

Welcome To 4-H Forestry

People have depended on one of the most valuable natural resources for food and shelter since the beginning of time – the forest. It may be hard to imagine how forests could be that important, but think back to the Pilgrims. We depend on the forest today as much as the colonists did after the Mayflower landed at Plymouth Rock.

By studying forestry, you have the opportunity to learn interesting facts and put them to good use. 4-H Forestry projects offer exciting activities for both boys and girls, whether they live in the city or the country.

You will recognize why trees are important for recreation, natural beauty, the environment, and hundreds of thousands of products. You'll be able to identify trees and understand which of them provide wood or wildlife habitat. You'll discover why forests are known as the most renewable natural resource we have. You may even want to seek a career in forestry or a related field. 4-H Forestry is your ticket to adventure. Your involvement is limited only by your imagination.

What Is A Forest?

Have you heard the old saying, "You can't see the forest for the trees?" A forest is more than just a group of trees. We would certainly be wrong if we thought that only trees make up a forest. A forest is a living community of trees, plants, and animals.

A forest is a place of endless activity, but you may have to look closely and quietly to see it. Trees, plants, birds, animals, fish, reptiles, and insects live and die in the forest. It's a never-ending cycle.

Sometimes the growth processes within a forest take years to complete. As the world's population keeps increasing, more pressure is placed on our forests to produce the things we need. Forests are cleared to make room for houses, subdivisions, parking lots, highways, shopping

centers, industrial parks, airports, reservoirs, and waterways. As a result, the forests that remain must provide enough wood, wildlife, and recreation to make up for what is lost through progress. Providing more resources with less land is a problem we face today.

What Is Forestry?

Human beings have discovered ways to help Mother Nature by studying the forest and its importance in our daily lives. This statement explains what the profession of "forestry" is all about. Forestry is defined as "the science, art, and practice of managing and using natural resources that occur on and together with forestland to benefit people." At a simple level, forestry can be thought of as:

1. Identifying, measuring, and cutting the "right" trees,
2. Protecting trees from fire, insects, and diseases, and
3. Removing some trees to improve the growth of others.

Forestry is all of these things and more. Young people go to college to study forestry, then work for years in that field and never stop learning something new. Forestry is a subject you can enjoy while you learn.

What Is A Forester?

Foresters work in many types of jobs and are employed by many different organizations. One forester may be concerned with planting trees while another plans and supervises the harvest. Professional foresters deal with problems concerning trees, soils, watersheds, rangelands, wildlife, and recreation. Some foresters spend their time surveying forests to make decisions that will affect an outcome for many years. Others become administrators, researchers, specialists, or resource managers.

As you work on a 4-H Forestry project, you will become familiar with a forester's job. You will probably get to meet and talk with several professional foresters about their responsibilities. One thing that all foresters share is a deep, personal "feeling" for the forest. You may also develop this passion by becoming involved in 4-H Forestry.

The Great American Forest

When the Pilgrims arrived at Plymouth Rock, they came face-to-face with a dark, dense wilderness that became known as the "Great American Forest." Many of the pioneers did not "see" the forest as we view it now. The large trees represented hidden "danger," and many of them were obstacles that had to be removed to plant crops. Settlers used some of the trees for building but much of the wood was burned. Our ancestors thought the American forest was so large it could never run out of trees, but it nearly did! As more people came to America, the forest gradually began to yield way for "settlements." Colonists thought nothing of setting fire to the forest to clear land for a homestead and crops, or to control pests.

One of the first industries in the New World was a sawmill established in 1607 at Jamestown, Va. New sawmills sprang up as people moved westward. Timber was needed for homes, barns, fuel, and better ships to bring more people across the Atlantic Ocean. Within the next 300 years, the "Great American Forest" provided the resources America needed to spark a fantastic span of development.

However, no effort was made to replace the trees by planting new ones. In Mississippi and the rest of the South, wildfires on cutover land prevented millions of acres from being reforested. By 1909 some conservationists were predicting that the "Great American Forest" would be gone by the 1930s. Americans began to understand the need for protecting trees and wildlife habitat. New forests were planted, managed wisely, and carefully used.

We know how to treat our forests with care because we had to learn "the hard way" – by the experience of almost losing them completely. We understand how the forest reacts to our actions. As a member of 4-H, you are likely to become a leader in your state or community someday. You may be in a position to make decisions that will affect the future of the forest, one of the most important resources we have.

The Forestry Cycle

Following the cycle of a forest can give us a good idea of what forestry is. We could choose any point in the cycle, but let's start at the beginning.

How A Forest Begins

Many forests begin naturally – by seed or sprouts. (Sprouts come from small buds on stumps or from roots of trees that have died.) As older trees are removed or die, sunlight reaches young seedlings and sprouts. Trees produce thousands of seeds, many more than are needed to replant a forest. Wild animals, birds, and other forest creatures eat some seeds, but a few happen to land in places with water and nutrients, and begin to grow.

Workers who plant seed by hand or machines start other forests. Some seeds are planted in nurseries to produce seedlings while others are sown directly in the forest floor. Seedlings grown in a nursery are then transplanted in an area where they can grow.

How A Tree Grows

All trees have roots, a trunk, and a crown. The roots anchor the tree in the soil and keep it from falling over. They take up water and nutrients from the soil so the tree can make its food.

The trunk, which is the part of the tree that provides most of the wood products we use, holds up the crown and acts as a passageway for nutrients that flow up and down the tree. The trunk contains many vessels for transporting water and nutrients from the roots to the crown. These vessels also move the food made by the tree from the crown back down to the other parts.

The crown is made up of branches, twigs, and leaves. The leaves are small "factories" that use raw materials transported from the roots and carbon dioxide from the air to produce food for the tree. Sunlight is the source of energy for these factories. This process is known as "photosynthesis."

Three parts of a tree – the root tips, the cambium, and the buds – actually do the growing. Root tips grow deep into the soil and laterally out from the tree in search of more nutrients.

The cambium of the tree is a layer of cells just inside the bark in the roots, trunk, and branches. You can't see this cell layer with just your eye, but it makes the tree increase in diameter. New wood cells are produced on the inside of the cambium and new bark cells on the outside. This is why the bark of older trees is rough, furrowed, and sometimes scaly. The old bark does not grow, so it has to crack and break apart as new bark is produced beneath it.

The buds are the most visible growth area of a tree. The main stem of the tree and the branches grow in height and length through the terminal bud. Leaf buds grow into leaves, and flower buds produce the flowers that produce fruit and seeds.

Protecting The Forest

New and old forests alike must be protected from fire, insects, diseases, and storms. Researchers devote time in developing tree varieties more resistant to these natural enemies and investigating effective ways to control forest pests. Other protective steps are carried out directly in the forest by what foresters call "best management practices" (BMPs). BMPs are activities conducted in the forest following harvesting to protect soil, water, and wildlife habitat.

Fire is not always an enemy of the forest. People who manage forests often use fire to prevent other fires with "controlled" or "prescribed" burning. By using fire to burn small areas of a forest under the right circumstances, foresters can reduce the threat of devastating wildfires. Prescribed burning removes brush, needles, and other clutter without harming the trees. It's like sweeping a floor or mowing a yard. Clutter on the forest floor serves as "fuel" for a wildfire on a dry, windy day. The entire forest could easily be destroyed. Prescribed burning also controls diseases, increases the number of seeds that germinate, and improves wildlife habitat.

Insect pests and diseases annually destroy more timber than fire does. They are what foresters call the "silent killers." Often we don't realize they are present in the forest until the damage has been done. Foresters must constantly be on alert for signs of a problem. Often the only treatment is to remove affected trees quickly to protect the rest of the forest. The wood must be used before wood-decaying fungi ruin it.

Forest Improvement

An important part of managing a forest during its life cycle is known as "timber stand improvement" (TSI). This technique includes different practices used to improve the quality of the forest and increase its growth. TSI practices can include:

- Removing low-quality, diseased, or other unwanted trees to make room for healthy trees.
- Thinning of forests that have too many trees too close together to provide wood and promote tree growth.
- Prescribed burning to remove forest clutter and improve wildlife habitat.
- Pruning certain trees to produce high quality, knot-free timber.
- Fertilizing and cultivating planted forests to increase growth.

Harvesting The Forest

Trees are harvested from the forest at various times for many types of products. When trees of differing size and age are in the same stand, some of them are selected for cutting. This practice is known as "all-aged management." Harvests are made generally every 5 to 10 years in certain forests. Low-quality and mature trees are cut for wood products. Removing these trees improves growth and quality of the forest that remains. With all-aged management, all phases of the forestry cycle happen at the same time on the same acre of land.

Other situations call for different management practices. With "even-aged management," the forest is thinned once or twice. Eventually, all trees and brush in a certain area are completely removed. This method of harvesting is often called "clearcutting," but it should not be confused with the destructive practice of "clearing" that almost wiped out our forests a century ago.

Clearcutting today is not only an economical method of harvesting but also a scientific, necessary means of starting a new forest. Clearcutting is done because some trees cannot grow in the shade of other trees. All trees and brush must be removed before trees are planted to give the new forest a good start. While this method is unsightly for a few years, it lowers the prices of wood products, provides good food for wildlife habitat, and speeds growth of planted seedlings.

Two other options for even-aged management are "seed tree" and "shelterwood" systems. With these methods, most of the timber is harvested, and a few carefully spaced seed trees are left behind. These trees not only provide the seed for the next generation but also continue to grow and increase in value. After a good stand of young trees has established, the seed trees are harvested for wood and room is made for the new stand.

Multiple Use Of The Forest

Forests are unique because they can be used in more ways than any other resource. A forest provides timber, wildlife habitat, recreation, and soil and water conservation – all at the same time and on the same acre of land. We don't have to set aside areas for either timber production or recreation. (Sometimes a forest manager will set aside certain areas for one purpose.) As you dig deeper into 4-H Forestry, you'll explore the multiple uses of forests. Because forests benefit people in so many ways, it is important to make sure they continue forever. This is the goal of forestry.

Forestry Topics

Here are examples of forestry topics that you can develop into a project. Check with your 4-H leader to find out which project/record sheets are currently available. Get copies of any reference publications listed for each project.

Tree Planting
Nature Trails
How Trees Benefit You
Tree Seed Identification
Christmas Tree Production
Transplanting Forest Trees
Forest Measurements
Collecting Tree Seed
Big Tree Contest
Forest & Soil Conservation
Tree Identification
Papermaking
Forest Fire Prevention
Urban Forestry
Thinning
Forestry Careers
Timberstand Improvement
Fence Post Production
Forest Insects
Site Preparation
Forest Diseases

Forest Fertilization
Forestry Exhibits
Signs of People in the Forest
Forest Recreation
Plant Succession
Pruning Trees
Wood Identification
Timber Harvesting
Prescribed Burning
Forest Mapping
Reading Annual Rings
Firewood Production
Orienteering – Navigating in the Woods
Forest Wildlife
Surviving in the Forest – Edible Plants
Importance of Forest Products
Forest & Water Conservation
Economic Benefits of Forests
How Much Wood Do You Use?
Developing a Forestry Library