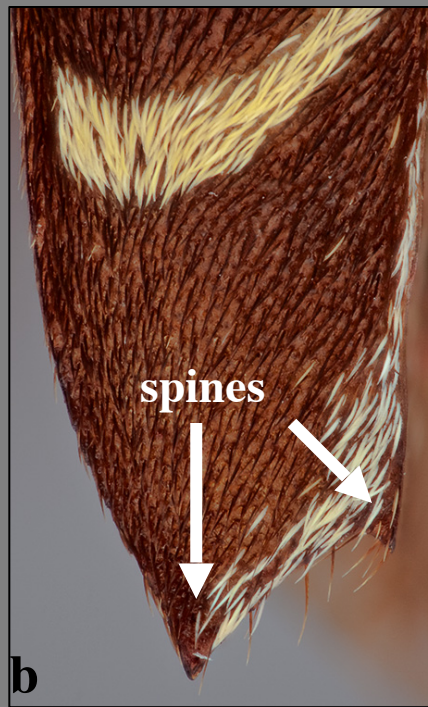
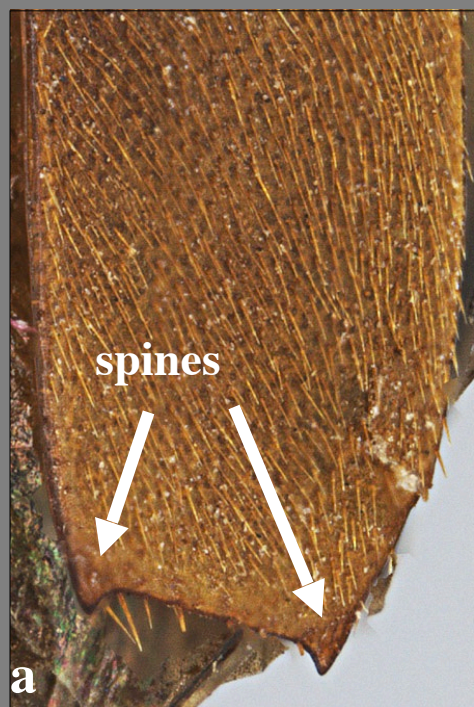




82 (81)

Sharp spines on at least outer angle of elytral apices (a-b).....83

Outer angle of elytral apices without sharp spine (s), obliquely truncate (c) or rounded (d).....84





83 (82): Part I

Pronotum without pale, pubescent patches (a); scutellum at most with thin pubescence (e); overall body color reddish brown, median and posterior elytral bands straight (g); portrait (g).....*Neoclytus acuminatus* (Fabricius)

Pronotum with pale, pubescent patches (b-d); scutellum covered with dense, white pubescence (f); overall body color dark brown, all elytral bands arcuate (h-i); portraits (h-i).....*Neoclytus modestus zebratus* Van Dyke





83 (82): Part II



Neoclytus acuminatus (Fabricius)



89

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Oregon
Department
of Agriculture



Begin key



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83 (82): Part III

Neoclytus modestus zebratus Van Dyke

white
morph



h

yellow
morph



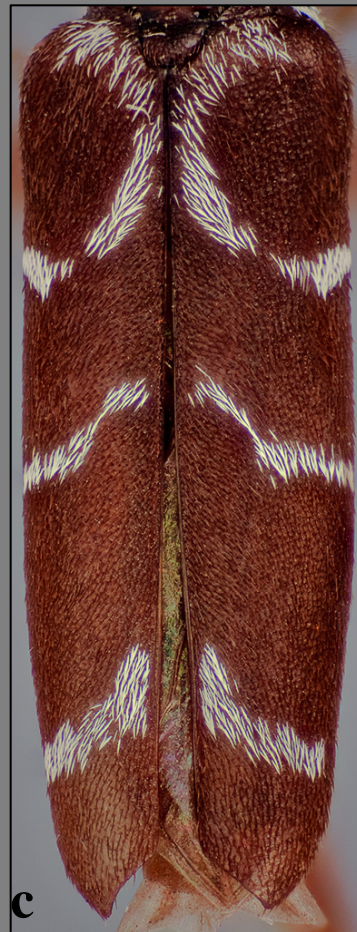
i



84 (82)

Elytra with at least anterior pair of pale bands connected along the suture (a-c).....85

Elytra with none of the pale bands connected along the suture (d).....FTT

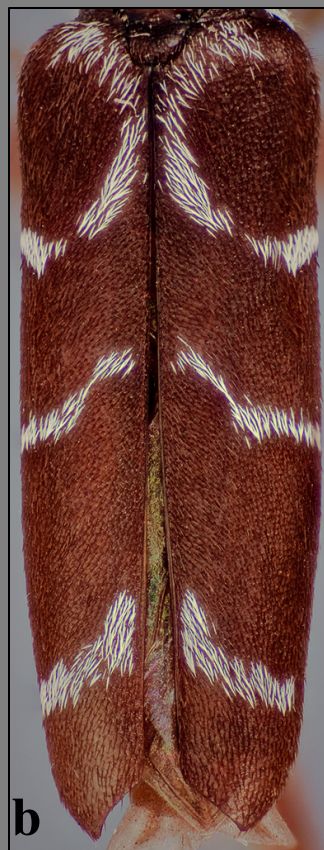




85 (84): Part I

Normally both the anterior and posterior pairs of pale elytral bands connected along the suture (a); pronotum with distinct pale markings and abundant long setae (d); elytral apices rounded (f); portraits (f-g).....*Neoclytus conjunctus* (LeConte)

Only anterior pair of pale elytral bands connected along the suture (b-c); pronotum without distinct pale markings and without long setae (e) elytral apices obliquely truncate or broadly pointed (e); portraits (h-i).....*Neoclytus muricatus* Kirby





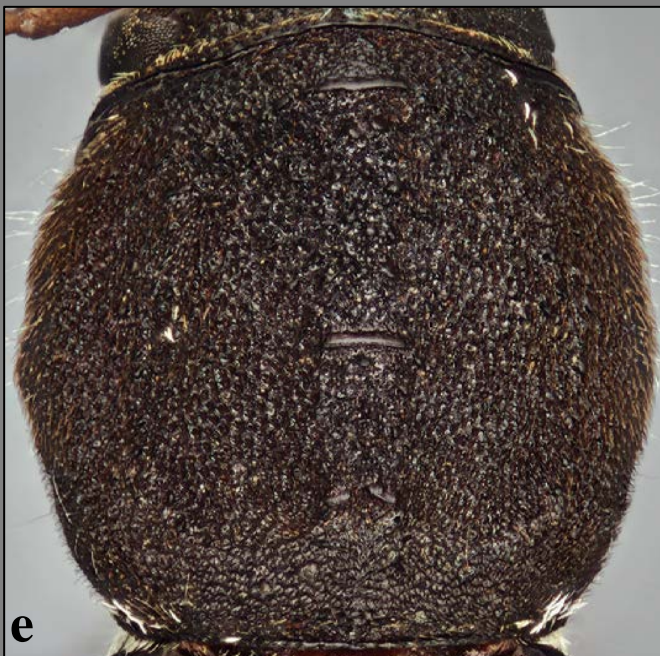
85 (84): Part II

**pronotum with
pale markings
& many long
setae**



d

**pronotum
without pale
markings &
without
many long
setae**



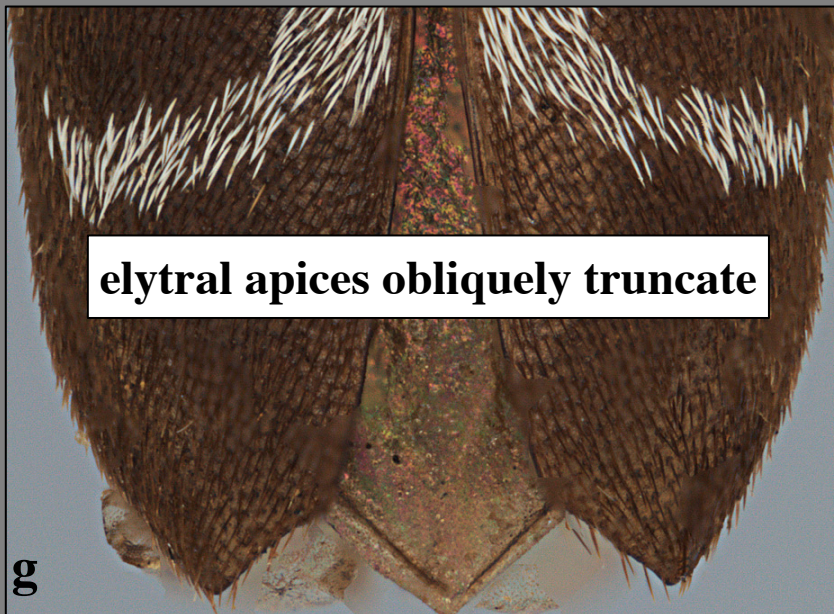
e

elytral apices rounded



f

elytral apices obliquely truncate



g



85 (84): Part III

Neoclytus conjunctus (LeConte)

white
morph



yellow
morph





Begin key



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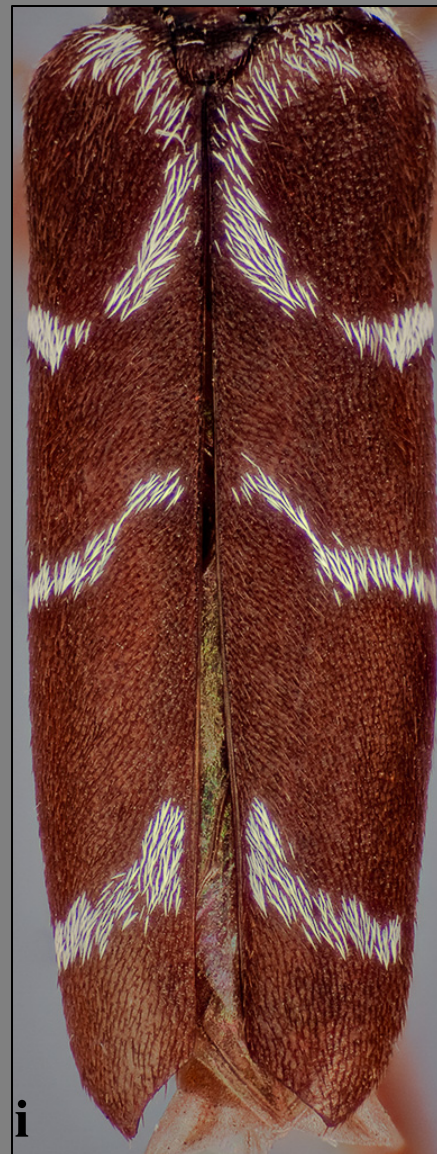
85 (84): Part IV

Neoclytus muricatus Kirby

reduced
pale
elytral
markings



well-
developed
pale
elytral
markings

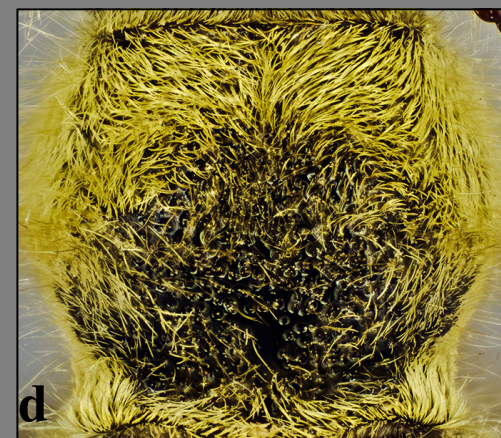
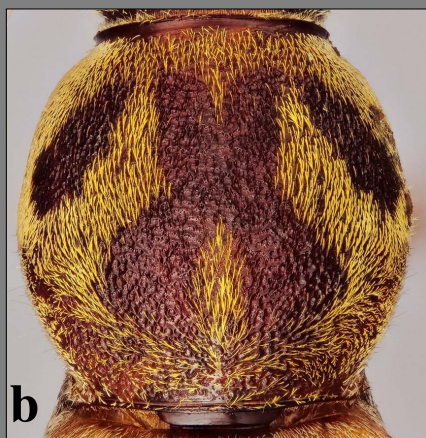




86 (81): Part I

Pronotum either with pale bands of pubescence (a-c) or with pale pubescence scattered more widely over the dorsum (d-e); smaller (h-j) (~10 mm long).....87

Pronotum without pale pubescence (f), although sometimes a pale band is along the posterior margin of the head (g); larger (k) (20-25 mm long).....FTT





86 (81): Part II

smaller size



larger size

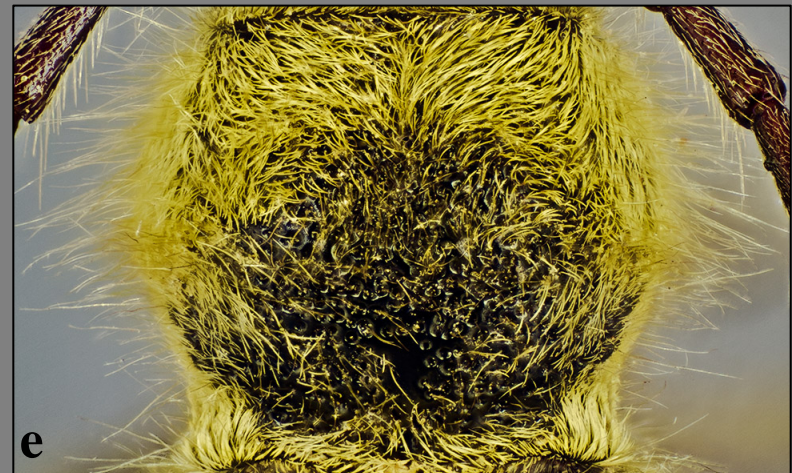
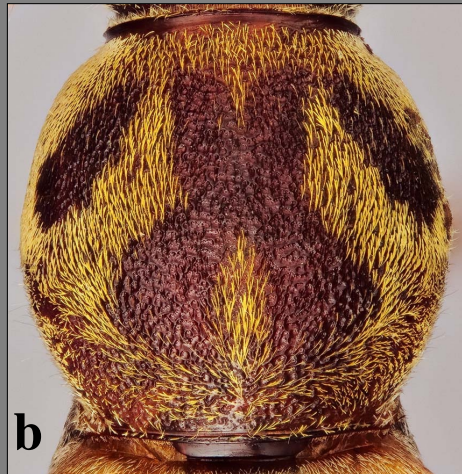




87 (86)

Pronotum with sharp, well-defined pale markings (a-c).....88

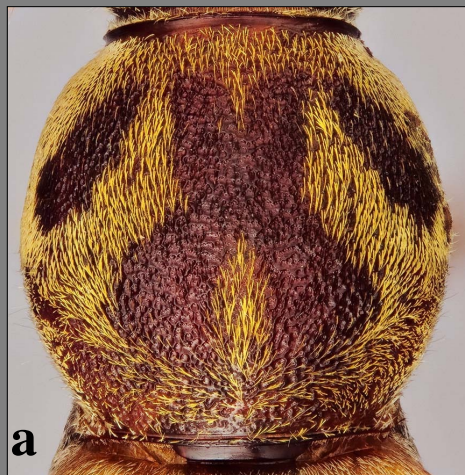
Pale pubescence on pronotum not in the form of sharply defined markings but more generally distributed over the dorsum (d-e).....FTT





88 (87)

Pronotum with dark median area surround by paler, more-or-less arcuate bands (a-b).....89



Pale pubescence on pronotum mostly in form of bands at anterior and posterior margins (c).....FTT





89 (88): Part I

Pronotum with an interrupted median pale pubescent stripe and an arcuate lateral pale pubescent stripe on either side(a); pale pubescence golden (c); portrait (c).....*Chlorophorus annularis* (Fabricius)*

Pronotum with dark central area surrounded by pale pubescence (b); pale pubescence gray (d); portrait (e).....*Chlorophorus strobilicola* Champion*





89 (88): Part II



Chlorophorus annularis (Fabricius)*



c



89 (88): Part III



Chlorophorus strobilicola Champion*



d

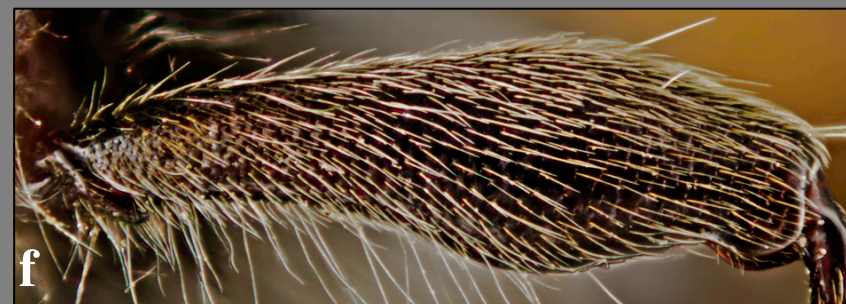
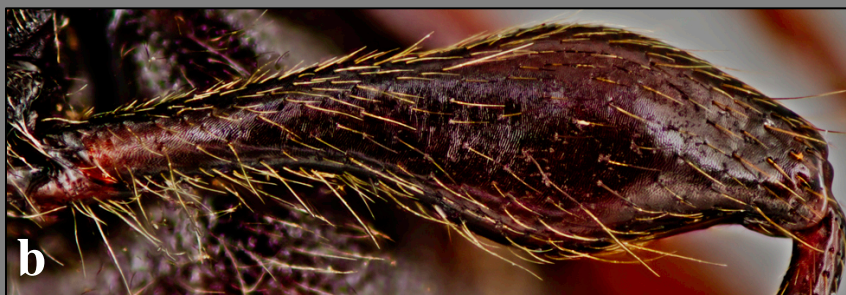
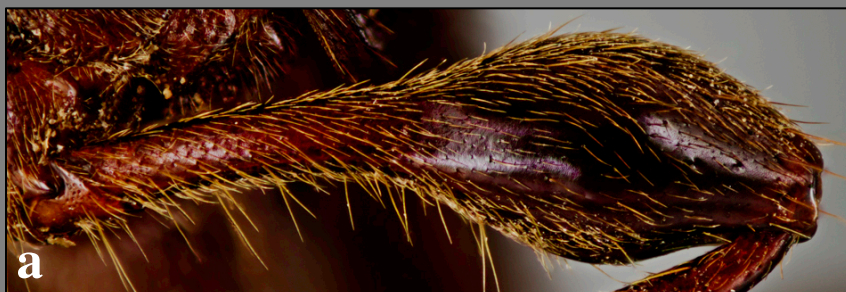


Begin key

90 (74)

At least meso- and meta-femora strongly club-shaped, very narrow and cylindrical in basal third to half and abruptly much broader in the apical half to two-thirds (a-c).....91

Femora not strongly clubbed, slightly broadened around apical third to half but not narrowly cylindrical at base (d-f).....102

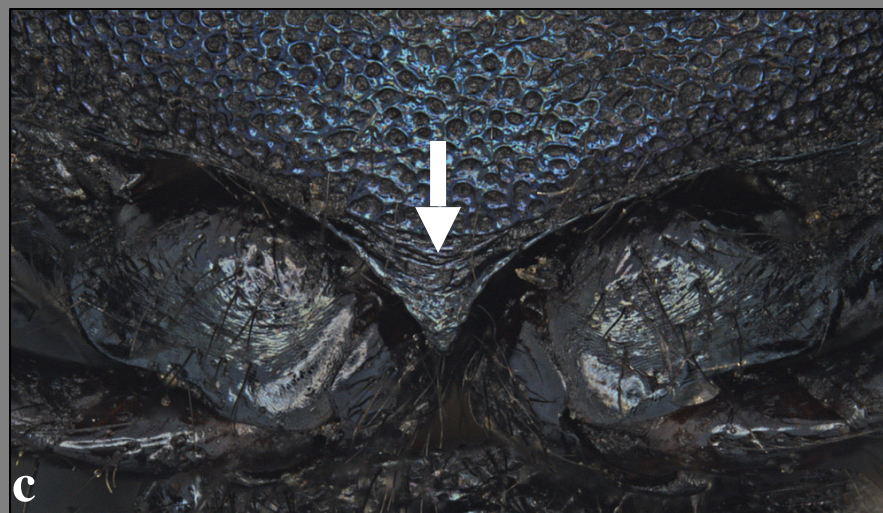
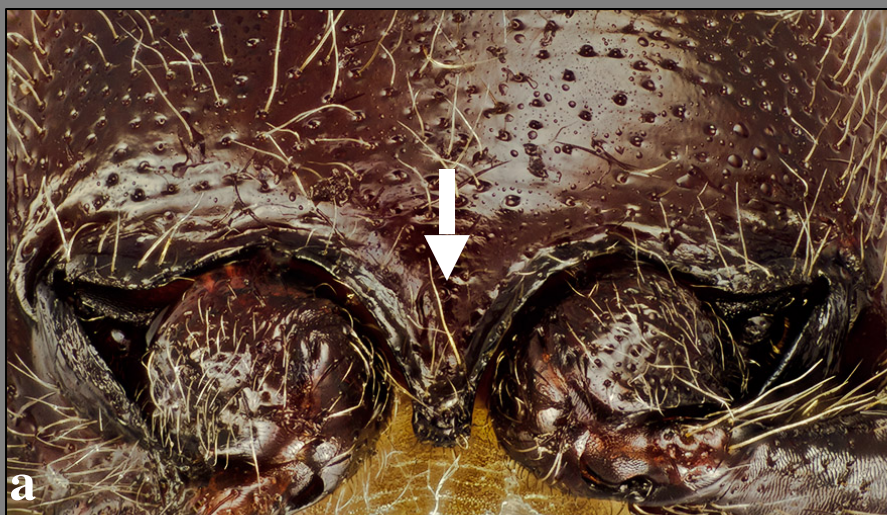




91 (90)

Process separating procoxae extends almost the length of the procoxae (a)....92

Procoxae are in contact or the procoxal process extends no farther than half the length of the procoxae (b-c).....93





92 (91): Part I

Elytra dark with pale markings (a); rest of body dark (c) ;
portrait (c).....*Callidiellum rufipenne* (Motschulsky)*

Elytra pale with dark markings (b); rest of body pale (d) ;
portrait (d).....*Callidiellum villosulum* Fairmaire*





92 (91): Part II



Callidiellum rufipenne (Motschulsky)*



c



92 (91): Part III



Callidiellum villosulum Fairmaire*



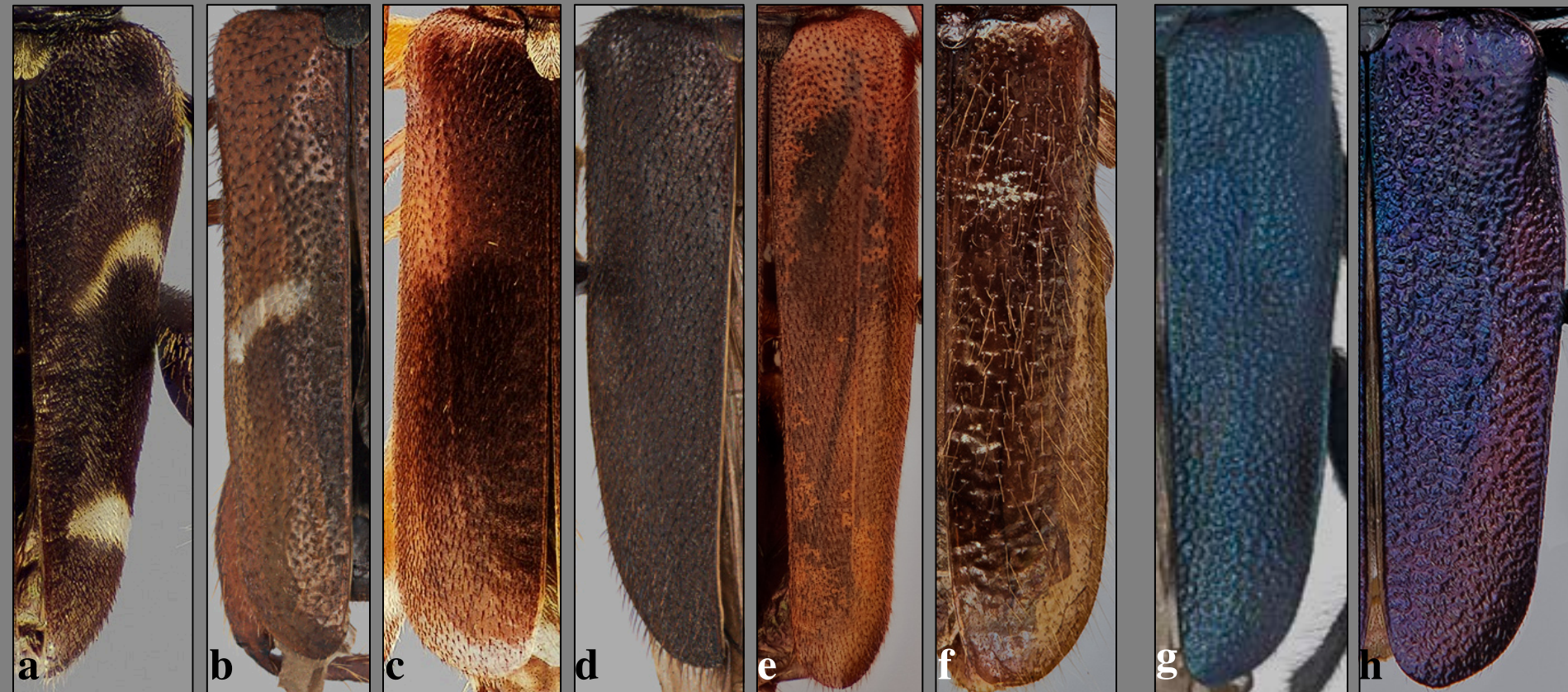


Begin key

93 (91): Part I

Elytra often with pale bands (a-b) or extensive pale markings (c), otherwise overall brown or black (d-e) or brassy (f) (rarely dark metallic), with small and fine punctures; antennae and body slender (i-l).....94

Elytra never with pale bands (g-h), sometimes with vague pale borders along outer margins (h), with large and coarse punctures; antennae and body stout (m-n); often, not always, dark metallic in color.....FTT





93 (91): Part II



antennae and bodies slender



antennae and bodies stout

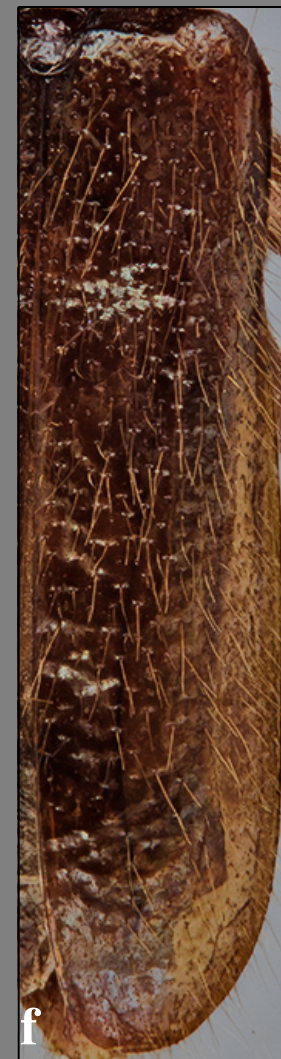
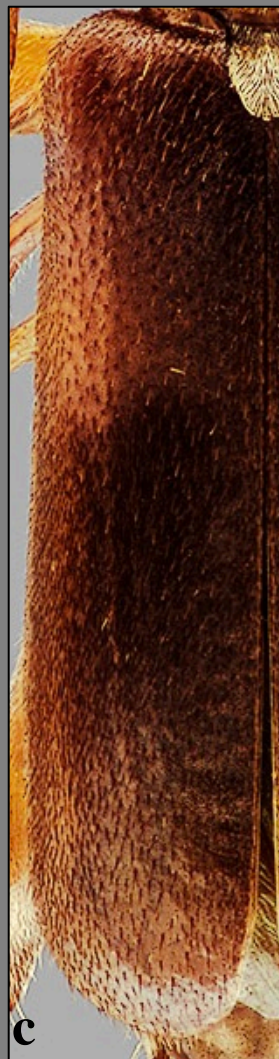




94 (93)

Elytra with pale bands (a-b) or extensive pale markings (c).....95

Elytra without pale bands or extensive pale markings (d-f).....98

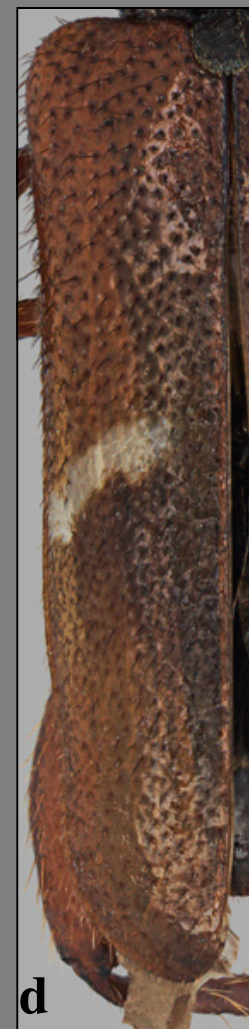
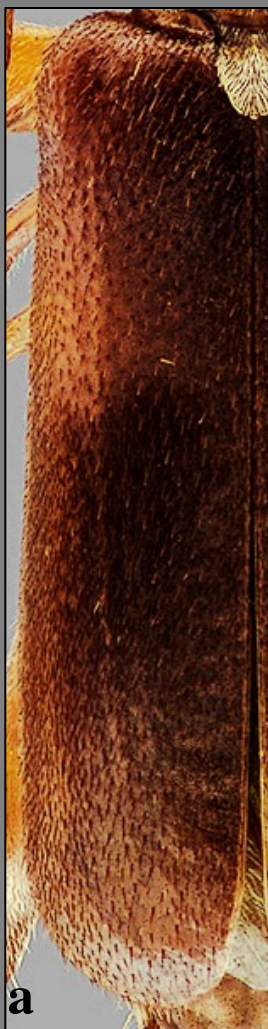




95 (94): Part I

Elytra with extensive pale markings but without pale bands (a); portrait (e).....*Phymatodes dimidiatus* (Kirby)

Elytra only with pale bands (b-d).....96





Begin key

95 (94): Part II



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Phymatodes dimidiatus (Kirby)



e

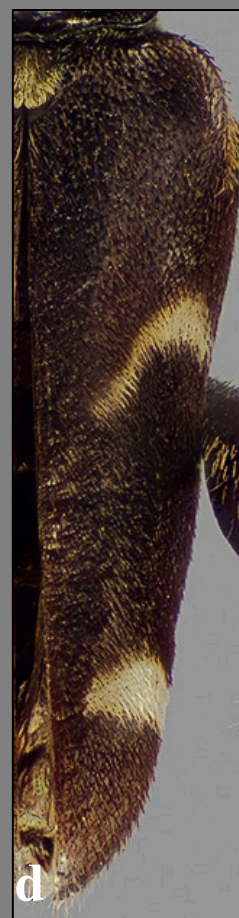
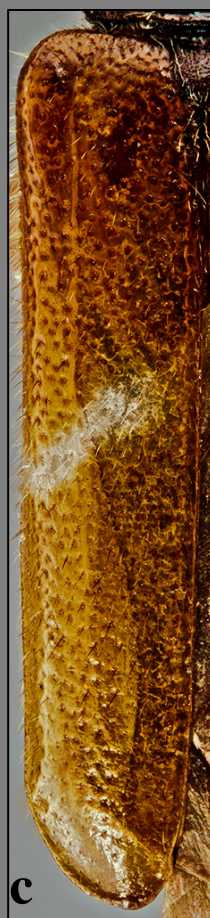
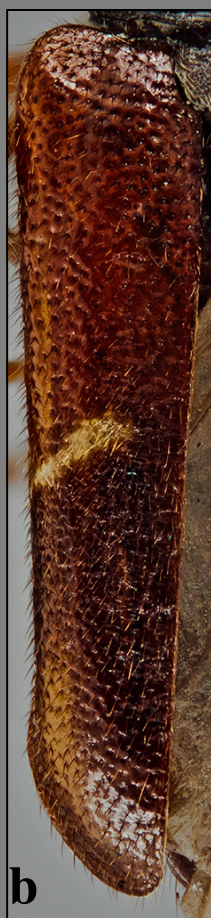
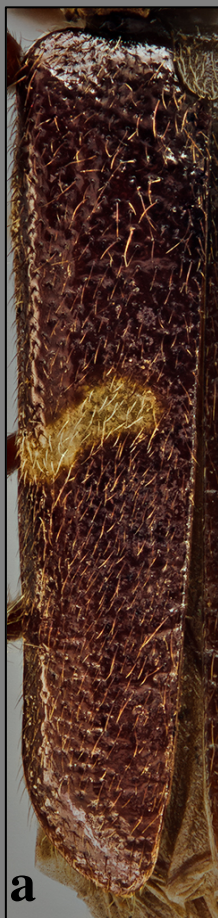


96 (95): Part I

Each elytron with one pair of pale bands, elytra varying in color (a-c); portrait (f).....*Phymatodes nigrescens* Hardy & Preece

Note: Another western species, *P. vulneratus* (LeConte), will key here. The characters distinguishing these two species are very subtle. Individuals keying to *P. nigrescens* are much more common in the samples we've seen.

Each elytron with two pairs of pale bands (d-e).....97





Begin key

96 (95): Part II



Index

Phymatodes nigrescens Hardy & Preece



f



97 (96): Part I

Elytra dull, with dense pubescence (a); portrait (c)*Phymatodes decussatus* (LeConte)

Elytra glossy, with sparse pubescence (b); portraits (d-e).....*Phymatodes nitidus* LeConte





97 (96): Part II



Phymatodes decussatus (LeConte)



c



97 (96): Part III

Phymatodes nitidus LeConte





98 (94): Part I

Elytra brassy and shiny with long, sparse pubescence (a);
portrait (c)..... *Phymatodes aeneus* LeConte

Elytra with dense pubescence and often dull (b-c), if shiny,
not brassy (d-e).....99





98 (94): Part II

Phymatodes aeneus LeConte





99 (98)

Eye incompletely separated into dorsal and ventral lobes, lobes connected by strip 3 or more facets wide (a).....100

Eye almost completely separated into dorsal and ventral lobes, lobes connected by strip no more than 2 facets wide (b)....FTT

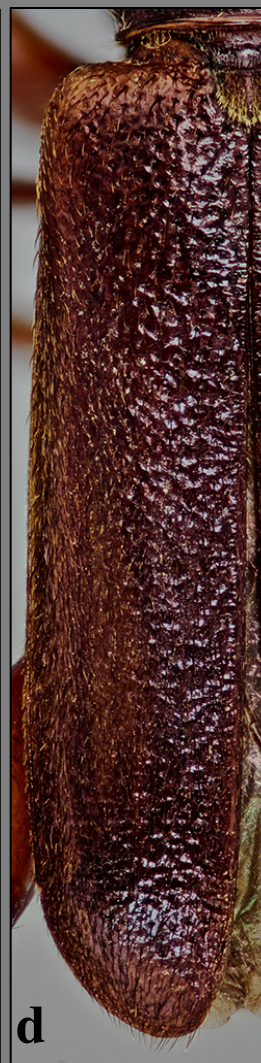
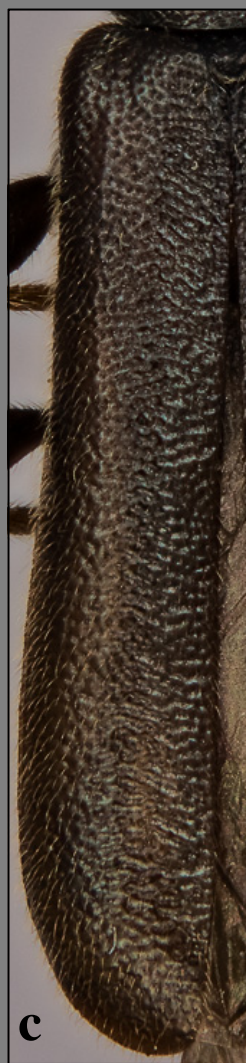




100 (99)

Elytra dull (a-b).....101

Elytra shiny (c-d).....FTT

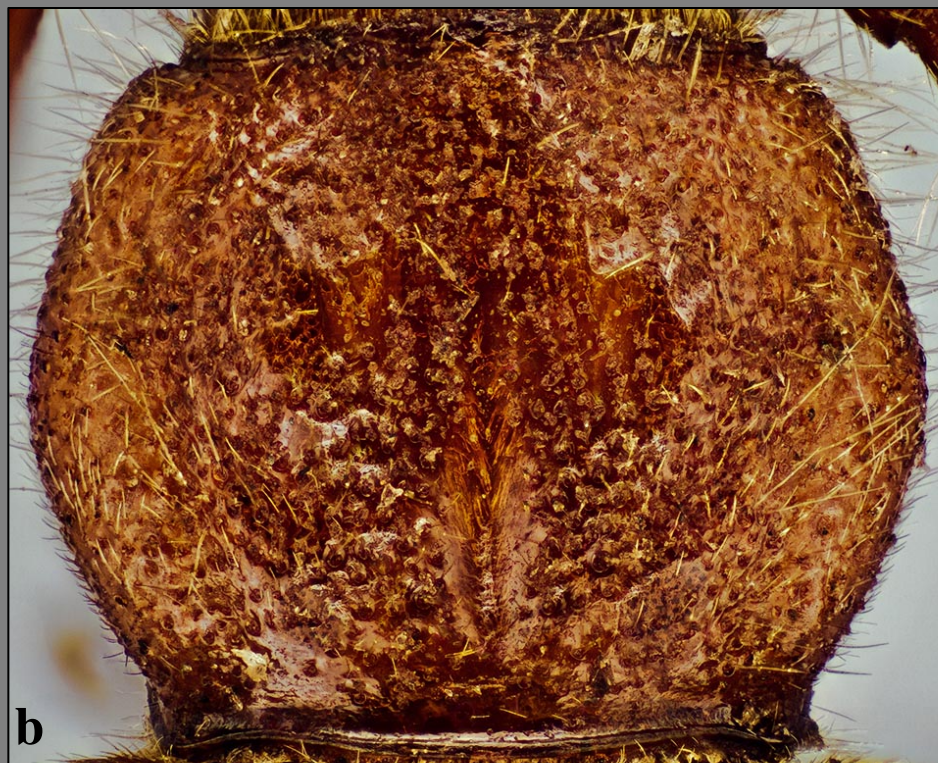




101 (100): Part I

Dorsum of pronotum granulate-punctate (a); elytra very finely and indistinctly punctate (c); normally unicolorous; portrait (e).....*Phymatodes grandis* Casey

Dorsum of pronotum only with punctures, granules absent (b); elytral punctures larger and distinct (d); if elytra dark, then the pronotum is pale; portraits (f-g).....*Phymatodes testaceus* (Linnaeus)





101 (100): Part II

elytra very finely and indistinctly punctate



elytral punctures larger and distinct





101 (100): Part III

Phymatodes grandis Casey





Begin key



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101 (100): Part IV

Phymatodes testaceus (Linnaeus)



f. Dark morph

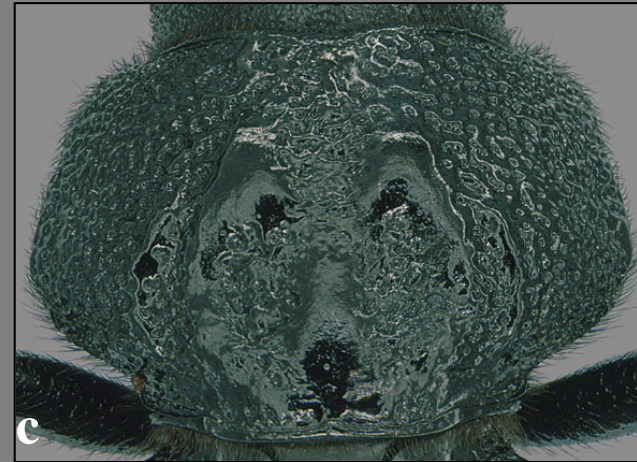


g. Pale morph

102: (90) Part I

Pronotum heavily pubescent (a-b), if distinct raised shiny areas are present, these are small and inconspicuous (a); elytra are brown and heavily pubescent (e-g)....103

Pronotum thinly pubescent with large, raised shiny areas (c-d); elytra uniformly bright metallic purple (h) or sharply bicolored (i) and thinly pubescent.....FTT



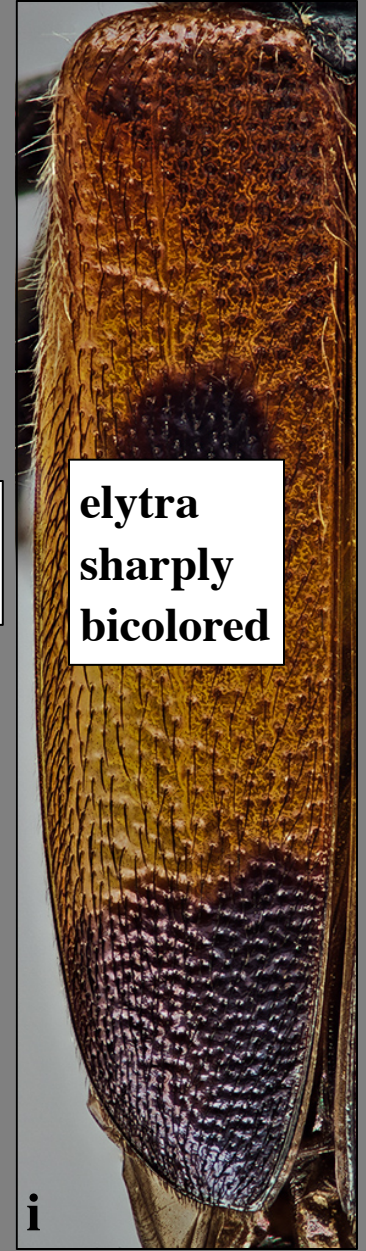
102: (90) Part II



elytra brown and heavily pubescent



elytra uniformly
bright metallic



elytra
sharply
bicolored



103: (102) Part I

Elytra (a) and pronotum (d) with more-or-less even covering of pubescence; portrait (g).....*Trichoferus campestris* (Falderman)*

Elytra (b-c) and pronota (e-f) with abundant denuded round spots.....104





103: (102) Part II



Trichoferus campestris (Falderman)*

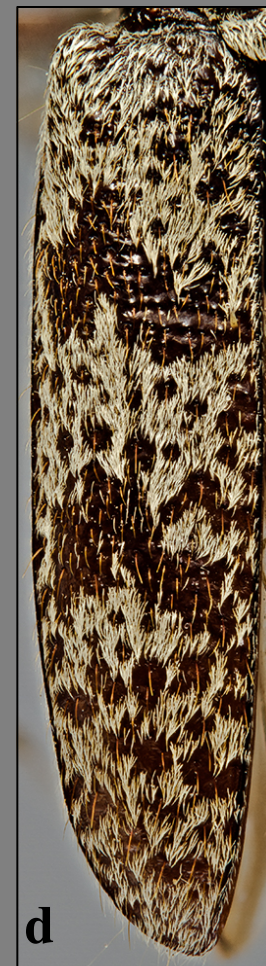




104: (103) Part I

Pronotum (a) and elytra (c) with smaller punctures and smaller denuded round spots and without extensive denuded markings; portrait (e).....*Brothylus gemmulatus* LeConte

Pronotum (b) and elytra (d) with larger punctures and larger denuded round spots and with extensive denuded markings.....FTT





104: (103) Part II



Brothylus gemmulatus LeConte

