

CAREERS IN CONSERVATION BIOLOGY & RELATED FIELDS

compiled by Dr. Angelo Capparella (apcappar@ilstu.edu), revised January 2020
School of Biological Sciences, Illinois State University, Normal, IL

Although targeted to undergraduates, graduate students will find useful information too.

I. CAREER OPPORTUNITIES

Careers in conservation biology and related fields can lead to jobs in government agencies (GOs), non-government organizations (NGOs), environmental consulting firms, and academia. The amount of education varies from B.S. to M.S. to Ph.D., depending on the job. A good source for seeing the types of job opportunities and their requirements is:

<http://www.conbio.org/professional-development/scb-job-board>

Other database links to job announcements can be found in Appendix 1 of this guide.

A. GOVERNMENT JOBS

1. Federal

U.S. agencies such as:

Army Corps of Engineers

Bureau of Land Management

Environmental Protection Agency

Fish and Wildlife Service

Forest Service

Geological Survey

National Park Service

2. State

Examples of agencies in Illinois follow; equivalent agencies are found in other states:

Department of Natural Resources (includes state parks and other sub-agencies such as the Illinois Nature Preserves Commission)

Environmental Protection Agency

3. Local

Forest Preserve districts of various counties in Illinois, especially in northern Illinois.

Any parks, sustainability, or other local (county, city) government agency.

Also see part I.B.2. because some of those organizations may be part of a local government.

B. Non-governmental organizations (NGOs)

1. Non-profit conservation groups.

There are many operating at different geographic scales (internationally, nationally, regionally, state-wide, locally). Just a few are given here to give you an idea:

Ducks Unlimited

Environmental Law and Policy Center

Prairie Rivers Network

Public Interest Research Group

The Nature Conservancy

World Wildlife Fund

Many conservation land trusts are found across the U.S.; for Illinois check:
<http://www.prairiestateconservation.org/pscc/directory-land-trusts-illinois/>

For other states, check:
<https://www.findalandtrust.org/>

If you are interested specifically in careers with NGO advocacy organizations that work to protect the environment, I highly recommend this article written by Jen Walling, Executive Director of the Illinois Environmental Council:
<https://ilenviro.org/pursue-a-career-protecting-the-environment/>

2. Zoos/Museums/Botanical Gardens/Arboreta/Nature Centers

These can either be freestanding (private) or part of a governmental body. Examples largely in Illinois include:

Chicago Botanic Garden (partially supported by Cook County)
Field Museum of Natural History
Illinois State Museum (partially supported by the state of Illinois)
Lincoln Park Zoo (partially supported by the Chicago Park District)
Miller Park Zoo (partially supported by the City of Bloomington)
Missouri Botanical Gardens in St. Louis
Morton Arboretum
Peggy Notebaert Nature Museum

While at ISU, students have done volunteer or internship work at the Miller Park Zoo in Bloomington, the Sugar Grove Nature Center (<http://www.sugargrovenaturecenter.org/>) at Funks Grove just south of town, and the Ecology Action Center in Normal (<https://ecologyactioncenter.org/>).

For a list of nature centers in Illinois check:
http://en.wikipedia.org/wiki/List_of_nature_centers_in_Illinois

The Environmental Education Association of Illinois has job postings that cover some of these groups: <http://www.eeai.net/>

C. Environmental Consulting Firms

These are businesses that do biological surveys for wind farms, environmental impact studies for industry, ecological restoration, etc. They post job opportunities on their websites. Examples of ones that work in Illinois include:

Huff and Huff, Incorporated
Pizzo & Associates, Ltd.
Western Ecosystems Technology, Incorporated

A list of firms that cover the Chicagoland area can be found here:
<https://www.lrc.usace.army.mil/Portals/36/docs/regulatory/pdf/consult.pdf>

D. Academia

This includes community colleges, four-year colleges, and universities. Community colleges usually require at least a M.S. degree, whereas colleges and universities require at least a Ph.D. degree.

II. EDUCATIONAL OPPORTUNITIES

The educational qualifications for employment are diverse depending on the type of job. However, getting a B.S. degree in organismal biology is an important first step, and some jobs may just require that, although that is increasingly uncommon. However, having a M.S. degree in organismal biology is a very useful degree for many jobs. A Ph.D. is required for most academic jobs and any job where the primary task is research (versus management, ecological restoration, or public environmental education). Following are suggestions for these three degrees.

A. Undergraduate.

The ISU School of Biological Sciences B.S. degree program is structured so that students can select a specific Sequence in which to specialize. Three sequences that will give one an excellent education in topics related to conservation biology are: Conservation Biology, Plant Biology and Zoology. Details are on the School's website: <https://biology.illinoisstate.edu/undergraduate/bio-as-undergraduate/overview/>.

1. Coursework.

As an undergraduate, you can take classes that develop skill sets of special value to employers or to graduate school faculty. Three areas to consider are:

(1) Field identification

Knowing well a specific taxonomic group is very valuable, especially if you plan to be involved in field work, research or environmental assessment. The School of Biological Sciences has several taxon-based courses that emphasize identification skills; these are listed under the Sequences on the School's website. Another way to get such skills is to do an independent study (using the BSC 290 number if you want course credit) with a faculty member who really knows a specific taxonomic group. Biology also has excellent museum collections of Illinois vertebrates, insects, and plants from which you could learn as well.

(2) Geographic Information Systems (GIS)

GIS competence opens many job doors related to conservation. The ISU Department of Geography, Geology, and the Environment offers three excellent courses: GEO 303, 304, 305.

(3) Statistics

Competence in statistics can be a real advantage in applying for jobs that involve data analysis or for applying to graduate school. Biology offers an applied course in Biostatistics (BSC 490 lecture/420.27 lab) that advanced undergraduates can take with permission from the instructor.

(4) Other courses

Although not widely known, as an advanced undergraduate you can take any 400-level (graduate-level) course *with permission* from your Advisor and the Instructor. Taking a graduate-level course as an undergraduate can give you an edge if you plan to apply to graduate school; however, be aware that the level of work expected is higher than in undergraduate courses.

2. Other Experiences

As an undergraduate, you can gain out-of-classroom experiences that will help you immensely when applying for jobs or for a graduate degree program. Here are some suggestions.

(1) Do research with a faculty member

The School of Biological Sciences website has information on faculty research areas:

<https://biology.illinoisstate.edu/research-and-facilities/research-topics/>

Remember, however, that there are too many biological sciences majors (over 700) for each person to do an individual project with a faculty member, so following are other ways to get valuable experience.

(2) Do professional practice

Biology majors can earn academic credit for experiences in internship, employment, or participation in a cooperative program when these activities are related to their training as biologists. Up to four hours of credit in BSC 398, Professional Practice in Biology, may be counted toward the hours of biology required for the major (credit/no credit). Up to 16 credits may count toward the 120 needed for graduation. Students may find, by their own initiative or with the help of the Biology School Advisor Raz Steward (rlstwe2@ilstu.edu), a suitable arrangement with a GO, NGO or other organization/agency. They will work out the exact terms of each arrangement with the Advisor. The arrangement includes a written report by the student at the end of each work experience. An example of past places where students have worked include Miller Park Zoo, Sugar Grove Nature Center, Fox Valley Wildlife Center, Ecology Action Center, Illinois Department of Natural Resources, Oaken Acres Wildlife Center. More information is at: <https://biology.illinoisstate.edu/careers-and-internships/internships/>

(3) Volunteer for conservation groups

ParkLands Foundation, a local conservation land trust that owns nature preserves along the Mackinaw River in McLean and Woodford counties, does extensive ecological restoration for which they always need volunteers. You can get valuable experience and make useful contacts. ParkLands Foundation (www.parklandsfoundation.org) maintains a calendar of restoration work days, although sometimes work days arise that are not on the calendar. If interested in these, the best way is to email Jason Shoemaker (the ParkLands Land Steward at shoemaj@gmail.com) and ask to be put on the notification list for volunteer work days or express your interest in special volunteer opportunities.

The Ecology Action Center in Normal (<https://ecologyactioncenter.org/>), which does environmental education and environmental sustainability activities, often has volunteer opportunities available.

If your away from campus home is in Illinois and you want to volunteer, check out the earlier mentioned list of conservation groups and of nature centers in Illinois to find one near you. Another possibility if you live in the Chicago area is the Chicago Conservation Corps: <http://chicagoconservationcorps.org/>

(4) Do conservation internships during the summer or after graduation

There are many conservation-oriented internship opportunities. Some cover all expenses or include a salary. An excellent source is the Student Conservation Association which lists internships from across the nation: <http://www.thesca.org/>

B. Graduate

A M.S. degree in some area of organismal biology is an excellent way to get research experience without the higher demands of a Ph.D. (doctorate degree). It can be an excellent stepping stone to enter the conservation job market or to enter a doctoral program. We've had many of our M.S. graduate students taking the M.S. Sequence in Conservation Biology (different from the B.S. undergraduate sequence) enter a job. To get an idea of what graduate students do for projects, attend the weekly (noon to 12:50 pm, Science Lab Building 121) Integrative Biology seminar series wherein most of the talks are given by graduate students about their research projects.

A Ph.D. degree is mandatory for a job in most colleges and universities, and for research intensive jobs in governmental and non-governmental organizations.

To find a graduate program at the M.S. or Ph.D. level that focuses on conservation check: <http://www.conbio.org/professional-development/academic-programs>

Here at ISU we have a Sequence in Conservation Biology at the M.S. level and we have a Biology Graduate Certificate in GIS at both the M.S. and Ph.D. levels. Consult the School of Biological Sciences webpages:

<https://biology.illinoisstate.edu/assets/documents/conservative.pdf>

https://biology.illinoisstate.edu/assets/documents/Biology_GIS_certificate02292020.pdf

Dr. Victoria Borowicz (vaborow@ilstu.edu) and Dr. Lise Comte (lccomte@ilstu.edu) are the Conservation Biology Undergraduate & Graduate Sequences Coordinators

One requirement for getting into most graduate schools is taking the Graduate Record Exam (GRE). First, determine if the school you are applying to requires it, and if they require the subject area part along with the general exam. Second, get a workbook to refresh your knowledge before taking the exam. When applying for graduate school, it is also important that you identify a faculty member that you'd like to work with, and then write to that faculty member to see what openings and opportunities they may have in their lab. Most graduate students are supported through their having a paid Teaching Assistantship (TA) for which they help teach undergraduate lab courses. However, when a faculty member has a research grant they can often offer a paid Research Assistantship (RA), at least for part of the time one is in school. Those institutions with a museum collection or herbarium can often offer a paid Curatorial Assistantship (CA). It is very important to realize that the graduate school experience is very intense, and that you can rarely have an outside job and do well. Therefore you need to consider your TA/RA/CA and your graduate research and studies as your job. When you apply for graduate school, it is important to highlight your relevant (in terms of showing your biological interests) experiences in any of these areas: research, professional practice, internship, volunteer activities. And if possible, visit the school and faculty member you'd like to work with to make sure that it will be a good experience for you.

Finally, what should you do if you didn't find a conservation job or get accepted in graduate school or don't have a plan after graduation but want a conservation career? It is OK to take a little time off (a year or two) between degrees, but just be sure to continue doing some conservation-oriented activities, whether it is volunteering (always include on your resume), doing temporary work, reading articles about the field, taking occasional classes, etc.

APPENDIX 1

Note that website URLs can change over time, so if one does not work try a google search using the title of the website. There are redundancies among these lists.

General information on biology careers:

American Institute of Biological Sciences: <http://www.aibs.org/careers/>

Job and internship listings:

American Society of Mammalogists: <http://www.mammalsociety.org/employment-opportunities>

Association of Zoos & Aquariums: <http://www.aza.org/joblistings/>

Biology Jobs: <http://www.biologyjobs.com>

Conservation Job Board: <http://www.conservationjobboard.com/>

Conservation News: <http://www.conservationmaven.com/>

Cyber-Sierra: <http://www.cyber-sierra.com/nrjobs/natres.html>

Earthworks: <http://www.earthworks-jobs.com/index.shtml>

Ecological Society of America: <https://www.esacareercenter.org/>

Illinois Department of Natural Resources:

<https://www.dnr.illinois.gov/outreach/EmploymentOpportunities/Pages/default.aspx>

Illinois Natural History Survey:

<http://www.inhs.illinois.edu/fieldstations/forbes/job-opportunities>

International Union for the Conservation of Nature:

<https://hrms.iucn.org/iresy/index.cfm?event=vac.showOpenList>

Ornithology Exchange: <https://ornithologyexchange.org/jobs/board/>

Society for Conservation Biology: www.conbio.org/jobs/

Society for Ecological Restoration: https://www.ser.org/networking/opening_search.asp

Society of Wetland Scientists Job Board:

<http://www.sws.org/Resources/the-sws-wetland-jobs-board.html>

Environment Jobs: www.environmentjobs.com

Texas A&M Fish and Wildlife Job's board: <http://wfscjobs.tamu.edu/job-board/>

USA (federal) Jobs: www.usajobs.gov

Warnell Job Board (UGA's Forestry School): <http://jobs.forestry.uga.edu/>

Land Trust Alliance: <http://www.landtrustalliance.org/about/jobs/jobs>