Environmental Career Ambassadors

Have you signed up as an environmental career ambassador yet? We have 329 volunteers in 61 counties.

Environmental Career Ambassadors are environmental professionals willing to make classroom or school career fair presentations for middle and high school grades about their careers and/or provide shadowing, internship, field trip and scholarship opportunities to Ohio students.

Ohio high school students, teachers, and career counselors need a better understanding of the wide variety of careers in environmental science and engineering. They also want to know about the specialized training and skills needed for these careers.

Ohio is emphasizing Science, Technology, Engineering and Mathematics (STEM) fields to prepare students for jobs in the state’s emerging high-tech economy. Employers looking to hire professionals in environmental science and engineering are reporting a shortage of qualified applicants.

The Ohio Department of Education’s learning standards and model curriculum also emphasize student learning about real-world careers. Schools and career centers are looking for business professionals to provide role models and diverse work-place experiences for their students.

The Environmental Professionals Network (EPN) is an online community connecting Ohio professionals in

- Air quality
- Environmental Health & Policy
- Energy, Materials & Sustainability
- Land Use and Conservation
- Water resources & water quality
- Wildlife and ecosystems

EPN members share information, announce events and training opportunities, post/seek jobs, internships and volunteer opportunities, and find collaborators for projects.

More information is available at http://epn.osu.edu. Please visit the EECO website’s Environmental Career Ambassador page for toolkits to help a Career Ambassador with school or classroom presentations: Water Toolkit and Natural Resource Toolkit. https://eeco.wildapricot.org/eca

Save the Date

More information about each opportunity at www.eeco-online.org

OEEF Grant
Letter of Intent due July 8, 2015
Grant Due July 15, 2015
www.epa.state.oh.us/oef/

EECO Annual Conference
April 9 - 12, at Maumee Bay State Park in NW Ohio
See page 3 for details

Ohio River Valley Woodland & Wildlife
March 28, Sharonville, Ohio. Learn about landowner tools and techniques http://tinyurl.com/qewo58d

Butler County Farm Day
May 2, 10 am - 3 pm, 3070 Wehr Road, Hamilton, Ohio. Come on down to the farm and learn about where your food comes from. Free!

Project Learning Tree Workshop
May 9, Civic Garden Center of Greater Cincinnati. See page 10 for details.

Stone Lab Professional Development for Teachers
Various dates throughout the summer for five different courses. Applications are available online at http://stonelab.osu.edu/applynow/
Growing up in an outdoor family I spent a lot of time hunting, trapping and fishing with my father. I heard him talk about “the game warden” and from a young age thought it sounded like a job I would be interested in. When it came time for college, I picked a well-known 2 year college to study natural resources, bypassing an offer of acceptance to a four year college’s honors program.

While completing my Associates Degree, I learned that the jobs I was interested in were very few and far between so I went on to the school I previously had decided against and earned a Bachelor’s Degree to be more competitive in the job market. When I was coming out of college, however, there were no openings for wildlife officers in Ohio.

I took a slightly different path and became a naturalist, working for a private not-for-profit for ten years. This position was enjoyable and helped me become a more proficient writer and public speaker, and taught me to be able to talk to just about anybody, one on one. These skills would greatly benefit me later.

I applied for a position as a wildlife officer 7 years after college, but did not make it. Three years later I tried again. After a grueling hiring process, I spent several months in the academy, first earning my peace officer certification and then learning the intricacies of being a wildlife officer. Two weeks before graduation I received my assignment to a county. I spent several years in that county, and then transferred to another part of the state. After 6 months, I took my first promotion to wildlife officer supervisor and came right back to where I started. In this position I supervised the officers in six counties, and worked in the field with them often. After a few more years I received another promotion to a district law enforcement supervisor position, where I supervised plain clothes investigators, but was not in the field too much. Three years later I moved to the headquarters where I oversaw a few of the programs within our law enforcement operations for five years. Eventually I was promoted to the position of Executive Administrator for Law Enforcement.

That is the path I have followed. I knew from a very young age that I was interested in wildlife law enforcement and although it took a while, I achieved my goal. If you are interested in a similar path, you need to be smart in your actions and make wise choices, take your education seriously, stay fit and be persistent as well as flexible. In addition, here is what you need to know:

- The minimum requirements are at least an associate’s degree in wildlife management, criminal justice or a related field, a valid driver’s license and age 21.
- If you meet the minimums, you will be invited to take a written test, those with the highest test scores will be invited to an interview.
- Those who perform best on the interview will go through an extensive background investigation, a physical fitness test, a swimming test, a drug screening, a polygraph test, a psychological exam and medical physical.
- Those that meet all of the criteria must attend an academy of several months, which is followed by a field training program of 6 months. You are then on probation for another 6 months.

The standards are very high, but so are the rewards. Wildlife officers are provided the best equipment, work from their homes, are paid well and have opportunities for a variety of career options. The work is varied from day to day and challenging. Some stay in their first county of assignment for their entire career, some will transfer to other counties, or become a plain clothes investigator. There are opportunities for advancement if you are interested in those challenges.

I will admit this has been a bit of a winding path I have been on, but it has been full of some great people to meet and work with, along with quite a few “bad guys”. I have had some very unusual experiences, worked outside all times of the day or night, and in all types of weather and habitat. I have been mentally challenged as well as physically challenged. I can’t say that I have really regretted any of the turns in my career path and look forward to meeting the new challenges ahead.
Strands:
- Population & Climate Change: Population crisis causing climate change & water issues
- STEM & Careers: Importance of STEM (Science, Technology, Engineering, Math) in schools and in the future of Ohio careers
- Youth Education: Connecting children to their natural world
- Funding & Philanthropy: What and who are fundable and why do individual donors give to non-profits

College Credit and Sanitarian Hours will be provided for this conference.

Register on the EECO website https://eeco.wildapricot.org/event-1869398.

Display or Sponsor: If you would like to display, be a vendor or a sponsor at the conference please contact Brenda Metcalf at brendasmetcalf@aol.com for more information.

Awards: If you can think of an educator (formal, non-formal, volunteer) or an organization that has performed outstanding contributions to environmental education in Ohio, please contact Brenda Metcalf. There are also awards for publications, EE through art, along with an award for business or industry that fosters a climate of cooperation for resolving environmental problems. Please visit https://eeco.wildapricot.org/awards to find out more about the various awards and how to submit a nomination. Brenda can be reached at brendasmetcalf@aol.com

Why Transportation Agencies Need More Women Engineers

North Carolina is trying to recruit girls for careers in engineering not only to fill anticipated vacancies but also because hiring more women could make the roads safer.

Read the entire article by Daniel C. Vock at http://tinyurl.com/m656b6u
Ohio Environmental Education Fund

Awarded Mini Grants March 2015

In the spring 2015 application cycle, Ohio EPA awarded the following six new mini grants, for a total of $26,777.

**Belmont Soil and Water Conservation District, “Captina Creek Watershed Streambank Stabilization and Riparian Enhancement Educational Initiative,” $1,850**

Belmont County, Audience: General Public

Contact: Kimberly Brewster, kb.belmontswcd@att.net, 740-526-0027.

Supports a workshop to increase the awareness and knowledge of proper streambank stabilization techniques among 50 local officials and operators in the Captina Creek Watershed, including county commissioners, township trustees, floodplain managers, stream cleanup crews employed by the county, local Ohio Department of Transportation employees, and industries operating within the watershed. A workshop on riparian zone protection will be led by an experienced stream restoration expert. Topics will include stream physical forms and functions, how they can degrade, and how to develop restoration and enhancement projects to benefit watersheds and communities.

**Preservation Parks of Delaware County, “Planting for Pollinators,” $5,000**

Delaware County, Audience: General Public

Contact: Richard E. Niccum, Jr., miccum@preservationparks.com, 740-524-8600 Ext. 3.

The primary purpose of the project is to educate visitors about how to enhance insect biodiversity and provide habitat to native pollinator species such as honeybees, solitary bees, butterflies, moths and hummingbirds. In addition to the signs, education staff will conduct programs throughout the year related to pollinators and utilizing the garden. These educators also host a number of school field trips at Deer Haven Preserve each year and will incorporate the garden and pollinator topics into field trip sessions that meet Ohio’s academic content standards in science, social studies, language arts, fine arts, and math. An accompanying media campaign will include the creation of short videos on Youtube, Facebook and the Park District Website to promote the project and highlight what residents can do in their own yards.

**Northwood Local Schools – Northwood High School, “Northwood Outdoor Environmental Science Lab,” $4,997**

Wood County, Audience: Pre-School – University

Contact: Lara Michele Fish, lfish@northwoodschools.org, 419-691-4651.

Students will monitor water quality impacts from twenty acres of land owned by the school district that was previously a farm field and borders Dry Creek, a tributary to Lake Erie. The goal of this project is to restore this land to its natural habitat with the help of students and community volunteers, while providing 150 seventh grade and high school environmental science students with access to outdoor water quality testing in a hands-on inquiry setting. Students will combine classroom and field activities from the Healthy Water, Healthy People curriculum, collect and identify macro-invertebrates as an indicator of stream health, and sample dissolved oxygen, turbidity, pH and flow rate. They will also study phosphorus and nitrate loads that contribute to harmful algal blooms in Lake Erie, and share their research results at TMACOG’s annual Student Watershed Watch congress. Seventh grade students will also participate in a field trip to the Ottawa National Wildlife Refuge for wetland education activities developed with funding from a previous OEEF grant.

Continued on next page
Ohio EPA College Scholarship & Internship Opportunities

College Scholarship Opportunities

Ohio EPA offers college scholarships to students in environmental science and environmental engineering at Ohio colleges and universities. Up to $2500 is available for students entering their final year in four- and five-year programs. Up to $1,250 is available to second year students in two-year degree programs. Students in related majors such as biology, botany, chemistry, chemical and civil engineering, environmental health and safety, forestry, geology, laboratory sciences, natural resource conservation, wildlife management and zoology are also eligible to apply. Applications are due April 15th, at www.ohiosci.org/oeef-scholarship/. This program is administered through a partnership with the Ohio Academy of Science.

College Internship Opportunities

Learn from and work with seasoned professionals across the state. Ohio EPA also offers paid internships for college students in majors such as environmental science, biology, chemistry, engineering, geographical information systems, natural resources, botany, zoology, laboratory sciences, information technology, and legal. Interns must be enrolled in a college program directly related to the position, or have graduated within the past quarter/semester. Most internship opportunities occur in the summer, with job openings posted in January and February. Winter internships are often part-time. Like our Facebook page https://www.facebook.com/OhioEPAInterns to find out about internship opportunities.

Continued... Awarded Mini Grants March 2015

Southwest Air Quality Agency, “Idle-Free Campaign,” $4,930
Butler, Clermont, Hamilton and Warren Counties, Audience: General Public
Contact: Joy Landry, joy.landry@hamilton-co.org, 513-946-7754.

Southwest Ohio Air Quality Agency proposes to expand its existing Idle-Free initiative to 190 area schools, day care centers, parks, sports complexes, YMCAs, recreation centers and other facilities where children are dropped off and picked up for their sports and extracurricular activities by parents who idle their vehicles. The mini grant will provide 190 Idle-free zone signs and posts at these locations. The message about the health and environmental benefits of reduced emissions will be reinforced through the ongoing four-county public awareness campaign incorporating social media, television, Web links, electronic newsletters and school programs.

City of Delaware, “Water Treatment Plant Educational Center, $5,000
Delaware County, Audience: Pre-School – University
Contact: Brad Stanton bstanton@delawareohio.net, 740-203-1903.

The City of Delaware Water Treatment Plant is one of a few in the U.S. using ultrafiltration and nanofiltration. New exhibits for visitors touring the plant will illustrate water conservation, water and wastewater treatment, the lack of treatment of storm water, and regional water supplies and history. An exhibit on the hydrological cycle is aligned with seventh grade science standards to illustrate the changing states of water moving through the lithosphere, biosphere, hydrosphere and atmosphere.

The Ohio State University Extension - Darke County, “Manure Science Review: Nutrient Stewardship Education for Farmers,” $5,000
Darke County, Audience: Regulated Community
Contact: Amanda Douridas, douridas.9@osu.edu, 937-484-1526.

The Manure Science Review, an educational field day that provides science-based information on best practices for manure nutrient management, will be held in Darke County, Ohio in August 2015, reaching an estimated 175-200 farmers. The program will include presentations that provide information on relevant issues, including feeding strategies to reduce phosphorus (P) in manure, methods for reducing nutrient runoff from cropland, and technologies to utilize manure. Field demonstrations, which will illustrate practices and equipment that can reduce the risk of manure nutrient runoff, will include field trials for cover crops and manure side-dressing, technologies for injecting liquid and solid manures, smoking drainage tile to illustrate preferential flow, and manure application equipment calibration.
Environmental Majors at Ohio’s Colleges and Universities

This is not an all encompassing list. There are some great environmental programs at universities not listed. Many of the programs listed are ones that the EECO newsletter committee have worked with graduates from that program, or in fact are graduates themselves.

**Denison University: Environmental Studies Program**
http://denison.edu/academics/environmental-studies

**Areas of Study:** Broad training in environmental issues with opportunities for emphasis in the humanities, social sciences, natural sciences and arts. Students select from courses in many disciplines to learn about environmental problems and solutions from different perspectives and then design a concentration to acquire depth in their area of interest. Sample concentrations within the Environmental Studies major include: Environmental Biology, Environmental Economics, Sustainable Agriculture, Ecosystem Management, Philosophy and Environmental Ethics, and Religion and Nature, just to name a few.

**What do Graduates Do?** About one-third of our graduates go into business, and many of those are involved in sustainable business initiatives. Another third work for non-profit organizations with a wide range of environmental and sustainability-linked missions. About 20% work in the government or public sector, and about 10% of our graduates go on in academia to seek masters, law, doctorate or professional degrees.

**Good to Know:** The Denison Environmental Studies Program has roots reaching back to the 1960s and a long history of close ties with organizations such as the Ohio Environmental Council and the Rodale Institute.

**Graduate Profile:** Many of our graduates work in central Ohio. Emily Schaefer ’09 works with OSU Extension on pesticide education; Charlie Allen’14 works as a contractor with the US Fish & Wildlife Service; Andy Hupp’04 is the Certification Operations Coordinator at the Ohio Ecological Food and Farm Association; Robyn Wilson’00 is a professor in the School of Natural Resources at the Ohio State University; Emily Elsom Cunningham’97 was recently profiled in the Columbus Dispatch for her work doing environmental education at the Columbus Zoo; Sarah Mill ’07 is the director of education at the Dawes Arboretum in Newark, Ohio. Many more of our alums are scattered around the country doing great environmental work.

**University of Findlay: Environmental, Safety & Occupational Health Management**
http://www.findlay.edu/sciences/environmental/

**Areas of Study:** Environmental, Safety and Occupational Health (ESOH) management involves protection of the environment and human health through the minimization of air pollutant emissions, industrial and municipal wastewater and stormwater discharges, solid and hazardous waste generation and hazards in the workplace. ESOH students take courses in science, mathematics, epidemiology, environmental, safety, and health laws and regulations, environmental permitting and reporting, sustainability, and safety and industrial hygiene. Training and certification courses and paid internships/co-ops are also included.

**What do graduates do?** ESOH professionals in the private sector manage their company’s compliance with environmental and occupational safety and health laws and regulations. They also work for regulatory agencies like U.S. EPA, Ohio EPA, the Occupational Safety & Health Administration (OSHA), Ohio Department of Health, Ohio Bureau of Workers Compensation, and county and city health departments. Government regulators and regulated entities work together to create healthier workplaces and communities, promote sustainable development, and train communities in emergency response and disaster planning.

**Good to Know:** Many paid internship opportunities exist to apply classroom concepts and learn the profession. UF’s ESOH graduates have 100% job placement with beginning salaries typically in the $50,000-$70,000 range.

**Graduate Profile:** Catherine Wiemers (2002) graduated with a B.S. in Environmental, Safety and Occupational Health Management. Catherine completed internships overseeing asbestos remediation in school buildings. Following graduation, Catherine works at Marathon’s Corporate Health, Environment Safety and Security (HES&S) Department, where she coordinates the waste vendor vetting program and provides regulatory guidance to employees on solid and hazardous waste regulations. She encourages her clients within Marathon to use the Corporate HES&S Department as a resource. She advises them that “environmental issues and regulations are complicated so they shouldn’t hesitate to pick up the phone or send an email seeking answers to their questions. A question is not about what you don’t know, it’s about what you want to learn.”
**Hocking College: School of Natural Resources**
http://www.hocking.edu/schools/naturalresources

**Areas of Study:** Ecotourism and Adventure Travel, Fish Management and Aquaculture Sciences, Forest Management, GeoEnvironmental Science, Geographic Information and Global Positioning Systems Certificate, Landscape Management, Natural and Historical Interpretation, Natural Resources Law Enforcement, Timber Harvesting and Tree Care Certificate, Wildlife Resources Management

**What do Graduates Do?** Graduates work in settings such as parks, government agencies, environmental consulting firms, museums, zoos and wildlife centers, fish hatcheries, tree farms and nurseries, mining or oil and gas exploration and production sites, wetlands, water and wastewater treatment plants, outdoor education programs and schools. HC graduates are also working as stormwater managers, watershed coordinators, park police, wildlife officers, surveyors, city planners, urban foresters, soil conservationists, site assessors, naturalists and guides.

**Good to Know:** Hocking College graduates more conservation professionals than any other two year program in the country.

**Graduate Profile:** Shawn Ford, Class of 2011, two-year degree in Geoenvironmental Science, utilized his skills learned at Hocking College from his GIS/GPS certificate toward a summer position at the Fairfield County Auditor’s office. From there, he became an independent environmental consultant with Andersen Environmental writing Phase I environmental assessments as part of the due diligence process for commercial real estate transactions. He is currently a full-time Project Scientist with Partner Engineering and Science, remotely based in Cincinnati, working on Phase I and Phase II environmental assessments, property condition assessments, and asbestos inspections. Quote: “When I first started submitting reports my supervisors were shocked at how well I had been taught at Hocking College about how to write reports, take samples, and think analytically about the various types of sites we were assessing. The hands on comprehensive training I received at Hocking is by far what makes me stand out amongst people with twice my years of education.”

**Miami University: College of Arts & Science**
http://miamioh.edu/cas/index.html

**Areas of Study:**
- Geology - http://miamioh.edu/academics/majors-minors/majors/geology.html
- Sustainability (co-major) – http://miamioh.edu/academics/majors-minors/majors/sustainability.html

**What do graduates do?** A wide variety of employment opportunities are available for those who graduate from the College of Arts & Sciences, these include: environmental consulting and planning firms, energy and mineral resource companies, government agencies, parks, environmental protection agencies, health departments, schools, universities, corporations, legal practices, non-profit organizations, industry biological physics and biophysics, medical physics, medicine, and biomedical engineering.

**Good to Know:** Many of the students get to work one–on-one with faculty to do a research project, and students get to experience field-based learning opportunities. Many of the students continue furthering their education. In the Earth Sciences discipline, about 50% of the graduates obtain immediate employment.

Project Dragonfly: Project Dragonfly, at Miami University, offers graduate courses and master’s degree programs (the Global Field Program, the Advanced Inquiry Program, and Earth Expeditions); co-founded the Emmy-Award winning national PBS television series DragonflyTV, produced by TPT public television; and directs national exhibit projects (Wild Research, with the Cincinnati Zoo & Botanical Garden, and iSaveSpecies, with a consortium of U.S. public learning institutions).  http://www.projectdragonfly.org/
**University of Mount Union: Environmental Science Program**

http://www.mountunion.edu/environmental-science-major

**Areas of Study:** Environmental Science at Mount Union combines a general introduction to environmental science with a depth of coursework in one of three fields: Biology, Chemistry, or Geology. All students in the program study Environmental Policy, Environmental Ethics, conduct in-depth studies into current issues and conduct a year-long laboratory or field research project. A number of electives are available in each depth area.

**What do Graduates Do?** Our graduates continue to graduate school (~30%) or find employment in environmental consulting firms, private businesses, or government agencies.

**Good to Know:** Mount Union students benefit from the proximity of campus to our Huston-Brumbaugh Nature Center, which serves as both a site for student research and classwork and a regional environmental education center. Our program is based in the liberal arts and develops communication and critical thinking skills in our students. The program is well funded through a generous endowment from the late Dr. John D. Brumbaugh of Akron, Ohio. Our current program evolved from an Environmental Biology Program housed in the Biology department.

**Graduate Profiles:** Our graduates work in a diversity of jobs. Laura Sayre has been doing environmental biology for a number of years. She is experienced in many types of ecological surveys and manages a variety of ecological projects with specific expertise in corridor projects and residential and commercial development. In her current position her main responsibilities include managing and performing wetland assessments and delineations, performing ecological surveys, researching resource materials, and preparing reports for federal agencies, state agencies, and local property owners.

Heidi Babos has had a variety of interesting experiences since graduation. She worked at the Huff Run Watershed in east central Ohio, then went to the University of Reading in Great Britain where she used her background in environmental science to study environmental archaeology. She is currently studying environmental science in the graduate program at Central Michigan University.

Job titles for other graduates include research assistants at the Ohio Agricultural Research and Development Center, Manager of Environmental Response, Assistant Professor of Ecology and Sustainability, Environmental Chemist, GIS Analyst, and Sustainability Coordinator.

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**University of Toledo: College of Engineering**

http://www.eng.utoledo.edu/

**Areas of Study:**

- Bioengineering - [http://www.bioe.eng.utoledo.edu/](http://www.bioe.eng.utoledo.edu/)
- Chemical and Environmental Engineering - [http://www.che.utoledo.edu/](http://www.che.utoledo.edu/)
- Civil Engineering - [http://www.eng.utoledo.edu/civil/](http://www.eng.utoledo.edu/civil/)
- Electrical Engineering and Computer Science - [http://www.eng.utoledo.edu/eecs/](http://www.eng.utoledo.edu/eecs/)
- Engineering Technology - [http://www.et.utoledo.edu/](http://www.et.utoledo.edu/)
- School of Green Chemistry and Engineering: [http://www.utoledo.edu/nsm/sgce/](http://www.utoledo.edu/nsm/sgce/)

**What do graduates do?** Develop medical supplies, solve environmental problems, provide clean water, develop hardware and software, develop alternative energy solutions and design more fuel-efficient vehicles.

**Good to Know:** All engineering students (engineering technology – optional) are required to participate in a minimum of three semesters of co-operative work experience at locations around the world.

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**Butler County Farm Day**

**May 2, 10 am - 3 pm**

Double J Farm, 3070 Wehr Road, Hamilton, Ohio

Come and meet the animals, find out where your food comes from, see conservation practices, check out the live hive honey bees, and watch the wool spinning demonstration.

Find out more at [http://www.butlerswcd.org/Events/FarmDay.html](http://www.butlerswcd.org/Events/FarmDay.html) or call 513-887-3722
Ohio University: Environmental Health Science

http://www.ohio.edu/chsp/sph/academics/ehs.cfm

Areas of Study:

• Food safety and vector-borne disease control
• Solid and hazardous waste management
• Water and air quality management
• Environmental risk communication
• Climate change and public health
• The built environment and health

What do graduates do? Environmental health science professionals work to preserve and improve the quality of the environment and safety of the workplace. Majoring in environmental health science (or the related field of occupational hygiene and safety) may be right for you if you want to protect the quality of air, water, shelter and food; are interested in enforcing environmental and public health laws; are concerned about making workers’ jobs as free from hazards as possible; and want to work to ensure a sustainable, high quality of life for future generations. Graduates work in industry, corporations, insurance companies, food establishments, research facilities and government agencies. Many find employment in health-care settings, including hospitals, public health departments, and environmental protection agencies. Still more options exist with public utilities, educational settings, natural resource departments, and consulting firms.

Good to Know: Graduates receive a Bachelor of Science in Environmental Health (BSEH), and the major fulfills the educational requirements to take the exam for certification as a registered environmental health specialist or registered sanitarian. The program at Ohio University is accredited by the National Environmental Health Science and Protection Accreditation Council.

Graduate Profile: EH Major Will Maier graduates in May 2015 with a degree in Environmental Health Science and a minor in Economics. Will was an intern with the US Public Health Service in summer 2014. He worked with the Indian Health Service in Bemidji, Minnesota on projects related to wastewater management, food safety, rabies control, and other important environmental health projects. In summer 2015, Will returns to the US Public Health Service in Shiprock New Mexico for work with the Navajo Indian Tribe. Will is one of several graduates of the EH program who are employed by the Public Health Service; other alumni work for the Food and Drug Administration, US EPA, and other federal environmental agencies.

Case Western Reserve University:
Department of Earth, Environmental and Planetary Sciences at Case Western Reserve University

http://geology.case.edu/

Areas of Study: Geological Sciences, Environmental Geology, Environmental Studies. The department encompasses a wide range of teaching and learning opportunities into the physical, chemical, and biological processes that shape the earth and the planets. Earth science provides a lens for understanding properties of the earth’s interior, surface, and ecology.

What do Graduates Do? Graduates apply their geologic knowledge to the fields of resource conservation, land use planning, environmental geochemistry, hydrology, engineering construction works, environmental consulting, and other environmental fields. They also go onto graduate school for advanced degrees.

Good to Know: The undergraduate programs stress practical experience and field work as well as classroom study. All students participate in a three-semester Senior Project sequence in which they propose a research project, conduct the research, write a thesis, and present it to the Department.
**Ohio State University: Environmental Engineering**

[https://ceg.osu.edu/department](https://ceg.osu.edu/department)

**Areas of Study:** Environmental engineering is the planning, design, construction, operation, and maintenance of constructed facilities for the protection of human health and safety and the preservation of wildlife and the environment. It includes water supply and resources, environmental systems modeling, environmental chemistry, wastewater management, solid waste management, hazardous waste management and remediation, atmospheric systems and air pollution control, and environmental and occupational health.

**What do graduates do?** Typical environmental engineering projects are large, one of a kind, and important in the daily lives of a great many people. Graduates of environmental engineering programs are found in engineering and administrative posts in industry, construction, research, government, and consulting firms.

**Good to Know:** The BS degree in Environmental Engineering offered at Ohio State is currently the only accredited undergraduate environmental engineering program in the state of Ohio.

Faculty Contact: John J. Lenhart, Ph.D., Associate Professor and Co-Director of Ohio Water Resources Center; email: lenhart.49@osu.edu; phone: 614-688-8157

**Graduate Profile:** Craig Ayres graduated from Ohio State in May of 2013 and immediately started working as a Water Resources Engineer for AECOM in Columbus, OH. Craig works on a variety of projects in the water resources department, but mainly focuses on collection and treatment systems. His particular expertise is on combined sewer overflows, with the goal to mitigate or eliminate their occurrence. Craig got his job through an open house sponsored by AECOM. At this meeting he was able to meet with project managers and arranged a follow up interview. As a student Craig had summer internship positions with other organizations that provided valuable practical experience that employers like to see. Craig indicates that the program at Ohio State “prepared me by developing critical thinking and problem solving skills as well as exposing me to all lines of work and critical issues we face in this industry. My undergraduate research project in particular, was the most valuable experience I received. Especially the documentation and presentation of all my work.” To future or potential students Craig advises them to get involved as much as possible with internships and a variety of work positions. This can provide valuable insight into career pathways to follow or avoid. He also recommends students take advantage of study abroad and other unique activities that can provide life-long learning experiences outside the traditional classroom setting.

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**Videos & DVDs: Environmental Career Resources**

- **Aquarium Curator and Herpetologist** video from National Aquarium and Kids.gov

- **Conservation Connect** outdoor career videos from US Fish and Wildlife Service

- **Marine Biologist Career Spotlight** video from Smithsonian and Kids.gov

- **Wildlife Biologist Career Spotlight** video from US Fish and Wildlife Service & Kids.gov

- **Wildlife Officer Career Spotlight** video from US Fish and Wildlife Service & Kids.gov

- **Zoo Keepers** from the National Zoo and Kids.gov

**Environmental Related Occupations** two-volume Career Pathway DVD [www.careerpathwaysonline.com](http://www.careerpathwaysonline.com) includes video interviews of Ohio and West Virginia environmental professionals about their careers, education and salary in the following fields:

- Air Quality Manager
- Hazardous Waste Manager
- Forest and Conservation Scientist
- Geologist
- Park Ranger
- Environmental Inspector
- Solid Waste Manager
- Urban and Regional Planner
- Water and Wastewater Treatment Plant Operator
- Meteorologist
- Biological Scientist
- Recycling Plant Manager
Career Path of An Environmental Scientist

By David Kajtaniak, Environmental Scientist for the California Department of Fish and Wildlife

Hello, my name is David Kajtaniak and I am an Environmental Scientist for the California Department of Fish and Wildlife (CDFW). I work in a somewhat rural part of Northern California (5 hours north of San Francisco) and my program, the Coastal Watershed Planning and Assessment Program (CW-PAP), conducts fisheries-based watershed assessments along the Northern California coast.

How did I get here? Growing up in Northwest Ohio I had an early interest in the outdoors, especially wildlife and fish. Numerous family vacations to various National Parks helped foster this interest by experiencing a variety of flora and fauna in different geographic regions. By the time I entered college (Ohio University in Athens), I desired to further my education in the field to broaden my horizons and gain a scientific understanding of ecology. Summer jobs as a Land Management Technician at Oak Openings Metropark allowed me to apply principles I was learning in college classes to on the ground restoration work, specifically restoring tallgrass prairie and oak woodland and oak savannah habitats.

Upon completing my Bachelor of Science degree (Field Biology), I acquired an AmeriCorps Watershed Stewards Project member position in Klamath, CA about an hour south of the Oregon border. Over the course of two years (two terms) under the tutelage of a CDFW Habitat Specialist, I performed a wide variety of duties including identifying salmon distribution and populations in small streams; evaluating stream habitat conditions; constructing in-stream habitat improvement structures and riparian re-vegetation and bio-engineered stream bank stabilization projects; scientific report and grant writing; performing watershed and salmon curriculum in elementary classrooms as well as participating/leading community watershed restoration projects. My experience with AmeriCorps allowed me to acquire work in private environmental consulting companies in various field technician positions, which eventually led to a staff biologist position.

The desire to have an active role in fisheries and ecosystem restoration led me back to the CDFW. Currently, my primary role with the CDFW is to serve as the lead biologist and author of the CW-PAP’s watershed assessments and overseer of the program’s website - http://coastalwatersheds.calfish.org/ CW-PAP coordinates with other government agencies, private corporations and landowners, non-profits and various stakeholders to produce fisheries-based watershed assessments that utilize a holistic approach to watershed research, monitoring, and management of listed salmonid species. Through the course of developing and producing an assessment I identify existing data concerning the watershed basin, evaluating its usefulness for watershed level assessment, coordinate with field crews for the collection of new data to fill critical gaps or build on pre-existing monitoring efforts, and develop recommendations for future land-use activities to potentially facilitate the recovery of populations of salmon and steelhead. While my workload keeps me office-bound most of the time, I do love the opportunities I get to put on stream waders and walk streams to identify/count spawning salmon, or putting on a wetsuit to jump into a stream to count juvenile salmon and steelhead, or see a restoration project come together that not only benefits fish but other fauna within the region as well.

Project Learning Tree Workshop

May 9, 2015

When: May 9 from 8:30am-3:30pm

Where: Civic Garden Center of Greater Cincinnati, 2715 Reading Road, Cincinnati OH 45206

$25 fee includes: PreK-8 Environmental Education Activity Guide with 96 activities that are aligned with ELA & Mathematics Common Core State Standards. Attendees are also eligible for Green Works grants worth up to $5000.

Registration and Information: Please call 513.221.0981

What is Project Learning Tree (PLT): PLT is an award-winning, interdisciplinary environmental education program featuring classroom-proven, hands-on learning activities for youth. The curriculum can enhance your programs for youth in classrooms, camps, and community events. The material has links to technology, reading connections, differentiated instruction, and outdoor explorations.

This workshop is brought to you by Taking Root, Civic Garden Center of Greater Cincinnati, Cincinnati Parks, and the Environmental Education Council of Ohio.
Attention K-12 Classroom and Nonformal Educators—
Help us expand Project WILD!

The Council for Environmental Education (CEE), the national office for Project WILD, invites K-12 educators (formal and nonformal) to help field test activities being considered for publication in future editions of Project WILD K-12 Curriculum & Activity Guide. If you would like to try out one or more activities with your students and then provide CEE with feedback, please follow the link below and complete the brief application survey. The survey takes about five minutes to complete.

To sign up, follow this link: https://www.surveymonkey.com/r/W75DD2Q

We need to receive completed surveys by Friday, April 3, 2015.

If you are selected, CEE will send you $40 for participating. Activities typically require two 45 minute class sessions or the equivalent instructional time, and may also involve investigating outdoor areas, such as a schoolyard or park. Although you are welcome and encouraged to field test more than one activity, and to conduct a single activity with more than one class, only one $40 stipend will be provided to each participating educator. Stipends will be paid within 30 days of receipt of the field test evaluation forms.

If you are selected to participate, you will receive notification by Friday, April 10, along with a link to one or more activities to test.

After you conduct the activities with students, all completed activity feedback surveys must be completed by Friday, June 5, 2015.

Stay tuned—in addition to this first phase of field testing, a second opportunity to participate will be in the fall of 2015 when CEE launches the second round of Project WILD field testing.

Project WET & Healthy Water, Healthy People and The Wonders of Wetlands
Facilitator and Educator Workshop

When: Wednesday and Thursday, June 10 and 11, 2015, 9a-4p
Where: Battelle Darby Creek Metro Parks Nature Center, 1415 Darby Creek Drive, Galloway, Ohio 43119
Fee: $30 Registration Fee (covers 2 breakfasts, lunches and snacks. Curriculum provided by the Ohio EPA, OEE)
Deadline to Register: June 5, 2015

Please register online at WMAO Registration Website

Participants Will Receive:

• Certification as a Project WET and Healthy Water, Healthy People Facilitator and both Curriculum Guides
• Guide Membership to the online Water Education Portal and DiscoverWater.org
• Science behind and valuable training in the use of Project WET, Healthy Water, Healthy People and The Wonders of Wetlands activities & other resource materials
• Certification as The Wonders of Wetlands Educator and Curriculum Guide

For more information contact: Dennis Clement, Project WET State Coordinator at dennis.clement@epa.ohio.gov or 614-644-2048.
**Websites: Environmental Career Resources**

**Environmental Careers Classroom Activity** created by Ohio EPA Office of Environmental Education to showcase 41 different public sector and private sector careers  
[http://epa.ohio.gov/oee/EnvironmentalEducation.aspx#135377996-environmental-education-resources](http://epa.ohio.gov/oee/EnvironmentalEducation.aspx#135377996-environmental-education-resources)

**My Future Life** videos with career interviews such as Aquatic Biologist, Hydrogeologist, Environmental Projects Manager, Plant Pathologist, Wind Energy Assessment, and Waste Management  
[http://www.youtube.com/user/SEOCEMS](http://www.youtube.com/user/SEOCEMS)

**Occupational Outlook Handbook** from the US Bureau of Labor Statistics includes in-depth job descriptions, degree requirements, pay and job outlook for a number of environmental careers, including:

- Atmospheric Scientists
- Epidemiologists
- Biological Technicians
- Geoscientists
- Civil Engineers
- Hazmat Removal Workers
- Conservation Scientists and Foresters
- Hydrologists
- Environmental Engineering Technicians
- Microbiologists
- Environmental Engineers
- Occupational Health & Safety Specialists
- Environmental Science Technicians
- Wildlife Biologists
- Environmental Scientists and Specialists
- Zoologists

**Bureau of Labor Statistics K-12 website**  
[http://www.bls.gov/k12/](http://www.bls.gov/k12/)

**Scientists at the Smithsonian**, includes Amphibian Ace, Bat Listener, Bee Tracker, Bird Strike Sleuth, Germinator, Reef Doctor, Seed Reader and many more  
[www.smithsonianeducation.org/scientist/index.html](http://www.smithsonianeducation.org/scientist/index.html)

**Scientists Card series** from Natural Inquirer middle school science education  

**US Geological Survey Career Cards** for ten different science careers including biological science technician, biologist, cartographer, chemist, ecologist, geologist, geographer, hydrologic technician, hydrologist, physical scientist  

**Careers in Ohio** from the Ohio Oil and Gas Energy Education Program  
[http://oogeep.org/industry-workforce/careers/](http://oogeep.org/industry-workforce/careers/) or email [acroce@oogeep.org](mailto:acroce@oogeep.org) to order free copies

**Sustainability Career Resources.** This link doesn’t seem like much, but it connects to 69 different career resources  
[http://tinyurl.com/o8ysldr](http://tinyurl.com/o8ysldr)

**Ohio Career Exploration Internship Program** at the Ohio Development Services Agency places high school students in businesses for 20-week paid internships. Online application at  
[http://development.ohio.gov/bs/bs_cecip.htm](http://development.ohio.gov/bs/bs_cecip.htm)

**Ohio Department of Education Career Pathways**, showing middle, high school and college course options for various career clusters  

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**Upcoming Newsletters**

Do you have a theme that you are interested in? Want to share information about a particular EE topic? If so, contact our newsletter committee about submitting articles, or even becoming part of the committee.

If you are interested in writing an article, our next planned issues are:

- Water Quality Research, article deadline is May 15
- Environmental Technologies, article deadline is August 15
- Energy in Winter, article deadline is November 15

Articles are typically 300-500 words. As you can see, we like to include lots of pictures. If you submit photographs, please make sure they are of high quality/resolution, and are not copyrighted.

To find out more about how to submit, or to join our committee, please contact Betsy Banks at [ewb@case.edu](mailto:ewb@case.edu)
Tips For Career Day Speakers
By Tom Markle, longtime Career Day Coordinator at Walnut Springs Middle School in Westerville

Things to include in your presentation:

• A brief history/background of yourself that led to your current career or job
• Description and responsibilities of your career/occupation
• Education/training required – (please emphasize the importance of life-long learning)
• Skills needed, i.e. good communication skills, hand-eye coordination, etc.
• Positive and negative aspects of your career/occupation (e.g., you like working outdoors)
• Salary range/pay (and benefits, as applicable)
• Any extracurricular activities in school and how they may have helped you
• Time for Q & A

Questions you might get from students:

• What are the major duties/responsibilities of your job?
• What character traits/work habit do you or your employer expect an employee to have?
• What training/education is required for this job?
• What other jobs/people depend on your job getting done?
• What are the “normal” hours of your job? If there is overtime, how much/often?
• What types of demands (physical, mental, emotional) or hazards, if any, are involved in your job?
• What specific types of tools, equipment, and/or technology do you use on a regular basis?
• What led you to this job/career? If you have/had a role model or mentor, please tell me about them.
• What do you like most about your job? The least?
• What courses in middle/high school would help a student prepare for your job/career?
• What extra-curricular activities, volunteer work, and/or part-time job might help someone prepare for your job?
• What changes, positive and/or negative, have taken place in your job/career recently or since you started?
• How much have these changes affected you and/or your career?
• What do you think your job/career will be like in ten years?
• What is the employment outlook for this field of work and/or how difficult is it to find your type of job?
• What other occupations are related to your job/career?
• What advice would you give a student who is considering your type of job/career?

Remember that middle school students respond well to hands-on, interactive, show-and-tell type information and presentations. Show them equipment you use, safety gear you wear, and examples of problems you try to solve.
Helpful Career Books


What Color is Your Parachute? For Teens, by Carol Christen and Richard N. Bolles, c. 2006, Ten Speed Press

Scientist in the Field Series of Books

Scientists in the Field series of books from Houghton Mifflin Harcourt:

The Bat Scientists by Mary Cay Carson, c. 2010
Emi and the Rhino Scientist by Mary Kay Carson, c. 2010
The Frog Scientist by Pamela S. Turner, c. 2009
Gorilla Doctors: Saving Endangered Great Apes by Pamela S. Turner, c. 2005
Hidden Worlds: Looking Through a Scientist’s Microscope by Stephen Kramer, c. 2001
The Hive Detectives: Chronicle of a Honey Bee Catastrophe by Loree Griffin Burns, c. 2010
The Manatee Scientists: Saving Vulnerable Species by Peter Lourie, c. 2011
Once a Wolf: How Wildlife Biologists Fought to Bring Back the Gray Wolf by Stephen R. Swinburne, c. 1999
Park Scientists: Gila Monsters, Geysers and Grizzly Bears in America’s Own Backyard by Tom Uhlman and Mary Kay Carson, c. 2014
The Polar Bear Scientists by Peter Lourie, c. 2012
The Prairie Builders: Reconstructing America’s Lost Grasslands by Sneed Collard III, c. 2008
Project UltraSwan by Elinor Osborn, c. 2002
Quest for the Tree Kangaroo: An Expedition to the Cloud Forest of New Guinea, by Sy Montgomery, c. 2006
Saving the Ghost of the Mountain: An Expedition Among Snow Leopards in Mongolia by Sy Montgomery, c. 2009
Science Warriors: The Battle Against Invasive Species by Sneed B. Collard III, c. 2008
Secrets of Sound: Studying the Calls and Songs of Whales, Elephants and Birds by April Pulley Sayre, c. 2002
The Snake Scientist by Sy Montgomery, C. 1999
Stronger than Steel: Spider Silk DNA and the Quest for Better Bulletproof Vests, Sutures, and Parachute Rope by Bridget Heos, c. 2013
The Tarantula Scientist by Sy Montgomery, c. 2007
Tracking Trash: Flotsam, Jetsam and the Science of Ocean Motion by Loree Griffin Burns, c. 2007
The Whale Scientists: Solving the Mystery of Whale Strandings, by Fran Hodgkins, c. 2007
The Woods Scientist by Stephen R. Swinburne, c. 2002
What region of EECO are you in? And, who is your local contact?

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