

Insect Parasitism!



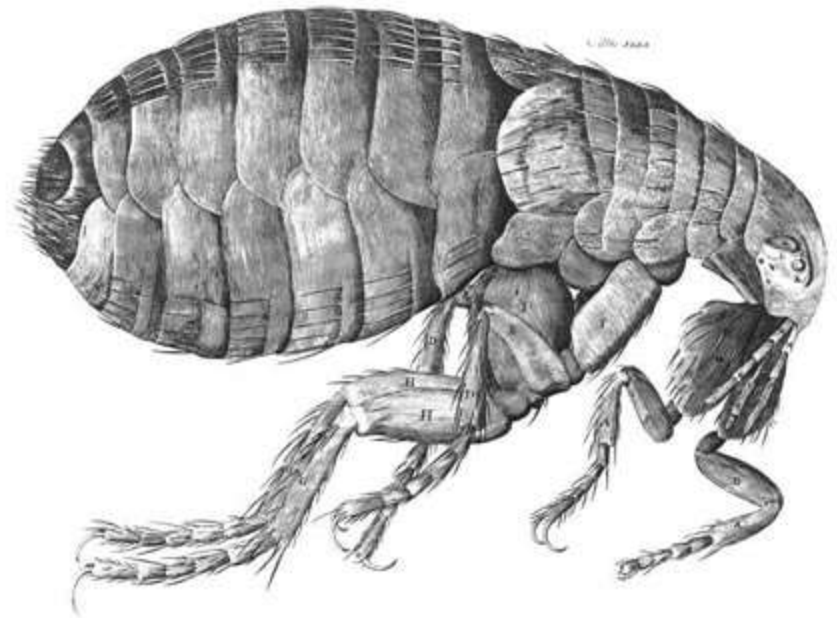
Insect Parasitism – Lecture Overview

- What is a parasite?
- **Parasitism** – most common life style in nature!
- Phenomenal success evident in insects =
Virtually all insect orders contain parasitic representatives
- Overview of insects as **ectoparasites**, **endoparasites** and **parasitoids**

Insect Parasitism – Adaptations for Success

- Remarkable **cuticle** versatility
- Diverse **jointed appendage** modifications – legs, mouthparts & ovipositor
- Adaptations for feeding, respiration
- Transmission & reproductive adaptations
- Complex life cycle with **metamorphosis**

Order Siphonaptera - Fleas



Holdfast & blood-feeding adaptations of fleas



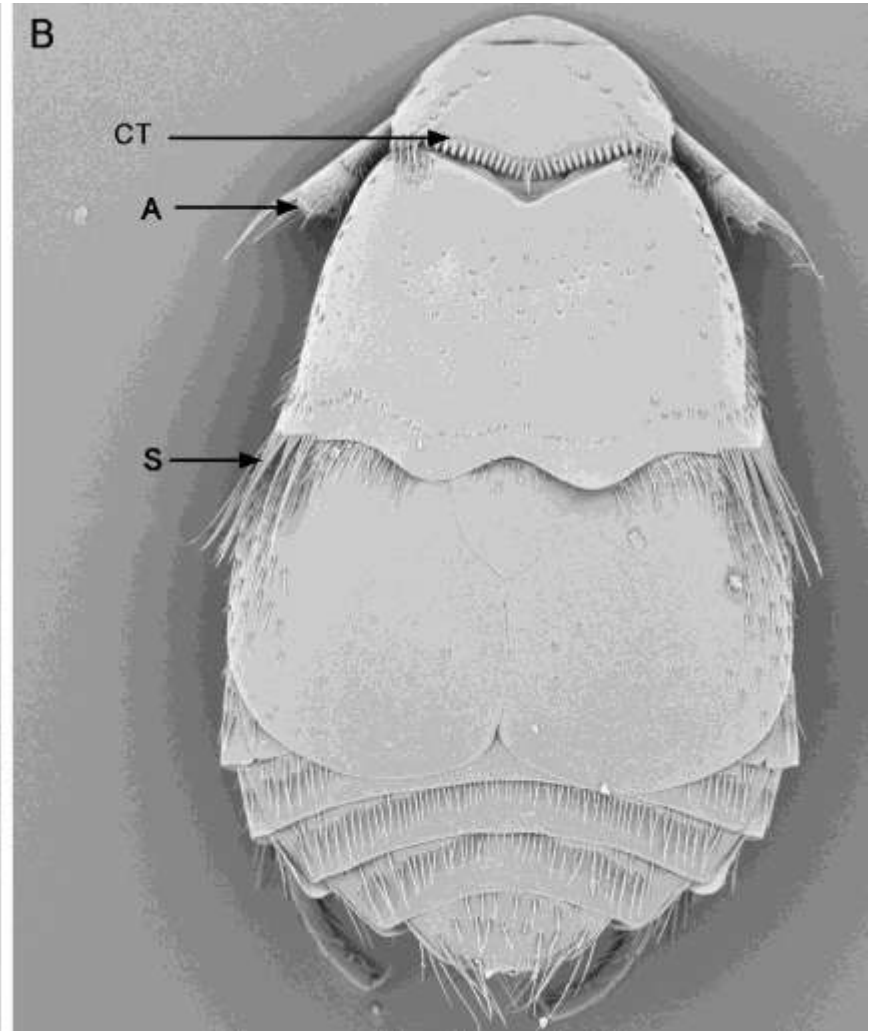
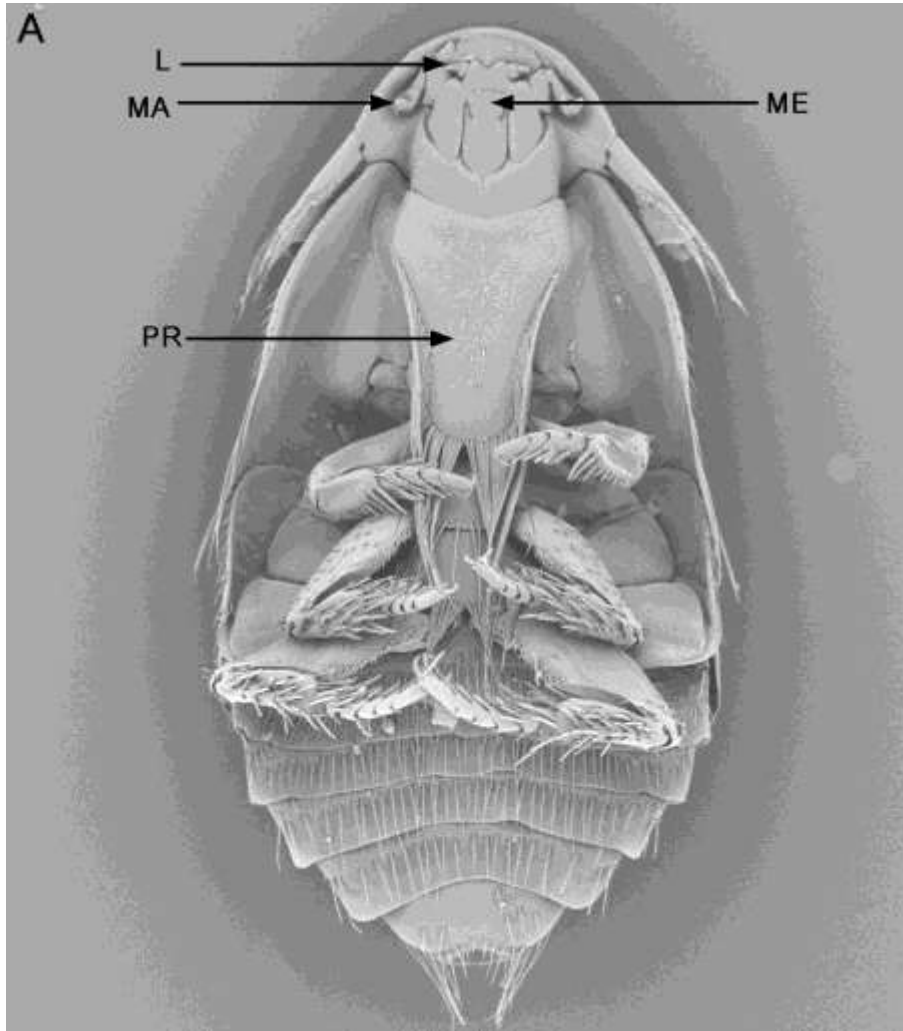
Order Phthiraptera – Sucking lice



Order Phthiraptera (Chewing Lice)



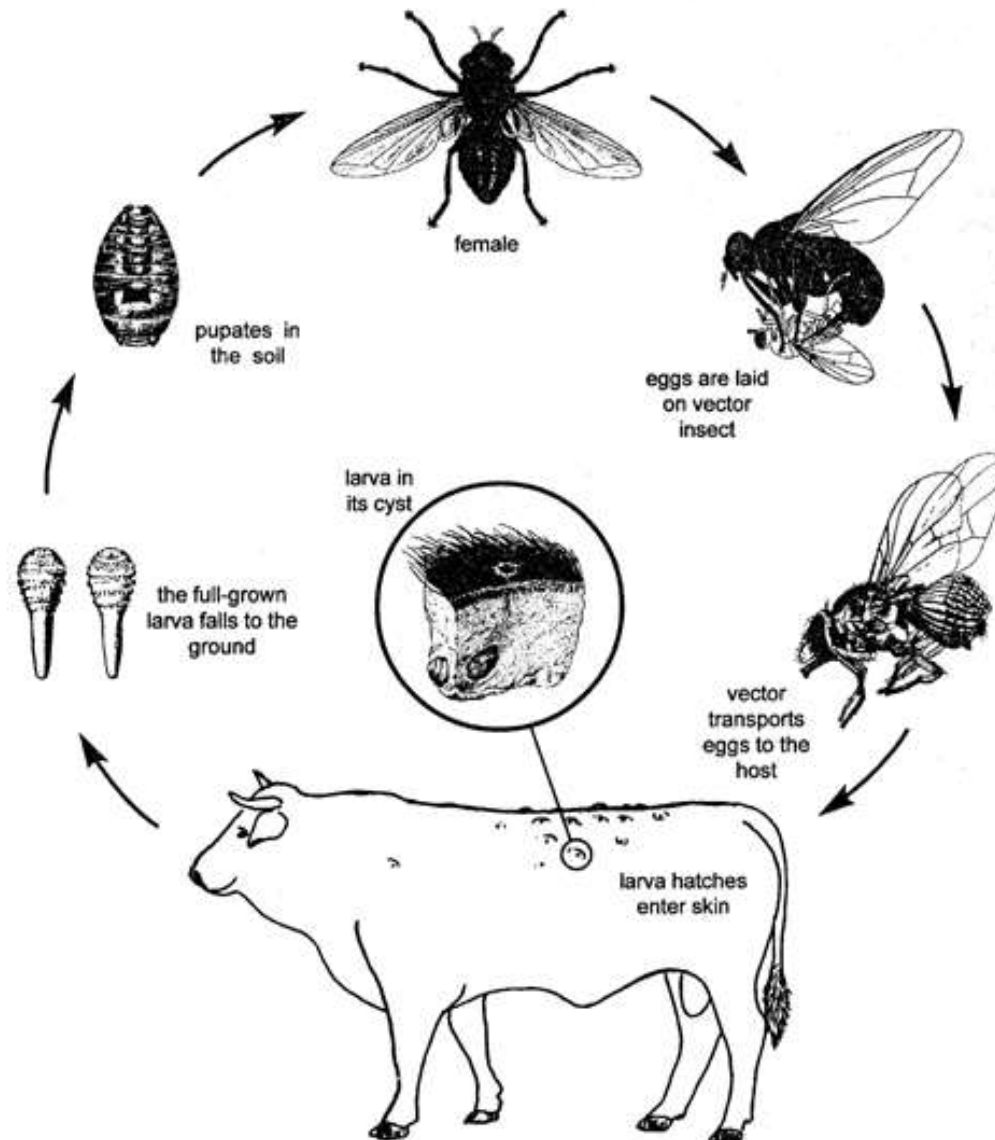
Order Coleoptera: Beaver beetle!



Endoparasites – Order Diptera - Botflies!



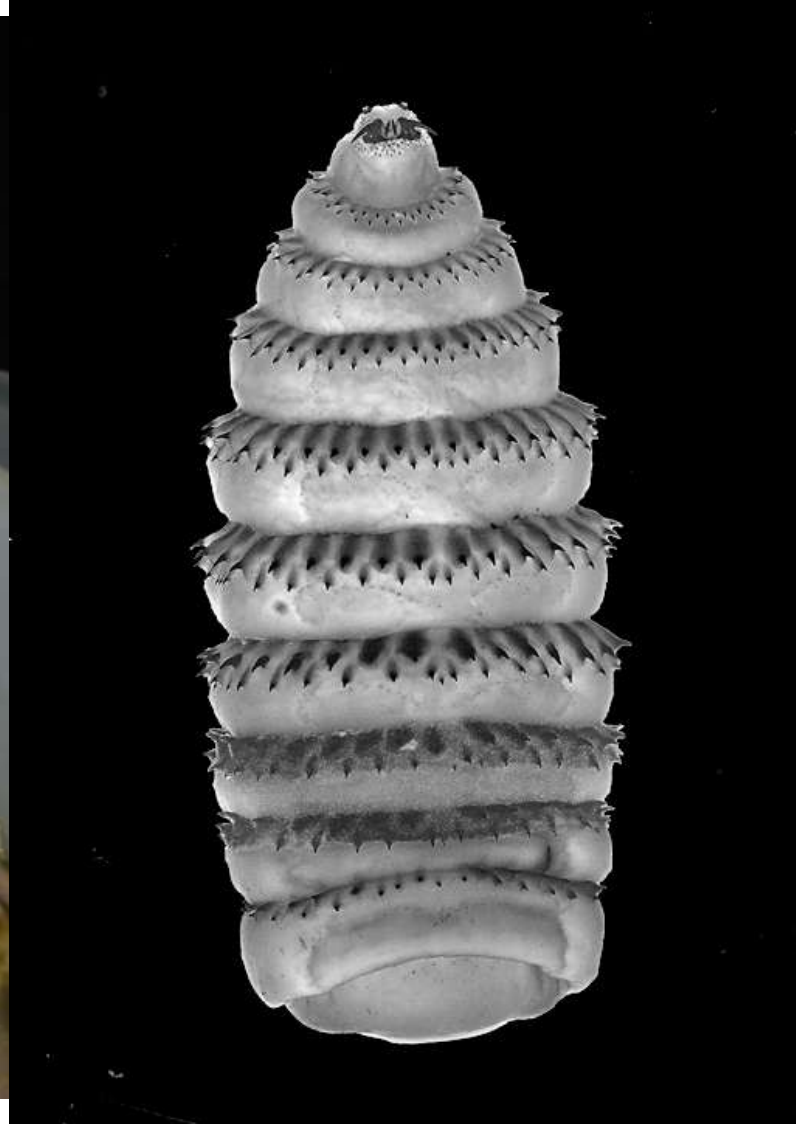
Human botfly life cycle



Human Botfly!



Horse Botfly



Rodent botfly!



Lethal Fly Parasitism (Myiasis)



Insect Parasitoids

- Phenomenal diversity of wasps (**Hymenoptera**) in 2 major families – **Ichneumonidae & Braconidae**
- Huge parasitoid fly family – **Tachinidae**
- Fascinating life cycle - female parasitoids locate specific insect host (usually caterpillars)
- Use **ovipositor** to lay eggs inside host
- Larvae hatch, and eat caterpillar from inside – modify behaviour & physiology dramatically
- Eventually kills caterpillar host
- **Hyperparasitoids! = Biodiversity!!**

Biology of Insect Parasitoids



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Parasitoids in action!

- <http://www.sciencedaily.com/releases/2011/08/110829114554.htm>

Importance of Parasitoids

- Huge component of biological diversity
- Natural regulators of insect populations – huge ecological significance
- Potential use in biological control of agricultural and forestry insect pests
- Forest tree - insect herbivore - parasitoid interactions focus of considerable research





Gypsy Moth parasitoids





Braconid wasp parasitoid (*Coeloides dendroctoni*)





Silver-Spotted tiger moth Tachinid fly parasitoid



Parasitoids – manipulation of host behaviour

- Some parasitoids turn caterpillars into ‘bodyguards’ for their larvae!

<http://www.wimp.com/parasiticwasp/>

- ‘Zombified’ cockroaches!

<http://www.youtube.com/watch?v=cyd8NmLJwcM&feature=related>

Insect Parasitism! Spectacular!!

