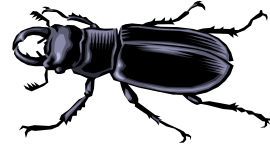




Phylum Arthropoda
jointed foot animals



- More than a million arthropod species have been identified.
- Estimated 15 million not yet discovered

Arthropods are divided into four subphyla :
Trilobita, Chelicerata, Crustacea, Uniramia

- They first appeared on this planet ~600 million years ago
- Exist in all major ecosystems

All arthropods have these four characteristics:

- 1) Exoskeleton made of chitin
- 2) Segmented body (2 or more segments)
- 3) Jointed appendages (legs, jaws, etc.)
- 4) Undergo a metamorphosis

1) Exoskeletons: can be semi-hard and/or leathery (insects) or extremely hard (ticks and lobsters).

Advantage of Exoskeleton

- Gives protection
- Protects from dehydration
- Allows movement.

Disadvantage of Exoskeleton

- Does not grow; the arthropod must periodically shed.
- If exoskeleton is damaged the organism will die

2) Segmented body: allows more mobility than previous species

- 2 or more segments
- Does not allow fluid movement like that of vertebrates

3) Jointed legs & segments : most all segments have a pair of appendages (legs, mandibles, antennae, etc.). Some segments are fused.

4) **Undergo a metamorphosis**: major change in body shape and morphology.

Ex. Larvae, pupae, adult

Other characteristics:

- Respiration: gills, lungs, tracheal tubes
- Sexual reproduction
- Social Behaviors
- Very successful design

The classes

Subphylum /Class Crustacea : primarily aquatic. Range in size from microscopic water fleas (Daphnia) to giant crabs that are over 12 feet across. The head & thorax section are fused into a cephalothorax, and there is a tail (abdomen), which in crabs is folded under.

- Two pairs of antennae, at least 5 pairs of legs, and specialized mouthparts (mandibles)

Subphylum Chelicerata : horseshoe crabs and arachnids

- 2 body segments and mouthparts called chelicerae.

Class Arachnida : spiders, ticks, mites, scorpions

- all arachnids have 4 pairs of legs connected to a cephalothorax
- spiders breathe using lungs, spin silk, and 8 simple eyes
- mites and ticks are external parasites

Subphylum Uniramia: insects, centipedes, millipedes

Class Insecta : the "notched" animals, the insects

- have 3 body segments and 3 pairs of legs
- most have 1 pair of antennae and one pair of compound eyes
- many have at least one pair of wings
- they have specialized adaptations for feeding -- tubes, mandibles, etc.
- Social insects live in little societies ruled by a queen. The queen is the only female capable of reproduction. All other females are sterilized at birth and become workers or soldiers. Males are only kept in a colony for reproduction and once that is done, they are killed or exiled.

-insects communicate in many ways : chirping, pheromones (smell), light, buzzing, dancing (bees)



Phylum Echinodermata :
The Spiny Skinned Animals

-Echinoderms are marine animals thought to have a common ancestor with the lower chordates

- Sea stars (starfish), sand dollars, sea urchins and sea cucumbers are all echinoderms

- Most start as free-swimming, bilaterally symmetrical larvae, then undergo a metamorphosis into a radial, bottom-dwelling adult

- They typically have an internal skeleton (a test) made of calcium plates

- All echinoderms have tube feet -- small, movable protrusions -- which aid in movement, feeding, respiration and excretion.

All echinoderms have a water-vascular system, nervous system and reproduction system. They do not have a circulatory, respiratory, or excretory system, and they have no head or brain.

They have separate sexes, but some can reproduce asexually by budding or regeneration

Echinoderms evolved over 500 million years ago

There are five classes

Crinoidea : "lilylike," sea lilies, feather stars; sessile

Asteroidea : "star-like," starfish; use tube feet to obtain food

Ophiuroidea : "snakelike," basketstars and brittlestars; use long, narrow arms to rake in food

Echinoidea : "hedgehoglike," sea urchins, sand dollars; organs enclosed in a hard test, spines stick out from it

Holothuroidea : sea cucumbers; armless, and they eviscerate when threatened

