National Science Foundation
WHERE DISCOVERIES BEGIN

News Release 17-088

NSF awards $13 million for research on how humans, environment interact

Projects continue mission of Dynamics of Coupled Natural and Human Systems program

Bangladesh villagers live atop a levee that's rapidly eroding following a series of river floods.

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September 12, 2017

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Delta: A place where sediment carried downstream by a river enters the sea, forming a fan of sand or mud.

Although deltas make up just 1 percent of the world's land, they're home to more than half a billion people -- and to fertile ecosystems such as mangroves and marshes. Deltas also serve as economic hotspots. They support much of the world's fisheries and forest products, and are major food production areas for many nations.

Scientists have found that deltas are disappearing at an increasing rate, however, affecting humans and other species, according to scientist Kimberly Rogers of the University of Colorado-Boulder.

Rogers is one of nine recipients of grants made in 2017 by the National Science Foundation's (NSF) Dynamics of Coupled Natural and Human Systems (CNH) program, which supports research that examines the complex interactions between human and natural systems. Total funding for 2017 CNH grants is $13 million.

Rogers will study socioecological system dynamics related to livelihoods, human migration and landscape evolution in the Ganges-Brahmaputra-Meghna Delta, which drains land in such locations as Bangladesh, Bhutan, India and Nepal. The results will help researchers and policymakers understand deltas worldwide, including the Mississippi Delta in the U.S.

CNH is co-funded by NSF's directorates for Geosciences (GEO); Social, Behavioral and Economic Sciences (SBE); and Biological Sciences (BIO). The program, part of NSF's Environmental Research and Education (ERE) portfolio, has issued awards since 2001.

"People are part of our planet," said Richard Yuretich, CNH program director for GEO. "The CNH program explores our relationship with the world around us so we can live comfortably and minimize the adverse consequences of our actions."

CNH considers humans and the environment as one interconnected system. This year's grantees will look at ways in which people deal with environmental processes in a range of settings, including coasts, woodlands and cities.

"The complex interplay between our activities and the natural environment has major impacts on human well-being and on environmental quality," said Tom Baerwald, CNH program director for SBE. "A deeper understanding of these dynamics is critical to improving human welfare and preserving natural systems."

The 2017 CNH research subjects include: feedback among coral reef fishing practices, livelihood strategies, and the shifting dominance of corals and algae; dynamics of interactions among humans, bats and pathogens; water supplies, land use and disadvantaged communities; links between short-lived local pollutants and long-lived global greenhouse gases; and traditional livelihoods and ecosystem dynamics in Utah's pinyon-juniper woodlands.

Liz Blood, CNH program director for BIO, summed it up: "These awards demonstrate the importance of understanding the connectedness of nature and society in studying the effects of environmental change and socioeconomic stress. The results are critically important to all of us."

2017 NSF CNH Awards

Jennifer Burney, University of California-San Diego: The Coupled Climate and Institutional Dynamics of Short-Lived Local Pollutants and Long-Lived Global Greenhouse Gases <https://nsf.gov/awardsearch/showAward?AWD_ID=1715557>

Brian Codding, University of Utah: Dynamic Impacts of Environmental Change and Biomass Harvesting on Woodland Ecosystems and Traditional Livelihoods <https://nsf.gov/awardsearch/showAward?AWD_ID=1714972>

Helen Dahlke, University of California-Davis: The Dynamics of Water Supplies, Land Use, and Disadvantaged Communities <https://nsf.gov/awardsearch/showAward?AWD_ID=1716130>

Sally Holbrook, University of California-Santa Barbara: Multiscale Dynamics of Coral Reef Fisheries: Feedbacks Between Fishing Practices, Livelihood Strategies, and Shifting Dominance of Coral and Algae <https://nsf.gov/awardsearch/showAward?AWD_ID=1714704>

Dylan McNamara, University of North Carolina-Wilmington: Climate Change Adaptation in a Coupled Geomorphic-Economic Coastal System <https://nsf.gov/awardsearch/showAward?AWD_ID=1715638>

Raina Plowright, Montana State University: Dynamics of Zoonotic Systems: Human-Bat-Pathogen Interactions <https://nsf.gov/awardsearch/showAward?AWD_ID=1716698>

Sarah Reed, Wildlife Conservation Society: Experimental Investigation of the Dynamic Human-Environmental Interactions Resulting from Protected Area Visitation <https://nsf.gov/awardsearch/showAward?AWD_ID=1716533>

Kimberly Rogers, University of Colorado-Boulder: Socioecological System Dynamics Related to Livelihood, Human Migration, and Landscape Evolution <https://nsf.gov/awardsearch/showAward?AWD_ID=1716909>

Christopher Solomon, Cary Institute of Ecosystem Studies: Social-Ecological Dynamics of Recreational Fishery Landscapes <https://nsf.gov/awardsearch/showAward?AWD_ID=1716066>

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Researchers conduct a survey of fish sold on the roadside of a Pacific island.
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Truckload of fuel wood harvested from the pinyon-juniper woodlands of Utah by local tribal members.
Credit and Larger Version (/news/news_images.jsp?cntn_id=242942&org=NSF)

Water management practices can help replenish groundwater resources in California.
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Ocean City, Maryland (foreground) and Assateague National Seashore rest on ever-shifting sands.
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A female grey-headed flying fox roosts with young in a subtropical rainforest in New South Wales.
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Related Websites

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