



Chapter 8-7: Phylum Arthropoda

Most animals are arthropods; the species in this phylum outnumber all of the other species of animals and plants together. Over a million species of arthropods in the phylum Arthropoda have been described and it is generally accepted that, from an evolutionary standpoint, they are the most successful organisms on Earth.

All members of the phylum Arthropoda have jointed appendages and segmented body plans, but their segments do not simply repeat as they do in earthworms. They are highly specialized for tasks such as feeding, walking, sensing, and reproducing. In addition, arthropods have an outer skeleton called an exoskeleton. This exoskeleton is periodically shed in a process called molting, which enables the arthropod to grow.

In the first part of this plate we show the anatomy of a typical arthropod, the grasshopper. Many of the typical arthropod features are found in this animal. In the second section of the plate, representative arthropods are described. Begin your reading below as you focus on the grasshopper.

The grasshopper is a member of the class Insecta. The body of the grasshopper consists of three main parts: the **head (A)**, the **thorax (B)**, and the **abdomen (C)**, in which segmentation is most apparent. In the grasshopper, the thorax and head are fused.

Some of the distinguishing characteristics of insects are their **antennae (D)**, their **compound eyes (E)**, and their feeding appendages, which include a **mandible (F)** and two pairs of **maxillae (G)**. The maxillae are fused together to form a sort of lower lip.

Insects vary in shape and size, but many insects have two pairs of **walking legs (H)** and third pair called **jumping legs (I)**. Along the wall of the abdomen are openings called **spiracles (J)**, which lead to tubes that make up the respiratory system of the insect. Two pairs of wings are also present; the **fore wings (K)** and the **hind wings (L)**. The last segment of the abdomen, called the **ovipositor (M)**, is specialized for the deposit of the insect's eggs.

Having described some of the typical features of an arthropod, we will now turn to some representative arthropods from the various classes of this phylum. We will use the common names of these different arthropods as we discuss them. Focus on the representative arthropods and use light colors such as yellows, grays, and pastels in order to avoid obscuring the important features of the animals.

Among the arthropods are thousands of species of **millipedes (N)**, which have cylindrical bodies and two pairs of legs per segment. Most millipedes feed on decaying plant matter. A similar group in appearance is the **centipedes (O)**, which have flattened bodies and one pair of legs per segment. Centipedes are predators and scavengers and their first pair of legs is modified into claws that are used for injecting poison into their prey.

Certain arthropods are referred to as crustaceans. These animals live in marine and fresh water, and include the **crab (P)** and the **crayfish (Q)**. These are the only arthropods that have two pairs of antennae as well as walking legs on their thorax and abdomen. Shrimp and lobster are also included in this group.

Arthropods that have eight legs, such as **ticks (R)** and **horseshoe crabs (S)**, are arachnids. Spiders, scorpions, and mites are also included in the group, in which the head and thorax are usually fused to one another. Many species of arachnids kill their prey by injecting them with venom. Ticks are bloodsucking parasites that are vectors for various diseases including Rocky Mountain spotted fever and Lyme disease.

Over 700,000 species of insects have been identified, all of which have at least three pairs of legs, and several of the typical parts shown in the grasshopper. The diagram shows the **housefly (T)** and a common **beetle (U)** as further representatives of the insect group. Some other familiar members include termites, crickets, lice, fleas, moths, butterflies, bees, and ants.

Grasshopper Anatomy

- Head.....A
- Thorax.....B
- Abdomen.....C
- Antennae.....D
- Compound Eye.....E
- Mandible.....F
- Maxillae.....G

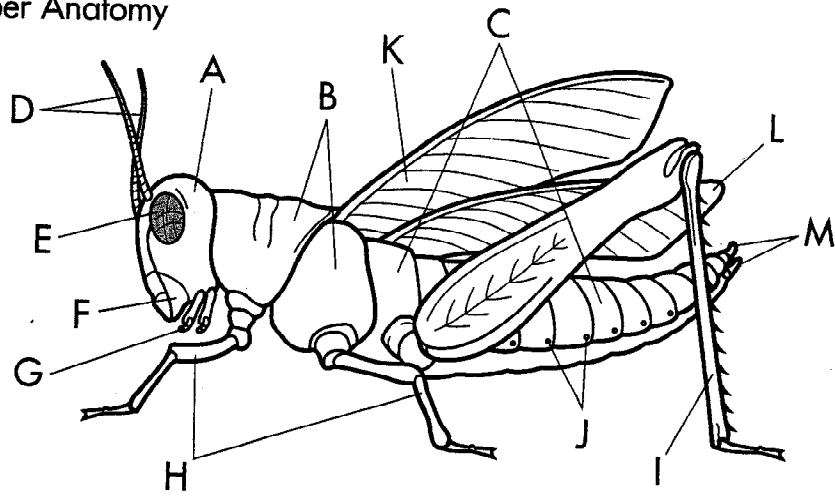
Phylum Arthropoda

- Walking Legs.....H
- Jumping Legs.....I
- Spiracles.....J
- Fore Wing.....K
- Hind Wing.....L
- Ovipositor.....M
- Centipede.....O
- Crab.....P
- Crayfish.....Q
- Tick.....R
- Horseshoe Crab.....S
- Housefly.....T
- Beetle.....U

Representative Anthropods

- Millipede.....N

Grasshopper Anatomy



Representative Arthropods

