4-H FORESTRY PROGRAM Unit C-5

FORESTRY CAREERS

member's manual
and
leader's guide

Acknowledgments

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Careers in Forest Management and Production

While on one hand trees are considered to be a crop, just like corn or cotton, on the other hand their rotation is much longer than that of annual crops. Many factors influence the length of this rotation in tree production. The eventual product of a tree crop is timber, and proper management of our forest lands can substantially increase the amount and kind of timber products.

Our nation depends upon an adequate supply of wood for a variety of uses. Today's forester must face the challenges of helping assure this supply, along with protecting forest resources for proper watershed conditions, wildlife habitats and aesthetic enjoyment. A forester's responsibility extends not only to our present generation but to future ones as well. Today foresters are planting and managing the trees that will be used by your grandchildren.

In terms of our current forest resources, over 750 million acres, or one-third of the total land area of the United States, is occupied by forest cover. This total includes both commercial land, used to produce timber for use as wood products, and non-commercial land, which for various reasons has been taken out of production.

As society grows more complex, the need for wood and wood products will increase. In any given year our country alone uses billions of cubic feet of wood in a variety of products. This amounts to over 60 cubic feet of wood for each person in the nation, and has made the forest products industry the fifth largest in the nation. Today's professional foresters and forestry technicians are needed to provide tomorrow's wood, just as these forestry professionals depend in part on the rising demand for wood products and other forest values for their employment.

Tasks and Roles of a Forestry Professional

What does a forester do?

Some people think of a forester as a person who sits in a tower high above the forest watching for the first signs of smoke from a fire. Foresters do in fact play an important part in protecting our forests from fires. However, they perform many other jobs as well.

You might think a career in forestry means you will spend much of your time fishing, hunting and trapping the wilderness. Although any or all of these skills may aid the forester in his daily work, there is much more to being a forester than just enjoying the outdoors. A forester is responsible for the management and use of all the natural resources within the forest area. He is committed to the wise use of these resources for the benefit of the whole society.

The forest land managed by the forester can be quite extensive, sometimes totaling 100,000 or more acres. (A forest this size would cover an area 121/2miles square.) To manage and harvest such a large area, the forester must have specialized help. This help can be divided into two general categories: *forest management* and *forest production*.

Within the area of forest management, the most common position is that of *professional forester*. This person has acquired a Bachelor of Science degree from an accredited college or university either in forestry or a closely related field, including course work in dendrology, ecology, forest economics, forest policy administration, forest protection, mensuration, and resource management.

A *forest technician* has studied forestry in a one or two-year training program. This person does not have the amount of scientific knowledge that is required of a forester, but does understand basic forestry principles and the forester's general

objectives. Forest technicians are needed to control water resources and manage wildlife, forage, recreation and timber resources. They supervise and/or perform such tasks as timber cruising, log scaling, timber stand improvement, re-planting and re-seeding, insect and disease surveys and other related kinds of work. Forest technicians often supervise semi-skilled workers, or *forestry aides* in these tasks. In most cases, the technician is in turn supervised by the professional forester.

In addition to the forest management area, there are also many job roles on the production side of forestry. *Forest engineers* are responsible for designing logging plans for removing timber from the forest in the most efficient way possible with the least amount of damage to the forest ecosystem. Forest production workers do the actual physical work to convert trees into wood products. These tasks include: felling trees, operating heavy equipment, working on an assembly line, maintenance work, setting chokers, sawing, operating a dry kiln, trucking, laboratory work, clerical work, summer help and other supporting tasks.

Specialized forestry fields

As knowledge about forestry resources increases, work becomes more specialized. Some of the specializations that you may be introduced to in your forestry studies are:

Biometrics, the statistical study of biological observations and phenomena, involving such data as the effect of fertilization on plant growth, optimum stocking levels for specific site conditions, and mill tallies to increase production.

Ecology, the study of the interrelationship of organisms and their environment, including the succession of forest stands, the effect of forest litter on infiltration rates or the ability of plant material to withstand flooding.

Economics, the description and analysis of the production, distribution and consumption of goods and services. A forest economist analyzes the trends in the supply and demand of forest commodities and services to aid in recommending alternative uses of our forest land for the future.

Engineering, which studies the properties of matter and the sources of energy in nature and how these may be made useful. A forest engineer designs and supervises the building of logging roads, erosion and drainage control systems, logging devices and communication systems.

Entomology, the study of the life cycles of beneficial and destructive insects, their effect on forest areas and forest products and their propagation or control.

Fire management, the task of protecting forest land from fire. The fire manager supervises controlled burning that reduces hazardous fuel build-up in forest areas. He might also supervise suppression operations during wildfires. He is responsible for developing public awareness of both the beneficial and destructive effects of f i re.

Genetics, which studies plant breeding to produce trees that are resistant to specific diseases or insects, or that have an extremely fast growth rate and excellent form.

Hydrology, a study of the effect of forestry practices and natural phenomena on the availability and quality of water from watersheds.

Landscape Architecture, the manipulation of natural scenery and landforms to produce an aesthetic effect.

Nature Interpretation, the task of stimulating interest in and appreciation of the natural and human history of the forest through talks, tours, and interaction with visitors to the area.

Nursery Management, the task of producing and supplying vegetative cover crops, trees and other woody plants for use in the establishment of cover on non-forested land and reforestation on cut-over and naturally disturbed land.

Pathology, the study of diseases of forest trees and stands, and the resulting deterioration of forest products.

Range Management, the task of population control of animals and their forage supply, including a study of the

effect of grazing in terms of other forest uses.

Recreation, the task of planning and administering land acquisitions, development of facilities and use of forest lands for enjoyment and sport.

Silviculture, the task of creating and maintaining the kind of forest that will best fulfill management objectives

Urban Forestry, the task of caring for and maintaining existing city trees and developing plans for the establishment of new trees.

Watershed Management, the study of the affect of logging debris on streamflow, and how efficient logging methods can better protect water resources.

Wildlife Management, the task of harmonizing the needs of wildlife with alternative uses of the forest.

Wood Science, the study of the processes involved with growing, harvesting, manufacturing, processing, distributing or further developing wood products.

The following descriptions feature some of the more common jobs in which technicians are employed:

Research Technician, works directly with scientists and forest professionals in developing new forestry methods and techniques.

Sales and Service Technician, sells, installs, operates and often repairs forestry equipment (and trains personnel to service and maintain this equipment) located at the customer's installation.

Operations Technician, works as direct supervisor of field crews in many or all of the various operations assumed by a natural resources manager either in a public or private organization.

Forest Products Buyer, specializes in buying wood or other forest products.

In addition to the areas listed above, there are numerous other areas in which a forestry technician may work. Here are some of them:

Timber stand improvement
Lumber grading chain work
Logging
Timber cruising
(volume estimating)
Timber buying
Kiln operation
Forest insect control
Park and recreation management
Wood chemistry
Wood processing
Nursery culture work
Forest surveying
Log and pulp scaling
Timber marking
Small sawmill management
Fire control and suppression
Forest disease control
Company record manager
Helicopter piloting
Aerial photography

Potential Employers

There are many opportunities for forestry employment in the United States. If you plan to become either a professional forester or a forestry technician you can seek employment in three general areas: 1) Public agencies, 2) Private industry, or 3) Self-employment.

Public agencies in forestry

Public agencies, which are part of the government, exist at the federal, state, regional, county, municipal and educational institution levels.

Perhaps the best-known public employer of forestry professionals is the United States Forest Service, which employs around 20,000 full-time people and the same number part-time and seasonal employees.

Every state government has departments of natural resources, conservation, parks and recreation, fish and wildlife, and so on. These departments employ persons with forestry-related backgrounds.

Regional planning commissions, which are public agencies with regional jurisdiction over several counties or states, employ foresters, planners, biological scientists and recreation specialists.

Many counties employ foresters just as the states do, through county road and water commissions, forest preserve districts and the like.

Cities and towns often employ foresters and arborists to manage urban forest and tree resources. These local governments recognize that trees in the urban environment are extremely important in reducing noise, heat and wind.

Colleges and universities employ persons with backgrounds in forestry and natural resources to teach and conduct research. Extension foresters, located at the state land-grant universities, conduct various educational programs aimed at the general public.

The role of private industry

Private industry plays a very important role in the forestry job market. Currently, it offers around 35 percent of the entry job opportunities in forestry. Many companies own large amounts of forest land, which must have expert care and management, so this percentage is expected to increase in the future.

One of the important tasks of the industrial forester is to encourage private landowners to develop and sustain good forestry practices on private woodlands. This technical assistance helps to develop markets that will supply industry with additional sources of wood.

The self-employed forester

Many enterprising students are successful in starting up their own forestry businesses upon graduating from college. Some of the opportunities for the self-employed forester are timber-consulting work, land use planning, Christmas tree farming, managing a forestry supply business and developing a nursery-landscape operation.

Consulting foresters may be actively engaged in managing public and private woodlands. They develop and carry out a management plan for the owner which might include land and boundary surveys, timber volume determinations, stand improvement practices, logging layouts and reforestation recommendations. Some consultants are called to the stand as expert witnesses in legal disputes involving forestry operations.

Getting a Start in Forestry

If you decide to enter the forestry field you should obtain as diverse an education as your college program will permit. Foresters do more than grow and manage trees. They must also understand the principles of business management and be able to communicate their knowledge effectively. Business administration and communication arts courses prove very helpful in this regard. Forestry professionals may be called upon to speak to local civic groups or to assist in outdoor education programs. In general, a forestry professional spends much of his time communicating with people who, in one way or another, use the forest

Besides the requirement of a Bachelor of Science degree in forestry or a closelyrelated field, previous work experience is also very desirable when applying for a professional position. This experience, which may be gained for instance through summer work helps you to become familiar with and enthusiastic about forestry work. In most cases relevant education combined with practical experience is the key to desired employment.

To be hired by the federal government, you must first file a Civil Service Personal Qualification Statement with the U.S. Civil Service Commission in the region where you wish to work. You will be assigned a rating, and your name will be placed on a ranked list of qualified applicants. When an opening becomes available, the top three applicants in the region are interviewed for the position.

A CAREER ANALYSIS

How Do I Fit the Job?

Complete the statements below for each on-site career experience or any career investigated by you (using resources other than this activity guide).

1. The requirements for this career are:
   Physical Educational Certification licensing Personality traits Procedures for entering

2. The benefits are (e.g., paid vacation, holidays, sick leave, travel insurance, expense accounts, savings program, retirement plan, reduced health insurance, educational program, discount privileges, etc.):

3. Job satisfactions are:

4. Income range is: $_____ to $_____
   1. Starting salary (circle weekly, biweekly, monthly, annually): $ _____
   2. Expected earnings after 2 years: $ _____
   3. Expected earnings after 10 years: $ _____

5. The compatibility of my lifestyle with the income range is:

6. The chances for advancement in this position are: Good □ Average □ Bad(no possibility) □

7. Hazards connected with this job are:

8. The ratio of the number of applicants, to the number of vacancies in this career is:

9. The future outlook of this career is:

10. Advantages (LIST) Disadvantages

A SELF-EVALUATION

How Does the Job Fit Me?

Below are questions and statements which will help you to form answers to the question, "Who am I?" Do not be alarmed if you do not have all of the answers. Most people spend a lifetime getting to know themselves. The questions you cannot answer this year may be easier next year. On the other hand, your answers will probably change or will vary throughout your life as you make a self -evaluation. a useful tool now and in the future.

1. School subjects I enjoy and why: _____

2. School subjects I dislike and why: _____

3. My hobbies and why I like them: _____

4. Do I relate better to a few close friends than to a crowd? Clarify. _____

5. Do I prefer to work with people or by myself? Clarify. _____

6. Am I impatient to get a job done quickly then move on to something different or do I like to work more slowly with attention to detail? Clarify. _____

7. Am I "people oriented" or "action oriented" or "material oriented" or "data oriented"? (Explain to what extent you fall under each category and why. Then list some helpful qualities you have to apply to each:)

a. People _____

b. Action _____

c. Material (Working with Hands) _____

d. Data (Ideas) _____

8. Do I like to meet new people and live in a new location or do I prefer to stay in familiar surroundings? Clarify. _____

Things You Can Do

1 . Interview with a forestry professional

Under the guidance of your 4-H leader, select a job role in forestry that you would like to know more about. Then take the following steps:

a. Contact a local forestry professional who has a similar responsibility and arrange to meet with this person.
b. Review what daily tasks they do within a time period of a day or two, perhaps by "shadowing" them as they perform their duties. Learn what importance each of these tasks have within the forestry professional's overall objectives in forestry.
c. Make a chart of the forestry professional's tasks within the span of one month, grouping together similar tasks under one general heading.
d. Develop a written or oral presentation on this career for your club or school, perhaps with the aid of photographs or slides.

2. Locate several forestry-related agencies or industries in your area, find out the names of the heads of these organizations and discuss career possibilities with these people.
3. Invite a forester to talk to your club about his profession.
4 Take a tour of different forestry operations in your area.
5. Make a study of the entrance requirements of several schools or colleges of forestry and compare the cost and quality of each program.
6. Review a copy of the Civil Service Personal Qualification Statement and Application Form.
7. Develop a personal library of conservation-related career material, including the addresses of agencies that employ resource managers.
8. Sponsor a Forest Careers Day at your school. Ask representatives from forestry-related industries or agencies to attend. Contact your Cooperative Extension Service forester for advice in setting up the program.

Leader's Section

The members involved in this 4-H Forestry project will be relying upon you to become aware of different forestry professions, develop an appreciation for forestry work and stimulate their thoughts on a future career in forestry.

The most important activity in this project is the career interview. You can help the member decide upon a forestry career that is interesting yet practical. Your continued encouragement is important. The member may have to make several contacts before finding the right forestry professional who will take the time to be interviewed, so he or she should not be dismayed if the first contact does not produce the desired result.

The best initial contact for members would be your state extension forester. If you live in a state without an extension forester, contact your state forestry agency. The member should eventually be able to find a forestry professional somewhere in your state who is willing to be interviewed.

Have the member formulate a series of questions to ask the forestry professional before the interview takes place. The interview should focus on what activities the forestry professional does during the day, and what importance these daily tasks have to the overall objectives of forestry.

The member should ask the forestry professional to provide a copy of his/her activity report for one month. The member can then construct a cardboard calendar and list the forestry professional's different activities under specific dates.

If possible, the member should then develop both an oral and written report. The oral report should be given to the member's club or school class. The written report can be retained as part of the member's permanent record. (Note: a slide presentation would make the oral report more meaningful to non-forestry members.)