

# Biogeography. Lecture 20

Alexey Shipunov

Minot State University

March 26, 2014



# Insects: Arthropoda/Insecta

## Hexapoda/Insecta



# Hexapods: very short overview

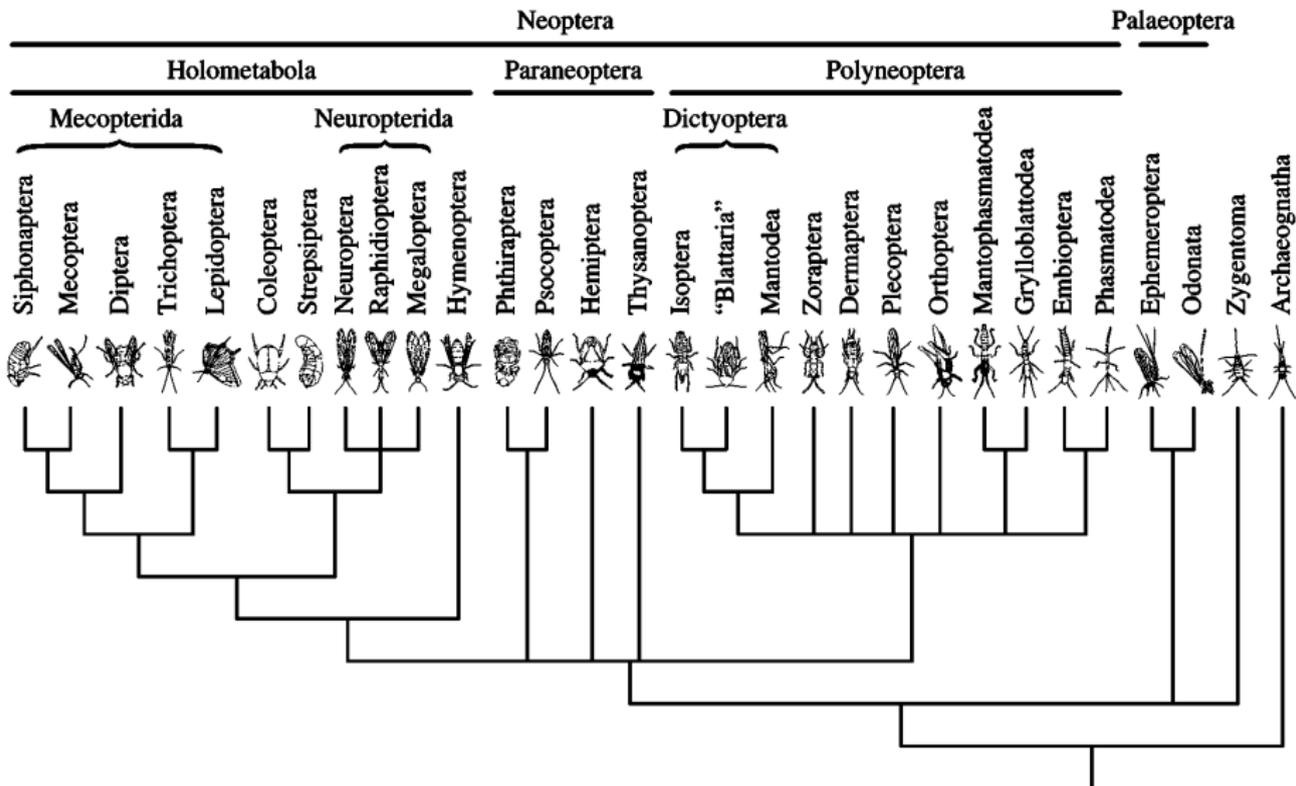
1) Entognatha (springtails etc.)

2) Insecta:

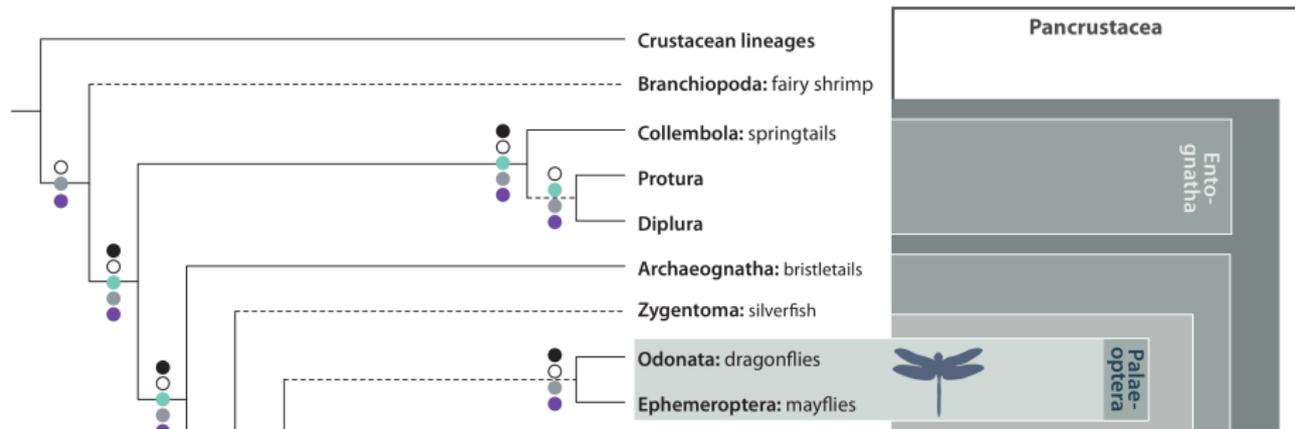
- ▶ Apterygota
- ▶ Pterygota
  - ▶ Palaeoptera
  - ▶ Neoptera
    - ▶ Polyneoptera
    - ▶ Paraneoptera
    - ▶ Holometabola: Hymenoptera, Neuropteroidea, Mecoptera



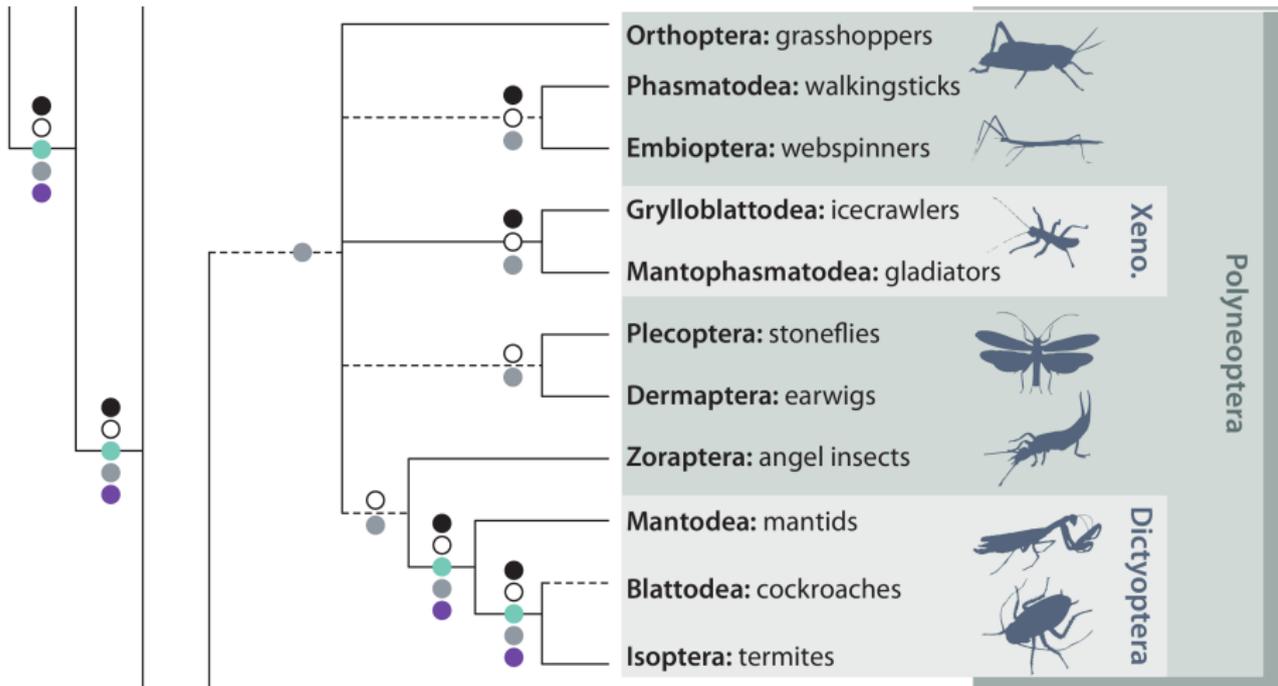
# Insecta tree (Ishiwata et al., 2010)



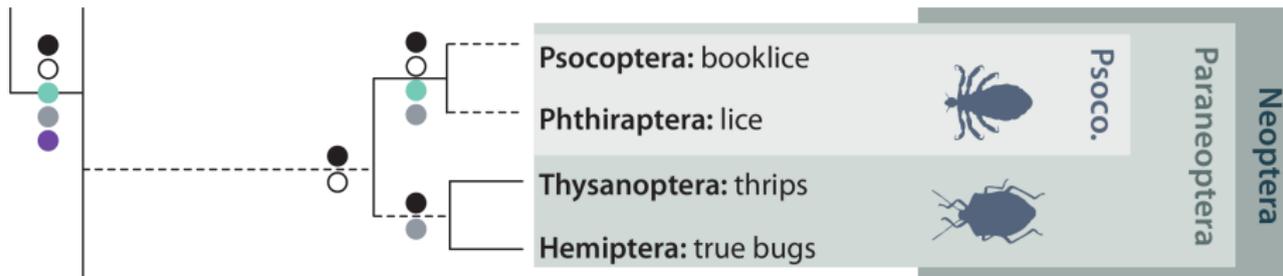
# A: Basal groups



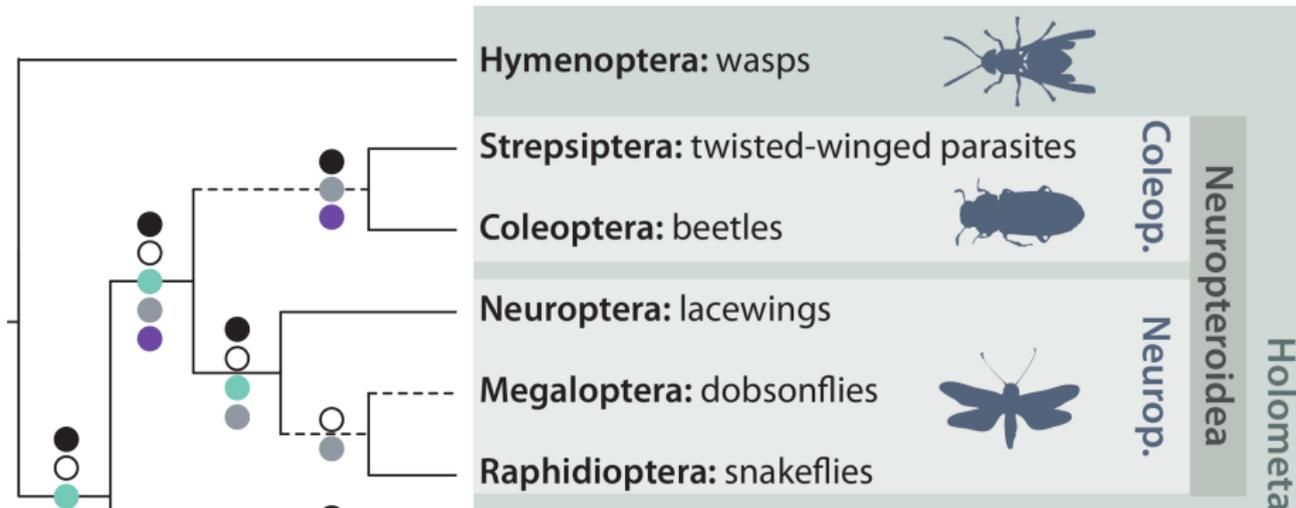
# B: Polyneoptera



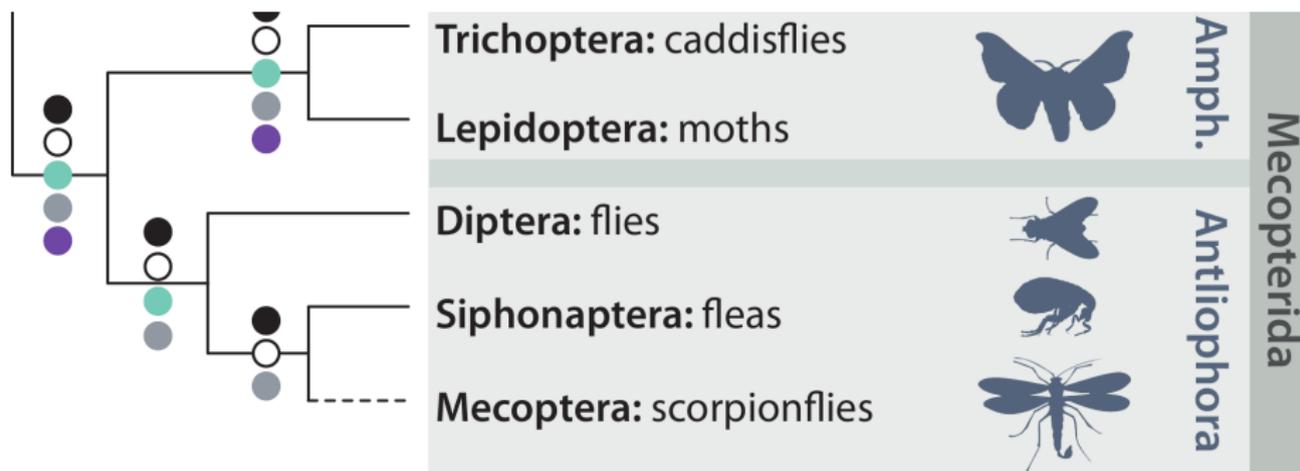
# C: Paraneoptera



# D: Hymenoptera and Neuropteroidea



# E: Mecopteraida



# Mollusca

## Terrestrial mollusks



## Short overview

Mollusks belong to the phylum Mollusca in Lophotrochozoa. There are many classes of mollusks but only one, gastropods (Gastropoda) was successful enough to conquer land.

- ▶ Gastropoda
  - ▶ Cycloneritimorpha (e.g., *Helicina*)
  - ▶ Littorinimorpha (e.g., *Pomatias*)
  - ▶ Pulmonata (most of land gastropods belong here)



## Cycloneritomorpha: *Helicina*



# Littorinimorpha: *Pomatias*



## Pulmonata: *Caracolus*



## For Further Reading



A. Shipunov.

*Biogeography* [Electronic resource].

2014—onwards.

Mode of access:

[http://ashipunov.info/shipunov/school/biol\\_330](http://ashipunov.info/shipunov/school/biol_330)



Gastropoda.

<http://en.wikipedia.org/wiki/Gastropoda>

