School of Environment and Natural Resources

Yearbook 2013 - 2014

THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

Welcome.

It is with great pleasure that I share with you this yearbook highlighting our School's activities and accomplishments for 2013 - 2014. I hope you are struck, as I am, with the vibrancy of our activities in the School of the Environment and Natural Resources. Our rich history has paved the way to where we are now – providing leadership for better understanding and addressing today's pressing environmental and natural resource challenges through our teaching, research and outreach. We are committed to sustaining this activity and continuing to build on this tradition.

Jeff S. Sharp

Director and Professor
School of Environment and Natural Resources

About Us.

The School of Environment and Natural Resources (SENR) faculty, staff and students comprise a community of over 750 scholars. We are engaged in education, research and outreach in the environment. We come from a variety of backgrounds and perspectives, but share common goals and passions. We provide leadership on local, regional and global levels for a variety of teaching, research and extension outreach activities. Our programs are aimed at better understanding and addressing environmental and natural resource challenges. Each of our three locations, SENR Columbus, SENR Wooster and the Wilma H. Schiermeier Olentangy River Wetland Research Park, offers a unique experience and a variety of opportunities for faculty, staff, students, and partners.

Our Mission.

The School of Environment and Natural Resources at The Ohio State University creates science-based knowledge and fosters environmental sustainability through teaching, research and outreach. By integrating the natural and social sciences, we promote discovery and leadership through a comprehensive approach. We strive to better understand and address environmental and natural resource challenges locally, regionally and globally.

We are an interdisciplinary academic unit dedicated to teaching and promoting the use and management of natural resources in an economically efficient, environmentally compatible, and socially responsible manner.

Our faculty and staff hold expertise in a variety of subject areas, including: aquatic and water resources, ecosystem restoration, environmental social sciences, forestry, natural resource management, rural sociology, soil science, and wildlife ecology. Through our outreach programs, we spread that expert knowledge and information across the state of Ohio. Our passionate graduate and undergraduate students make the school an exciting place for research, learning and service.

Our History.

The Ohio State University has a rich tradition of academic programming in the environment and natural resources. In 1905, Congress created the U.S. Forest Service, and personnel were assigned to the Ohio Agricultural Experiment Station (now OARDC) in Wooster, OH. The Ohio Legislature subsequently created a Department of Forestry at the Experiment Station to administer statewide forest management programs. An Extension soil conservation program was established in the OSU Department of Agronomy in 1914, and the OSU Department of Geography launched a liberal arts course in the "Conservation of Natural Resources" in the 1920s. A Cooperative Wildlife Research Unit was established on the Ohio State Columbus campus in 1936, and the training of wildlife specialists was a direct outgrowth of that action.

In 1945, an Interdepartmental Conservation Curriculum (ICC) was initiated by the College of Agriculture at OSU with undergraduate specializations in soil, water, and wildlife conservation. A Natural Resources Institute was created by action of the OSU Board of Trustees in 1955 to direct the ICC and to stimulate and coordinate teaching and research in the conservation, development, and wise use of natural resources. Over 100 faculty members from 19 departments and more than 50 people from federal, state, and local agencies participated in the Institute's programs. Student demand grew significantly through the Institute, and faculty began to lobby for a more complete program in natural resources.

In an effort to strengthen all OSU activities related to natural resources, the Board of Trustees created the School of Natural Resources (SNR) on July 1, 1968. By the autumn of 1969, the School's initial set of programs included a Masters degree and a set of undergraduate course offerings that addressed:

- *Conservation and Outdoor Education*
- *Fisheries Management*
- *Forestry*
- *Park Administration and Outdoor Recreation*
- *Wildlife Management*

According to a history of the SNR prepared for the Centennial Celebration of OSU in 1970, "the programs of the School are designed to focus on the interaction of man's natural environment wherein social factors, science, and political practices are recognized as co-determinants. The goal is a holistic view of man in relation to his natural resources base." This shift away from single commodity science (forestry, fisheries, etc.) paved the way for a new paradigm of ecosystem function and management within the framework of the SNR.

Among the core courses established in 1969, Natural Resources 201, originally titled "Environmental Management and Man", was designed to meet the needs for a background course in conservation for prospective teachers, serve as a survey course for a variety of resource management fields, and provide an introduction to the environment for liberal arts majors. Interest in the environment continued to grow throughout the decades of the 1970s, 80s and 90s. In response, SNR developed a formal undergraduate program in Environmental Education and Interpretation in 1971, and a separate Environmental Science major was approved in 1993. Environmental subject matter remains a central thrust of academic programs in the School today where applied ecology, ecological restoration, natural resource conservation and management, outdoor recreation and tourism, and environmental policy are emphasized by our faculty.

In 1994, the College of Food, Agricultural, and Environmental Sciences was re-organized and the Department of Agronomy was dissolved. Soil Scientists associated with the Agronomy department were assimilated into the School of Natural Resources together with a graduate program that provided both MS and PhD degrees in Soil Science. In 1999, a statewide moratorium on new PhD programs was lifted, and an updated proposal for a PhD in Natural Resources was approved by the Board of Regents. The new PhD program was designed to provide for in-depth experience in developing and carrying out independent scholarly research in some area of natural resources, while insuring that each doctoral student developed an awareness of how his or her specialty area related to the larger picture of integrated natural resource management within a pluralistic and democratic society.

In November 2005, The Ohio State University Board of Trustees approved a request from the School faculty for a name change, and the School of Natural Resources became the School of Environment and Natural Resources. This name change was proposed to better indicate who we are, what we provide our students, and what we have been about throughout the history of our unit. In 2008, the name of the School's graduate program was also changed to reflect the name of the unit.

Since its inception in July 1968, twelve individuals have served as directors of Ohio State's School of Environment and Natural Resources. The diverse backgrounds, expertise, and experience demonstrated by these individuals are representative of the academic and real-world diversity of the School's multidisciplinary faculty, and exemplify the ranges of programming and opportunities available through the School. Each director has played a significant role in making the School what it is today by initiating, overseeing, and supporting program thrusts that have continued to evolve and blossom over the years. Today, the SENR is broadening its interdisciplinary leadership within the University, expanding its international reach, and strengthening its programs to meet and address the challenges of today's world.

Attribution: History of the School of Natural Resources, The Ohio State University Centennial Celebration (Columbus, Ohio: The Ohio State University). 1970.

Past SENR Directors

Charles A. Dambach
(1968-1969)

Robert W. Teater
(1970-1974)

Gordon E. Gatherum
(1975-1984)

Craig B. Davis
(1984-1988)

John F. Disinger
(acting director, 1988-1989)

Mohan K. Wali
(1990-1993)

Robert E. Roth
(acting director, 1993-1994)

Fred P. Miller
(1994-1998)

Gary W. Mullins
(1998-2004)

Jerry M. Bigham
(2005-2009)

Ronald L. Hendrick
(2009-2013)

School of Environment and Natural Resources Faculty, August 22, 2014.

Undergraduate Academics.

The School of Environment and Natural Resources (SENR) is an innovative and dynamic place to learn.

Our faculty and staff understand that the study of our environment is diverse and constantly changing. Therefore, it is our mission to educate our students to recognize the value of this evolving world and develop ways to ensure its health.

Graduates of our program receive an education that will enable them to understand environmental issues, lead those around them, and be competitive in a career landscape that is increasingly challenging and selective.

Our focus on the interactions between people and their environment sets us apart from other programs. An integrated foundation in both the natural and social sciences forms the basis for both what we do and what our students learn and put into practice.

Undergraduate Program

Students and teaching are a priority in the School of Environment and Natural Resources. The school is home to more than 650 undergraduates pursuing BS degrees in five environmental and natural resources (ENR) majors including:

- *Environment, Economy, Development and Sustainability*
- *Environmental Science*
- *Forestry, Fisheries and Wildlife*
- *Environmental Policy and Decision Making*
- *Natural Resources Management*

The SENR offers exceptional undergraduate education that prepares the next generation of leaders for careers in environment and natural resource-related fields. Undergraduate enrollment in SENR continues to grow.

SENR undergraduate students receive a comprehensive educational experience including opportunities to engage in research with faculty mentors, hold internships with local, state and national organizations, study abroad to discover and learn about environmental sustainability, and the opportunity to participate in extracurricular clubs or organizations to enhance their leadership skills.

An outstanding Student Services Team provides academic and career counseling and administers a campus-wide Environment and Natural Resources Scholars program for high ability students of all majors with an interest in environmental and natural resource issues.

Undergraduates earning a BS degree in one of SENR's five majors pursue and are placed in careers such as natural resource specialists for the Ohio Division of Wildlife, sustainability consultants for private firms, specialists or field technicians for city governments or pursue advanced degrees in fields such as environmental science, sustainable agriculture and community and regional planning.

166
NUMBER OF COURSES OFFERED

3350
NUMBER OF UNIQUE STUDENTS ENROLLED

46
NUMBER OF UNDERGRADUATE STUDENTS RECEIVING ENR SCHOLARSHIPS

NUMBER OF UNDERGRADUATE MAJORS OFFERED

119
NUMBER OF BS DEGREES AWARDED

Undergraduate Highlights

Graduate Program.

SENR hosts a vibrant and robust graduate program that provides Master of Environment and Natural Resources (MENR, professional degree), Master of Science (MS, thesis degree) and Doctor of Philosophy degrees in Environment and Natural Resources. Over 25 graduate level courses are offered within the School and over 100 masters' and doctoral graduate students are advised by SENR faculty each year.

Seven graduate specializations (focused areas of study) are offered to provide students with the broadest education within their specific interest area and to prepare the next generation of environmental and natural resource scientists and professionals to address critical environmental and natural resource issues.

Specializations offered include:

- *Ecological Restoration*
- *Ecosystem Science*
- *Environmental Social Sciences*
- *Fisheries and Wildlife Science*
- *Forest Science*
- *Rural Sociology*
- *Soil Science*

SENR attracts the brightest and most promising scholars. A substantial number of our graduate students are awarded University Fellowships. Many graduate students serve as Graduate Teaching Associates or Graduate Research Associates.

Our graduate students come from a wide range of academic backgrounds and work experience. They have opportunities to partner and interact academically, socially and professionally with peers, faculty, and professionals through multiple organizations and events in the School, university and community.

Boniface Massawe, an iAGRI sponsored doctoral student in SENR analyzing soil samples from the Kilombero Valley, Tanzania.

Graduate Awards/Recognitions

Recipient of National Science Foundation East Asia and Pacific Summer Institute (EAPSI) fellowship: 1

Selected as U.S. Borlaug Fellow in Global Food Security, by the U.S. Agency for International Development (USAID): 1

Selected as CULTIVAR participant in United States Department of Agriculture (USDA) - National Institute of Food and Agriculture (NIFA): 1

Recipients of Ohio Agricultural Research Development Center's SEEDS award: 2

6
PHD DEGREES AWARDED

25+
GRADUATE LEVEL COURSES OFFERED

21
MS DEGREES AWARDED

NUMBER OF SPECIALIZATIONS OFFERED

85
NUMBER OF GRADUATE STUDENTS WITH TEACHING OR RESEARCH ASSISTANTSHIP

18
GRADUATE STUDENTS ENROLLED WITH FELLOWSHIP FUNDING

Graduate Highlights

MAZEIKA SULLIVAN

Associate Professor, School of Environment and Natural Resources

2014 ALUMNI AWARD FOR DISTINGUISHED TEACHING

RENEE JOHNSTON

Academic Program Manager, School of Environment and Natural Resources

2014 COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES AWARD FOR OUTSTANDING SERVICE TO STUDENTS

BRIAN LOWER

Associate Professor, School of Environment and Natural Resources

2014 RODNEY F. PLIMPTON OUTSTANDING TEACHER AWARD

JOSEPH DONNERMEYER

Emeritus Professor, School of Environment and Natural Resources

2013 OHIO STATE ACADEMY OF TEACHING FOUNDER'S AWARD

Research.

The School of Environment and Natural Resources boasts a dynamic research portfolio that integrates the natural and social sciences within the context of natural resource use and management for a sustainable environment. The School's research initiatives are organized into centers and laboratories with multidisciplinary faculty memberships. A few notable examples include: the Carbon Management and Sequestration Center; Terrestrial Wildlife Ecology Laboratory; Environmental and Social Sustainability Lab; and Forest Ecosystem Restoration and Ecology Lab.

Examples of major research themes include:

- *Urban wildlife ecology*
- *Aquaculture and fisheries management*
- *Human behavior and decision making in environmental policy*
- *Carbon sequestration and global climate change*
- *Forest ecosystem and watershed restoration*
- *Sustainable agro-ecosystems*
- *Soil ecology*
- *Land remediation and by-product utilization*
- *Wetland and riverine restoration*
- *Rural and environmental sociology*
- *Rural-Urban interface food production*
- *Coupled human and natural systems*

Research Facilities

Research facilities include managed field sites at the Ohio Agricultural Research and Development Center in Wooster, Ohio, and at nine outlying stations; classrooms, laboratories and offices in Kottman and Parker Halls on the Columbus campus and laboratories and offices in Williams and Hayden Halls on the Wooster campus; and the 30-acre Schiermeier Olentangy River Wetland Park on the banks of the Olentangy River in Columbus.

$4.0 million generated through sponsored research for fiscal year 2013.

Extension/Outreach Programs.

The School of Environment and Natural Resources delivers high quality, accessible education programs on critical environmental and natural resource issues.

SENR staff, students and faculty make a focused effort to educate and connect to individuals in our surrounding communities through these various programs.

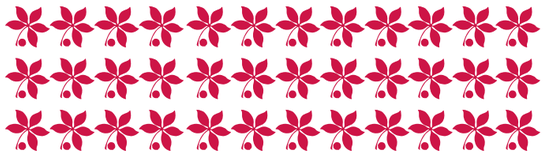
Led by faculty and staff, our Extension/ Outreach program areas include:

- *Agriculture, Food & Society*
- *Children & Youth*
- *Community, Environment & Development*
- *Environmental Professionals Network*
- *Forestry*
- *Healthy Streams & Watersheds*
- *Invasive Species*
- *Ohio Certified Volunteer Naturalist*
- *Ohio Environmental Leaders Institute*
- *Lake States Fire Consortium*
- *Ponds, Fisheries, and Aquatic Management*
- *Soils*
- *Wildlife & Wildlife Education*

OSU Extension faculty and staff often collaborate with a diverse array of individuals, communities, businesses and organizations to promote the conservation and management of our natural resources. SENR also partners with local and state government organizations, as well as private industry to develop environmental and natural resource tools, programs, plans and policy.

ABOUT THE SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES

Faculty



NUMBER OF FACULTY: 36

150+

NUMBER OF SCHOLARLY ARTICLES PUBLISHED

Extramural Research Funding

$4,000,000

Staff

76

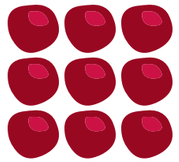
NUMBER OF RESEARCH, TEACHING AND ADMINISTRATION STAFF

Alumni

6000

NUMBER OF ALUMNI

Undergraduate Research



NUMBER OF ENR STUDENTS PARTICIPATING IN DENMAN UNDERGRADUATE RESEARCH FORUM

Graduate Students

GRADUATE STUDENTS ENROLLED WITH FELLOWSHIP FUNDING

Teaching and Research Locations

SENR COLUMBUS

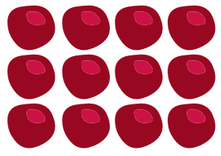
SENR WOOSTER

WILMA H. SCHIERMEIER OLENTANGY RIVER WETLAND RESEARCH PARK

Events

24

NUMBER OF SENR SEMINARS HOSTED



NUMBER OF ENVIRONMENTAL PROFESSIONALS NETWORK BREAKFASTS

250

NUMBER VOLUNTEERING AT PAY IT FORWARD AT SCHIERMEIER WETLANDS

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES

By the Numbers

Making a Difference.

Through the generosity and support of our donors we are able to enhance the quality of the undergraduate and graduate experience in the School of Environment and Natural Resources (SENR).

Scholarships

The School of Environment and Natural Resources through the generosity of our donors provides scholarships for high achieving students. Our scholarships are based on academic record, leadership skills, financial need, and major. For the 2013 and 2014 academic years eighty-six SENR scholarships were awarded to School of Environment and Natural Resources undergraduate students representing all of our majors. Two scholarship recipients share the impact of donor support and generosity.

Buford M. and May Scott Teater Scholarship helps student prepare for career of his dreams

Ethan Rhodus, a native of Dublin, Ohio, and rising junior majoring in Natural Resource Management in the School of Environment and Natural Resources (SENR) is a recipient of the Buford M. and May Scott Teater Scholarship. Ethan is an Honors student, a member of ENR Scholars and is engaged in Growing Green, a campus group that works collaboratively with Columbus City Schools to combine environmental science curriculum with fun, hands-on gardening experiences. Ethan also serves as an Ambassador for the SENR and participates actively in programs at The Ohio State University Outdoor Adventure Center. Ethan aspires to work for an outdoor skill and leadership organization and has a strong desire to positively impact people and enhance their relationship with the outdoors.

Ethan is grateful for the flexibility the scholarship provides. He notes, “The scholarship allows me to fully focus on preparing for my future career and to take advantage of many more learning and leadership development experiences in outdoor education that otherwise, I may not have been able to, if I was working.” In fact, Ethan is well on his way to the career of his dreams and most recently has become certified in fighting wilderness fires, which will prepare him to both teach about fire and work directly fighting them.

Ethan Rhodus, undergraduate majoring in Natural Resource Management and recipient of the Buford M. and May Scott Teater Scholarship (607142).

The Nikki Meifert Memorial Fund helps student to stay engaged and hone research skills

Meghan Parsley, a native of Hilliard, Ohio, and senior majoring in Forestry, Fisheries and Wildlife in the School of Environment and Natural Resources (SENR) is the 2014-2015 recipient of the Nikki Meifert Memorial Fund Scholarship. Meghan serves in a number of leadership roles, including President of the Evolution and Ecology Club at The Ohio State University. She serves as an Ambassador for both the SENR and for the College of Food, Agricultural, and Environmental Sciences. She is a member of Alpha Zeta Partners, a professional honorary fraternity for men and women who have an interest in the broadly defined field of agriculture.

Meghan has volunteered and completed a number of internships related to her major, including working with conservation organizations. She recently completed an internship working with Asian avian and mammal species at the Columbus Zoo and Aquarium. She currently conducts independent research on salamander genetics in the Department of Evolution, Ecology, and Organismal Biology at The Ohio State University. Cumulatively, these leadership and research experiences have shaped Meghan’s desire to pursue a graduate degree in conservation biology.

On the impact of the scholarship, Meghan shares a benefit has been being able to stay involved in organizations and leadership roles, while also developing her research interests and skills. Something she says may not have been possible if she also had to formally work. She notes, “The scholarship has allowed me to afford school, while also maintaining my active academic schedule.” For that, she is thankful.

Meghan Parsley, undergraduate majoring in Forestry, Fisheries and Wildlife and recipient of the Nikki Meifert Memorial Scholarship Fund (604840).

New Gift of $500,000 to the College of Food, Agricultural, and Environmental Sciences will help both natural resources students and in-career professionals.

The gift from Mrs. Teater, a retired Franklin County Commission member, and four sons establishes the Dr. Robert W. Teater Endowed Fund (647128), named after her late husband, a director of the Ohio Department of Natural Resources for eight years. Before that, Dr. Teater served as director of Ohio State University's School of Environment and Natural Resources. The endowed fund will provide scholarships for natural resources professionals or other mid-career students who want to pursue a degree or take additional coursework in the School of Environment and Natural Resources. Furthermore, it will provide program support for undergraduate and graduate interns working on projects in partnership with natural resources professionals. It will also support SENR professional development outreach and educational programming for natural resources professionals.

Learn more about this fund by visiting: *http://cfaes.osu.edu/news/articles/500000-gift-from-dorothy-teater-creates-new-cfaes-endowment*

Make a Gift Today

Are you interested in making a tax-deductible gift to The Ohio State University and would like it to directly benefit the students and programs of the School of Environment and Natural Resources (SENR)? Consider directing your gift to one of these funds:

SENR Innovation Fund (314748)

Funds shall be used at the discretion of the Department Chair to provide support for strategic initiatives within the School of Environment and Natural Resources that drive the mission of the School. With generous support from donors to this fund we have been able to support instructional activities to advance natural resources education. In particular efforts to increase experiential opportunities have grown for students. Through this support SENR has also been able to deepen and foster relationships with community partners.

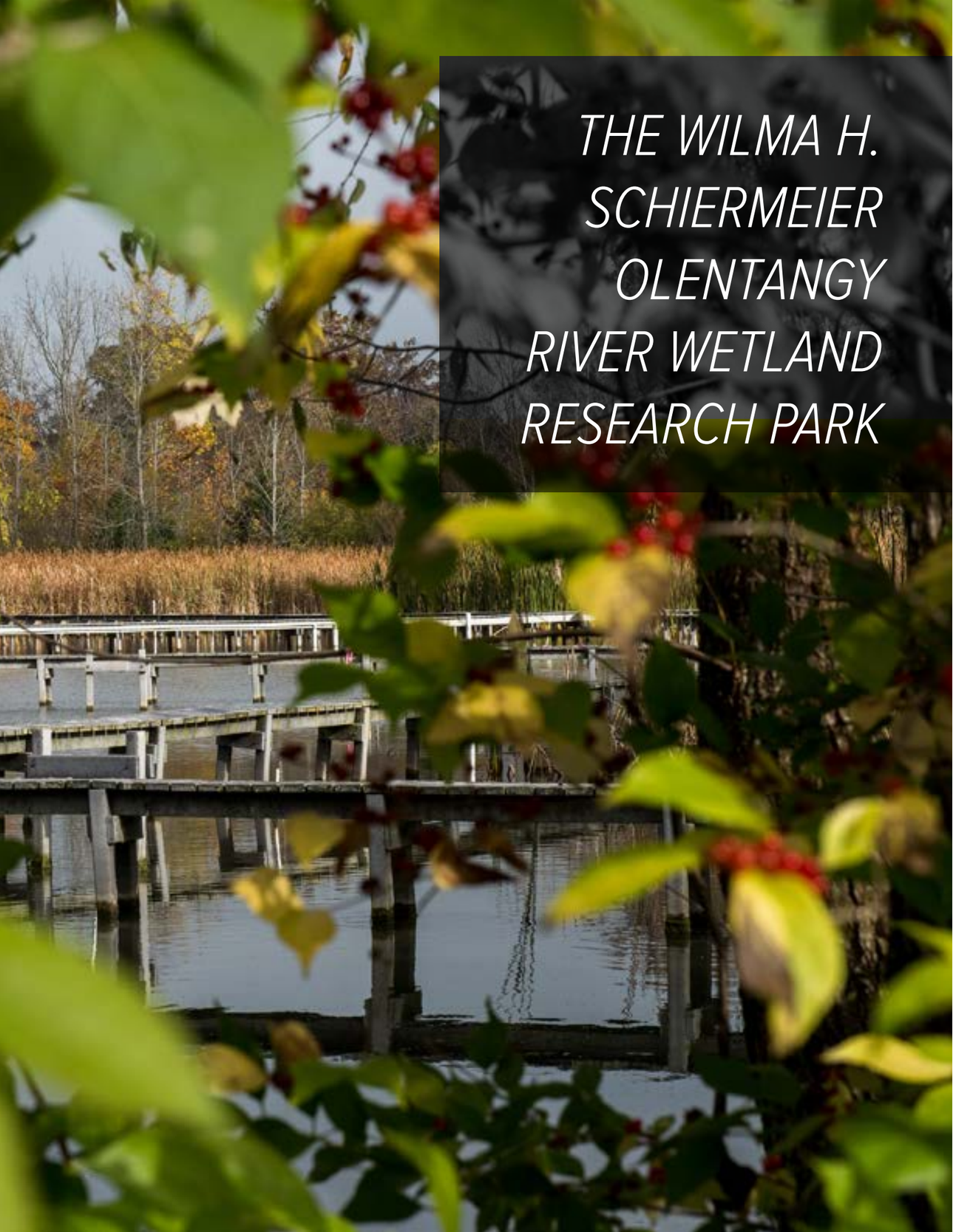
Barnebey Family Scholarship Fund (600329)

Established June 2, 1995, with proceeds of the Barnebey Center sale. Income provides graduate/undergraduate scholarships in the School of Natural Resources and student oriented endeavors of significance to the School's progress.

The Fred P. Miller Soil Science Program Fund (664987)

Established June 7, 2005, by Dr. Miller through The Foundation. Distribution enhances the quality of undergraduate and graduate experiences in soil science.

To make a gift to one of these funds or to search for another SENR area to support, visit: *https://www.giveto.osu.edu/makeagift/*



THE WILMA H. SCHIERMEIER OLENTANGY RIVER WETLAND RESEARCH PARK

Home to the School of Environment and Natural Resources' aquatics program and a gateway to research, teaching and outreach on water resources at the university the Wilma H. Schiermeier Olentangy River Wetland Research Park is a long-term, large-scale aquatic research facility located along the northern edge of The Ohio State University's Columbus campus. This vast 52-acre urban research site is situated adjacent to the Olentangy River and consists of two experimental wetland basins, an oxbow wetland, bottomland hardwood forest and a mesocosm compound. The robust Heffner Teaching and Research Building located on the site includes analytical and teaching laboratories, a wet laboratory, flexible classrooms, offices and meeting spaces.

The Schiermeier Wetlands facilities serve the SENR community on a variety of levels. In these facilities, researchers can pursue basic and applied research at multiple levels of ecological organization, from microbes to ecosystems to landscapes. The Schiermeier Wetlands also provide hands-on education and training for undergraduate and graduate students, offering them a chance to serve the community through environmental outreach and extension. Through these activities, the Schiermeier Wetlands play an essential role in developing science-based solutions to critical issues in water resource management, restoration and conservation.

Research Highlights

Research activities at the Schiermeier Wetlands continue to expand throughout the university with eleven active projects in 2014 engaging 5 academic units and government agencies. Current research covers a broad spectrum of study areas within freshwater and riparian environments including:

- *Greenhouse gas emissions (Department of Civil, Environmental and Geodetic Engineering – Ohio Water Development Authority)*
- *Influence of dam removal on aquatic ecosystems (SENR – Ohio Division of Natural Resources, National Science Foundation, U.S. Geological Survey, Ohio Water Development Authority)*
- *Native Ohio fish conservation through propagation and reintroduction (SENR – Ohio Division of Natural Resources)*
- *Rate of Bacteria uptake within wetlands (Public Health)*
- *Aquatic to terrestrial contaminant flux in the Scioto River Basin (SENR – Ohio Agricultural Research and Development Center)*

Teaching and Outreach Highlights

Teaching at the Schiermeier Wetlands provides an opportunity for instructors to access a unique space with proximity to both the wetlands and the Olentangy River. The Heffner Teaching and Research Building and Schiermeier Wetlands are utilized by a growing number of instructors at The Ohio State University for lecture and lab activities.

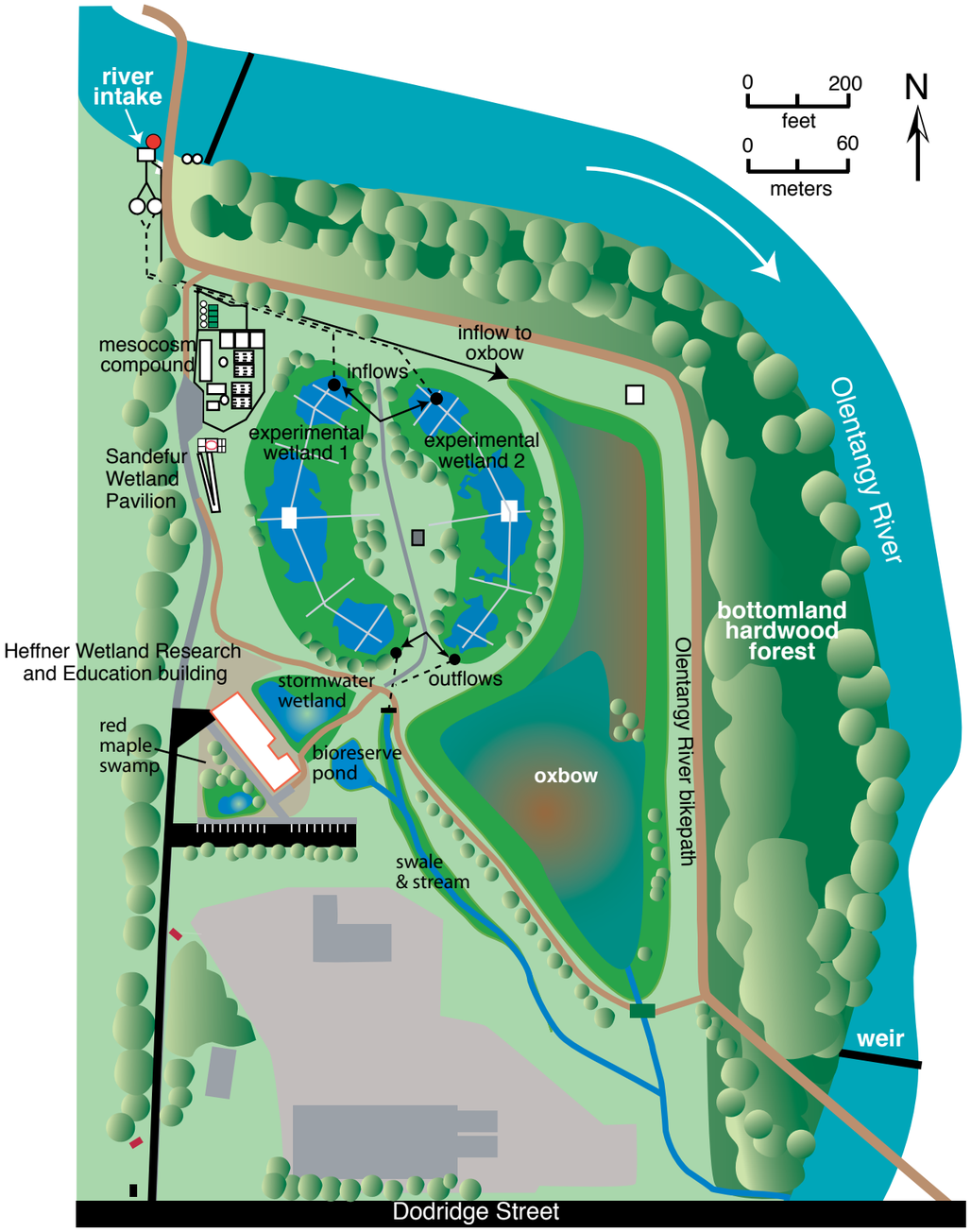
In 2013 and 2014, nearly 1,300 Ohio State students were enrolled in a course either formally scheduled at the Schiermeier Wetlands or utilized by an instructor for a lecture or lab activity. During these years, the Schiermeier Wetlands were enjoyed by over 3,300 individuals through tours and outreach activities, including university-sponsored days of service. The Schiermeier Wetlands also served as an outreach site for youth from local communities. For example, in June, the "Day in the River" event was held for St. Joseph's 7th and 8th grade STEM camp students, with students participating in science-based, hands-on activities in the field associated with National Science Foundation research.

Courses Offered:

- *Stream Ecology*
- *Methods in Aquatic Ecology*
- *Wetland Ecology and Management*
- *Taxonomy and Behavior of Aquatic Invertebrates*
- *Ecological Engineering*

St. Stephen's STEM camp students visit the wetlands for a water science day (June 18, 2014). Photo credit: Grace Debbeler

Faculty and graduate students sampling emergent aquatic insects to understand ecosystem changes related to dam removal on the Olentangy River. This research is funded by the National Science Foundation, the Ohio Department of Natural Resources (Division of Wildlife), and the Ohio Water Development Authority. Shown left to right: Alayna Dorobek (MS student), Mazeika Sullivan (associate professor), Paradzayi Tagwireyi (former PhD student, finished in May 2014).



The Schiermeier Olentangy River Wetland Research Park.

CONNECTING OUR COMMUNITY

ENVIRONMENTAL PROFESSIONALS NETWORK (EPN)

Coordinated by David Hanselmann, the Environmental Professionals Network (EPN) is a service of SENR. This network connects environmental professionals both in-person and online. EPN hosts monthly breakfast programs focused on innovative and pressing environmental topics, such as: controlling nutrient runoff and protecting water quality, achieving clean energy goals, and pests and invasive species.

Through this network, participants also have free access to many online networking capabilities, such as marketing, querying, information sharing, and more. Participants are also encouraged to create and share content such as job postings, documents, reports and event announcements.

Highlights of EPN's second year (2013-2014):

- *Attained milestone of 1200 online participants*
- *Maintained average breakfast attendance of over 100*
- *Saw additional collaborations from EPN participant networking*
- *Achieved greater use of EPN online networking capabilities*
- *Co-sponsored events, including a Columbus Metropolitan Club infrastructure-related lunch*
- *Co-sponsored the new Environmental Career Ambassador program*
- *More than 20 sponsors and supporters of the EPN Breakfast*

Over 800 people attended the April EPN breakfast featuring Jack Hanna: The Columbus Zoo and OSU – Partners in Sustainability and Biodiversity.

Environmental professionals gather monthly for breakfast programs on innovative and pressing environmental topics.

ALUMNI CONNECTION AND ENGAGEMENT

The Environment and Natural Resources Alumni Society (ENRAS) is a non-profit society affiliated with The Ohio State University Alumni Association. ENRAS is comprised of SENR graduates and promotes the following:

- *Advancing the professions in the field of natural resources.*
- *Augmenting the educational and career development of graduates, students, and others associated with the School.*
- *Promoting the growth and development of the School as well as its students, faculty, staff and alumni.*

The Alumni Connection, a bi-annual newsletter, launched in the fall of 2013 with the goal of connecting over 6,000 SENR alumni and friends. Led by the Executive Council of the Environment and Natural Resources Alumni Society (ENRAS), the newsletter and website serves as the go-to destination for news and updates on the activities of SENR alumni. The newsletter recognizes alumni achievements and contributions, provides updates on alumni relations and seeks to strengthen engagement of alumni with the school and the College of Food, Agricultural, and Environmental Sciences.

In early 2014, ENRAS in collaboration with the SENR Coalition of Student Organizations (CSO) organized and hosted the SENR Career Boot Camp event held at the Nationwide and Ohio Farm Bureau 4-H Center. The Career Boot Camp brought together students and alumni for a panel discussion on career development and the various environmental and natural resource opportunities available to future graduates. The Panelists represented each of SENR's five majors. Students also had the opportunity to network with SENR alumni in breakout sessions where they visited about career pathways and important steps to future employment opportunities.

The 2014 Career Bootcamp brought together students and alumni to learn about career opportunities.

GROWING LEADERS AND CULTIVATING SCIENTISTS

ENVIRONMENTAL SCIENCE SYMPOSIUM

Led by SENR faculty members Brian and Steven Lower and reaching students across the university, the Environmental Science Student Symposium introduces students to the scientific process and exemplifies what it means to be a scientist. Students enrolled in ENR 2100 – Introduction to Environmental Science present thier scientific research findings to both their peers and the public through a poster design at this symposium. The symposium is held annually at the Ohio Union on the campus of The Ohio State University and features over 600 student presentations. These posters range across hundreds of topics in environmental science. Appealing to a wide variety of students, seventy different majors were represented at the latest symposium.

ENR 2100 is an introductory class for both science and non-science majors at The Ohio State University (OSU) co-instructed by Brian Lower, associate professor in the SENR and Steven Lower, a professor in the SENR and the School of Earth Sciences.

ECOLOGY

FOSSIL FUELS

FRESHWATER

Top Poster Topics

Ecology	2013: 353 POSTERS 2014: 390 POSTERS
Fossil Fuels	2013: 112 POSTERS 2014: 129 POSTERS
Freshwater	2013: 99 POSTERS 2014: 110 POSTERS

OHIO ENVIRONMENTAL LEADERS INSTITUTE

Coordinated by Extension Program Directors Joe Bonnell and Anne Baird, the Ohio Environmental Leaders Institute (OELI) – Learn, Lead, Partner for a Sustainable Ohio brings environmental professionals and policy makers together to learn the skills they need to deal with complex and often controversial environmental and natural resource issues through collaborative, integrative, and inclusive planning and decision-making processes.

Participants over a period of several months engage in face-to-face workshops, attend lively presentations and site visits and engage in interactive skill-building exercises and discussion.

The OELI continues to thrive and to date has had approximately 100 individuals participate in at least one OELI event.

Notable impacts of the program include:

- *Increases in collaboration skills and networking*
- *Gains in the areas of knowledge of environmental sustainability and leadership*

Ohio Environmental Leaders Institute participants.

MICROTROP 2014

MicroTrop 2014, a one month intensive course in Senegal for early career scientists, provided advanced training in tropical soil microbiology and classical and state of the art metabolic and molecular methods. This opportunity was made possible as part of a $2.6M National Science Foundation Project directed by Professor Richard Dick and with the additional support of other funding agencies.

Through lectures, round table discussions and field excursions, participants were exposed to the potential role of microbial ecology research for delivering solutions to the environmental and agricultural challenges of a developing country.

Twenty advanced PhD students and early-career researchers participated in the course from the United States and African countries of Benin, Burkina Faso, Cameroon, Ivory Coast, Kenya, Madagascar, Senegal and Zimbabwe.

MicroTrop 2014 participants donning their new lab coats.

The training was led by internationally known soil scientists and microbiologists, including OSU Professors Richard Dick, School of Environment and Natural Resources, Brian McSpadden Gardener of OARDC, and John Reeve, Microbiology. Also contributing were scientists representing nine institutions from the United States, Africa, and France.

MicroTrop 2014 was organized by collaboration between The Ohio State University, Drs. Lydie Lardy and Sebastien Barot of the French Institut de Recherche pour le développement (IRD), Dr. Claire Marsden of the French Montpellier SupAgro School, and Dr. Saliou Fall of the Senegalese Institute for Agricultural Research (ISRA).

Participants toured the small farmer vegetable production and environmental pollution remediation project on the edge of Dakar. Forty percent of the vegetables sold in Dakar come from the gardens that use recycled, treated waste water.

UNDERGRADUATE RESEARCH

Undergraduate Research

SENR encourages and supports broad and diverse undergraduate research experiences. There are a variety of ways students can engage and contribute to research. Students work in SENR laboratories, present at scholarly forums, and work with faculty mentors to plan and conduct individualized research.

The Denman Undergraduate Research Forum

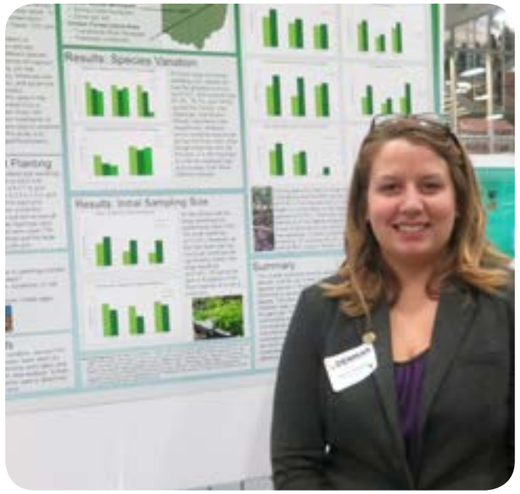
The Denman is an opportunity to showcase outstanding student research at The Ohio State University.

This forum is a cooperative effort between Ohio State's Undergraduate Research Office, the University Honors & Scholars Center, and the Office of Research.

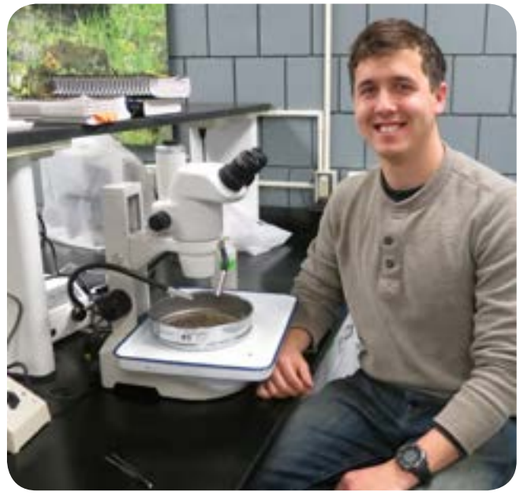
SENR undergraduate researchers were well represented at the 2014 Denman Forum with 9 students participating. Out of 43 posters in the agriculture/environmental science category, SENR undergraduate researchers Rachel Hefflinger and Elisabeth Nadler's posters were awarded top honors.

The OARDC SEEDS: Director's Undergraduate Research Competition

The OARDC SEEDS: Director's Undergraduate Research Competition is designed to provide undergraduate students with in-depth research experience and to stimulate faculty-undergraduate collaborations and mentoring of students by Ohio State University faculty.



Rachel Hefflinger, a Forestry, Fisheries and Wildlife student was awarded 2nd place in the agriculture/ environment category for her poster, "Examining the Short Term Effects of Restoration Plantings on Emerald Ash Borer Infested Flood Plains" at the 2014 Denman Undergraduate Research Forum.



Jim Palus, a junior majoring in environmental science in the School of Environment and Natural Resources received a 2014 OARDC SEEDS grant for his research proposal, "Effect of N:P ratio on cyanobacterial dominance."

CREATING SCIENCE-BASED KNOWLEDGE

Science-Based Knowledge.

The School's research portfolio includes broad support from federal and state agencies, private industry, and foundations.

2013 Fiscal Year Research Funding Highlights

Richard Moore, Rattan Lal, Warren Dick and Kristi Lekies, funding of $616,480.00 for continued support of "Climate change, mitigation, and adaptation in corn based cropping systems"

Richard Dick, Mark Erbaugh, Ken Martin, Steven Neal and Emilie Regnier, additional funding of $455,877.00 to support "Development of agronomy and crop production academic programs, research, and need based extension programs for sustainable food production in the Senegal"

Elizabeth Dayton, funding of $362,620.00 for her project "Beneficial use of alum sludge research and development of general use permit framework"

Stan Gehrt, funding of $180,000.00 for his project "Predator ecology in the Chicago area"

Associate Professor Stan Gehrt leads the Cook County Coyote Project/Urban Coyote Research Program.

Nicholas Basta, funding of $176,745 for "Risk pathway approach to evaluating health effects from coal mining in Appalachian communities: Identification of potential exposure pathways"

Mazeika Sullivan, funding of $167,455.00 for his project "Influence of dam removal on aquatic ecosystems contamination"

Professor Warren Dick leads the Soil and Environmental Biochemistry and Microbial Ecology Lab.

Warren Dick, funding of $406,181.00 for his project "Beneficial uses of FGD gypsum in Ohio: agricultural and environmental applications"

Charles Goebel, David Hix, Eric Toman and Robyn Wilson, funding of $149,657.00 to support "Fire science network and delivery system for fire dependent ecosystems of the northern Lake States"

Linda Lobao, Mark Partridge and Gregory Hooks, funding of $143,371 for "Collaborative research: Places, poverty and state capacity: Local state responses to recession and socioeconomic well-being, 2001-2012"

Elizabeth Toman, Eric Toman and J. Lee, funding of $109,695 for "Surface water quality and ecosystem health with shale energy development"

Research Publications

Faculty, staff and graduate students publish their research findings in prominent journals in their fields, including:

Advances in Agronomy
Behavioral Ecology and Sociobiology
Conservation Letters
Ecological Engineering
Biological Conservation
Frontiers in Ecology and the Environment
Global Change Biology
Global Change Biology Bioenergy
Forest Ecology and Management
Microbial Ecology
Aquatic Sciences
Frontiers in Microbiology
Journal of Ornithology
Soil Biology and Biochemistry
Applied Soil Ecology
PLOS ONE

Research findings are also presented at local, national and international professional meetings throughout the year.

Assistant Professor Kris Jaeger assembling a core sediment sampler to take a core of the streambed sediment.

Research Making Headlines

The Columbus Dispatch Environment section (8/7) features research conducted by Research Scientist Libby Dayton "Phosphorus contract efforts have slipped as algal problems grow."

Ohio State Alumni Magazine's Innovation section (May/June) highlights Associate Professor Jeremy Bruskotter's research study examining the federal government's proposal to discontinue protection for the gray wolf in the article, "Plan to end wolf protection endangers other species."

Research Scientist Libby Dayton is gathering and organizing science-based data so farmers can easily use it to help improve water quality.

The Boston Globe's Ideas section (5/6) features "How to solve climate change with cows (maybe)" and includes quotes from Professor Rattan Lal on his research related to soil carbon sequestration.

The Columbus Dispatch Science section (4/27) features research conducted by faculty members Mazeika Sullivan and Kristin Jaeger in the article, "Reborn Olentangy becomes OSU Lab."

The Farm and Dairy (3/21) features "Shale industry: Bringing change to eastern Ohio" research conducted by Research Associate Joe Campbell.

The National Oceanic and Atmospheric Administration (NOAA) features on its' website (2/18) Research Scientist Libby Dayton's research on reuse of dredge material.

The Chicago Sun-Times Voices article, "Chicago coyotes on the streets — and on TV (video)" discusses Associate Professor Stanley Gehrt's research in PBS's 'Nature' show Meet the Coywolf (airing 1/22).

The Columbus Dispatch article, "Feral Cats Create a Stir at Newark Trailer Park" (10/28) features a quote by Stanley Gehrt, wildlife ecologist.

The article "Light pollution takes a toll on the aquatic food web" (9/25) from the Science News blog Wild Things features research of Associate Professor Mazeika Sullivan.

Scientific American magazine article, "Wild animals of all stripes are adapting to the cityscape and thriving" (9/22) features a quote by Wildlife Ecologist Stanley Gehrt drawing on research he conducts on coyotes.

Science magazine article (9/20), "Predators in the 'Hood" highlights research conducted by Stanley Gehrt, wildlife ecologist on coyotes spread across the landscape into natural areas in cities.

Research Recognitions

Professor Rattan Lal was chosen as one of the first Global Dryland Champions by the United Nations Convention to Combat Desertification. The honor recognizes "those who have made outstanding contributions to our efforts for achieving a land-degradation-neutral world."

Professor Lal was recognized at a dinner hosted by the Namibian government during the 11th session of the Conference of the Parties to the UNCCD in Windhoek, Namibia, September 23, 2013.

Distinguished University Professor Rattan Lal. Professor Lal is the director of the Carbon Management and Sequestration Center and has been recognized by Thomas Reuters: 2002-2013 as one of the World's Most Influential Scientific Minds.

SPREADING KNOWLEDGE AND ENGAGING CITIZENS

SENR SEMINAR SERIES

The SENR Seminar Series, led by a committee of faculty and students host a public seminar that is also part of ENR 8980 during the autumn and spring academic semesters. Carefully selected seminar speakers address a variety of topics that are relevant to the major environmental problems and natural resource management issues of our day. A variety of experts present information from a diverse range of fields; from the humanities and social sciences, to traditional resource management disciplines, to the biological and physical sciences. The program includes opportunities for interested parties to meet, both formally and informally, with speakers before and after their presentations.

Nearly 25 seminars were organized and delivered during Autumn 2013 and Spring 2014 semesters. Seminars are recorded and made accessible to the public in an online archive maintained on the school's website.

Seminar Series Titles for Autumn 2013 and Spring 2014

Birthright: People and Nature in the Modern World

A Theoretical Framework for Analyzing Hydraulic Fracking Policy

Ecological Thresholds in Human-modified Landscapes

Civil Society and the Collaborative County

Improving Soil Maps by Data Mining Existing Soil Surveys

Assessing and Managing Soil Quality for Urban Agriculture

Decision Aiding in Difficult Contexts: Insights from Research in the Developed and Developing World

The Second Ohio Breeding Bird Atlas: Citizen Science Reveals 25-year Changes in Bird Populations

Confronting the Ethical Dimension of Conservation and Sustainability

Native Predators, Invasive Prey and the Effects of Individual Variation on Biological Invasions

Thinking Like an Environmental Citizen: The Evolution of Aldo Leopold's Public Writing About Game Management

Is there a Role for Restoration when Fuel Reduction is a Management Objective in Fire-dependent

Forest Ecosystems? Lessons from the Northern Lake States

From Analog to Digital: A Lifetime in Ecology and Environmental Science

State of Energy and the Environment at Ohio StateWildfire and Stream-Riparian Food Webs in the American West

Columbus Zoo, the Wilds, and OSU: A New Collaboration to Advance Conservation Science

Inequality and Climate Change: Vulnerability, Responsibility, Action

Conservation of Northern Bobwhites: A Technical Problem or Adaptive Challenge for Wildlife Management?

The Role of Tropical Agroforestry in the Ecology and Conservation of Flocking Andean Birds

Communicating Environmental Risks: The Effects of Message Frame on Risk Mitigating Behavior

Riverine Food Web: Theory and Application in Managed Systems

*The New Jewish Food Movement: Reflections on its First Ten Years**

Ecological Restoration as Public Spiritual Practice

Fish Biodiversity in a Changing World

**Co-sponsored by the Melton Center for Jewish Studies with support by the Gretel Bloch fund, Agroecosystems Management Program, Office of Student Life, Multicultural Center and Energy Management & Sustainability department, OSU Hillel, and Ohio Interfaith Power and Light.*

FORESTRY AND WILDLIFE PROGRAMMING

The Ohio Woodland Stewards Program is made possible by the work of SENR Extension professionals, Kathy Smith and Marne Titchenell, along with Extension colleagues in the field and other CFAES departments, and the Ohio Department of Natural Resources Divisions of Forestry and Soil and Water Conservation and the Ohio Forestry Association. The program offers and produces topical educational outreach to meet the needs of 340,000 private woodland owners across the state and their working partners.

The team develops and provides a variety of educational outreach on forestry and wildlife. The team produces the Ohio Woodlands, Water and Wildlife newsletter which is distributed three times per year. They offer numerous workshops each month on topics such as invasive species, tree and wood identification, wildlife conflict, bats and bat diseases, why trees matter, tree diagnostics and more. More than 50 demonstrations and talks at the Gwynne Conservation Area were offered during the 2013 Farm Science Review.

In 2013, two Extension factsheets were published and disseminated:

Managing for Bobwhite Quail in Ohio's Agricultural Landscape

Feral Swine in Ohio: Managing Damage and Conflict

In addition, the team partnered in the creation of the new early detection smart phone app. This app engages citizens in the Great Lakes region in the identification and reporting of suspected invasive species. The Great Lakes Early Detection Network (GLEDN) is free to download and is currently used by over 3000 individuals across the state. By using the app, citizens help to track invasive species in real time.

In additon, the team created and distributed a new identification poster to raise awareness of an invasive species, Kudzu, a climbing, entwining, and engulfing invader, in the spring of 2014.

In 2013, Ohio Woodland Stewards hosted the first state-wide invasive species conference for natural resource professionals on the OSU Mansfield campus.

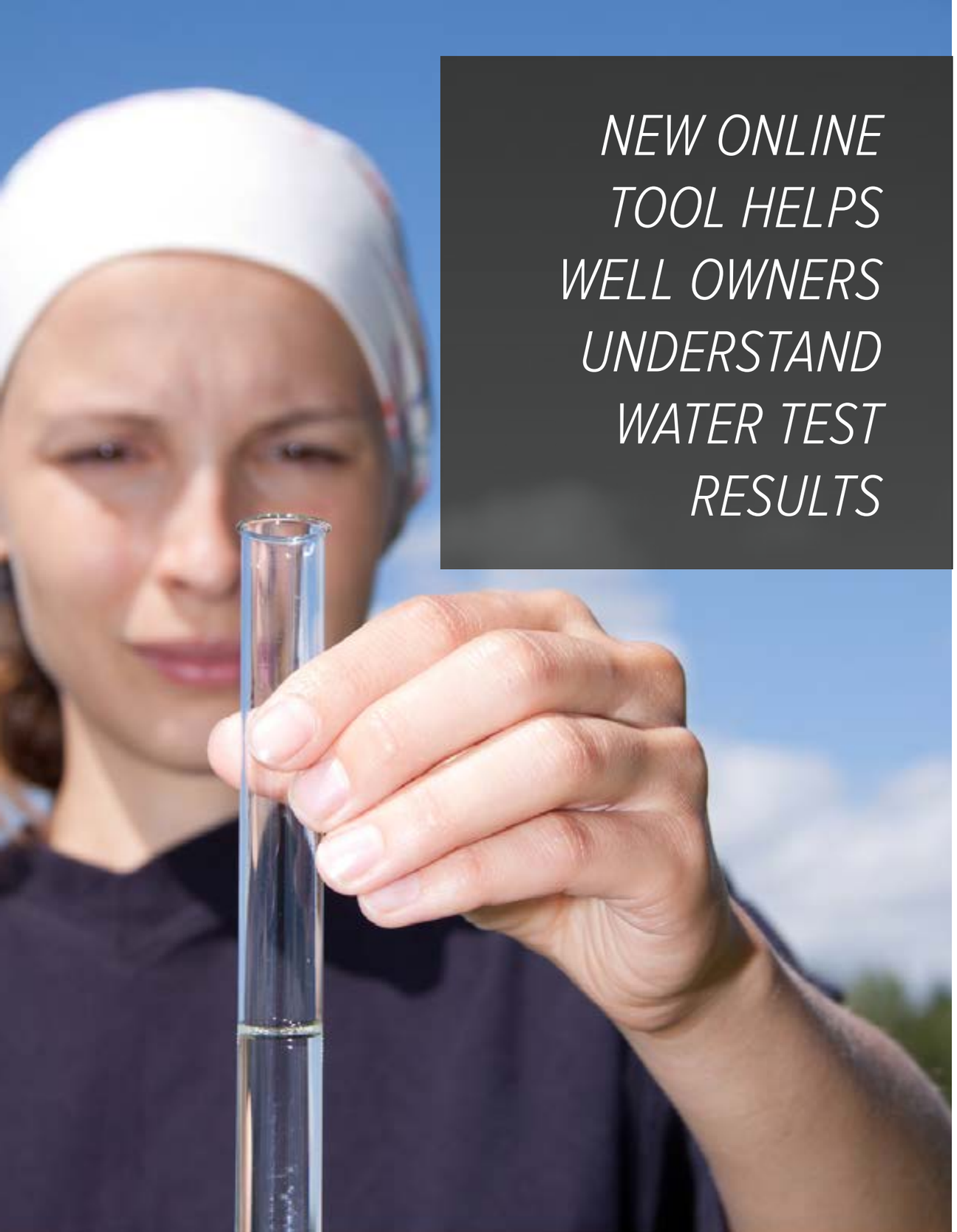
Made possible through team effort, the program averages 500 attendees each year to its programs with more than 68% of those being new to Extension programming. Participants leave the programs having aquired new and improved skills in how to properly sell their timber, identify their trees, set realistic objectives and goals, and deal with invasive plants. This knowledge has the potential to improve the future health and productivity of their woodland acreages.

ENHANCING FIRE SCIENCE DELIVERY

The Lake States Fire Consortium is one of 14 national knowledge-exchange consortia funded by the Joint Fire Science Program

Founded and led by SENR faculty, the Lake States Fire Consortium seeks to improve the effectiveness of forest management and restoration. This consortia currently delivers the best available fire-science information to over 430 fire and resource managers across the Lake States Region, including portions of Minnesota, Wisconsin, Michigan, Illinois, Indiana, Ohio, Pennsylvania, and New York, as well the Canadian provinces of Manitoba and Ontario. The consortia is composed of the U.S. Fish and Wildlife Service, U.S. Forest Service, National Park Service, Bureau of Indian Affairs, state and provincial Department of Natural Resources, The Nature Conservancy and others. These efforts will ultimately improve environmental quality and ecosystem health across the Lake States Region and reduce the potential risk of catastrophic wildfire.

The Lake States Fire Consortium delivers the best available fire-science information to over 430 fire and resource managers across the Lake States region.



NEW ONLINE TOOL HELPS WELL OWNERS UNDERSTAND WATER TEST RESULTS

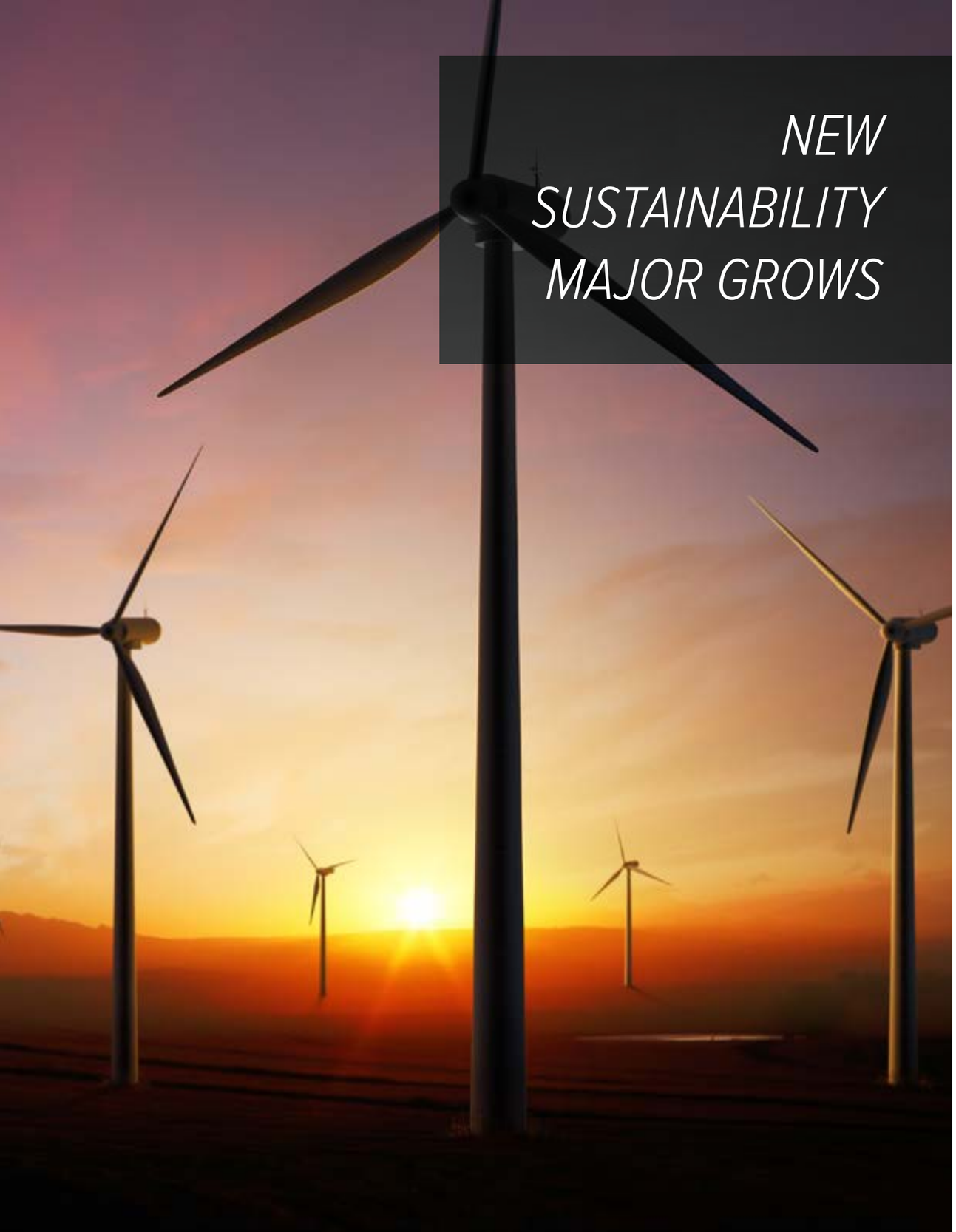
Private well owners are encouraged to have their well water tested regularly. A new online tool has recently been developed to help these owners decipher their lab results. Partnering to bring the new tool to fruition are OSU Extension, Ohio Department of Health and the Ohio Environmental Protection Agency. In the spring 2013, this free online Well Water Interpretation Tool was made available via the OSU Extension's Ohio Watershed Network's website (http://ohiowatersheds.osu.edu, click on "Know Your Well Water"). The Ohio Watershed Network is coordinated by Extension program directors Joe Bonnell and Anne Baird of the School of Environment and Natural Resources.

This comprehensive website helps well-owners test their well water, understand the results, and protect their well water and groundwater resources for the future.

The School of Environment and Natural Resources offers a range of Extension/Outreach education and programs focused on helping to protect, restore and enhance water quality and conserve and manage fisheries, including:

- *Ohio Watershed Academy – builds the capacity of current and future watershed group leaders to facilitate the development and implementation of community-based watershed action plans*
- *Ohio Pond Update – seasonal update on the care and management of ponds*
- *Online Guides for Streamside Landowners – offer a series of practices streamside landowners (suburban, rural residential and agricultural) can take to achieve this objective and maintain and/or promote stream health*
- *Programming and materials for the detection, prevention and management of aquatic invasive species*

FOSTERING ENVIRONMENTAL SUSTAINABILITY



NEW SUSTAINABILITY MAJOR GROWS

SENR partnered with the Department of Agricultural, Environmental, and Development Economics to develop and offer a new major focused on sustainability. This new major has been aptly named Environment, Economy, Development and Sustainability (EEDS). It provides an innovative undergraduate curriculum, recognizing the growing need to serve students who are interested in the intersection between sustainability, humans, the environment and the economy.

Students majoring in EEDS take coursework in environmental economics, business management, environmental sociology, community and international development, ecological engineering, and environmental sciences. EEDS majors can choose to specialize in one of four areas: Sustainability and Business; Environmental Economics and Policy Analysis; Community Development; or International Development.

Starting in autumn 2013 Ohio State undergraduate students could complement their major program of study with a focus on sustainability through enrollment in the new Ohio State minor in Environment, Economy, Development, and Sustainability (EEDS). The EEDS minor offers students a multi-disciplinary program that focuses on the human, economic and environmental dimensions of sustainability – often referred to as people, planet and profit.

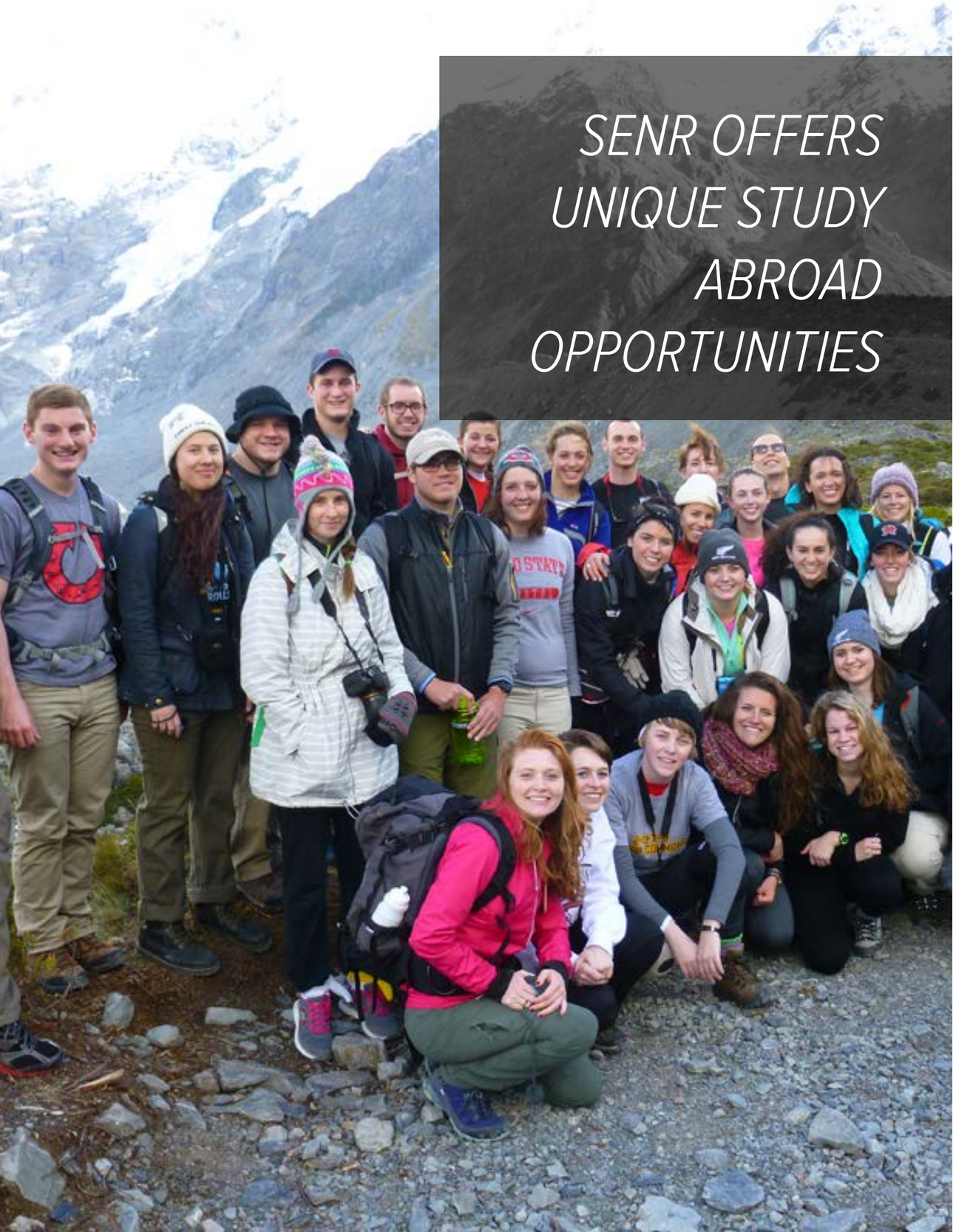
EEDS Enrollment By Year

26 AU12

95 AU13

174 AU14

Environment, Economy, Development, and Sustainability (EEDS) Welcome Back Event, September 2013.



SENR OFFERS UNIQUE STUDY ABROAD OPPORTUNITIES

SENR offers a broad range of unique study abroad opportunities, which allow students to gain knowledge and appreciation of environmental sustainability in a variety of settings across the globe. Our universally-appealing study abroad offerings reach not only student majors in the SENR, but also students in other majors. Please see the study abroad map on the following pages to get a sense of the breadth of our study abroad programs.

Number of ENR students participating in study abroad: 54

Number of non-ENR students participating in ENR-related study abroad: 59

SENR Study Abroad Snapshots:

Students learn about the relationships between people and their natural environment while seeing rain forests, the outback, and the Great Barrier Reef in Australia.
See Map

Students experience sustainable development and learn about the relationship between people and their natural environment in Fiji.
See Map

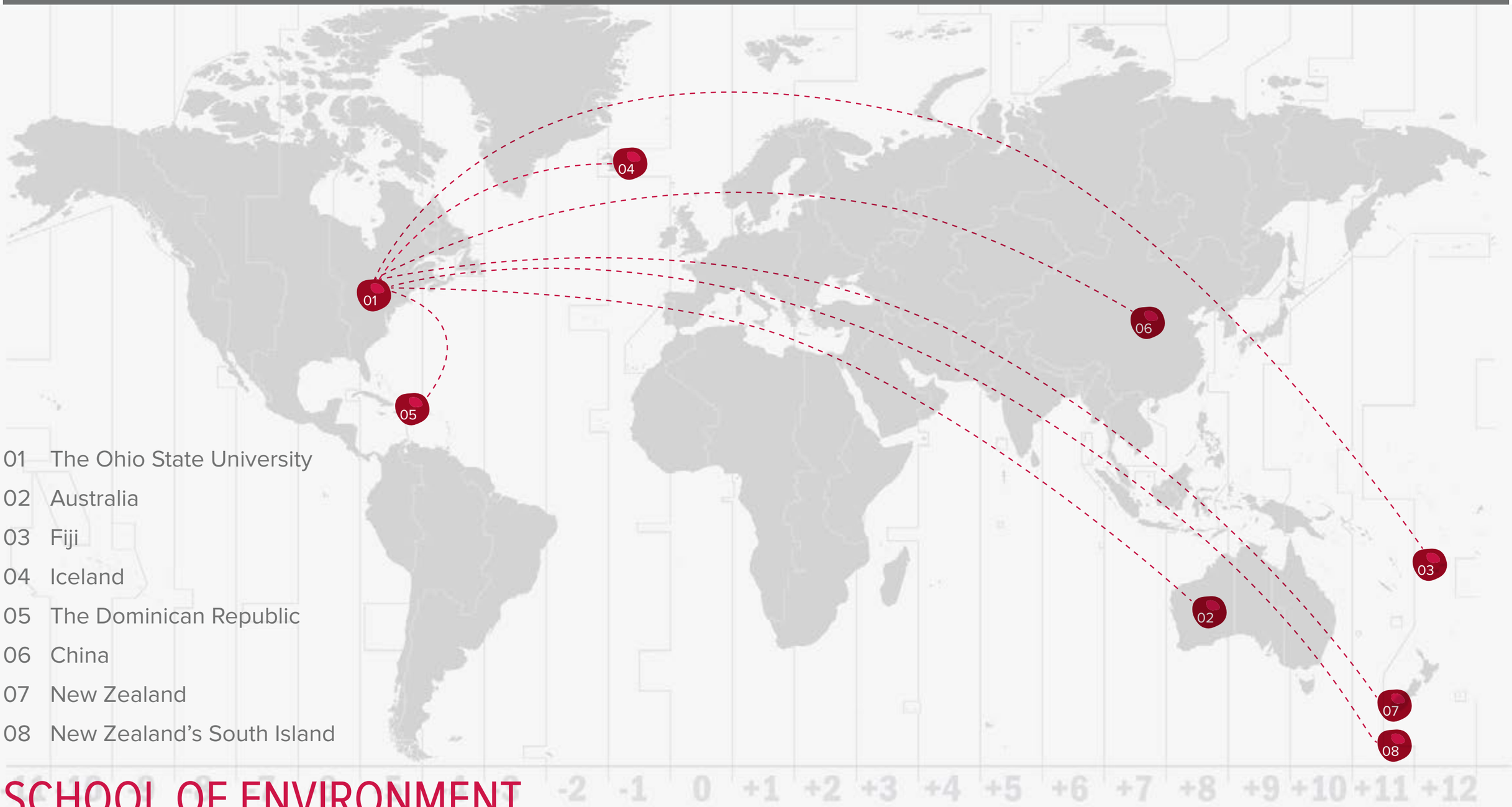
Students explore the geological wonders of Iceland, such as volcanoes, lava flows, waterfalls and glaciers, while learning about clean energy, land reclamation efforts and Viking culture.
See Map

Students study sustainable resources management in the Caribbean nation of The Dominican Republic.
See Map

Students conduct environmental research in China.
See Map

Students examine the natural and social history and resource conservation of New Zealand's South Island.
See Map

Students study the relationships between human societies and the natural environment in New Zealand.
See Map



01 The Ohio State University
02 Australia
03 Fiji
04 Iceland
05 The Dominican Republic
06 China
07 New Zealand
08 New Zealand's South Island

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES

Study Abroad Map

Publications

2014

Adhikari, Subhendu, Rattan Lal, and Han-Ping Wang. 2014. Carbon sequestration in the soils of aquaculture ponds, crop land, and forest land in southern Ohio, USA. *Environmental Monitoring and Assessment* 186(3):1569-1574.

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