



SESYNC Feedbacks

News from the National Socio-Environmental Synthesis Center



A black bear eats hawthorn berries. Large animals can disperse seeds over great distances, but many large seed dispersers are extinct or in decline. (Photo by Paul D. Vitucci)

RESEARCH | SESYNC Postdoc Research in Science

Former Postdoc Evan Fricke Lands Cover of Science with SESYNC Research

Lost Birds and Mammals Spell Doom for Some Plants

Annapolis, MD — In one of the first studies of its kind, researchers have gauged how biodiversity loss of birds and mammals will impact plants' chances of adapting to human-induced climate warming.

More than half of plant species rely on animals to disperse their seeds. In [a study](#) featured on the cover of this week's issue of *Science*, U.S. and Danish researchers showed the ability of animal-dispersed plants to keep pace with climate change has been reduced by 60% due to the loss of mammals and birds that help such plants adapt to environmental change.



Researchers from Rice University, the University of Maryland, Iowa State University, and Aarhus University used machine learning and data from thousands of field studies to map the contributions of seed-dispersing birds and mammals worldwide. To understand the **severity of the declines**, the researchers compared maps of seed dispersal today with maps showing what dispersal would look like without human-caused extinctions or species range restrictions. [Read more.](#)

WELCOME | SESYNC's Newest Graduate Fellow



SESYNC Introduces Rachel Wegener, Recipient of the Payne Fellowship

SESYNC is pleased to announce University of Maryland (UMD) graduate student Rachel Wegener as this year's recipient of the Dr. Richard Payne Graduate Fellowship. The fellowship aims to recognize excellence in graduate students within UMD's College of Computer, Mathematical, and Natural Sciences by supporting innovative and actionable research that directly links social and environmental sciences. The award honors Dr. Richard Payne, a UMD Professor of Biology, University Senator, and a dedicated instructor and mentor for students and postdocs.

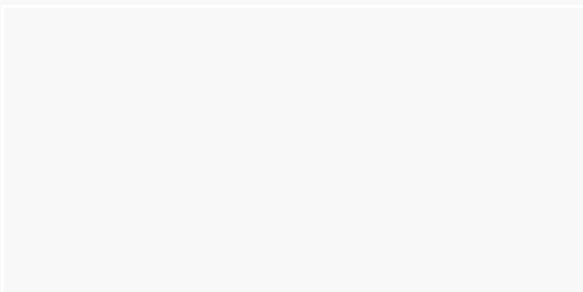
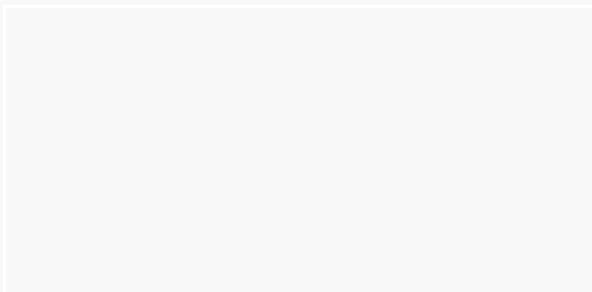


Rachel Wegener is currently a graduate student in UMD's Department of Atmospheric and Oceanic Studies. Her research focuses on marine heat waves (MHWs)—unusual events in which patches of sea water exhibit higher-than-normal temperatures.

Through her research, Rachel is hoping to better understand the physical drivers that cause MHWs, which could ultimately lead to improved forecasting techniques. She explained that if scientists can better predict when and where MHWs will occur, communities might be able to better adapt to MHWs and their effects through policy and permitting changes. [Read more.](#)

LATEST VIDEOS | Perspectives from a Political Ecologist

New SESYNC Videos Feature Lecture from Dr. Christina Hicks



What is social theory?



Perspectives on Social Science & Social Theory from a Political Ecologist

Presented by Dr. Christina Hicks,
Lancaster University



Why Draw from Political Ecology?

Presented by Dr. Christina Hicks,
Lancaster University

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RESEARCH SPOTLIGHT | Pursuit Work in Nature Communications



Findings from SESYNC Pursuit, Led by Former SESYNC Postdoc and Scholar, Show Increase in Water Competition

Transnational land investments induce competition for water resources

Annapolis, MD — The ongoing transition from smallholder farming to large-scale commercial agriculture is fueling a global competition for local freshwater resources, according to **new research** published this week in *Nature Communications*.

The study's findings suggest that the expansion of transnational large-scale land acquisitions (LSLAs) by agribusiness companies enhances the strain on water availability and exacerbates competition over local water resources.

“Water scarcity was substantially enhanced by the shift to water-intensive crops by agribusiness investors and the expansion of irrigated cultivation,” said Paolo D’Odorico, professor of and chair of the University of California, Berkeley’s Department of Environmental Science, Policy, and Management. D’Odorico, one of the study co-authors, conducted the research as part of a working group at the National Socio-Environmental Synthesis Center (SESYNC)—[Food-Energy-Water Interdependencies of the Global Agrarian Transition](#). **Read more.**

"Increasing the uptake of ecological model results in policy decisions to improve biodiversity outcomes." Published in *Environmental Modelling & Software* by Sarah R. Weiskopf, Zuzana V. Harmáčková, Ciara G. Johnson, María Cecilia Londoño-Murcia, Brian W. Miller, Bonnie J.E. Myers, Laura Pereira, Maria Isabel Arce-Plata, Julia L. Blanchard, Simon Ferrier, Elizabeth A. Fulton, Mike Harfoot, Forest Isbell, Justin A. Johnson, Akira S. Mori, Ensheng Weng, and Isabel M.D. Rosa. This paper resulted from the SESYNC Pursuit: [The missing link: incorporating the role of biological diversity into projections of ecosystem services](#).

"The effects of defaunation on plants' capacity to track climate change." Published in *Science* by former SESYNC postdoctoral fellow Evan C. Fricke and colleagues Alejandro Ordonez, Haldre S. Rogers, and Jens-Christian Svenning.

"Competition for water induced by transnational land acquisitions for agriculture." Published in *Nature Communications* by Davide Danilo Chiarelli, former SESYNC fellow Paolo D'Odorico, Marc F. Müller, Nathaniel D. Mueller, Kyle Frankel Davis, former SESYNC postdoctoral fellow Jampel Dell'Angelo, Gopal Penny, and Maria Cristina Rulli.

"A better index for analysis of co-occurrence and similarity." Published in *Science Advances* by former SESYNC fellow Kumar Mainali, Eric Slud, Michael C. Singer, and William F. Fagan.

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