Advancing Global Sustainability through Research, Education, and Engagement

2016-17 Annual Report

SCHOOL OF GLOBAL
ENVIRONMENTAL SUSTAINABILITY
COLORADO STATE UNIVERSITY

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ENVIRONMENTAL SUSTAINABILITY
COLORADO STATE UNIVERSITY

INVEST in a SUSTAINABLE FUTURE

Empowering the sustainability leaders of today and tomorrow

At Colorado State University, 80 percent of incoming students identify sustainability as a top interest for study. The next generation is demanding an understanding of how economic, social, and environmental factors all interact together to create their future. SoGES, through its integration of research, education, and engagement, meets that need on the CSU campus.

As part of State Your Purpose – The Campaign for Colorado State University, SoGES seeks to accomplish the following by 2020:

- **Increase total enrollment to 1,000 students annually** by expanding course offerings and developing new degree programs in global environmental sustainability
- **Enhance fellowship and scholarship programs** to provide more support for students, early-career researchers, professors, and practitioners
- **Expand research on critical interlinked sustainability challenges**, such as preserving biodiversity, improving food security, reducing poverty, and minimizing the human and environmental impacts of climate change and energy production
- **Develop new community partnerships, engagement, and outreach activities** to identify needs and bring CSU expertise to bear on local, regional, national, and global challenges

These are not humble goals. They will ensure that Colorado State University continues as a global leader in sustainability research, education, and outreach. Achieving them requires resources to bring faculty together across disciplines, to provide more courses and advising to more students, and to engage public and private partners in solving the greatest sustainability challenges of our time. That is why SoGES is seeking to raise $50 million by 2020.

We invite you to be part of a sustainable future by supporting the School of Global Environmental Sustainability. To learn more about giving to SoGES, contact Moira Sharkey in University Advancement at moira.sharkey@colostate.edu or (970) 491-3651.

STATE YOUR PURPOSE
• THE CAMPAIGN FOR COLORADO STATE UNIVERSITY •

ABOUT the SCHOOL

CSU's Johnson hall where the School is located

Achieving global environmental sustainability – which can be defined as maintaining the Earth's environmental quality, functionality, and services over the long-term while meeting the human needs of today and tomorrow – is one of the greatest global challenges of the coming century.

The School of Global Environmental Sustainability (SoGES) was created by Colorado State University (CSU) to address this challenge. SoGES is a Special Academic Unit attached to the Office of the Provost and Executive Vice President. SoGES connects all eight colleges at the University by providing a structure for sustainability research, education, and engagement. The School is in a distinctive position to draw upon the intellectual and innovative strengths across all of CSU to promote comprehensive, collaborative, and interdisciplinary approaches to the pressing issues that span sustainability today.

The School supports faculty in development of new research and curricula, mentors early career scientists, teaches students, and enables deeper connections across disciplinary and institutional boundaries. SoGES fosters ongoing dialogue about sustainability issues with a multitude of stakeholders from the academic, public, and private sectors. The School builds on CSU's history of leadership in environmental science and education by integrating sustainability studies with the sciences, humanities, arts, and business.

Complex and multi-faceted issues require creative management and problem solving informed by interdisciplinary understanding. SoGES advances global environmental sustainability knowledge by exploring, documenting, and teaching about the links between environmental, societal, and economic aspects of sustainability. These relationships must be addressed to effectively tackle the sustainability challenges of the 21st century, such as minimizing biodiversity loss, providing solutions to the impacts of climate change, and improving food security and social equity while meeting the needs of a human population that is projected to reach nine billion people by mid-century.

VISION

A world that is environmentally healthy, socially equitable, and economically vibrant.

RESEARCH AREAS

To strategically address CSU's sustainability strengths, the School supports research in six subject areas: Climate Change and Energy; Food Systems and Food Security; Environmental Institutions and Governance; Sustainable Communities; Land and Water Resources; and Biodiversity, Conservation, and Management.

MISSION

- Conduct innovative research that leads to new and deeper understanding of sustainability issues
- Provide a challenging, integrative, and provocative education that gives our students knowledge and tools that enable them to contribute to environmental sustainability
- Engage with the public, decision-makers, and other stakeholders to translate discoveries into useful information and practical solutions to pressing environmental problems

RESEARCH applying intellectual creativity to sustainability grand challenges

TO DATE

35 interdisciplinary research teams with faculty PIs from **41** departments/units across **8** colleges

24 faculty fellows from **18** departments across **8** colleges

15 international scholars from **10** countries

60+ manuscripts, books, and book chapters published

$10,932,661 funding obtained by PIs from external sponsors

120 Ph.D. student and postdoc fellows from **30** departments across **7** colleges

FY 2016-17

GLOBAL CHALLENGES RESEARCH TEAMS ..... pgs. 8-9

- **$35,000** awarded to **2** teams
- **13** faculty PIs from **10** departments across **6** colleges
- **12** engagement events held
- **~$40K** from other sponsors

RESIDENT FELLOWS ..... pgs. 10-11

- **$24,000** awarded to **4** Fellows
- **4** manuscripts published
- **1** engagement event held

SUSTAINABILITY LEADERSHIP FELLOWS ..... pgs. 12-13

- **Sixth** cohort
- **20** Fellows from **16** departments/units across **6** colleges

VISITING FELLOWS ..... pg. 14

- **4** fellows from Nigeria, Brazil and United States
- **9** manuscripts published

Research CENTERS & PROJECTS

TO DATE

2 centers

2 international research initiatives

1 working group

9 manuscripts, books, and book chapters published

FY 2016-17

$2,106,150 funding obtained from external sponsors

FUTURE EARTH ..... pg. 15

- **1st** grants competition and **4,200** online collaborators

GLOBAL SOIL BIODIVERSITY INITIATIVE ..... pgs. 16-17

- **8** technical contributions to global policy and research synthesis
- **4** engagement efforts and **2** manuscripts published

THE AFRICA CENTER ..... pg. 18

- **14** events held

GLOBAL BIODIVERSITY CENTER ..... pg. 19

- **4** events held

CONSERVATION DEVELOPMENT ..... pg. 20

- **5** manuscripts and technical reports published
- **1** citizen science program launched

HIGHLIGHTS

EDUCATION interdisciplinary learning and scholarship

TO DATE

299 CSU graduates hold a minor in Global Environmental Sustainability

2,638 students have completed GES courses

10 sustainability courses developed

4 interdisciplinary minors

FY 2016-17

INTERDISCIPLINARY MINORS ..... pg. 22

- **285** students enrolled in the GES minor from **47** majors across all **8** colleges
- **75** students graduated with a GES minor
- **27** students enrolled in sustainable water and peace and reconciliation minors

SCHOLARSHIPS ..... pg. 23

- **$10,000** awarded

COURSE DEVELOPMENT ..... pg. 23

- **2** awards for new courses

GES COURSES ..... pg. 24

- **10** courses offered
- **495** students completed GES courses
- **1** experimental course taught
- **1** new sustainability course initiated

ENGAGEMENT encouraging dialogue for informed solutions

TO DATE

3,250 email list subscribers

1,411 facebook likes

2,089 twitter followers

115 faculty across **8** colleges

FY 2016-17

STUDENT SUSTAINABILITY CENTER ..... pgs. 26-27

- **30** members
- **1** manuscript
- **3** endorsements
- **16** events, booths, and volunteering efforts

COMMUNICATIONS and SUPPORT ..... pg. 28

- **14%** increase in web visitors
- **20** guest posts on blog
- **183** mentions in media
- **289** sustainability-related meetings held in SoGES conference rooms

EVENTS ..... pgs. 28-30

- **41** hosted and co-hosted special events
- **4,354** attendees at SoGES events
- **6** Managing the Planet panels
- **6** Antarctic Lectures
- **4** Dining with Sustainability dinners

EXTERNAL ADVISORY BOARD

Osvaldo Sala (chair)

Julie A. Wrigley Professor at Arizona State University

Joyce Berry

Former Dean of the Warner College of Natural Resources, Colorado State University

Rosina Bierbaum

Professor at the School for Environment and Sustainability, University of Michigan; Roy F. Westin Chair in Natural Economics, University of Maryland

Maggie L. Fox

Past President and CEO of The Climate Reality Project

Thomas Dietz

Professor of Sociology and Environmental Science and Policy and Assistant Vice President for Environmental Research at Michigan State University

Rob Jackson

Michelle and Kevin Douglas Provostial Professor and Senior Fellow at the Woods Institute for the Environment and at the Precort Institute for Energy at Stanford University

Thomas E. Lovejoy

Senior Fellow at the United Nations Foundation and University Professor in the Department of Environmental Science and Policy at George Mason University

W. Berry Lyons

Professor and Director of the School of Earth Sciences at Ohio State University

James B. Martin

Senior Counsel of Beatty & Wozniak, P.C., Denver, Colorado

Jonathan Patz

Professor and Director of the Global Health Institute at the University of Wisconsin

Former Colorado Governor Bill Ritter, Jr.

Director of the Center for New Energy Economy

Scott J. Sternberg

Former President of Vaisala Inc.

LEADERSHIP

MANAGEMENT

Diana H. Wall

Director

Diana H. Wall is a soil ecologist and a University Distinguished Professor at Colorado State University and Director of the School of Global Environmental Sustainability. Her research explores how life in soil (microbial and invertebrate diversity) contributes to healthy, fertile and productive soils and thus to society, and the consequences of human activities on soil globally. Her research on soil biota, particularly soil nematodes, extends from agroecosystems to Antarctica. She is currently Science Chair, Global Soil Biodiversity Initiative. Diana received the 2017 Eminent Ecologist Award from the Ecological Society of America, the 2016 Honorary Member award from the British Ecological Society, the 2015 Ulysses Medal from University College Dublin, the 2013 Tyler Prize for Environmental Achievement, the 2012 SCAR President's Medal for Excellence in Antarctic Research and the 2013 Soil Science Society of America Presidential Award.

Kathleen Galvin

Assistant Director of Education

Kathy Galvin is Professor of Anthropology, Senior Research Scientist at the Natural Resource Ecology Laboratory, Head of the Africa Center at CSU, and SoGES Assistant Director of Education. She is also an advising faculty member in the Graduate Degree Program in Ecology. Trained as a biological anthropologist, she has conducted interdisciplinary human-ecological research in east and southern Africa and central and East Asia. She is interested in issues of pastoral land use, conservation, climate variability, resilience, and adaptation strategies of people in drylands, and household decision-making under environmental uncertainty. Kathy has served on multiple National Research Council and National Science Foundation panels. She was an Aldo Leopold Leadership Fellow, and received her B.A. and M.A. from CSU and her Ph.D. from Binghamton University.

Peter W. Backlund

Associate Director

Peter Backlund joined SoGES as Associate Director in September 2014. He was previously Director of the Integrated Science Program and Director of External Relations at the National Center for Atmospheric Research, and before that held senior positions at the White House Office of Science and Technology Policy, and the National Aeronautics and Space Administration. Peter's interests include the relationship of human activities and environmental changes; the integration of social science and natural science; assessment of climate change vulnerability, risks, and response strategies; use of scientific research in decision-making and public policy; and improving the communication of scientific information to non-technical audiences. He has helped lead scientific assessments of the effects of climate change on land resources, water resources, biodiversity, agriculture, and global food security. Peter is a fellow of the American Association for the Advancement of Science and received his B.A. from the University of New Mexico and his M.A. from George Washington University.

Eugene Kelly

Assistant Director of Research and Development

Gene Kelly is the Deputy Director of the Agricultural Experiment Station and Associate Dean for Extension in the College of Agricultural Science. He is a professor of pedology, has served as the head of the Department of Soil and Crop Sciences, and as the SoGES Assistant Director of Research and Development since 2009. Gene's scientific specialization is in pedology and geochemistry and his current research centers on the influence of climate change and land use on soil degradation and sustainability in water limited systems. He serves as an advisor to the United States Department of Agriculture with the National Cooperative Soil Survey and is a fellow of the Soil Science Society of America. He received his B.S. and M.S. degrees from CSU and his Ph.D. from the University of California-Berkeley.

SENIOR SCHOLARS

Josh Tewksbury

Director of the Future Earth Colorado Global Hub

Former Colorado Governor Bill Ritter, Jr.

Director of the Center for New Energy Economy

Edward B. Barbier

Professor in the Department of Economics

FACULTY

Ruth Alexander	History
Peter Backlund	SoGES
Ken Barbarick	Soil and Crop Sciences
Jennifer Barfield	Veterinary and Biomedical Sciences
Jill Baron	Natural Resource Ecology Laboratory
Dan Beachy-Quick	English
Del Benson	Fish, Wildlife, and Conservation Biology
Autumn Bernhardt	University Honors Program
Michele Betsill	Political Science
Jens Blotevogel	Civil and Environmental Engineering
Thomas Borch	Soil and Crop Sciences
Cynthia Brown	Bioagricultural Sciences and Pest Management
Jo Burgess Barbier	Economics
Daniel Bush	Biology
Phil Cafaro	Philosophy
Sue Ellen Campbell	English
Martin Carcasson	Communication Studies
Michael Carolan	Sociology
Joseph Champ	Journalism and Technical Communication
Suren Chen	Civil and Environmental Engineering
Tony Cheng	Forest and Rangeland Stewardship
Jane Choi	Horticulture and Landscape Architecture
Stephanie Clemons	Design and Merchandising
Doug Cloud	English
Rich Conant	Ecosystem Science and Sustainability
Daniel Cooley	Statistics
M. Francesca Cotrufo	Soil and Crop Sciences
Kevin Crooks	Fish, Wildlife, and Conservation Biology
Charles Davis	Political Science
Sandra Davis	Political Science
Tom Dean	Management
Scott Denning	Atmospheric Sciences
Robert Duffy	Political Science
Brian Dunbar	Institute for the Built Environment
Maria Fernandez-Gimenez	Forest and Rangeland Stewardship
Emily Fischer	Atmospheric Sciences
Steven Fonte	Soil and Crop Sciences
Brian Foy	Microbiology, Immunology, and Pathology
Chris Funk	Biology
Kathy Galvin	Anthropology
Cameron Ghalambor	Biology
Scott Glick	Construction Management
Susan Golicic	Management
Neil Grigg	Civil and Environmental Engineering
Peter Hall	Sociology
Elizabeth Hobbs	Horticulture and Landscape Architecture
Thomas Holtzer	Bioagricultural Sciences and Pest Management
Amy Hoseth	Library
Adrian Howkins	History
Paul Hudnut	Management
Ruth Hufbauer	Bioagricultural Sciences and Pest Management
Nancy Irlbeck	Animal Sciences
Gene Kelly	Soil and Crop Sciences
Raj Khosla	Soil and Crop Sciences
Julia Klein	Ecosystem Science and Sustainability
Alan Knapp	Biology
Mary-Ann Kokoska	Art
Boris Kondratieff	Bioagricultural Sciences and Pest Management
Stephan Kroll	Agricultural and Resource Economics
Melinda Laituri	Ecosystem Science and Sustainability
Jan Leach	Bioagricultural Sciences and Pest Management
Katherine Leigh	Design and Merchandising
Dale Lockwood	Biology; SoGES
Sheryl Magzamen	Environmental and Radiological Health Sciences
Stephanie Malin	Sociology
Anthony Marchese	Mechanical Engineering
Katie McShane	Philosophy
Sue Ellen Melzer-Drinnen	Soil and Crop Sciences
Stephen Mumme	Political Science
Donald Mykles	Biology; University Honors Program
Mary Nobe	Construction Management
Barry Noon	Fish, Wildlife, and Conservation Biology
Troy Ocheltree	Forest and Rangeland Stewardship
Paul Ode	Bioagricultural Sciences and Pest Management
Dennis Ojima	Ecosystem Science and Sustainability
Svetlana Olbina	Construction Management
Erika Osborne	Art
Mehmet Ozbek	Construction Management
Merlyn Paulson	Horticulture and Landscape Architecture
Keith Paustian	Soil and Crop Sciences
Lori Peek	Sociology
Jennifer Peel	Environmental and Radiological Health Sciences
Graham Peers	Biology
Liba Pejchar	Fish, Wildlife, and Conservation Biology
LeRoy Poff	Biology
Jason Quinn	Mechanical Engineering
Jorge Ramirez	Civil and Environmental Engineering
Howard Ramsdell	Environmental and Radiological Health Sciences
Dave Randall	Atmospheric Science
Tony Rappe	Chemistry
Ravi Ravishankara	Chemistry
Laura Raynolds	Sociology
Ken Reardon	Chemical and Biological Engineering
Sarah Reed	Fish, Wildlife, and Conservation Biology
Kyle Saunders	Political Science
Meagan Schipanski	Soil and Crop Sciences
Courtney Schultz	Forest and Rangeland Stewardship
Andy Seidl	Agricultural and Resource Economics
Arathi Seshadri	Soil and Crop Sciences
Sybil Sharvelle	Civil and Environmental Engineering
Kenneth Shockley	Philosophy
Melinda Smith	Biology
Dimitris Stevis	Political Science
Peter Taylor	Sociology
Dawn Thilmany McFadden	Agricultural and Resource Economics
David Thompson	Atmospheric Sciences
Bill Timpson	School of Education
Craig Trumbo	Journalism and Technical Communication
Rodolfo Valdes-Vasquez	Construction Management
Sue VandeWoude	Microbiology, Immunology, and Pathology
Subhas Venayagamoorthy	Civil and Environmental Engineering
Chandrasekar Venkatachalam	Electrical and Computer Engineering
Diana Wall	Biology; SoGES
Reagan Waskom	CSU Water Center/ Colorado Water Institute
Ellen Wohl	Geosciences

RESEARCH

2016-17 research award recipients

The School invests in innovative research activities to advance global sustainability science, including cultivation of interdisciplinary partnerships, experimentation with new methods, and development of projects that integrate disparate knowledge and approaches.

GLOBAL CHALLENGES RESEARCH TEAMS

Collaborative teams of faculty that build cross-campus partnerships to address the world's most pressing regional and global environmental issues. The program provides seed funding to foster creative and innovative approaches to sustainability grand challenges and establish interdisciplinary relationships to conduct research in new areas and with expanded applicability.

$35K awarded | **2** teams | **13** principal investigators *from* **10** departments *across* **Six** colleges

ENVIRONMENTAL JUSTICE AND SUSTAINABILITY IN THE ANTHROPOCENE

$15,000 awarded

RESEARCH FOCUS
How and why equity and environmental justice are important elements of the study of environment, public health, and sustainability

Principal Investigators

Neil Grigg, Department of Civil and Environmental Engineering
Melinda Laituri, Department of Ecosystem Science and Sustainability
Sheryl Magzamen, Department of Environmental and Radiological Health Sciences
Stephanie Malin, Department of Sociology
Stacia Ryder, Department of Sociology
Dimitris Stevis, Department of Political Sciences

In the Anthropocene epoch – an age when human actions determine the behavior and well-being of the planet to a greater degree than other natural processes – issues of environmental justice take on a greater urgency. Human transformation of the environment demands a fuller understanding of multiple dynamics, outcomes, and goals for human activities in order to build equitable and innovative governance, policy, and action. Disciplinary interpretations of equity and environmental justice vary, producing important yet fragmented bodies of literature. The Environmental Justice research team focuses on how these vary across disciplines and through the lens of all six SoGES research focal areas. Their primary goal is to help researchers across CSU and other organizations establish common ground for future interdisciplinary and transdisciplinary collaboration.

In its **3rd** year, the team increased membership to **150** globally including **80** CSU faculty and researchers from **18** departments and all **8** colleges.

Accomplishments

In FY 2016-17 Environmental Justice focused on two major projects to harness and advance transdisciplinary expertise within and beyond their network:

- **Symposium**
  Environmental Justice in the Anthropocene | April 24-25, 2017
  The symposium built on decades of environmental justice research and practice to address the many environmental and ecological problems in the Anthropocene. There were three major themes: multidisciplinary facets of environmental justice, just transitions, and just futures. The event brought together more than 400 scholars, activists, and community members from around the world to discuss current and future issues surrounding environmental justice. The team garnered approximately $40,000 in additional sponsorship for this effort. Sponsors: Adapting Canadian Work and Workplaces to Respond to Climate Change, York University; College of Liberal Arts, CSU; Department of Philosophy, CSU; Office of International Programs, CSU; Office of the Vice President for Research, CSU; Office of the Provost and The Executive Vice President, CSU; Partnership for Air Quality, Climate, and Health, CSU; Warner College of Natural Resources, CSU.
- **White papers**
  Completed white paper drafts for all environmental justice roundtables held between 2015 and 2016, which provided in-depth records and compiled an accessible account of various areas of interest in environmental justice across the School's research focal areas.

Events

- **In partnership with the Diversity Symposium** September 19, 2016
  Co-hosted Jacqueline Patterson, Director of the NAACP Environmental Climate Justice Program
- **Toxic Prisons in an Incarceration Nation** October 7, 2016
  Robert Perdue, Department of Sociology, Appalachian State University
- **Nuclear Families & Gentlemen Activists** October 28, 2016
  Co-sponsored by the Environment & Resources Group lecture featuring Robert Perdue, Department of Sociology, Appalachian State University
- **Radiation, Mom Brains, and Beyond** October 28, 2016
  Co-sponsored a Sociology-in-Progress guest lecture featuring Becky Alexis Martin, Senior Research Fellow, University of Southampton, UK
- **Natural Resources 544D Environmental Justice Workshop**
  January 20, 2017 | Full-day workshop to introduce students in the Conservation Leadership Through Learning master's program to the concept of environmental justice and its applicability to their areas of interest. The workshop included a field visit to the Fort Collins Buckingham neighborhood and three sessions: defining environmental justice, examining locality, and operationalizing environmental justice research.

[OVER]CONSUMPTION: THE CULPRIT CAUSING AN ENVIRONMENTAL CRISIS IN YOUR CLOSET

$20,000 awarded

RESEARCH FOCUS
Post-consumer textile landfill waste and the environmental impact of clothing overconsumption

Principal Investigators

Sonali Diddi, Department of Design and Merchandising
Katharine Leigh, Department of Design and Merchandising
Ruoh-Nan (Terry) Yan, Department of Design and Merchandising
Vickie Bajtelsmit, Department of Finance
Kelly Martin, Department of Marketing
Katie McShane, Department of Philosophy
Brittany Bloodhart, Department of Atmospheric Science; Department of Psychology

In the developed world, high demand and abundance of low-priced 'fast fashion' clothing has created an enormous amount of textile waste. Consumers, particularly under the age of 40, are purchasing larger amounts of cheaply made clothing, and discarding clothes at a higher rate than ever before. Contrary to popular belief, the vast majority of discarded and donated clothes end up in the landfill rather than being reused or exported to developing countries. In Colorado, the amount of discarded textile waste is far larger than most consumers realize and in 2015 alone, the Denver landfill estimates it received around 90,000 pounds of denim and 35,000 pounds of cotton and acrylic sweaters.

Accomplishments

The [Over]Consumption team used a multidisciplinary approach to develop a research agenda focused on the socio-psychological aspects of overconsumption and to promote awareness about the environmental impact and carbon footprint of clothing consumption. In FY 2016-17 they accomplished three major project goals:

- **Data collection**
  Conducted 1) a survey of 650 CSU students and 2) six focus groups on campus to quantitatively and qualitatively asses consumption behaviors, attitudes, and personal values toward sustainable clothing consumption locally.
- **Presentation of findings**
  Using survey and focus group data, submitted abstracts that were accepted to present three papers at international conferences in 2018. Additionally, the team is in the process of developing three manuscripts for publication related to this work.
- **Engagement**
  Held six major campus and community events to raise awareness about the environmental effects of clothing consumption and waste.

Events

- **Social media event** Fall 2016
  The @clothesinmycloset Instagram event had CSU students upload pictures of the contents of their closet, along with a description of what it means to them and a phrase about their wardrobe. The event helped raise awareness about clothing consumption and was a precursor to other events. In the upcoming FY 2017-18 year, the team will conduct a visual analysis of the photos and taglines posted.
- **Denim Visual Impact poster installation** March 27-29, 2017
  Created a visual impact piece of 1,000 pounds of denim, displayed in the Lory Student Center's Curfman Gallery. The installation was accompanied by posters outlining environmental and social impacts of the clothing industry. Co-sponsor: Denver Waste Materials and cooperation from Lory Student Center Arts Program.

- **Sustainability After Fashion** March 28, 2017
  Speaker: Otto Von Busch, Associate Professor at Parsons School of Design. Lecture aimed at challenging the phenomena of consumption through philosophical underpinnings.

- **The True Cost movie screening** March 29, 2017
  Documentary showing how overconsumption is the main driver for numerous environmental and social problems prevalent in the global clothing industry.
- **T-shirt Exchange and Upcycling Lab** March 29, 2017
  The event encouraged campus and community members to bring an old t-shirt and exchange it for a responsibly made t-shirt with a "nutritional label". The upcycling lab used the old t-shirts to make bags. Co-sponsor: Beyond the Label, a California-based company.

- **Reception** March 28, 2017
  Networking reception for faculty across CSU, City of Fort Collins officials, industry members, and University administration to establish research and outreach connections related to sustainable clothing consumption.

RESIDENT FELLOWS

Faculty members engaged in creative sustainability research and problem solving. The program is designed to enhance scholarly contributions to sustainability by providing opportunities to accelerate progress and engage in the academic life of the School.

ANDREA DUFFY

International Studies

$6,000 awarded

RESEARCH FOCUS

How nineteenth-century French forest policies dramatically transformed human relations with the environment within and beyond the borders of France

Andrea Williams is an environmental historian and a practitioner of interdisciplinary research. Her work focuses on how France's nineteenth-century scientific forestry regime transformed human relationships with the environment. Early French foresters debated the sustainability of land-use practices without the benefit of hindsight, and her research reexamines their perspectives and initiatives so that we can discern what they did well and also learn from their mistakes. While Andrea's case studies are limited to the Mediterranean region, her findings are globally relevant. Her work provides one example of the ways in which, throughout history, power hierarchies have been determined and contested on environmental ground and it is indicative of the environmental pressures and challenges that subaltern groups have faced in the past and continue to face today. Andrea used her Fellowship for a course buyout to complete her book, *Nomads' Land: Pastoralism and French Environmental Policy in the Nineteenth Century Mediterranean World* set to be published in fall 2017. She also wrote and published two journal articles and a book review with the additional time allowed from the Fellowship.

Algerian cork forests on fire

CRAIG TRUMBO

Department of Journalism and Media Communications

$6,000 awarded

RESEARCH FOCUS

Socioeconomic responses to combined extreme weather events of drought, wildfire, and flood

Craig Trumbo is a professor of journalism and mass communication. His work investigates risk-related social responses to natural and anthropogenic hazards. As a consequence of climate change, there is increased probability that areas will undergo a rapid weather "whiplash" among droughts, wildfires, and floods. When occurring together over a short period of time these hazards pose an extraordinary risk to agricultural systems and economies, rural and urban infrastructures, and the natural ecosystems on which we ultimately depend. His Fellowship research built on a SoGES GCRT from the previous year, that used existing historical data (dating to 1960) to locate in time and place extreme events in which these hazards have exerted a combined effect. Craig's Fellowship further investigated the cases of weather whiplash identified by the GCRT and their resulting ecological and social impacts. Ultimately, this work will help recommend strategies for communities to be able to adapt to and prepare for this increasing threat. He also used the Fellowship to begin development of an undergraduate course on the role of individual and societal responses to risk, including both natural and anthropogenic hazards.

Extreme weather whiplash

RESEARCH

$24K awarded | **4** fellows *from* **FOUR** departments *across* **2** colleges

YAN VIVIAN LI

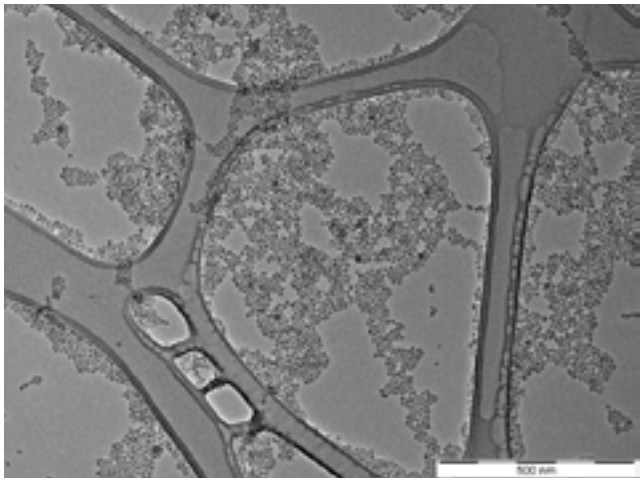
Department of Design and Merchandising

$6,000 awarded

RESEARCH FOCUS

The fate and transport of a new class of carbon nanoparticles and the potential use of the nanoparticles as novel model tracers in water and environmental research

Vivian's research aims to upgrade the function and performance of textiles and apparel to improve environmental protection and living conditions in the supply chain. Her work while a Resident Fellow focused on characterizing the movement of engineered nanoparticles in the environment. These particles are widely used in the manufacturing of textiles globally, with hundreds of thousands of metric tons produced and released each year. Potential benefits of this work include the possibility of developing new, more effective tracers to study the flow of water through porous media and improved understanding of environmental risks associated with the dispersal and fate of nanoparticles, some of which are known carcinogens. This Resident Fellow work resulted in a grant proposal submitted to the National Science Foundation, which is currently being revised for resubmission.



Carbon nanoparticles

STEPHEN MUMME

Department of Political Science

$6,000 awarded

RESEARCH FOCUS

Politics and institutional development of U.S.-Mexico management of transboundary water resources

Steve Mumme is a political scientist specializing in comparative environmental politics and policy. His Resident Fellowship built on his research examining the institutional development of United States-Mexico water management along their border since the landmark U.S.-Mexican Water Treaty was struck in 1944. Joint water management is a critical part of the political landscape in the American Southwest, and crucial for sustainable water and riparian area management. These border treaties and agreements that govern water resources directly affect how western water managers are able to respond to climate volatility and prolonged water scarcity. Steve used his Fellowship to organize and produce a symposium at CSU on the U.S.-Mexico Salinity Crisis of 1961-1973 and to present a paper based on the symposium at the International Water History Conference in Grand Rapids, Michigan. He published three manuscripts, with a fourth in press and three more in development. He gave two additional conference presentations, organized a conference panel, and spent time working on a book.

Mini-Symposium

March 21, 2017 | 20 participants

Held during CSU Water Center Hydrology Days, this symposium explored the diplomatic history, impact, and contemporary significance of this extraordinary agreement shaping binational cooperation and operations on the Colorado River with 10 guest speakers and panelists.

SUSTAINABILITY LEADERSHIP FELLOWS

Providing early career researchers with innovative training to effectively communicate science to the media and public, develop professional skills and techniques, and strategies to build meaningful careers that incorporate engagement and interdisciplinarity.

Sixth cohort | **20** fellows | *from* **17** departments | *across* **Six** colleges

The Sustainability Leadership Fellows program selects 20 advanced PhD students and postdoctoral scholars from a competitive pool of applicants across eight colleges at CSU. Each cohort of Fellows begins the year with in an intensive two-day science communication workshop run by COMPASS, science communication specialists. During the academic year, Fellows participate in six formal training sessions led by local and University experts on a range of topics including conflict management, interacting with policy-makers, data visualization, and time and workload optimization. Fellows also take part in additional skill building and networking opportunities throughout the year, including interacting with and describing their research to the University Provost. Each Fellow writes a blog post and peer reviews another's work for publication on the School's HumanNature blog. At the end of the program, Fellows are able to elegantly deconstruct, define, and communicate their research within the framework of broader global environmental sustainability challenges using cross-disciplinary and integrative thinking.

Science Communication Workshop September 13-15, 2016

Topics:

- how media is changing and what it means for communicating science
- foundations for effective science communication
- introduction to each journalist's media platform
- bridging the worlds of science and journalism
- thinking like a journalist
- knowing your audience and the 'message box'
- preparing for interviews and interview practice
- broadening your network and use of social media
- becoming an agent of change and the 'change chart'

Lead trainer: **Nancy Baron**, COMPASS.
Journalist trainers: **Christopher Joyce**, National Public Radio; **Ashley Ahearn**, KUOW and Earthfix; **David Malakoff**, Science Magazine; **Hillary Rosner,** independent journalist.

Training Curriculum

Storytelling and Writing for Blogs October 18, 2016
Trainer: John Calderazzo, Professor Emeritus, Department of English and Changing Climates CSU

Time Management and Writing Productivity November 14, 2016
Trainer: Sarah Reed, Wildlife Conservation Society and Department of Fish, Wildlife, and Conservation Biology

Communications drill December 15, 2016
Two minutes to describe your science to the CSU Provost Rick Miranda

Science, Policy, and Interacting with Policymakers February 28, 2017
Trainer: Peter Backlund, School of Global Environmental Sustainability

Proposals and Grant Writing March 21, 2017
Trainers: Alan Knapp, Department of Biology; Elizabeth Ryan, Department of Environmental and Radiological Health Sciences

Talking Science with Skeptical Audiences April 12, 2017
Trainer: Doug Cloud, Department of English

Data Visualization for the Rest of Us: A Beginner's Guide April 26, 2017
Linda Hofschire, Library Research Service, Colorado State Library, Denver

> *...I've participated in four training sessions with SoGES, and each time I've been impressed by the scientific sophistication of the students and by their unmitigated enthusiasm for learning communication skills. I knew Diana Wall had an outstanding reputation as a scientist, but she also seems to have a knack for finding and motivating the sharpest young minds in the country. If my own kids asked where they should go to become articulate environmental scientists, I'd send them to her.*
>
> - Christopher Joyce, Science Correspondent, National Public Radio

RESEARCH

Cohort

Elizabeth Bach, Postdoctoral Fellow, Department of Biology and the School of Global Environmental Sustainability
HumanNature blog entry: *Six ways soil biodiversity sustains us!*

Drew Bennett, Postdoctoral Fellow,
Department of Fish, Wildlife and Conservation Biology
HumanNature Blog entry: *The power of stories in combating our shifting baselines*

André Dozier, Ph.D. Candidate,
Department of Civil and Environmental Engineering
HumanNature blog entry: *Crop production faces extinction in Colorado, can video gaming be the answer?*

Stacey Elmore, Postdoctoral Fellow,
Department of Fish, Wildlife and Conservation Biology
HumanNature blog entry: *Raccoons and Rabies: A complex and under-recognized sustainability issue in the United States*

Stacy Endriss, Ph.D. Candidate, Department of Bioagricultural Sciences and Pest Management and Graduate Degree Program in Ecology
HumanNature blog entry: *Here's to the Villains: Studying invasive plants in a nativist world*

Rebekah Gullberg, Ph.D. Student,
Department of Microbiology, Immunology, and Pathology
HumanNature blog entry: *How to get rid of a houseguest: Alternative strategies for antivirals*

Robert Aaron Hrozencik, Ph.D. Student,
Department of Agricultural and Resource Economics
HumanNature blog entry: *Creating a sustainable future for the Ogallala Aquifer*

Ajit Karna, Ph.D. Candidate, Department of Microbiology, Immunology, and Pathology and Department of Microbiology
HumanNature blog entry: *As the mosquito bites*

Anita Kuepper, Ph.D. Student,
Department of Bioagricultural Sciences and Pest Management
HumanNature blog entry: *Herbicide resistance: An agricultural arms race*

> *This program was a huge boost for my confidence. It allowed me to discuss my science and practice communication skills in a supportive yet challenging environment, which energized me to eagerly confront situations that previously left me paralyzed by anxiety.*
>
> - Stacy Endriss

> *I benefited in many ways: Improving communication skills and awareness, socializing with an excellent community across campus, and an empowerment that my message is important and I have the power to do big things.*
>
> - Derek Schook

Katherine Lininger, Ph.D. Candidate, Department of Geosciences
HumanNature blog entry: *An overlooked carbon sink? The influence of rivers and floodplains on the carbon cycle*

Stacy Lischka, Ph.D. Candidate, Department of Fish, Wildlife and Conservation Biology and Department of Human Dimensions and Natural Resources
HumanNature blog entry: *Bears and people and garbage, oh my!*

Brittany Mosher, Ph.D. Candidate,
Department of Fish, Wildlife and Conservation Biology
HumanNature blog entry: *Love in the time of Chytrid*

Isabella Oleksy, Ph.D. Student, Department of Ecosystem Science and Sustainability, Natural Resource Ecology Laboratory and Graduate Degree Program in Ecology
HumanNature blog entry: *When there's something strange in your water...*

Steven Rosenzweig, Ph.D. Student, Department of Soil and Crop Sciences
Blog entry: *Soil health and an era of ecological experimentation in agriculture*

Stacia Ryder, Ph.D. Student, Department of Sociology
HumanNature blog entry: *Reflections on environmental racism and justice: My sustainability will be intersectional...*

Derek Schook, Ph.D. Candidate, Department of Geosciences
HumanNature blog entry: *Rolling rocks, pushing pebbles, and slinging sand: How rivers change landscapes, and how people change rivers*

Alisha Shah, Ph.D. Candidate, Department of Biology
HumanNature blog entry: *Don't go with the (low) flow: Why rivers are in need of our protection*

Xoco Shinbrot, Ph.D. Student, Department of Human Dimensions of Natural Resources and Graduate Degree Program in Ecology
HumanNature blog entry: *Designing conservation programs to protect coffee from climate change*

Carlie Trott, Ph.D. Candidate, Department of Psychology
HumanNature blog entry: *Finding hope in a climate of uncertainty: Reflections on climate change education and action with children*

Brandon Wolding, Ph.D. Student, Department of Atmospheric Science
HumanNature blog entry: *The changing climate of science*

RESEARCH

VISITING FELLOWS

Local and international scholars hosted by the School to collaborate and connect with faculty experts at CSU while they work on their sustainability-related research.

ADEMOLA ADENLE

Nigeria | January 2016 - December 2017

Ademola Adenle is a former Research Fellow at the United Nations University, Japan. Since his start as a SoGES Visiting Fellow in 2016, he has published a number of scholarly articles and opinion pieces covering a range of issues affecting Africa on sustainable development. He is lead editor of a book titled *Risk Analysis and Governance of GMOs in Developing Countries*, published by Cambridge University Press, UK and co-editor of a book in progress on science, technology, and innovation for meeting sustainable development goals, to be published by Oxford University Press, UK. Ade is also collaborating with faculty from the Department of Agricultural and Resource Economics on a multi-stakeholder analysis of climate change mitigation and clean energy in Africa, where they are examining low-carbon development programs for renewable energy and barriers to implementation of these programs.

CRISTINA YUMIE AOKI INOUE

Brazil | August 2016 - June 2017

Cristina Yumie Aoki Inoue is a Professor of International Relations at the University of Brasília, Brazil. Cristina's research areas include global environmental politics focusing on the governance of biodiversity and climate change, the Amazon region, transnational networks, and international cooperation for development. As a Visiting Fellow, she presented three conference papers on her research in global environmental governance. She began joint research with Kathryn Hochstetler, a former SoGES Visiting Fellow, on south-south relations and earth system governance, which they will present at a conference in fall 2017. She also started the "Worlding Global Environmental Politics" project with Dimitris Stevis in the Department of Political Science, where they will offer concurrent graduate student seminars in fall 2017 at University of Brasília and CSU. Finally, Cristina and Michele Betsill in the Department of Political Science are planning a study abroad course in the Brazilian Amazon, which will join students from CSU, University of Brasília, and Universidade da Amazônia.

> *I am returning to Brazil with renewed energy and enthusiasm.*
>
> - Cristina Yumie Aoki Inoue

PAUL CAWOOD HELLMUND

United States | March 2016 - June 2017

Paul Cawood Hellmund, is an educator and the founder and president of Hellmund Associates, and the former president of the Conway School. As a Visiting Fellow, Paul interviewed dozens of CSU faculty, administrators, and students to help design a deeply immersive project- and place-based experiential learning course for freshmen and sophomores interested in sustainability. In summer 2017 he taught a pilot of the new GES course, Applied Community Sustainability. In January 2017, Paul helped lead a CSU Bridge Scholars study abroad program to Costa Rica, during which he and first-generation college students explored the potential of applying biomimicry. During FY 2016-17, Paul co-taught a Water Sustainability Fellows seminar for Colorado Asset students, exploring how to diversify the voices involved in major water decisions in the state. As an offshoot of that seminar, he helped co-found an international collaboration, River Sisters/Hermanas del Rio, bringing together officials and residents of cities in the watershed of the Colorado River in both Mexico and the United States. In February, he joined a joint US-Mexican delegation of the River Sisters/Hermanas del Rio in exploring the headwaters of the Colorado River and meeting with mayors and other officials of the watershed.

> *Being a SoGES Visiting Fellow gives you a chance—time, space, and colleagues—to gain laser-sharp focus on some aspect of sustainability that you just haven't had time to explore and yet you know could be a game-changer.*
>
> - Paul Hellmund

GEORGE TAYLOR

United States | September 2015 - August 2017

George Taylor is director of Philanthropy Support Services, a division of PaxTerra Inc. and chair of the advisory council of the Center for Asian Studies at University of Colorado, Boulder. In FY 2016-17 George continued to deepen his understanding of water resources in high mountain Asia including past, present, and potential future CSU contributions to water resources management in south, south-east, and central Asia. He also explored internationalization at CSU, building on recommendations made from his work in the previous year. George gave three presentations on his work during the year and spent a considerable amount of time networking on campus and traveling for his research.

FUTURE EARTH futureearth.org

The global research platform providing the knowledge and support to accelerate our transformations to a sustainable world.

Colorado Hub – Secretariat Staff

Joshua Tewksbury, Global Hub Director (CU and SoGES-CSU)
Kathy Kohm, Editor-in-Chief of Anthropocene Magazine (CU)
Laurel Milliken, Information Technology Officer (SoGES-CSU)
Lakshmi Muralidharan, Finance Manager (CU)
Jon Padgham, Capacity Building Lead (CU)
Mel Plett, Logistics & Coordination (CU)
Craig Starger, Research Enabling Lead (SoGES - CSU)
Dan Strain, Digital & Social Media Communications Lead (CU)

Future Earth is a 10-year international initiative to coordinate new, interdisciplinary actionable science efforts and solutions to sustainability research and global environmental change. Future Earth has five global hubs based in Colorado, Montreal, Paris, Stockholm, and Tokyo. The Colorado Hub resides within the School of Global Environmental Sustainability at CSU and the Sustainability, Energy, and Environment Complex at CU-Boulder. In FY 2016-17 Future Earth broadened its research agenda and deepened its engagement with professionals and innovators within and outside academia to deliver on its global mission: to generate the knowledge needed to build transformations to a more sustainable world.

PEGASuS Grants

In FY 2016-17 the Colorado Hub collaborated with the Global Biodiversity Center to secure a $2 million grant from the Gordon and Betty Moore Foundation to develop an international grants program for sustainability science. The new initiative is called the Program for Early-stage Grants Advancing Sustainability Science (PEGASuS) and also includes a grant from the Nomis Foundation to CU Boulder, forming a unique opportunity for CSU and CU to shape the future of global sustainability science.

The first grants competition, focused on biodiversity and natural assets, resulted in over **220** applications from **53** countries and will be awarded in fall 2017.

Online Collaboration network.futureearth.org

The Colorado Hub at CSU developed the Open Network in October 2016, this online platform brings together researchers and professionals to do the work needed to build transformations toward a sustainable world. Members from across the globe can CONNECT with peers, COLLABORATE on research and engagement, and LEARN about new opportunities in sustainability. The Open Network's features include private and public discussion groups, a crowd-sourced jobs board, and events calendar and tools for hosting webinars.

The Open Network includes more than **4,200** members from over **100** countries and **280** new users per month on average.

Ocean Knowledge-Action Network

The Colorado Hub co-leads Future Earth's efforts related to ocean sustainability. In 2016, the Colorado Hub led a global consultation process to identify priorities for ocean sustainability research in partnership with the Belmont Forum. The Colorado Hub organized a one-day expert panel in Bern, Switzerland followed by a global online consultation that gathered input from 247 participants from across the world followed by a 35-person expert consultation held in Brussels, Belgium co-organized with the Belmont Forum. The Colorado Hub is also leading on the development of an Ocean Knowledge-Action Network. The Colorado Hub co-organized an international workshop in Kiel, Germany in December 2016 with 91 participants from 26 countries from which a workshop report was developed and distributed to the Future Earth community. This report forms a basis for future directions and research priorities for the Ocean Knowledge-Action Network. The Colorado Hub also had a prominent role at the United Nations Ocean Conference in New York City in June 2017, where Craig Starger delivered a statement to the UN General Assembly on behalf of the Scientific and Technological Community.

Craig Starger delivering a statement to the UN Generally Assembly on behalf of the Scientific and Technological Community

Engagement

The Colorado Hub began collaborating with two School of Global Environmental Sustainability Global Challenge Research Teams in FY 2016-17 in the development of a Future Earth *Systems of Sustainable Consumption and Production Knowledge-Action Network*. This included two roundtable events held by the School in fall 2016 as well as participation by two GCRT representatives, Dimitris Stevis and Sonali Diddi, at the *Workshop on Further Development of a Future Earth Knowledge-Action Network on Systems of Sustainable Consumption and Production*, held at the National Socio-Environmental Synthesis Center in Annapolis, Maryland in May 2017.

In FY 2016-17 Director of the Colorado Hub, Josh Tewksbury gave keynote lectures on the state of the planet at the Montreal Meeting of Future Earth, and at the Smithsonian Earth Optimism Summit, as well as invited presentations at the first Planetary Health / Geohealth Alliance meeting in Boston, the American Geophysical Union, the Ecological Society of America Meeting, the Society for Conservation Biology, and the Society for American Naturalists. In addition, he served on the advisory panel for the crafting of the Global Environmental Facility 7th disbursement, and successfully negotiated the approval of a 20 to 30 million dollar Ocean Sustainability Collaborative Research Action through the Belmont Forum, at their annual plenary meeting in Doha.

GLOBAL SOIL BIODIVERSITY INITIATIVE globalsoilbiodiversity.org

A collaboration of international scientists dedicated to enhancing the use of soil biodiversity science and ecosystem services in policy and management of global terrestrial ecosystems.

GLOBAL SOIL BIODIVERSITY INITIATIVE
A SCIENTIFIC EFFORT
www.globalsoilbiodiversity.org

International Scientific Advisory Committee

Diana Wall (Scientific Chair), Colorado State University, United States
Elizabeth Bach (Executive Director), Colorado State University, United States
Fred Ayuke, University of Nairobi, Kenya
Richard Bardgett, University of Manchester, UK
Ciro Gardi, European Food Safety Authority, Italy
Nobuhiro Kaneko, Yokohama National University, Japan
Fatima Maria de Souza Moreira, Federal University of Lavras, Brazil
Luca Montanarella, European Commission Joint Research Centre, Italy
Johan Six, ETH Zurich, Switzerland
Wim van der Putten, Netherlands Institute of Ecology & Wageningen Centre for Soil Ecology, The Netherlands

The Global Soil Biodiversity Initiative (GSBI) develops and synthesizes state of the art research from scientists internationally, providing scientific input to the United Nations and other international environmental bodies. Its scientific priorities include identifying key knowledge gaps linking soil biodiversity and ecosystem function, developing a platform for synthesis of soil biodiversity data, methods harmonization, and establishing a forum for global research networks. The GSBI secretariat is housed at SoGES.

Celebrating its fifth anniversary in 2016, the GSBI is an internationally recognized source of credible, emerging soil biodiversity science. Membership grew 37 percent to 1,238 participants worldwide.

Distribution of GSBI participants

Scientific Contributions to Policy

In FY 2016-17 the Global Soil Biodiversity Initiative made significant contributions toward integrating soil biodiversity science into several national and international policy reports and recommendations. These reports and assessments provide global policymakers with the latest science on how soil biodiversity sustains our planet and our communities.

United Nations - Global

- Held a GSBI side-event at the 13th Conference of Parties to the United Nations Convention on Biological Diversity, *Mainstreaming Soil Biodiversity into Global Biodiversity*
- Provided expert feedback on United Nations Convention to Combat Desertification report, *Global Land Outlook*
- Provided expert feedback leading to new sections on soil biodiversity in the Intergovernmental Panel on Biodiversity & Ecosystem Services *Land Degradation and Restoration Assessment*
- Continuing collaboration with the Intergovernmental Panel on Biodiversity & Ecosystem Services forthcoming assessments

International

GSBI participants contributed expert comments on the European Food Safety Authority's Opinion on the *Effects of Plant Protection Products on in-soil Organisms*. After public comments were addressed, the final opinion was published in January 2017. Work to integrate soil biodiversity into European policy continues with the ongoing European Accademies' assessment, Soils at Risk, led by several members of the GSBI International Scientific Advisory Committee.

National

Scientific Chair Diana Wall presented at the U.S. White House Office of Science and Technology Policy workshop Gaining Ground – Soil as a Renewable Resource, in July 2016 and the National Research Council Board on International Scientific Organizations symposium, *Soil: The Foundation of Life,* in December 2016, both held in Washington, DC. These meetings led the development of an interagency working group and a Framework for a Federal Strategic Plan for Soil Science, including soil biodiversity.

CENTERS & PROJECTS

The Global Soil Biodiversity Atlas presented to the Australian Parliament by the Hon. Luke Hartsuyker MP, Assistant Minister to the Deputy Prime Minister, on behalf of the Hon. Barnaby Joyce MP, Deputy Prime Minister and Minister for Agriculture and Water Resources; Minister for the Environment and Energy the Hon. Josh Frydenberg MP; and Assistant Minister for Industry, Innovation and Science the Hon. Craig Laundy MP

Research Synthesis & Management

The GSBI partnered with several efforts to synthesize soil biodiversity research:

- The sWORM working group funded by German Synthesis Centre for Biodiversity Science is working toward a global earthworm analysis and database
- The African Soil Microbiology Project funded by U.S. Agency for International Development to sample and analyze soil microbial communities from 1,000 samples in 10 countries
- The Land Potential Knowledge System app: a free, global app that leverages technology to give land owners and managers tools and information to make individual land-use decisions

The sWORM working group is at the March 2017 workshop in Leipzig, Germany

Online Engagement

- **4,037** Twitter followers, a 53 percent increase
- **3,703** Facebook followers, a 58 percent increase
- **3,471** Newsletter subscribers, an 8 percent increase
- **11,720** Website visits, a 21 percent increase

@theGSBI GlobalSoilBiodiversityInitiative

Engagement

- The Global Soil Biodiversity Atlas Published in 2016, the Atlas increased its reach in FY 2016-17, including official launch events in 15 countries, more than 1,300 print copies sold, more than 45,000 downloads of the online version, and more than 4 million views online
- Beneath our Feet blog Web traffic increased 350 percent in FY 2016-17, the blog featured 32 contributors from 12 countries and averaged 2,000 social media impressions for each post
- Symposium November 6-9, 2016
  Unearthing the Role of Global Soil Biodiversity in Ecosystems Organizers: Andre Franco (CSU, Department of Biology) and Diana Wall. Soil Science Society of America Annual Meeting, Phoenix, AZ
- National Biodiversity Teach-In February 2017
  Soil Biodiversity: Life beneath our feet webinar by Elizabeth Bach, hosted by Elgin High School, Elgin, IL; >600 live viewers across USA including middle school & high school students as well as soil conservation extension groups

A popular GSBI Beneath our Feet blog post featured the collaboration of participant Dr. Tancredi Caruso at the University of Belfast and artist Ed Reynolds to produce a show of soil biodiversity inspired art

THE AFRICA CENTER africacenter.colostate.edu

A community of faculty, students, community members, and African partners addressing complex issues of sustainable environments and societies.

Leadership

Kathleen Galvin (Director), Department of Anthropology; Natural Resource Ecology Laboratory
Bethlehem Abebe Astella, Department of Human Dimensions of Natural Resources (PhD Student)
David Bunn, Natural Resource Ecology Laboratory
Jessica Davis, Department of Soil and Crop Sciences
Paul Evangelista, Department of Ecosystem Science and Sustainability; Natural Resource Ecology Laboratory
Stacy Lynn, Natural Resource Ecology Laboratory
James R. Owiny, Lab Animal Resources
Robin Reid, Department of Ecosystem Science and Sustainability; Natural Resource Ecology Laboratory; Center for Collaborative Conservation
Gabriel Senay, Department of Ecosystem Science and Sustainability (faculty affiliate)
Sue Van Den Heever, Department of Atmospheric Science
Sue VandeWoude, Dept of Microbiology, Immunology, and Pathology
Renée Harmon (Research Assistant), School of Education
Conrad Marshall (Graduate Student Fellow), Department of Ecosystem Science and Sustainability; Graduate Degree Program in Ecology

The Africa Center focuses on innovative and interdisciplinary research that crosses conventional disciplines to tackle environmental and sustainability issues on the continent. Members are actively involved in research, education, and collaborative engagement between institutions in Africa and the U.S. to promote sustainable ecosystems and societies.

In FY 2016-17 the Africa Center added five new members to its executive committee, grew its community partnerships, and increased its student and community outreach efforts. The Center named a Graduate Student Fellow in 2016-17 and became a member of the Posner Center for International Development. During the year, the Africa Center hosted eight guest speakers, four CSU faculty lectures, one panel discussion on African refugee resettlement in Northern Colorado, and its third annual *Africa & Ale* event. The Center also hosted two student networking luncheons to build connections between students and faculty and learn about students' interest in Africa research.

Online Engagement

- **519** e-mail subscribers, a 24 percent increase
- **293** Twitter followers, a 25 percent increase
- **184** Facebook followers, a 18 percent increase
- **125** Instagram followers
- **4,028** website visits

@CSUAfricaCenter CSUAfricaCenter

Events

65 attendees

25 attendees

35 attendees

60 attendees

35 attendees

30 attendees

Conservation and Development in a Conflict Zone: Threats and Strategies from the Eastern Democratic Republic of Congo and the Albertine Graben

35 attendees

40 attendees

25 attendees

15 attendees

65 attendees

15 attendees

70 attendees

100 attendees

CENTERS & PROJECTS

GLOBAL BIODIVERSITY CENTER biodiversity.colostate.edu

A network of faculty working on biodiversity research at the University encouraging knowledge transfer and cross-campus collaboration.

Executive Committee Members

Christopher Funk (Director), Department of Biology
Cynthia Brown, Department of Bioagricultural Science and Pest Management
Jacey Cerda, School of Global Environmental Sustainability
Kevin Crooks, Department of Fish, Wildlife, and Conservation Biology
Colleen Duncan, Department of Microbiology, Immunology, and Pathology
Kathleen Galvin, Department of Anthropology
Barry Noon, Department of Fish, Wildlife, and Conservation Biology
Arathi Seshadri, Department of Soil and Crop Sciences
Kate Schoenecker, Department of Ecosystem Science and Sustainability
Diana Wall, Department of Biology; School of Global Environmental Sustainability
George Wittemyer, Department of Fish, Wildlife, and Conservation Biology
Jacob Job (Research and Social Media Coordinator), Department of Fish, Wildlife, and Conservation Biology

The mission of the Global Biodiversity Center is to advance understanding, conservation, and appreciation of life's variation, ranging from genetics and organisms to ecosystems and their interactions. In all systems, aquatic to terrestrial and managed to natural, biodiversity maintains life on our planet and underpins the ecosystem services vital to human well-being, including food, carbon storage, climate regulation, and aesthetics and cultural support. The Global Biodiversity Center works to maintain and enhance biodiversity through research, policy advancement, education, and outreach at CSU.

In FY 2016-17 the Global Biodiversity Center added two new executive committee members, hired a research and social media coordinator, and held four large-scale events. The Center partnered with Future Earth in receipt of a $2 million grant from the Gordon and Betty Moore Foundation to fund sustainability science projects under Future Earth's PEGASUS funding opportunity. And notably, Center director Chris Funk was part a team that discovered the Ecuadorian Rainfrog (*Pristimantis ecuadorensis*), a new species of endangered frog that inhabits cloud forests in Ecuador.

CSU SOURCE stories

CSU, Future Earth team land sustainability science grant

by MARY GUIDEN December 13, 2016

A team led by Josh Tewksbury, director of the Colorado Global Hub of Future Earth, and W. Chris Funk, director of the Global Biodiversity Center at Colorado State University's School of Global Environmental Sustainability, recently received a $2 million grant from the Gordon and Betty Moore Foundation to fund sustainability science projects.

'Spectacular-looking' endangered frog-species discovered in Ecuador's cloud forest

by ANNE MANNING March 22, 2017

It's not every day someone gets to say, "I've discovered a new species." It's a claim that Colorado State University biologist Chris Funk can happily make. Funk and his collaborators, who've spent years exploring the tropical climes of South America to study the region's dizzying biodiversity, have documented a new species of rainfrog they've named the Ecuadorian rainfrog (*Pristimantis ecuadorensis*).

Events

130 attendees

February 22, 2017 | An open dialogue with the public about the value of public lands and how they benefit human wellbeing. Panelists: Barry Noon, Department of Fish, Wildlife, and Conservation Biology; Kenneth Shockley, Department of Philosophy; Judith Kohler, Colorado Chapter of the National Wildlife Federation; Courtney Schultz, Department of Forest and Rangeland Stewardship.

20 participants

April 15, 2017 | Training for graduate students and faculty in developing and focusing their message, delivering short talks, writing letters to the editor and opinion-editorials, contributing to science-advisory groups, visiting members of Congress, Executive Branch agencies, and White House officials, and providing expert testimony. Instructors: Jacey Cerda, School of Global Environmental Sustainability; Barry Noon, Department of Fish, Wildlife, and Conservation Biology; Christopher Funk, Department of Biology.

110 attendees

April 18, 2017
Fast-paced, IGNITE-style presentations by CSU's leading biodiversity scientists.

60 attendees

June 14, 2017 | Pollinator workshop featuring CSU's research efforts into understanding honey bee health and nutrition, as well as which species of bees are native to Colorado and how to attract them by creating pollinator-friendly habitats. Speakers: Ali Hogeboom, Department of Soil and Crop Sciences and Graduate Degree Program in Ecology; Lisa Mason, Department of Bioagricultural Sciences and Pest Management; Arathi Seshdari; Department of Soil and Crop Sciences.

Online Engagement

- **160** Twitter followers — @CSUBiodiversity
- **200** Facebook followers — GlobalBiodiversityCenter
- **2,772** website visits

CONSERVATION DEVELOPMENT WORKING GROUP cd.colostate.edu

Balancing development with conservation in urbanizing landscapes to sustain biodiversity and human well-being in the places where people live and work.

Leadership

Liba Pejchar (Co-Director), Department of Fish, Wildlife, and Conservation Biology
Sarah Reed (Co-Director), Wildlife Conservation Society; Department of Fish, Wildlife, and Conservation Biology

The Conservation Development Working Group aims to balance development with conservation in urbanizing landscapes to sustain biodiversity and human well-being in the places where people live and work. Comprised of scholars and practitioners from five colleges and 10 departments at CSU, plus diverse external public and private institutions, they define conservation development as an approach to the design, construction, and stewardship of a development that achieves functional protection of natural resources, while also generating social and economic benefits for human communities. They aim to create a low-cost, high-impact research and outreach program of both scientific importance and practical relevance for land conservation and sustainable development. The group has positioned CSU as a leader in this area; Conservation Development currently serves as a regional and national resource for information and expertise in this rapidly evolving field.

Fort Collins Urban Conservation and Development project

In 2016-17, the Conservation Development Working Group focused efforts specifically on sustaining and improving the value of urban natural areas for people and wildlife. The City of Fort Collins, like many communities, has a long history of protecting open space. However, Fort Collins' population is projected to grow rapidly from 155,000 today to 240,000 by 2045. As the densities of homes and businesses increase, the integrity of local habitats and the ability for all residents to access open space close to where they live and work is under threat. To address this concern and plan for growing populations in our local community and others facing similar challenges, Conservation Development is using Fort Collins as a model system to adopt an integrated social-economic-ecological approach to urban conservation and development. The working group combines citizen engagement with cutting edge social and natural science to identify how urban green space provides quality habitat for wildlife, economic value to local residents and businesses, and contributes to human health and well-being.

Conservation Development submitted a grant proposal to the Environmental Protection Agency's Science to Achieve Results program, titled: *From indicators to actions: Applying meaningful measures of ecosystem services and human well-being to community planning and management*. $599,146 was recommended for funding, then rescinded due to federal budget cuts.

Publications and Awards

During FY 2016-17, Conservation Development published five scholarly articles, with another in review. A 2015 working group publication in *Frontiers in Ecology and the Environment* was recognized in spring 2017 with a Warner College of Natural Resources Publication Award. Additionally, they hosted two citizen science training sessions and a volunteer appreciation event for the Nature in the City Biodiversity Project. Working group members gave five presentations at conferences and meetings during the year, and Conservation Development was awarded a $600 grant with another $74,398 grant pending.

Engagement

In 2014 Conservation Development collaborated with the City of Fort Collins to conduct the first citywide assessment of biodiversity across public and private open space. The results of this assessment supported development of the Nature in the City Strategic Plan, which includes policies and actions to create and maintain access to nature in Fort Collins. The Strategic Plan was adopted unanimously by City Council in March 2015, and in April 2015, Fort Collins citizens voted strongly in favor of a sales tax extension to implement the initiative over 10 years. Conservation Development has since launched a successful citizen science program (2015-2017), which involves community volunteers in ongoing monitoring of urban biodiversity. The results of the biodiversity monitoring are actively used by the City to inform land acquisition and management decisions, influence long-range planning and development reviews, and achieve the vision of the Nature in the City initiative.

Nature in the City Biodiversity Project – Volunteer Appreciation Event

September 7, 2016 | 30-35 volunteers and staff
A thank you for Nature in the City Biodiversity Project volunteers. Speakers: Kate Rentschlar, Sarah Reed, Lisa Mason, Jamie Weiss. Co-sponsor: City of Fort Collins – Nature in the City initiative, Citizen Science Bee Monitoring project

Nature in the City Biodiversity Project – Citizen Science Training Sessions

May 4 and May 6, 2017 | 35-40 volunteers and staff
A welcome to the Nature in the City Biodiversity Project citizen scientist team participants. Speakers: Justin Scharton, Sarah Reed, Allison Mitchell, Mikko Jimenez. Co-sponsor: City of Fort Collins – Nature in the City initiative

EDUCATION

Interdisciplinary minors graduation ceremony Spring 2017

The School is actively involved in educating and equipping students with knowledge and tools to tackle sustainability challenges by offering interdisciplinary sustainability curricula, promoting the development and integration of sustainability concepts into courses across campus, and working to increase the breadth of programs for all levels of students. The School's rigorous curriculum integrates economic, societal, and environmental dimensions of sustainability. Its educational offerings are overseen by a committee of sustainability experts drawn from all colleges at CSU.

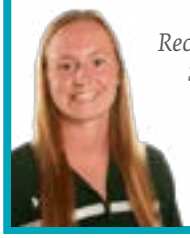
INTERDISCIPLINARY MINORS

Spring 2017 interdisciplinary minor graduates

Global Environmental Sustainability (GES)

75 graduates **285** students enrolled from **47** majors

The GES minor is a 21-credit sequence with course offerings from 25 different subject codes across all eight colleges, providing depth in learning and allowing students to tailor coursework to augment their interests. The minor provides a deep understanding of the complexity surrounding the problems we face and the solutions that we need to implement to address climate change, biodiversity, pollution, public health, oceans, food security and development on a global scale. To date, 299 students have graduated from CSU with a minor in GES. They have positions in organizations that include the cities of Wheat Ridge and Fort Collins, Western States Reclamation, Davy Resource Group, Bishop Brogden Associates, Rocky Mountain National Park, Pegasus Technical Services and United Capital Financial Advisors.



Receiving a minor in Global Environmental Sustainability means being informed about the impact of our choices on future generations.

-Katie Kicklighter

Sustainable Water (SWIM)

The Sustainable Water Interdisciplinary Minor, run through the Water Center and academically housed at the School, focuses on water issues from social, political, economic, and ecological perspectives. Students gain knowledge of the complexities of water management and its use. Three students graduated with the SWIM minor in FY 2016-17, and 10 students are currently enrolled.

Sustainable Energy (SEM)

The Sustainable Energy Minor is academically housed at the School and administered by CSU's Energy Institute. The minor provides students with the skills and knowledge necessary to understand the challenges and opportunities in the transition to a sustainable energy future. Providing society with energy in a sustainable way requires a broad understanding of technical, environmental, and social science issues. The courses in the minor span multiple colleges and cover physics, life sciences, engineering, sociology, and political science. The minor was approved in spring 2017 and is currently enrolling students.

Peace and Reconciliation (SPRS)

The Interdisciplinary Minor in the Role of Sustainability in Peace and Reconciliation Studies began actively enrolling students in January 2017. It focuses on the social, philosophical, and education aspects of peace and reconciliation and how these can address issues of sustainability. Three students graduated with the SPRS minor in FY 2016-17, and 17 students are currently enrolled.

EDUCATION

Participating in [the GES] minor was by far the best decision I made while at CSU.

- Julian Richards

...I am more informed on the issues facing our planet today and better prepared to work towards solutions.

- Sonya Angello

FOUR GES minor students were each awarded $2,500 scholarship for their high-level sustainability coursework thanks to a $10,000 contribution from the CGW Foundation.

GRADUATE CERTIFICATES

Graduate certificates consist of 9-15 credit sequences that are narrowly focused on a particular sustainability topic. All coursework in these programs addresses the United Nations Sustainable Development Goals and delivers technical knowledge that can be immediately applied. Certificates are designed for individuals working for NGOs, environmental services companies, or government entities focused on improving people's lives through the development of sustainable environmental practices. Students can receive certificates as part of a Masters or Ph.D. program or as a stand-alone program. There were eight admitted students in FY 2016-17. The four certificates and programs are: Applied Global Stability: Natural Resources, Applied Global Stability: Agriculture, Applied Global Stability: Water Resources, and the Sustainable Peace and Reconciliation Studies Interdisciplinary Graduate Program.

E-WASTE COURSE

Electronic waste is a growing economic, social, and environmental issue that is rapidly expanding. To address this critical topic, Arrow Electronics awarded SoGES and the School of Advanced Materials Discovery $50,000 to develop an upper division interdisciplinary course on the subject. Experts from chemistry, materials science, design, environmental health, and supply chain management are creating the course and an e-book for a spring 2018 offering.

GRAND CHALLENGES COURSE GRANT

In FY 2016-17 the School offered a competitive grant opportunity to develop a Grand Challenges Course. The grant allowed faculty from two different colleges to develop and co-teach a course that will address global issues from an interdisciplinary perspective. The resulting Grand Challenges Course will provide a challenging learning experience that offers expertise from multiple disciplines but focused on one topic and will be offered as an upper-division elective that encourages critical and creative thinking and inquiry consistent with the School's educational goals. This effort was funded by the Office of the Provost and Executive Vice President.

Awarded Course | starting spring 2018

Science and Economics of Global Climate Change

This course considers climate change, one of the key challenges for the 21st Century, from both natural and social science perspectives. Starting from Earth's energy budget, the course will derive climate sensitivity, and explore climate models and scenarios. It will then survey the core insights from economics that must be understood to develop an effective response. Throughout, the course emphasizes active learning through exploration with simplified models of climate and the economy, and through the use of in-class experiments in which students play the role of market participants.

Instructors:
Terrence Iverson, Department of Economics
Scott Denning, Department of Atmospheric Science

EDUCATION

COURSES

495 students completed GES courses in FY 2016-17

GES 101 Foundations of Global Environmental Sustainability *Offered face-to-face and online*

The introductory course in the GES minor provides a comprehensive survey of issues in global sustainability and lays the groundwork for a firm understanding of sustainability grand challenges. Open to all students at CSU, the course also exposes interested students to curricular opportunities across all eight colleges.

GES 101 class in session

GES 141 Sustainable Energy

An introduction to the basics of energy production and evaluates the sustainability of different sources of renewable and non-renewable energy. Students explore energy storage, transmission, pollution, and conversion as well as life-cycle analysis, policies, regulations, and economics of energy production. This course is required for the Sustainable Energy Minor.

GES 130 Introduction to Sustainability Engagement

Teaches students, selected as EcoLeaders for their dormitories, about campus sustainability efforts and how local actions are connected to global issues in sustainability. This is a one-credit course that supports the EcoLeaders Program run by CSU's Housing and Dining Services.

GES 180A3 Applied Community Sustainability

Engaging with Northern Colorado communities, teams of students develop workable solutions to problems related to food security, green infrastructure, and urban wildlife conservation, and other sustainability topics. Fully integrated with a writing course provides a complementary emphasis on values, ethics, and meaning—and critical thinking, writing, and speaking. This course is taught in conjunction with a section of the English Department's CO150 course and its development was supported by the President's Sustainability Committee.

GES 330 Sustainability in Practice/GES 331 Practicum

Implements sustainability projects on campus. GES and EcoLeader students propose and execute projects that will educate other students and increase the operational sustainability of campus life in this variable-credit course.

GES 441 Analysis of Sustainable Energy Solutions

Energy as a critical resource for society and its connection to climate change, food production, and water resources. This course is the capstone for the sustainable energy minor and launched in spring 2017.

GES 450 Global Sustainability and Health

Introduces students to important aspects of health as influenced by environmental factors. The course brings together physical and social sciences to highlight mechanisms of change. A new course, starting fall 2017.

GES 460 Sustainability and the Law

Sustainability through the lens of case law, considering the role of law from the local to the international level. Students explore the differences between how scientists address sustainability and how lawyers approach the issues.

GES 470 class on New Belgium Brewery's sustainability tour

GES 470 Applications of Environmental Sustainability *Offered face-to-face and online*

Practices and problem solving for environmental sustainability with an emphasis on assessment tools, decision-making, and best practices. This course is the capstone for the GES minor and accepts a limited class size for more focused coursework and student teams.

GES 520 Issues in Global Environmental Sustainability *Offered face-to-face and online*

Provides students with a deep understanding of sustainability issues, placed in broader economic and social context. The course is open to all graduate students across campus.

COURSE ENDORSEMENTS: The School endorses courses across campus for their strength and depth of sustainability content. Endorsement is noted in the course catalog and on transcripts, attracting students to these courses and allowing employers and graduate programs better insight into the value of courses taken.

ENGAGEMENT

SoGES External Advisory Board lecture with Kim Jordan of New Belgium Brewing Company, November 1, 2016

The School promotes dialogue about Sustainability with the local and global communities through an extensive set of events, ongoing discussion with a wide variety of stakeholders, and an active and dynamic online presence.

STUDENT SUSTAINABILITY CENTER

A University-wide, student run organization whose mission is to empower students to advance sustainability practices and principles. The Center involves students in volunteer projects, hosts events to raise awareness about sustainability, consolidates and distributes sustainability information and news, and builds relationships across campus to promote environmental initiatives.

Officers

Emily Taylor (Director), Environmental Policy major, GES and Sustainable Energy minors; graduating May 2018
Madison Wood (Associate Director of Engagement), Ecosystem Science and Sustainability and Spanish double major; Spatial Information Systems minor; graduating December 2017
Jack Van Vleet (Associate Director of Outreach), Rangeland Ecology major; Ecological Restoration and Conservation Biology minors; graduated May 2017
Tim Weinmann (Director of the Nitrogen Footprint Project), Ecosystem Science and Sustainability major; graduated May 2017

The Student Sustainability Center, supported by and housed at SoGES, worked to expand resources for undergraduate student engagement and increase collaboration with campus organizations. In FY 2016-17 the Student Sustainability Center refined its primary goals as a student-led organization:

- promote interdisciplinary relations across all majors and encourage sustainable practices in all fields
- connect undergraduates to the School and the minor in Global Environmental Sustainability
- provide valuable information on jobs and internships for students, current news, and opportunities around campus and community
- provide a fun environment for all undergraduates to be a part of and build lasting connections with fellow students

During the year, the Center increased collaboration with student organizations, including ASCSU Environmental Affairs, Defend Our Future, Climate Reality Campus Corps, and EcoLeaders. The Center increased its presence on campus, hosting nine events and four booths including a career fair for sustainability professions, and a more active social media platform. It also formalized three engagement programs in FY 2016-17 to better define its structure and provide more opportunities for student involvement: the club, a leadership program, and a research program.

Nitrogen Footprint Project

A collaboration between 20 universities world-wide, this student-led research effort was initiated at CSU in 2014 under the mentorship of Jill Baron, U.S. Geological Survey and Natural Resource Ecology Laboratory, and student project manager Tim Weinmann. In FY 2016-17 the Center completed calculations on CSU's nitrogen pollution and began public outreach and awareness efforts. They participated in the Celebration for Undergraduate Research and Creativity, hosted workshops on nitrogen at two Student Sustainability Center club meetings, developed and distributed handouts on ways to reduce personal nitrogen pollution, and ran a booth dedicated to nitrogen education at the 2017 Earth Day Festival. In addition, the Center published a co-authored paper on adding CSU's nitrogen footprint and the University sustainability plan in *Sustainability: The Journal of Record*.

Leadership in Sustainable Professions program

Created in Spring 2017, the program provides students with professional development opportunities and an understanding of how interdisciplinary aspects of sustainability can be incorporated into their careers. The competitive program is open to all GES minor students and a cohort of 10 students was selected in 2017. The first semester-long training consisted of four workshops:

- **Measuring Sustainability** February 28, 2017 | Utilizing metrics to measure progress on sustainable initiatives across industries. Led by Carol Dollard and Stacey Baumgarn, CSU Facilities Management
- **Communication & Sustainability** March 21, 2017
  Effective communication tools for achieving sustainability goals in a professional setting. Led by Peter Backlund, School of Global Environmental Sustainability
- **Public Sector Roundtable** April 11, 2017
  Conversations with public sector professionals to learn about sustainability in their respective field and practice networking skills. Professionals: Jacey Cerda, Environmental Lawyer and SoGES Faculty; Aaron Fodge, CSU Alternative Transportation; Tom Plant, Center for the New Energy Economy; Reagon Waskom, CSU Water Center and Colorado Water Institute; and Emily Wilmsen, City of Fort Collins Sustainability
- **Private Sector Roundtable** May 2, 2017
  Conversations with private sector professionals to learn about sustainability in their respective field and practice networking skills. Professionals: Greg Goble, Otter Box; Carol Cochran, Horse and Dragon Brewing Company; Helene Lefowitz, Institute for the Built Environment; John Butler, Brendle Group; and Ellie Troxell, Brendle Group

Events

Booths

- **Ice Cream Social** August 10, 2016
- **Ram Welcome** August 19, 2016
- **Fall Involvement Expo** September 1, 2016
- **Spring Involvement Expo** February 1, 2017

Sponsored Events

Sustainability Lunch and Learn
September 29, 2016
22 attendees

77 attendees

30 attendees

ENGAGEMENT

1350 email subscribers

788 Facebook followers

141 Instagram followers

30 members

Student Sustainability Center Club

The Center's Club meets biweekly to promote sustainability efforts in student lives and at the institutional level. Club activities are also aimed at increasing student engagement and collaboration with the Fort Collins community. Meeting topics in FY 2016-17 included:

- CSU Nitrogen Footprint research engagement
- build your own simple compost project
- sustainable Halloween costumes
- verma-composting
- movie screening of the documentary, *Minimalism,* to learn about conscious living
- earth week event projects

Endorsements

- **ZipBike Letter of Support** Wrote a letter of support in fall 2016 for an ASCSU resolution to bring ZipBike stations to campus in connection with the City of Fort Collins bike-share program
- **Federal Coal Program Reform Letter** Along with other environmental student organizations across the Rocky Mountain region, the Center signed a letter of support for the Wilderness Society, presented to the Secretary of the Interior at a public meeting in July 2016
- **Aylesworth/Newsome LEED Gold Resolution** Endorsed the Residence Hall Association's proposal for Housing and Dining Services to commit to LEED Gold standards in two upcoming redevelopment projects
- **"Heated" Youth Rally to Demand Climate Action** Helped promote a climate rally hosted by CSU students in April 2017

Volunteering

- **We Ride: Bicycle Education Expo** August 21, 2016 | 4 volunteers | Student Sustainability Center and ASCSU members helped educate first year students on the environmental benefits of commuting by bike
- **Bike to Breakfast** September 29, 2016 | 6 volunteers Educating students about bike safety on campus
- **Fall Clean Up** November 7, 2016 | 11 volunteers Basic yard cleanup for the elderly in the community
- **Earth Week Alternative Transportation Events** April 17-21, 2017 | 8 Volunteers | Helped with alternative transportation events including Carpool to Coffee, Bike to Breakfast, and Bus to Barista

SSC.CSU

Co-sponsored Events

150+ attendees

34 attendees

40 attendees

200+ attendees

10 attendees

30 attendees

COMMUNICATIONS & SUPPORT

Website sustainability.colostate.edu

- **63,186** visits, a 14 percent increase
- visits from **188** countries
- international traffic constituted **24%** of total visits

Blog blog.sustainability.colostate.edu

- **20** guest posts from CSU early career postdoctoral fellows and Ph.D. students
- **5,760** visits, a three percent increase
- international traffic constituted **42%** of total visits

Vimeo vimeo.com/soges

- **1,365** video plays
- **427** plays in Colorado
- **1,116** desktop plays, **174** phone plays, **66** tablet plays

Social Media and Correspondence

- **3,250** subscribers to the School email list and newsletter, a 7 percent increase
- **1,411** Facebook Likes, a nine percent increase
- **2,089** Twitter followers, a 15 percent increase

Media Mentions

- **183** mentions in the media
- **79%** of the stories ran in the U.S.
- **21%** of the stories ran internationally

Conference Rooms

- **289** interdisciplinary sustainability-related meetings and events
- **471** usage hours
- **88** staff-initiated meetings and events

EVENTS

The School acts as a conduit for sustainability science and works to communicate and connect that science to diverse audiences. By hosting a range of events each year, the school tailors them to educate the CSU community and public on critical sustainability issues.

Dining with Sustainability

A dinner series convening researchers and managers across Northern Colorado working in areas of environmental sustainability.

March 23, 2017 Dining with Sustainability dinner

Dining with Sustainability dinners provide sustainability experts from the University, federal and local agencies, and the non-profit and private sectors an opportunity to:

- establish and strengthen networks
- identify opportunities for collaboration and information-sharing
- promote creative and innovative approaches to one's own work
- inspire research, enterprise and collegiality

Each dinner is loosely structured to promote exchange of ideas and generate conversation through both small and large group formats over the course of the evening. The School circulates participant lists and food for thought in advance of each dinner and houses a full list of active participants on its website. The program covers dinner and refreshments, the event is casual and fun, and participants regularly stay well beyond the 2.5-hour timeframe to continue discussions.

The School accepts approximately 20 participants for each dinner, selected to assure disciplinary and organizational diversity and encourage active interaction. Three dinners were hosted in FY 2016-17: September 1, 2016, September 22, 2016, and March 23, 2017.

ENGAGEMENT

53 total events

17 SoGES events

36 co-sponsored events

4,354 total attendees

Hosted and co-hosted events

100 attendees

93 attendees

825 attendees

118 attendees

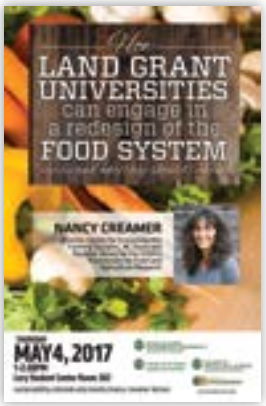
90 attendees

165 attendees for lecture
45 guests at VIP reception

20 attendees

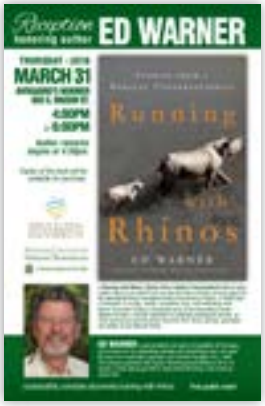
130 attendees

60 attendees



70 attendees

50 attendees



95 attendees

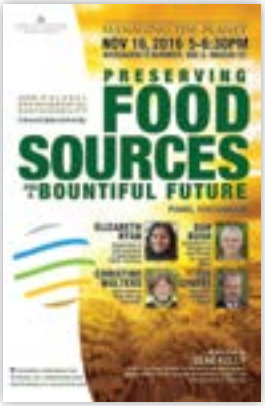
ENGAGEMENT

Managing the Planet Panel Series

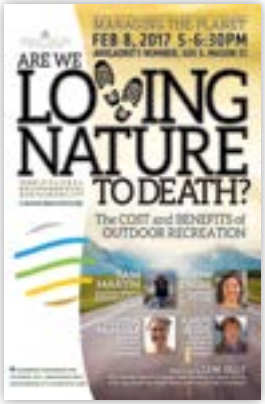
Addressing the most current sustainability issues with diverse panels of CSU experts and designed for engagement with the local community.

60 attendees

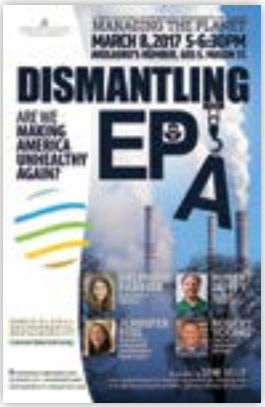
120 attendees



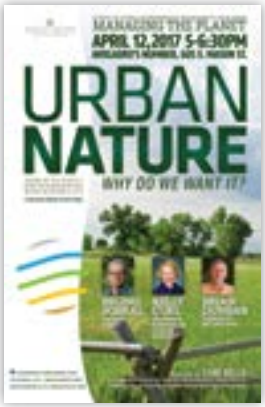
120 attendees



70 attendees



120 attendees

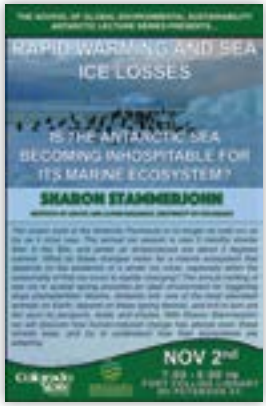


150 attendees

Antarctic Lecture Series

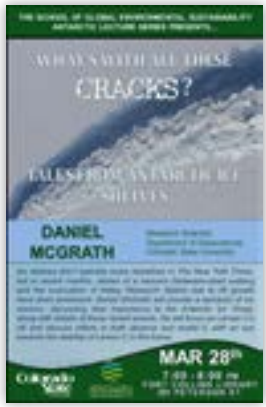
Discussing life and work 'on the ice' with invited Antarctic researchers.

75 attendees

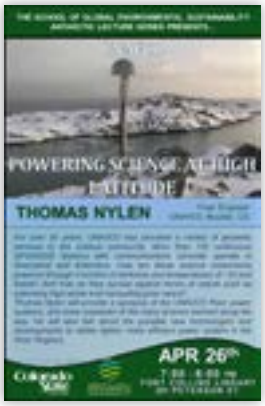


40 attendees

40 attendees



90 attendees



40 attendees

OPERATIONS

Johnson Hall, Colorado State University

STAFF

Jarvis Choury

Fiscal and Operations Manager

Aleta Weller

Senior Research and Engagement Officer

Dale Lockwood

Academic Coordinator; Instructor, Department of Biology

Kristin Pintauro

Communications Coordinator

Moira Sharkey

Development Officer

Ryan Deming

Web and Video Coordinator

Laura Shaver

Event and Administrative Coordinator

Elizabeth Bach

Global Soil Biodiversity Initiative Executive Director

Craig Starger

Research Liaison Officer, Future Earth Colorado Global Hub

Pat Keys

Research Scientist

Laurel Milliken

Information Technology Officer, Future Earth Colorado Global Hub

Emily Taylor

Student Sustainability Center Director

EXECUTIVE COUNCIL

Michele Betsill

Department of Political Science

Thomas Borch

Department of Soil and Crop Sciences

Joe Champ

Department of Journalism and Media Communication

Tom Dean

Department of Management

Brian Dunbar

Institute for the Built Environment

Chris Funk

Department of Biology

Alan Knapp

Department of Biology

CURRICULUM COMMITTEE

Jan Leach

Department of Bioagricultural Sciences and Pest Management

Barry Noon

Department of Fish, Wildlife, and Conservation Biology

Dennis Ojima

Department of Ecosystem Science and Sustainability

Kenneth Reardon

Department of Chemical and Biological Engineering

Elizabeth Ryan

Department of Environmental and Radiological Health Sciences

Dave Thompson

Department of Atmospheric Sciences

Joe Von Fischer

Department of Biology

Kathleen Galvin (Chair)

Department of Anthropology

Cynthia Brown

Department of Bioagricultural Sciences and Pest Management

Rich Conant

Department of Ecosystem Science and Sustainability

Angela Acree Guggemos

Department of Construction Management

Nancy Levinger

Department of Chemistry

Dale Lockwood

Academic Advisor, School of Global Environmental Sustainability

Jean Morgenweck

CSU OnlinePlus

Howard Ramsdell

Department of Environmental and Radiological Health

David Riep

Department of Art and Art History

Thomas Timberlake

Department of Forest and Rangeland Stewardship

Jocelyn Boice

Morgan Library

OPERATIONS

FINANCE REPORT

	Budget	Actual Expenses	Credits
FY 2016-17 BASE BUDGET	**$952,504.00**		
Salaries			
Director, Associate Director, Assistant Directors		$448,189.00	
Staff, Postdoc, Research Scientist		$312.890.00	
SALARIES TOTAL		**$761,079.00**	
Research			
Global Challenges Research Teams		$42,000.00	
Resident Fellows		$24,000.00	
TOTAL		**$66,000.00**	
Sustainability Leadership Fellow Program			
Science Communication Workshop, trainings, year operations and supplies		$30,904.00	
TOTAL		**$30,904.00**	
Education			
GES101, 470, 520 and GES101 Online (professors and TAs, supplies, and trips)		$103,597.00	
TOTAL		**$103,597.00**	
Student Sustainability Center			
Salaries		$5,647.75	
Operations and events		$4,303.20	
TOTAL		**$9,950.95**	
PROGRAM ACTIVITIES TOTAL		**$210,451.95**	
General Administration			
Supplies		$8,878.00	
Operating charges (events, phone, data, etc.)		$63,963.00	
Travel		$41,378.05	
TOTAL		**$114,219.05**	
EXPENSE TOTAL		**$1,085,750.00**	
1X monies			$70,000.00
1X Tyler Prize gift match from Central			$45,424.00
Differential tuition			$39,193.00
FY15 carryforward			$21,379.00
Balance			**$42,750.00**
Balance for future commitments in FY17 $21,379			

GRANTS

Future Earth & Global Biodiversity Center
Tewksbury J., Funk W. C., *Future Earth Spark Funding Initiative: Integrating science for sustainability*, Gordon and Betty Moore Foundation, 2017-2020, ($2,031,152)

Conservation Development Working Group
Environmental Protection Agency, Science to Achieve results (STAR). 2016. *From indicators to actions: applying meaningful measures of ecosystem services and human well-being to community planning and management*. ($599,146 recommended for funding, then rescinded due to federal budget cuts)

CSU Graduate School. 2016. Student Recruitment Mini-Grant. ($600)

City of Fort Collins, Natural Areas Department. 2016. *Nature in the City: Protecting and enhancing the value of open space for people and wildlife*. ($74,398; pending)

PUBLICATIONS

Student Sustainability Center

Kimiecik, J., Baron, J. S., Weinmann, T., & Taylor, E. (2017). Adding a nitrogen footprint to Colorado State University's sustainability plan. *Sustainability: The Journal of Record, 10*(2), 89–95. https://doi.org/10.1089/sus.2017.29091.jk

Research Scientist: Pat Keys

Keys, P. W., Wang-Erlandsson, L., Gordon, L. J., Galaz, V., & Ebbesson, J. (2017). Approaching moisture recycling governance. *Global Environmental Change*, *45*, 15–23. https://doi.org/10.1016/j.gloenvcha.2017.04.007

Resident Fellow: Andrea Duffy

Duffy, A. E. (2016). Fighting fire with fire: Mobile pastoralists and French discourse on wildfires in nineteenth-century Algeria. *Resilience: A Journal of the Environmental Humanities, 3*, 71. https://doi.org/10.5250/resilience.3.2016.0071

Williams, A. (2017, April). Syria's forgotten pluralism and why it matters today. *The Conversation*. https://theconversation.com/syrias-forgotten-pluralism-and-why-it-matters-today-76206

Resident Fellow: Stephen Mumme

Mumme, S. P. (2016). Enhancing the U.S. Mexico treaty regime on transboundary rivers: Minutes 317-319 and the elusive environmental minute. *Journal of Water Law, 25*(1), 27–37.

Mumme, S. P. (2017). [Review of the book *Cooperation in the Law of Transboundary Water Resources*, by C. Leb]. *Journal of Water Law, 25*:3.

Mumme, S. P. (2017). Constructing equity during the salinity crisis, 1961-1973: Mexico, the United States, and the politics of sharing on the Colorado River. *Journal of the Southwest*, *59*(1–2), 133–183. https://doi.org/10.1353/jsw.2017.0009

Nava, L., Brown, C., Demeter, K., Lasserre, F., Milanés-Murcia, M., Mumme, S., & Sandoval-Solis, S. (2016). Existing opportunities to adapt the Rio Grande/Bravo Basin water resources allocation framework. *Water, 8*(7), 291. https://doi.org/10.3390/w8070291

Global Biodiversity Center

Guayasamin, J. M., Hutter, C. R., Tapia, E. E., Culebras, J., Peñafiel, N., Pyron, R. A., Morochz, C., Funk, C.W., & Arteaga, A. (2017). Diversification of the rainfrog *Pristimantis ornatissimus* in the lowlands and Andean foothills of Ecuador. *PLOS ONE, 12*(3), e0172615. https://doi.org/10.1371/journal.pone.0172615

Global Soil Biodiversity Initiative

Bach, E., & Wall, D. H. (2017). Trends in biodiversity: Soil organisms. In S. Levin (Ed.), *Encyclopedia of the Anthropocene*. Elsevier Publishers.

Crowther, T. W., Todd-Brown, K. E. O., Rowe, C. W., Wieder, W. R., Carey, J. C., Machmuller, M. B., Snoek, B.L., Fang, S., Zhou, G., Allison, S.D., Blair, J.M., Bridgham, S.D., Burton, A. J., Carrillo, Y., Reich, P. B., Clark, J. S., Classen, A. T., Dijkstra, F. A., Elberling, B., Emmett, B. A., Estiarte, M., Frey, S.D., Guo, J., Harte, J., Jiang, L., Johnson, B.R., Kröel-Dulay, G., Larsen, K. S., Laudon, H., Lavallee, J. M., Luo, Y., Lupascu, M., Ma, L. N., Marhan, S., Michelsen, A., Mohan, J., Niu, S., Pendall, E., Peñuelas, J., Pfeifer-Meister, L., Poll, C., Reinsch, S., Reynolds, L. L., Schmidt, I. K., Sistla, S., Sokol, N. W., Templer, P. H., Treseder, K. K., Welker, J. M. & Bradford, M. A. (2016). Quantifying global soil carbon losses in response to warming. *Nature*, *540*(7631), 104–108. http://dx.doi.org/10.1038/nature20150

Working Group: Conservation Development

Farr, C. M., Pejchar, L., & Reed, S. E. (2017). Subdivision design and stewardship affect bird and mammal use of conservation developments. *Ecological Applications*, *27*(4), 1236–1252. https://doi.org/10.1002/eap.1517

Kretser, H. E. & Reed, S. E. (2017). *Incorporating wildlife science into land-use planning to improve private lands conservation*. Wildlife Conservation Society, Adirondack Program Technical Paper #5.

Miller, A. E., Goad, E., Gallo, T., Reed, S. E., Bailey, L. L., & Pejchar, L. (2017). The effect of exurban development on wintering birds in Colorado. *The Wilson Journal of Ornithology, 129*(1), 85–97. https://doi.org/10.1676/1559-4491-129.1.85

Mockrin, M. H., Reed, S. E., Pejchar, L., & Jessica, S. (2017). Balancing housing growth and land conservation: Conservation development preserves private lands near protected areas. *Landscape and Urban Planning, 157*, 598–607. https://doi.org/10.1016/j.landurbplan.2016.09.015

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Visiting Fellow: Ademola Adenle

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Former Visiting Fellow: Pilar Andrés

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