Invertebrates

By Laura Klappenbach

FACT: The term invertebrate refers to an informal collection of a very large number of animals.

Although vertebrates all fall within a single taxonomic group, invertebrates occupy more than 30 groups of animals. These include sponges, cnidarians, flatworms, molluscs, arthropods, insects, segmented worms, and echinoderms as well as numerous minor phyla such as brachiopods, arrow worms, bryozoans, hemichordates, peanut worms, rotifers, water bears, ribbon worms, velvet worms, spoonworms, horseshoe worms and a handful of others.

FACT: Invertebrates were the first animals to evolve.

The first animals had soft bodies and for this reason they left little fossil evidence of their existence. Scientists have discovered fossilized burrows and tracks in sediments that date back nearly 1 billion years. The oldest fossil of an invertebrate dates back to the late Precambrian, about 600 million years ago.

FACT: The first invertebrates evolved from single-celled, food-eating microorganisms.

Scientists are still uncertain exactly how the first invertebrates evolved. Most experts agree that the first invertebrates evolved from single-celled, food-eating microorganisms. Scientists think that these microorganisms formed permanent symbiotic groups and in doing so, they were no longer single-celled, they had become multicellular. When this happened, animals had evolved.

FACT: Invertebrates are often most noted for what they lack: a backbone and a bony skeleton.

Invertebrates do not have bones, a bony skeleton, or a backbone. Instead, they gain structural support for their bodies in different ways. For example, sea anemones have a hydrostatic skeleton that produces support via sheets of muscles and an internal cavity filled with fluid. Other invertebrates such as insects and crustaceans have a hard outer shell or exoskeleton.

FACT: Invertebrates account for 97 percent of all known species.

An estimated 97% of all species are alive today are invertebrates. Of all invertebrates, the insects are by far the most numerous. There are so many species of insects that scientists have yet to discover them all, let alone name or count them. Estimates of the total number of insect fall in the range of 1 to 30 million. There are also some 10,000 species of sponges, 9,000 species of cnidarians, 100,000 species of mollusks, and 75,000 species of arachnids in addition to tens of thousands of species belonging to other lesser known groups.

FACT: The simplest invertebrates, in fact the simplest animals, are sponges.

Sponges are sessile animals that live in marine and freshwater habitats. Sponges feed by siphoning water into their body and filtering out food particles. Water enters their body through small pores ou their outer surface. The water then passes into a central cavity and is expelled through a large opening called the osculum. Although the cells in the body of a sponge perform specialized functions, they are not organized into true tissues or organs as they are in other animals.

FACT: Most invertebrates change form as they grow, going through a process known as metamorphosis.

Metamorphosis is a process by which organisms change form as they mature. Young are sometimes very different from adult forms and may feed on different resources and inhabit different niches. Metamorphosis can enable a species to disperse with greater ease at certain times during its life cycle, find different food resources, or prepare for breeding. The changes involved in metamorphosis are controlled by hormones and may proceed quickly or gradually.

FACT: Some species of invertebrates form large colonies.

Colonies are groups of animals of the same species that remain together throughout most of their life cycle. Members of a colony are often closely related and benefit from living together by dividing up the work of obtaining food, protecting themselves, and reproducing. Invertebrate colonies are most common in marine habitats where the members of the colony are often physically joined. Marine invertebrate colonies include corals, hydrozoans, Portuguese man-of-war, and sea squirts. Invertebrate colonies that occur on land have individuals that are separated. The best known terrestrial colonial invertebrates are the social insects—bees, ants, termites, and wasps.

FACT: Invertebrates will eat almost anything that was or is alive.

There are herbivores, carnivores, and detritivores in the invertebrate world. They go about obtaining food in a multitude of ways. Some aquatic invertebrates such as sponges are filter feeders while others such as starfish actively hunt prey. On land, spiders build elaborate webs that snare their prey. Leaf-cutter ants slice and dice foliage from trees and cart it back to their nest where they use it as fertilizer to grow great fungal gardens that feed their colony.

FACT: Many of the world's parasites are invertebrates.

Ticks, tapeworms, leeches, and roundworms are just a few of the parasites in the animal kingdom and all are invertebrates. Some parasites live on the external surfaces of their hosts while others live in the digestive tract or tissues of their hosts. Parasites often go through an elaborate series of steps in their life cycle during which time they may pass from one to several other hosts.