

# Arthropod Characteristics

- Segmented body plan
- Exoskeleton composed of chitin
- Paired jointed appendages on variable number of segments
- Dorsal heart with paired ostia (openings)
- Hemocoelic body cavity (open circulatory system)
- Nervous system comprised of a dorsal brain and ventral nerve chord

## Classes of Arthropods

There are five major classes of arthropods and each class can be separated based on shared characters.

**Class Arachnida** (scorpions, spiders, mites, ticks, daddy longlegs, etc.)

- Two body regions (cephalothorax and abdomen)
- Cephalothorax with 6 pairs of appendages (chelicerae, pedipalps and 4 pairs of walking legs)
- Abdomen with up to 3 pair of appendages (spinnerets)
- Mostly terrestrial and predatory, some secondarily aquatic and sap-sucking.



### **Mexican Redknee** – *Brachypelma smithi*

This tarantula is found in central Mexican desert and scrub areas. This species of tarantula is protected under international law. The Mexican, (*Brachypelma*) tarantulas are so colorful, most species were over collected in their native habitats since the 1930s. Since then, efforts to preserve the Mexican species have been extensive. To date, all species of *Brachypelma* are classified as a C.I.T.E.S. II animal and the Mexican government has prohibited trade of all wild-caught animals as well as keeping habitat locations a secret. Proudly, this spider is the product of captive breeding. Specimens have been kept in captivity for up to 40 years.

**Class Crustacea** (crabs, lobsters, shrimp, isopods, water fleas, copepods, etc.)

- Primarily aquatic with most species being marine, some terrestrial representatives
- Body divided into 2 regions (cephalothorax and abdomen)
- Cephalothorax with 2 pairs of antennae, 3 pairs of mouthparts and at least 5 pairs of legs
- Appendages biramous (forked segmentation)
- Most species scavengers or predatory



### **Pillbugs** – *Armadillidium vulgare*

This species is found throughout Europe, temperate Asia and North America. Pillbugs (roly poly) are crustaceans not insects. They are related to crabs, lobsters, shrimp, etc. and belong to the Order Isopoda. They are able to roll up into a ball for protection. The female carries eggs and young in a brood pouch. Other species of isopods include the sowbugs (named for their habit of carrying the young underneath), woodlice and rockslaters or sea roaches.

### Class Diplopoda (millipedes)

- Primarily herbivorous, all terrestrial
- 2 body regions (head and trunk)
- Head with one pair of antennae and often a pair of compound eyes
- Diplosegmentation (two fused segments), segments usually cylindrical – advanced trait since some segments still retain one pair of legs).
- Typically two pairs of legs per body segment



#### **African Giant Millipede** – *Archispirostreptus gigas*

This is the largest and most often kept species of millipede. Adults can reach lengths of up to 9 inches! Millipedes can be separated from the similarly shaped centipedes by having two pair of legs per body segment instead of one pair per segment. This condition is called diplosegmentation (meaning two segments) and is unique to this class of arthropods. In addition, millipedes are cylindrical in cross section and are herbivorous while centipedes are flattened and are predatory. African Giants are found naturally in Zaire and the Congo wherever rainforests occur and can be fed almost any fruit or vegetable though they seem partial to curcubits (cucumbers, melons, squashes) and non-acidic fruits.

### Class Chilopoda (centipedes)

- Terrestrial predators
- 2 body regions (head and trunk)
- Dorso-ventrally (top-bottom) flattened with one pair of appendages per segment
- Head with one pair of antennae and simple eyes
- First pair of trunk appendages modified into poison claws
- Typically one pair of legs per body segment



#### **Giant South American Centipede** – *Scolopendra gigantea*

The largest centipede known with individuals attaining sizes up to 250 mm (12 inches)! It ranges from Jamaica, Trinidad, and northern South America into Brazil in rainforest habitats. Because of its large size, *S. gigantea* can easily feed on small lizards, mice and large insects such as cockroaches. The bite has not been recorded but is undoubtedly quite painful. Centipedes can be separated from millipedes by only having one pair of legs per body segment, possessing modified fang-like legs and being flattened top to bottom.

**Class Insecta = Hexapoda** (insects)

- Many feeding strategies
- Mostly terrestrial, some secondarily aquatic
- Body with 3 regions (head, thorax, abdomen)
- Head with 5 pairs of appendages (a pair of antennae, a fused labrum, a pair of mandibles, a pair of maxillae, and a fused labium) – many orders with mouthparts modified and lost
- Thorax with 3 pair of legs and usually two pair of wings (primitive forms wingless others with wings secondarily lost)
- Abdomen with up to one pair of appendages (cerci)
- Only invertebrates with wings and only animals with true wings



**Eastern Lubber Grasshopper** – *Romalea microptera* The wings of this large grasshopper are so short that it cannot fly. Instead the bright pink and black hindwings are used in courtship. A rasping noise is made by scrapping the large hind legs across the tegmina (forewings). Lubbers are abundant during the summer months along roadsides, field edges and gardens of the southeast from North Carolina to Florida, west to Louisiana, northeast to Tennessee. Slow and clumsy (hence the name lubber) these grasshoppers rely on their warning coloration for safety rather than jumping or flying. When handled, it secretes a foul-smelling liquid

to repel predators. The hind tibiae have sharp spines capable of cutting human skin. There are two color forms: either dull straw yellow with black markings or mostly black with a yellow stripe around the edge of the pronotum. Their diet consists of herbaceous plants of many kinds but they seem partial to lilies and amaryllis.



**White-eyed Assassin Bug** – *Platymeris biguttata* The reduviid bugs, commonly called assassin bugs are a family of true bugs that prey on soft-bodied insects and occasionally vertebrate blood. They have piercing mouthparts shaped into a beak that delivers a paralyzing bite to its invertebrate prey (caterpillars are especially favored). This species is found in the drier regions of southern Africa and the two large white spots on the wing cases give them their common name. White-eyed Assassin Bugs hide gregariously under peeling bark, under logs and rocks, etc. and they emerge at night to feed. In Central America, the kissing bug (*Triatoma sanguinea*) feeds on human blood and may carry Chagas Disease. They get their name from the habit of biting on lips to drink their blood meal.