

iFAST: The International Forum on Advanced Environmental Sciences and Technology

A series of distinguished seminars by eminent scientists

8 p.m. CDT; 9 p.m. EDT; 1 a.m. GMT (April 29); 9 a.m. Beijing (April 29)

Wednesday, April 28, 2021



Drew Harvell
Cornell University

<https://ecologyandevolution.cornell.edu/catherine-drew-harvell>

Drew Harvell's research on ocean outbreaks and hygiene subsidies of marine ecosystems has been published in over 170 research articles and taken her from the reefs of Mexico, Indonesia and Hawaii to the Pacific Northwest. Her award-winning book, *Ocean Outbreak*, details infectious epidemics in the ocean and solutions that benefit people and biodiversity. She is professor emerita of Cornell University, Fellow of the Ecological Society of America and Faculty Affiliate at Friday Harbor Laboratories (University of Washington). She was awarded the Cornell SUNY Chancellors Award for Excellence in Research, the Seattle Aquarium Conservation Research Award, the NW Yachting Magazine Outstanding Environmental Leadership Award, the Prose Award (*Ocean Outbreak*) and the National Outdoor Book Award (*A Sea of Glass*). Follow her on twitter @DrewHarvell.

Host-Pathogen Interactions and the Sustainability of Marine Ecosystems

Decades of research reveals how infectious disease outbreaks have reshaped coral reefs, seagrass beds and eastern Pacific shorelines. Climate warming is fueling new infectious outbreaks in the ocean. I document links with warming in outbreaks that can disrupt the balance of nature in both foundation ecosystems like coral reefs and seagrass beds and keystone predators. Our recent work, using new diagnostic molecular tools, drones and Artificial Intelligence, documents major outbreaks of a destructive protozoan (*Labyrinthula zosterae*) in eelgrass meadows from San Diego to Alaska and a link with climate warming. Now is the time to be proactive in developing solutions for a healthier ocean for biota and humans. Our new research shows that natural ecosystems have untapped powers for decontaminating our oceans. Tropical and temperate seagrasses can reduce the bacterial pathogen load in today's oceans. Bacterial sequencing was accomplished in Central Indonesia and Western USA by next-generation Illumina MiSeq sequencing platforms to characterize microbial diversity and potential human pathogens. Human pathogens were reduced by 50% in seagrass meadows of Indonesia compared to nearby non-seagrass habitats. Human bacterial pathogens also occur seasonally in Puget Sound and pathogen diversity is reduced in eel grass meadows. In our 34-site survey, we detected 3,074 potential human bacterial pathogen reads belonging to 33 bacterial species. Corals inside marine protected areas or seagrass beds also have fewer diseases. This new data on clear health services of tropical and temperate seagrasses amplifies the urgency for harnessing nature's superpowers in planning ocean futures.



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Register for the Zoom conference at www.ou.edu/ieg/seminars

Organizing Committee Chair: Jizhong Zhou (University of Oklahoma, USA; <https://www.ou.edu/ieg>)
Xueduan Liu (Central South University, China)