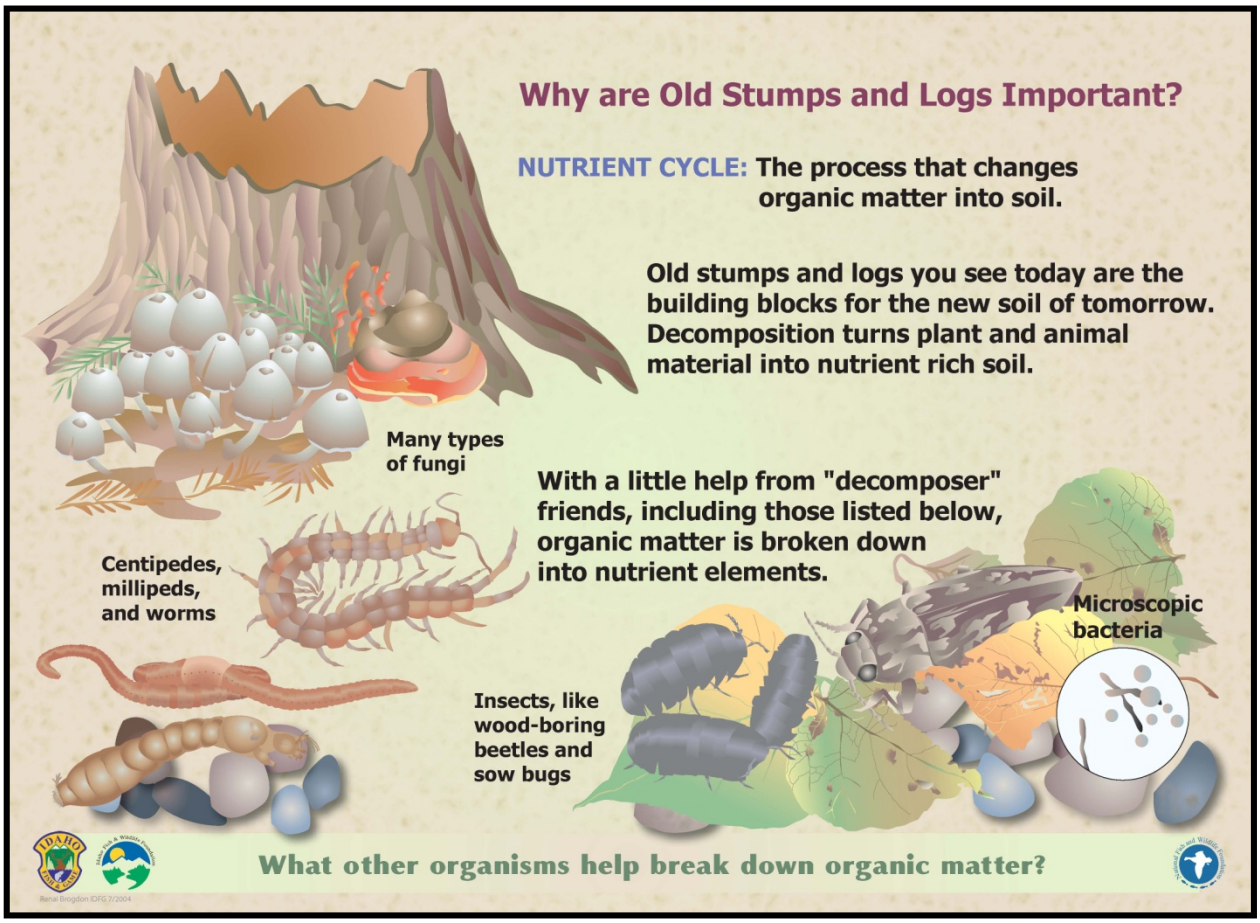


Learning Objectives-after this lesson, students will be able to:

Explain why dead and dying plants and animals are beneficial to ecosystems
Describe how organic matter is broken down

Vocabulary Words

Decomposer
Nutrient
Organic Matter

THE NUTRIENT CYCLE

Just like water cycling through different stages, forms, and locations, nutrients follow a cycle of their own. Generally, nutrients found in plants are eaten and processed by animals, which then pass along the nutrients either in their feces or to animals higher on the food chain when eaten. Feces, fallen trees, and the bodies of dead plants and animals decompose into the ground. This process is aided by bacteria, insects, and fungi that break down the natural material. As the organic material decomposes, nutrients are returned to the soil, and taken up by new plants through their root systems: the cycle continues.

Each plant needs specific soil conditions to grow and thrive. Plants native to a geographical location are better suited to grow in the type of soil indigenous to that area. Thus, the natural processes that take place in an area are critical to perpetuating the plants and animals of that area.

To illustrate this point, consider a typical yard and garden at home. When growing a garden, it is best to test the soil to ensure that it can support the plants the gardener wants to grow. Often people will add commercial fertilizer, manure, or compost to their gardens and lawns to optimize the plants' growth. This is because gardens and lawns are typically kept clean and free of debris, decaying matter (detritus), and feces that would otherwise add the necessary nutrients to the soil for plants to grow.

But, too much of a good thing can be as harmful as too little. Adding too much decaying matter to an area can overload the soil and make it too nutrient rich to grow plants as well. Each ecosystem and habitat type has developed its own typical nutrient load from the plants and animals that inhabit it, leading to its own soil type.

Wildlife

The anadromous salmon (Steelhead and Chinook) that travel up the Clearwater River and its tributaries to breed will naturally die after spawning. The bodies of these fish provide vital nutrients along the banks of the streams and rivers. Sometimes, fish hatcheries that catch adult fish in their native streams and bring them to the hatchery to spawn will return the spawned out carcasses to the river to continue the cycling of nutrients.

In northern Idaho, some nutrient recycling is accomplished by ospreys and eagles. These raptors catch fish, take them to their terrestrial perches and eat them. The waste from this meal often times ends up fertilizing the perching tree.

Stumps, snags and old logs are vital ecosystem components for a variety of reasons. Many insect species live in and feed on the decaying matter. In turn, amphibians, bird, and mammals rely on these insects for their own diet.

Snags are an important component of the forest structure that provide den sites, nesting, roosting and foraging sites for many wildlife species (approximately 44 bird species and 14 species of mammals), as well as nutrients for the soil as they breakdown and decay. Several species of amphibians and reptiles are dependent on snags and downed logs for dens and food. In addition to providing excellent nesting and foraging sights for cavity nesters such as nuthatches and woodpeckers; many small mammal species also use snags. Bats, which roost under the loose bark of snags, can help control forest pests by consuming large numbers of insects during their nightly feeding. Flying squirrels use cavities and witches' brooms for nesting, especially when adjacent to riparian areas.

Small mammals such as the least weasel, squirrels, skunks, mice and wood rats use old logs for hiding cover and dens. Reptiles, such as snakes and lizards and amphibians including salamanders and frogs also use old logs for resting, hiding, and nesting.

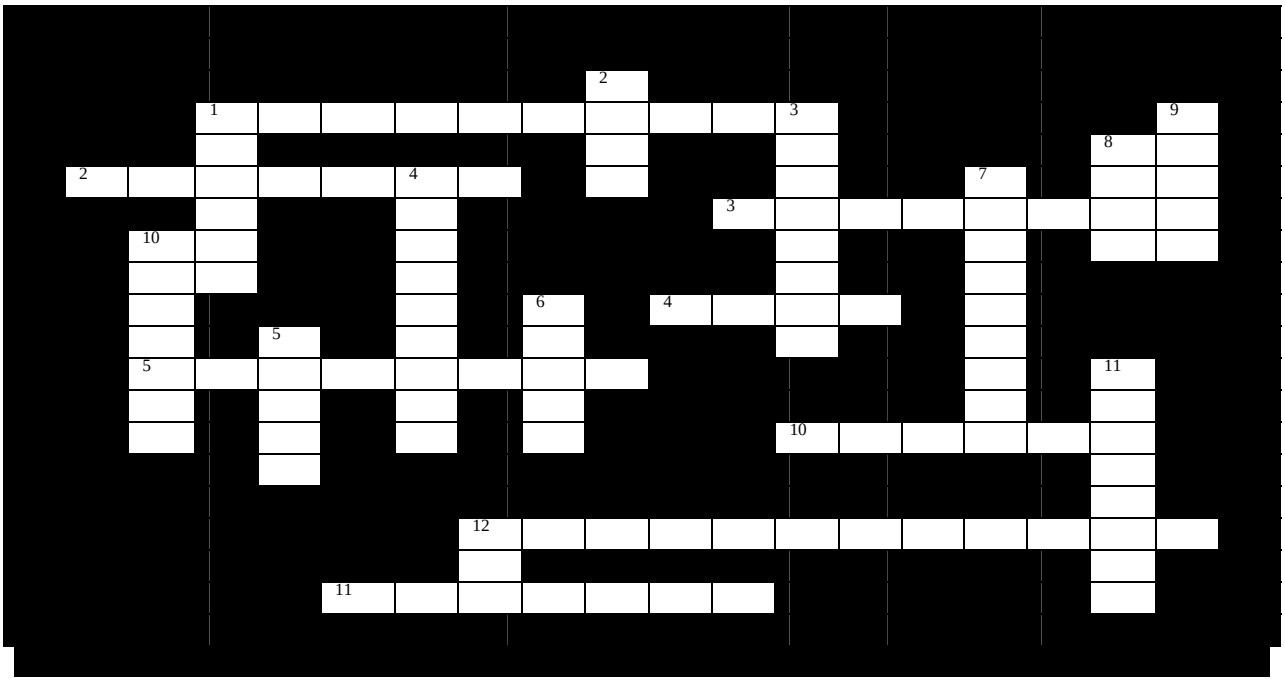
Thus, dead, dying and decaying organic matter in the forest provides habitat for resident wildlife from the smallest shrew to a big grizzly bear, as well as forage opportunities necessary for their survival.

At the WaterLife Center

Just looking around the kiosk along the trail we can find lots of old stumps and logs. Fallen logs rot and the bark loosens up, providing cover for small animals. Also, directly adjacent to the trail is a standing dead tree, called a snag. Why are snags important habitat features? Look closely at the snags, stumps and downed logs for bug holes and larger holes and cavities that have been excavated by pileated woodpeckers and yellow bellied sapsuckers.

Suggested Activities

Crossword Puzzle - Complete the following puzzle using the clues below.
(Answers on page 50)



Across

1 An organism that breaks down dead plant or animal matter
2 The area where an organism normally lives
3 A large group of microorganisms
4 A dead standing tree
5 This matter is a source of nourishment for soil

10 A dense growth of trees
11. A lowland area saturated with moisture
12 The variability of living organisms on earth

Down

1 The remains of something that has broken up
2 An invertebrate with a long flexible body and no obvious appendages
3 Areas associated with a natural water course
4 A cold blooded smooth skinned vertebrate
5 The part of a tree left protruding from the ground after it has fallen
6 Taxonomic Kingdom including mold, mushrooms and toadstools
7 Chiefly nocturnal venomous segmented arthropod with a set of legs per segment
8 Collection of dirt and organic matter that vegetation grows in
9 Rot
10 Matter made up of materials produced by plants or animals
11 Decaying matter
12 A winged mammal