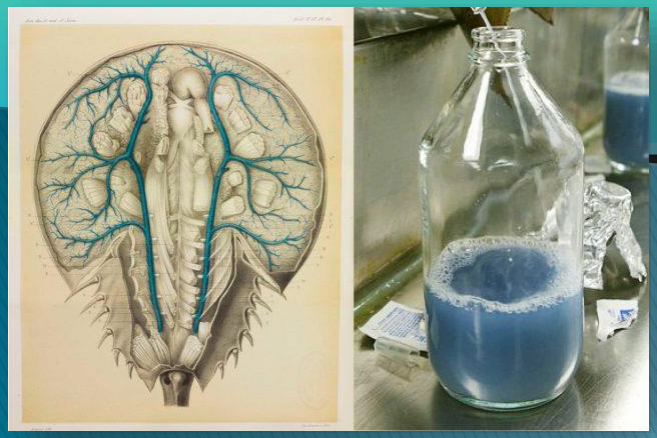
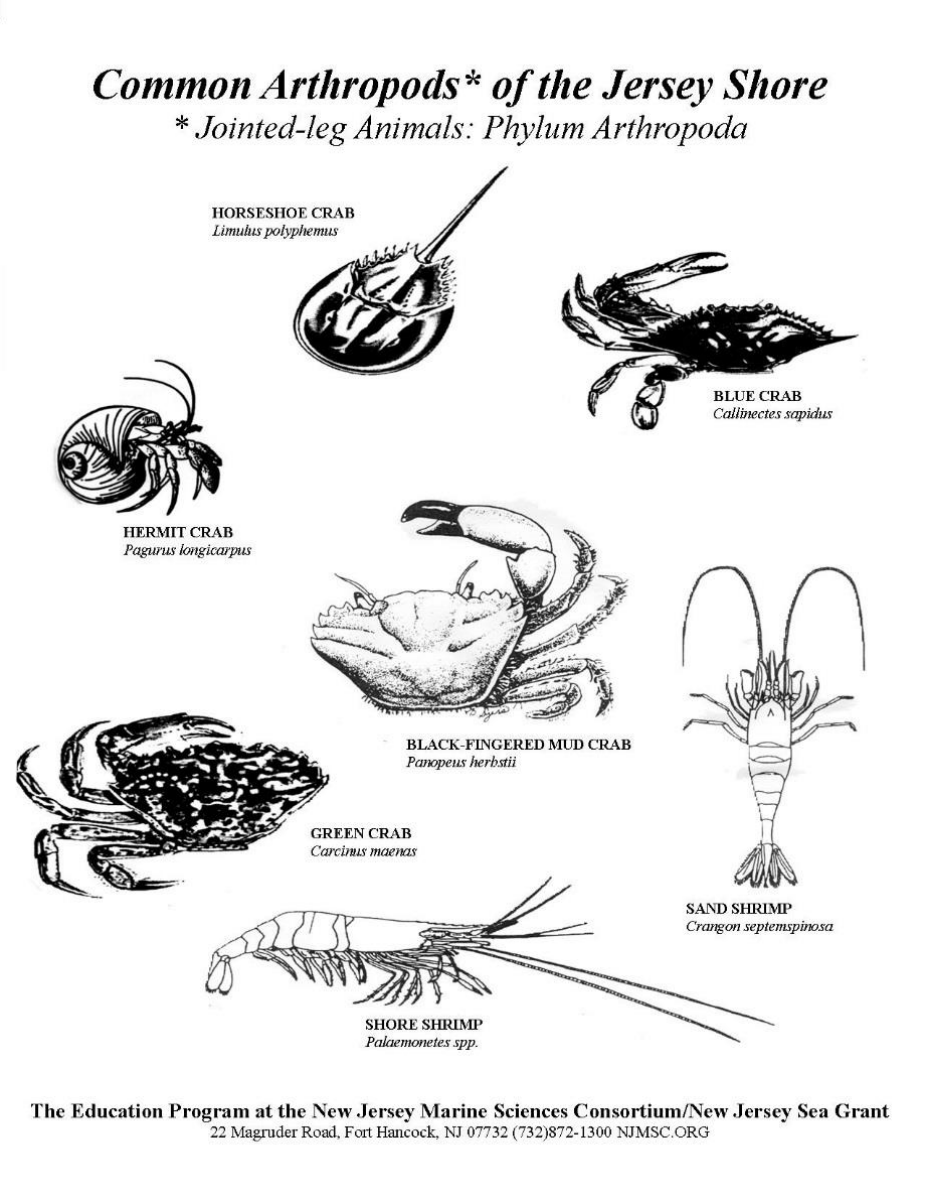
Arthropods

Almost 75% of All Identified Animal Species

"Arthrod" = jointed, "podos" = foot/leg



Arthropod General Characteristics



- Jointed Appendages
- Exoskeleton
  - Protein and Chitin (polysaccharide)
  - Flexible at joints
  - Not Living
- Body divided into segments
- Sophisticated Sensory Organs
- Two Major Groups
  - Chelicerates
  - Mandibulates

Chelicerata

- Classes:
- Xiphosura (Horseshoe Crab)
- Arachnida (Spiders, Ticks, Scorpions)
- Picnogonida (Sea Spiders)

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Subphylum Chelicerata

(Mites, Scorpions, Sea Spiders, etc.)

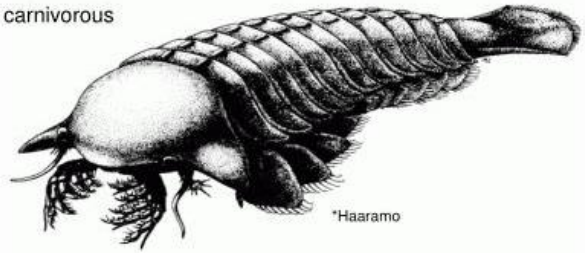
Classes

*Haaramo

*Neartica

About the Subphylum

- Most of the information for this subphylum is in the classes
- Their legs bear claws
- Some species are marine, some are land living, some are extinct
- Bodies are divided into two main parts
- Eyes are covered by a thick cornea
- They have compound eyes
- They feed on algae and other things
- Most are carnivorous



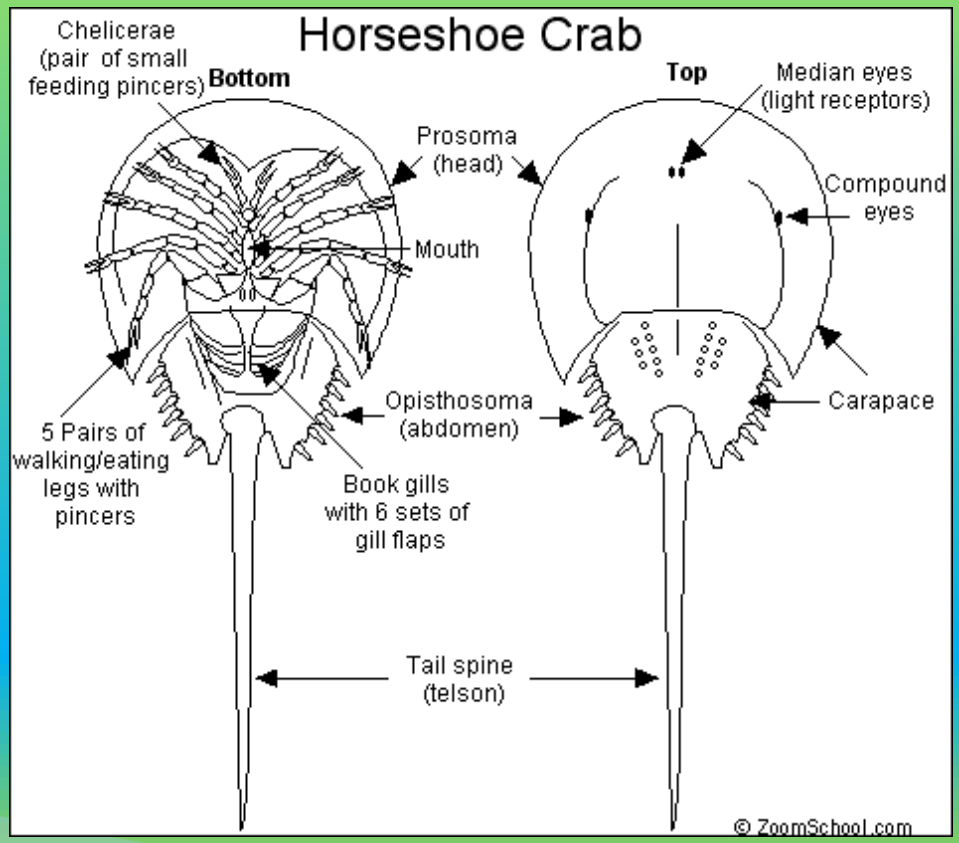
*Haaramo

Chelicerate Form and Function

- Six Pair of Appendages
  - Chelicerae modified for feeding.

Horseshoe Crabs

- Body
  - Cephalothorax
  - Abdomen
  - Telson
- Carapace
- Males smaller than females
- Spawn on beach
- Male attaches to the shell of a female



Horseshoe Crab Sex Determination

- Females are larger than males and their first pair of appendages are pincers.

Sea Spiders

- Found Intertidal zone – 6,000 meters
- Males extra pair of appendages to carry eggs
- Feed on juices of cnidarians and other soft-bodied inverts

Mandibulate Examples

- Crustaceans
  - Mantis Shrimp
  - Krill
  - Copepods
  - Amphipods
  - Barnacles

Mandibulate Form and Function

- Mandibles (pair of appendages on head) modified for feeding
- Three main body regions
  - Head
  - Thorax
    - Fused head and thorax cephalothorax
  - Abdomen
- Sensory Antennae (two pair)
- Molting

Decapods

- Crabs, Lobsters and true shrimp
  - “ten feet”
  - Chelipeds = Pincers
- Specialized Behavior
  - Hermit Crabs
  - Decorator Crabs
  - Blue Crabs
- Nutrition and Digestion
  - Combination of predatory/scavenging behavior
  - Stomach
- Reproduction
  - Sexes usually separate
  - Spermatophores (male delivers via copulatory pleopods)

Ecological Role of Arthropods

- Link in Food Chain
- Nutrient Cycling
- Fouling Organisms
- Symbiosis
  - Cleaner Shrimp
  - Barnacles (Commensal and Parasitic)

How are all these linked on an evolutionary basis?