Heirarchical Classification

- Placement of related organisms in categories or groups
  (Kingdom, Phylum, Class, Order, Family, Genus and Species)

- Members within a group have certain morphological characteristics in common.

- Dozen or so major groups or phyla (phylum).

Principal Phyla of the Animal Kingdom

- Phylum Protozoa - single-celled animals
- Phylum Porifera - sponges
- Phylum Coelenterata - jelly fish, corals
- Phylum Platyhelminthes - flatworms: flukes, tapeworms
- Phylum Nematelminthes - roundworms
- Phylum Trochelminthes - rotifers
- Phylum Brachiopoda - brachiopods

Principal Phyla of the Animal Kingdom

- Phylum Bryozoa - moss animals
- Phylum Mollusca - molluscs: clams, snails
- Phylum Echinodermata - starfish, sea urchins
- Phylum Annelida - earthworms, leeches
- Phylum Onychophora - Peripatus
- Phylum Arthropoda - crayfish, millipedes, spiders, insects
- Phylum Chordata - fish, amphibians, reptiles, birds, mammals
Phylum Arthropoda

Organisms united by having the following similar characters

1. Segmented body
2. Paired segmented appendages
3. Bilateral symmetry
4. Chitinous exoskeleton
5. Tubular alimentary canal
6. Open circulatory system

Phylum Arthropoda

Phylum characters – cont.

7. Body cavity = blood cavity
8. Ventral nervous system
9. Striated Skeletal muscles
10. Respiration by gills or trachea

Phylum Arthropoda

- Subphylum Crustacea
- Subphylum Chelicerata
  
  Class Xiphosura - horseshoe crabs
  Class Pycnogonida - sea spiders
  Class Arachnida - spiders, mites, ticks
Phylum Arthropoda

Subphylum Atelocerata (Mandibulata)
- Class Diplopoda - millipedes
- Class Chilopoda - centipedes
- Class Pauropoda - pauropods
- Class Symphyla - symphylans
- Class Hexapoda – insects
  (formerly Insecta)

- Class Arachnida
  - Ixodida – hard and soft ticks
  - Mesostigmata – mites

- Class Hexapoda
  - Diptera – true flies
  - Phthiraptera – lice
  - Siphonaptera – fleas

Class Arachnida

- Over 100,000 described species
- Ticks and mites
- Adults have 8 legs, some larvae have 6 legs
- Lack antennae and wings
- Body two distinct regions
  - cephalothorax (head and thorax)
  - opisthosoma (abdomen)
Class Hexapoda

Characteristics of adult:
- Body - three distinct regions
- Head - antennae, mouthparts, eyes
- Thorax - 3 pairs of legs, 1 or 2 pairs of wings
- Abdomen - no appendages, spiracles

Class Hexapoda

- Divided into 30 Orders
- Hundreds of Families
- 800,000 described species
- Largest order Coleoptera (beetles)
- More species of insects than any other kind of organism
- Diversity is incredible

Binomial Nomenclature - system of naming organisms. Developed by Carl Linnaeus (Systema Naturae, 1758).

International Code of Zoological Nomenclature

Scientific names (Genus species) are latinized and usually refer to a characteristic of the animal.

*Musca domestica* house fly    *Haematobia irritans* horn fly

Common names of organisms not covered by ICZN. In U.S. common names of insects are approved by Entomological Society of America.