**Chapter 4**

**The Organization of Life**

**Section 1**

**Day 1**

**Defining an Ecosystem**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are communities of organisms and their abiotic environment.
* Examples are an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Ecosystems do not have clear boundaries.
* Things move from one ecosystem to another.
* Pollen can blow from a forest into a field, soil can wash from a mountain into a lake, and birds migrate from state to state.

**The Components of an Ecosystem**

* In order to survive, ecosystems need five basic components:
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Plants and rocks are components of the land ecosystems, while most of the energy of an ecosystem comes from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* If one part of the ecosystem is destroyed or changes, the entire system will be affected.

**Biotic and Abiotic Factors**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are environmental factors that are associated with or results from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which includes plants, animals, dead organisms, and the waste products of organisms.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are environmental factors that are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with the activities of living organisms which includes air, water, rocks, and temperature.
* Scientists can organize these living and nonliving things into various levels.

**Organisms**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are living things that can carry out life processes independently.
* You are an organism, as is an ant, and ivy plant, and each of the many bacteria living in your intestines.
* Every organism is a member of a species.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are groups of organisms that are closely related can mate to produce fertile offspring**.**

**Populations**

* Members of a species may not all live in the same place.
* Field mice in Maine will not interact with field mice in Texas. However, each organism lives as part of a population.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are groups of organisms of the same species that live in a specific geographical area and interbreed.
* For example, all the field mice in a cornfield make up a population of field mice.

**Populations**

* An important characteristic of a population is that its members \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rather than with members of other populations
* For example, bison will usually mate with another member of the same herd, just as other flowers in the same field will usually pollinate wildflowers.

**Communities**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are groups of various species that live in the same habitat and interact with each other.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is part of a community.
* The most obvious difference between communities is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ they have.
* Land communities are often dominated by a few species of plants. These plants then determine what other organisms can live in that community.

**Habitat**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are places where an organism usually lives.
* Every habitat has specific characteristics that the organisms that live there need to survive. If any of these factors change, the habitat changes.
* Organisms tend to be very \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to their natural habitats.
* In fact, animals and plants usually cannot survive for long periods away from their natural habitat.

**Chapter 4**

**Organization of Life**

**Section 2**

**Day 1**

**Evolution by Natural Selection**

* English naturalist \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ observed that organisms in a population differ slightly from each other in form, function, and behavior.
* Some of these differences are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Darwin proposed that the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a strong influence over which individuals survive to produce offspring, and that some individuals, because of certain traits, are more likely to survive and reproduce than other individuals are.

**Evolution by Natural Selection**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is the process by which individuals that have favorable variations and are better adapted to their environment survive and reproduce more successfully than less well adapted individuals do.
* Darwin proposed that over many generations, natural selection causes the characteristics of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is a change in the characteristics of a population from one generation to the next.

**Nature Selects**

* Darwin thought that nature selects for certain traits, such as sharper claws, because organisms with these traits are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Over time, the population includes a greater and greater proportion of organisms with the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* As the populations of a given species change, so does the species.

**Nature Selects**

* An example of evolution is a population of deer that became isolated in a cold area.
* Some of the deer had genes for thicker, warmer fur.
* These deer were more likely to survive, and their young with thick fur were more likely to survive to reproduce.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is the process of becoming adapted to an environment.
* It is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Coevolution**

* The process of two species evolving in response to long-term interactions with each other is called **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* An example is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which has a long, curved beak to reach nectar at the base of a flower.
* The flower has structures that ensure that the bird gets some pollen on its head.
* When the bird moves the next flower, some of the pollen will be transferred, helping it to reproduce.

**Coevolution**

* The honeycreeper’s adaptation is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The plant has two adaptations:
	+ The first is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which attracts the birds.
	+ The second is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that forces pollen onto the bird’s head when the bird sips nectar.

**Evolution by Artificial Selection**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is the selective breeding of organisms, by humans, for specific desirable characteristics.
* Dogs have been bred for certain characteristics.
* Fruits, grains, and vegetables are also produced by artificial selection.
* Humans save seeds from the largest and sweetest fruits.
* By selecting for these traits, farmers direct the evolution of crop plants to produce larger, sweeter fruit.

**Evolution of Resistance**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is the ability of an organism to tolerate a chemical or disease-causing agent.
* An organism may be resistant to a chemical \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Humans promote the evolution of resistant populations by trying to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Pesticide Resistance**

* A pesticide sprayed on corn to kill grasshoppers, for example, may kill most of the grasshoppers, but those that survive happen to have a gene that protects them from the pesticide.
* These surviving insects pass on this resistant gene to their offspring.
* Each time the corn is sprayed; more grasshoppers that are resistant enter the population.
* Eventually the entire population will be resistant, making the pesticide useless.

**Chapter 4**

**Organization of Life**

**Section 3**

**Day 1**

**The Diversity of Living Things**

* Most scientists classify organisms into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ kingdoms based on different characteristics.
* Members of the six kingdoms get their food in different ways and are made up of different types of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the smallest unit of biological organization.
* The cells of animals, plants, fungi, and protists all contain a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* While cells of bacteria, fungi, and plants all have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
| **Kingdom** | **Characteristics** | **Examples** |
| Archaebacteria |  | Methanogens (live in swamps and produce methane gas) and extreme thermophiles (live in hot springs) |
| Eubacteria |  | Proteobacteria (common in soils and in animal intestines) and cyanobacteria (also called blue-green algae) |
| Fungi |  | Yeasts, mushrooms, molds, mildews, and rusts |
| Protists |  | Diatoms, dinoflagellates (red tide), amoebas, trypanosomes, paramecia, and *Euglena.* |
| Plants |  | Ferns, mosses, trees, herbs, and grasses |
| Animals |  | Corals, sponges, worms, insects, fish, reptiles, birds, and mammals |

**Bacteria**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are extremely small, single-celled organisms that usually have a cell wall and reproduce by cell division.
* Unlike all other organisms, bacteria lack \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* There are two main kinds of bacteria, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Most bacteria are eubacteria.
* Bacteria live in every habitat on Earth, from hot springs to the bodies of animals.

**Bacteria and the Environment**

* Some kinds of bacteria \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of other organisms and return the nutrients to the soil.
* Others recycle nutrients, such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Certain bacteria can convert nitrogen from the air into a form that plants can use.
* This conversion is important because nitrogen is the main component of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Bacteria and the Environment**

* Bacteria also allow many organisms, including humans, to extract certain nutrients from their food.
* The bacterium, *Escherichia coli*or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***,* is found in the intestines of humans and other animals and helps digest food and release vitamins that humans need.

**Fungi**

* A **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is an organism whose cells have nuclei, rigid cell walls, and no chlorophyll and that belongs to the kingdom Fungi.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ act like mini-skeletons that allow fungi to stand up right.
* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the reproductive structure of a fungus.
* The rest of the fungus is an underground network of fibers that absorb food from decaying organisms in the soil.

**Fungi**

* Fungi get their food by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that help break down organic matter, and then absorbing the nutrients.
* The bodies of most fungi are huge networks of threads that grow through the soil dead wood, or other material on which the fungi is feeding.
* Like bacteria, fungi play an important role in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Fungi**

* Some fungi, like some bacteria, cause \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is an example of a condition caused by fungi.
* Other fungi add flavor to food as in blue cheese. The fungus gives the cheese both its blue color and strong flavor.
* Yeasts are fungi that produce the gas that makes bread rise.

**Protists**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**are diverse organisms that belong to the kingdom Protista.
* Some, like amoebas, are animal like. Others are plantlike, such as kelp, and some resemble fungi.
* Most protists are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, including diatoms, which float on the ocean surface,
* Another protist, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***,* is the one-celled organism that causes the disease malaria.

**Protists**

* From an environmental standpoint, the most important protists are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Algae are plantlike protists that can make their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* They range in size from the giant kelp to the one-celled phytoplankton, which are the initial source of food in most ocean and freshwater ecosystems.

**Plants**

* Plants are many-celled organisms that make their own food \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Most plants live on land where they use their leaves to get sunlight, oxygen, and carbon dioxide from the air.
* Plants absorb nutrients and water from the soil using their roots.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are connected by vascular tissue, which has thick cell walls and serves is system of tubes that carries water and food.

**Lower Plants**

* The first land plants had no vascular tissue, and swimming sperm.
* They therefore had to live in damp places and could not grow very large.
* Their descendents alive today are small plants such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_were the first vascular plants, with some of the ferns being as large as small trees.

**Gymnosperms**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are woody vascular see plants whose seeds are not enclosed by an ovary or fruit.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are gymnosperms that bear cones.
* Much or our lumber and paper comes from gymnosperms.

**Gymnosperms**

* Gymnosperms have several adaptations that allow them to live in drier conditions than lower plants.
	+ They can produce \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which protects and moves sperm between plants.
	+ These plants also produce \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which protect developing plants from drying out.
	+ A conifer’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ also lose little water.

**Angiosperms**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**are flowering plants that produce seeds within fruit. Most land plants are angiosperms.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the reproductive structure of the plant.
* Some angiosperms, like grasses, have small flowers that use wind to disperse their pollen.
* Other angiosperms have large flowers to attract insects and birds.
* Many flowering plants depend on animals to disperse their seeds and carry their pollen.

**Angiosperms**

* Most land animals are dependent on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Most of the food we eat, such as wheat, rice, beans, oranges, and lettuce comes from flowering plants.
* Building materials and fibers, such as oak and cotton also come from flowering plants.

**Animals**

* Animals cannot make their own food. They must take it in from the environment.
* Animal cells also have no cell walls, making their bodies soft and flexible.
* Some animals have evolved hard exoskeletons.
* As a result, animals are much more mobile than plants.
* All animals move around in their environment during at least one stage in their lives.

**Invertebrates**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are animals that do not have backbones.
* Many invertebrates live attached to hard surfaces in the ocean and filter their food out of the water, such as corals, various worms, and mollusks.
* These organisms are only mobile when they are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* At this early stage in their life, they are part of the ocean’s plankton.

**Invertebrates**

* Other invertebrates, including squid in the ocean and insects on land, actively move in search of food.
* More \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ exist on Earth than any other type of animal.
* Insects are successful for many reasons:
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ allows them to live on little food and to hide from enemies in small places.

**Invertebrates**

* Many insects and plants have evolved together and depend on each other to survive.
* Insects carry pollen from male fruit parts to fertilize a plant’s egg, which develops into fruits such as tomatoes, cucumbers, and apples.
* Insects are also valuable because they eat other insects that we consider pests.

**Invertebrates**

* However, insects and humans are often enemies.
* Bloodsucking insects transmit human diseases such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Insects do most damage indirectly by eating our crops.

**Vertebrates**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are animals that have a backbone, and includes mammals, birds, reptiles, amphibians, and fish.
* The first vertebrates were \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, but today most vertebrates live on land.
* The first land vertebrates were \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* These animals were successful because they have an almost \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which allows the egg to hatch on land, away from predators in the water.

**Vertebrates**

* Birds are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ vertebrates with feathers.
* They keep their hard-shelled eggs and young warm until they have developed insulating layers of fat and feathers.
* Mammals are warm-blooded vertebrates that have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Birds and mammals have the ability to maintain a high body temperature, which allows them to live in cold areas, where other animals cannot live.