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AN ANNOTATED CHECK LIST OF THE COMMON BARK BEETLES FOUND IN ALBERTA WITH A FIELD KEY TO GENERA

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Introduction

The importance of bark beetles as tree pests are well known and many accounts of their habits and biologies are well documented in the forestry and entomology literature. These insects frequently cause major damage to trees by attacking the branches, stems, twigs, cones or roots.

This report is intended to assist field personnel to tentatively identify most of the more common bark beetles found in the Alberta-Yukon-Northwest Territories region. It is suspected, however, that species not mentioned in this report may also be present in the region. The field keys include 18 genera and a check-list of 45 species with information on their geographic distribution and tree hosts. A glossary of taxonomic terms and two plates of illustrations are also included.

Because it is unlikely that most people have ready access to a microscope, the distinguishing characteristics of each genera and for the most part, the species, are discernable with a 10 power hand lens.

Field Key to Genera

1. Venter of abdomen tapers sharply upward forming a cavity underneath the elytra (Fig. 1).....Scolytus
Venter of abdomen not tapering sharply upward..... 2
2. Elytral declivity with spines; sometimes small and blunt..... 3
Elytral declivity without spines..... 4
3. Elytral declivity with a distinct hook (male) or two blunt spines on each side (female)(Figs. 2 & 3).....Pityogenes
Elytral declivity moderately concave with three short spines on each side (Fig. 4).....Orthotomicus or Pityokteines
Elytral declivity strongly concave with prominent spines (Figs 7, 8, 11, 14, 16, 19 and 20).....Ips
4. Pronotum slopes noticeably downward (lateral view)..... 5
Pronotum more or less horizontal and/or somewhat globose..... 6
5. Eyes divided; elytral striae not impressed (Fig. 21)....Polygraphus
Body somewhat elongate; elytral striae impressed (Fig. 22).....Hylurgops
Elytral striae deeply grooved (Fig. 23).....Scierus or Carphoborus
Elytra mottled with gray scales (Fig. 24).....Pseudohylesinus
Stubby; usually large; head noticeable when viewed from above (Fig. 25).....Dendroctonus
6. Elytral declivity flattened or slightly concave..... 7
Elytral declivity convex..... 8
7. Elytra smooth and shiny (Fig. 26).....Pityophthorus
Yellowish body hairs (Fig. 27).....Dryocetes
8. Very small; front of head flattened (Fig. 28).....Crypturgus
Pronotum somewhat globose or moderately arched..... 9
9. Elytra smooth and polished (Fig. 29).....Trypodendron
Pronotum roughened by small pointed tubercles projecting in front.. 10
10. In willow (Fig. 30).....Cryphalus
In poplar.....Procryphalus
In fir.....Taenioglyptes

CHECK-LIST OF SPECIES

(in the same order as appearing in key)

Scolytus piceae: (Fig. 1) 1/8 inch; stubby; dark brown to black. Venter of abdomen tapers sharply upward; abdominal spine prominent. Elytra smooth and shiny.

Host: White spruce

Distribution: Consort, Kinuso, Seebe, Banff National Park and Ft. Providence in the N.W.T.

Scolytus unispinosus: Similar to S. piceae except abdominal spine short and stout.

Host: Douglas fir

Distribution: Hillcrest, Crowsnest Lake and Kootenay National Park.

Scolytus tsugae: Similar to S. unispinosus except abdominal spine absent.

Host: Douglas fir

Distribution: Coleman and Waterton Lakes National Park.

Scolytus sobrinus: Similar to S. unispinosus except for the host.

Host: Alpine fir

Distribution: Waterton Lakes National Park.

Pityogenes knechteli: (Figs. 2 and 3) Less than 1/8 inch; dark brown to black. Males have a distinct hook and the females two blunt spines on each side of a slightly concave declivity.

Hosts: Lodgepole and jack pine and alpine fir

Distribution: General throughout the range of pine.

Orthotomicus caelatus: (Fig. 4) 1/8 inch; dark brown to black. Elytral declivity moderately concave with three short spines on each side; second and third more prominent than the one at the top.

Hosts: White spruce, lodgepole and jack pine

Distribution: General throughout the range of its hosts.

Orthotomicus latidens (see Ips guildi).

Pityokteines sparsus: Less than 1/8 inch; slender; dark brown to black. Declivital spines similar to Orthotomicus. Females with tuft of long yellowish hairs on front of head.

Host: Balsam fir

Distribution: Valleyview.

Pityokteines minutus: Similar to P. sparsus except spines nearly obsolete in females (requires microscopic examination).

Host: Balsam fir

Distribution: Grande Prairie, Clear Prairie, Whitecourt, Slave Lake, Valleyview, Entrance area and Yoho National Park.

Ips borealis: (Figs. 5,6 and 7) 1/8 inch; dark brown to black; declivity with four spines on each side. Front of head smooth with lower part slightly elevated in the female; male with more hairs on front of head.

Hosts: White and engelmann spruce

Distribution: General throughout the range of spruce.

Ips perturbatus: (Fig. 8) 3/16 inch; stubby and one of the largest Ips in Alberta. Declivital spines coarse; the third very prominent and shaped like a spearhead.

Hosts: White and engelmann spruce

Distribution: General throughout the area of spruce.

Ips yohoensis: (Fig. 9) 3/16 inch; narrow; dark brown to black. Second and third declivital spines a little more prominent than one and four. Lower front of head moderately elevated, sometimes with sparse setae.

Hosts: White and engelmann spruce

Distribution: Hillcrest, Brule and Yoho, Banff, Kootenay and Jasper National Parks.

Ips amiskwiensis: (Figs. 10 and 11) 3/16 inch; narrow; dark brown to black. Declivital spines coarse, particularly the third. Lower front of head moderately elevated partially obscured by dense tuft of golden hairs.

Hosts: White and engelmann spruce

Distribution: Blairmore, Seebe, Canmore and Banff, Kootenay and Yoho National Parks.

Ips engelmanni: (Fig. 12) 3/16 inch; narrow; dark brown to black. Declivital spines coarse particularly the third. Lower front of head strongly elevated in female with compact brush of golden hairs covering the face of the protuberance. Lower front of head of males slightly elevated and not as densely tufted.

Hosts: White spruce but mainly engelmann spruce

Distribution: Castlemount, Blairmore, Gap Ranger Station, Sentinel Ranger Station, Seebe and Kootenay National Park.

Ips tridens: (Figs. 13 and 14) 3/16 inch; narrow; dark brown to black. Females are similar to those of I. engelmanni but the frontal protuberance is turned up and more prominent, lacking the dense tuft of hair. Males are similar to those of I. engelmanni.

Hosts: White and engelmann spruce

Distribution: Burmis, Hillcrest, Blairmore, Coleman, Castlemount, Livingstone Ranger Station, Lynx Creek, Seebe and Grand Prairie.

Ips semirostris: (Fig. 15) 3/16 inch; dark brown to black. Females are similar to those of I. tridens but the frontal protuberance not as prominent. Males are similar to those of I. engelmanni.

Hosts: White and engelmann spruce

Distribution: Banff National Park and Aklavik in the Northwest Territories.

Note: Recent work by G. N. Lanier indicates that I. yohoensis, I. amiskwiensis, I. engelmanni, I. tridens and I. semirostris are all one species.

Ips guildi: (Fig. 16) 1/8 inch; slender; dark brown to black. Elytral declivity nearly verticle with second and fourth spines usually quite long, particularly the fourth.

Note: This species is now called Orthotomicus latidens.

Hosts: Lodgepole and limber pine

Distribution: Burmis, Bragg Creek, 60 miles south Grande Prairie, Clear Prairie, Grimshaw, Crimson Lake and Yoho and Jasper National Parks.

Ips pini: (Fig. 17) 1/8 inch; stubby, dark brown to black; surface smooth and shiny. The third declivital spine more prominent on the male. Sutures of the antennal club are curved or angled (usually requires microscopic examination).

Hosts: Lodgepole and jack pine

Distribution: General throughout the range of pine.

Ips perroti: (Fig. 18) very similar to I. pini except the sutures of the antennal club are straight. (No other Ips has the straight sutures).

Hosts: Lodgepole and jack pine

Distribution: Grande Prairie, Robb, Ft. Vermilion, McKay, Pinedale, Dixonville, Keg River area and Waterton Lakes National Park.

Ips mexicanus: (Fig. 19) 1/8 inch; slender; dark brown to black. Moderately concave declivity with three spines on each side; the third long and prominent. (The only Ips in Alberta with just three declivital spines).

Note: This species formerly called I. radiata.

Host: Lodgepole pine

Distribution: Yoho and Waterton Lakes National Parks.

Ips woodi: (Fig. 20) 3/16 inch; stubby; reddish brown to black. Declivital spines coarse, particularly the third. Numerous long yellowish hairs on front of head and pronotum.

Host: Limber pine

Distribution: Burmis, Bellevue and Waterton Lakes National Park.

Polygraphus rufipennis: (Fig. 21) 1/8 inch or slightly less; brown to black. Eyes divided; elytral striae shallow. Pronotum moderately narrowed in front.

Hosts: White, engelmann and black spruce, lodgepole and jack pine.

Distribution: General throughout the range of the spruces.

Hylurgops rugipennis: (Fig. 22) 3/16 inch or more; reddish brown. Body somewhat elongate; elytral striae impressed. Pronotum narrower than elytra gradually tapered toward the front.

Hosts: Lodgepole and jack pine

Distribution: Cypress Hills, Crowsnest Pass, Robb, Edson area, Peace River area and Kootenay, Yoho, Jasper and Waterton Lakes National Parks.

Hylurgops porosus: Similar to H. rugipennis but darker in color.

Host: Lodgepole pine

Distribution: Beaver Mines, Coleman, Entrance and Kootenay, and Waterton Lakes National Parks.

Scierus annectens: (Fig. 23). Usually more than 1/8 inch; reddish brown; elytral striae deeply grooved. Pronotum narrower than elytra moderately tapered in front.

Hosts: White and engelmann spruce and lodgepole pine

Distribution: Blairmore, Porcupine Hills, Seebe, Entrance, Hinton, Edson, Clear Prairie, Keg River, Banff and Yoho National Parks.

Carphoborus carri: Less than 1/8 inch; gray with fuzzy surface; elytral striae deeply grooved.

Host: White spruce

Distribution: Seebe and Big Horn Ranger Station.

Pseudohylesinus nebulosus: (Fig. 24) 1/8 inch; reddish brown. Pronotum narrower than elytra. Elytra mottled with gray or yellowish scales.

Host: Douglas fir

Distribution: Maycroft, Banff, Jasper and Waterton Lakes National Parks.

Dendroctonus obesus: (Fig. 25) 1/4 inch or less; reddish brown to black. Head noticeable when viewed from above. Pronotum narrows somewhat abruptly in front. Strial punctures on declivity small (usually requires microscopic examination).

Note: This species formerly called D. engelmanni or D. borealis.

Hosts: White and engelmann spruce

Distribution: General throughout the range of the host.

Dendroctonus punctatus: 1/4 inch. Similar to D. obesus except pronotum more tapered. Strial punctures on declivity coarse.

Hosts: Black, white and engelmann spruce.

Distribution: Cypress, 32 North Banff, Entrance, Hotchkiss area, High Level and Wadlin Lake area.

Dendroctonus ponderosae: 1/4 inch or less; dark brown to black. Pronotum narrows somewhat abruptly in front.

Note: This species formerly called D. monticolae.

Host: Lodgepole pine

Distribution: Blairmore and Kootenay and Yoho National Parks.

Dendroctonus murrayanae: 1/4 inch; dark brown to black with elytra usually reddish. Pronotum narrows moderately in front. Elytral declivity not too abrupt.

Host: Lodgepole pine

Distribution: General throughout the range of the host.

Dendroctonus valens: Usually more than 1/4 inch; more distinctly reddish than other species. Pronotum narrows moderately in front.

Host: Lodgepole pine

Distribution: Lone Star, Rocky Mountain House and Edson area.

Dendroctonus rufipennis: 1/4 inch; similar to D. murrayanae except for long, dense, golden body hairs.

Host: Jack pine

Distribution: Keg River area.

Dendroctonus pseudotsugae: 1/4 inch; dark brown to black with elytra usually reddish; yellowish body hairs. Pronotum narrows abruptly in front.
Hosts: Douglas fir and western larch
Distribution: Longview, Maycroft, Brocket, Porcupine Hills, Blairmore and Kootenay National Park.

Dendroctonus simplex: 3/16 inch; similar to D. pseudotsugae except for the smaller size.

Host: Eastern larch

Distribution: Athabasca, Grimshaw, Grovedale, Dixonville, Steen River, Chinook Valley, High Level, Lac la Biche, Truman, Northwest Territories and Kootenay National Park.

Pityophthorus tubercalatus: (Fig. 26) Less than 1/8 inch; slender; shiny dark brown to black. Females with long yellowish hairs on front of head. Elytral declivity slightly concave; suture slightly elevated.

Hosts: Lodgepole and limber pine

Distribution: Waterton Lakes National Park, 29 miles north Cowley, Porcupine Hills, Robb, Edson area, 35 miles south of Grande Prairie, Girouxville, Notikewin, Hotchkiss and Indian Cabins.

Pityophthorus alpinensis: Similar to P. tubercalatus except for host.

Host: Alpine larch

Distribution: Highwood pass and Banff National Park.

Dryocetes affaber: (Fig. 27) 1/8 inch; brown. Pronotum narrows gently toward the front. Yellowish body hairs.

Hosts: White and engelmann spruce

Distribution: General throughout the range of white spruce.

Dryocetes autographus: 3/16 inch; reddish brown. Similar to D. affaber except for size and color.

Hosts: White spruce and lodgepole pine

Distribution: Kootenay and Yoho National Parks and N.W.T.

Dryocetes confusus: Over 1/8 inch; dark brown to black; yellowish body hairs. Pronotum narrows gently toward the front. Circular mat of short golden hairs on front of head of female.

Hosts: Alpine and balsam fir

Distribution: Hinton, Clear Prairie, Waterton Lakes, Yoho and Jasper National Parks.

Crypturgus borealis: (Fig. 28) Less than 1/16 inch; brown with pronotum usually darker. Front of head flattened.

Hosts: White spruce and alpine fir

Distribution: Grizzly Creek, Boyle, Cadomin, 36 miles S.E. Grovedale, Hotchkiss and N.W.T.

Trypodendron lineatum: (Fig. 29) 1/8 inch; stubby; dark brown with medium brown stripe on each elytra. Pronotum somewhat globose with varying degree of brown pigment; surface roughened by deep pits. Front of head concave in male.

Hosts: White and engelmann spruce and lodgepole pine

Distribution: Widely distributed throughout the forested areas of Alberta and the National Parks.

Trypodendron retusus: Over 1/8 inch; similar to T. lineatum except usually larger and darker.

Host: Trembling aspen

Distribution: Entrance area.

Cryphalus nitidus: (Fig. 30) 1/16 inch; black. Pronotum somewhat globose with small pointed tubercles projecting in front.

Host: Willow

Distribution: Hillcrest.

Procryphalus mucronatus: 1/16 inch; black. Similar to Cryphalus except lateral edge of elytra usually grooved.

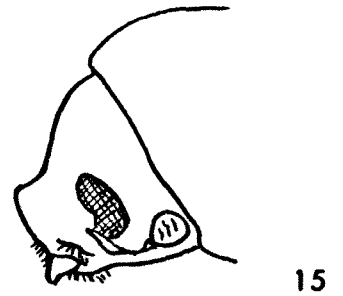
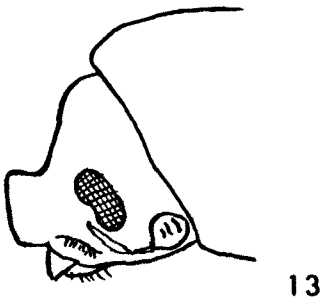
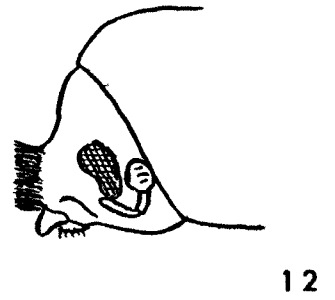
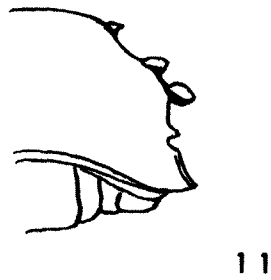
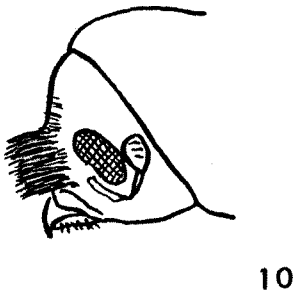
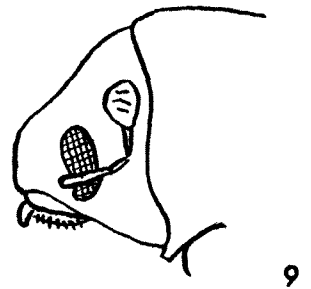
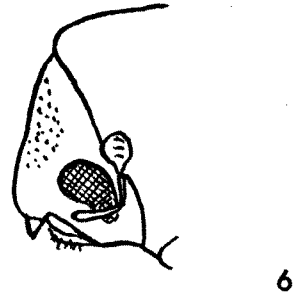
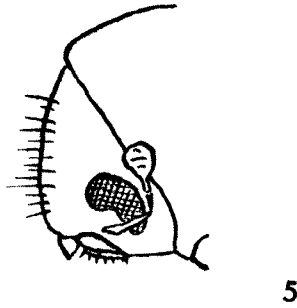
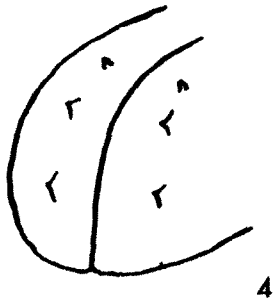
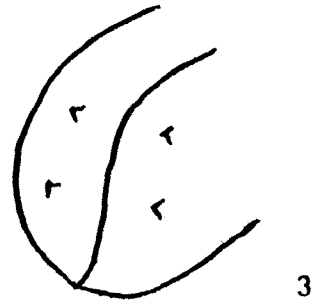
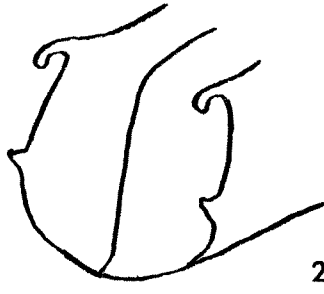
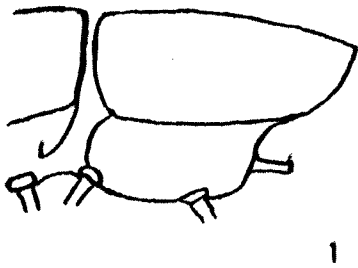
Hosts: Trembling aspen and Northwest poplar

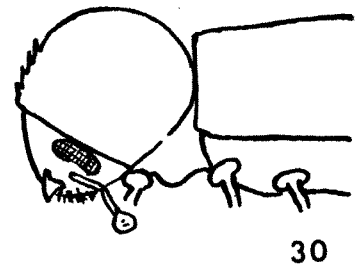
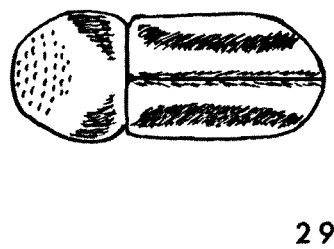
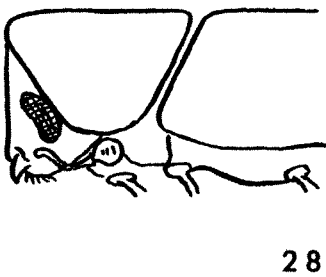
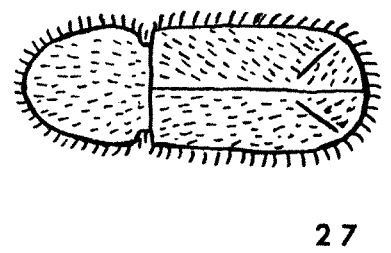
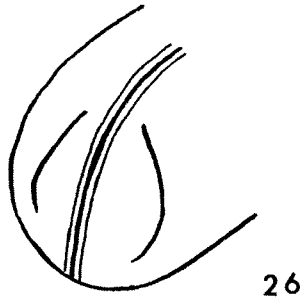
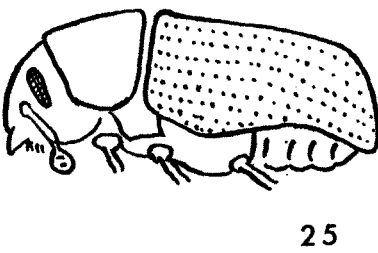
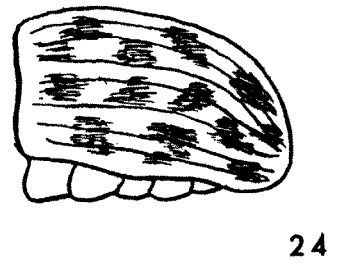
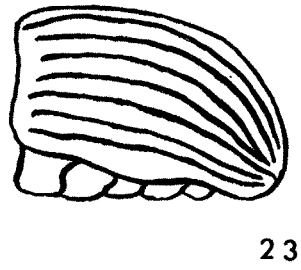
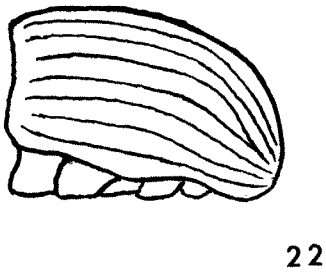
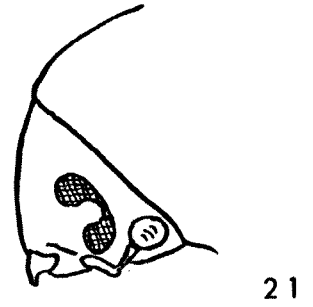
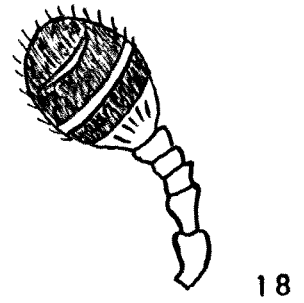
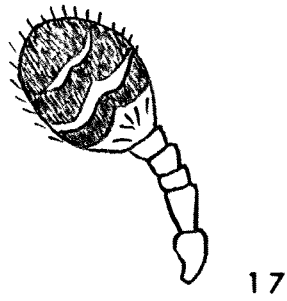
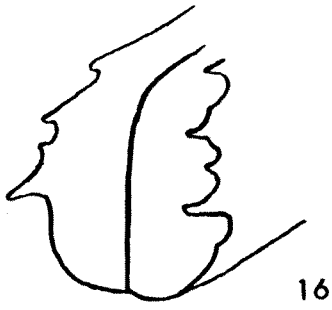
Distribution: Porcupine Hills, Pultenay, Bowden and Consort.

Taenioglyptes ruficollis: 1/16 inch; black. Similar to Cryphalus except body usually a little stouter.

Hosts: Alpine and balsam fir

Distribution: Coleman, Slave Lake, Yoho and Banff National Parks.





Illustrations

1. Scolytus piceae (ventral cavity and abdominal spine)
2. Pityogenes knechteli (Declivital hooks ♂)
3. Pityogenes knechteli (blunt spines ♀)
4. Orthotomicus caelatus (blunt declivital spines)
5. Ips borealis (head ♂)
6. Ips borealis (head ♀)
7. Ips borealis (declivital spines)
8. Ips perturbatus (declivital spines)
9. Ips yohoensis (head)
10. Ips amiskwiensis (head)
11. Ips amiskwiensis (declivital spines)
12. Ips engelmanni (head)
13. Ips tridens (head)
14. Ips tridens (declivital spines)
15. Ips semirostris (head)
16. Orthotomicus latidens (declivital spines)
17. Ips pini (antennal sutures)
18. Ips perroti (antennal sutures)
19. Ips mexicanus (declivital spines)
20. Ips woodi (declivital spines)
21. Polygraphus rufipennis (divided eye)
22. Hylurgops rugipennis (elytral striae)
23. Scierus annectens (elytral striae)
24. Pseudohylesinus nebulosus (elytral scales)
25. Dendroctonus sp. (lateral view)
26. Pityophthorus sp. (elytral declivity)
27. Dryocetes sp. (body hairs)
28. Crypturgus borealis (lateral view of head)
29. Trypodendron sp. (dorsal view)
30. Cryphalus nitidus (lateral view of pronotum)

Glossary

Declivity	:	posterior slope of the elytra
Dorsal	:	upper surface
Elytra	:	outer hard wings
Globose	:	somewhat spherical
Lateral	:	side
Pigment	:	coloring
Pronotum	:	dorsal part of prothorax
Protuberance	:	elevation of the surface
Spines	:	outgrowths or tubercles
Striae	:	thin lines on the elytra
Suture	:	line where the two elytra meet. Also applies to the lines on the antennal club
Venter	:	undersurface