

## Careers in Natural Resource Conservation <sup>1</sup>

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As we recognize the growing importance of the environment in both the local and global communities, youth are expressing increasing interest in learning about and working with natural resources. There are many good career opportunities with a variety of employers working in and with other natural resources. To solve environmental problems and manage resources, people need to have skills in many areas--science, policy, economics, communication, history, and design. Landscape architects, wildfire researchers, recreation specialists, wildlife biologists, wood scientists, hydrogeologists, interpreters, forest technicians, forest managers, firefighters, pilots, plant scientists, archaeologists, entomologists, geneticists, soil scientists, wastewater engineers, fishery biologists, computer programmers, air quality chemists, transportation engineers, accountants, statisticians, cartographers, policy analysts, and law enforcement agents all have careers that could provide them a chance to work with natural resources in some capacity. The work conditions vary from job to job; they may involve work outdoors or indoors, in a swamp or in a lab, alone or as part of a team. There's something for everyone!

An important part of working with youth today is facilitating the discovery of the countless career paths available to them. An exciting discipline that you can present and explore with them is this field of natural resources. This fact sheet helps you get acquainted with natural resource career opportunities, describes how local agencies can assist you, and provides activities to introduce young people to a profession in natural resources.

### Career Basics

Choosing a career is a major decision in a young person's life. The 4-H National Center for Workforce Preparation provides curriculum resources and other forms of assistance to help 4-H'ers acquire basic skills, explore career options, and gain experience in the workplace. The 4-H Council lists grant opportunities for 4-H agents to receive funds to establish career-related programs and partnerships. The Florida 4-H program also offers career activities including a What Are My Skills? Worksheet (4HGCR32).

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The United States Department of Education and Labor oversees the School to Work program, which provides support and funding to states and local communities to develop school to work initiatives. These initiatives vary from state to state; Florida supports several school to work programs. Program components can include linking with community colleges, partnering with industry, and locating guest speakers to visit schools and clubs. The National Youth Development Information Center is a project of the National Assembly and the National Collaboration for Youth. The Center includes a section devoted to youth career development that provides information on youth jobs, internships, trainings, and conferences. Check out the Center via the internet at <http://www.nydic.org>.

The first step toward a natural resource career is finding out more about the environment. 4-H project books are excellent starting points for youth to discover new fields of interests. Youth can investigate a broad range of topics as a group or can explore personal interests individually. There are numerous 4-H project books on natural resources: forest resources, aquatic sciences, wildlife, fisheries, entomology, and marine sciences.

The second step is exploring what people can do to help protect and manage natural resources. Service projects are excellent ways to learn more about local environmental activities and partner with organizations and agencies. When youth have a chance to talk to natural resource professionals, youth could ask what their jobs entail and what they like about their work. The third step involves choosing the appropriate career, agency, or organization based on the interests and skills of the youth and contacting that agency about jobs and internships. Internships, summer jobs, and volunteering are great ways for youth to get a first hand look at job possibilities and to know more about agencies. They will have a chance to work side by side with natural resource professionals and learn some of the issues and challenges that these professionals deal with everyday.

## Who Hires Natural Resource Professionals?

### Federal Agencies

Each federal and state agency welcomes volunteers, summer help, and students who are seeking career opportunities. The following descriptions will help youth begin their search for information. The federal government maintains a Web site, <http://www.studentjobs.gov>, which serves as a gateway to student positions at federal agencies. These positions are for students sixteen years or older and include summer employment, part-time and full-time work, temporary and permanent jobs, student internships, and volunteer opportunities. The site provides a searchable database, agency overviews, and a listing of federal jobs by college major.

The **Forest Service (FS)** manages 191 million acres of public lands in national forests and grasslands and provides technical and financial assistance to state and private forestry agencies. FS has approximately 30,000 employees and hires an additional 15,000 temporary workers in the summer. The most common FS positions are forestry technicians and forest managers but opportunities include work as biologists, ecologists, archaeologists, accountants, teachers, computer specialists, nurses, recreation planners, and law enforcement officers. FS offers both volunteer and internship opportunities, some of which are targeted directly at youth. These opportunities exist at national forests and offices across the country including Florida's three national forests. Visit <http://www.usafreedomcorps.gov> for more information.

The **National Park Service (NPS)** manages the natural and cultural resources of various sites of national importance. NPS has over 20,000 permanent and temporary employees and relies on the efforts of over 90,000 volunteers. Positions with the NPS include park rangers, interpreters, administrators, park police, researchers, educators, gardeners, and carpenters. Internships are available at many of the parks across the country, including the national parks and monuments in Florida. NPS runs a national volunteer program called Volunteers-in-Parks (VIP)

that helps match interested people with parks. Contact individual parks for more information on internships and volunteer opportunities or visit <http://www.nps.gov/personnel>.

The **Fish and Wildlife Service (FWS)** conserves, protects, and enhances the nation's fish and wildlife resources. FWS manages more than 520 National Wildlife Refuges. The 7,500 employees work as biologists, wildlife managers, engineers, educators, law enforcement agents, and outdoor recreation planners. Many of the National Wildlife Refuges have student internships that last 12-20 weeks and offer young people an opportunity to work in natural resource management and environmental education. FWS utilizes over 36,000 volunteers to assist in research, lead tours, maintain trails, and pick up litter. For more information on volunteer opportunities visit <http://volunteers.fws.gov/>. Contact one of the National Wildlife Refuges in Florida for information about their specific internship and volunteer positions.

The **Environmental Protection Agency (EPA)** protects human health and the environment by regulating clean water, clean air, and waste management. EPA employs over 17,000 people. Positions with EPA include scientists, engineers, lawyers, and natural resource specialists. EPA supports several programs targeted at undergraduate and graduate students to help them conduct their own research. Visit <http://www.epa.gov/epahome/intern.htm> to find out more. Volunteer opportunities with EPA involve work on specific projects such as water quality monitoring and wetlands restoration. For information on volunteer programs in Florida, contact EPA's Region 4 office at 1-800-241-1754.

The **Natural Resources Conservation Service (NRCS)** works with local water and soil conservation districts to conserve natural resources. NRCS's 12,500 employees work in the 2,565 headquarters and field offices across the country. Positions at NRCS include biologists, soil scientists, archaeologists, economists, engineers, and foresters. NRCS's volunteer program is Earth Team and involves over 29,000 volunteers who work in schools, with organizations, in offices, and on the land with

professional conservationists. Call 1-888-LAND-CARE or visit <http://www.edis.ifas.ufl.edu/pdf/files/FR/FR12700.pdf> for more information.

The **Bureau of Land Management (BLM)** works to balance land use with conservation of resources and manages 264 million acres, nearly an eighth of all land in the United States. Almost all BLM lands are in twelve western states. BLM provides career opportunities for youth who wish to work in western natural resource management. BLM employs 10,000 people to work in biology, forestry, geology, engineering, land surveying, archeology, recreation planning, aviation, computers, and law enforcement. Over 20,000 volunteers perform fieldwork in sites, assist with clerical work in offices, host campgrounds, and staff visitor centers. For more information visit <http://www.blm.gov/volunteer>.

### State Agencies in Florida

The **Department of Environmental Protection (DEP)** protects air and water quality, ensures proper waste management, and manages the state park system. DEP employs 3,000 people as biologists, engineers, natural resource specialists, law enforcement officers, and park rangers. There are many volunteer opportunities at the 152 state parks and recreation areas across Florida. Volunteers play a crucial role as they greet visitors, lead tours, and maintain trails and campgrounds. Find out about volunteer positions at <http://www.floridastateparks.org/volunteers/VolForm.cfm> or contact parks in your area.

The **Division of Forestry (DOF)** protects and manages Florida's forest resources. DOF has 1,100 employees that serve as foresters, forest rangers, park rangers, mechanics, pilots, biologists, and telecommunication specialists. Volunteer opportunities exist at the 30 state forests and in county and district offices across the state. Volunteers can conduct education programs, host campgrounds, perform clerical work, maintain trails, restore ecosystems, and help with research. Contact the district manager for your county or visit [http://www.fl-dof.com/forest\\_management/volunteer.html](http://www.fl-dof.com/forest_management/volunteer.html).

### The Fish and Wildlife Conservation

**Commission (FWCC)** manages Florida's fish and wildlife resources. FWCC employs 1,700 people who work in education, wildlife, forestry, fisheries, public relations, and law enforcement. Two volunteer and intern programs include a manatee counting project and a freshwater fisheries program where volunteers can educate the public, manage habitat, build and repair piers and ramps, and conduct research. For information, contact the FWCC regional office for your area.

### The five Water Management Districts

(WMDs) manage Florida's wetlands and water resources. The WMDs employ people who work in hydrology, mapping, forestry, wildlife, fisheries, engineering, computers, and education. Student opportunities vary within each district but may include part-time jobs, internships, and volunteer positions. Contact your WMD for more information.

### Forest Industry

In Florida, over 60,000 people work in the forest products industry and an additional 72,000 jobs are supported by forest products manufacturers. Companies like Georgia Pacific and International Paper manage some of the 1000 wood and paper product manufacturing sites throughout Florida as well as millions of acres of productive forests. Numerous career and internship opportunities are offered through these companies, which are advertised through the **Florida Forestry Association** at <http://www.floridaforest.org/>. The **Society of American Foresters (SAF)** is a national organization representing the forestry profession. SAF provides information on forestry careers and networking opportunities. Visit SAF at <http://www.safnet.org>.

### Non-profit Conservation Organizations

A career in natural resources can also lead to employment at one of the many non-profit conservation organizations involved in the management and protection of natural resources throughout the world. **The Nature Conservancy (TNC)** works to conserve ecosystems and biodiversity. The Florida Chapter of TNC is headquartered in Altamonte Springs and offers internships, jobs, and volunteer opportunities

throughout Florida. Volunteers can assist with prescribed fires, restore natural ecosystems, and monitor wildlife populations. The **National Audubon Society** conserves and restores natural ecosystems by focusing on birds and other wildlife. Audubon employs over 300 full time educators, scientists, and land managers who work at the organization's 100 sanctuaries, nature centers, and offices throughout the country. Internships are available as well as volunteer opportunities at several of Audubon's 70 properties in Florida. The **Sierra Club**, **National Wildlife Federation**, and **World Wildlife Fund** are just a few of the other organizations that offer jobs, internships, and volunteer positions.

The **Student Conservation Association (SCA)** is a national organization that combines service opportunities with outdoor education and career training for youth. SCA maintains information and listings of volunteer and internship opportunities for high school and college students. These positions can be found in all 50 states; last from twelve weeks to one year, and involve federal agencies such as NPS, FS, BLM, and FWS, and non-profit organizations such as TNC and Audubon. Visit <http://www.sca-inc.org> for more information.

### Local Agencies and Organizations

In your county and community, there could be numerous opportunities for youth to explore the natural resource field. The Florida Association of Counties provides a useful website (<http://www.fl-counties.com>) that contains county information and links to county websites.

Youth could plant street trees with the city arborist or volunteer at a nature center to lead educational programs. These opportunities vary from locale to locale but many include internships or volunteer positions. Organizations which commonly hire students include:

- city and county parks and recreation, forestry, and natural resource departments
- nature centers, private parks, botanical gardens, and zoos

- utility companies

The website, <http://www.floridagardener.com/FLGardens/>, maintains a list of nature centers, parks, and botanical gardens across Florida.

### Activity Ideas

The number of agencies and organizations that offer natural resource career and volunteer positions is rising. The following activity suggestions can help youth explore and make their way into one of the agencies.

#### Activity 1: Make Contact

Using the local phone book, have youth scan through the government pages for natural resource agencies with offices in your area, such as the Division of Forestry and the Soil and Water Conservation District. Youth can also use the SCENE Directory, a listing of Environmental Education materials and programs organized by keywords and state agencies that provide them. The SCENE Directory is produced by the State Committee for Environmental Education (SCENE) and is available at County Extension Offices and at <http://www.sfrc.ufl.edu/Extension/scene.htm>. Youth can surf the Internet and investigate Web sites of natural resource agencies and organizations. Most Web sites have specific pages that address employment, internships, and volunteer positions. With information from the phone book, SCENE Directory, and the internet, youth can pinpoint and contact their local agencies and ask for information on careers, internships, and volunteer positions.

Once youth have identified organizations that interest them, invite representatives of those agencies to speak to your youth group or have youth set up individual interviews with a few natural resource professionals.

#### Activity 2: Get Ready

Before a speaker visits or youth conduct an interview, have group members make an interview guide that addresses questions about natural resource jobs and careers that can be asked of a natural resource professional. These questions could include

what their educational training was, why they like their job, what their working conditions are like, and if they have any recommendations for someone wanting to get into the natural resource field.

#### Activity 3: Learn More

Once information has been gathered about careers with various agencies and organizations, encourage youth to develop a matrix showing what types of agencies and organizations deal with which resources. For the row headings, list the categories of agencies and organizations: federal, state, local, non-profit, and for profit. For the column headings, list resources: wildlife, forests, fisheries, air, water, soil, recreation, and education. Place the names of agencies and organizations in the appropriate cell. Some cells may have more than one agency or organization; the names of some agencies and organizations may be repeated in several cells. See the matrix below to get started (Table 1).

#### Activity 4: Classroom Career Exploration

Curriculum guides often include activities on careers. Project WILD lists three. In *History of Wildlife Management*, youth contact wildlife management agencies to find out about the agency mission, history, and philosophy. In *Wildwork*, youth choose a wildlife job that interests them and present information about their choice. In *Which Niche?*, youth compare natural resource professions held by people to the role of animals in an ecosystem. Project Learning Tree (PLT) lists sixteen activities that deal with careers. These include *400-Acre Wood*, where youth take on the roles of land managers of a public forest; *Forest for the Trees*, in which youth act as a manager of a tree farm; and *Who Works in This Forest?*, where youth explore forest-related careers. *Florida's Fabulous Forests*, Book 3 of the 4-H Forest Resources Series, contains a "job hunt" feature in several of its activities that provides information on related careers.

#### Activity 5: Shadow Time

Help youth identify two possible careers and locate people who currently serve in such positions. Youth can ask to "shadow" them in their job. This means they will observe professionals for several

hours or a day. Sometimes youth might even be able to participate in the work. They might help collect field data or attend a meeting. Encourage youth to compare the two experiences by analyzing what each person does.

### **Summary**

Careers that manage, conserve, and protect natural resources are very diverse and extremely rewarding. Becoming aware of the many possibilities is the first step toward making a decision to pursue a challenging, interesting, and vitally important career in our environment.

**Table 1.** Table 1. Example of the beginning of a matrix that youth can prepare showing what agencies and organizations deal with which resources.

	Wildlife	Forests	Fisheries	Air	Water	Soil	Recreation	Education
Federal						Natural Resources Conservation Service		
State					Water Management Districts, DEP		Dept. of Environ. Protection	Dept. of Environ. Protection
Local							County Parks and Rec. Dept.	
Non-Profit	National Wildlife Federation							
For Profit		Georgia Pacific						