

EXERCISE VIII
ORDER MALLOPHAGA

The student will identify mounted specimens of Mallophaga with the aid of the following key:

Key to Certain Mallophaga of Medical and Veterinary Importance Including Those Species
Commonly Found on Domesticated Animals in North America North of Mexico¹
Adults Only

1. Antennae normally 4-segmented, distinctly clubbed or capitate and may be largely or entirely concealed in antennal grooves or capsules on underside of head; maxillary palpi 2- to 4-segmented (Fig. 67); meso- and metathorax usually separated by a suture *Amblycera* 2
- Antennae 3- or 5-segmented, usually filiform, not concealed in a groove, maxillary palpi absent (Fig. 68); meso- and metathorax usually fused without a dividing suture, forming the "pterothorax". *Ischnocera* 12

AMBLYCERA

2. Tarsi each with 2 claws. 3
- Middle and hind legs with one claw or with none (on guinea pigs and other neotropical rodents) *Gyropidae* 7
3. Antennae clavate, 4-segmented, or if 5-segmented, then without a compact terminal club 4
- Antennae capitate (compact terminal club), 5-segmented; legs long and slender; body clothed with stiff, slender setae (on kangaroos, wallabies, dogs) *Boopidae*
(on dog) *Heterodoxus spiniger*
4. Antennal grooves lateral in position, with broad lateral openings; abdomen broad and distinct from pterothorax 5
- Antennal capsules small, with small ventral openings (Fig. 73); abdomen joined to pterothorax with little or no lateral notch 6
5. Head evenly expanded behind, broadly triangular and strongly enlarged above the eyes (Fig. 67); 6 pairs of abdominal spiracles present; pro- and mesothorax never fused (Fig. 70) (on poultry and other birds—27 genera in North America north of Mexico) *Menoponidae* 8
- Head not evenly expanded behind, nor broadly triangular, not enlarged above the eyes; 5 pairs of abdominal spiracles present; mesothorax either greatly reduced or fused with the prothorax (on Central and South American rodents) *Trimenoponidae*
(on guinea pig) *Trimenopon hispidum*
6. Sides of head nearly straight; spiracles located on segments II-VII (on song birds—one North American genus) *Ricinidae*
- Sides of head with strong lateral swellings in front of eyes; spiracles located on segments III-VIII (on birds of prey, grebes and shore birds—one genus) *Laemobothriidae*

GYROPIDAE

7. Tarsi with at least 1 claw each; 6 pairs of abdominal spiracles present; maxillary palpi 3-4-segmented *Gyropus*
(oval guinea pig louse) *Gyropus ovalis*
- Tarsi without claws (Fig. 69); 5 pairs of abdominal spiracles; maxillary palpi 2-segmented *Gliricola*
(slender guinea pig louse) *Gliricola porcelli*

¹ Prepared with the aid of John S. Wiseman.

MENOPONIDAE

8. Meso- and metathorax usually united, but if separated both segments similar to abdominal segments; first 2 antennal segments without marked distal anterior expansions. 9
 - Thorax strongly developed; meso- and metathorax divided by a suture and both quite dissimilar in shape to abdominal segments (Fig. 71); first 2 antennal segments with marked distal anterior expansions (several species on domestic and wild ducks and geese) Trinoton
9. Head with spine-like ventral processes arising lateral and posterior to the mandibles (Fig. 67) Menacanthus 10
 - Head without ventral sclerotized processes arising lateral and posterior to the mandibles (on chickens and guinea fowl) (shaft louse) Menopon gallinae
 (= pallidum)
10. Abdominal tergites III-VII each with 2 transverse rows of setae (Fig. 66) 11
 - Abdominal tergites III-VII each with 1 transverse row of setae (on chickens) Menacanthus pallidulus
11. Less than 2 mm. in length; dorsum of meso-metathorax with a few short setae on the lateral margins (on chickens) Menacanthus cornutus
 - More than 2 mm. in length; numerous short setae scattered on dorsum of meso-metathorax (common on chickens and turkeys and sometimes found on other domestic fowl) Menacanthus stramineus

ISCHNOCERA

12. Tarsi with a single claw; antennae 3-segmented in male and usually in female (infesting rodents, carnivores, ungulates, and other mammals—5 genera in North America north of Mexico) Trichodectidae 13
 - Tarsi 2-clawed; antennae 5-segmented in both male and female (59 genera on birds in North America north of Mexico) Phloptoridae 27

TRICHODECTIDAE

13. Three pairs of abdominal spiracles (Fig. 72); second antennal segment of male longer than base segment Felicola 14
 - Six pairs of abdominal spiracles or none evident; second antennal segment of male shorter than base segment 15
14. Preantennal region triangular (Fig. 72) (on cat) Felicola (Felicola) subrostratus
 - Preantennal region broadly rounded (on fox) Felicola (Suricatoecus) vulpis
15. Head width equal to or less than length 16
 - Head width greater than length (Fig. 74) 24
16. Preantennal region broadly rounded with numerous short setae (if notched anteriorly then male and female antennae similar); abdominal segments each with a transverse row of setae and with scattered setae (on cow, goat, horse, sheep, elk, and reindeer) . Damalinea (Bovicola) 17
 - Preantennal region with anterior margin set off by distinct angles from lateral margins, with sparse short setae; sexes with dissimilar antennae; abdominal segments each with a transverse row of setae 22
17. Body sparsely covered with short setae 18
 - Body densely covered with long setae (from angora goat) Damalinea crassipes
18. Antennae of sexes dissimilar; first segment of male antenna considerably swollen 19
 - Antennae of sexes similar 20
19. Gonapophysis of female with internal margin nearly straight, with internal lobe reduced (Fig. 82) (on horse) Damalinea equi
 - Gonapophysis of female with a large internal lobe or projection (on sheep) Damalinea ovis

20. Anterior margin of female clypeus feebly emarginate (notched) or not at all 21
 - Anterior margin of female clypeus deeply emarginate (angora goat). Damalinea limbata
21. Head subquadrangular (Fig. 75); dorsal surface of head with few setae; setae on inner margin of gonapophysis restricted to lobe (goat). Damalinea caprae
 - Head not quadrangular, narrowing anteriorly; dorsal surface of head with numerous setae; setae on inner margin of gonapophysis not restricted to lobe (on cattle) Damalinea bovis
22. Male with parameres fused distally; endomeres fused to form endomeral plate (Fig. 80) (pseudopenis) (on deer) Damalinea (Tricholipeurus) 23
 - Parameres and endomeres free (Fig. 81) (on porcupine). Eutricophilus
23. First antennal segment less than 1/2 the total antennal length (on deer). Damalinea parallela (= odocoilei)
 - First antennal segment of male at least 1/2 the total antennal length (Fig. 76) (on deer) Damalinea lipeuroides
24. Six pairs of abdominal spiracles present; antennae of male shorter than head . . . Trichodectes 25
 - No visible abdominal spiracles; antennae of male longer than head and prothorax combined (on pocket gophers) Geomydoecus
25. Parameres and endomeres free (See Fig. 81) 26
 - Parameres fused distally (Fig. 80); endomeres fused to form endomeral plate (on wild carnivores: badger, cacomistle, skunk, and probably weasel) Trichodectes (Neotrichodectes)
26. Antennae of the sexes similar (on mink, martin, ermine, and weasel) . . . Trichodectes (Stachiella)
 - Antennae sexually dimorphic (on dog, wolf, bear, coyote, and racoon) Trichodectes (Trichodectes)
 (on dog and other canines) Trichodectes canis

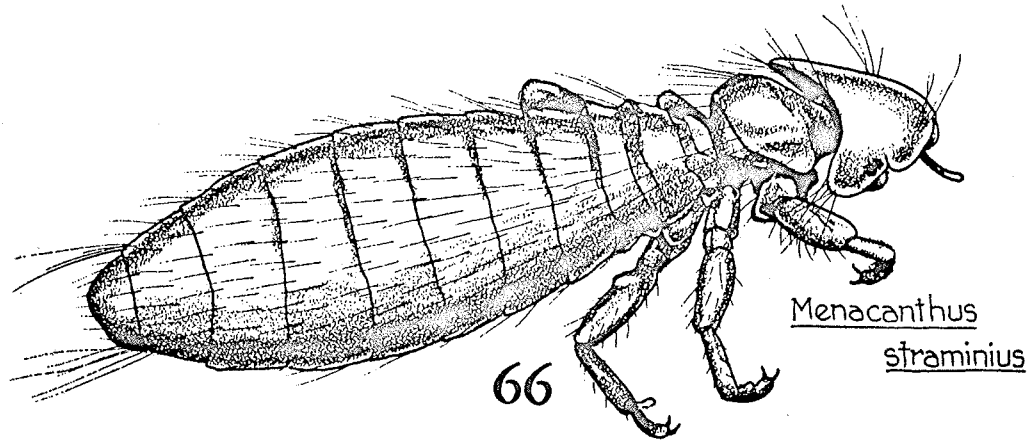
PHILOPTERIDAE

27. Preantennal region expanded and with a hyaline-free margin (Fig. 77), a pair of small peg-like spines dorsally (on geese, ducks, swans) Anatoecus
 - Not as above 28
28. Sides of forehead usually straight or angulate, if slightly convex not forming a continuous arc with anterior medial margin; temporal lobes rounded 29
 - Forehead forming a continuous arc from bases of antennae; temporal lobes frequently angulate 30
29. Clypeus dorsally armed with 2 pairs of spines, one flattened and porrect, the other strongly recurved (slender pigeon louse) Columbicola columbae
 - Clypeus not armed dorsally (on geese, ducks, swans) Anaticola
30. Temples angulate 31
 - Temples rounded 34
31. Temporal lobes angulate or somewhat produced but not extending far backward and without stylet-like processes 32
 - Temporal lobes extending far backward terminating in long stylet-like processes (Fig. 78) (large turkey louse) Chelopistes meleagridis (= Goniodes meleagridis)
32. Large lice; over 2 and up to 5 mm. in length; more than 2 long setae on each side of head in post-antennal region and additional long setae on dorsum of head Goniodes 33
 - Smaller lice, less than 2 mm. in length; 2 long setae on each side of head in post-antennal region, all other setae on head are short (on chicken). (fluff louse) Goniocotes gallinae
33. Two long setae on each temple; male antenna with process on third segment (brown chicken louse) Goniodes dissimilis
 - Three long setae on each temple, no process on third segment of male antenna (large chicken louse) Goniodes gigas

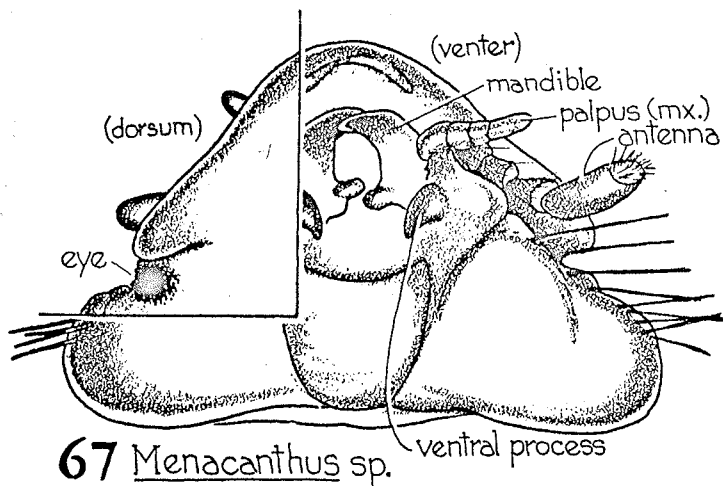
34. Without chitinized projections near the clypeal margin 35
 - Anterior portion of head near the clypeal margin with a series of chitinized projections
 joined to form a transverse line (slender turkey louse) Oxylipeurus polytrapezius
 (= Lipeurus polytrapezius)
35. First antennal segment of male with an appendage (Fig. 79); dorsally, a patch of long setae
 on each postero-lateral angle of pterothorax with no intervening long setae (on chickens)
 (wing louse) Lipeurus caponis
 - First antennal segment of male without an appendage; dorsally, the posterior margin of the
 pterothorax with 4 patches of long setae (on chickens) . . . (head louse) Cuclutogaster heterographus

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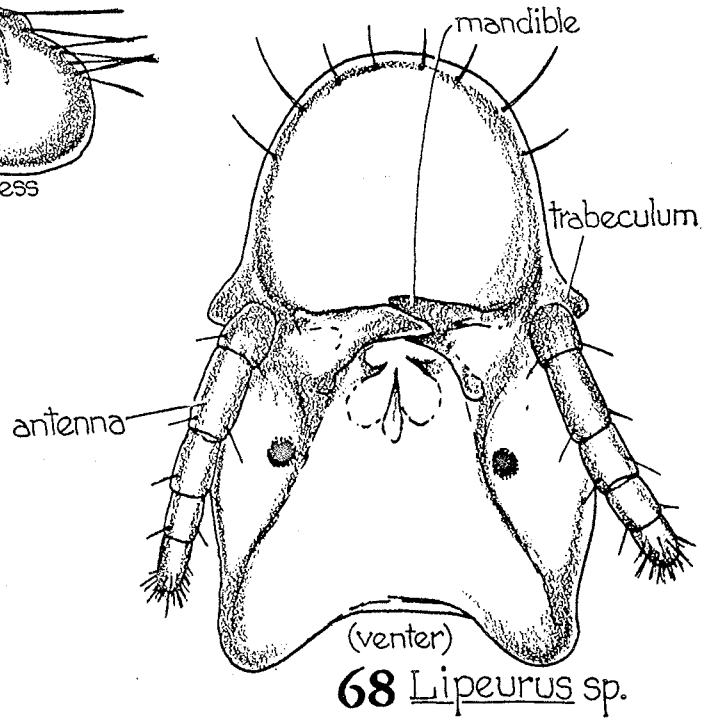
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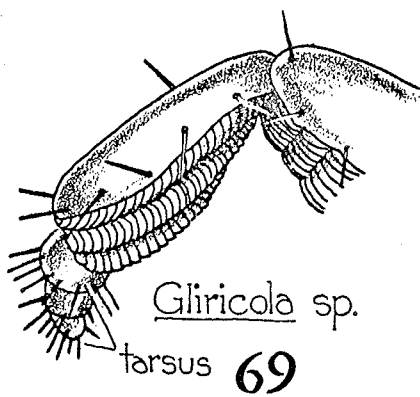
Menacanthus stramineus



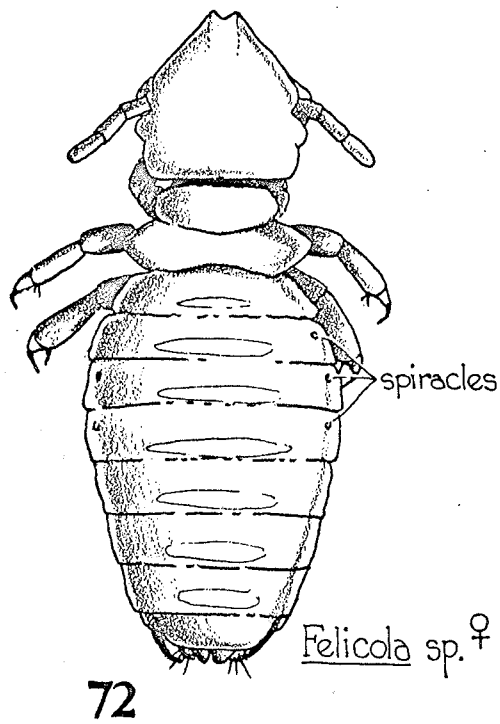
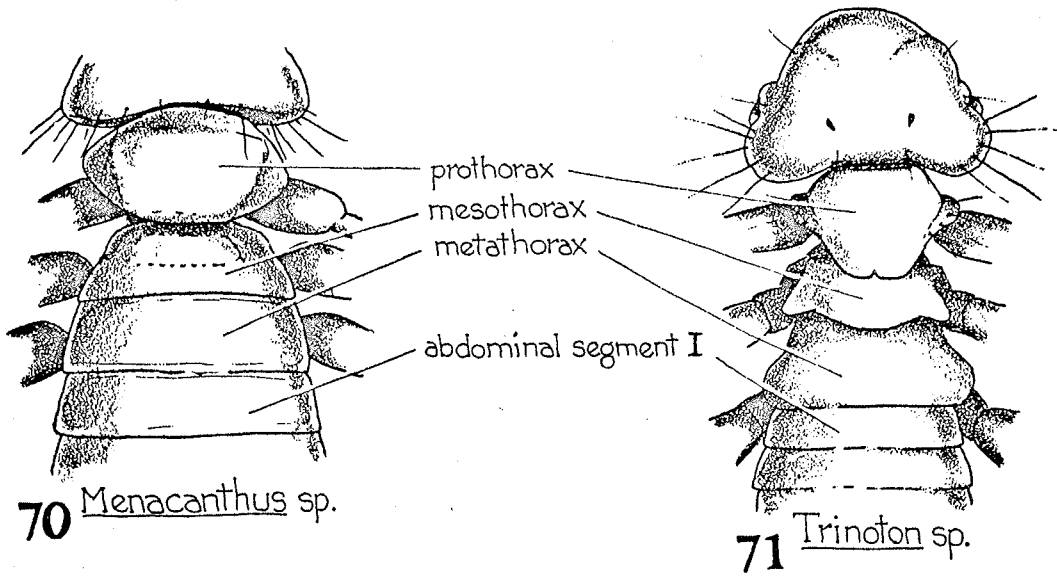
67 *Menacanthus* sp. ventral process

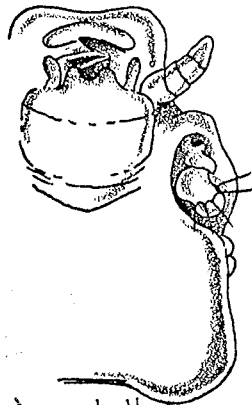


68 *Lipeurus* sp.



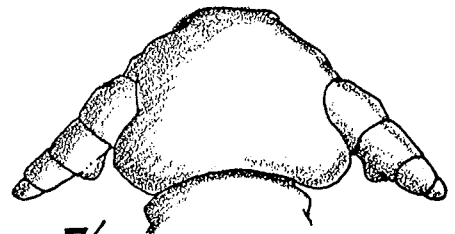
Gliricola sp. 69



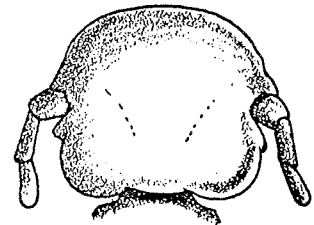


Laembothrion sp.

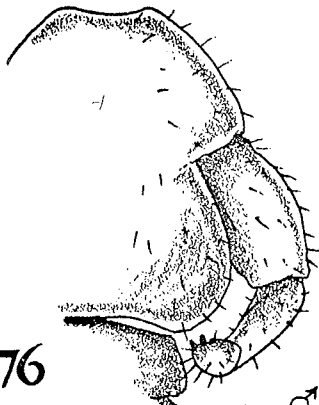
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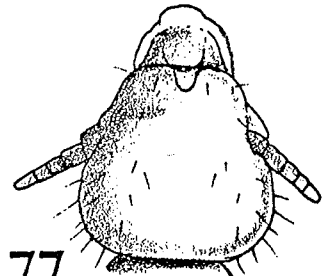
74 Geomydecus sp.



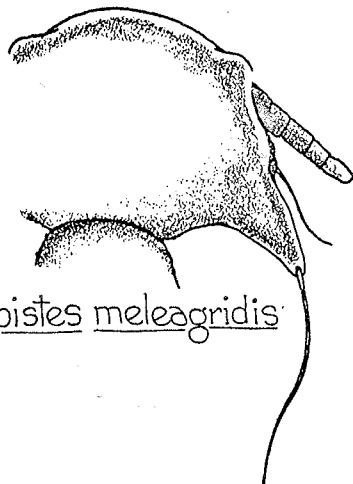
75 Damalinia caprae



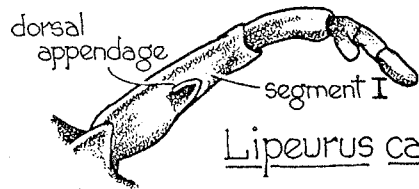
76 Damalinia lipeuroides ♂



77 Anatoecus sp.

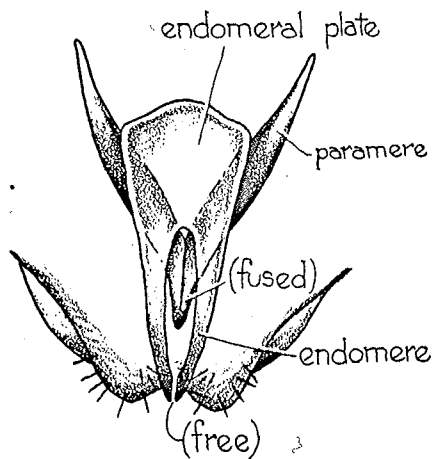


78 Chelopistes meleagridis

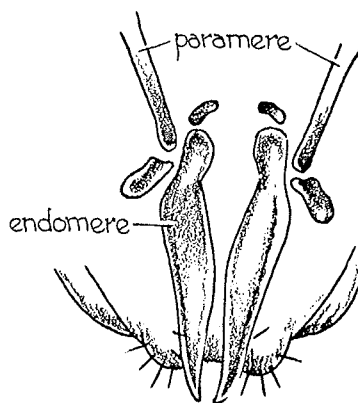


Lipeurus caponis ♂

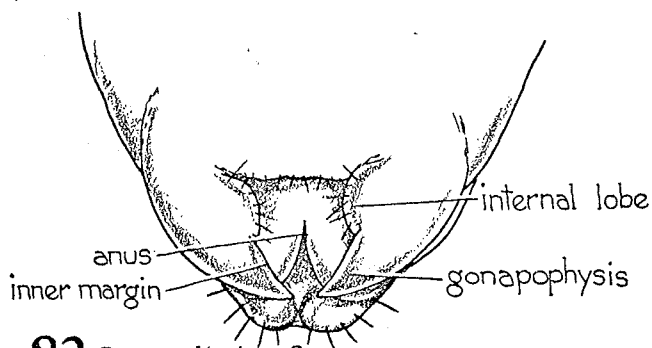
79



80 *Damalinia* male genitalia



81 *Eutricophilus* male genitalia



82 *Damalinia* female genitalia