



Make a difference: ecology careers in federal agencies



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My family couldn't afford summer camp and the local beaches were polluted, so I spent summers in Alabama with my dad, exploring the woods and streams a world away from the rest of my childhood in inner-city Chicago. I crafted fishing poles, chased invertebrates for bait, and found a box turtle crossing a road, escaping the destruction of its fragmented habitat. These experiences led me to pursue an education in ecology and then a job in the federal government. – JS

Most federal ecologists have an inspirational story about why we pursued our careers. The ways we apply our scientific knowledge are also diverse (Hitt 2009; Lowman and Kress 2017; Petes and Meyer 2018). However, we are bound together by a public service mission and a commitment to making a positive difference, either through research, management, or education (Figure 1), or by informing policy with science.

High-school graduates to PhD scientists can find opportunities to work in ecology-related positions within the federal government. The skill set needed depends on the position. Internships provide on-the-job training, while technician positions require technical skills. More senior positions may demand awareness of interactions between basic and applied science, strong critical thinking skills, an understanding of the science–management–policy interface, and the ability to translate scientific inquiry into public benefits. Federal research ecologists must be skilled in grant writing, outreach, scientific literacy, experimental design, project management, graduate student and post-doctorate mentorship, and so on. Some agencies emphasize educational credentials (eg a PhD is required for positions above a GS-12 paygrade in the US Department of Agriculture–Agricultural Research Service [USDA–ARS]), while in other agencies the highest leadership positions can be achieved without a PhD (eg in the USDA–Natural Resources Conservation Service [NRCS]).

Federal ecologists must be adaptable to changing national or regional needs. For example, federal response to challenges such as animal disease outbreaks, harmful algal blooms, or hurricanes may require inputs from a variety of disciplines, including ecology. In the USDA–ARS, research units (groups of scientists) and ARS leadership develop a peer-reviewed, 5-year, flexible research plan that defines the agency's and each scientist's research trajectory. Based on Congressional and Administrative direction, the plan addresses national or regional needs. Some federal employees find it refreshing to

work in a professional atmosphere dominated by a team approach to mutual problem solving. Many federal research positions have publication requirements and encourage scientists to seek external funding and develop research collaborations, including for support of post-doctoral candidates. Small, noncompetitive, annual research budgets and permanent technician positions allow federal researchers in some agencies to do research that is not grant-funded; in some cases, this allows federal scientists to address a wider range of questions than our university colleagues.

Good supervisors balance support of the skill sets their scientists want to develop with those the team needs. For instance, you may commit to accepting a leadership role in a professional organization or initiating a public outreach project, while your supervisor may ask you to learn a new programming language. Probationary periods in the federal government usually last a year. Like university tenure reviews, federal research positions undergo periodic “grade evaluations”, where your body of work is considered to determine whether you merit a promotion (eg ARS and US Geological Survey [USGS] Research Grade Evaluation). In non-research positions, a scientist's performance is evaluated annually (eg NRCS).

Research is not the only pathway for ecologists in the federal government. If you want to work in policy, consider taking classes in environmental law, nonprofit organization management, and public policy, to gain the necessary knowledge and vocabulary. There are also opportunities to connect your work with non-ecological disciplines, including media, economics, trade, transportation, energy, and national security. At the US Agency for International Development (USAID), Department of State, or various domestic agencies, you could develop or apply policy, promote trade or international dialogues, or foster capacity building. In the military, you could develop internal policy for best practices in maneuver exercises, enforce regulation of existing federal policies, study emerging biological threats, formulate climate-change strategies, or develop community outreach projects. You could work on Capitol Hill as a science advisor, providing unbiased assessments to Congress, or serve as a policy analyst for any given agency (Petes and Meyer 2018). As a program manager, you could oversee funding arrangements for and ensure proper reporting from federally funded research projects, or as a National



Figure 1. Introducing students to forest diversity through plant monitoring.

Program Leader, you could guide the direction of future research across agencies. You could also work in a variety of federally supported libraries and museums (Lowman and Kress 2017), or with agencies enforcing regulations (eg game wardens) or providing technical assistance outreach (eg USDA field office staff).

Administration changes seldom impact job security for federal ecologists. However, budgets may affect hiring capacity and changing priorities may impact the types and numbers of scientists being hired. Administrations change; political parties rise and fall. For this reason, a truism in the federal government is to treat every colleague as if they may be your next boss. Also, political appointees, rather than scientists, fill many leadership roles in agencies that employ scientists. Shifting politics shuffle leadership and may move federal employees into new roles.

Changing administrations may result in minor to substantial changes in agency structures, scientist responsibilities, research directions, or analytical portfolios. In extreme cases, when agencies or offices are dissolved, special federal programs often provide displaced personnel with preference for new positions. Some agencies provide specific opportunities for spousal employment (eg Department of the Navy). The federal government does not offer paid maternity or paternity leave but does comply with the Family and Medical Leave Act (FMLA). If a federal employee has accrued enough annual leave or sick leave hours, these may be used to cover salary while on FMLA leave. Federal employees accrue 4 hours sick leave and 4–8 hours annual leave per two-week pay period. Other federal employee benefits include a partial match (1–5%) toward the equivalent of a 401(k), a life insurance policy, access to a health benefits program, and a retirement annuity.

Federal ecology positions tend to be salaried rather than hourly. This means that while work weeks are scheduled to last

40 hours, many ecologists put in extra time after hours and on the weekends. Travel and field work may also take place during weekends, early mornings, or evenings. Federal ecologists must seize opportunities to collaborate whenever they are available.

A recent keyword search for “ecology” on USAjobs.gov yielded 76 positions, of which 23 were open to the public, 9 were permanent, and 2 targeted recent graduates (<https://www.usajobs.gov/Search/?k=ecology>; accessed 3 Jul 2018). Applying “cold” may not be the most effective first step to landing a federal job. You might first reach out to federal research groups co-located on university campuses (eg ARS research labs at Purdue, Washington State, New Mexico State, etc). Co-located scientists may have strong networks in both academic and federal communities, and you may find opportunities to collaborate on research, work with the agency to analyze a dataset, share your research through a brownbag seminar, or just talk with federal scientists about their experiences. This can help you decide if a federal job fits your career goals and can demonstrate to potential employers that you understand the federal system, which can be useful even in non-federal jobs.

Exploring LinkedIn and searching meeting abstracts and journals can help you identify individuals to contact about their experiences as federal ecologists. For instance, a search for “NOAA”, “USGS”, “EPA”, and “USDA” in the online 2018 ESA Annual Meeting program yielded 17, 40, 15, and 130 hits, respectively (<https://bit.ly/2tYTARj>; accessed 3 Jul 2018). Not all coauthors attend the Annual Meeting, but it’s a great way to get an idea of research in which federal scientists are involved. There is also a federal jobs information session at the annual ESA conference.

We conclude with a few additional thoughts about looking for your next job. First, be sure that you look beyond the initial job description and think about where the job might lead you. Second, find and cultivate mentors. Third, be flexible. Perhaps you are interested in marine turtles, but an urban gardens internship better fits your schedule. The more you expose yourself to the peripheral aspects of your field of study, the better you will be able to adapt your career to address evolving societal needs. Finally, apply for a federal job because you want to make an impact through public service. Working for the federal government is not necessarily easier or harder than working as an ecologist in academia or the private sector. It is a career path that may be just as difficult to get into and just as rewarding to pursue.

Supporting Information

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