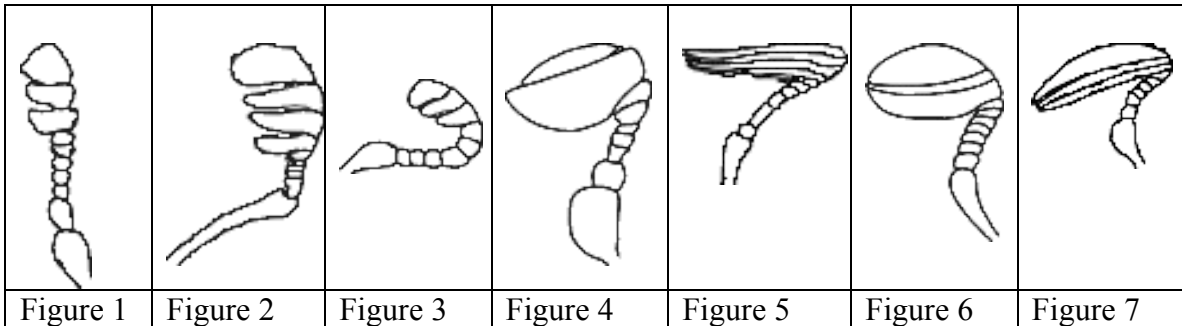


Key to Families and Subfamilies of Scarabaeoidea of the New World

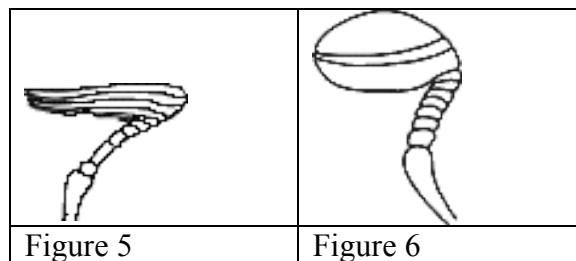
by Brett Ratcliffe and Mary Liz Jameson, 2002

1. Antennal club 3-8 segmented, symmetrical, usually lamellate (figs. 1-7). Head not covered by prothorax. Forecoxae large, strongly transverse or conical and projecting below prosternum. Foretibiae flattened with one or more teeth on outer edge. Tarsi with 5 distinct segments, none of which is lobed or densely pubescent.....2



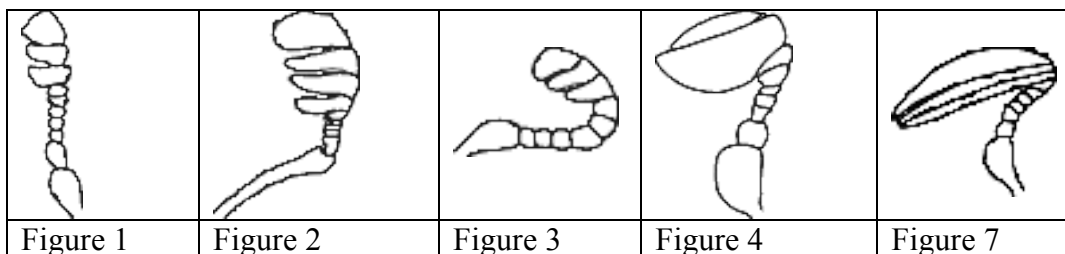
Figures 1-7. Right antenna dorsal view of: (1) *Diphyllostoma* sp. (Diphyllostomatidae), (2) *Platycerus* sp. (Lucanidae), (3) *Odontotaenius disjunctus* (Passalidae), (4) *Hybosorus illigeri* (Hybosoridae), (5) *Pleocomma* sp. (Pleocomidae), (6) *Bradycinetulus* sp. (Geotrupidae), (7) *Euphoria* sp. (Scarabaeidae).

2 (1). Antennae with 11 segments (figs. 5,6)..... 3



Figures 5-6. Right antenna dorsal view of: (5) *Pleocomma* sp. (Pleocomidae), (6) *Bradycinetulus* sp. (Geotrupidae).

2'. Antennae with fewer than 11 segments (figs. 1-4, 7) 4



Figures 1-4, 7. Right antenna dorsal view of: (1) *Diphyllostoma* sp. (Diphyllostomatidae), (2) *Platycerus* sp. (Lucanidae), (3) *Odontotaenius disjunctus* (Passalidae), (4) *Hybosorus illigeri* (Hybosoridae), (7) *Euphoria* sp. (Scarabaeidae).

3(2). Antennal club with 4-7 elongate segments (fig. 5) **Pleocomidae**



Figure 5. Right antenna dorsal view of: *Pleocoma* sp. (Pleocomidae).

3'. Antennal club with 3 circular or oval segments (fig. 6) **Geotrupidae**



Figure 6. Right antenna dorsal view of: *Bradycinetulus* sp. (Geotrupidae).

4(2). Body capable of being rolled into a contracted sphere (fig. 8). Middle and posterior tibiae flattened and dilated **Ceratocanthidae**



Figure 8. *Ceratocanthus* sp. lateral view (Ceratocanthidae).

4'. Body oblong, not capable of being rolled into a sphere. Middle and posterior tibiae not significantly flattened and dilated 5

5(4). Mesotibia at apex with longer spur pectinate along one edge (fig. 9) **Ochodaeidae**



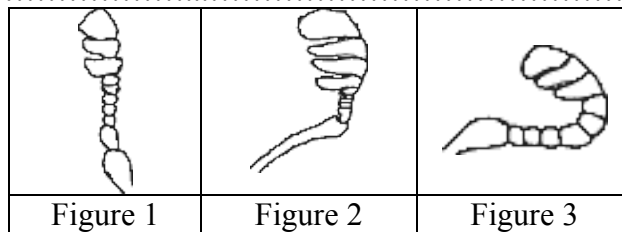
Figure 9. Spur at apex of mesotibia of *Ochodaeus* sp. (Ochodaeidae) (pectinate).

5'. Mesotibia at apex with spurs simple, not pectinate (fig. 10) 6



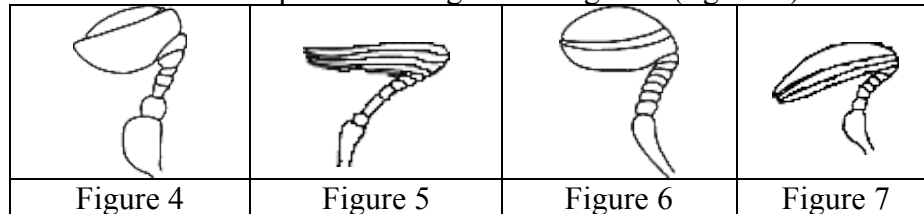
Fig. 10. Spur at apex of mesotibia of *Pleocoma* sp. (Pleocomidae) (simple).

6(5). Segments of antennal club not capable of being tightly closed together (figs. 1-3) 7



Figures 1-3. Right antenna dorsal view of: (1) *Diphyllostoma* sp. (Diphyllostomatidae), (2) *Platycerus* sp. (Lucanidae), (3) *Odontotaenius disjunctus* (Passalidae).

6' Segments of antennal club capable of being closed together (figs. 4-7) 9



Figures 4-7. Right antenna dorsal view of: (4) *Hybosorus illigeri* (Hybosoridae), (5) *Pleocoma* sp. (Pleocomidae), (6) *Bradycinetulus* sp. (Geotrupidae), (7) *Euphoria* sp. (Scarabaeidae).

7(6). Mentum deeply emarginate (fig. 11). Head often with central, anterior horn (fig. 12) **Passalidae**

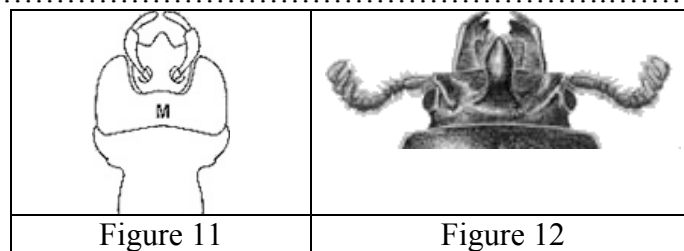


Figure. 11. Ventral view of mentum (M) of *Odontotaenius disjunctus* (Passalidae) (apex deeply emarginate). Figure 12. Head of *Odontotaenius disjunctus* (Illiger).

7'. Mentum simple, not deeply emarginate (fig. 13). Head without central horn 8

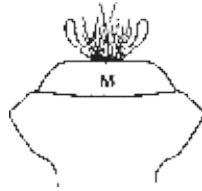
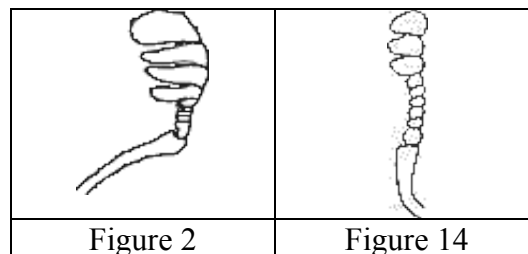


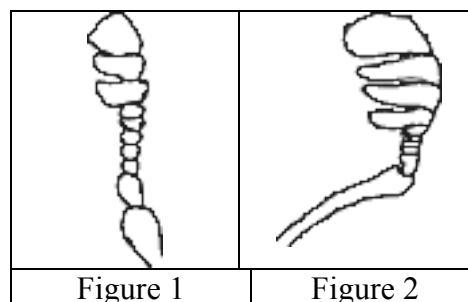
Figure 13. Ventral view of mentum (M) of *Lucanus* sp. (Lucanidae) (apex simple, truncate).

8(7). First antennal segment much longer than segments 2 and 3 together (figs. 2, 14). Antenna geniculate (fig. 2) (exception: straight or weakly geniculate in *Ceruchus*, fig. 14) **Lucanidae**



Figures 2, 14. Right antenna dorsal view of (2) *Platycerus* sp. (Lucanidae) and (14) *Ceruchus piceus*.

8'. First antennal segment subequal to segments 2 and 3 together (fig. 1). Antenna not geniculate (fig. 2) **Diphyllostomatidae**



Figures 1, 2. Right antenna dorsal view of: (1) *Diphyllostoma* sp. (Diphyllostomatidae), (2) *Platycerus* sp. (Lucanidae).

9(6). Antennal club with 3 segments, first segment hollowed out to receive second segment (fig. 4) **Hybosoridae**



Figure 4. Right antenna dorsal view of *Hybosorus illigeri* (Hybosoridae).

9'. Antennal club with 3-7 segments, first segment simple, not hollowed out to receive second segment (e.g., fig. 7) 10



Figure 7. Right antenna dorsal view of *Euphoria* sp. (Scarabaeidae).

10(9). Abdomen with 5 ventral sclerites (fig. 15). Dorsal surface roughened or tuberculate, not shining 11

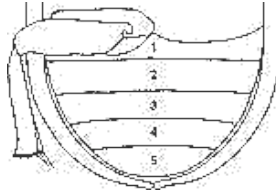


Figure 15. Abdomen and posterior leg of *Omorgus* sp. (Trogidae).

10'. Abdomen with 6 ventral sclerites (fig. 16). Dorsal surface variably sculptured, shining or not 13



Figure 16. Abdomen and posterior leg of *Copris* sp. (Scarabaeidae).

11(10). Antenna 9-segmented **Aclopininae**

11'. Antenna 10-segmented 12

12(11). Eyes not divided by canthus (fig. 17). Clypeus with sides narrowing to apex. Color brown, gray, or black. Metafemora and metatibia not enlarged, not covering abdomen **Trogidae**



Figure 17. Dorsal view of head of *Omorgus* (eyes not divided by canthus).

12'. Eyes divided by prominent canthus (fig. 18). Clypeus with sides subparallel to divergent before apex. Color testaceous to light reddish brown. Metafemora and metatibia enlarged, covering most of abdomen **Glaresidae**



Figure 18. Dorsal view of head of *Glaresis* (eyes divided by prominent canthus).

13(10). Elytra shortened and widely divergent at apex, not covering pygidium (fig. 19) (except in *L. lupina*). Eighth abdominal segment with spiracle **Glaphyridae**

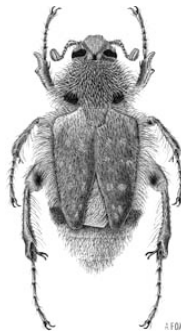


Figure 19. *Lichnanthe rathvoni* LeConte (Glaphyridae).

13'. Elytra not shortened and widely divergent at apex, pygidium exposed or not. Eighth abdominal segment lacking spiracle 14

14(13). Pygidium completely (or nearly so) covered by apex of elytra. Length 1.5-13.0 mm **Aphodiinae**

14'. Pygidium completely exposed. Length longer than 5.0 mm 15

15(14). Antennal insertion visible from above (clypeus with sides constricted medially just before eyes) (fig. 20) **Cetoniinae**

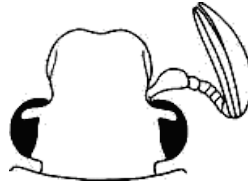


Figure 20. Head and antenna (dorsal view) of *Euphoria* sp. showing clypeal sides constricted and with antennal insertion visible.

15'. Antennal insertion not visible from above (clypeus with sides not constricted) 16

16(15). Abdominal sternites distinctly narrowed at midline (fig. 16); length of all sternites shorter than length of metasternum. Scutellum usually hidden **Scarabaeinae**

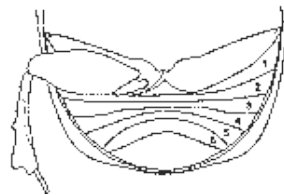
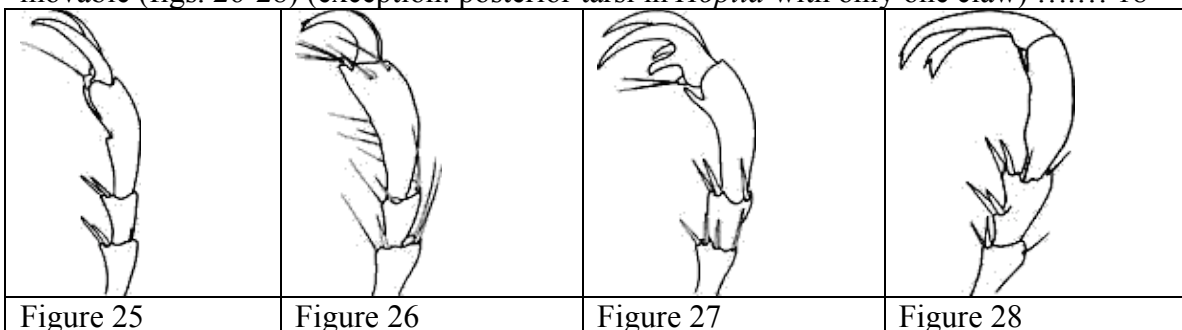


Figure 16. Abdomen and posterior leg of *Copris* sp. (Scarabaeinae).

16'. Abdominal sternites normal, not narrowed at midline; length of all sternites longer than length of metasternum. Scutellum usually visible 17

17(16). Claws of both middle and posterior tarsi unequal in length and independently movable (fig. 25) (exception: all legs in *Leptohoplia* with only claw or with one claw greatly reduced) **Rutelinae**

17'. Claws of both middle and posterior tarsi equal in length and not independently movable (figs. 26-28) (exception: posterior tarsi in *Hoplia* with only one claw) 18



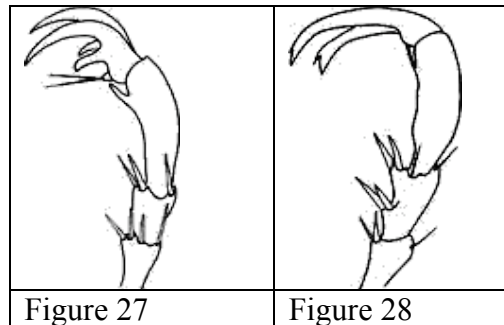
Figures 25-28. Claws of posterior tarsi of: (25) *Anomala* sp. (Rutelinae) (claws simple and unequal in length). (26) *Xyloryctes jamaicensis* (Dynastinae) (claws simple and equal in length), (27) *Polyphylla* sp. (Melolonthinae), (28) *Dichelonyx* sp. (Melolonthinae) (claws cleft or toothed and equal in length).

18 (17). Claws of middle and posterior tarsi simple (fig. 26). Base of pronotum and elytra subequal in width. Apex of posterior tibia always with 2 spurs. Mandibles often exposed in dorsal view 19



Figure 26. Claws of posterior tarsi of *Xyloryctes jamaicensis* (Dynastinae) (claws simple and equal in length)

18'. Claws of middle and posterior tarsi cleft, toothed (figs. 27-28), or simple (if simple, base of pronotum much narrower than base of elytra). Apex of posterior tibia with 1-2 spurs or spurs absent. Mandibles hidden in dorsal view Melolonthinae



Figures 27-28. Claws of posterior tarsi of: (27) *Polyphylla* sp. (Melolonthinae), (28) *Dichelonyx* sp. (Melolonthinae) (claws cleft or toothed and equal in length).

19 (18). Mandibles and labrum projecting anteriorly beyond clypeus, visible in dorsal view. Metatibial spines separated by base of tarsomere 1 (fig. 29) 20



Figure 29. Metatibial apex showing metatibial spurs of *Aegidium* (spurs separated by base of tarsomere 1).

19'. Mandibles and labrum not projecting anteriorly beyond clypeus, not visible in dorsal view. Metatibial spines adjacent, not separated by base of tarsomere 1 (fig. 30)
 **Dynastinae**



Figure 30. Metatibial apex showing metatibial spurs of *Ancognatha* (spurs adjacent, not separated by tarsomere 1).

20 (19). Prosternal projection (posterior to procoxae) produced to level of procoxae, conical. Venter with abundant, long, tawny setae **Allidiostomatinae**

20'. Prosternal projection (posterior to procoxae) triangular, produced to middle of procoxae. Venter without abundant, long setae **Orphninae**