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I am pleased to share with you the 2012-2013 Annual Report for The School of Global Environmental Sustainability (SoGES). This report summarizes the breakthrough up energy, enthusiasm, and collaboration of Colorado State University’s (CSU) researchers, students, and staff to drive new intellectual collaborations and expand CSU’s ability to address the world’s environmental problems. These problems are emergent, interacting, occurring at a faster rate than previously forecasted and increasingly complex, which requires that we expand the breadth of knowledge available to develop solutions to these global challenges.

The School positions CSU as a leader in sustainability science and provides an interdisciplinary focus on problem solving with respect to sustainability challenges. Thus, SoGES helps provide CSU with a campus-wide service that brings to the forefront the interrelated aspects of sustainability—economy, environment, and the economy. The School, located on the corner of the CSU Fort Collins campus, was uniquely designed as a structure to facilitate cross-campus and cross-disciplinary interaction as a result of 2008 President’s Task Force Report (sustainability.colostate.edu).

The 2008 report noted that universities must consider new structures that will accelerate innovative research, education, and communication—because the decisions of society about structures that will accelerate innovative research, education, and places us among the best in the nation in the emerging field of sustainability science.

The School with your advice, and that of our Executive Council and External Advisory Board, will begin a new Phase 2.0 in 2013-2014. In short, SoGES will build on its initial development phase and advance to new cross-cutting functions and opportunities for The School of Global Environmental Sustainability (SoGES). This report shares The School Highlights in 2012-2013.
The School of Global Environmental Sustainability (SoGES) is at the core of a growing number of exciting sustainability initiatives in research and education at Colorado State University (CSU). SoGES, located on the oval at the CSU Fort Collins campus, serves as a hub to connect CSU’s community of scholars and practitioners interested in applying interdisciplinary perspectives to large-scale environmental, economic, and social questions not easily addressed through traditional approaches.

The School was uniquely designed to reach across disciplines and colleges to forge new alliances and advance greater understanding of the challenges to achieving sustainability faced by our nation and global community.

SoGES is meeting this challenge and continues to strengthen CSU’s reputation of being at the forefront of addressing the world’s sustainability issues through research, education, and outreach.
Mission and Vision

Mission
To develop new strategies for global sustainability that inform solutions to global environmental problems. The School of Global Environmental Sustainability will accomplish this by using a linked societal-environment-economics framework to advance understanding and generation of sustainability science.

The School defines environmental sustainability broadly as humans coexisting with the natural world on a planet with finite resources.

Our Vision is to:

• provide a challenging, integrative, and provocative education to establish the foundation, principles, and practices to ensure long term environmental sustainability while meeting the needs of people around the earth

And to:

• be a magnet for excellence at CSU, and provide both an external and an internal focus for activities in sustainability science
• provide an organizational structure that can link the proven talent in residence at CSU in focused and dedicated ways to tackle the most pressing issues related to Global environmental sustainability

Research Focal Areas

To strategically address CSU’s sustainability strengths, the School has selected six areas of focus:

• Climate Change and Energy
• Food Security
• Environmental Institutions and Governance
• Sustainable Communities
• Land and Water Resources
• Biodiversity, Conservation, and Management

Climate Change and Energy
Climate change impacts, adaptation, mitigation, and issues of energy are sustainability challenges that require insights from disciplines across campus. Climate change and energy issues are intrinsically linked together and influence every part of our everyday lives. Thus understanding energy supply and demand and the demographic, socio-economic and technological forces that affect and are affected by Climate Change and Energy issues require research by multiple disciplines.

Food Security
The concept of food security is defined as the availability of food and physical, social, and economic access to food that meets a growing population’s dietary needs as well as their food preferences. Food security is a complex sustainable development issue, linked to agriculture, climate, atmospheres, water, ecology, economics, trade, nutrition/health, and sustainable development.

Environmental Institutions and Governance
Environmental Institutions and Governance includes—but is not limited to—research on environmental policies and management practices, community conservation programs, common property resource regimes, collaborative decision-making processes, and markets for environmental goods and services. Environmental governance research may investigate broader questions of authority, accountability, legitimacy, participation, and fairness and equity.

Sustainable Communities
Sustainable community science is organized to enable people to meet their own needs and to enhance their well-being while preserving Earth’s life support systems or without endangering the living conditions of other people, now or in the future. It addresses the interactions between nature, society, and economies, and is linked to sustainable development and institutional innovations to assure sustainable trajectories into the future.

Land and Water Resources
An demand for food and energy grow, land and water resources are increasingly stretched to serve across diverse user and stakeholder groups. The dynamic nature of the complex customary, legal, and social constructs that regulate land and water use demand dynamic, diverse, and nimble interdisciplinary research teams capable of responding to emerging issues.

Biodiversity, Conservation, and Management
Biodiversity conservation and management are integral to our sustainable future. Biodiversity provides ecosystem services including air quality, carbon sequestration, water purification, pollution, and prevention of ecosystem. Species loss is accelerating, as are changes to species composition due to land use change and invasive species, with unknown effects for our future.

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The unique world problems of sustainability are cross-cutting and are not usually reflected in traditional structures of universities. To make progress on sustainability problems, universities must find new mechanisms and embark on new structural academic experiments to facilitate interdisciplinary research. These must build connections between traditional disciplines and between existing centers and institutes. Research universities are among a new era that will increasingly require interdisciplinary faculty in strong research teams and educational curricula that incorporates interdisciplinary learning and sustainability science.

To meet these changing needs, the School of Global Environmental Sustainability was established in 2008 under the direction of Professor Diana H. Wall. The School builds on Colorado State University’s historical legacy for excellence in leadership in the environment and is a successful model for the modern, interdisciplinary 21st century university.

The School is celebrating its fifth anniversary in 2013 and continues to develop in order to address the most pressing environmental, economic, and social issues facing the world, SoGES funds interdisciplinary research activities that tackle real world problems. The School provides financial and logistical support to highly innovative and interdisciplinary research fellows and teams whose members come from every college on the University campus.

To provide outreach to the campus, local, and global communities, SoGES annually invites CSU experts and other sustainability professionals to join in interdisciplinary panels, lectures, and events open to the public. The School supports CSU’s sustainability researchers and centers worldwide and maintains dynamic content available to the global community through the School’s website.
Diana is actively engaged in research to explore how soil biodiversity contributes to healthy, productive soils and thus benefits society, and the consequences of human activities on soil sustainability. Her global research includes more than twenty years of collaborative research in the Antarctic Dry Valleys examining how climate change affects soil biodiversity, ecosystem processes and ecosystem services. Wall Valley, Antarctica was named for her achievements in 2005.

Diana received her Ph.D. from the University of Kentucky and holds an Honorary Doctorate from Utrecht University, the Netherlands. She is a National Associate of the National Academy of Sciences and Fellow of the American Association for the Advancement of Sciences, the Ecological Society of America and the Aldo Leopold Leadership Program. She is Chair, Scientific Advisory Committee of the Global Soil Biodiversity Initiative and is a member of the US Standing Committee on Life Sciences for the Scientific Committee on Antarctic Research (SCAR). She received the 2012 SCAR President’s Medal for Excellence in Antarctic Research and the 2012 Mines Medal of the South Dakota School of Mines and Technology. She was a member of the 2012 US Antarctic Program Blue Ribbon Panel, a PCAST Working Group, the US Commission of UNESCO and was co-lead author of the Millennium Development Goals Committee Chapter of the Millennium Ecosystem Assessment. Diana served as President of the Ecological Society of America, the American Institute of Biological Sciences and other societies and was Chair, Council of Scientific Society Presidents. Her edited books include two on sustaining soil biodiversity and ecosystem services. Diana was the 2013 Laureate of the Tyler Prize for Environmental Achievement.

Kathleen Galvin is Professor and Senior Research Scientist at the Natural Resource Ecology Laboratory. She is also an Adjunct Faculty member in the Graduate Degree Program in Ecology at CSU. Trained as an anthropologist, she has conducted interdisciplinary human-ecological research in east and southern Africa for over 30 years. More recently she has worked in central and east Asia. She is interested in issues of pastoral land use, conservation, climate variability and resilience and adaptation strategies of people in drylands. Her current research focuses local perceptions of climate change and environmental changes and viable solutions both in Mongolia and in Kenya. She has also examined the importance of spatial complexity and the costs of fragmentation of pastoral ecologies around the world. She led a research group to investigate household decision-making under environmental uncertainty across sites around the world. Kathleen has been a member of a National Academy of Science/National Research Council (NAS/NRC) group to assess Research Needs and Modes of Support for the Human Dimensions of Global Change. She was also a panel member of the NAS/NRC Human Dimensions of Seasonal-to-Interannual Climate Variability group. She served on the National Science Foundation, Cultural Anthropology Program Panel. She was an Aldo Leopold Fellow.

Gene Kelly is a Professor of Pedology and Head in the Department of Soil and Crop Sciences and is Associate Director for research in the School of Global Environmental Sustainability at CSU. He received his B.S. and M.S. degrees from CSU and his Ph.D. from the University of California-Berkeley. Gene conducts research and internationally on various aspects of soils as related to global change issues. His scientific specialization is in pedology and geochemistry with primary interests in the biological weathering of soil and studies of soil degradation and global biogeochemical cycles. His current research centers around the influence of climate change and land use on soil degradation and sustainability in water-limited systems worldwide. He serves as an advisor to the United States Department of Agriculture with the National Cooperative Soil Survey and several major research programs. He is a Fellow of the Soil Science Society of America.
External Advisory Board

Thomas Dietz, Michigan State University

Thomas Dietz is a Professor of Sociology and Environmental Science and Policy (ESP) and Assistant Vice President for Research at Michigan State University. At MSU he was Founding Director of the Environmental Science and Policy Program and Associate Dean in the College of Social Science, Agriculture and Natural Resources and Natural Science. Dr. Dietz is a Fellow of the American Association for the Advancement of Science, and a recipient of numerous awards such as the Sustainability Science Award of the Ecological Society of America, the Distinguished Contribution Award and the Outstanding Publication Award, both from the American Sociological Association Section on Environment, Technology and Society, and the Gerald B. Yourk Book Award, from the Society for Human Ecology. As the National Research Council he served as chair of the U.S. National Research Council's Committee on Human Dimensions of Global Change and currently is Vice-Chair of the NRC Panel on Advancing the Science of Climate Change. Dr. Dietz has served as Secretary of Section K (Social, Economic, and Political Sciences) of the American Association for the Advancement of Science and is the former President of the Society for Human Ecology. He has a Ph.D. from University of California, Davis.

Jonathan Foley, University of Minnesota

Jonathan Foley is the director of the Center for Sustainability and the Global Environment (CSGE) at the University of Minnesota, a professor in the Department of Evolution and Behavior and the Climate Program in the School of Global Environmental Sustainability. Dr. Foley's research focuses on complex global environmental systems and their interactions with human societies. His work on human-environment interactions provides new perspectives on large-scale ecological processes, global patterns of land use, the behavior of the planet's climate and water cycles, and the sustainability of our bioeconomy. This research has led him to be a regular advisor to large corporate, NGO's and governments around the world. Foley joined the University of Minnesota in 1997, and in 2013 he was named the inaugural director of the CSGE. Prior to that, he served as the founding director of the Center for Sustainability and the Global Environment (CSGE), including the National Science Foundation's Faculty Early Career Development Award, the J. McDonald Foundation's 21st Century Science Award, an Arctic Leadership Fellowship, and the Sustainability Science Award from the Ecological Society of America. In 1997, President Bill Clinton awarded him the Presidential Early Career Award for Scientists and Engineers.

Maggie L. Fox, The Climate Reality Project

Maggie L. Fox is the President and CEO of The Climate Reality Project, a non-profit organization leading a global campaign to help citizens around the world discover the truth about the climate crisis and bring about global change. Along with former Vice President Gore, Maggie has trained hundreds of climate educators from around the world in Beijing, Cairo, Lima, Jakarta, Istanbul, Turkey, and most recently Chicago. She is the past National President of America Votes, and the former Deputy Executive Director of the Sierra Club. With over 30 years of experience working for progressive change, she is a veteran of numerous political, environmental and national issue campaigns. Maggie has consulted with a number of organizations on their energy and climate campaigns, including The Hewlett Foundation, The UN Foundation, The Western Conservation Foundation, Western Resource Advocates and The Better World Fund. She currently serves on the board of the Green Fund and Energy Future Coalition and was honored by the Women's Caucus on Energy and the Environment as the 2010 Woman of the Year.

Kim Jordan, New Belgium Brewing Company

Kim Jordan, Co-Founder and CEO of New Belgium Brewing, has cultivated her passion for social work, the environment and sustainability into a business model resulting in the success of New Belgium. Since founding New Belgium in 1995, Kim has worked as an advocate for social and environmental issues and currently serves on the board of the Green Fund and Energy Future Coalition. Kim is widely respected as a business leader in the craft beer industry and as a trailblazer for companies in the environmental and sustainability space. She has joined her time spent on mid-range and long-term strategic development and her passion for social work, the environment and sustainability into the business model resulting in the success of New Belgium. Since founding New Belgium in 1995, Kim has worked as an advocate for social and environmental issues and currently serves on the board of the Green Fund and Energy Future Coalition. Kim is widely respected as a business leader in the craft beer industry and as a trailblazer for companies in the environmental and sustainability space. She has joined her time spent on mid-range and long-term strategic development and her passion for social work, the environment and sustainability into the business model resulting in the success of New Belgium. In her role as Co-Founder and CEO, Kim has been named Entrepreneur of the Year, Trailblazer Award – Entrepreneur Magazine, Entrepreneur of the Year – Colorado Biz Magazine, Wirth Chair Award – CU, Denver, Governor's Excellence in Renewable Energy Award,aron Power Business Leadership Award – Environmental Protection Agency, Mid-sized Brewer of the Year – Great American Beer Festival. As CEO and President of New Belgium Brewing, Kim is active in day-to-day Sales, Branding and Organizational Development aspects of the business. Much of her time is spent on mid-range and long-term strategic development.

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Thomas E. Lovejoy, a Professor at George Mason University and a former full-time employee of the World Bank, has been a leading figure in the international environmental movement for over 50 years. He is known for his work on biodiversity and the importance of conservation for sustainable development. Lovejoy has been awarded numerous international awards including the Tyler Prize for Environmental Achievement, the Heinz medal, and the Right Livelihood Award. He has served on the boards of numerous organizations and is currently the chair of the Byrd Polar Research Center at Ohio State University. Lovejoy is a member of the National Academy of Sciences and the American Academy of Arts and Sciences.
Osvaldo Sala, Arizona State University

Osvaldo Sala is the Julie A. Wrigley Professor at Arizona State University, where he contributes to both the School of Life Sciences and School of Sustainability. He came to ASU in 2010 from Brookhaven National Laboratory, where he was the founding Director of the Environmental Change Initiative and the Sloan Lindemann Professor of Biology. Sala has so far published 170 peer-reviewed papers and several edited books. His work is reflected in more than 170 peer-reviewed papers. Osvaldo Sala, Arizona State University

Tom Tomich, University of California Davis

Tom Tomich is founding director of the University of California Davis Agricultural Sustainability Institute, manager of the National Science Foundation’s E.O. Hulbert Endowed Chair in Sustainable Food Systems at UC Davis, and a professor in both the Departments of Human and Community Development and Environmental Science and Policy. Tomich serves as director of the UC statewide Sustainable Agriculture Research and Education Program (SAREP). Dr. Tomich was principal economist for the World Agroforestry Centre from 2007-2011, where he was the president of the Millenium Ecosystem Assessment and the IPCC. Environmental Change Initiative and Environmental Science and Policy.

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Sala served in public policy at Harvard University. Dr. Tomich spent 10 years as a policy advisor and institute associate with the Harvard Institute for International Development and served as a lecturer in economics and natural resources at Harvard University.

Joe Champ, Department of Journalism

Joe Champ teaches in a variety of areas including the role of media in society (more accurately, “media as society”), TV/multimedia production, and qualitative research methods at the graduate level. Joe Champ, Department of Journalism

Michele Betsill, Department of Political Science

Michele Betsill's research investigates the multiple ways in which climate change is governed at the local level across the public and private spheres. She is particularly interested in questions about politics and authority in global climate governance. Michele Betsill, Department of Political Science

Thomas Borch, Department of Soil and Crop Sciences

Thomas's research is directed at understanding ecosystem functioning and the fate of trace elements and organic contaminants in soils. In addressing the fate of environmental contaminants, one must consider the potential for the complete system rather than solely a simplified fraction of the soil.

SueEllen Campbell, Department of English


Joe Champ, Department of Journalism and Technical Communication

Joe research focuses on the intersection of technical communication, culture, and the natural world. Joe has often collaborated with USDA Forest Service to study communication issues faced by the agency. Joe Champ teaches in a variety of areas including the role of media in society (more accurately, “media as society”), TV/multimedia production, and qualitative research methods at the graduate level. Joe Champ, Department of Journalism and Technical Communication

Tom Dean, Department of Management

Tom focuses his programmatic and conceptual efforts on understanding business strategies and economic opportunities present in emerging social and environmental trends. He teaches in OSU Global, Social, and Sustainable Enterprise MBA Program.

Susan Bodine, Institute for the Built Environment

Executive Council

Brian Foy, Department of Microbiology, Immunology, and Pathobiology

Brian studies vector biology and the interactions of vectors with their hosts and with vector pathogens. While much of my research employs molecular, proteomic and genomic techniques, I strive to develop these studies and techniques into practical applications for controlling arthropod-borne diseases.

Chris Funk, Department of Biology

Chris’s research program uses an integrative, cross-disciplinary approach to address basic and applied questions in evolutionary ecology. He addresses these questions by combining molecular population genetics and genomics, capture-mark-recapture analysis and other quantitative field methods, field and lab experiments; and computational approaches.

Jan Leach, Department of Bioagricultural Sciences and Pest Management

Jan’s long term goal is to identify target points for plant modification to improve these traits for sustainable crop production.

Each of her projects involves rice (Oryza sativa); and have contributed to the development of genomic and genetic resources that make rice an ideal monocot model crop plant.

Barry Noon, Department of Fish, Wildlife and Conservation Biology

Barry’s work on the vertebrate communities of forest ecosystems, and the conservation problems they face, has provided opportunities for international collaborative research with Indian scientists and graduate students. Collectively, they are studying the effects of climate change on vertebrate biodiversity in the Western Ghats Mountains, India.

Kristin A. Ojima, Department of Ecosystem Science and Sustainability

Along with being a professor at CSU Denver is also a Senior Research Scientist at the Natural Resource Ecology Laboratory (NREL) and a Senior Scholar at the HH Brown III Center for Science, Economics and the Environment. He is also the coordinator for the University Consortium for the DOI North Central Regional Climate Science Center based at Colorado State University.

Kenneth Reardon, Department of Chemical and Biological Engineering

Kenneth’s work is mostly in environmental biotechnology, particularly bioremediation. The goals of these projects are to improve our understanding of microbial degradation of hazardous compounds (often with the use of molecular biological and proteomic methods); and to develop better processes for cleanup of contaminated air, water and soil.

David Thompson, Department of Atmospheric Sciences

David’s research focuses on improving our understanding of global climate variability using observational data. My interests include large-scale atmospheric dynamics, the interpretation of observed climate change, stratosphere/troposphere coupling, ocean/atmosphere interaction, decadal climate variability, and the climate impacts of large-scale atmospheric phenomena.

Joe von Fischer, Department of Biology

Joe studies how the function of ecosystems is structured by the interactions among plants, the soil and soil microbes. As compared to the ecological interactions we observe on the macroscopic scale, soil processes are particularly fragile, e.g., the delicate relationship between root hair and soil mineral surface, gel-like biofilms feeding on root exudates, or the soil pores that conduct water and gases through the soil matrix.

David Thompson, Department of Atmospheric Sciences

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Curriculum Committee

The School of Global Environmental Sustainability Curriculum Committee is a diverse committee with representation from faculty members at CSU and graduate student representatives, a Liberal representative, and a Continuing Education representative. The Committee seeks to design and develop new cross-campus curriculum that will lead to a new generation of students well versed in the globally, interconnected world of sustainability.

Nancy Bamman, School of Social Work
Nancy is a Professor with the School of Social Work. She specializes in rural community development, and group processes and facilitation. She has interests in strengthening social networks and building social capital in communities.

Cynthia Brown, Department of Bioagricultural Sciences and Pest Management
Cynthia is a Professor in the Department of Bioagricultural Sciences and Pest Management. She is interested in the social networks and building social capital in communities.

Kathleen Galvin, Department of Anthropology
Kathleen Galvin is a Professor in the Department of Anthropology, and Senior Research Scientist at the Natural Resources Ecology Laboratory.

Susan Golick, Department of Management
Susan is a Professor with the department of Business. She has several years of professional experience in logistics and environmental engineering and has consulted with numerous firms on supply chain management. Her research focuses on managing business sustainability, strategy and sustainability in the supply chain.

Dale Lockwood, Department of Biology
Dale Lockwood is a population ecologist and instructor in the department of Biology. His work involves modeling the complex population dynamics of raggedgrass grasshoppers, modeling larval dispersal in marine organisms and the ecological genetics of plant species related to storage in seed banks.

Amy Herbst, Morgan Library
Amy is a Professor of library sciences at the Morgan Library.

Julie Orwick, Warner College of Natural Resources
Julie is an assistant to the Dean for Finance in the Warner College of Natural Resources.

Howard Ramdoff, Department of Environmental and Radiological Health Sciences
Howard is an environmental toxicologist in the department of Environmental and Radiological Health Sciences. He has a strong interest in exposure assessment, and his research projects have included field and laboratory studies of wildlife species (fish, mammals, birds, frogs) and humans potentially.

Sybil Sharvelle, Department of Civil and Environmental Engineering
Sybil is a Professor in the department of Civil and Environmental Engineering. Her research Interests include wastewater treatment and graywater reuse, biological process engineering, conversion of waste to energy, and integrated urban water management.

Robert Swenberg, Department of Anthropology
Robert Swenberg is a Professor in the Department of Anthropology. He has a strong interest in exposure assessment and his research projects have included field and laboratory studies of wildlife species (fish, mammals, birds, frogs) and humans potentially.

Jeff Cook – Graduate Student Representative, Department of Political Science
Jeff Cook is a PhD candidate in the department of Political Science. His research interests include state and national regulatory policy, interest group influence, climate change and energy policy.

Amy Hoseth, Morgan Library
Amy is a Professor of library sciences at the Morgan Library.

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Dale Lockwood, Academic Coordinator

Dale Lockwood is the Academic Coordinator for SoGES. He provides advising to the undergraduates minorin Global Environmental Sustainability, works with the Curriculum Committee to design and develop new courses, and curries in sustainability and meets with students interested in learning more about SoGES and the courses offered. A trained ecologist, he works involves the analysis of complex population dynamics of endangered species, exploring how a depredation in marine reserves to better implement marine resources and work on the ecological genetics of plant species related to storage in seeds. His research has been honored with one paper being named the Outstanding Paper in Genetic Resources by the Crop Society of America and another named one of the most important papers in Evolutionary Biology from the University of Colorado. Kelly has a Ph.D. in Ecology and Evolutionary Biology and a 2012-2013 Global Sustainability Leadership Fellow at CSU. With over 13 years’ experience in nonprofit management, she worked for the Bohemian Foundation, Project Self-Sufficiency, and the Community Foundation of Northern Colorado before coming to CSU. Since she is excited to apply the skills she learned in graduate school in grant management to further CSU’s goal to be a leader in global sustainability research, outreach, and education.

Kyle Inselman, Communications Coordinator

Kyle Inselman joined SoGES in January 2013 as one of the Communications Coordinators. With over 10 years of website experience and a background of working in a diverse set of non-profits across the Front Range, Kyle is excited to bring his skills back to a research university. Kyle holds a BFA in Film Studies and a BA in Languages from the University of Colorado Boulder.

Kristin Pietroaro, Communications Coordinator

Kristin is the full-time Communications Coordinator who handles all SoGES website and social media platforms, and multi-media content, as well as marketing and branding strategies for the School. She is a CSS alumnus (’79) with a BS in Graphic Design and 25+ years experience in the field. Her background is rich with designing logos and profits. Prior to coming to SoGES, she has worked in the area of science/policy interface having chaired the Environmental Advisory Board of Larimer County and as vice chair of the Colorado Agriculture and Natural Resources Executive Board. Her work involves the analysis of complex population dynamics of endangered species, exploring how a depredation in marine reserves to better implement marine resources and work on the ecological genetics of plant species related to storage in seeds. His research has been honored with one paper being named the Outstanding Paper in Genetic Resources by the Crop Society of America and another named one of the most important papers in Evolutionary Biology from the University of Colorado.

Kelly S. Ramirez, Postdoctoral Scholar

Kelly S. Ramirez is a postdoctoral scholar in the department of geographic science and a 2012-2013 Global Sustainability Leadership Fellow at CSU. She is excited to apply her interest in natural resources and policy. A soil microbial ecologist, she combines research interests in global change with molecular and other tools to explore how soil microbial communities and ecosystem processes respond to global changes. Her work on anthropogenic nitrogen deposition analyzes impacts on soil microbial communities and ecosystem processes, and she is engaged in experimental work and theoretical modeling. Kelly was awarded a National Science Foundation Pre-Doctoral Graduate Research Fellowship, a SIOAN Fellowship and the NSF Alliance for Graduate Education and Professional grant. She is a 2012-2013 Global Sustainability Leadership Fellow at Colorado State University. Kelly has a BS in Biology and Ecology and Evolutionary Biology from the University of Colorado, Boulder, and a PhD in Biology from Washington State University.

Becky Cramer, Research Grant Coordinator

Becky Cramer joined SoGES in December 2012 as the School’s Research Grant Coordinator responsible for assisting Global Challenge Research Team faculty, Board of Fellows, Global Sustainability Leadership Fellows, and Affiliates in the identification and preparation of research funding proposals. She provides support for multi-disciplinary research teams who will benefit from both internal and external funding opportunities in advance to advance their research. Becky holds a dual assignment also working as a research grant coordinator for the College of Natural Sciences, Department of Geosciences and a PhD in Natural Resource Recreation and Tourism from CSU. With over 15 years’ experience in grant development and grant management, she works for the Bohemian Foundation, Project Self-Sufficiency, and the Community Foundation of Northern Colorado before coming to CSU. She is excited to apply the skills she learned in graduate school in grant management to further CSU’s goal to be a leader in global sustainability research, outreach, and education.

Allison Burford, Main Office Administrator

Allison is the full-time main office administrator. She is responsible for event planning, travel booking & reimbursements, conference services and main office management. Allison is a CSS Alumni, having received her Master’s Degree in Political Science from Colorado State University in 2012.

Stratis Giannakourosa, Sustainability Outreach Coordinator

As the Sustainability Outreach Coordinator, Stratis is responsible for outreach to community and corporate stakeholders for summer programs at CSU. He is a CSU alumnus, having received his undergraduate degree in Economics with a focus in international trade from Leeds College. He recently completed his Masters at Colorado State University in Environmental Politics and Policy. Stratis has directed programs in sustainability entrepreneurship and (clean) tech development. He has worked as a communications officer with MEDASSET, an NGO based in Athens, Greece, specializing in the protection of the Caretta caretta turtle in the Eastern Mediterranean. He also co-founded www.GreenDubuque.org, a non-profit 501C3 committed to reducing greenhouse gas emissions, promoting smart development and urban green space, and protecting the health and integrity of local ecosystems. In addition to renewable energy research he is interested in the political economy of global resource flows, climate change adaptation, resilience and mitigation. He enjoys spending his free time hiking, backcountry skiing and snowshoeing in the mountains around Fort Collins.
The School invests in highly innovative and interdisciplinary research and synthetic projects that are based on a rigorous scientific framework, and will make significant progress towards solving the most pressing environmental issues facing the global community.
School Research Initiatives

The School of Global Environmental Sustainability invests in research activities at Colorado State University that cross conventional disciplinary boundaries and address the complex social, economic and environmental challenges of global sustainability science.

To address these pressing global sustainability issues, the School funds interdisciplinary research activities that tackle real world challenges. By bringing together leading researchers at CSU, the School helps create and further solutions toward environmental and sustainable challenges.

The School supports CSU faculty and researchers through SoGES Global Challenges Research Teams (GCRTs) and Resident Fellowships that collaborate on the School’s six research focal areas. Additionally, the School sponsors a Sustainability Leadership Fellows program, made up of a select group of leading senior PhD Candidates and Postdoctoral Fellows interested in communicating their science to media and the public.

Research Focal Areas
1  Food Security
2  Environmental Institutions and Governance
3  Sustainable Communities
4  Land and Water Resources
5  Biodiversity, Conservation and Management
6  Climate Change and Energy

Services Provided to GCRTs and Resident Fellows

The School of Global Environmental Sustainability’s support is more than just financial awards. The School has a real stake in ensuring the success of GCRTs and Resident Fellows. Current and past teams and fellows can take advantage of a host of services offered by the School and its staff to assist in the successful facilitation and communication of their ongoing research efforts. Services available to teams and fellows includes conference and meeting planning support including use of Johnson Hall meeting rooms and audio visual equipment; administrative support is available through SoGES administrative staff; marketing and public relations expertise is available and includes help creating and managing websites and online presence; and grant management support both in the fiscal management of SoGES funds and in the preparation of proposals for ongoing funding to other funding agency.

The School supports Global Challenges Research Teams, Resident Fellows, Sustainability Leadership Fellows, Visiting Fellows, speakers, scholars, and other research activities.

Each year, the number of applicants for the School’s research programs has increased. In 2013, the School had record high numbers of applicants for all programs, revealing an increasingly significant presence on campus and value of the School’s programs, and causing the programs to be ever more competitive.

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Global Challenges Research Teams

Research proposed by Global Challenges Research Teams (GCRTs) shows potential for providing greater understanding towards transformational outcomes for real-world problems and provides strategies to sustain initiatives and research beyond the initial SoGES investment.

Each year, the School solicits proposals for GCRTs that include new collaborative teams of faculty and researchers and build cross-campus collaborations. These teams address pressing regional and global environmental issues, create and strengthen research partnerships at CSU, and foster innovative and interdisciplinary approaches to critical sustainability solutions. The interdisciplinary nature of these teams encourages CSU researchers to expand their borders, helping them establish cross-campus relationships and conduct research in new areas and with expanded applicability to sustainability issues. The teams advance research in developing sustainable environments in a team-based, creative, experiential approach to real-world problem solving. GCRTs balance research and outreach, engage regularly with the School to network across campus and elevate research efforts, and provide opportunities for student engagement.

2012-2013 Global Challenges Research Teams
The School supported five GCRTs in 2012-2013, each working on a unique set of problems and solutions.

- **Conservation Development**
- **Case Studies**
- **Natural Disasters**
- **University Water Strategy for Global Issues**
- **Environmental Governance in the Intermountain West**

All five 2012-2013 GCRTs stated that the funding support provided by the School was essential to the success of their research team. Additionally, all five teams will be continuing their work in 2013-2014, fostering sustainability research and solutions beyond the initial SoGES support.

SoGES Focal Areas Addressed by 2012-2013 GCRT’s

<table>
<thead>
<tr>
<th>Focal Area</th>
<th>GCRTs by Focal Area</th>
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<tbody>
<tr>
<td>Energy and Climate Change</td>
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<td>Sustainable Communities</td>
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<tr>
<td>Environmental Institutions &amp; Governance</td>
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<tr>
<td>Land &amp; Water Resources</td>
<td>(1)</td>
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</tbody>
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Flooding in China, 2008.

*Photo by Aleta Rudeen Weller*
The Conservation Development GCRT explores an approach to the site design and management of property that combines land development and land conservation with a goal of providing functional protection for existing natural resources, while also providing social and economic benefits to human communities. This work has the potential to serve as a role model for other local governments seeking ways to develop that are compatible with conservation. This work has the potential to serve as a role model for other local governments seeking ways to develop that are compatible with conservation.

Accomplishments
During the 2012-13 year, the Conservation Development GCRT made significant headway on its research and communication work. Their efforts included surveys, interviews, and collaborations, and which have furthered the group’s research objectives and which have made their research more available to use for planning purposes.

During the year, Conservation Development completed a revision of their GCRT website (http://cd.colostate.edu), which serves as a resource for land use planning, conservation, and development practices. In the future, the GCRT plans to create a collaborative learning network to serve as an even stronger resource to groups. Additionally, the Conservation Development Principal Investigators is serving on Feinberg’s dissertation committee, Dr. Hostetler’s graduate student, Daniel Feinberg is now conducting M.S. research on a topic that has emerged directly from the GCRT’s work, and one of the Conservation Development Advisors for Teton County, WY is currently serving on Feinberg’s academic committee.

During the 2012-2013 year, the Conservation Development

• Completed an interdisciplinary review of 566 papers to synthesize the state of knowledge regarding ecological, economic, and social dimensions of residential land development. The results of this project were presented in a webinar and at several conferences.
• Completed interviews of 30 conservation development practitioners regarding the need for a collaborative learning network to cultivate greater expertise and communication regarding conservation development. The results of this project were presented in a webinar and at several conferences.

• Applied a detailed database of residential sales transactions to examine the profitability and appreciation of homes developed in conservation subdivisions and comparable conventional development projects. GCRT members presented results of this project at three major conferences.
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Conclusion
In this capacity, the GCRT will have the opportunity to translate their group’s findings for practical applications. Conservation Development will be exploring new opportunities to translate their group’s findings for practical applications. Conservation Development will be exploring new opportunities to advance the science and practice of conservation development practice, and ultimate goal of improving biodiversity conservation and stewardship practices in context-specific land development projects. As a result of this collaboration, Dr. Hostetler’s graduate student, Daniel Feinberg is now conducting M.S. research on a topic that has emerged directly from the GCRT’s work, and one of the Conservation Development Advisors for Teton County, WY is currently serving on Feinberg’s academic committee.

Researchers Objectives Completed by Subgroups
• Complied an interdisciplinary review of 566 papers to synthesize the state of knowledge regarding ecological, economic, and social dimensions of residential land development. The results of this project were presented in a webinar and at several conferences.
• Compiled a database of nearly 400 conservation development subdivisions in 28 Colorado counties. Used GIS analysis to evaluate land use and land cover (i.e., conservation development subdivisions and comparable conventional development projects). GCRT members presented results of this project at three major conferences.

Gating Questions
1. To what extent have conservation development projects lived up to their goals of protecting and enhancing biodiversity conservation and stewardship practices? And what are the financial risks and returns associated with conservation development projects?
2. How can existing research on the social, economic, and ecological effects of land use regulations be synthesized and used to examine new approaches to combining land conservation and incorporating conservation objectives into development practices?
Since 2010, Conservation Development has submitted a total of 14 proposals for additional funding to support the GCRT. Five grants and contracts have been awarded by Teton County (2012), Rocky Mountain Land Use Institute (2012), and the Pyramid Center for Collaborative Conservation (2010) and 2011), and National Fish & Wildlife Foundation (2011) to support specific project activities. Two additional grants were awarded by the Robert & Patricia Switzer Foundation ($18,000) and the Conservation Development Project ($53,000) to support a portion of Sarah Reed’s time in leading the GCRT.

Research


Reed, S.E. (2012). Case study of land use and home sales in Colorado conservation development. Rocky Mountain Land Use Institute, Denver, CO.


Pejchar, L. and S.E. Reed. 2013. Conservation development—evaluating an emerging approach for sustaining biodiversity and ecosystem services. Rocky Mountain Land Use Institute, Boulder, CO. (unsuccessful)

Pejchar, L. and S.E. Reed. 2012. Transforming a strong development threat into a conservation solution. A bold strategy for advancing conservation in Colorado: Environmental Solutions for Communities, National Fish & Wildlife Foundation, Bethesda, MD.


Reed, S.E. 2012. Enhancing the effectiveness of conservation design and management standards on local land-use regulations. Cooperative Forestry Assistance Grant, USDA Forest Service.

Presentations, posters, or talks

Research

SoGES funding has been absolutely critical for maintaining our group. With this funding, we can support and structure to maintain our group as a large group and in the form of several research subgroups. It has also allowed us to invite key collaborators and relevant speakers to our meetings. It has partially funded our travel to conferences to communicate our results. Most of all, we use this funds to support students (graduate and undergraduate) to go to conferences and to participate in our research projects.

"This funding provided us with the catalyst to continue our work and to reach out to potential collaborators across campuses."
Case Studies

Handling Controversial Material: Using Case Studies of Polarizing, Emotional and Politicized Topics to Deepen Understanding

The Case Studies GCRT explores the use of case studies to address highly controversial issues such as climate change denial that typically attract intensely politicized, ideological, and polarized debates.

Principal Investigators
William M. Timpson, School of Education
Morris Burns, Department of Theater (retired)
Rick Knight, Department of Human Dimensions of Natural Resources
Natalie Keoe, School of Education
Antoine Aragon, School of Education
Felicity Lindell, Environmental Institutions & Governance; Sustainable Land, Water & Resources; Biodiversity, Conservation & Management

Number of Members at Beginning 8
Number of Members at end 25

Sustainability science is inherently interdisciplinary and thus its study requires holistic thinking and systems analysis. Traditional approaches to education curriculum tend toward oversimplification and reduction in order to identify underlying concepts. Instead, the Case Studies GCRT explores the use of case studies to sustainability education curriculum in order to avoid, rather than avoid, complexity. The use of case studies, in all case studies in sustainability education curriculum to embrace, rather than avoid, complexity. The use of case studies, in all

SoGES Funding Support

Funding provided by the School allowed the Case Studies GCRT to employ a research assistant, a professional filmmaker, and an author to contribute to the ongoing publication of the School of Education's work. Additionally, the Case Studies GCRT utilized the School's communications team to build two websites that sit within the School's existing websites. These websites provide information on the ongoing work towards future publications and products. With the production of articles and a book, the GCRT hopes to raise funds for future publications and products from other sources that require more tangible outcomes.

Accomplishments

During the 2012-2013 year, the Case Studies GCRT built on previous case studies work, wrote and tested new case studies, developed a video companion piece, and published its products as downloadable materials for dissemination online.

SoGES funding support gave the Case Studies GCRT the opportunity to initiate this project, build interdisciplinary relationships, and begin work toward future publications and products. With the production of articles and a book, the GCRT hopes to raise funds for future publications and products from other sources that require more tangible outcomes.

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Without this funding, we could not have conducted our research into the value of these case studies nor could we have had the ongoing support of a publisher who specializes in works on teaching, learning and curriculum for higher education.

Additionally, the Case Studies GCRT utilized the School's communications team to build two websites that sit within the SoGES site and serve as a useful reference for anyone interested in sustainability.

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Over the course of the 2012-2013 year, the Case Studies GCRT accomplished the following:

- Developed original case studies that address highly controversial issues like climate change denial and framed these within a context of sustainability.
- Field-tested many of these case studies in classes at CU.
- Collected video-recordings of case study implementation.
- Employed qualitative research methodologies to evaluate the effectiveness of case study materials and make recommendations for future study.
- Submitted several collaborative journal articles using a combined dataset.
- Reached an agreement with Atwood Publishing to produce a new book, which will be available, in part, through downloading aspects of the manuscript. The book will be completed in 2013.
- Developed original case studies that address explosive issues like climate change denial and framed these within a context of sustainability.
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Lind-Tufte, K. (2011). What are the implications of PSD’s... education, sustainability, peace and reconciliation... Madison, WI: Atwood.


Nelson, D. R. (2011). The lost society: Teenagers who are institutionalized long-term in group or therapeutic homes... In W. M. Timpson & D. K. Holman (Eds.), Case studies of classrooms and communication: Integrating diversity, sustainability, peace and reconciliation... Madison, WI: Atwood.


Grant submitted to Rotary International.

"The School is an essential refug... interdisciplinary creative work... that is restricted or... with the more narrow disciplinary units. The support and encouragement from SoGES allows for creative thinking outside the constricted silos of academia, and that opens the doors to all kinds of activities. For example, in my case: two successful Fulbright awards; several books that are either published or under development; new empirical studies that have been published or are under development; and a major multi-year, multi-million dollar interdisciplinary project with the Department of Chemistry." - William Timpson


Lind-Tufte, K. (2011). What are the implications of PSD’s... education, sustainability, peace and reconciliation... Madison, WI: Atwood.


Nelson, D. R. (2011). The lost society: Teenagers who are institutionalized long-term in group or therapeutic homes... In W. M. Timpson & D. K. Holman (Eds.), Case studies of classrooms and communication: Integrating diversity, sustainability, peace and reconciliation... Madison, WI: Atwood.


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The Sustainable Adaptation to Rapidly Alternating Hydrologic Extremes (formerly “Reducing Vulnerability and Improving Sustainability to Natural Disasters in the Natural, Built, Social, and Economic Interface”) GCRT creates an interdisciplinary, multidimensional understanding of how communities – in concert with the natural systems within which they interactively exist – may be made less vulnerable to the effects of natural disasters.

During the course of the year, the Natural Disasters GCRT successfully convened scientists from diverse fields to look at human exposure to natural disasters from an interdisciplinary perspective, linking these otherwise narrowly contextualized patterns related to weather whiplash events in the United States. Eventually, the product of this GCRT’s work will be translated into actionable recommendations to federal entities such as the Federal Emergency Management Agency, the United States Geological Survey, the National Oceanic and Atmospheric Administration, and other agencies and their state and local partners working toward creating more sustainable and disaster resilient communities.

Accomplishments
During the 2012-2013 year, the Natural Disasters GCRT developed a significant body of background literature, moving the research toward a focused project. They also developed a collaborative network that can enhance ongoing studies.

GDRT focused on the consequences of increasing hydrologic extremes under climate change, commonly known as “extreme weather” or “weather whiplash.” Beginning with a much broader focus, the Natural Disasters GCRT was able to narrow their focus over the course of the year, focusing on the condition wherein drought and flooding occur in spatial/temporal proximity. During the 2012-2013 year, the Natural Disasters GCRT was able to narrow their focus over the course of the year, focusing on the condition wherein drought and flooding occur in spatial/temporal proximity.

The Natural Disasters GCRT used funding support for teaching releases for all three principal investigators for the Fall 2012 semester, freeing up time to focus on GCRT research. Additionally, funding support from the School allowed the research team to hired two Graduate Research Assistants in the Natural Disasters Group in the School of Global Environmental Sustainability in the College of Liberal Arts, who acquired and processed literature and created an application for funding support to the National Science Foundation Program Directors at the 7th Annual DFG-NSF Conference, “Reckoning with the Risk of Catastrophe”, October 3-5, 2012, Washington DC, (presented by Trumbo). Stacia Sydoriak (doctoral GRA, Department of Sociology) (consulting role) was hired and provided, made this work feasible. "There is no question that the time release provided, and the hourly graduate student support provided, made this work feasible.”

The Sustainable Adaptation to Rapidly Alternating Hydrologic Extremes (Natural Disasters) GCRT is an interdisciplinary, multi-dimensional understanding of how communities – in concert with the natural systems of natural, built, social, and economic interface — may be made less vulnerable to the effects of natural disasters. Specifically, the GCRT focused on the consequences of increasing hydrologic extremes under climate change, commonly known as “extreme weather” or “weather whiplash.” Beginning with a much broader focus, the Natural Disasters GCRT was able to narrow their focus over the course of the year, focusing on the condition wherein drought and flooding occur in spatial/temporal proximity.

Accomplishments
During the 2012-2013 year, the Natural Disasters GCRT

• Developed a significant body of background literature, moving the research toward a focused project. They also developed a collaborative network that can enhance ongoing studies.

The Natural Disasters GCRT will continue their work in 2013-2014, beginning with a pilot analysis, which will assist them in an application for funding support to the National Science Foundation.
University Water Strategy for Global Issues

The University Water Strategy for Global Issues GCRT identifies critical water issues and explores opportunities to improve water management and sustainability. The University comes to grips with how to use its resources regionally, as well as the national and global society as environmental sustainability. In 2012-2013, the University Water Strategy GCRT worked closely with the CSU Water Center and SoGES to organize a series of faculty-driven Water Café events with the goal to advance the University’s water agenda by answering these basic questions:

- How do these issues affect environmental sustainability?
- What are the goals for University water sustainability?
- Who are the leading thinkers and potential speakers for GCRT events?
- What is the plan to engage faculty at the University?
- What are the anticipated outcomes?
- Where can CSU make the greatest contribution and obtain resources for the work?

Key themes under consideration include food, energy, sustainability, and the water/society nexus. University Water Strategy GCRT accomplished the following:

1. Facilitated faculty discussion at CSU regarding water issues.
2. Developed internal linkages across the CSU campus.
3. Held several workshops and faculty meetings to discuss water related research, education and outreach at CSU; and
4. Developed two interdisciplinary proposals that have been submitted.

The GCRT has undergone three initiatives to discuss with the Provost’s Office to further develop a Water Center proposal for the next year to continue the effort. Additionally, SoGES in 2013-2014 and plan to develop a large research proposal activity at the University.

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Key themes under consideration include food, energy, sustainability, and the water/society nexus.
The Environmental Governance in the Intermountain West (EG-IMW) team has developed a conceptual framework to study environmental governance in the Intermountain West region in the United States (Colorado, New Mexico, Arizona, Utah, Wyoming, Montana, and Idaho). This framework is experiencing rapid social and ecological change, which is putting new pressures on the region's natural resources and the governance systems that protect them. In the midst of these changes, the environmental and natural resource governance system, which historically has been dominated by the federal government, is also undergoing significant transformation. The Intermountain West region, dominated by the federal government, is also undergoing rapid social and ecological change, which is putting new pressures on the region's natural resources and the ecosystem services they provide. The Intermountain West region is experiencing rapid social and ecological change, which is putting new pressures on the region's natural resources and the governance systems that protect them. In the midst of these changes, the environmental and natural resource governance system, which historically has been dominated by the federal government, is also undergoing significant transformation.

EG-IMW focuses on the Intermountain West region due to its rapid social and ecological change, which is placing new pressures on the region’s natural resources and the governance systems that protect them. In the midst of these changes, the environmental and natural resource governance system, which historically has been dominated by the federal government, is also undergoing significant transformation.

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The EG-IMW team has developed a conceptual framework to study environmental governance in the Intermountain West region. This framework is applying existing strengths and ongoing research activities in the College of Liberal Arts and the Departments of Political Science and Sociology in the Warner College of Natural Resources at CSU. The framework is presented in a co-authored paper, which was presented at the 2013 International Symposium on Society and Resource Management Conference. Funding covered registration, travel, and lodging expenses for several EG-IMW study group members. The conference also helped to coordinate current research efforts from different disciplines and environmental governance research focus areas during the 2012-2013 year.

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Environmental Governance in the Intermountain West

Case Studies

• Assessing incentive-based watershed programs in the Colorado River Basin: An applied understanding of architecture and agency, Heidi Heuber Stearns. This project evaluated the success of incentive-based watershed programs in the western US. While program characteristics varied widely, foci on engaging policymakers, science, and the public were common characteristics. Applying the EG-IMW framework to this project allows us to ask questions about: (1) architecture, including the interactions, rules, performance and embeddedness of watershed programs within larger systems; and (2) agency, including the bridging of public-private partnerships and their agents and connections, and exercising of agency through power and authority.

Collaborators

• Amber Childress, PhD student, Graduate Degree Program in Ecology
• Matt Luizza, PhD student, Graduate Degree Program in Ecology

Publications


• Assessing incentive-based watershed programs in the Colorado River Basin: An applied understanding of architecture and agency, Heidi Huber-Stearns.

• Social networks and accountability in landscape-scale collaborative stewardship in Northern Colorado, Patrick Bixler (PhD student, Sociology), who coordinated their research in the Crown of the Continent. They collected data for one another, developed a social network analysis of the landscape-scale collaborative stewardship, and to write a concept paper outlining its development and its application in ongoing research at the ISCRM conference in June.

Next Steps

• The EG-IMW GCRT continues its efforts to engage coming generations of scholars in the field of environmental governance, with an emphasis on understanding the complex interplay between architecture and agency in the development of new governance initiatives.

• The EG-IMW GCRT is currently exploring opportunities to collaborate with the North Central Climate Science Center and other partners to advance research in the field.

• These efforts will contribute to the development of a concept paper for publication within the next 2-3 years, and to explore other funding opportunities to continue the research.

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2013-2014 Global Challenges Research Teams

CONSERVATION DEVELOPMENT
Principal Investigators: Lisa Pechlar, Sarah Read
Research Description: Our team will explore an approach to the site design and management of property that continues land development and land conservation with a goal of providing functional protection for natural resources. Our team brings together a diverse group of scholars and practitioners to synthesize information on existing Conservation Development practices, to develop rigorous indicators for evaluating the conservation effectiveness of these projects, and to advance an agenda for future research and monitoring of Conservation Development projects around the world.

SUSTAINABLE AFRICAN ECOSYSTEMS AND SOCIETIES UNDER GLOBAL CHANGE
Principal Investigators: Kathleen Gabor, Robin Reid, Paul Evangelista, Sue Vandewoude, Stacy Lynn, Jessica Davis
Research Description: This GCRT will bring a team of university faculty and researchers together to explore the opportunities and education opportunities on the complex issues of biodiversity, ecosystems, wildlife, livestock and human health and wellbeing in Africa. To do this we will address the state of knowledge, epistemic avenues of research in meetings, through manuscripts, hold a major workshop, secure speakers to campus and develop a center to facilitate this cross-college initiative.

HEADWATERS INITIATIVE
Principal Investigators: Melinda Laituri, Noel Geig, Reagan Wisdom, Marzak Arab
Research Description: This GCRT will target critical headwater regions of the world, which pose major 21st Century sustainability issues where the intersection of humanity and biodiversity is confronted by rapidly changing environmental and climatic conditions. A scoping exercise will be undertaken to identify signature headwater regions and the challenges associated with these areas as critical sources of water. We will develop a demonstration project focusing on the Cache la Poudre headwater region building on many existing efforts to assess and protect this important local resource. Integral to this will be bringing together of stakeholders and focus groups to discuss mechanisms for adaptation to changing climatic conditions.

SUSTAINABLE AFFORDABLE HOUSING
Principal Investigators: Scott Glick, Caroline Clevenger, Kenneth Tremblay, Sybil Sharvelle, Janet Ore, Ronald Holt
Research Description: This GCRT will identify ways to expand the use of non-traditional building materials into highly efficient homes in an effort to reduce the demand for the virgin natural resources typically used in construction. This group will look at the role culture may play in material selection and use from a Native American perspective.

CASE STUDIES
Principal Investigators: Bill Timpson, Nathalie Kees, Terry Engle, Shawnan Ariondechi Engle, Kurt Fausch, Antonette Attegeron, Marji Hotschkel, Kyle Sandmeier, Galfan Breuer, Reba Brepera
Research Description: This GCRT will draw on expertise from several disciplines to identify, author, field test, refine, and make available for curriculum incorporation, a new series of case studies focused on biodiversity, conservation and management within sustainable communities. Case studies will focus on areas including the connections between cattle and sustainable communities, sustainability issues with STEM education, conservation biology, protected lands management and sustainable communities, and others. These case studies will offer educators and community leaders a useful framework for engaging audiences of all ages and backgrounds in active and interactive explorations of complex content with the intent to promote deeper understanding.

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URBAN LAB & LENSES
Principal Investigators: Brian Daubner and Jane Clot
Research Description: This GCRT will create a collaborative Urban Lab to enhance the sustainability and biodiversity of the urban areas between campus and Old Town, Fort Collins using the LENSES regenerative framework.

The School accepted six GCRTs for the 2013-2014 academic year. Of these, three were return teams from previous years.
Resident Fellows

2012-2013 Resident Fellows

Robert Duffy

Professor and Chair, Political Science Department

Amount of award: $6,500

Focal Areas Addressed: Climate Change and Energy, Environmental Institutions & Governance

Dr. Duffy’s research has focused on a variety of environmental and energy issues, as well as the role of organized interests in federal elections.

SoGES Funding Support

The support from the School was used to provide a course buyout in the fall 2012 semester. This additional time allowed Dr. Duffy to conduct the majority of the research for his book. Additionally, he was able to use the remainder of the funds to purchase books on US energy policy that have assisted him in his writing.

Project Collaborators

Dr. Duffy has worked with a number of graduate students in his department on his research, including: Jeff Cook, Jon Fisk, and Cassie Koerner. Dr. Duffy has been interested in using some of the information as part of their own projects, and Dr. Duffy is exploring possibilities for collaborating with these graduate students on related energy papers.

Next Steps

Dr. Duffy will continue and complete his research in 2013-2014, with an anticipated completion date of winter 2014.

Joe Champ

Associate Professor, Department of Journalism and Technical Communication

Amount of Award: $5,900

Focal Areas Addressed: Climate Change and Invasive Species, Environmental Institutions & Governance, Sustainable Communities, Land & Water Resources, Biodiversity, Conservation, & Management

Dr. Champ has experience as a television journalist, weekly newspaper writer and photographer. He focuses on communication theory and qualitative research methods, media, and the human relationship to nature.

His focus as a SoGES Resident Fellow has been summarizing research findings for a book on the evolving attitudes of fish and wildlife in Montana, and the evolution of Montana’s resource usage and preservation.

SoGES Funding Support and Accomplishments

The support from the School was used to provide a course buyout in the spring 2013 semester. This additional time allowed Dr. Champ with time to work on the manuscript for his book project. At the end of 2012-2013, he was able to complete half of his manuscript and anticipate completion of the first draft by fall 2013.

Next Steps

Dr. Champ is continuing work on this project in 2013-2014 and plans to have a manuscript to a publisher by the end of the year.

"Having that extra time was really helpful - I just needed to analyze, think, and write - and that’s exactly what happened during my fellowship semester."

"As a SoGES Council member this past academic year, it helped that I could talk to people about my research who were interested in it. The Fellowship allowed me to be productive in my thinking and writing, and then the various meetings afforded me the opportunity to share some of what I was doing with others to get some feedback. That was valuable."

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Joseph Champ

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Dr. Chen is focused on accelerating progress in chemical science research for sustainability through international collaborations and to educate next-generation scientists enabling them to engage more effectively in interdisciplinary research for sustainability through development of a new course, Chemistry of Sustainability.

Dr. Chen's work is focused on accelerating progress in chemical science research for developing sustainable paths to technology important to bioplastics using environmentally friendly, nontoxic organic catalysts.

**SoGES Funding Support**

While funding support from the School was not sufficient to carry out chemical research, it did provide support for Dr. Chen to travel to national and international conferences to present research and interact with other scientists.

**Accomplishments**

- Metal- and Organocatalysis for Sustainable Chemicals, Materials, and Fuels, 245th American Chemical Society Meeting, New Orleans, LA, 04/10/2013
- Sustainable Polymers from Plant Biomass-Derived Conjugated Polar Alkenes, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, China, 12/18/2012
- Stereo-random to stereo-perfect sustainable polymers by metal, metalloid, and organic catalysts. American Chemical Society Polymer/PME Symposium, Philadelphia, PA, 08/20/2012
- Stereelectivity and Sustainability in Polymerization Catalysis, Peking University, Beijing, China, 08/08/12

**Next Steps**

In 2013-2014, Dr. Chen plans to apply for federal funding support to further his research. Association with the School as a Resident Fellow adds a valuable point to the broader impact section of his proposal to the National Science Foundation.

**SoGES Focal Areas address:** Sustainable Communities

Dr. Benson’s research focus is on global sustainability for nature conservation to include private and communal lands, their managers, and the agencies, organizations, and governments that affect them.

**Research Focus**

Global sustainability for nature conservation to include private and communal lands, their managers, and the agencies, organizations, and governments that affect them.

**Stephan Kroll**

**Department of Agricultural and Resource Economics**

Research Focus

Efficient policies (green taxes, cap-and-trade, congestion pricing, to name a few prominent policies recommended by economists) to tackle environmental problems.

**Kyle Saunders**

**Department of Political Science**

Research Focus

The influence of institutional, social, and political characteristics that explain and predict urban sustainability practices and urban sustainability challenges and other pre-cursors to policy.
Academic researchers are a primary source of information that guides the complex decisions that determine our environmental future, and communication curriculum is too often overlooked as scientific researchers build their academic career.

The School's Sustainability Leadership Fellows (SLFs) are a select group of leading CSU senior PhD Candidates and early Postdoctoral Fellows interested in communicating science to media and the public. Over the course of one year, fellows receive state-of-the-art training in environmental communication and professional development skills.

Sustainability Leadership Fellows

2012-2013 Program

Energy and Climate Change
Food Security
Environmental Institutions & Governance
Sustainable Communities
Land & Water Resources
Biodiversity, Conservation, & Management

SLFs by Focal Area

(4)
(5)
(7)
(3)
(9)
(9)

SLFs by College

College of Agricultural Sciences
Paul Tanger, Department of Bioscience, advisor: Jan Leach

College of Engineering
Ghassan Alaka, Department of Atmospheric Science, advisor: Eric Malote
Misha Schwerman, Department of Atmospheric Science, advisor: Jeff Collett
Fang Wang, Department of Atmospheric Science, advisor: Chris Kummerow

College of Liberal Arts
Jamie Fuller, Department of Anthropology and Graduate Degree Program in Ecology, advisor: Stephen Leisz
Theresa Judd, Department of Political Science, advisor: Michele Betsill
Michelle Leach, Department of Sociology, advisor: Lori Peek
Holly Marlatt, Department of Journalism and Technical Communication, advisor: Craig Trumbo

College of Natural Sciences
Sarah Fitzpatrick, Department of Biology, advisor: Chris Funk
Sarah Maisonneuve, Department of Biology and Graduate Degree Program in Ecology, advisor: Mike Coughenour
Kelly Ramirez, Department of Biology and School of Global Environmental Sustainability, advisor: Diana Wall
Lindsay Reynolds, Department of Biology, advisor: LeRoy Poff
Seema Sheth, Department of Biology and Graduate Degree Program in Ecology, advisor: Amy Angert

Warner College of Natural Resources
Sharon Baruch-Mordo, Department of Fish, Wildlife & Conservation Biology, advisor: Ken Wilson
Sarah Bushing, Graduate Degree Program in Ecology, advisor: David Cooper
Jessica Ernakovich, Natural Resource Ecology Lab, advisor: Matthew Welker
Debra Kaye Holman, Department of Human Dimensions of Natural Resources, advisor: William Temple
Kavitha Janamanchi, Department of Forest and Rangeland Stewardship, advisor: Maria Fernandez-Gimenez
Faith Stenerud, Geosciences, advisor: Melissa Latre
Andrew Tredennick, Natural Resource Ecology Lab, advisor: Kathleen Galvin

Each cohort is made up of 20 early career Fellows, and selected on a competitive basis, including their current sustainability science research and their interest in communicating important scientific concepts to broad audiences. Fellowships begin in May and run through April each year.

“This training was a refreshing and new-school approach to science and the real world.”

“This training was a refreshing and new-school approach to science and the real world.”

...the SLF program has given me more tangible goals... and also, importantly, inspiration to push the bar. Thanks to this program, I feel better equipped to start making my ultimate career goals a reality.

Clear concepts of how to best present [and] communicate science is so important and really should be a mainstay of all graduate degrees.

Journalist Susan Moran (right) and Liz Neeley, COMPASS (left), talking about communicating science
2012-2013 Sustainability Leadership Fellows

Science Communication Workshop

Each year, incoming SLFs kick off their fellowship with a Science Communication Workshop, a two-day intensive communication training. The workshop is run by COMPASS, science communication specialists, and incorporates renowned journalist trainers to educate Fellows about effectively communicating science to media and the public.

During the workshop, Fellows receive multidisciplinary training to best communicate their science to a scientific and non-scientific community alike, and to effectively address global environmental challenges in a landscape of increasing digitization and information accessibility. The workshop teaches Fellows why and how to make scientific narratives digestible, deliver, and communicate their research within the framework of broader global environmental challenges using cross-disciplinary and integrative thinking.

“This program reignited my passion for the work I was doing. I also think the communication skills we learned will significantly contribute to my ability to write clearly for high impact publications and grant proposals.”

Fellows generally find that they are now more comfortable and a better group on presenting their research to broad audiences. The workshop also provided Fellows with the opportunity to confront their fears about communication and gave them confidence about communicating science in the future.

Nearly all 20 Fellows said that in the year following the Science Communication Workshop, they have changed the way they communicated. They have improved their writing and presentations related to their research topics.

“I believe I am now a stronger candidate for future jobs I will apply to. This program has provided me with a unique tool set that I truly use every day, as communication is daily part of life!”

2012-2013 SoGES SLFs stated unanimously that the Science Communication Workshop better prepared them for their careers by equipping them with:

1. The ability to communicate clearly and concisely with broad audiences
2. Confidence to communicate with the media and the public
3. Tools and techniques to improve communication
4. A better understanding of social media and its utility for communicating science and policy
5. A network and connections to rely on for help with communication

SLF Program Benefits

At the end of the 2012-2013 year, all 20 Fellows expressed that they received significant benefit from the SLF program. The two most frequently cited benefits were improved communication skills (including strategies and tools for how to communicate with a variety of audiences and the media), and new appreciation for why scientists should communicate science and the various tools available to do so.

The benefit most frequently cited by Fellows was improved communication skills. Many Fellows stated that the program increased their ability and willingness to communicate with a broader audience about their research. Fellows noted an improved ability to speak concisely and meaningfully about their research, which for many has translated to other areas of their work, including publications, social media and websites, presentations and public speaking, and general interaction with others.

“…I used to [think] ‘the more complicated it is, the better’. Now I think ‘the more useful, the better’. I want to pursue a direction that can apply my knowledge to some application that has better and more direct impact...”

“Thinking about how to communicate my work makes me a better scientist.”

Training Sessions

Over the course of the academic year, the School’s Sustainability Leadership Fellows receive state-of-the-art training in environmental communication and professional development skills. Fellows are expected to attend a minimum of four of the six trainings offered in order to fulfill their Fellowship requirements.

Time Management, September 6, 2012
Trainer: Sarah Reed, Division of Fish, Wildlife and Conservation Biology and Miranda Mocktin, Rocky Mountain Research Station.

CVs and Grant Writing, October 25, 2012
Trainers: Kathy Galvin, Department of Anthropology, Jill Buron, U.S. Geological Survey and Natural Resource Ecology Laboratory, and Colleen Welsh, Department of Biology.

Using Videos and Media to Tell Your Story, November 14, 2012
Trainer: Steve Weiss and Joe Champ, Department of Journalism and Technical Communication and Mike Hooker, CSU Public Affairs and Communications.

Science-policy Interface, February 14, 2013
Trainer: James Courey, Vice Provost for International Programs.

Leadership, March 25, 2013
Trainer: Tony Franz, CSU President.

Intellectual Property, April 11, 2013

I learned a lot that is not taught/practiced in other venues at CSU.”

“I would recommend the SLF program to any research student. It is a great addition to the fellowship program.”

...I used to [think] ‘the more complicated it is, the better’. Now I think ‘the more useful, the better’. I want to pursue a direction that can apply my knowledge to some application that has better and more direct impact...”
2013-2014 Sustainability Leadership Fellows

College Of Agricultural Sciences

Jillian M. Long, Department of Plant Sciences and Soil Management and Cell and Molecular Biology Graduate Program, advisor: Jan Leach
Chubashini Suntharalingam, Department of Agricultural and Resource Economics and Graduate Degree Program in Economics, advisor: Gregory Graff

College Of Engineering

Matthew Igd, Department of Atmospheric Science, advisor: Jason van den Heever
Shanses Nakas, Department of Atmospheric Science, mentor: Jon Kreidwien

College Of Health And Human Sciences

Suzan Hassan AlDoubi, School of Education, advisor: Sharon Anderson

College Of Liberal Arts

Timothy J. Assal, Department of Anthropology and Graduate Degree Program in Ecology, advisor: Jason Sibold
Tessa Conroy, Department of Economics, advisor: Stephan Weiler
Jonathan M. Fisk, Department of Political Science, advisor: Charles Davis
Liesel Hans, Department of Economics, advisor: Robert Kingsley
Matthew W. Lataza, Department of Political Science and Graduate Degree Program in Ecology, advisor: Michele Bettil

College Of Natural Sciences

Paul Brown, Department of Biology and Graduate Degree Program in Ecology, advisor: Joe Von Ferber
David Hasner, Department of Biology and Graduate Degree Program in Ecology, advisor: Alan Knapp
Clinton Leach, Department of Biology and Graduate Degree Program in Ecology, advisor: Colleen Webb
Ryan McShane, Department of Biology and Graduate Degree Program in Ecology, advisor: Leeby Polk
Monica Paez, Department of Biology and Graduate Degree Program in Ecology, advisor: Chris Funk

College Of Veterinary Medicine And Biomedical Sciences

Stephanie Lynn Mason, Department of Microbiology, Immunology, and Pathology, advisor: Joffrey Wilton
Warner College Of Natural Resources

Natalie Kramer, Department of Geosciences, advisor: Ellen Wohl
Tabatha A. Orosz, Department of Fish, Wildlife and Conservation Biology, mentor: Merin Issot
Hauda Habib, Stevens, Department of Forest and Rangeland Stewardship, advisor: Tony Cheng
Katie Runbeck, Department of Ecosystem Science and Sustainability and Graduate Degree Program in Ecology, advisor: Ronique Risso

Research
Visiting Fellows

2012-2013 Visiting Fellows

Joana Roque De Pinho (Portugal)

Joana Roque De Pinho is a post-doctoral researcher at Instituto Superior de Ciências Sociais e Politicas in Lisbon, Portugal. She co-creates, co-directed, and co-produced the award-winning documentary Through our Eyes: A Maasai Photographic Journey. While working as a SoGES Visiting Fellow, she worked on a video film that will document two collaborative workshops whereby local land users directly inform the scientific process and climate change research. One workshop was held in Kenya and the other in Portugal. She co-wrote, co-directed, and co-produced the award-winning documentary Through our Eyes: A Maasai Photographic Journey.

Pilar Andrés (Spain)

Pilar Andrés received her PhD degree from the Autonomous University of Barcelona with a dissertation on the role of mites on forest litter decomposition. Following her doctoral, she started the Center for Ecological Research and Forest Applications (CREAF, Barcelona) as a researcher in charge of applied land restoration projects. She has led projects addressed to restore soils heavily degraded by mining and public works while recycling urban and agricultural organic wastes. During this period, she evaluated restoration quality and soil pollution by using indicators based on soil microcortical analyses. Over time, these projects became multidisciplinary and included the whole ecological and socioeconomic system from a social multicriteria approach. In 2006 she started a European Union project, working with research and post-graduate training. Since then, her research has been conducted in the dry tropical region of Central America. Currently, she has a two year Marie Curie International Outgoing Fellowship to work at SoGES with Dr. Diana Wall, Biology and Dr. John Moore, NREL. Her research work has led to novel effects of land use and management on soil biodiversity and environmental services provided by soil trophic webs.

Kevin Henry (United States)

Kevin Henry is currently Coordinator for “Where the Rain Falls” an eight-country action research project exploring the impacts of climate change on food security and human migration. “Where the Rain Falls” is an initiative of CARE, a leading international NGO, in collaboration with the United Nations University. Kevin was previously Senior Director of the Sustainable Livelihoods Cluster, responsible for CARE USA’s global efforts related to agriculture, economic development and climate change. He brings to the School of Global Environmental Sustainability 30+ years of experience, including involvement in CARE’s response to humanitarian crises such as African droughts, the Asian tsunami, Haiti earthquake, and conflicts in Somalia, Rwanda, Sudan, Afghanistan and Iraq. Kevin’s undergraduate degree was from the School of Foreign Service at Georgetown University and his Master’s degree from the Woodrow Wilson School at Princeton University. As a SoGES Visiting fellow, he plans to engage with others at CSU that share his interest in climate change and sustainable smallholder agriculture and food systems, while also contributing to the advancement of SoGES’ broader sustainability mission.

Kathryn Hochstetler (Canada)

Kathryn Hochstetler is Center for International Governance Innovation (CIGI) Chair of Governance in the Americas at the Balsillie School of International Affairs and Professor of Political Science at the University of Waterloo, in Canada. She has published widely on environmental politics in developing countries, focusing on the role of civil society and government bureaucracies. Other research has focused on the politics of international environmental negotiations, including the Rio conferences (1992 and 2012) and the climate change negotiations. Her most recent book is the prize-winning Greening Brazil: Environmental Activism in State and Society (Duke University Press, with Margaret Keck). While a Visiting Fellow at the School, she will be writing a series of articles on her current research on the role of emerging powers in addressing climate change. This includes a study of the current politics of renewable energy in Brazil and South Africa. In addition, she is editing a volume on international environmental politics with CSIS political science professors Michelle Bell and Dimitris Searis.

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Each year, the School of Global Environmental Sustainability hosts Visiting Fellows. Visiting Fellows are scholars with expertise in broad areas of sustainability from universities worldwide. They come to CSU to collaborate and connect with faculty experts on campus to address different economic, societal, and environmental issues. The School provides Visiting Fellows with office space, resources, and networking opportunities.
To increase national and international awareness of the types of biodiversity research at CSU and to determine if there was potential for catalyzing cross-campus interdisciplinary biodiversity research occurring at Colorado State University, the School of Global Environmental Sustainability, with support from the Provost Office, initiated the SoGES Biodiversity Initiative (SBI) in August 2012. The SoGES Biodiversity Initiative falls under the research focal area Biodiversity, Conservation, and Management.

This campus wide, faculty driven, Initiative works to engage and network faculty involved in biodiversity research at CSU. It encourages knowledge transfer across campus and potential collaborations, and promotes CSU as an international center for biodiversity research through research, publications and public awareness.

2012-2013 Accomplishments

2012-2013 Summary

During the year approximately 100 faculty members were invited to provide feedback to the SBI. Over 40 percent have attended a meeting, given suggestions, or expressed interest. These faculty spots fill 10 departments (10 departments) and UMA, including:

- College of Agriculture: Department of Horticulture and Landscape Architecture, Department of Agriculture and Resource Economics
- College of Natural Sciences: Department of Agriculture and Resource Economics
- College of Veterinary Medicine: Department of Pathology and Laboratory Medicine
- College of Agricultural Sciences: Department of Fish, Wildlife and Conservation Biology
- College of Natural Sciences: Department of Biology
- College of Liberal Arts: Department of Philosophy

Next Steps

As decided at the final SBI meeting of the 2012-2013 year the SBI will continue the events for biodiversity research through research, publications and public awareness.

2012-2013 Accomplishments

IGNITE Biodiversity

April 9, 2013 - IGNITE Biodiversity was organized as an outreach effort of SBI to highlight the breadth of biodiversity research being done on campus, make this research accessible to the students, and encourage knowledge transfer across campus and potential collaborations. The SBI hosted the IGNITE Biodiversity event.

Meetings

Seven scheduled meetings of School staff and faculty involved in biodiversity research. Between 10 and 20 people attended each meeting and discussion topics covered a range of topics in biodiversity research. Several recommendations were made to take the SBI and planning for the IGNITE Biodiversity event.

Visiting Expert

October 18, 2012, SoGES and the SBI hosted SoGES External Visiting Expert, Dr. Tom Lovejoy, winner of the Blue Planet Prize for 2012. Dr. Lovejoy met with the SBI faculty and students to provide feedback to the SBI. Over 40 percent have attended a meeting, given suggestions, or expressed interest. The faculty spots fill ten departments (10 departments) and UMA, including:

- College of Agriculture: Department of Horticulture and Landscape Architecture, Department of Agriculture and Resource Economics, and Department of Bioagricultural Sciences and Pest Management
- Warner College of Natural Resources: Natural Resource Ecology Laboratory (NREEL), Department of Human Dimensions of Natural Resources, Center for Collaborative Conservation, and Department of Fish, Wildlife and Conservation Biology
- College of Veterinary Medicine: Department of Microbiology, Immunology, and Pathology
- College of Natural Sciences: Department of Biology
- College of Liberal Arts: Department of Philosophy

SoGES Biodiversity Initiative

With the support of SOGES the SBI will continue the events for biodiversity research through research, publications and public awareness.

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- College of Agricultural Sciences: Department of Fish, Wildlife and Conservation Biology
- College of Natural Sciences: Department of Biology
- College of Liberal Arts: Department of Philosophy

Next Steps

As decided at the final SBI meeting of the 2012-2013 year the SBI will continue the events for biodiversity research through research, publications and public awareness.

During the 2013-2014 year the committee will identify strengths of CSU biodiversity research and campus wide biodiversity research themes. This will be accomplished through a campus workshop in Fall 2013 and the outcome will be a Draft Plan, an introspective of CSU Biodiversity and the role of academic institutions in global efforts of biodiversity conservation. The committee head will find an underestimate to aid in the development and compilation of a searchable database to summarize campus research. The committee will pursue funding opportunities to support these efforts, explore ways to build up the SBI community and identify outreach activities to engage students.

SBI 2013-2014 Committee

W. Chris Funk, Department of Biology, CSU (Committee Chair)
Cynthia L. Brown, Department of Bioagricultural Sciences and Pest Management
Tom Stohlgren, Research Ecologist, United States Geological Survey
Delwin Benson, Department of Fish, Wildlife and Conservation Biology
Collison Duncan, College of Veterinary Medicine and Biomedical Sciences
Liba Pejchar, Department of Fish, Wildlife and Conservation Biology
Don Mykles, Department of Biology
Sarah Reed, Department of Fish, Wildlife and Conservation Biology
Andrew Seidle, Department of Agriculture and Resource Economics
Susan Skagen, Research Wildlife Biologist, United States Geological Survey
George Wittmer, Department of Fish, Wildlife and Conservation Biology
The Global Soil Biodiversity Initiative (GSBI) is a bottom-up collaboration of international scientists dedicated to enhancing the use of soil biodiversity science and ecosystem services in policy and land management in global terrestrial ecosystems. The GSBI is committed to enhancing the translation of expert scientific knowledge on soil biodiversity, ecosystem functioning are occurring, especially in the context of climate change. Clear research and technological advances have clearly highlight that changes to soil biodiversity and ecosystem services into the local, regional and global ecosystem services. The first planning meeting for the Global Soil Biodiversity Assessment was held at Colorado State University, Fort Collins, CO February 26-28, 2013, which was jointly sponsored by SOGES and the European Commission-Joint Research Center. Over 20 international scientists were invited to participate. The primary outcome of this workshop towards an assessment will be a Global Soil Biodiversity Atlas. The goal of the Atlas will be to provide information on soil biodiversity across regions and management systems in a compelling manner and bring awareness to the importance of maintaining soil biodiversity and ecosystem services. The final atlas will be presented at the First Conference of the GSBI – Assessing Soil Biodiversity and Role in Ecosystem Services (Dijon, France) December 2014. The Atlas will primarily be supported by the European Commission-Joint Research Centre and the GSBI.

The Assessment will outline the current state of knowledge of soil biodiversity and ecosystem services, and highlight relationships to soil fertility and management; serve as an independent scientific resource for policy makers; present maps useful to policy makers and the public; show potential changes and links to global change drivers. The GSBI will facilitate this effort and assure that a network of international scientists (soil ecologists, taxonomists, soil scientists, biogeochemists, ecosystem scientists, agronomists) and policy makers representing different countries, regions and gender will be involved in the GSBI Assessment.

First Conference of the GSBI
Assessing Soil Biodiversity and Role in Ecosystem Services (Dijon, France) December 2014. Co-planning for this conference by the GSBI and ECOFINDERS is underway. The GSBI will provide a dynamic international meeting summarizing the current state of knowledge and recent advancements in the science of soil biodiversity. The conference is funded by the European Union program ECOFINDERS.

Global Distribution of Soil Biodiversity Working Group
The GSBI has received funding for a working group to establish a framework to bring together global soil biodiversity data and develop a predictive theory to improve our understanding of global distribution of soil biodiversity and the relationship to factors that control this diversity. The goal of the workshop is “Improving our understanding of the distribution of soil biodiversity and the factors that control this through data integration and infrastructure”, will be an action plan to facilitate the transfer of this information for use in furthering research and establishing sustainable management. Leipzig, Germany (March 2014).

Research Activities
In July 2012 the GSBI led an effort to sample the soil of Central Park, NYC, and map the diversity and distribution of microbes and fauna from 600 locations across the Park. This project will highlight the abundance of biodiversity in an urban setting and a site relevant and familiar to the general public.

Global Soil Biodiversity Initiative
Global Soil Biodiversity Initiative

The GSBI is coordinated by a Secretariat housed at SoGES; an Advisory Board of international scientists and others set priorities. The GSBI is funded by the 5 founding institutions.* Founding Institutions: Colorado State University, USA; University of Manchester, UK; Wageningen University and the Netherlands Institute of Ecology (NIOO), Netherlands; ETH Zurich, Switzerland, USA; European Commission, EU-JRC.

The GSBI is co-ordinated by a Secretariat housed at SoGES; an Advisory Board of international scientists and others set priorities. The GSBI is funded by the 5 founding institutions*. The GSBI is coordinated by a Secretariat housed at SoGES; an Advisory Board of international scientists and others set priorities. The GSBI is funded by the 5 founding institutions*. The GSBI achieves its mission through scientific activity by:

• Informing policy and research alike by providing clear, transparent and scientifically credible information.

• Collaborating with existing and new initiatives on soil biodiversity that relate to soil: UNCCD, UNFOS and Other Organizations.

• Encouraging capacity building in all aspects of soil biodiversity and ecosystem services.

The GSBI meets the goals of SOGES on multiple levels, from engaging the public and policy sector through active participation in national and global management of lands for global sustainability. The GSBI will facilitate this effort and assure that a network of international scientists (soil ecologists, taxonomists, soil scientists, biogeochemists, ecosystem scientists, agronomists) and policy makers representing different countries, regions and gender will be involved in the GSBI Assessment.

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White papers and other manuscripts

The GSBI informs policy and research through clear, transparent and scientifically credible information. At the first GSBI Open Science meeting in London, 2012, the international participants produced the GSBI Position Paper (globalsoilbiodiversity.org/London2012). The document outlines the need for and goals of the GSBI.

Provide Expertise

The GSBI offers to collaborate with all existing entities (CBD, FAO, IPBES, UNCCD, UNFCC, European Commission) and within the framework of the Global Soil Partnership (GSP), and with other organizations (e.g., IUCN, Future Earth, NGOs).

International working group

The GSBI currently supports an international working group on global methods and monitoring techniques.

Timeline of the GSBI events

- GSBI Initiated in Fall 2011
- 1st open meeting held (London, March 2012)
- Latin American Congress of Soils (March 2012)
- Rio+20 Side Event (June 2012)
- Global Soils Week, Germany (Nov. 2012)
- GSBA Planning Workshop (Feb. 2013)
- Ecological Society of America Symposium (Integrating Soil Biodiversity into Discussions of Global Sustainability) (Aug. 2013)

Participation

The GSBI has over 350 members representing 69 countries. Participants provide a reservoir of specialists for scientific updates, contributing to information that may be needed for the IPBES, EU and other future projects, and for initiatives that could benefit from our scientific input. Additionally, the GSBI quarterly newsletter is received by over 500 interested parties.

Of note: In May 2013, the New York Times highlighted soil biodiversity and the efforts of the GSBI in an article The Hidden World Under Our Feet, by Jim Robbins.

Global Soil Biodiversity Initiative

GSBI founders Johan Six, Luca Montanarella, Diana Wall, Richard Bardgett, and Wim van der Putten
The School provides a number of ways for CSU faculty and researchers to be affiliated with the School. By providing a diversity of avenues to engage, CSU experts can choose how to be involved in sustainability science and at what level. The SoGES Scholar database and Speakers Bureau are two databases, which help connect researchers to the local and global communities on sustainability science.

SoGES Sustainability Speakers’ Bureau

The School supports the Sustainability Speakers’ Bureau, which helps connect top researchers at the University with opportunities for outreach in the Fort Collins and northern Colorado community. The School receives regular requests for speakers, and the Sustainability Speakers’ Bureau is the first resource utilized to connect content experts with outreach and educational opportunities. The Bureau lists each Speaker, their topic areas, and links to researcher websites.

At the end of the 2012-2013 year, the School’s Sustainability Speakers Bureau had 16 members. In 2013-2014, the School is upgrading the Scholar Database to be more user-friendly, with enhanced search capabilities and functionality.

At the end of the 2012-2013 year, the School had 161 Scholars. In 2013-2014, the School is upgrading the Scholar Database to be more user-friendly, with enhanced search capabilities and functionality.

SoGES Scholars

SoGES Scholars are recognized as a network of world-class experts at the University, each working in a unique area of sustainability research. Scholars can take advantage of the many services provided by the School and are listed on the School’s Sustainability Scholar Database, utilized as a resource campus and worldwide as CSU’s first point of contact for sustainability experts.

At the end of the 2012-2013 year, the School had 161 Scholars. In 2013-2014, the School is upgrading the Scholar Database to be more user-friendly, with enhanced search capabilities and functionality.

To better connect Bureau members with speaking opportunities.
The School is actively involved with education on campus at the graduate and undergraduate levels as well as through outreach to middle and high school students. The School offers an interdisciplinary minor in Global Environmental Sustainability, undergraduate and graduate courses in sustainability science, provides research opportunities to students, and houses the Student Sustainability Center and the Pre-College Summer Sustainability Program. The School continues to promote and support education in sustainability science University-wide and is working to increase the breadth of programs and opportunities for all levels of students.
Companies, non-profit organizations and researchers are increasing their focus on sustainable practices. The goal of the GES minor is to equip students with the foundational knowledge to tackle the world’s greatest challenges of environmental, social, and economic sustainability. Comprised of an interdisciplinary set of courses, the GES minor allows students to build on their major to understand the problems and solutions that we all face. Students take two required courses, GES 101 and GES 470, along with five GES-endorsed courses offered across campus and tailored to meet student’s learning objectives and trajectory. GES minor graduates are equipped with a strong understanding of the core scientific concepts underpinning sustainability science. These young professionals leave the University with a solid grasp of the inherent complexity surrounding issues of sustainability science and with transferrable skills that can be applied to any career path.

GES Curriculum

The Global Environmental Sustainability (GES) minor provides students with the core sustainability science concepts to address real world challenges in sustainability. Established in 2009, the number of students enrolled in the GES minor continues to grow every year, as does the diversity of students from across CSU departments and Colleges. 170 students were enrolled in the minor as of July 2013. Students represent all eight colleges on campus, encompassing 41 different majors.

The common goal expressed by students in the GES minor is a drive to make a difference in the world. The majority of students who have graduated with the minor stated that they feel the skills learned will help them find the right career and allow them to incorporate sustainability science to any future job they may obtain.

GES Courses

The School of Global Environmental Sustainability offers three GES courses:

- GES 101, Foundations of Global Environmental Sustainability
- GES 470, Applications of Environmental Sustainability
- GES 520, Issues in Global Environmental Sustainability

GES courses have high enrollment each semester and frequently experience waitlists for GES 101 and GES 470.

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<th>Course</th>
<th>Colleges Represented</th>
<th>Freshman</th>
<th>Sophomore</th>
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<td>GES580 Spring 2013</td>
<td>6</td>
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The Applications of Environmental Sustainability (GES 470) is a graduate level course open to all graduate students across campus. Like GES 470, this course covers a range of topics in sustainability. While similar to GES 101 in overall format, the course accepts a much smaller class size and delves much deeper into a smaller set of topics. Graduate students focus on a range of primary literature as a basis for class discussions and discussions. The students develop an understanding of the complexity of problems and how to place those issues in a context that structures solutions in economic and social frameworks.

Students complete individual assignments throughout the course and develop their own case studies, which are presented to the class. Industry-led field trips to examine sustainability practices. The course focuses on practices and problem solving for issues of environmental sustainability. In this course students learn how to work in interdisciplinary teams. Students work individually and as small interdisciplinary groups to assess the local and regional sustainability coordinator of companies, local government, and non-profits, facility in various departments, and leaders of NGOs and other non-profits.

One of the most important aspects of understanding Global Environmental Sustainability is the interconnected nature of the problems and possible solutions. Systems thinking skills provide students with a unique way to address society’s environmental problems. An implementation that embraces the linkages of not only environmental, but social and economic sustainability as well.

Economic sustainability as well. The linkages of not only environmental, but social and environmental problems; to implement solutions that embrace skills provide students with a unique way to address society’s.

Environmental Sustainability is the interconnected nature of various aspects of sustainability.

The course focuses on practices and problem solving for issues of environmental sustainability. In this course students learn and apply tools for assessing environmental issues and best practices for working in interdisciplinary teams. Students work individually and as small interdisciplinary groups to assess the local and regional sustainability coordinator of companies, local government, and non-profits, facility in various departments, and leaders of NGOs and other non-profits.

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Program Overview

In 2013, the School of Global Environmental Sustainability piloted the Pre-college Summer Sustainability Program. The program brought high school students from across the United States to Colorado State University for an intensive eight-day introduction to sustainability. This program was sponsored by the School of Global Environmental Sustainability and received support from the Center for Multiscale Modeling of Atmospheric Processes and the Robert M. Noyce STEM Scholars Program.

Program Objectives:
• To provide high-achieving high school students an opportunity to explore various career choices within the fields of sustainability, science, and innovation
• To recruit students from a diverse set of backgrounds, through local and international recruitment with a focus on future matriculation to the University
• To promote the CSU environmental brand amongst students who have already been self-selected for an environmental focus. In this regard the program acts as a resource for more refined recruitment of students motivated to undertake environmental studies.
• Assist the University through the targeted recruitment of these students, with the concurrent benefits of brand building and national and international recognition in areas of the environment and sustainability.

2013 Program Summary:
• Students ranged in age from rising sophomores to current seniors.
• 17 students enrolled: (1)Arizona, (1)Iowa, (8)Colorado, (3)California, (2)Massachusetts, (1)Arkansas, (1)New York

The eight-day summer residential program focused on the School’s six focal areas of sustainability: Energy and Climate, Food Security, Environmental Institutions and Governance, Sustainable Communities, Land and Water Resources, Biodiversity Conservation and Management.

Throughout the eight day program, students had opportunities to interact with University professors and graduate students working in each of the six focal areas. The experiential learning approach provided students with hands-on experience in the field and the curriculum was brought to life through daily trips and site visits.

The program was based on the CSU campus and students experienced a taste of campus life, staying in University dorms during the program with access to recreational facilities and evening activities in Old Town Fort Collins. Each day, students visited some of Colorado’s most exciting locations as part of the educational curriculum, including: Rocky Mountain National Park, River rafting on the Cache La Poudre River, Short Grass Stephens Research Information Center, CSU’s Atmospheric Sciences Campus, Old Town Fort Collins, Life on Campus.

Student satisfaction was extremely high, measured both informally through conversations with students and formally through the post-program survey. Additionally, the program received overwhelmingly positive feedback from parents of participating students, expressed through personal conversations, feedback in emails, and comments on the program’s blog.

Overall student satisfaction (response rate 14 of 17 students):
- Excellent: 85.7%
- Above average: 14.9%
- Average: 0%
- Below average: 0%
- Unsatisfactory: 0%

Nearly all students indicated that as a result of the Pre-college Summer Sustainability Program, they are more likely to pursue a college degree in an environmental or sustainability-related field (response rate 14 of 17 students):
- Yes: 78.6% (more likely to pursue sustainability degree)
- Opinion has not changed: 21.4%
- No: 0% (less likely to pursue sustainability degree)

Additionally, the majority of students indicated that the Program made them more likely to consider attending Colorado State University for their college career (response rate 14 of 17 students):
- Yes: 78.6% (now considering study at CSU)
- Maybe: Has not changed opinion about CSU: 21.4%
- No: Now less likely to consider studying at CSU: 0%

Student participant and parent responses to the program have been overwhelmingly positive, with initial inquiry from several parents into next year’s program.

100% of students said they would recommend the program to their peers.
Next Steps

The School of Global Environmental Sustainability intends to move forward with the Pre-college Summer Sustainability Program in summer 2014. As it stands after the initial year, the program can be made sustainable from both an administrative and a fiscal perspective. Administrative resources have already been largely committed in designing and organizing the first iteration of the program and will continue to pay dividends for future programs without adding substantial additional costs. The School is also considering minor changes for future years, such as evolving the program to be shorter in duration with narrowed objectives that make it easier to implement and more financially accessible to Colorado residents.

The overwhelmingly positive feedback from the first year of the program indicates that it provides value to the CSU community in a variety of ways: future matriculation; sustainability education; positive branding for Colorado State University (even amongst those who may not attend but are made aware of CSU’s environmental branding); and as a means of highlighting the work of the School in a tangible way and in addition to other forms of outreach currently ongoing.

Pre-College Summer Sustainability Program

Pre-College Summer Sustainability Program Budget

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<th>INCOME</th>
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<td>Scholarships</td>
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<tr>
<td>Early Registration</td>
<td>9 @ $1,575 $14,175.00</td>
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<tr>
<td>Regular Registration</td>
<td>2 @ $1,800 $3,600.00</td>
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<td><strong>TOTAL INCOME</strong></td>
<td><strong>$22,575.00</strong></td>
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<tr>
<th>EXPENSES</th>
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<tr>
<td>CSU Onsite Expenses (accommodations and food)</td>
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<tr>
<td>Operational Expenses (transportation, activity fees and instructors)</td>
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<td>Program Promotion*</td>
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<td>Program Director Salary</td>
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<td><strong>TOTAL EXPENSES</strong></td>
<td><strong>$39,055.51</strong></td>
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**TOTAL PROGRAM REVENUE** $16,480.51

Net Revenue before Director’s salary $7,286.47

*Does not include in-house web and graphic design
Outreach

The School of Global Environmental Sustainability acts as a conduit for sustainability science, and works to communicate and connect that science to diverse audiences. To accomplish this, the School assists in communication efforts for teams, faculty and researchers on campus; organizes many co-sponsored and School events; and helps connect and network those interested in sustainability science.
Sustainable Peace and Development in Burundi
Dr. William Timpson, a SoGES scholar and GCRT member and faculty member in the School of Education, was selected as a Science Policy Leadership Fellow by the American Institute for Biological Sciences in Washington, DC. He was selected based on his accomplishments at the interface of science and policy. In Timpson’s end of year report to the School, he stated: “The Sustainability Leadership Fellow program has given me the knowledge and tools to effectively communicate science and opened new doors for me to possibly start a career in science-based policy.”

Dr. Dennis Ojima awarded ‘Champion of Nature and Environment’ medal
SoGES Executive Council member and CSU professor Dennis Ojima was awarded the “Champion of Nature and the Environment” medal by the Mongolian Ministry for his social-ecological research in Mongolia. The medal is one of the “Champion of Nature and Environment” medals awarded by the Mongolian Ministry for his social-ecological research in Mongolia.

Dr. Alan Knapp Awarded $3.7 Million National Science Foundation Grant as a result of SoGES funding for GCRT research
In 2013 the National Science Foundation awarded $3.7 million to Alan Knapp, a biology professor and senior ecologist with the Graduate Degree Program in Ecology at CSU. The project is an outcome of the 2008-2009 Global Challenges Research Team’s funding support from the School of Global Environmental Sustainability.

Paper published as a result of support from the Environmental Governance Working Group GCRT
The School was featured in a 2013 Nature Careers article highlighting sustainability programs that have successfully woven sustainability into education curricula.

New Career Opportunities
The School of Global Environmental Sustainability in 2008, and the School of Global Environmental Sustainability in Fort Collins launched its Outreach 7978 program in 2013.

Outreach 7978 newsletter featured in Nature
The School of Global Environmental Sustainability was featured in a 2013 Nature Careers article highlighting sustainability programs that have successfully woven sustainability into education curricula.

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The Student Sustainability Center (SSC) mission is to empower students to advance sustainability principles and practices at Colorado State University and beyond. Through innovation and collaboration with the campus community, we work to raise awareness about opportunities for positive environmental impact and lead projects to achieve personal and institutional sustainability.

Mission

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Accomplishments

• Partnered with the City of Fort Collins to educate dozens of students and community members about environmental issues through the Mindful Movie film series held each month.

• Watershed – October 4, 2012 – The Lake Michigan shoreline has a water quality and algae crisis. But what is the evidence for reporting the concern? Is the county board or state government’s lack of involvement in contamination problems, or is it lack of citizen engagement in understanding water quality and the simple actions that everyone can take to preserve Lake Michigan?

• Poison Waters – November 8, 2012 – Despite the successful passage of the Clean Water Act, many major American waterways are still contaminated. This film explores ideas for solving this problem. The movie highlights the danger not only from industry, however. Perhaps even bigger threats are natural phenomena: climate change, river development, and the disposal of household consumer goods. Grass roots citizens’ groups affect positive change!

• The Hungry Tide – April 17, 2013 – The Hungry Tide explains the tragic impact of climate change on Kiribati, a small Central Pacific nation, and the personal story of a woman living near by. Join host Dr. “Kiki” Sanford as she explores the amazing life of corals with Dr. Peter Tiimon, an advocate for the rights of Pacific Islanders. Dr. Tiimon explains the tragic impact of climate change on Kiribati, a small Central Pacific nation, and the personal story of a woman living near by. Join host Dr. “Kiki” Sanford as she explores the amazing life of corals with Dr. Peter Tiimon, an advocate for the rights of Pacific Islanders.

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The School of Global Environmental Sustainability hosts more than 30 special events each year, each with different goals and designed for varied audiences. School events are tailored to meet the many facets of the CSU and School mission, and educate the CSU community and the public on critical sustainability issues. Through events ranging from panels and lectures to distinguished author receptions and informational gatherings, the School fosters science communication and education, assisting in a better understanding of sustainability science and making CSU researchers accessible to decision-makers and lay audiences.

Each year, the School hosts six panels as part of the SoGES Managing the Planet panel series. Panels address diverse topics related to relevant sustainability issues and feature an interdisciplinary panel of Colorado State University experts conducting research related to the topic. Panels are organized to highlight current research and designed to engage the audience and dedicate the majority of time to questions and open discussion. SoGES Managing the Planet panels are held in an informal setting at Avogadro’s Number, a local restaurant and bar, and are free of charge and open to the public. Panels provide an opportunity for community members to engage with and ask questions of leading CSU researchers in a relaxed atmosphere.

2012-2013 Managing The Planet Panel Series

September 12, 2012
After Rio+20 - Moving Forward
Panelists:
- Michele Betsill, Department of Political Science, CSU
- Gillian Bowser, Natural Resource Ecology Laboratory, CSU
- Kevin Henry, CARE France
- Kelly Ramirez, Global Soil Biodiversity Initiative, CSU

October 10, 2012
Political Polarization & Our Environmental Future
Panelists:
- Mark Fiege, Department of History, CSU
- Tom Plant, Center for the New Energy Economy, CSU
- Sandra Davis, Department of Political Science, CSU
- Tony Cheng, Department of Forest and Rangeland Stewardship, CSU

November 14, 2012
The Biochar Solution: Facts vs. Fiction
Panelists:
- Francesca Cotrufo, Natural Resource Ecology Laboratory, CSU
- Morgan DeFoor, Department of Mechanical Engineering, CSU
- Neil Hannum, Department of Soil and Crop Sciences, CSU
- John Leemans, Department of Agriculture and Resource Economics, CSU
February 13, 2013

Melting Down at the Poles: What are the Differences?

Panelists:
- Diana Wall, School of Global Environmental Sustainability, CSU
- David Thompson, Department of Atmospheric Science, CSU
- John Moore, Department of Ecosystem Science and Sustainability, CSU
- Shane Kanatous, Department of Biology, CSU

Persons in attendance: 95

March 13, 2013

Understanding Climate Change and its National and Regional Impacts: The 2013 National Climate Assessment

Panelists:
- Dennis Ojima, Department of Ecosystem Science and Sustainability/Natural Resource Ecology Lab, CSU
- Shannon McNeeley, North Central Climate Science Center, CSU
- Kathleen Sherman, Department of Anthropology, CSU
- Jill Baron, U.S. Geological Survey/Natural Resource Ecology Lab, CSU
- Tom Brown, United States Forest Service

Persons in attendance: 130

April 10, 2013

Welcome to the Future: Is the 2012 Fire Season Indicative of What Lies Ahead?

Panelists:
- Barry Noon, Department of Fish, Wildlife, and Conservation Biology, CSU
- Mark Fiege, Department of History, CSU
- Sarah Bead, Department of Fish, Wildlife, and Conservation, CSU
- Monica Rocca, Department of Ecosystem Science and Sustainability, CSU

Persons in attendance: 80

April 2, 2013

Reception Honoring Author Robin S. Reid

Author: Robin S. Reid, Center for Collaborative Conservation, CSU

Book: Savannas of Our Birth: People, Wildlife, and Change in East Africa, which tells the sweeping story of the role that East African savannas played in human evolution, how people, livestock, and wildlife interact in the region today, and how these relationships might shift as the climate warms, the world globalizes, and human populations grow.

Persons in attendance: 80

April 30, 2013

Reception Honoring Authors Mark Feige and SueEllen Campbell

Co-hosted with Public Lands History Center, CSU

Author: Mark Feige, Department of History and Public Lands History Center, CSU

Book: The Republic of Nature, re-frames American history based on the simple but radical premise that nothing in the nation’s past can be considered apart from the natural circumstances in which it occurred.

Author: SueEllen Campbell, Department of English and Faculty Affiliate at the Public Lands History Center, CSU

Book: The Face of the Earth, explores how humans have made sense of our planet’s marvelous landscapes and investigates how we see lives with the great shaping forces of nature - from fire to changing climates and the intricacies of adaptation. The authors gave a joint talk and reading about their books, how they are similar and what sets them apart.

Persons in attendance: 60

Distinguished Author Series

Colorado State University has an abundance of distinguished researchers making significant contributions to the scientific literature. The School’s Distinguished Author series, initiated in Spring 2013, is designed to highlight and display recent books authored by the University’s leading sustainability researchers.

In 2013, the School held two receptions for three book authors. Author receptions are held at the School, refreshments are served, and books are available for purchase. The authors give a brief talk on their work, read an excerpt from their book, and at the end of the event is dedicated to conversation and networking.
2012-2013 Antarctic Public Library Lecture Series

September 24, 2012
antiARtica, the art in Antarctica
Presenter: Jim Collinson, School of Earth Sciences, Stanford University

September 26, 2012
A changing world and its effects on top level predators: Lessons to be learned from an Antarctic predator; the Weddell seal
Presenter: Shane Kanatous, Department of Biology, CSU

October 22, 2012
Working at Palmer Station on the Antarctic Peninsula, in support of the United States Antarctic Program
Presenter: Rebecca Sloop, Raytheon Polar Services, Denver, Colorado

October 27, 2012
Climate Change and soil animals: What very large changes on very small organisms can tell us about the future of Antarctica
Presenter: Zachary Sylvain, Department of Biology, CSU

November 20, 2012
Snow Job; Working for science in Antarctica
Presenter: Karen Joyce, McMurdo Station

March 19, 2013
A half century of Antarctic exploration 1957-2013
Presenter: John Behrendt, United States Geological Survey

April 30, 2013
This is my job? 20 years supporting science in Antarctica
Presenter: Bob Farrell, United States Antarctic Program
2012-2013 Special and Co-Sponsored Events

September 12, 2012
Your role in a regenerative world
Presenter: Chrisna Du Plessis, University of Pretoria, South Africa
Co-sponsor: CSU Institute for the Built Environment

October 11, 2012
Water – health and food security
Presenter: Chris Holmes, U.S. Agency for International Development
Co-sponsor: University Water Strategy for Global Issues, SoGES GQRT

October 1-3, 2012
Natural Gas Symposium 2012 Living Energy Right
Co-sponsors: CSU Center for the New Energy Economy; CSU Venture; CSU Office of the Vice Provost for Research; CSU Energy Institute

October 18, 2012
Journey of the Universe hosted by Dr. Tom Lovejoy
Panelists: Holmes Rolston III, Department of Philosophy, CSU; Robin Red, Center for Collaborative Conservation, CSU; Cameron Ghahramani, Department of Biology, CSU

October 11, 2012
Between God & green: How American evangelicals are cultivating a middle ground on climate change
Presenter: Katharine K. Wilkinson, Boston Consulting Group
Co-sponsors: Department of Political Science, CSU; Department of Philosophy, CSU; Changing Climates, CSU

November 7, 2012
Visions for sustainability science
Panelists: Pam Matson, School of Earth Sciences, Stanford University; Oswald Yala, School of Sustainability, Arizona State University; Tom Tomich, Agricultural Sustainability Center, University of California, Davis

October 29, 2012
Workshop: “The performing art of science presentation”
Presenter: Nancy Suelke, Harvard University
Co-sponsor: Department of Chemistry, CSU

November 29, 2012
Getting the big cheese onboard: Integrating sustainability in the workplace
Presenter: Tony Gorton, Environmental Health and Safety Director at Hach Industries
Co-sponsor: Global Social & Sustainable Enterprise, CSU

February 15, 2013
Workshop Cache la Poudre headwaters initiative: The role of data in understanding a river system
Co-sponsor: University Water Strategy for Global Issues, SoGES GQRT

K-12 Engagement

Wetmore Elementary School
Earth Day Presentation
Preston STEM Institute
Green Entrepreneurship Seminar
Rocky Mountain Kindware
Green Architecture Workshop

Earth Day presentation at Werner Elementary School
2012-2013 Special and Co-Sponsored Events

February 19-20, 2013
19th Annual Front Range Student Ecology Symposium (FRSES)
FRSES provides a forum for students to present their research in a professional, friendly and supportive peer setting.
CSU Co-sponsors:
Warner College of Natural Resources; Associated Students of CSU; Department of Atmospheric Sciences; Department of Biogeochemical Sciences and Post Management; Department of Biochemistry and Molecular Biology; Department of Biology; Center for Collaborative Conservation; Department of Ecosystem Science & Sustainability; Department of Fish, Wildlife & Conservation Biology; Department of Forest and Rangeland Stewardship; Department of Human Dimensions of Natural Resources; Department of Political Science; Department of Soil & Crop Sciences; Department of Statistics

March 27, 2013
Student Sustainability Center
Converge 2013
An open forum convening all CSU sustainability-oriented organizations.
CSU organizations represented: 17
Persons in attendance: 75

April 12, 2013
School of Global Environmental Sustainability 2013 Open House
This event highlighted the 2012-2013 academic year and accomplishments of the SoGES Global Challenges Research Teams and Resident Fellows.
Persons in attendance: 60

April 18, 2013
Our Energy Future
Co-sponsor: CSU Clean Energy Supersector

April 21, 2013
Rosemary & Peter Grant, Princeton University
Rosemary & Peter Grant are noted for their work concerning Darwin’s finches on the Galápagos Island named Daphne Major.
Co-sponsored: Graduate Degree Program in Ecology (GDPE), CSU

April 23, 2013
Rosemary & Peter Grant
Rosemary & Peter Grant are noted for their work concerning Darwin’s finches on the Galápagos Island named Daphne Major.
Co-sponsored: Graduate Degree Program in Ecology (GDPE), CSU

May 1, 2013
Women and Sustainability
Panelists:
Thais Corral, Network of Human Development, Brazil
Dennis Ojima, Natural Resource Ecology Laboratory, CSU
Tungaa Ulambayar, Department of Forest and Rangeland Stewardship, CSU
Co-sponsor: Women, Population, and the Environment, SoGES GCRT

May 2, 2013
When knowledge isn’t power: Science, technology, and the environment in the 21st century
Monfort Professor-in-Residence Dr. Naomi Oreskes, author of Merchants of Doubt, Plate Tectonics, and The Rejection of Continental Drift.
Persons in attendance: 175
Co-sponsor: Colorado State University

May 13, 2013
Finding your voice: What scientists need to know about science communication and the risks & returns of speaking up
Presenter: Liz Neeley, Assistant Director of Science Outreach at COMPASS, Seattle, Washington.
Person in attendance: 35

May 20, 2013
Melting down at the poles: What are the differences?
Invited to repeat the panel at the Environmental Protection Agency (EPA) Region 8 Climate Change Speaker Series in Denver, Colorado
Invited Panel

February 19-20, 2013
19th Annual Front Range Student Ecology Symposium (FRSES)
FRSES provides a forum for students to present their research in a professional, friendly and supportive peer setting.
CSU Co-sponsors:
Warner College of Natural Resources; Associated Students of CSU; Department of Atmospheric Sciences; Department of Biogeochemical Sciences and Post Management; Department of Biochemistry and Molecular Biology; Department of Biology; Center for Collaborative Conservation; Department of Ecosystem Science & Sustainability; Department of Fish, Wildlife & Conservation Biology; Department of Forest and Rangeland Stewardship; Department of Human Dimensions of Natural Resources; Department of Political Science; Department of Soil & Crop Sciences; Department of Statistics

March 27, 2013
Student Sustainability Center
Converge 2013
An open forum convening all CSU sustainability-oriented organizations.
CSU organizations represented: 17
Persons in attendance: 75

April 12, 2013
School of Global Environmental Sustainability 2013 Open House
This event highlighted the 2012-2013 academic year and accomplishments of the SoGES Global Challenges Research Teams and Resident Fellows.
Persons in attendance: 60

April 18, 2013
Our Energy Future
Co-sponsor: CSU Clean Energy Supersector

April 21, 2013
Rosemary & Peter Grant, Princeton University
Rosemary & Peter Grant are noted for their work concerning Darwin’s finches on the Galápagos Island named Daphne Major.
Co-sponsored: Graduate Degree Program in Ecology (GDPE), CSU

May 1, 2013
Women and Sustainability
Panelists:
Thais Corral, Network of Human Development, Brazil
Dennis Ojima, Natural Resource Ecology Laboratory, CSU
Tungaa Ulambayar, Department of Forest and Rangeland Stewardship, CSU
Co-sponsor: Women, Population, and the Environment, SoGES GCRT

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During this six month period, visits to the School’s website showed an increased level of engagement from current CSU students, faculty, and staff. 19% of new visits, and 32% of all visits are from Fort Collins, CO. 72% of new visits, and 79% of all visits are from the United States. 12% of new visits, and 24% of all visits originated from within the CSU system. Internationally, visitors to the website represent 158 countries, with the most visitors from India, Canada, the United Kingdom, Australia, the Philippines, Germany, and China.

During the same six month time frame, 14% of new visits and 11% of total visits were on a mobile device such as a smartphone or iPad. Mobile device users stayed less time and visited fewer pages than those visiting from a computer. These numbers could indicate that people who learn about the School quickly look up the School on the web while at its events, especially given that the top two cities using mobile to access the School’s website are Denver and Fort Collins. 37% of all site visits are return visits, with 2,309 unique returning visitors on the website. Return visitors generally stayed on the website longer than new visitors, averaging almost five minutes per visit, indicating that the School’s website is used as a regular resource for many repeat users.

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Email Distribution List
The School maintains email lists of constituents and interested individuals for School events, opportunities, and updates. At the end of 2012-2013, the email list had a total of 2,308 contacts, all of which receive regular School emails. Interest in receiving School emails increased significantly in 2013, with a 27% increase in subscriptions, in the six months between January and June (3,308 subscriptions as of January 1, 2013 and 2,308 subscriptions as of June 30, 2013). Of these new mailing list members, 50% opted up to receive emails from the School during School-run events. Subscriptions at events indicates not only increased interest in the School, but also successful School events, which potentially inspire attendees to be more involved and receive more information from the School. The other 50% of new mailing list members joined via the online sign-up form, demonstrating active growth online as well.

The School of Global Environmental Sustainability maintains a website containing a wealth of information about the School, its research and programs, and CSU’s commitment to sustainability work and education. Featuring dynamic content and updated daily, the School’s website serves as a hub for sustainability news and events and a conduit for sustainability science and expertise at the University. The School’s website experiences high volumes of visitors daily. Over a six month period, January through June 2013, the School’s website experienced 15,192 unique visitors, including 14,697 new visitors, for a total of 23,302 site visits and 66,472 pageviews.

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Social Media

The School aims to engage with a diversity of audiences interested in sustainability by utilizing a variety of platforms and communication techniques. Currently, the School manages a Facebook Page, Twitter feed, and blog, all of which are used to interact online daily. The School uses these platforms to field and answer questions, listen to the needs and inquiries of the online community, post events and news of interest, and communicate about sustainability science and opportunities.

Facebook

Since the SoGES Facebook Page was established in Spring 2009, its audience has grown to more than 800 Likes, with steadily increasing interaction among Facebook users. The Facebook Page is used to post news, photos, and event reminders. The top 10 performing posts on the Facebook Page from August 1, 2012 through June 14, 2013 were primarily content featuring School news and events. The topmost performing post reached 500 people. The next four reached between 402-491, and the next five reached between 321-391.

Of the top performing posts, 37% of viewers were not yet fans of the Page. This indicated Facebook is not only a useful tool for engaging with constituents, but is also useful for building overall growth among current and future students, and the online community.

Twitter

Similar to Facebook Page, the School Twitter feed is used to highlight news, event information, and other general updates, featuring quick, real-time engagement. During the six month period between January and June 2013, the SoGES Twitter feed saw a 21% increase in followers, and had 837 followers at the end of the 2012-2013 year.

HumanNature Blog

The School’s HumanNature blog is a communications outreach project and features content from scientists across campus. The blog is designed to aggregate environmental science research from a multitude of university organizations. In 2013-2014, the School is engaging its Sustainability Leadership Fellows to regularly post original content regarding their own research and outreach activities.

Klout Score for Social Media

As of June 30, 2013, the School has a Klout Score of 47, which includes Twitter and Facebook presence. Klout is a tool that uses social media analytics to rank its users according to online social influence, with a score of 1 to 100. The SoGES Klout Score of 47 is a good “threshold” number to show emerging active use and engagement across social media. CSU colleges and organizations hover in the high 40s to low 50s, and CSU’s official social media holds a Score of 63.
The School of Global Environmental Sustainability is funded primarily through the Office of the Provost, Executive Vice President at Colorado State University with general funds. The School has a base budget. Additional funds were received as follows:

- Targeted funds from the Provost and Vice President for Research to help support the Global Challenges Research Teams, research-related positions, and special events for the campus and community.
- Differential Tuition – assessed on the GES prefix of the School’s courses at a rate of $35 per student credit hour. This is assessed for juniors and seniors and is used to enhance the quality of education. There are currently two GES courses – GES301 and GES470.
- Online course – GES101 is offered online, the School receives 50% of the tuition assessed.

The School of Global Environmental Sustainability has been working with the CSU Division of University Advancement to secure additional fundraising dollars. To date, this has been unsuccessful.

**Budget**

<table>
<thead>
<tr>
<th>Description</th>
<th>Budget</th>
<th>Actual Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FUND SOURCES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees’ Salaries, Ass. Directors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees’ Staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>55,300.00</td>
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<tr>
<td><strong>GLOBAL CHALLENGES RESEARCH TEAM</strong></td>
<td>38,000.00</td>
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<tr>
<td>Environmental Governance</td>
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<tr>
<td>Food Security</td>
<td>1,000.00</td>
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<tr>
<td>Health</td>
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<tr>
<td>Water Security</td>
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<tr>
<td>Agricultural Development</td>
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<td><strong>TOTAL</strong></td>
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<td>Differential Tuition</td>
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<td><strong>TOTAL</strong></td>
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<tr>
<td>Online course – GES101</td>
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<td><strong>RESEARCH TOTAL</strong></td>
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<td><strong>EDUCATION</strong></td>
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<td><em>FORMS</em></td>
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<td>GES101 - Online</td>
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<td>GES101 - Online and Sustained</td>
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<td>GES101 - Online</td>
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<tr>
<td>GES101 - Online and Sustained</td>
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<td><strong>TOTAL</strong></td>
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<td>General Director</td>
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<td><em>OTHERS</em></td>
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<td>External Funded</td>
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<tr>
<td>GES101 - Online</td>
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<td><em>TOTAL</em>*</td>
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<td><strong>TOTAL</strong></td>
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<td><strong>TOTAL</strong></td>
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<td><strong>SSC</strong></td>
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<td><strong>TOTAL</strong></td>
<td>128,000.00</td>
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</table>

**Salaries**

<table>
<thead>
<tr>
<th>Description</th>
<th>Budget</th>
<th>Actual Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries</td>
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<tr>
<td>Research</td>
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<tr>
<td>Education</td>
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<tr>
<td>General Admin.</td>
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</tr>
<tr>
<td>SSC</td>
<td>1.2%</td>
<td></td>
</tr>
</tbody>
</table>

**2012-2013 Budget**

- *Note: All figures are in USD.*
Gifts for research will help:
- Bring leaders together from multiple disciplines to create and share knowledge by hosting visiting fellows from across the globe.
- Foster innovative solutions to real-world problems and break down the disciplinary boundaries by funding CSU faculty research groups and fellows.
- Equip the next generation of academic scholars with science communication and leadership skills to translate science into action.

Gifts for outreach will help:
- Bring worldwide leaders in sustainability to the CSU campus and northern Colorado communities to network with and foster leading concepts in sustainability science.
- Provide public access to researchers working on sustainability science and two-way communication about key sustainability issues.
- Foster a global community of forward-thinking citizens, ready to tackle the world’s greatest challenges.

Each year, the School of Global Environmental Sustainability works hard to network leading researchers, students, and the northern Colorado and global communities on cutting edge sustainability science and innovation. Your support can make the difference for the School’s capacity to continue to support the University campus and community on sustainability research, outreach, and education.

The School is looking for private donors, foundations, and corporations that would like to help support SoGES as a global leader in sustainability science.

Gifts for education will help:
- Provide scholarships to students to engage in sustainability education and research.
- Provide graduate fellowships to bolster graduate student training to promote a high level of sustainability learning, problem solving and lifelong professional networks.
- Support curriculum development for cutting-edge sustainability education across campus.
- Bolster the interdisciplinary Minor in Global Environmental Sustainability and equip all CSU graduates with a solid foundation in core sustainability concepts.

To give a gift to the School of Global Environmental Sustainability, please visit sustainability.colostate.edu/support.

Sponsorship Opportunities