

CAREERS IN CONSERVATION BIOLOGY

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I. CAREER OPPORTUNITIES

Careers in conservation biology can lead to jobs in government agencies, 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 here:

<http://sustainability.illinoisstate.edu/student-involvement/career.shtml>

and many other sources are in Appendix 1.

A. GOVERNMENT JOBS

1. Federal

U.S. agencies such as:

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 northern Illinois.

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

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

B. Non-governmental organizations (NGOs)

If you are interested in the greater Chicago region, check out the Chicago Wilderness initiative, a regional alliance involving more than 260 organizations across NE IL, SE WI, and SW MI.

Internship and job opportunities can be explored: www.chicagowilderness.org

1. Non-profit conservation groups.

There are many of these groups 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 found across the U.S.; for Illinois check:

http://www.prairiestateconservation.org/Illinois%20Directory/Illinois_Directory.html

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

for a list of nature centers in Illinois check:

http://en.wikipedia.org/wiki/List_of_nature_centers_in_Illinois

The Illinois Association of Environmental Educators 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, 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 Chicago area can be found here:

<http://www.lrc.usace.army.mil/Portals/36/docs/regulatory/pdf/consult-IL.pdf>

D. Academia

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

II. EDUCATIONAL OPPORTUNITES

The educational qualifications for conservation biology employment is 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. A M.S. degree in organismal biology is a very useful terminal (end point) degree for many jobs. A Ph.D. is required for most academic jobs and any job where the primary task is research (versus management or public environmental education). Following are some suggestions for these three degrees.

A. Undergraduate.

The ISU School of Biological Sciences has restructured its B.S. degree program so that students will be able to 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:

<http://bio.illinoisstate.edu/undergrads/index.shtml>

1. Coursework.

As an undergraduate, you have the opportunity to take classes that develop skill sets of special value to employers or to graduate school. Three areas to consider related to conservation biology are:

(1) Field identification

Knowing well a particular taxonomic group is very valuable, especially if you plan to be involved in field work or research. The School of Biological Sciences has several taxon-based courses that emphasize identification skills; these are listed under the Sequences on their website. Another way to get such skills is to do an independent study (using the BSC 290 number if you want course credit; 1 hour credit = 3 hours work per week) with a faculty member who really knows a particular taxonomic group. The School also has excellent museum collections of Illinois birds, insects, mammals, and plants from which you could learn as well.

(2) Geographic Information Systems (GIS)

GIS competence opens many job doors related to conservation biology. The ISU Geography-Geology Department offers three excellent courses available to biology majors: 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. The School of Biological Sciences offers an applied course in Biostatistics (BSC 490 lecture/420.27 lab) that advanced undergraduates can take with permission from the instructor.

2. Other Experiences

As an undergraduate, you have the opportunity to gain out-of-classwork experience that will help you immensely when applying for jobs or for a graduate degree. Here are some suggestions.

(1) Do research with a faculty member

The School of Biological Sciences website has information on faculty research areas; organismal faculty are listed here: <http://bio.illinoisstate.edu/research/bees.aspx>

Remember, however, that there are too many biological sciences majors (about 400) 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 Professional Practice Coordinator or a Sequence Coordinator, a suitable arrangement with industries, zoological or botanical gardens, environmental agencies, or research laboratories. 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. More information at:
<http://bio.illinoisstate.edu/undergrads/internships.shtml>

(3) Volunteer for conservation groups

Two local groups (ParkLands Foundation, Sugar Grove Nature Center) do 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. Also, Jason Shoemaker (the ParkLands Land Steward at shoemaj@gmail.com) has a notification list for unscheduled work days (those that are weather dependent) as well as reminders about scheduled work days. Email him if you'd like to be placed on that list. In Funks Grove just south of town is the Sugar Grove Nature Center. Details on their volunteer workdays can be found at: <http://www.sugargrovenaturecenter.org/stewardship.html> They also have volunteer environmental education opportunities.

If you have the opportunity to volunteer at home, 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/blog/>

(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/>

A more competitive internship is the Conservation and Land Management Internship Program, Chicago Botanical Garden: <http://www.clminternship.org/index.php>
“Each year, the Conservation and Land Management (CLM) internship program places 75-100 graduates from colleges and universities across the country in five-month paid internships to assist biologists and other professional staff at the Bureau of Land Management, National Park Service, Forest Service, Geologic Survey, Fish and Wildlife Service and other federal agencies. Internships are primarily located in one of the 12 western states, including Alaska. Beginning in 2001, the program has successfully placed over 700 interns, providing them with a rich experience from which to launch their professional careers.”

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 doctorate. 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 graduate Sequence in Conservation Biology (different from the undergraduate sequence) enter into 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 colleges and universities, and also for research intensive jobs in governmental and non-government 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:

http://bio.illinoisstate.edu/masters/conservation_bio/index.shtml

and we have a Biology Graduate Certificate in GIS at both the M.S. and Ph.D. levels:

<http://bio.illinoisstate.edu/masters/certificate/index.shtml>

One requirement for getting into most graduate schools is taking the Graduate Record Exam (GRE). First, make sure that the school you are applying to requires it and see if they require the subject area part along with the general exam. Second, get a workbook so that you can 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 lab courses. However, when a faculty member has a substantial 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 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. So with a TA/RA/CA, supplemented sometimes by a loan, that is the way to succeed. When you apply for graduate school, it is very important to highlight your relevant experiences in any of these areas: research, professional practice, internship, volunteer activities. And you should try, if possible, to 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 some time off (a year or two) between degrees, but just be sure to continue doing some conservation-oriented activities, whether it is volunteering, doing temporary work, reading articles about the field, taking occasional classes, etc.

Feel free to contact me if you need further information on any of these topics, have corrections, or have suggestions for additions.

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APPENDIX 1

Note: website URLs can change over time. These were last checked July 2013. There are redundancies among lists.

General information on biology careers:

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

Job Boards:

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

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

Austin College Job Board: <http://www.austincollege.edu/academics/centers-and-institutes/center-for-environmental-studies/internships-job-opportunities/jobs-internships/>

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

Climate Change Policy and Practice: <http://climate-l.iisd.org/jobs/>

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

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

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

Duke Job Board: <http://www.biology.duke.edu/jackson/ecophys/postdoc.htm> (mainly Postdoc and Professional)

Duke Job Link Page: <http://www.biology.duke.edu/jackson/ecophys/ojl.htm>

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

Eco Jobs Board: <http://www.ecoemploy.com/jobs/>

Ecological Society of America: http://www.esa.org/careers_certification/jobLists.php

European Tropical Forest Research Network: <http://www.etfrn.org/vacancies>

Ornithological Society of America: <http://www.osnabirds.org/jobs.aspx>

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

Society for Ecological Restoration: http://www.jobtarget.com/c/search_results.cfm?site_id=578

Society of Wetland Scientists Job Board: <http://www.sws.org/jobs/>

Stop Dodo Environmental Jobs: www.environmentjobs.com

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

University of Montana Job Board: <http://www.cfc.umt.edu/StudentServices/jobs.php>

USA (federal) Jobs: www.usajobs.gov

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

Wildlife Resources Inc.: <http://www.wildliferesources.org/job-board/>

Wildlife Society: <http://careers.wildlife.org/jobseeker/search/results/>

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

National Ecological Observatory Network: <http://www.neoninc.org/contact/careers>

Pacific Island Jobs: <http://www.pacificislandjobs.com/jobsearch.php>

Penn State Inst. of Energy & Env: http://www.psiee.psu.edu/for_students/career_planning.asp

PERKHAD Wildlife Job Search (large list): <http://www.pherkad.com/jobs.html>

Ranger 146's Job Links: <http://www.goldendelighthoney.com/Ranger146/index.html#NaturalResourceJobs>