

Are you an undergraduate who is interested in nature and the environment?



Here is a guide to start you on a pathway towards a rewarding career in ecology, sustainability, conservation biology, environmental science, or environmental studies.

This guide was compiled by environmentally minded ASU faculty members, advisors, friends, and students. The winding journey towards an environmental career may seem daunting at first, but don't give up! We've been in your shoes. We created this document to help you find opportunities and resources as early as possible in your time at ASU.

SEMESTERS 1-2

Take a course related to the environment to see if you enjoy it.

Check out the course catalogs in these academic degree programs to find introductory courses related to the environment:

- 🌿 Conservation Biology & Ecology (SOLS/Tempe)
- 🌿 Sustainability (SOS/Tempe)
- 🌿 Geography (Tempe)
- 🌿 Earth & Environmental Studies (SESE/Tempe)
- 🌿 Applied Biological Sciences (Poly)
- 🌿 Environmental Science (West and Lake Havasu)
- 🌿 English-Environmental Humanities (Tempe)
- 🌿 Parks & Recreation Management (Downtown)

Find a community of students at ASU who share your passion for nature

Join one or more of these student organizations:

- 🌿 Nature at ASU: A cross-major, cross-campus professional development organization for ASU students who are interested in environmental opportunities and careers.
<https://halllab.asu.edu/nature-at-asu/>

- 🌱 CACSCB: Central Arizona Chapter of the Society for Conservation Biology. A student-run organization based out of the Tempe campus that focuses on conservation-related wildlife skills and job opportunities. <https://cacscb.org>
- 🌱 WRSA: Wildlife and Restoration Student Association. A student-run organization based out of the Polytechnic campus that focuses on wildlife-related field skills and job opportunities. <https://www.facebook.com/groups/asuwrsa/>
- 🌱 ECO: Environmental Community Outreach at ASU Lake Havasu, <https://asuhavasusundevils.weebly.com/environmental-community-outreach>

SEMESTERS 1-4

Declare your major

You can major in nearly any subject and still pursue a career working for the environment! Here are some of most popular majors for students who want to work to study or protect our natural world:

- 🌱 Conservation Biology & Ecology (SOLS/Tempe)
- 🌱 Sustainability (SOS/Tempe)
- 🌱 Geography (Tempe)
- 🌱 Earth & Environmental Studies (SESE/Tempe)
- 🌱 Applied Biological Sciences (Poly)
- 🌱 Environmental Science (West and Lake Havasu)
- 🌱 English/Environmental Humanities (Tempe)
- 🌱 Parks & Recreation Management (Downtown)
- 🌱 Tourism and Recreation Management (Lake Havasu)
- 🌱 Biology-Environmental Science (Lake Havasu)
- 🌱 Film (Tempe)
- 🌱 Journalism (Downtown)
- 🌱 Computer Science (Tempe)

Refine your major courses:

- 🌱 Meet regularly with your academic degree advisors to ask for (or enroll in) new or alternative courses that may not be in your major map, or could be substituted in the place of major requirements.
- 🌱 Take natural science courses that teach you the science of the environment, including Ecology, Organismal Diversity, Conservation of Biodiversity, Sustainable Ecosystems, Introduction to Earth & Environmental Studies, or other natural science courses.
- 🌱 Take courses that will develop field or lab skills for your resume:
 - GIS, computer programming, or quantitative modeling;

- Field-based courses that are offered at any ASU campus, or through ASU's environmentally themed Study Abroad courses;
 - Lab skills related to the environment (soil or water quality, genetics, plant biology, animal physiology, wildlife disease, etc.)
 - Identification of species of any group of organisms (e.g. invertebrate and vertebrate animals, plants, microorganisms, etc.).
- ✔ Take courses about the human dimension of environmental conservation, including Environmental justice, Environmental policy, Environmental economics, Environmental ethics, Environmental humanities, or others.
 - ✔ Explore environmental career pathways and salaries on the O*Net Resource Center, <https://www.mynextmove.org>. Try these keywords in your searches: Environmental, Nature, Wildlife, Conservation, Animal, Agriculture, Biology, Sustainability, Soil & Plant, Soil & Water, Ecology, Climate, Geography, Film & Video, Science Teacher.
 - ✔ Consider enrolling in one of ASU's certificate programs to master a defined skill-set that may be helpful for future environmental jobs:
 - Certificate in Wildlife Management, <https://cisa.asu.edu/degree/wildlife-management>
 - Certificate in Geographic Information Systems (GIS): <https://geoplan.asu.edu/degree-programs/undergraduate-minors-and-certificates/geographic-information-science>
 - Certificate in Environmental Education, <https://education.asu.edu/academic-programs/environmental-education-certificate>
 - Certificate in Energy, Food Systems, Environmental Economics, or Complex Adaptive Systems, <https://education.asu.edu/academic-programs/environmental-education-certificate>
 - Certificate in Environmental Humanities, <https://english.clas.asu.edu/admission/undergraduate-admission/environmental-humanities-certificate>

Gain environmental field skills (outdoors)

- ✔ Apply for summer ecological research position! Between December and June each year, ecology groups across the country are searching for undergrads to join their summer research teams, and they post these opportunities on ECOLOG, the Ecological Society of America job board. Go [here](#) to learn how to access this job board and sign up for a weekly digest of opportunities: <http://halllab.asu.edu/how-to-join-the-ecolog-job-board/>

- 🍃 Enroll in classes that offer an outdoor field methods component
- 🍃 Join a research group that conducts at least some of their work outdoors (see Participate in Environmental Research section, below).
- 🍃 Explore the Diversity Joint Venture for Conservation Careers website, <https://diversityinconservationjobs.org>
- 🍃 Explore intern, volunteer, or job opportunities with ASU's Natural History Collections group, <https://biokic.asu.edu/collections>
- 🍃 Join the ASU Outdoors Club to learn how to camp and hike, <https://orgsync.com/12552/chapter>
- 🍃 Participate in the annual spring Wildlife Techniques Workshop hosted by the Arizona Chapter of The Wildlife Society (AZTWS; workshop is in April every year)
- 🍃 Be on the lookout for other local field opportunities
 - Arizona Native Plant Society: <http://www.aznps.com/getinvolved.php>
 - Conservation Alliance of Central Arizona: <http://mymountainparks.org/get-involved/volunteer/>
 - Western Bat Acoustics Field Techniques Workshop: <http://wildlife.org/western-section-to-hold-bat-acoustics-workshop/>
 - And others! Google around the web to explore.
- 🍃 If you are a freshman, sophomore, or transfer student with two years remaining in college, apply for these national programs *that pay you a stipend to participate*:
 - Doris Duke Conservation Scholars Program (four locations)
 - University of Washington: <http://uwconservationscholars.org/>
 - Northern Arizona University: <https://nau.edu/LCI/DDCSP/>
 - Univ. of California Santa Cruz: <https://conservationscholars.ucsc.edu/program/>
 - University of Michigan: <http://www.ddcsp-umich.com>
 - Career Discovery Internship Program (US Fish & Wildlife Service and the Student Conservation Association): <https://www.thesca.org/cdip>

SEMESTERS 3-8

Gain environmental leadership skills

- 🍃 Run for one of the positions within [Nature at ASU](#), [CACSCB](#), or [WRSA](#)

- 🍃 Find opportunities to mentor other students; or lead a team in your research lab, in your job, or in your extra-curricular activities.
- 🍃 Develop a professional relationship with faculty members who can provide leadership mentoring and reference letters.

Participate in environmental research

- 🍃 Read about the importance of authentic undergraduate research experiences for your future career in the environment, especially those that teach you how to “think like a scientist”.
 - <http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=24622>
 - <https://ugradresearch.uconn.edu/why-undergraduate-research/>
 - <https://www.insidehighered.com/views/2017/07/07/undervaluation-role-undergraduate-research-advancement-scientific-knowledge-essay>
 - <https://clas.asu.edu/research/undergraduate>

- 🍃 Learn how to email a professor about research opportunities:
 - Find out about what faculty members are studying. Go to your school's website and scroll through the websites of faculty members who participate in your degree program. For example, for the School of Life Sciences, go to <https://sols.asu.edu/research/undergraduate-student-research> and use the search tool to look for faculty members using the list of expertise keywords. Click on each faculty member’s name to see what s/he works on.
 - Then, send a professional email to your faculty member of interest to inquire if s/he can meet with you to talk about their research and your interests in gaining research experience. Indicate to her/him that you’ve read some of his/her work.
 - Here are some example emails about how to write to a professor:
 - https://ugr.ue.ucsc.edu/email_examples
 - <http://research.berkeley.edu/how-cold-email-professor>
 - How to Email Your Professor (without being annoying): <https://medium.com/@lportwoodstacer/how-to-email-your-professor-without-being-annoying-af-cf64ac0e4087>

- 🍃 Apply for fun environmental research opportunities that pay! Check out the National Science Foundation (NSF) Research Experiences for Undergraduates (REU) program.
 - Some REU opportunities are listed as “REU Sites” on the NSF website here: <https://www.nsf.gov/crssprgm/reu/>

- But many other REU opportunities are advertised on ECOLOG, <http://halllab.asu.edu/how-to-join-the-ecolog-job-board/>. Search the archive with the keyword “REU” and then make sure the results are sorted by date.
 - Check out these tips on applying for an REU: <https://astrobites.org/2013/01/05/so-you-want-to-apply-for-an-reu-heres-how/>
- 🍃 Volunteer / work in a research group with an ASU professor and her/his graduate students who study environmental topics. You can find ASU undergraduate research opportunities here:
- School of Life Sciences Undergraduate Research, <https://sols.asu.edu/research/undergraduate-student-research>
 - ASU Undergraduate Research, <http://uresearch.asu.edu/get-started>
- 🍃 In your research lab, develop laboratory, computational, and quantitative skills for your resume
- 🍃 Get to know faculty members who will write you strong letters of recommendation
- 🍃 Develop your own research project with a faculty or graduate student mentor
- 🍃 Ask your faculty or graduate student mentor to help you to present your research findings as a poster at a scientific meeting or conference. *This step is important!* Usually there are many ASU undergraduates, graduate students, and faculty meetings who are also presenting posters or talks at these conferences, so you will not be alone.
- Local conferences or symposia, at ASU or in metro Phoenix
 - The Central Arizona–Phoenix Long-term Ecological Research Project (CAP LTER) Annual Symposium: <https://sustainability.asu.edu/caplter/publications/cap-lter-symposia/>
 - The McDowell Sonoran Preserve Arid Land Research Symposium, <https://www.mcdowellsonoran.org/event/arid-lands-symposium-integrating-research-action/>
 - The Western Alliance to Expand Student Opportunities (WAESO) Annual Research Symposium (open to students who have a WAESO scholarship)
 - Undergraduate Research Symposia associated with your School:

- ✓ School of Life Sciences Undergraduate Research Program (SOLUR) Annual Symposium (Tempe Campus), <https://sols.asu.edu/research/symposium>
- ✓ New College Undergraduate Inquiry and Research Experiences (NCUIRE at West Campus), <https://newcollege.asu.edu/ncuire/symposium>
- ✓ ASU Space Grant Undergraduate Scholars Symposium (based out of SESE), <https://asuevents.asu.edu/content/2018-nasa-space-grant-poster-session>
- Regional conferences, in Arizona or the Southwest
 - The Joint Annual Meeting (JAM) of the Arizona and New Mexico Chapters of The Wildlife Society and American Fisheries Society, <https://aztws.com/jam/>
 - Arizona-Nevada Academy of Science Annual meeting, <https://aznvas.org/meeting/>
 - Biennial Conference of Science & Management on the Colorado Plateau & Southwest Region, <https://nau.edu/merriam-powell/biennial-conference/>
- National conferences, in the US
 - See websites for the numerous nature-related professional societies below! Each of these has an annual meeting where you can present your research.

Look for and apply to summer or academic year internships and jobs

- 🍃 Explore the resources for environmental students at the [ASU Career and Professional Development Office](#)
 - Meet with an ASU Career Advisor to develop a strong resume/CV and cover letter.
 - Browse ASU's career and job database via the Sustainability and Natural Resources career page, <https://eoss.asu.edu/cs/explore/sustainability-environmental-and-natural-resources-careers>,
 - Register for ASU's Career and Professional Development database, Handshake, <https://eoss.asu.edu/cs/handshake>.
- 🍃 Browse for environmental/natural resource internships on the pages of [Barrett Honors College](#) (even if you are not a Barrett student), [Schools of Geography/Urban Planning](#), [Sustainability](#), the [ASU internship Office](#), and [Handshake](#).

- Take an Individual Development Plan assessment about the types of environmental careers you may want to learn more about.

- <http://myidp.sciencecareers.org>
- Here is a guide to Individual Development Plans for undergraduates: <https://medium.com/stem-and-culture-chronicle/building-your-individual-development-plan-idp-a-guide-for-undergraduate-students-f14feca9111c>
- Scan the numerous environmental job boards and apply. <https://cacsob.org/job-directory/>. Consider all jobs related to the environment, including environmental education, ecological or wildlife research, natural history collections, film or media, environmental policy, environmental activism, nature journalism, or community development.

- Apply for paid internships with a **non-profit environmental organization**. Here are just a few examples:

- Smithsonian Undergraduate Internships (many of these are environmental!) <https://www.smithsonianofi.com/smithsonian-internship-application-deadlines/>
- Environmental Defense Fund, <https://www.edf.org/jobs/internships-fellowships>
- The Nature Conservancy GLOBE program: <https://www.nature.org/about-us/diversity/globe/index.htm>
- The Phoenix Zoo: <http://www.phoenixzoo.org/careers/>
- Desert Botanical Garden, <https://www.dbg.org/jobs-internships>
- The Southwest Wildlife Conservation Center, <https://www.southwestwildlife.org/who-we-are/employment-opportunities.html>

- If you have the time and resources, you also may want to consider some of these unpaid internships with local, metro Phoenix organizations. Some of these internships can give you interesting experiences for your resume/CV. To find these opportunities, you can search the internet with keywords “Volunteer or Intern or Internship” and “Wildlife, or Botany” or whatever topic you’d like. Here is an example:

- OdySea Aquarium, <https://www.odyseeaquarium.com/education/internships/>

- Apply for paid summer or other seasonal internships and jobs with a **federal agency** that handles environmental issues. For example, many of these agencies offer undergraduate internship opportunities:

- On the [USAjobs.gov](https://www.usajobs.gov) website, use the keyword “Pathways” (without the quotation marks) to find student internship positions within our federal agencies.
- US Forest Service (USFS)

- <https://www.fs.fed.us/working-with-us/opportunities-for-young-people>
 - USFS Resource Assistants Program, <https://www.fs.fed.us/working-with-us/volunteers/resource-assistants-program>
 - US Fish & Wildlife Service (USFWS), <https://www.fws.gov/humancapital/>
 - Bureau of Land Management (BLM), <https://www.blm.gov/get-involved/internships>
 - Environmental Protection Agency (EPA), <https://www.epa.gov/careers>
 - National Park Service (NPS), <https://www.nps.gov/subjects/youthprograms/jobs-and-internships.htm>
 - Bureau of Reclamation (BOR), <https://www.usbr.gov/hr/student.html>
 - National Oceanic and Atmospheric Administration (NOAA), http://www.careers.noaa.gov/special_programs.html
 - US Department of Agriculture (USDA), <https://www.usda.gov/our-agency/careers>
- 🍃 Also be sure to check out --and apply for! -- jobs with **state and county environmental agencies**:
- AZ Department of Environmental Quality (ADEQ), <https://azdeq.gov/careers>
 - AZ Game & Fish Department (AZGF). Meet with our ASU AZ Game & Fish liaison to learn about and apply for AZGF internships. Both the Nature at ASU and CACSCB student groups have members with AZGF internship experience! http://azgfd.gov/inside_azgfd/edits/employment_internships.shtml
- 🍃 Consider applying for a job with a **private environmental consulting firm** that can help you to gain skills in environmental, biological, and ecological assessment related to the National Environmental Policy Act (NEPA). These skills are a required/desired pre-requisite for a job in many governmental agencies. As an example (not a complete list), here are some Arizona environmental consulting companies that conduct NEPA-related environmental assessments:
- <http://groupdelsol.com/about/>
 - <http://www.sec-landmgt.com>
 - <http://www.aesaz.com/index.html>
 - <https://www.partneresi.com/our-work>
- 🍃 Apply for internships, travel grants, scholarships, techniques workshops and other opportunities within **professional societies** related to the environment. Most of these societies have an office dedicated to professional development and education, with student fellowships, sections, job and internship boards, and other resources to help you:

- The Arizona Chapter of the Wildlife Society, <https://aztws.com/tips-and-tricks-for-getting-a-wildlife-job/>
- The Ecological Society of America, <https://www.esa.org/esa/careers-and-certification/explore-ecology-as-a-career/>
- Society for Conservation Biology, <https://conbio.org/professional-development/>
- The Wildlife Society, <http://wildlife.org/next-generation/>
- Society for Ecological Restoration, <http://www.ser.org/page/ProfDevelopment>
- American Fisheries Society, <https://fisheries.org/employment/career-help/>
- North American Association of Environmental Education, <https://naace.org/eeepro/jobs>
- Botanical Society of America, <https://cms.botany.org/home/awards/travel-awards-for-students/plants-grants.html>
- Entomological Society of America, <https://www.entsoc.org/employment/career-center>
- American Society of Limnology and Oceanography, <https://aslo.org/page/funding>
- Society of Wetland Scientists, <https://www.sws.org/Awards-and-Grants/student-research-grants.html>
- American Society of Mammalogists, <https://www.mammalsociety.org/education>
- Society for Freshwater Science, <https://freshwater-science.org/my-sfs/students>
- Soil Science Society of America, <https://www.soils.org/careers>

Finally, the most important piece of advice we have is:

Just say YES to nature-related opportunities that sound even remotely interesting to you. It doesn't matter if you don't have experience, or have never done something like this before, or you don't know anyone else who is doing it. As an environmentally minded undergraduate, your job is to try new things and meet new people who are as committed to nature conservation as you are. Each experience will open a new door for you, with new opportunities and people who can help you along your journey. Pretty soon, you'll find yourself surrounded by students, mentors, conservation practitioners, environmental scientists, and advocates – all of whom share your passion for nature.

Happy trails! You are not alone. We are better together. ☺

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Contributors to this document include: Members of the School of Life Sciences advising staff (including Ivy Esquibel and Virginia Downing), ASU faculty members (Sharon J. Hall, Heather Bateman, Scott Collins, Nico Franz, Jim Collins, Tad Day, Ben Blonder, Liz Makings, and Osvaldo Sala), and ASU students (Chelsea Avelino and Jessica Givens).