



SESYNC Feedbacks

News from the National Socio-Environmental Synthesis Center

Boundary Spanning Special Issue

Recognized for its leadership in interdisciplinary team science synthesis, the National Socio-Environmental Synthesis Center convened a three-day international symposium in June for 244 researchers who shared new insights and advances in socio-environmental systems research. At **Boundary Spanning**, participants gathered around three main themes: Systems under **Stress**, in **Transition** and by **Design** (See *interviews with theme leads below*). Participants explored the current state of socio-environmental systems research, recent advances in the field, and the unique challenges and opportunities that the questions and approaches of this research can create.

The phrase "boundary spanning" means reaching out to build bridges across historic and disciplinary divides. In this context, the symposium assembled a diverse and representative balance of researchers in the social and natural sciences, from institutions large and small, and at all levels of career achievement. It was also an educational venue for learning about innovative interdisciplinary work, exemplified in poster sessions and lightning talks about the cutting edge work, and research presentations that showed the value and role of applied, actionable science.

A collaborative and inclusive conference, theme leaders designed and selected unique sessions in each of the stress, transition and design themes. Lightning talks allowed for maximum participation and provided an opportunity for participants to experiment with new and concise ways to communicate their research to a broad audience. Participants from past and current SESYNC supported research helped link projects and activities, and the meeting resulted in exciting new

research collaborations.

Please read our full summary of the symposium [here](#). Keynote presentations are available on our [YouTube channel](#).

Back from the Frontier

Journalist Lisa Palmer caught up with several speakers at Boundary Spanning to find out how socio-environmental synthesis is transforming research.

I came to the Boundary Spanning symposium as an observer because interdisciplinary science is at the epicenter of innovation. Where else might an anthropologist, evolutionary biologist, disease ecologist, atmospheric chemist, social psychologist, and urban designer meet to develop ideas for future collaborations?

A journalist doesn't go into this type of meeting without plans for interviewing people at the cutting edge and to get their perspectives on where socio-environmental synthesis is going. As you'll see in the following three videos, made by SESYNC filmmaker in residence Elizabeth Herzfeldt-Kamprath, the need to move beyond thinking of environmental problems in the natural world as purely biophysical ones couldn't be greater. In interviews with speakers and theme leaders, I heard their reflections on what they learned and the opportunities for social scientists, natural scientists, physical scientists, and the professions of architecture, landscape architecture, and engineering to be more effective in solving sustainability problems by co-defining research questions with people who create solutions.



Solutions to inform better decisions on urgent global challenges was a major focus of these interviews because doing so requires crossing science frontiers in deliberate ways. "It's not about getting on the same page, but putting the two pages together, trying to tape them up side by side, and figuring out a way forward that works for everyone," Kendra McSweeney told me. "It takes the most time, but it is fundamentally essential to the sorts of changes we want to see."

Finding collaborators willing to do this work is vital. As Margaret Palmer explained in her opening remarks, the research community is hungry to form these bonds but they often don't know what type of collaboration would help advance understanding of a particular problem. "Sometimes researchers don't recognize that there are entire disciplines in other fields that have been championing a particular area of research," she said.

The Boundary Spanning symposium explored the current state of socio-environmental synthesis research, recent advances, challenges, and opportunities. I hope you enjoy learning more from these important theme highlights.

Symposium Themes

Theme leaders and participants in Boundary Spanning share their perspectives.

Socio-Environmental Systems under Stress explored how species, ecosystems, cultures and societies respond to dramatic stress events. Stress may result from **extreme weather** events, changes in **fire regimes**, **toxic releases** or **chronic pollution**, **disease outbreaks**, **social or economic disruptions**, and **political conflict**. Stress may stem from **power imbalances** and exposure to socio-environmental **inequalities**. Session and theme leaders reflect on spanning disciplinary and methodological boundaries to address these stressors and to combine collective knowledge to make it actionable.



Socio-Environmental Systems under Stress (3:59)

Socio-Environmental Systems in Transition examined dynamics of persistent and directional change in socio-environmental systems, including **urbanization**, **economic development**, **human migration**, **coastal sea-level rise**, **land cover** and **land use** change, **water** and **resource availability**, **markets** and **trade**, shifting **racial** or **cultural landscapes**, and **human-environment interactions**. Reflections on the theme emphasize the perpetual state of transition of many communities and the unexpected, and often positive responses to change.



Socio-Environmental Systems in Transition (4:24)

Socio-Environmental Systems by Design assessed outcomes of engineered landscapes and intentional efforts to alter, manage, or direct the structure and functioning of socio-environmental systems. It involved **governance, urban planning, infrastructure, environmental justice, synthetic biology solutions, technology, conservation or protected areas, scientific inquiry, and knowledge production**. Key takeaways from the theme include how tangible products help engage the public and stakeholders, and how to encourage those working in academia to take risks and embrace being a novice outside of the academic community.



Socio-Environmental Systems by Design (5:53)

What participants said:

"Thank you for inviting me to participate in the symposium. It was a fantastic event and provided opportunities for engaging across disciplines not available at other conferences. It fills a unique and much needed niche."

"Extremely useful for expanding my network and learning about diverse tools."

"This was a very special meeting you arranged, and I think that continuing to do so in the years to come will yield massive dividends for all involved, whether working in pure research or applied areas. The conference was also excellently organized and planned - although I was a bit disappointed that the young scholar's mixer could not accommodate more participants. Thanks for all your work, and I look forward to seeing what you come up with next."

"This symposium was eye-opening and inspiring. I've worked on multiple interdisciplinary projects but none achieved the level of integration I observed at talks at this symposium. As a result, I am eager to redouble efforts to achieve better integration and to incorporate more human dimensions to conservation planning."

Meeting the leadership challenges for interdisciplinary environmental research



An influential group of 20 research leaders met at SESYNC for frank discussion on how to combine core leadership knowledge and best practices to advance interdisciplinary research. In the July issue, *Nature Sustainability* published [an article](#) by Lisa Palmer on this effort to form a leadership forum, which could advance understanding of complex problems. Elena Irwin, of Ohio State University who gave a seminar at SESYNC in Spring 2018, wrote [a Comment](#) for the July issue on how academic enterprises can bridge barriers to achieve global sustainability.

SESYNC Publications

Modelling the distribution in Hawaii of *Angiostrongylus cantonensis* (rat lungworm) in its gastropod hosts. Published in *Parasitology* by Jaynee Kim and colleagues as part of the Pursuit, *Hawaiian Watershed Response*.

Implications of behavioral change for the resilience of pastoral systems-Lessons from an agent-based model. Published by Gunner Dressler and colleagues in *Ecological Complexity* as part of the Pursuit, *Human Decisions & Ecosystem Services*.

Long-term persistence loss of urban streams as a metric for catchment classification. Published in *Hydrology and Earth System Sciences* by Dusan Jovanovic, SESYNC Postdoc Tijana Jovanovic, and colleagues.

Nativity and seed dispersal mode influence species' responses to habitat connectivity and urban environments. Published in *Global Ecology and Biogeography* by SESYNC Postdoc Bianca Lopes, Dean Urban, and Peter White.

Using an integrated social-ecological analysis to detect effects of household herding practices on indicators of rangeland resilience in Mongolia. Published in *Environmental Research Letters* by María Fernández-Giménez, former SESYNC Postdoc Ginger Allington, and colleagues, included SESYNC researcher Kelly Hondula.

Property-level direct and indirect deforestation for soybean production in the Amazon region of Mato Grosso, Brazil. Published in *Land Use Policy* by SESYNC Postdoc Florian Gollnow and colleagues.

Lake regionalization and diatom metacommunity structuring in tropical South America. Published in *Ecology and Evolution* by SESYNC Postdoc Xavier Benito and colleagues.

Commentary to: a cross-validation-based approach for delimiting reliable home range estimates. Published in *Movement Ecology* by Erin Dougherty and colleagues, including SESYNC Postdoc Colin Carlson.

Response to Comments on "Designing river flows to improve food security futures in the Lower Mekong Basin". Published in *Science* by G.W Holtgrieve and colleagues, including former SESYNC Postdoc Albert Ruhi.

Meeting the leadership challenges for interdisciplinary environmental research. Published in *Nature Sustainability* by SESYNC Senior Fellow Lisa Palmer.

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