



Creation of a model of the food chain in the forest biotope - P22 activity - 6th Grade

The case of the Brown Bear



Terrestrial food chains

In a terrestrial food chain, we encounter a series of organisms that eat each other so that energy and nutrients flow from one to the other. A food chain shows the feeding relationship between various living things in a particular environment.

Producers are the beginning of a simple food chain. The producers are plants and vegetables. Plants are at the beginning of every food chain that includes the Sun. All energy comes from the Sun and plants are what make food with that energy. They use the process of photosynthesis. Plants also produce many other nutrients for other organisms.

Consumers are the next link in a food chain. There are three levels of consumers. Levels start:

- with the organisms that eat the plants and are the **main consumers or herbivores** of the chain, such as a squirrel,
- **secondary consumers, or carnivores** eat primary consumers, like a cat might eat a mouse and
- in some ecosystems, there is a **third level of consumers** called **tertiary consumers**, which consume the secondary and primary consumers, such as a wolf eating the cat or mouse.

There are also consumers called **omnivores** and they can be secondary or tertiary consumers.

The word "omnivorous" comes from the Latin words **omnis** "everything" and *vora*, meaning "to devour or swallow." Thus, omnivore means "**devour everything.**"

The advantage of omnivory is the ability to find food in a variety of places and habitat conditions. For example, if it is not possible to eat a certain food, an omnivore can very easily change its diet. Some omnivores are also scavengers, meaning they feed on dead animals or plants, further increasing their food options.

Omnivores must find their own food, and because they have such a varied diet, their means of obtaining food are not as specialized as those of carnivores or herbivores, such as humans and bears. All animals, including omnivores, are consumers.

The last links in the chain are the **decomposers**. They consume "dead" organic matter, meaning they break down the nutrients in the "dead matter" and return it to the soil.

The brown bear food chain

The food of the brown bear varies, that is, it changes due to the change of seasons. The bear lives in extensive mixed or pure forests of deciduous trees, beech, oak, etc. and coniferous trees, black pine, fir, etc. of the mountainous and semi-mountainous zone in search of its food.

Although it is an omnivore, it shows a clear preference for plant foods and especially for wild fruits, roots, mushrooms and honey. More specifically, it feeds on 85% plant-based foods and 15% animal-based foods.

After the bear wakes up from hibernation, its diet consists of ants and young shoots of dead animals, because it is very difficult in the spring, because it has already lost 30% of its weight, and the fruits of the forest are non-existent, since the fruit trees did not bear fruit and the bushes.

Also, the bear's diet includes all the available ripe fruits of the forest, such as various ripe berries, blackberries, cherries, pears, raspberries, mountain ash and wild rose, wild strawberries, nuts, such as acorns, beech nuts, but also bulbs, roots and grasses.

It supplements its diet with honey, which is its real "weakness", small and large mammals, insects (mainly ants) and turtles.

Bears eat a lot and the food they consume turns into fat, necessary for winter life. When the year is not fruitful, bears eat crops of oats, corn and also eat domestic animals.

Autumn is the season of overeating, due to the need to build up fat reserves for hibernation and the abundance of autumn forest fruits. Thus, the bear at this time spends most of its time searching for and consuming food.

Its diet consists of about 67 species of plant and animal organisms, which is a remarkable trophic flexibility and an important adaptation mechanism of the bear to the environmental conditions that determine the availability of food sources.

Also, due to the composition of its diet and the mobility that characterizes it, the bear acts unintentionally as a natural transporter - sower of plant species, through its feces, thus indirectly influencing the composition of forest vegetation, shrubs and small trees in an area, with as a result, the low vegetation of the forest thickens and thus, from the increased density of plants and roots, soil and water are retained better.

As for the animal proteins it consumes, these come from both ant colonies and turtles, as well as domestic working animals, such as herds of goats and sheep or cattle.

Source: opencourses.ionio.gr, legacy.callisto.gr