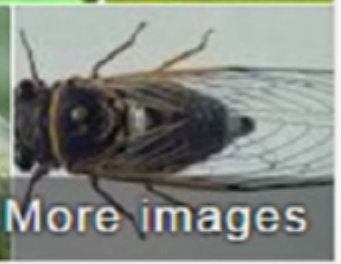


Aphids



Tropical Sod Webworm





More images

Homoptera



Homoptera is a suborder of order Hemiptera that is considered by some taxonomists to be paraphyletic, and therefore deprecated. It was therefore split into the suborders Sternorrhyncha, Auchenorrhyncha, and Coleorrhyncha. [Wikipedia](#)

Scientific name: Homoptera

Rank: Suborder

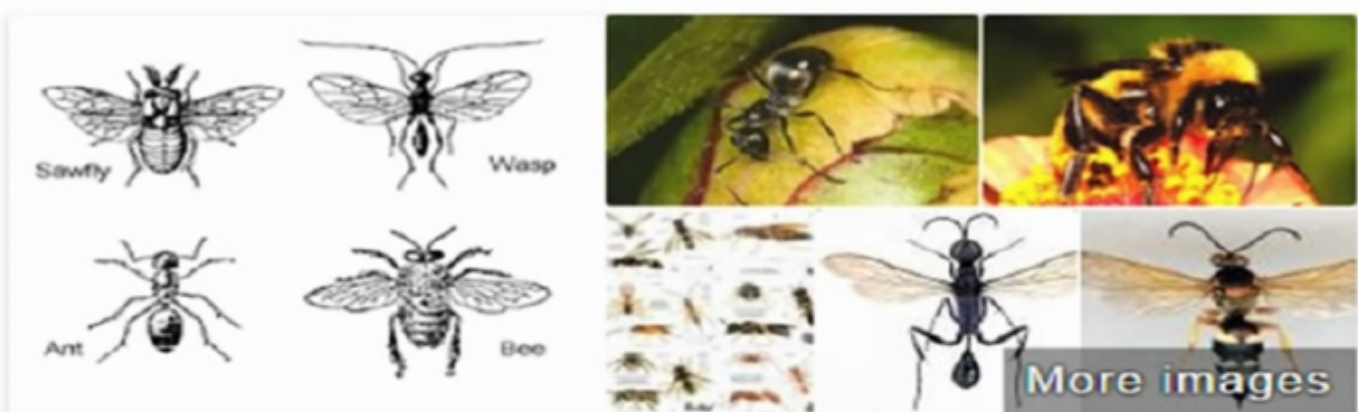


At least half (50%-80% [?]) of the animal species currently occupying the earth are insects (approximately 1.5 million different animal species)



Features of the Phylum Arthropoda (cont.)

- Nervous system---anterior 'brain' located above alimentary canal, paired connectives join brain to paired ventral nerve cords located below alimentary canal. Paired ganglia/segment.
- Excretory system---Malpighian tubules collect wastes in blood, empty them into hind gut
- Respiratory system---gills or tracheae & spiracles
- No cilia or nephridia
- Sexes nearly always separate. (Some are known from 'female only' populations.)



Hymenoptera

Insect



Hymenoptera is the third-largest order of insects, comprising the sawflies, wasps, bees, and ants. Over 150,000 species are recognized, with many more remaining to be described. [Wikipedia](#)

Scientific name: Hymenoptera

Higher classification: [Endopterygota](#)

Rank: Order

Speed: [Asian giant hornet](#): 40 km/h

Lifespan: [Western honey bee](#): 1 – 10 months, [Pharaoh ant](#): 4 – 12 years, [Black garden ant](#): 15 years, [Early bumblebee](#): 28 days

**Most common type
of mouthpart is
*chewing.***

**Tear off pieces of
tissue and eat it.**



Orange Dog Caterpillar – Bad insect (?)



Over 13,000 species of insects known from Florida

New species appear almost daily due to shipments of plants and other materials into Florida from abroad

The classes Chilopoda, Diplopoda, and Symphyla (centipedes, millipedes, etc.) have antennae, many legs and only two body regions. They add segments as they molt.



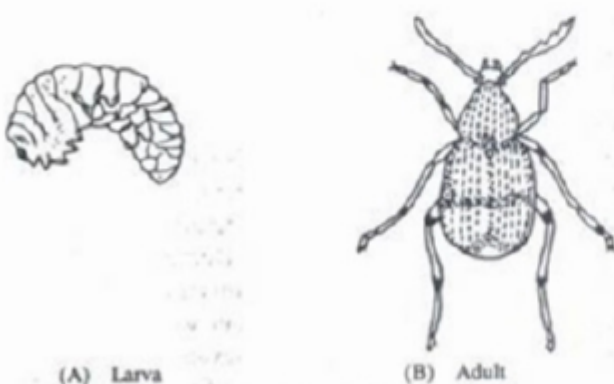
Features of the Phylum Arthropoda

- Paired, jointed legs
- Segmented bodies
- Bilateral symmetry
- Exoskeleton with chitin; molting
- Tubular digestive system with mouth & anus
- Open circulatory system—dorsal tubular heart
- Striated skeletal muscles
- Body cavity is a 'blood cavity' (blood bathes organs)



Photo: D.B. Richman, NMSU

- **Pulse Beetle**
 - Grub
 - Gram & Other Pulses



(A) Larva

(B) Adult

Fig. 108. *Pachymerus chinensis*.



Mealybugs



UF - IFAS



More images

True bugs



Insect

The Heteroptera are a group of about 40,000 species of insects in the order Hemiptera. Sometimes called "true bugs", that name more commonly refers to the Hemiptera as a whole, and "typical bugs" might ... [Wikipedia](#)

Scientific name: Heteroptera

Higher classification: [True bugs](#)

Rank: Suborder

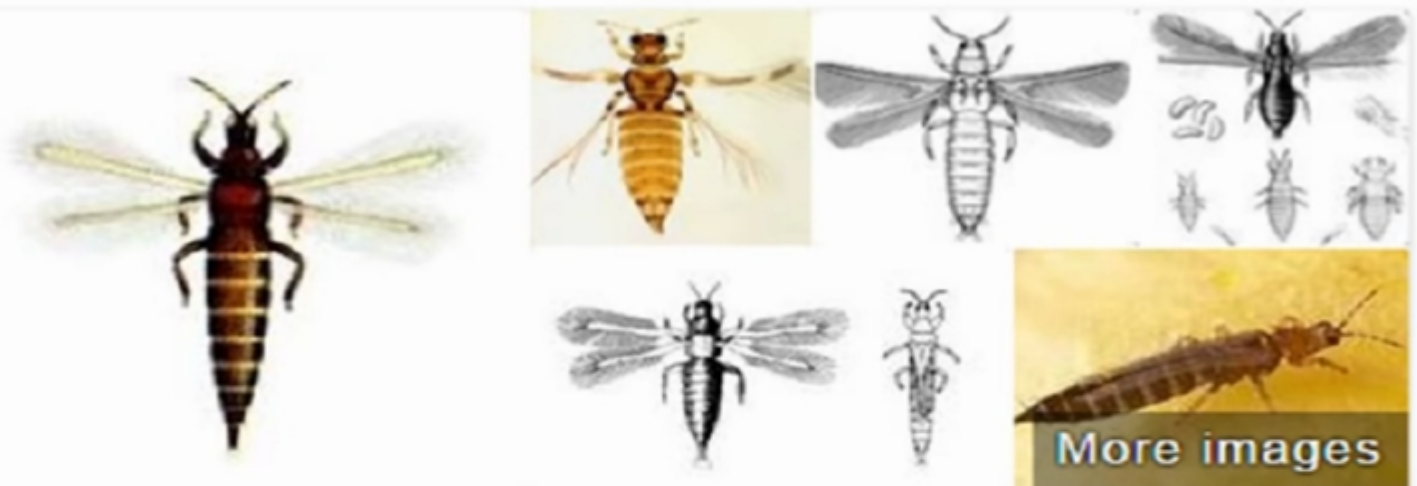
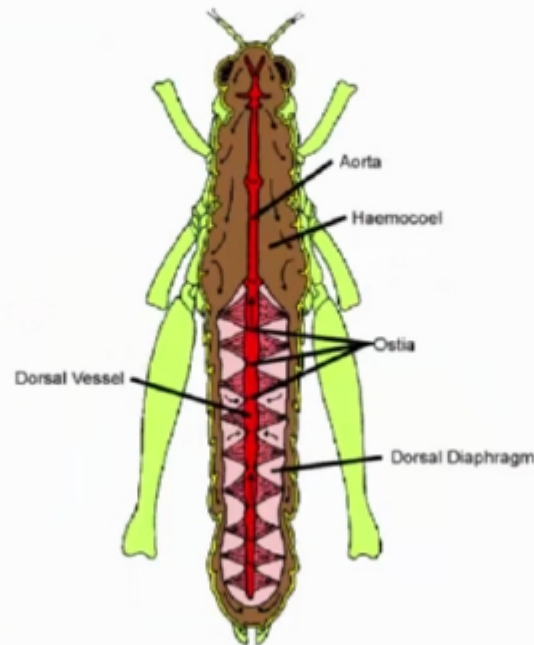
A few good bugs that eat whiteflies



Some Things That Eat Aphids (Good Insects)



- 5) All arthropods have an “open” circulatory system, no veins, arteries etc. Blood is held in a dorsal tubular structure with lateral openings in the abdomen.



Thrips

Insect

Thrips are minute, slender insects with fringed wings. Other common names for thrips include thunderflies, thunderbugs, storm flies, thunderblights, storm bugs, corn flies, corn lice and physopods.

[Wikipedia](#)

Scientific name: Thysanoptera

Higher classification: [Exopterygota](#)

The Study of Insects

- Known as entomology
- Entomologists have described and classified more than 900,000 insect species.
- Entomologists discover from 7,000 to 10,000 new species of insects each year.

Some specific insects Florida Master Gardeners should know ...



Apteriygota



Insect

The name Apteriygota is sometimes applied to a subclass of small, agile insects, distinguished from other insects by their lack of wings in the present and in their evolutionary history; notable examples ... [Wikipedia](#)

Scientific name: Apteriygota

Higher classification: [Insect](#)

Another common type of mouthpart is *piercing/sucking*



Aphid Mummies



The Class Insecta

Kingdom: Animalia

Phylum: Arthropoda

Class: Insecta

(Class: Arachnida)

Twospotted Spider Mite



Leafminers - Feed *within* the leaf



Serpentine Leaf Miner



Citrus Leaf Miner

The Thorax. Responsible for locomotion.
Made up of 3 segments. A pair of legs arise from each segment. Wings, if present, arise from 2nd and 3rd segment.



**Plant damage caused by
pests with chewing mouthparts**



- Rice weevil
 - Adult & Larvae



Rice weevil

Insect

The rice weevil is a stored product pest which attacks several crops, including wheat, rice, and maize. [Wikipedia](#)

Scientific name: *Sitophilus oryzae*

Higher classification: *Sitophilus*

Rank: Species

- Angoumois Grain Moth
 - Grubs



Angoumois grain moth

Insect

The Angoumois grain moth is a species of gelechioid moth. It is the type species of its genus *Sitotroga*, placed in the subfamily Pexicopiinae of the twirler moth family. [Wikipedia](#)

Scientific name: *Sitotroga cerealella*

Higher classification: *Sitotroga*

Rank: Species

Soft Scale: Green Scale



Southern Pine Beetle – Tree boring Beetle



Leaf-eating Beetles



Lacewing - eggs and adult



Lacewing larvae

**More than 1 million species of
insects world-wide**



“Skeletonizing” damage caused by immature chewing insects



Immature beetles

Asian Cycad Scale



Stinkbugs



Green Stinkbug - Bad

Note spines on thorax



Predatory Stinkbug - Good

UF

Relation of insects to humans:

1. **Beneficial:** Pollination, break down raw materials, aerate soil, bio-control of weeds and bad bugs, food for many animals, medical uses.
2. **Aesthetic Value:** Butterflies
3. **Injurious:** Feed on plants, stored foods, woods, fabrics, humans, and animals

Asian Cycad Scale



Protura

Animal



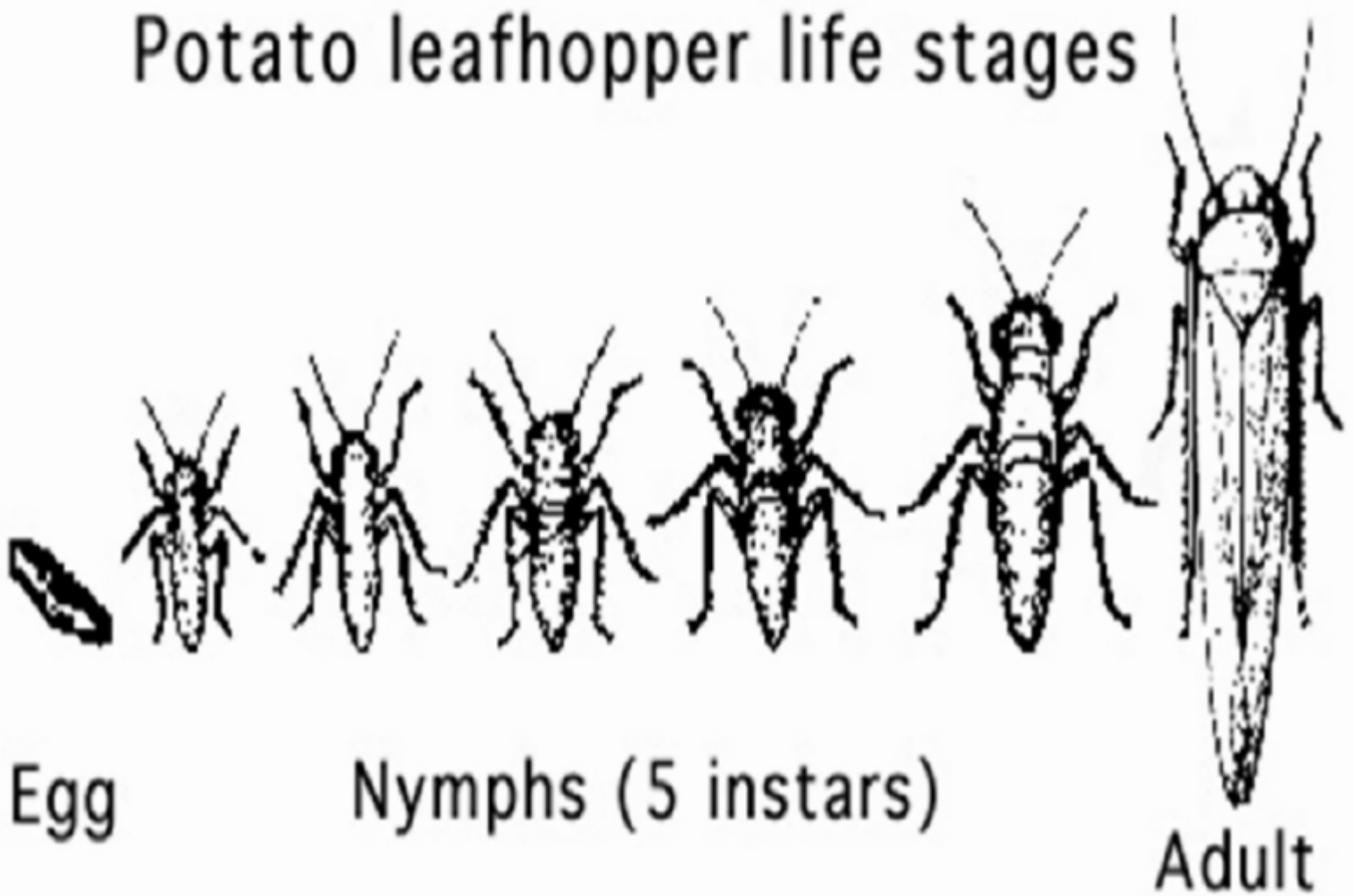
The Protura, or proturans, and sometimes nicknamed coneheads, are very small, soil-dwelling animals, so inconspicuous they were not noticed until the 20th century. [Wikipedia](#)

Scientific name: Protura

Rank: Order

Higher classification: [Entognatha](#)

Potato leafhopper life stages



Egg

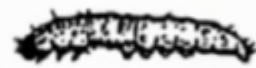
Nymphs (5 instars)

Adult

Some common yard and garden pests with chewing mouthparts



Weevil



Caterpillar



Grasshopper

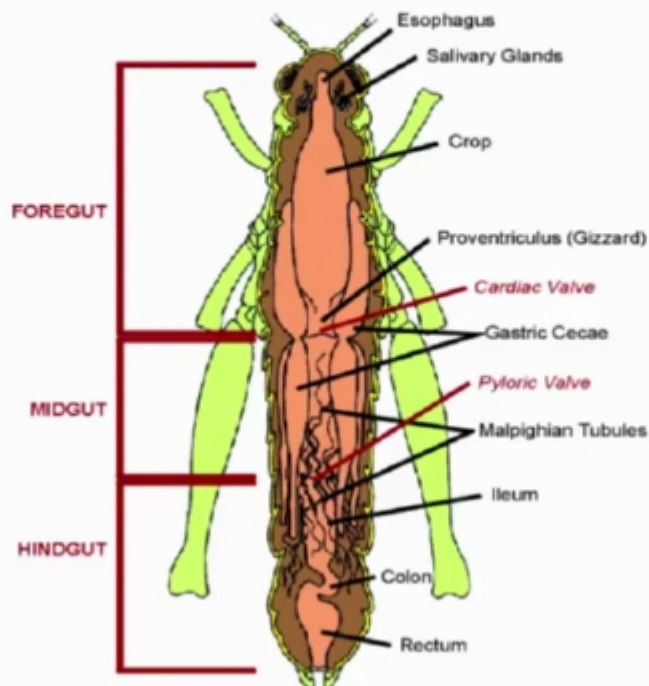


Beetle

A few good bugs that eat whiteflies



4) All arthropods have a digestive system (tube that runs from head to tail)





What IS an Arthropod?

- ‘**Arthropod**’ is derived from two Greek/Latin root words---
 - ‘arthro-’ meaning ‘jointed’....and
 - ‘-pod’ or ‘-poda’---meaning ‘foot’ or ‘leg’
- Here, it refers to a member of a very large group of animals---the **Phylum Arthropoda**, the ‘jointed foot animals’

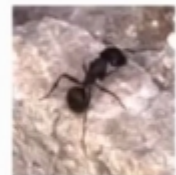


Photo: D.B. Richman, NMSU



Butterflies and moths



Insect

The Lepidoptera is an order of insects that includes moths and butterflies. 180,000 species of Lepidoptera are described, in 126 families and 46 superfamilies, 10% of the total described species of living organisms. [Wikipedia](#)

Scientific name: Lepidoptera

Lifespan: [Vanessa cardui](#): 12 months

Higher classification: [Amphiesmenoptera](#)

Rank: Order

Wingspan: [Papilio machaon](#): 6.5 – 8.6 cm, [Vanessa cardui](#): 5 cm, [more](#)

3/11/2017

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