

**Entomology 156: Biology Of Parasites
The Arthropod Parasites Lecture 2.
Introduction to Arthropod Parasite
Diversity**

I. Parasites within Class Chelicerata

- A. Includes numerous predaceous groups- spiders, scorpions etc
- B. Subclass Arachnida- numerous life styles including diverse parasitic forms
 - 1. Order Acarina-ticks and mites
 - 2. All ticks parasitic- all are blood feeding parasites of vertebrates

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- a. Two major groups- soft and hard
- b. Two major blood feeding strategies
 - 1) Rapid
 - 2) Slow



3. Mites- exceedingly diverse- enormous variation in life history

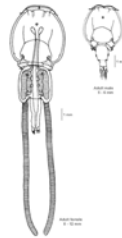
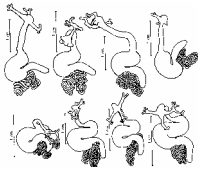
- a. Free-living
- b. Virtually all forms of parasitism



II. Crustacea: crabs, shrimp et al.

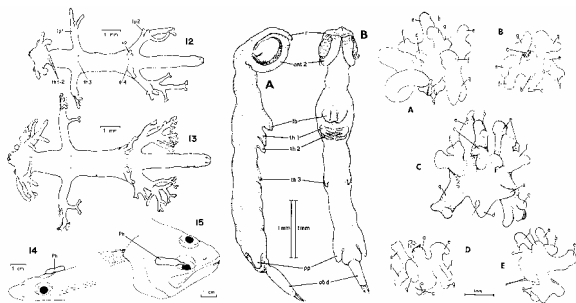
A. Subclass Copepoda: parasitic copepods

- 1. Bizarre life histories and morphology
- 2. Internal and external parasites of aquatic animals
- 3. Numerous species and great diversity



II. Crustacea: crabs, shrimp et al.

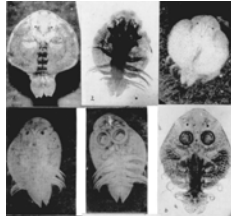
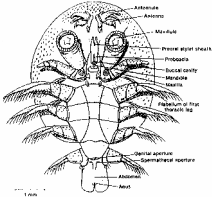
A. Subclass Copepoda: parasitic copepods



II. Crustacea: crabs, shrimp et al.

B. Subclass Branchiura: Argulus: fish lice

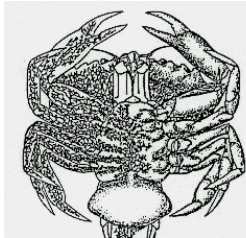
1. Louse like external parasites of fishes
2. Simple life histories



II. Crustacea: crabs, et al.

C. Subclass Cirripeda: parasitic barnacles

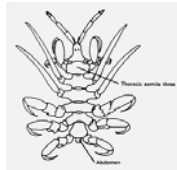
1. Internal parasites of other Crustacea
2. Completely unrecognizable as traditional barnacles



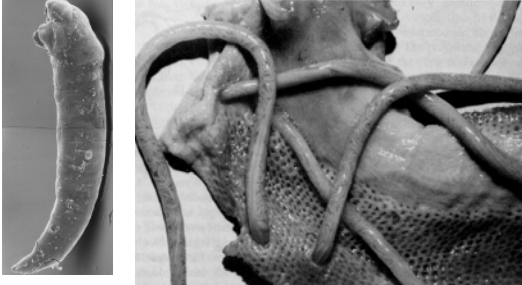
II. Crustacea: crabs, shrimp et al.

D. Subclass Malacostracha: Isopods and Amphipods

1. Common external parasites of fishes
2. Strongly associated with coast lines
3. Amphipoda- whale lice!



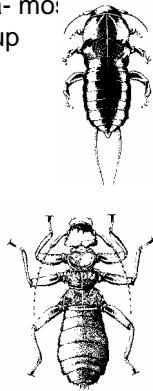
III. Phylum Pentastomida: Tongue worms



IV. Orders of the Class Insecta- mo:
diverse metazoan group

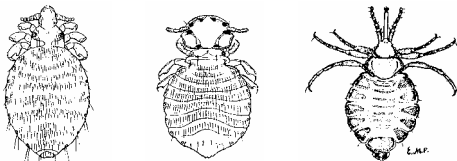
A. Dermaptera: the earwigs

1. Mostly free living predators
plant feeders or scavengers
- 2 Two small groups *Arixenia*
and *Hemimerus* parasites
 - a. *Arixenia*- South Asian bats
 - b. *Hemimerus*- South African
giant rats



B. Phthiraptera: Lice

1. All are parasites- derived from book lice
2. Three major groups formally separate orders
 - a. Sucking lice- Anoplura
 - b. Chewing lice- Mallophaga
 - c. Elephant lice- Rhynchophthira



C. Hemiptera: the Bugs- bed bugs, kissing bugs and bat bugs

1. Mostly free living predators or plant juice feeders
2. Uniformly possess piercing sucking mouth parts
3. Three families we shall consider
 - a. Bed bugs- Cimicidae



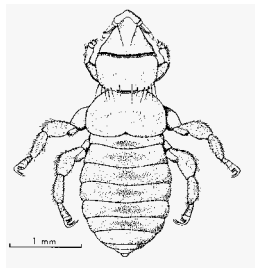
C. Hemiptera: the Bugs- bed bugs, kissing bugs and bat bugs

3. Three families
 - a. Bed bugs- Cimicidae
 - b. Kissing Bugs- Reduviidae



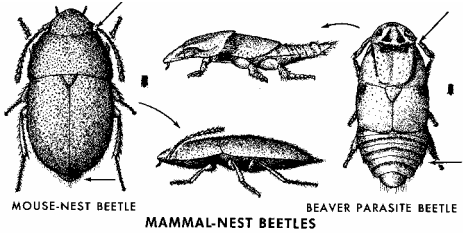
C. Hemiptera: the Bugs- bed bugs, kissing bugs and bat bugs

3. Three families we shall consider
 - a. Bed bugs- Cimicidae
 - b. Kissing Bugs- Reduviidae
 - c. Bat Bugs- Polytiidae



D. Coleoptera: the Beetles

1. Enormous group of highly successful insects
2. Very few insignificant parasitic groups
 - a. Rodent and beaver parasites- Leptinidae



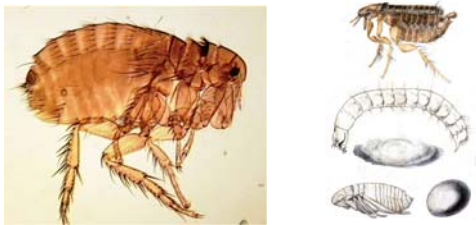
E. Strepsiptera: the Twisted-wing parasites

1. Small group, all parasitic- extreme specializations
2. Extraordinary life histories-
 - a. Complete (hyper) metamorphosis
 - b. Larvaform females
3. Parasites of bugs, bees, wasps and plant hoppers



F. Siphonaptera: Fleas

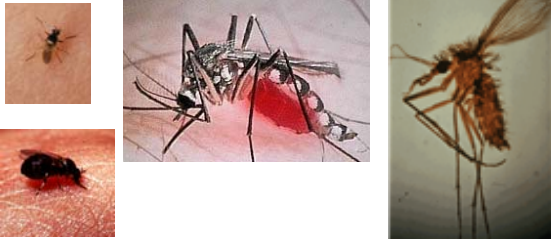
1. All wingless parasites of vertebrates- birds and mammals
2. Highly specialized and host specific
3. Complete metamorphosis confined to nest and host



G. Diptera: the Flies- mosquitoes and relatives; bot flies and relatives.

1. Major group of insects with numerous vertebrate parasites

a. Free-living blood-feeding adults



G. Diptera: the Flies- mosquitoes and relatives; bot flies and relatives.

1. Major group of insects with numerous vertebrate parasites

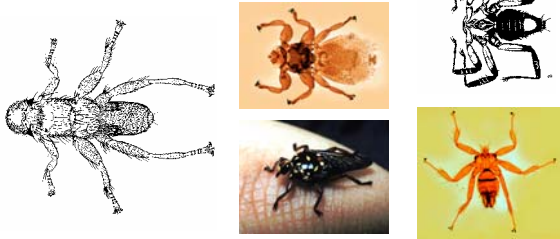
b. Maggot parasites



G. Diptera: the Flies- mosquitoes and relatives; bot flies and relatives.

1. Major group of insects with numerous vertebrate parasites

c. Louse like parasites of skin



G. Diptera: the Flies- mosquitoes and relatives; bot flies and relatives.

2. Numerous internal parasites of other insects



H. Lepidoptera: the Moths and Butterflies

1. Few parasitic groups
2. Old world parasites of large mammals
3. Take fluids from eyes and face



I. Hymenoptera: parasitic Wasps

1. Huge order-mostly parasitic!
2. Numerous families of small to minute parasites of insects
3. Great economic significance- control pests