

Lecture Material (Appendix I)

As you lecture the material put the important information on the board for the students to put in their notes. A few things are highlighted in the material but it is up to you to decide what you think is important for your class to learn.

Start the lesson by asking the students to think for a few minutes about the last time they were in the forest. You can ask a few students about their experience. Have a short discussion on their experience and then ask them what makes up a forest. (typical answer will be trees.)

Continue lesson by explaining what a forest really is.

So what are forests?

The definition of a forest is a biological community dominated by trees and other woody plants.

Is that all a forest is, a bunch of trees in a group? (have students think about this for a moment then have them answer to see what they think makes up a forest.)

Forests are actually a complex ecosystem that are composed of many different parts. Some of these parts include soil, nutrients, water, plants, wildlife, decomposers, and sunshine to make everything work.

Without soil trees would not have anything to anchor to or to get nutrients from. The nutrients found in the soil supply the tree with the materials needed for the tree to grow. The water keeps the tree hydrated and transports the nutrients throughout the tree as well as transporting the food made in the leaves of the tree. Other plants in the forest add biodiversity, which then creates, feed for the wildlife of the forest. Finally the forest contains decomposers which break down dead plants and animals. Decomposers return the dead organisms into the soil where they can be used by the trees and other plants. A forest needs all of these parts in order to run properly. If any one of the parts is missing then the forest cannot function properly.

As you can see forest are not just a bunch of trees but a complex system composed of many parts that work together to ensure the health of a forest including the trees. (have a short discussion with the students to see if they can name some parts of the forest such as some wildlife, decomposers, nutrients, etc.)

So now we know what a forest is made of but what are they good for? (have the students discuss with a partner about what they think the forest is good for. Walk around to hear some of the answers and then call on a group that has an exceptionally good answer.)

Uses of the forest-

1. Forests provide us with clean air and water.
2. Forests provide us a place for recreation. (hiking, biking, camping, hunting, etc.)
3. Forests provide us with a renewable natural resource.

(Discuss with the students how they use the forest. Explain how forests help with clean air and water. Discuss and emphasize the proper use of forests for recreation such as Tread Lightly.)

Forests have many uses but the largest use we have for a forest is its trees. The trees provide us with renewable natural resource.

What is a renewable natural resource?

A renewable natural resource is a resource that will replenish itself once it has been harvested. When you cut down trees new trees will grow in their place. This is especially evident in Pennsylvania. Pennsylvania means Penn's Woods, which originated from the founder of Pennsylvania, William Penn. The woods part comes from the vast amount of forest that covered Pennsylvania when William Penn founded it. Throughout time most of the forest were cut down in Pennsylvania for several reasons. Some of these reasons include clearing farmland, using the wood for lumber, charcoal, and to make chemicals. If almost all of the trees in PA were once cut down then where did all the trees come from that we have today? That is what makes trees a renewable natural resource. The trees that were cut many years ago left seeds on the ground which then grew into a new forest. Today 60% of Pennsylvania is covered with forest. That is about 17 million acres of land.

Forests are only renewable as long as we properly manage them. We cannot go in and cut down all of the trees at once and expect a health forest to grow back. We must practice what is known as Sustainable Forestry in order to keep our forests.

What is Sustainable Forestry?

Sustainable forestry is the caring for and managing of forests to provide the resources we need now and in the future. These resources include clean air and water, wood, and recreation.

Sustainable forestry does not look at just the trees but all parts of the forest that we discussed before- soil, wildlife, other plants, and water. All of these parts of a forest must be managed also in order to ensure a healthy forest.

So how do you maintain a forest?

You maintain a forest by using responsible practices. In order to ensure you have a future forest you must have seedlings that will turn into the forest of the future. There are several factors that limit the amount of seedlings in a forest. One of the biggest factors is whitetail deer. The deer eat the seedlings when they are small which either kills the seedlings or causes a deformed tree to grow. Another factor that limits seedling growth is ferns or other low-lying vegetation blocking the sunlight from the seedlings.

In order to ensure the seedlings grow properly several steps can be made. These include fencing in areas that have seedlings growing to keep the deer out, controlling weeds and other plants that shade the seedlings, and cut some trees to allow more sunlight to reach

the seedlings. When these steps are used properly it ensures future generations the use of forests.

(discuss with the class some of the forest in the area and try to determine if they are being managed for sustainability.)

How do you know what trees to cut down in the forest?

When it comes to cutting down trees in the forest there is a science that is used to ensure the health of the forest.

This is called Silviculture- the art, science, and practice of establishing, tending, and reproducing forest stands.

Silviculture is usually driven by what the landowner's objective is. That is, if the landowner wants to maintain his forest for future yields or whether they want to make the most money up front.

Either way Silviculture ensures the cutting is done in a way that allows the forest to regenerate itself.

There are several different methods to cutting a forest. These include:

1. Clearcutting- a harvesting and regeneration technique that removes all the trees regardless of size on an area in one operation. Creates a future even-aged forest. Clearcutting can actually be a good method to create a very nice forest in the future. Usually requires the area to be fenced in to prevent deer from eating the seedlings.
2. Salvage Cut- the removal of dead, damaged, or diseased trees with the intent of recovering value prior to deterioration. Also allows new growth to take old growth's spot. Cut not designed for regeneration but can have that effect if done properly.
3. Selection cut- a regeneration cut designed to create and perpetuate an uneven-aged forest. Trees removed singly or in small groups. Usually removes lesser quality trees along with a few high quality trees. Opens up forest to promote new growth and leaves high quality trees behind for seed trees.
4. Shelterwood- a regeneration cut designed to stimulate reproduction by removing all overstory trees. Achieved by a series of cuts over several years.

Silviculture is used to ensure future generations have a forest to use and enjoy.

Finish class off with a discussion on forest sustainability. Have students consider the forest in the area and see if they can come up with any evidence of Silviculture being used to maintain the forests.

In the materials section is a list of pamphlets from Penn State that can be used as reading material to help solidify what the students have learned. Contact the Cooperative Extension for the Ag. Sciences at Penn State to get the handouts.