

Greetings from the Director

The View from the ES Director in
Ladd 316

I wanted to take this opportunity to update you on the state of the ES program. To paraphrase President Barack Obama, the state of the ES program at Skidmore is excellent. We have 78 majors, 5 dedicated faculty in ES, and 57 affiliated faculty from 15 disciplines. We are the largest interdisciplinary program and the 5th or 6th largest major. There are so many great things happening, it is hard to keep track of them all.

Nurcan Atalan-Helicke was reappointed for a second three-year contract this past summer. We wish her all the best as she gets to pursue her research and recharge her intellectual batteries on a sabbatical this spring. A.J. Schneller didn't break the Internet with another sloth-saving photo, but he did publish the first ES capstone paper (A case study of indoor garden based learning with hydroponics and aquaponics) with ES grads Jenna Frank, Eliza Hollister, and Lauren Mamuszka, in Applied Environmental Education and Communication. He also had one of his Skidmore classroom assignments published as a book chapter, entitled "Writing letters to the editor to promote environmental citizenship and improve student writing". Anne Ernst also coauthored a paper, "Response of periphyton fatty acid composition to supplemental flows in the upper Esopus Creek". Both A.J. and Anne received new three-year contracts this year.

Our new tenure-track hire, Kurt Smemo, has hit the ground running (or sprinting, to be more accurate). He taught a new 300-level science class, "Soil Science, Ecology, and Geography", has new two articles in print, two more under review, and has submitted 4 grant proposals. Not a bad first semester. Finally, our long-lost colleague and friend, Karen Kellogg, has left the Dean's office and

is on a very well-deserved year-long sabbatical. She will be returning to ES after a four-year hiatus in Fall 2016.

We are also fortunate to have some other new faces in ES this year. Wendy Mahaney joined us for the year to teach ES 105, ES 205, ES 206 labs, and Restoration Ecology. Tom Hart joined us to teach Introduction to GIS this fall, and is now staying for another year and a half to teach more Introduction to GIS classes and an Advanced GIS class on spatial analysis and mapping for the College. Finally, Scott Kellogg, founder of the Radix Center in Albany, is serving as a sabbatical replacement for Nurcan this spring, teaching Political Ecology as well as a class on urban ecology and restoration.

Exciting things are happening in our curriculum. We changed our criteria for receiving honors in ES. Students no longer need to write an honors thesis, but can receive honors with a major GPA of 3.50 or higher and completion of an exceptional project and performance in the ES Capstone sequence.

There are 9 brand spanking new ES classes being offered this year. You can take Sea Changes: A History of the World's Oceans in the History department or The Coastal Ocean in the Geosciences department. Want to do some advanced GIS work? You can take Spatial Analysis and Mapping or Introduction to Remote Sensing of the Earth. Thinking about saving the planet, but not sure where to start? You can't go wrong with Regenerative Urban Ecologies in ES or Sustainable Planet – An Exploration of Energy, Consumption, Food and Sacrifice in Management and Business. Always wanted to study environmental issues in Spanish? Well, now you can with Beyond Saving the Rainforest.

Looking beyond the spring semester, the ES Steering Committee is revisiting our curriculum to deepen our interdisciplinarity, increase our

flexibility, and enhance our rigor. It is still very much a work in progress, but right now it looks like major changes are coming for ES 100 as well as ES 205 + 206. We are developing a new methods class for S&C students, increasing the flexibility on some of the requirements, and adding some more truly interdisciplinary courses to the major. Revising the curriculum is a long and complicated process, but we are hoping to be finished by the end of 2017.

In addition, we have submitted a proposal to increase the number of science classes that count towards the minor. We have also submitted a proposal to offer separate Environmental Studies and Environmental Science majors to the Curriculum Committee, who will consider it before bringing it before the Skidmore Faculty for final approval.

My door is almost always open if you want to come by and talk about any ideas you have for speakers, films, and classes or skiing, fishing or the English Premier League.

- Bob



Bob Turner, Director of the
Environmental Studies Program,
circa 1989

Contact: bturmer@skidmore.edu

Inside This Issue:

Page 2: Faculty Profile: Kurt Smemo; Faculty Highlights **Page 3:** Sustainability Initiatives; Student Internships **Page 4:** Summer Funding Award Winners **Page 5:** Faculty Student Summer Research Projects **Page 6:** Student Awards and Accomplishments **Page 7:** Study Abroad **Page 8:** Speakers, Films, and Field Trips **Page 10:** WRI News – Senior Capstone Projects **Page 12:** ES In Action: Photo Gallery

Faculty Profile: Kurt Smemo

Meet Kurt Smemo, the new scientist in the Environmental Studies Program at Skidmore College. A biogeochemist, Kurt's research focuses on large-scale topics including global environmental change in forest and wetland ecosystems, soil chemistry in relation to microbial-community and plant-community composition, and how organisms respond to changes in their environment. He plans to teach courses that examine how humans study and manage ecosystems on a broad scale.

Before he found his way to Skidmore, Kurt received his Bachelors degree in Forestry at the University of Montana in Missoula. He then went on to earn his M.S. in Environmental Science at the University of Illinois, followed by his Ph.D. in Natural Resources at Cornell. After Cornell, Kurt worked as a post-doc at the University of Michigan, looking at the effects of nitrogen pollution on forest ecosystems of the Great Lakes region. For the past nine years before coming to Skidmore, Kurt worked as a research scientist at The Holden Arboretum and adjunct professor at Kent State University in Ohio.

After many years of focusing largely on his own research, Kurt is excited to give back to the environmental community as an educator. Working at Skidmore, he hopes to teach younger generations to understand the large-scale environmental issues facing our planet and foster a community of creative problem solvers.

These days, Kurt is happily settling into the Skidmore community. During his first year, he is teaching a course on Soil Science, Ecology, and Geography and a course on watershed assessment, along with advising the environmental science seniors on their capstone projects. He plans to develop future courses that further focus on how we study and manage ecosystems, which fit soundly within his expertise in terrestrial biogeochemistry and ecosystem science.

Overall, Skidmore seems like a perfect fit for Kurt. He is excited to explore the research opportunities afforded by the variety of forests and wetlands near campus. He believes that Skidmore values teacher-scholars, and he feels especially privileged to be working with the Skidmore community as a whole because he believes in the way the students and faculty work to make the college an inviting and challenging place. He appreciates that Skidmore is a rapidly evolving place and that its students play a significant part in helping to change it. When dealing with difficult topics he says that, compared to other schools he is familiar with, the Skidmore community is "at least willing to talk about it, even if it is a little rough".

As an educator, Kurt sees this communication as especially

critical, as he believes that the challenges Skidmore faces are just small representations of global challenges. If he can help his students work through these issues on a small scale, he knows he is doing his part in creating global citizens who are more willing to work through these issues on a larger scale once they leave Skidmore.

- Olivia Gramprrie



Faculty Highlights

Visiting Assistant Professor **A.J. Schneller** published a new book chapter entitled: "Writing letters to the editor to promote environmental citizenship and improve student writing" in Byrne, L. (Ed.) *Learner-centered teaching activities for environmental and sustainability studies*. Springer Books. He also co-authored a paper with ES grads Jenna Frank '15, Eliza Hollister '15, and Lauren Mamuszka '15 and Psychology Assistant Professor Casey Schofield, in *Applied Environmental Education and Communication*, entitled "A case study of indoor garden-based learning with hydroponics and aquaponics: Evaluating pro-environmental knowledge, perception, and behavior change."

ES Program Coordinator **Anne Ernst** published a paper with colleagues Scott George, Barry Baldigo, and Dale Honeyfield from the US Geological Survey, entitled "Response of periphyton fatty acid composition to supplemental flows in the upper Esopus Creek, Catskill Mountains, New York."

Sociology Professor **Rik Scarce** published a book, *Creating Sustainable Communities: Lessons from the Hudson River Region* (SUNY Press, 2015), and a parallel documentary film, *Sustaining This Place: Creating a New Hudson Region Landscape* (Gruppo Zero Productions, 2015). The film premiered on campus in April, and since then he has screened it at the Environmental Consortium annual conference in Poughkeepsie, at The Linda in Albany, at the Downing Film Center in Newburgh, and elsewhere. Find out more at: www.SustainingThisPlace.net



Students at Saratoga Independent School helped test the effects of garden-based learning for Dr. A.J. Schneller and his capstone research team.

Associate Professor **Karen Kellogg** and Caroline Hobbs '16 conducted a research project focused on Skidmore's recent small hydropower agreement, including the industrial archeology of this historic weir and the contemporary legislative changes that made this project possible. This work led to the development of a webpage that describes the overall project (see <https://academics.skidmore.edu/blogs/microhydro/>) and a publication in the journal *Solutions* that places Skidmore's project in the larger context of small hydropower and climate change. Also, as many of you already know, Karen has been in the Dean of the Faculty's office for the past four years, but will be returning to teach ES courses beginning in 2016-17.

Sustainability Initiatives

Skidmore endorses its first Campus Sustainability Plan

In May 2015, the College endorsed the Campus Sustainability Plan, which highlights the College's work so far and sets goals for 2025 in 5 focus areas: energy, waste, lands and grounds, food, and engagement. More details are available at: skidmore.edu/sustainability/plan

A new **Skidmore Sustainability Map** gives a layout of all sustainability initiatives on campus. It is the latest and most comprehensive tool to help connect sustainability to life on campus. Please visit skidmore.edu/sustainability for a link to the map.

Summer Update

Community Garden Manager **Brian Fredericks '16** led a successful season, growing and selling over 900 pounds of produce to the dining hall, and designing and building a new arbor entrance at the garden. North Woods



Stewards **Katie Cuthbert '16** and **Urvi Kalra '18** organized a number of community events in the North Woods, and worked to remove over 80 invasive species from campus. This project was inspired by the work of **Eliza Hollister '15**, whose proposal motivated the College to commit to eradicating invasive species on the developed portion of campus.

Sustainable Food Interns

The Sustainability Office launched a new internship position this past year, and ES majors **Jackie Knoll '17** and **Carolyn Lois '16** and ES minor **Emily Singer '16** held the inaugural posts. The internship was developed as a collaboration between the Sustainability Office and the Dining Hall to track sustainable food purchases in the dining hall and develop new partnerships with local producers.

Inaugural Sustainable Service Day

The Sustainability Representatives organized Skidmore's first Sustainable Service Day in April. Over 30 volunteers worked at five different sites on and off campus, including Skidmore's North Woods, compost site, and Community Garden, as well as at a Regional Food Bank farm and the Wilton Wildlife Park and Preserve.

Student Internships

Each year, many ES students do internships for credit, working with a faculty advisor to add an academic piece to their work. Students work with environmental groups on campus, in town, and near their home.

This past year, **Katie Cuthbert '16** worked with the Saratoga County Wastewater Treatment Plant to develop a curriculum to teach 5th graders about wastewater treatment. **Emily Cheung '17**, **Lauren Sidor '17**, and **Nate Van Meter '17** worked with the Cornell Cooperative Extension Program in Ballston Spa, helping to develop a long-term water-quality monitoring system for Kayaderosseras Creek. **Anika Verma '17** worked with Saratoga PLAN on environmental health outreach and education, focusing particularly on the connection between farmland and environmental health. **Porter Hunt '17** learned about sustainable food and farming at 9 Miles East Farm. **Emily Mangan '16** worked at American Farmland Trust to coordinate the bi-annual Harvesting Opportunities Conference.

New solar thermal panels on DHall

Skidmore's new solar-thermal project, the sixth at Skidmore, includes about 30 panels on the roof of the dining hall. This will provide about 800 gallons of hot water a day, reducing Skidmore's energy costs and greenhouse gas emissions. "We need to implement creative renewable energy solutions on our campus to help Skidmore reduce its impact on the climate and demonstrate our commitment to sustainability, all of which align with the College's goals and values," said Sustainability Coordinator Levi Rogers. Skidmore Sustainability and the Skidmore Fund coordinated the effort, and 83% of the donations raised for the solar thermal project came from students and alumni.



Zankel lighting upgrade

Zankel Music Center swapped its incandescent bulbs for more efficient LEDs, cutting electricity use by 86% and improving the lighting design. As an added bonus, LEDs produce less heat, so the concert hall will need much less cooling, driving down its energy demand even further.

Skidmore Hosts Annual NY Geothermal Conference

In March, approximately 100 engineers, policy makers, and students visited Skidmore for the annual conference of the New York Geothermal Energy Organization (NY-GEO). Skidmore was selected to host the conference, dubbed "Geopalooza," because it has implemented a number of sustainable initiatives that align with the NY-GEO agenda, including our expansive geothermal systems. Currently, 40% of campus is heated and cooled with geothermal energy, and the new geo field currently being installed will bring this number to over 50%.

North Woods Boardwalk

A new boardwalk was built in the North Woods last fall, led by North Woods Steward **Urvi Kalra '16**, with the help of Skidmore's Facilities Services and volunteers. Located on the Blue Trail in an area commonly flooded by a natural spring, the boardwalk should encourage people to remain on the trail and reduce the stress on nearby plant and soil communities.



On campus, **Jackie Knoll '17**, **Carolyn Lois '16**, and **Emily Singer '16** worked with the Skidmore Sustainability Office and the Dining Hall, moving Skidmore closer to the sustainable food goal outlined in the Strategic Plan. Away from Skidmore, **Colton Mackay '16** worked as a horticulture/botany intern at the Cincinnati Zoo during the summer.

Many other students work in non-credit-bearing internships. **Colleen Sullivan '17** worked last summer for the EPA's Office of Solid Waste and Emergency Response, researching alternative technologies to open burning of energetic materials. Her research is currently being used by the State of California. **Emily Mangan '16** worked as an Energy and Environment Intern at the Council on Foreign Relations' Center for Geoeconomic Studies, looking at renewable energy, fossil fuel subsidies, and domestic environmental regulations. **Sarah Lasky '17** worked for a sustainable developer in Maryland, learning what goes into designing a sustainable building. **Maya Cohn '17** worked on the Climate Change team at Defenders of Wildlife.

Summer Funding Award Winners

This past summer, 9 ES students successfully competed for funding from various groups and programs on campus to undertake summer internships that focused on a range of environmental issues, working with groups in the Albany/Saratoga area, across the coast, and in countries around the world.

ES Summer Internship Award Winners

Sarah Coburn '16, ES minor

Sarah was awarded an ESSIA award to research volun-tourism with the Bodhi Surf and Yoga School in Costa Rica. Sarah assisted Professor Schneller in researching the effects of volun-tourism experiences on high school students. She conducted this research interviewing, observing, and participating in community service alongside students in Bahia Ballena, Costa Rica where the organization, Global Leadership Adventures, offers a program called Protecting the Pacific. She spent time talking with students about their ideas on sustainability, painting the local school, surfing, talking with locals, and taking in the beauty of Costa Rica.



Eliza Hollister '15, ESC major

Eliza interned at Radix Ecological and Sustainability Center in Albany, bolstering her knowledge of urban agricultural practices, becoming more involved in and informed of food systems and food justice in the Capital District, and forming connections with local professionals involved in environmental education. She gave tours to visitors, tended garden beds, picked up trash, built a fence, spread truckloads of wood chips, and transplanted a whole lot of vegetable plants. Eliza's internship provided her with the opportunity to serve the community and to form connections with similar-minded people.



Michaela Kerxhalli-Kleinfield '16, ESC major



Michaela worked at Saratoga PLAN, a local land trust that preserves open space in Saratoga County. As their Stewardship Intern, her responsibilities included both office work and hands-on fieldwork, offering Michaela the chance to explore all facets of working at the non-profit. However, Michaela's main project involved spearheading the review, organization, and development of stewardship archives, allowing her to explore the internal works of the organization. Through this project, she became intimately familiar with the language and development of conservation easements, property deeds and all other aspects of protecting and conserving local land.

Skidmore SEE-Beyond Award Winner

Julia Boyer '16, ESS major

Julia won Skidmore's SEE-Beyond grant to study how elephant feeding behavior influences vegetation community structure in South Africa's Kruger National Park. She lived and worked in Kruger National Park in South Africa as a student researcher, studying how disturbances like burning and elephant feeding influence large trees and local woody plants. She worked for several weeks designing the project, collecting and analyzing data, and finally presenting her findings for the managers and ecologists of the park. Not only did Julia get to experience life as a field researcher, but also got to experience the culture first hand through her peers and her experiences within the park.



Skidmore SGA Responsible Citizenship Internship Award (RCIA) Winners

Emily Cheung '17, ESS major

Emily interned at Conservation Fisheries, Inc., studying aquatic biodiversity in Tennessee. During her internship at the non-profit, Emily's main role was to work as a hatchery technician. She worked with endangered fish and learned how to identify, breed, and raise a variety of freshwater fish species. She harvested and tended to Barrens Topminnow eggs until they hatched, and then cared for the fish until adulthood. Her experience gave Emily the rare opportunity to rehabilitate a population of endangered species in captivity, and then release them back into their native habitat and watch their population begin to rebound.



Zia O'Neill '17, ESC major

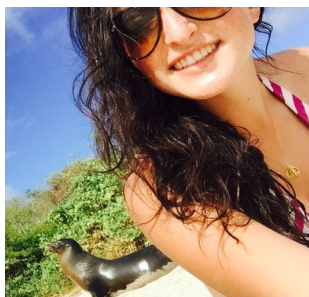
Zia worked for Bike & Build Cyclist, riding her bike across the country to raise money for affordable housing groups. She joined 28 other riders in a 4,049-mile cycling trip from Providence, RI to Seattle, WA. Bike & Build raises funds and awareness for affordable housing. As she pedaled her way through 14 states, Zia and her group stopped approximately every five days to switch out our helmets for hard hats and worked with the local chapter of Habitat for Humanity. The sixteen build days were a great introduction to basic construction skills and an opportunity to learn the stories of affordable-housing beneficiaries.



Summer Internship Award Winners (continued)

Rafaela Iturralde '17, ESC major

Rafa interned at the National Coordinating Entity for Environmental NGOs in Ecuador. She helped create a National Climate Justice Platform by uniting environmental NGO's members of CEDENMA in order to talk about UNFCCC COP21 as a civil society group. Rafa had the chance to network during small meetings held by CEDENMA regarding different topics such as the National Environmental Calendar. She also became familiar with Spanish environmental terms and with active environmental NGOs in Ecuador.



Kaelen Clark '16, ESS major



This past summer, Kaelen worked at the Community Harvest Project in Grafton, Massachusetts, a place where volunteers come to farm for hunger relief. As Education Intern, Kaelen created a summer curriculum for 5th to 7th graders on nutrition and

agriculture, and as head counselor at the summer camp, she

implemented the lesson plans she developed. Kaelen learned about the many facets of the food industry, from production to distribution, and had the opportunity to visit other hunger relief organizations, like Community Servings, which takes produce unfit for selling in a grocery store and cooks them into meals for people unable to cook for themselves and their families.

Skidmore Summer Funded Internship Awards Program (SSFIAP)

Tsering Choden '17, ESS major

Tsering worked for Childreach Nepal, in a rural village in the Sindhupalchowk district of Nepal. The region was severely affected by the 2015 earthquake that shuddered the entire nation; the devastation from the quake is still rife in the area. The internship consisted of providing education and awareness to local students regarding environmental, health, and economic issues. Tsering also helped to prepare a health profile of the students that attend Yangrima Boarding High School by assessing the health status, needs, and environment of the students.



Faculty Student Summer Research Projects

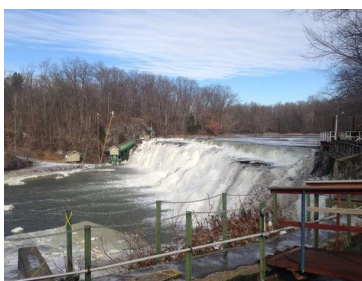
Every summer, Skidmore's Faculty Student Summer Research (FSSR) Program provides students with a unique opportunity to spend 5, 8, or 10 weeks working with faculty on original research. This past summer, 4 ES students worked on 3 different summer projects with ES faculty.

Lauren Sidor '17 and **Nate Van Meter '17** worked with ES Program Coordinator Anne Ernst, in partnership with Cornell Cooperative Extension, to develop a water-monitoring program for the Kayaderosseras Creek. After spending last spring learning how to prepare and deploy 3 remote devices that record water temperature and various water-chemistry parameters, they spent the summer installing the devices and establishing baseline water-quality levels within the watershed. **Jen Cristiano '18** joined the research during the second

half of the summer as part of the Skidmore Scholars in Science and Mathematics (S³M) summer transition program for freshmen scholars.



Caroline Hobbs '16 worked with Associate Professor Karen Kellogg for 5 weeks, to develop a comprehensive website on Skidmore's new micro-hydro facility. A small dam at Chittenden Falls in Columbia County NY had been in place since the early 1800s but fallen into



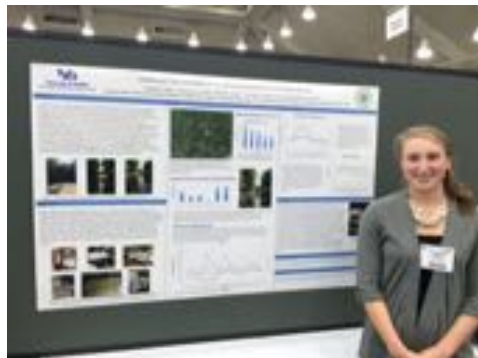
disrepair. The newly refurbished micro-hydro plant now provides about 18% of Skidmore's electricity each year and advances the College's sustainability efforts. The website can be found at: <https://academics.skidmore.edu/blogs/microhydro/>

Sarah Coburn '16 spent 5 weeks in Costa Rica this summer, collaborating with Visiting Assistant Professor A.J. Schneller to better understand the student and community outcomes of "voluntourism". They worked with a group of 100 high school service learners who participated in Global Leadership Adventure's "Protecting the Pacific" program, assessing their commitment to volunteerism, pro-environmental attitudes and behaviors, and involvement in environmental issues.



Student Awards and Accomplishments

Caroline Tuttle '17 spent last summer working with researchers at SUNY Buffalo's Department of Geology, investigating stream contamination. She presented her research at the Geological Society of America's national conference in Baltimore this past November, with a poster entitled "Analyzing daily variability in *E. coli* concentrations in an urban stream."



Emily Mangan '16 worked with a number of senior fellows, including John Campbell, former ambassador to Nigeria, during her internship at the Council on Foreign Relations last summer. She published an op-ed on Nigerian oil theft, "A primer on Nigeria's oil bunkering," found at: <http://blogs.cfr.org/campbell/2015/08/04/a-primer-on-nigerias-oil-bunkering/>

In conjunction with Hudson Crossing Park in Schuylerville, NY, students **Julia Boyer '16**, **Michaela Kerxhalli '16**, and **Colton MacKay '16** designed and taught a replicable 3-part experiential environmental education curriculum for 4th-6th graders entitled "Use, Restore, Protect: How Humans Interact with the Land," which is prominently featured online at the NGO's website for community educators to use during their next park visit. See: www.hudsoncrossingpark.org/userstoreprotect

NSF-REU Winners

The National Science Foundation (NSF) Research Experience for Undergraduates (REU) program offers competitive summer research opportunities for students across the country. Three ES students got funding for REU programs over the past 2 summers.

Charlie Lovejoy '16 won an REU award to work on experimental forest plots at Harvard Forest this past summer. Soils in some of the plots have been experimentally warmed over the past 25 years to 5 degrees C above ambient temperature, simulating soil warming that will occur as climate change progresses. Charlie and his coworkers compared experimental and control plots to look for differences in diversity of microbial and fungal communities, biogeochemical cycling of phosphorus,



and carbon sequestration. He also attended bi-weekly seminars on topics from statistical analysis to communicating science to the public.

Christine Munisteri '16 won an Summer 2014 REU award to participate in the Community, Soil, Air, and Water REU at Georgia State University, where she investigated barriers that prevent community members from using urban green space in Atlanta. She

For the first time, the Environmental Studies Program published the findings of an ES Capstone Research project in a peer-reviewed academic journal. Former ES students **Jenna Frank '15**, **Eliza Hollister '15**, and **Lauren Mamuszka '15**, along with professors A.J. Schneller (ES) and Casey Schofield (Psychology), authored "A case study of indoor garden-based learning with hydroponics and aquaponics: Evaluating pro-environmental knowledge, perception, and behavior change," in *Applied Environmental Education and Communication*. 14(4), 256-265. Copies of the manuscript can be downloaded at: www.tinyurl.com/skidmoreaquaponics

Emily Cheung '17 got a Student Opportunity Fund grant for \$500 for her research in Nepal on women training to be trekking guides. Emily spent last fall on the SIT program Nepal: Tibetan and Himalayan Peoples.

This past summer, **Michaela Ritz '17** finished her second year of the 2-year Doris Duke Conservation Scholars program at the University of Washington. She spent the first part of the summer researching the opportunities and barriers to farmers growing hybrid poplar trees for biofuel use. During the second part of her summer, Michaela worked in the San Juan Islands doing field work. She helped two graduate students research the distribution of various bat species throughout the islands using acoustic detectors. She also

collected tissue and guano samples and bat measurements, all to help understand migration patterns and genetic diversity of the local bat populations.



was awarded a Student Opportunity Fund grant to present her findings at the Association of American Geographers national conference in Chicago last April, and presented a poster at the NYS GIS Conference in Albany this past fall.

Ben Freiberg '16 won an REU award this past summer to work in the HJ Andrews Experimental Forest, a long-term ecological research site within the Willamette Valley of Oregon. The internship was an eco-informatics REU, integrating math, statistics, and engineering to study of ecosystems. Facilitated by Oregon State University, the project focused on salmonid bioenergetics. Ben and his colleagues worked to quantify the foraging window of the coastal cutthroat trout, and helped co-author the paper "Effects of drift supplementation and altered channel complexity on the foraging distance of coastal cutthroat trout (*Oncorhynchus clarkii clarkii*).



Study Abroad

Studying abroad or off campus in a domestic program continues to play a big role in the education of ES majors. 19 of our 27 seniors studied abroad or off campus last year, along with 24 of our 38 juniors. They spanned the globe on various programs, covering a host of countries that included Australia, Costa Rica, Denmark, Germany, Ghana, Iceland, Madagascar, Nepal, Netherlands, South Africa, Tanzania, United Kingdom, and the US, in Washington DC.

Spring is the more popular semester to study off campus, with over half of ES students going abroad then. About a third go abroad during the fall, and a smaller number go for a full year or for a summer or winter-break program.

Students return full of new adventures and experiences, adding a global perspective to their studies after they return.



ES students studied around the globe last year. Each red dot indicates where at least 1 ES student spent a semester or summer this past year.



ES students who studied abroad last year were all invited to a welcome-back picnic this past fall. First- and second-year students interested in finding out about ES-approved programs were also invited to come and hear directly about the various programs from students who had experienced them.



Bella Bennett '17 spent a summer studying in Iceland, exploring the glaciers and geology. This semester, she is studying with the Frontiers Abroad program in New Zealand, and you can follow her adventures at: <https://academics.skidmore.edu/blogs/lordoftherocks>.

Desde la puna, a la selva, a la costa, by Olivia McKee '16



In 2015 I travelled in the Andean, Amazonian, and coastal regions of Peru. With 84 of the world's 117 life zones and several distinct ethnic groups, Peru possesses unparalleled ecological and cultural diversity. I spent January farming in a small pueblo of the little-travelled Apurimac region, full of alpine cacti and flamingos, glacial lakes, Andean condors, hummingbirds, eucalyptus trees, and coca tea imported from the rainforest. I observed how Andean peoples utilize diverse microclimates created by the extreme topography – we farmed corn in the valley, beans and quinoa on the slopes, and potatoes in the high altitude region an hour drive upward from the town, where grassy fields are met with rocky snow-capped peaks. The pueblo itself was richly Quechua, grasping to its roots in the face of Spanish imperialism.

From February-April I studied with the School for Field Studies' program "Biodiversity & Development in the Amazon." With hands-on field excursions from the cloud forest to the lowlands, we studied the ecology of this incredibly biodiverse region. Macaws awoke us each morning on the campus we lived at with the Amazon Conservation Association. We got to know a sleepy rainforest village, with its tired dance club and market, as it grasped the remnants of the logging industry boom. We studied the Andean migration to the Amazon to tame and

reap natural resources, and how that damaged indigenous ways of life. For my independent research project I studied how modernity increases processed food intake for residents of the fertile Kosñipata Valley.

After SFS I trekked the Salkantay trail that concludes at Machu Picchu, musing on how the glaciers I was seeing would become the runoff that would end up in the Amazon. I explored Cusco, a city of paradoxes, with its narrow streets of artisans and tourists, and Spanish churches built atop Incan temples. I bettered my Spanish and returned to my friends in Apurimac, learned to butcher guinea pig, and deepened a tender love for a place and for a people.

In June I rolled down to the coast for a week spent breathing in the sea level oxygen at an ecovillage near Lima, where mango and potatoes are farmed right next to the Pacific. And then, tired and satisfied, I came back to my northeastern home.



Speakers, Films, and Field Trips

This past year brought several engaging speakers to campus. The ES Keynote speaker this year was Dr. Nagaraja Harshadeep, who spoke about the World Bank's approach to environmental challenges in the developing world. Dr. Eban Goodstein spoke to students about the climate talks in Paris in December, and Kate Clopek recruited students to the Saha Global Leadership Program, which works with women in rural Ghana. The ES Program sponsored several films shown on campus, including "Sustaining this Place: Creating a New Hudson Region Landscape," a documentary by Professor Rik Scarce; "Pandora's Promise," a film on nuclear energy; and "The Comfort Zone," a film on climate change in upstate New York. ES led several field trips this past year, including visits to the Radix Ecological Sustainability Center in Albany and the Kawing Crow Awareness Center in Greenfield.

ES Keynote Lecture: Dr. Nagaraja Harshadeep, Modernizing Approaches to Address Environmental Challenges in the Developing World

Water access, floods and droughts, coastal degradation, and pollution are all growing issues across the developing world, but the World Bank's Dr. Nagaraja Harshadeep is developing innovative solutions to these problems. As the ES keynote speaker, Dr. Harshadeep came to campus this past September to deliver a talk, "Modernizing Approaches to Address Environmental Challenges in the Developing World".

Dr. Harshadeep spent much of his lecture providing an overview of what the World Bank does and how it addresses environmental problems. The three "i"s – information, institution, and investment – provide the framework to tackle these problems. Dr. Harshadeep particularly focuses on information, using new tools such as satellite imaging, GIS, and analysis to turn data into knowledge that can help make decisions. He also demonstrated a new app that he helped to develop, called Spatial Agent. This app integrates a huge array of spatial data sets to provide a modern water-resources information platform.

Following the lecture, Dr. Harshadeep answered questions from the audience, many of whom were international students from countries where the World Bank has implemented projects. Dr. Harshadeep gave the history of various World Bank projects that have been implemented in countries ranging from India and Bangladesh to the Maldives.

In addition to his public lecture, Dr. Harshadeep had breakfast with a group of students to talk more informally about his work at the World Bank and answer questions. He also visited ES 100: Environmental Concerns in Perspective, to talk more about potential solutions to global environmental problems.



ES-sponsored films

Skidmore Sociology and ES Professor **Rik Scarce** debuted his new documentary last April 2015 at Skidmore. "Sustaining this Place: Creating a New Hudson Region Landscape" chronicles the successful efforts of everyday people to create a new Hudson region landscape, drawing from 59 interviews with people living and working in the Hudson Valley. It parallels Scarce's book, *Creating Sustainable Communities: Lessons from the Hudson River Region*, which was published last year by SUNY Press. From the project description, "[t]hese are the stories of farmers, community activists, landscape architects, elected officials, distillers, corporate executives, and others who understand that a lasting, livable tomorrow beings with them and

the organizations they create." After the film, Dr. Scarce answered questions from the audience. See <http://www.sustainingthisplace.net/category-s/104.htm> for a movie trailer.



The ES Program screened "Pandora's Promise" last spring, a 2013 documentary about the nuclear power debate. Its premise is that nuclear power is a safe and clean energy source that can be used to

address climate change, despite opposition by many environmentalists who are interviewed in the film. The film tied into ES 252: The Engineering and Ecology of Energy, but was open to the Skidmore community.

This past November 2015, Sustainable Saratoga's Climate and Energy Committee worked with Skidmore's Sustainability Office to screen "The Comfort Zone," a documentary exploring the effects of climate change in upstate New York. Three Rochester-based filmmakers investigated the projected effects of climate change in their area and presented their findings. The film screening was followed by a panel discussion. Sociology and ES Professor Rik Scarce, ES Assistant Professor **Kurt Smemo**, and NYS DEC climate policy analyst Mark Lowery gave their impressions of the film and fielded questions from the audience.



Speakers, Films, and Field Trips (continued)

Other invited speakers

Kate Clopek came to campus in October to talk to students about Saha Global, her non-profit organization that empowers women in rural communities to solve their village's need for clean water and electricity by providing business opportunities.

Students work through Saha's Global Leadership Program to learn how to train local women to launch profitable social enterprises. Saha has currently launched



78 clean water businesses and 15 solar electricity businesses, 100% of which are still in operation today. Skidmore first got involved with Saha in 2013, and 7 Skidmore students have participated in their Global Leadership Program so far.

Eban Goodstein, director of the Center for Environmental Policy and the MBA in Sustainability at Bard College, visited campus this past fall. He met several students over a dinner discussion of "How to get a job saving the planet: Sustainability careers in NGOs, business, and government" in the Dining Hall. He then gave a public lecture on the UN Climate Change Conference in Paris, including ways for students to engage in the implementation of Obama's Clean Power Plan, in a talk entitled "New rules for climate protection: Student and citizen action to change the future."

Field trips: Experiential Learning

Kawing Crow Awareness Center

This past fall, ES Program Coordinator Anne Ernst organized a field trip to the Kawing Crow Awareness Center in Greenfield Center. Kawing Crow's founder Vince Walsh led ES students on a 4-hour tour of his property, including 60 acres of woods and wetlands. Kawing Crow focuses on natural and cultural history, wilderness skills, and permaculture practices, and students were given an overview of various permaculture practices that Vince is implementing at Kawing Crow. ES 205 students got a chance to visit Kawing Crow later in the semester, where Vince talked to them about sustainable forest management practices.



Radix trip during Spring for AJ's ES 221 class

Visiting Assistant Professor A.J. Schneller brought his Sustainable Development class (ES 221) to the Radix Urban Sustainability Center in downtown Albany last spring, one of several field trips he has led there. Director Scotty Kellogg gave students a tour of Radix resources, including a solar-heated greenhouse, rainwater-collection system, micro-livestock (chickens, ducks, and rabbits), and compost system. Radix focuses on creating closed-loop systems, creating environmental and economic sustainability – aquatic plants are fertilized by fish waste in the aquaculture system, duck-pond water is filtered through willow tree roots, and heat generated by compost is used to heat the greenhouse in winter. Students ended their tour by making "seed bombs," mixing clay and compost with local wildflower seeds that can grow where they are thrown.



The Water Resources Initiative (WRI) at Skidmore College brings together students, faculty, and community partners to investigate our local watershed. Through courses and research, WRI helps us better understand the multiple perspectives that influence how we interact with our water resources on both a local and global scale. The ES Capstone focuses on issues within the Saratoga Lake / Kayaderosseras Watershed.



Senior Capstone Projects 2015

ES Capstone 2015: Creative Thought in Action

It is hard to believe that when we first created our signature ES Capstone Class that many ES faculty were legitimately worried we would run out of local environmental issues to study after 3-4 years. After 10 years, I am no longer surprised by the creativity of our students in finding new issues, methods, and avenues of inquiry.

Many of the capstone projects had a “ripped from the headlines” quality to them. If you read the New York Times, Grist, Orion, or the Huffington Post, you have heard about microplastics, antibiotic resistance, dumpster diving, nature walks, tiny houses, food forests, and backyard chickens. All were studied by the 2015 Capstone Class. Margie Pfeffer and Jordan Stark’s project analyzed **microplastics and their potential for bioaccumulation** just months before they were banned in NY State. Hannah Bachrach, Anna Gubbins, and Sarah Turner examined whether **antibiotic resistance** was creating superbugs in our streams. Melvin Alvarez, Jordan Chang, and Rebecca Fennel analyzed the **challenges to food recovery efforts** in Saratoga Springs, NY. Jewels O'Brien, Laura Mindlin, and Oliver Moffat analyzed whether taking college students on **nature walks** in the North Woods improved their mental health (probably yes, although less so in frigid weather). Jessica Aleman, James Brownie, and Jared Herman conducted a feasibility study of creating a **food forest** in Saratoga Springs. Lauren Bosche, Emily Durante, Maggie Patterson’s interest in tiny houses led to analysis of the difficulties in **affordable housing solutions** in Saratoga Springs. Osheen Srinivas studied challenges to putting **solar panels** on local public schools.

Other ES students used a personal interest or experience to spark their capstone project. Jenna Frank, Eliza Hollister, and Lauren

Mamuska’s passion for environmental education led to a project in a local elementary school on how an **experiential plant-literacy curriculum** changes kids’ environmental behaviors. Raquel Escobar’s experience seeing food going into the garbage at Chipolte led to an analysis of the failure of a **food composting system** for restaurants in the area with Melissa Kaslowski. For Julietta Cole, her passion for raising chickens led to a national and local survey of the environmental and livestock views of **backyard chicken farmers**.

Other projects tackled important public policy issues and produced data and analysis I plan on using in my environmental policy class. Natalie McKeon, Elizabeth Dolan, and Sarah Mellon’s study of the impacts of **environmental marketing** on millennials’ consumer behavior revealed very cool and counter-intuitive findings. Nick Hartmann, Sarah Hoenig, and Nandini Srinivasan tackled the **Hudson River PCB Superfund Site**.

Part of what I love the most about ES Capstone is how it makes me a more knowledgeable citizen about my community and impacts my own personal life. Melissa Chilinski, Spencer Nelson, and Amy Weaver’s project on the energy and environmental savings of **weathering old homes** motivated me to finally pay for a major insulation project in my 160 year old house. Jessica Dunning, Zachary Gordon, and Alice Wu’s project on the **impact of urbanization on the temperature** of the Kayaderosseras Creek helped tell me why I wasn’t catching any fish in the Kayaderosseras during July.

I don’t want to provide any spoilers, but you can be sure the ES Capstone class of 2016 will be great as well. Make sure to save 9am- 1pm on Wednesday, May 4. You do not want to miss it.

- Bob Turner

Elizabeth Dolan, Natalie McKeon, and Sarah Mellon Easy Being Green? The Effects of Environmental Marketing on Millennials Consumer Behavior

The Millennial Generation is very concerned about the environment, but this ecological sentiment may not translate directly to their purchasing behavior. Millennial consumers struggle in their ability to identify and interpret eco-labels. This population is more likely to support green products that are associated with a strong, eco-friendly brand, indicated by clear and visually-appealing imagery.

Julietta Cole Backyard Chickens: Hipster Fad or Gateway to Sustainable Living?

This case study explores the relationship between backyard chickens and environmental behavior to determine whether chickens are a fad or a gateway to sustainable living. Chicken owners are more likely to pay more for local, natural, and organic products, to grow their own food, to acquire more microlivestock, and to compost. The movement indicates a broader sustainable attitude.

Melvin Alvarez, Jordan Chang, and Rebecca Fennel Feeding Mouths, Not Landfills: An Analysis of Food Recovery Efforts in Saratoga Springs

Food recovery is a method of food redistribution that addresses both food waste and hunger. We interviewed stakeholders along the food distribution line and found several logistical and economic barriers to food recovery in Saratoga Springs. We provide solutions to maximize the amount of food being diverted from the waste stream and instead redistributed to low-income community members.

James Brownie, Jared Herman, and Jessica Aleman Bringing the Forest into the City: Creating a Community Food Forest for Saratoga Springs

Food Forests are low-maintenance, multifunctional, edible landscapes based on the principles of permaculture that can meet the needs of both people and ecosystems sustainably. We assessed the feasibility of creating a Food Forest in the City of Saratoga Springs. A Saratoga Springs Food Forest is desirable and feasible, and we anticipate that our research and recommendations will guide future implementation.



CONTACT INFO
Karen Kellogg
kkellogg@skidmore.edu
518-580-5198

STANDARD MAIL
Skidmore College
815 North Broadway
Saratoga Springs NY 12866

Senior Capstone Projects 2015 (continued)

Margie Pfeffer and Jordan Stark

Distribution and consequences of microplastics, a new anthropogenically-derived contaminant in streams

We sampled local streams to determine the breadth of microplastic pollution and the contributions of both point and nonpoint sources of microplastics. We exposed *Daphnia magna* (water flea) to microplastics to determine whether they could be incorporated into the food web or have negative health effects.

Lauren Bosche, Emily Durante, and Margaret Patterson

Barriers to Affordable Housing and Sustainable Solutions: A Case Study of Saratoga Springs, New York

We used Saratoga Springs as a case study for finding sustainable solutions to housing problems faced by cities undergoing urban renewal. Using archival research, we investigated the specific challenges that Saratoga Springs faces. Through interviews, we gained an understanding of the obstacles that affect access to and development of affordable housing programs in the Saratoga Springs region.

Nick Hartmann, Sarah Hoenig, and Nandini Srinivasan
Overseeing Oversight: Citizen Advisory Groups and the Hudson River PCB Superfund Site

We gathered data about the Community Advisory group (CAG), a unique form of oversight designed to ensure the removal of PCBs from the Hudson River. Compared to traditional oversight, CAG members have more dedication, technical capacity, ability to expand the cleanup project, and ability to share knowledge. However, there is lack of public involvement, a lack of member commitment, and stakeholder bias.

Osheen Srinivas

Incentives and Barriers for Implementing Solar Energy Technology in Schools in Saratoga Springs, NY

New York has many state tax incentives to use solar energy, but barriers still exist. The Saratoga Springs School District is not yet ready to implement solar technology due to barriers such as lack of comprehensive information and the upfront costs of installation.

Raquel Escobar and Melissa Kaslowski

Evolv[ing] Saratoga Springs: Composting Food Waste in Restaurants

We examined the successes and challenges for Evolv Composting LLC business, a business developed by 2 Skidmore students to encourage restaurants to compost food waste. We conducted surveys and interviews to better understand the barriers to restaurant participation in composting programs and the perceived benefits of the program.

Hannah Bachrach, Anna Gubbins, and Sarah Turner
Sinister Superbugs Skulking in Streams?

Upstate NY has a history of industry dumping heavy metal waste into streams. We grew stream bacteria on four different treatments to determine the effects of these legacy heavy metals and other urban pollutants on antibiotic resistance in stream bacteria, and identified microbial community shifts.

Amy Weaver, Melissa Chilinski, and Spencer Nelson

Retrofitting Homes for Energy Efficiency for Low Income People: A Case Study of Saratoga County

We analyzed the effectiveness of low-income weatherization in Saratoga County, NY. Based on a comprehensive examination of literature on weatherization programs at global and national levels, funding appears to be the greatest barrier to low-income weatherization programs. We suggest allocating more funding to programs that weatherize mobile homes as a way to maximize both funding and houses weatherized.

Lauren Mamuszka, Jenna Frank, and Eliza Hollister
Cultivating Seeds of Change: Knowledge, Perception and Behavior Outcomes of an Experiential Plant Literacy Curriculum

We measured the environmental knowledge, perceptions, and behavioral outcomes of an experiential plant-literacy curriculum designed for 5th and 6th graders at an independent elementary school in Saratoga Springs, NY. We demonstrated how experiential pedagogy and small-scale agricultural systems can be used as effective teaching tools. Treatment group students showed statistical improvement in environmental knowledge and behaviors at post-test.

Jewels O'Brien, Oliver Moffat, and Laura Mindlin

The Nature of Stress: Outcomes of Nature Walks in Skidmore's North Woods in Relation to Student Mental Health

Growing research supports the positive effects of interaction with the natural environment on stress, happiness, and mental health. We investigated the effects of 3 weekly nature walks on a group of college students. Our findings support the relationship between nature walks and mental health, and can inform nature-based healing, leadership, and college pre-orientation programming.

Jessica Dunning, Zachary Gordon, and Alice Wu

Urbanization in the Kayaderosseras Creek Watershed: Impacts on Stream Temperature

Kayaderosseras Creek is a trout stream in Saratoga County, but increased urbanization in the watershed may be increasing stream temperature and reducing trout habitat. We ran a thermal urban-runoff model on 15 sites in the watershed. Percent impervious cover had a large impact on both runoff and stream temperatures. Low-impact development and other techniques for reducing runoff are needed to maintain trout habitat.

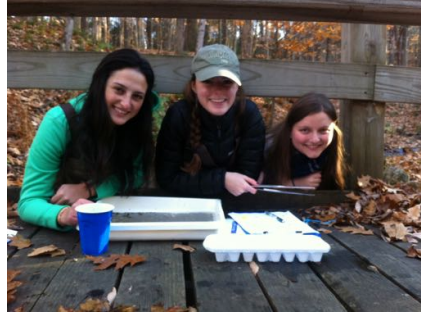


The 2015 ES Capstone class celebrates a successful year of research.

ES in Action



Look at those smiles – ES 105 students love looking for bugs in our local streams!



Visiting instructor Tom Hart (center) showed his ES 105 lab students the ins and outs of Loughberry Lake and its watershed.



Students from Professor A.J. Schneller's Environmental Education class use the Skidmore Community Garden as their classroom as they work with local school kids.



For Sustainable Service Day, Sustainability Fellow Emily Davidson (center) led a group of student volunteers at the Patroon Land farm, which provides food for the Regional Food Bank of Northeastern NY.



North Woods Steward Urvi Kalra '18 (left) works with a group to inoculate logs with shiitake mushroom spawn, at a Skidmore Community Garden event organized by Scotty Kellogg from the Radix Ecological Sustainability Center. Once inoculated, logs can produce edible mushrooms for up to 10 years.



ES students (and a few future Skiddies) learned about permaculture practices from Vince Walsh at the Kawing Crow Awareness Center in Greenfield Center.



ES 105 students measure stream discharge into Loughberry Lake on a beautiful fall day.