

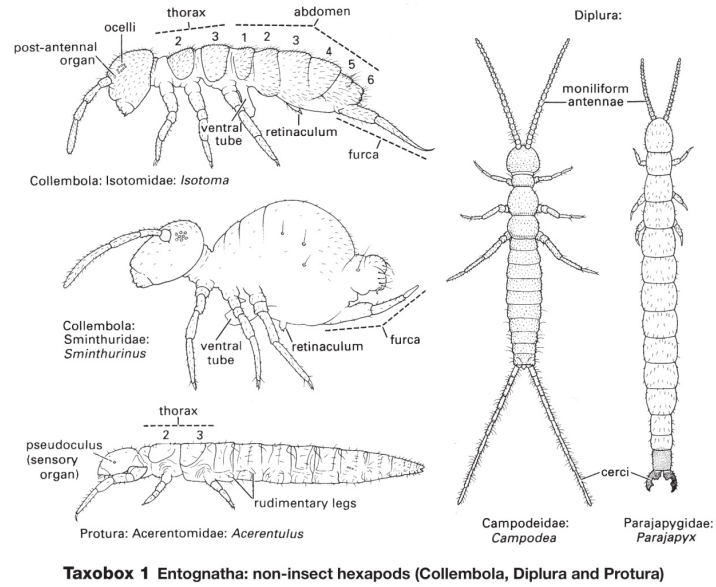
Insect diversity II

Su, Yong-Chao
KMU

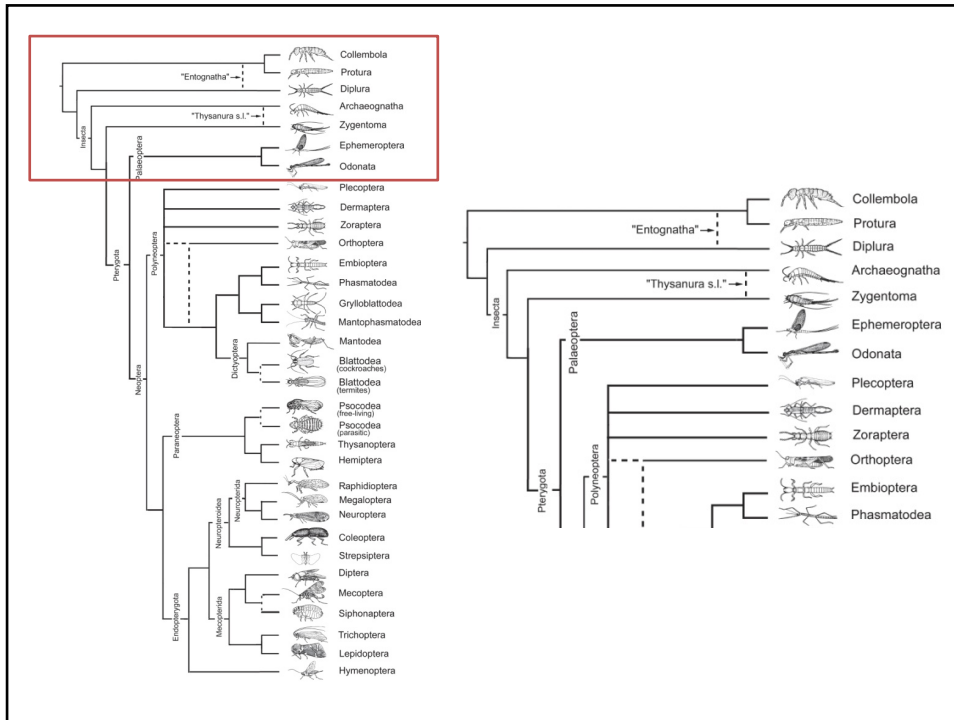
Table 1.1 Taxonomic categories (obligatory categories are shown in **bold**).

| Taxon category | Standard suffix | Example |
|-----------------------|------------------------|---------------------|
| Order | | Hymenoptera |
| Suborder | | Apocrita |
| Superfamily | -oidea | Apoidea |
| Epifamily | -oidae | Apoidae |
| Family | -idae | Apidae |
| Subfamily | -inae | Apinae |
| Tribe | -ini | Apini |
| Genus | | <i>Apis</i> |
| Subgenus | | |
| Species | | <i>A. mellifera</i> |

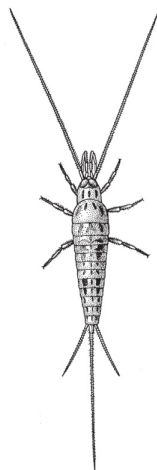
Entognatha (内口類)



Insecta (ectognatha)



Archaeognatha (Microcoryphia, bristletails)

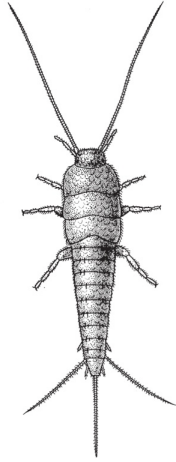


350 species

bristletail, Archaeognatha:
Machioides: *Petrobius maritima*

Taxobox 2 Archaeognatha (Microcoryphia; archaeognathans or bristletails)

Zygentoma (silverfish)

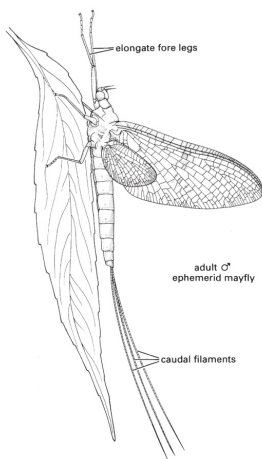


320 species

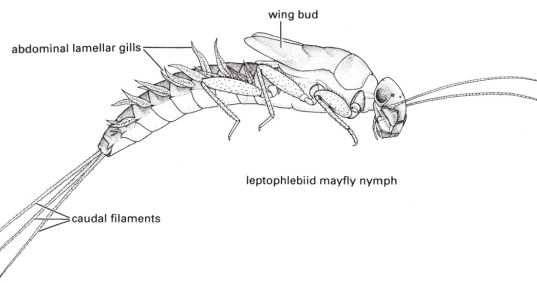
silverfish, Zygentoma:
Lepismatidae:
Lepisma saccharina

Taxobox 3 Zygentoma (silverfish)

Ephemeroptera (mayflies)

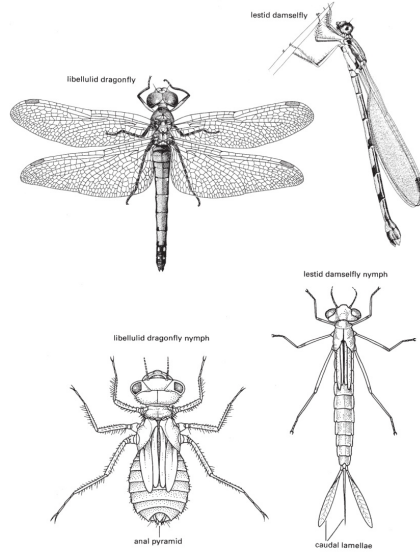


3,000 species



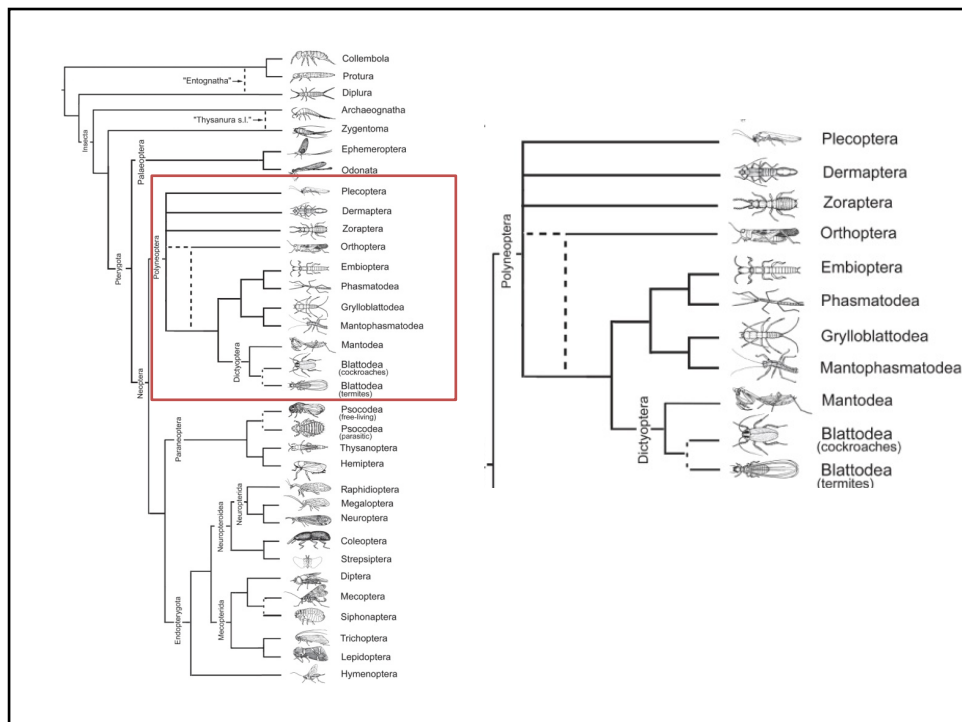
Taxobox 4 Ephemeroptera (mayflies)

Odonata (damselflies and dragonflies)

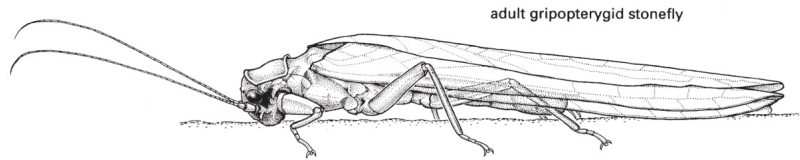


5,000 species

Taxobox 5 Odonata (damselflies and dragonflies)



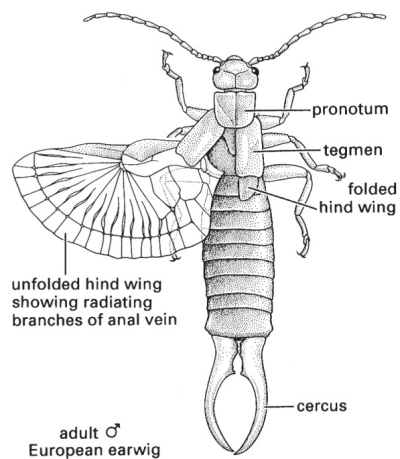
Plecoptera (stoneflies)



Taxobox 6 Plecoptera (stoneflies)

2000 species

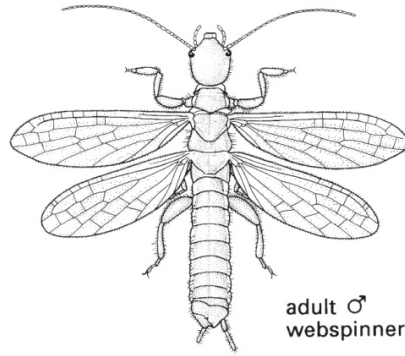
Dermaptera (earwings)



1800 species

Taxobox 7 Dermaptera (earwings)

Embioptera



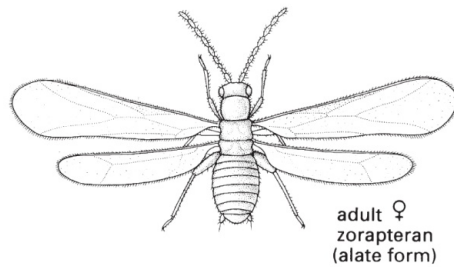
adult ♂
webspinner

Taxobox 10 Embioptera (Embiidina, Emboidea; embiopterans or webspinners)

2000 species

Zoraptera (angel insects)

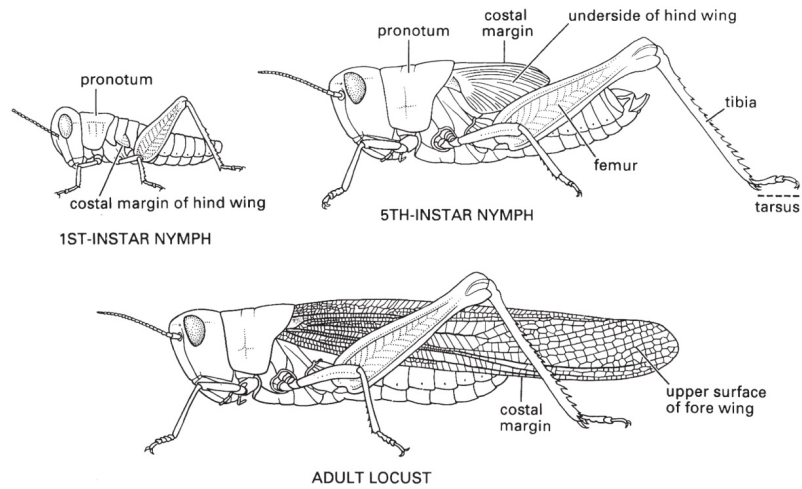
44 species



adult ♀
zorapteran
(alate form)

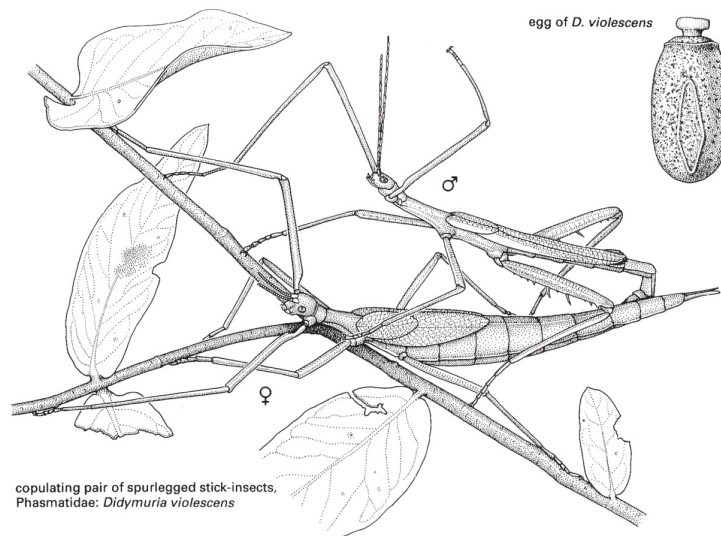
Taxobox 8 Zoraptera (zorapterans or angel insects)

Orthoptera (20,000 species)



Taxobox 9 Orthoptera (grasshoppers, locusts, katydids and crickets)

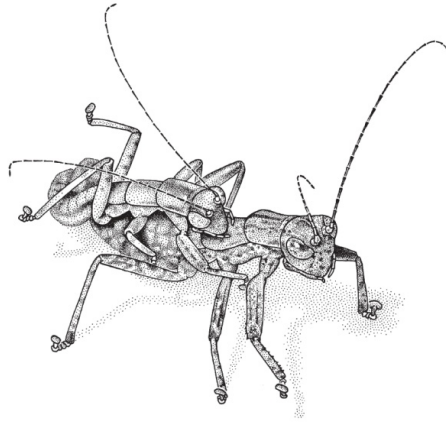
Phasmatodea (3,000 species)



copulating pair of spurlegged stick-insects,
Phasmatidae: *Didymuria violescens*

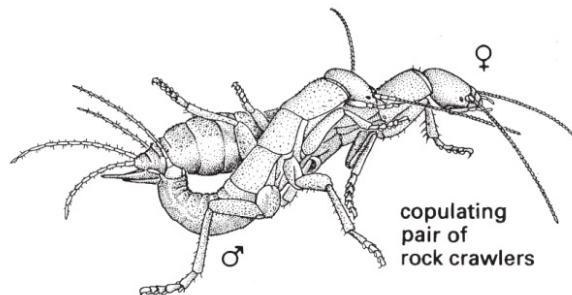
Taxobox 11 Phasmatodea (phasmids, stick-insects or walking sticks)

Mantophasmatodea (6-8 species)



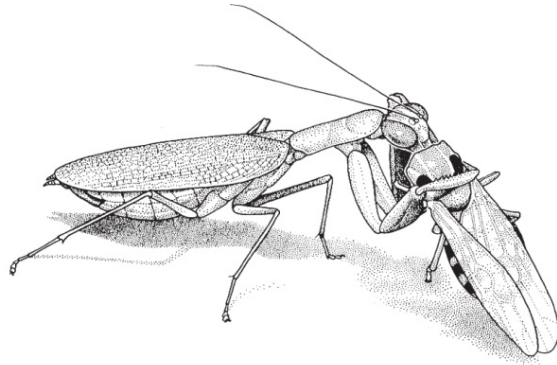
Taxobox 13 Mantophasmatodea (heelwalkers)

Grylloblattodea (25 species)



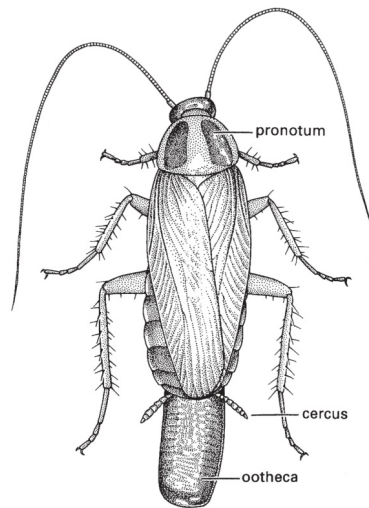
Taxobox 12 Grylloblattodea (Grylloblattaria or Notoptera; grylloblattids, ice crawlers or rock crawlers)

Mantodea (2,400 species)



Taxobox 14 Mantodea (mantids, mantises or praying mantids)

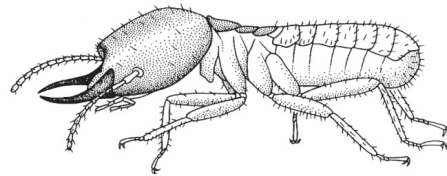
Blattodea (4,400 species)



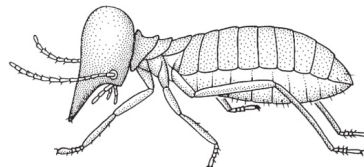
adult ♀ cockroach

Taxobox 15 Blattodea: roach families (cockroaches or roaches)

Blattodea ???

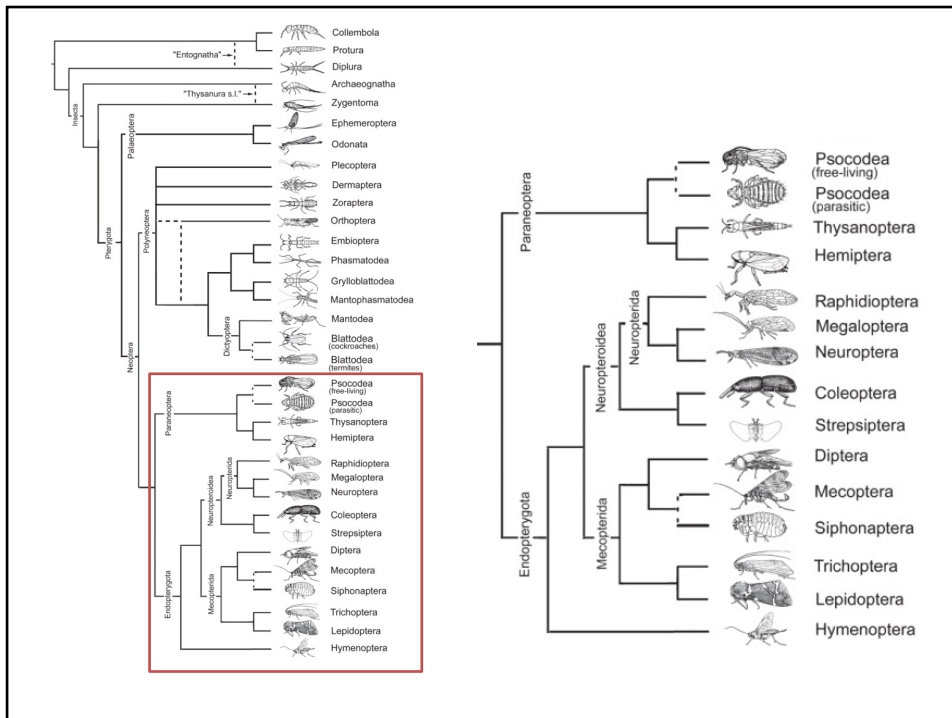


soldier of *Coptotermes*

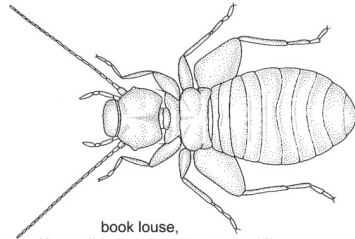


soldier of *Nasutitermes*

Taxobox 16 Blattodea: epifamily Termitoidea (former order Isoptera; termites, "white ants")

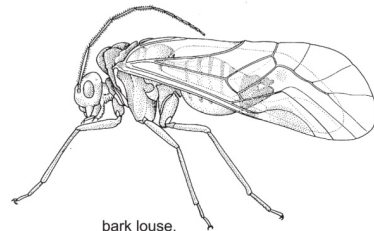


Psocodea (free-living)



book louse,
Liposcelidae: *Liposcelis entomophilus*

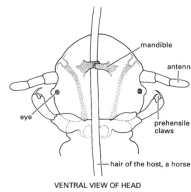
10,850 species



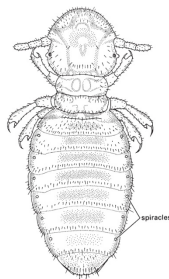
bark louse,
Psocidae: *Amphigerontia contaminata*

Taxobox 17 Psocodea: "Psocoptera" (bark lice and book lice)

Psocodea (parasites)

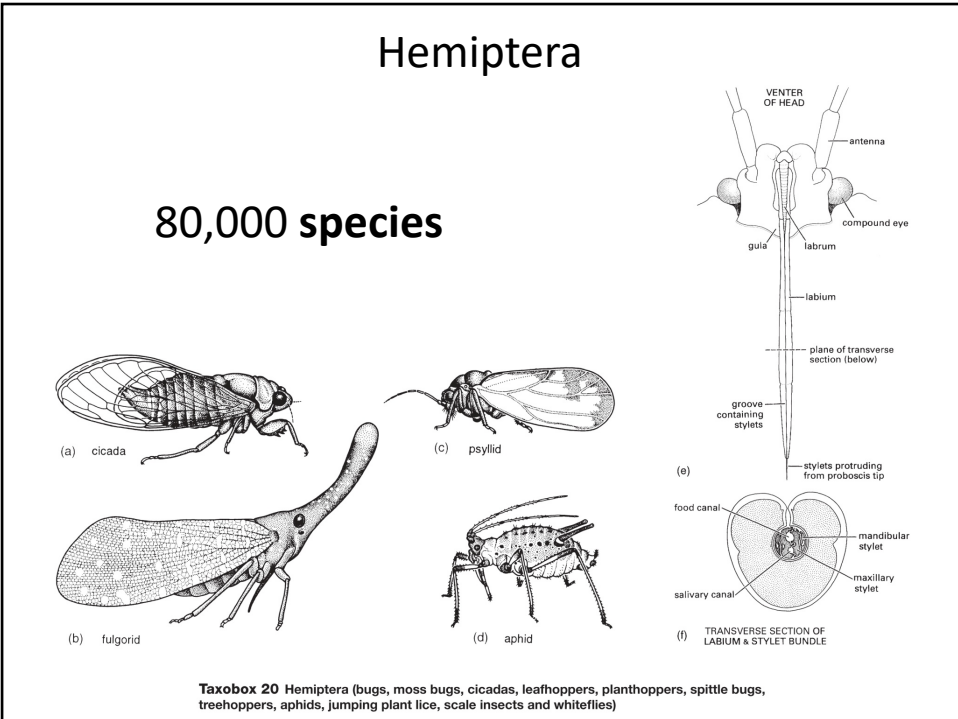
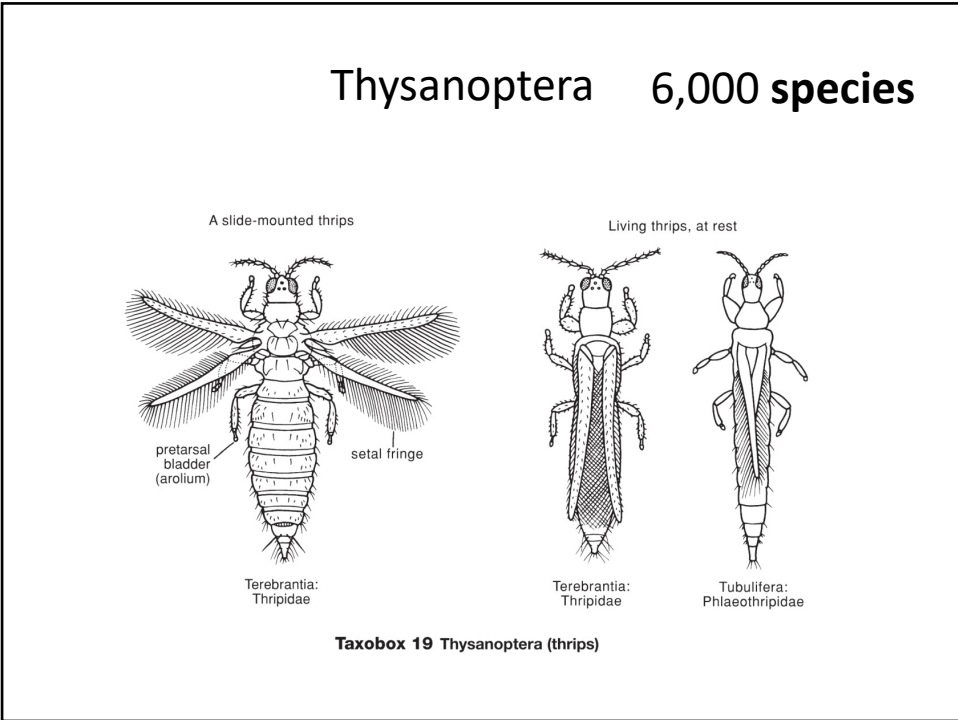


VENTRAL VIEW OF HEAD



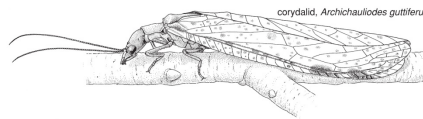
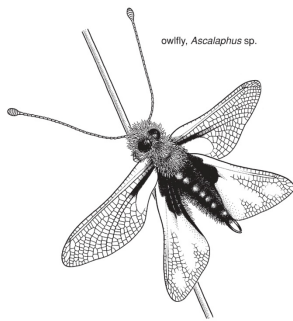
DORSAL VIEW OF LOUSE

Taxobox 18 Psocodea: "Phthiraptera" (chewing lice and sucking lice)



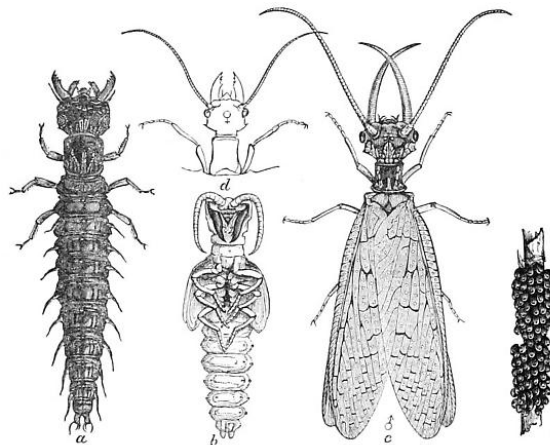
Neuroptera

500 species

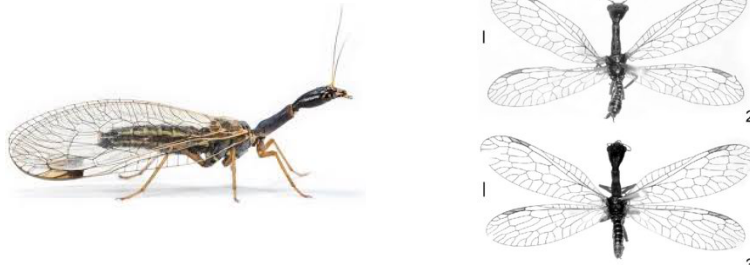


Taxobox 21 Neuropterida: Neuroptera (lacewings, owlflies and antlions), Megaloptera (alderflies, dobsonflies and fishflies) and Raphidioptera (snakeflies)

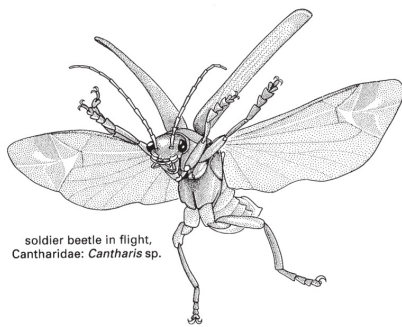
Megaloptera (300 species)



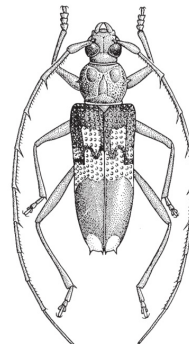
Raphidioptera (260 species?)



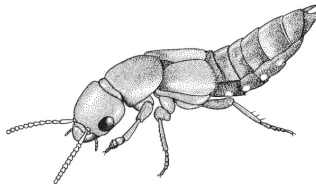
Coleoptera 350,000 species



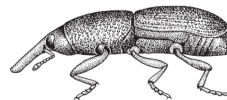
soldier beetle in flight,
Cantheridae: *Cantharis* sp.



longhorn beetle, Cerambycidae:
Phoracantha semipunctata



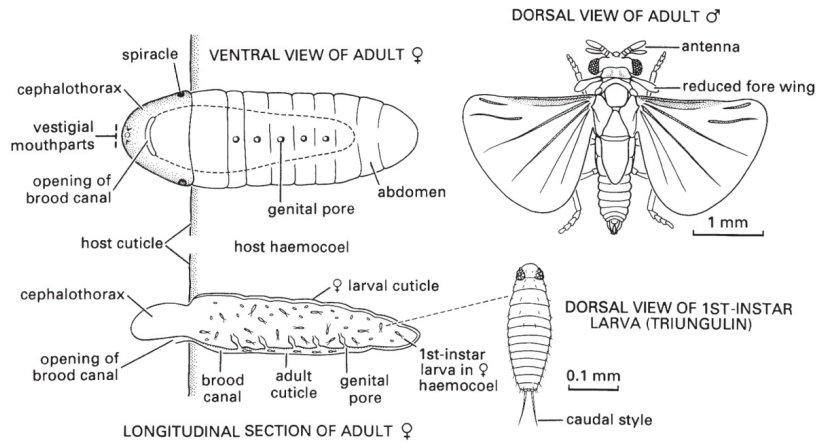
rove beetle, Staphylinidae:
Staphylinus caesareus



granary weevil, Curculionidae:
Sitophilus granarius

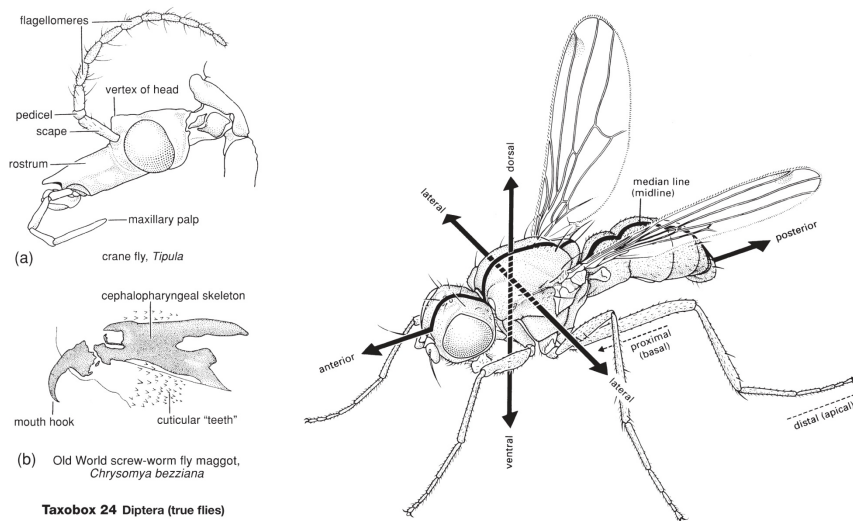
Taxobox 22 Coleoptera (beetles)

Strepsiptera (530 species)



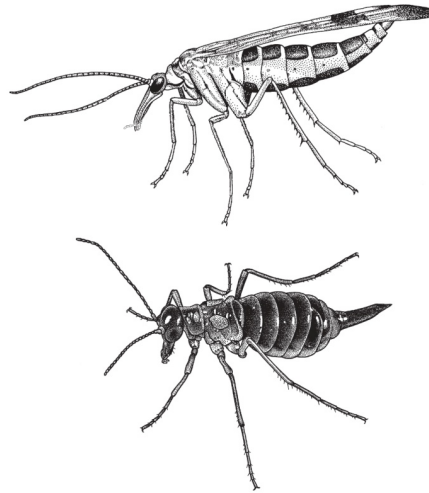
Taxobox 23 Strepsiptera (strepsipterans)

Diptera (150,000 species)



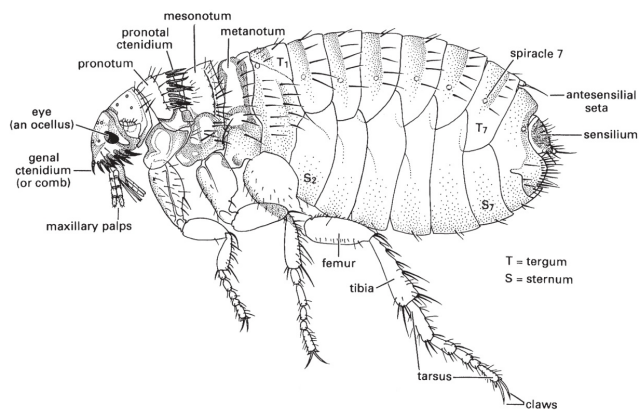
Taxobox 24 Diptera (true flies)

Mecoptera (500 species)



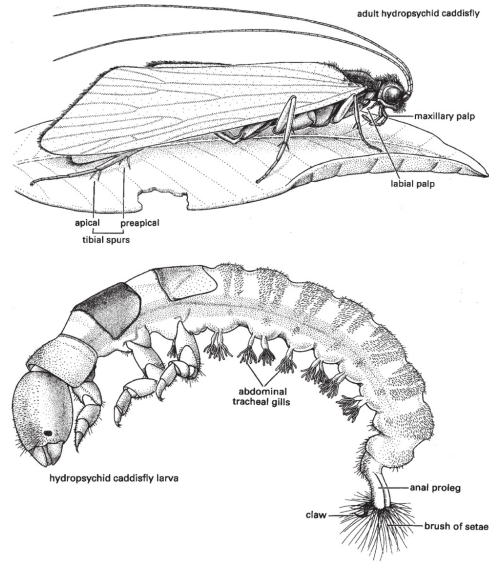
Taxobox 25 Mecoptera (hangingflies, scorpionflies and snowfleas)

Siphonaptera (2,500 species)



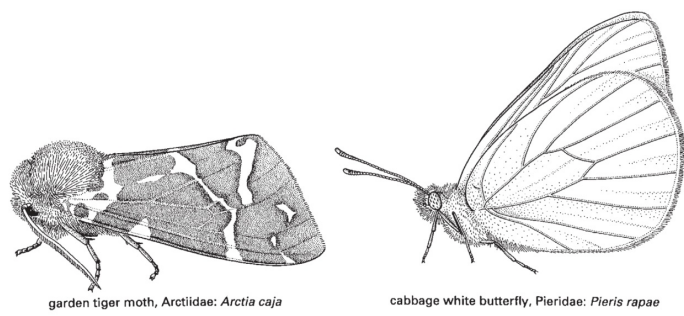
Taxobox 26 Siphonaptera (fleas)

Trichoptera (14,500 species)



Taxobox 27 Trichoptera (caddisflies)

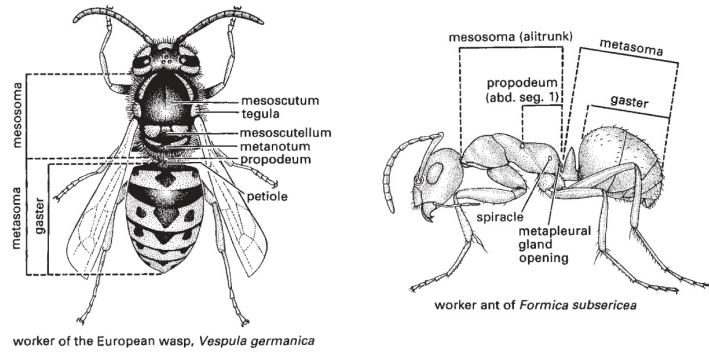
Lepidoptera (300,000 species)



Taxobox 28 Lepidoptera (butterflies and moths)

Hymenoptera

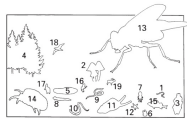
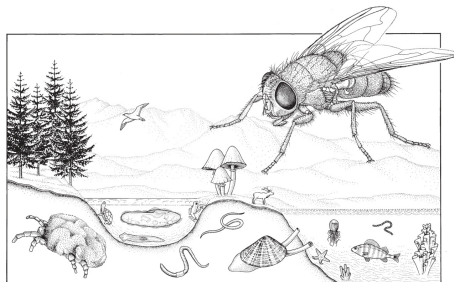
150,000 species



Taxobox 29 Hymenoptera (ants, bees, wasps, sawflies and wood wasps)

Conclusion

900,000 species
in Insecta!



- 1 Prokaryotes
- 2 Fungi
- 3 Algae
- 4 Plantae (multicellular plants)
- 5 Protozoa
- 6 Porifera (sponges)
- 7 Cnidaria (jellyfish, corals, etc.)
- 8 Platyhelminthes (flatworms)
- 9 Nematoda (roundworms)
- 10 Annelida (earthworms, leeches, etc.)
- 11 Mollusca (snails, bivalves, octopus, etc.)
- 12 Echinodermata (starfish, sea urchins, etc.)
- 13 Insecta
- 14 Non-insect Arthropoda
- 15 Pisces (fish)
- 16 Amphibia (frogs, salamanders, etc.)
- 17 Reptilia (snakes, lizards, turtles)
- 18 Aves (birds)
- 19 Mammalia (mammals)

Fig. 1.1 Speciescape, in which the size of individual organisms is approximately proportional to the number of described species in the higher taxon that it represents. (After Wheeler 1990.)