

2014 CDFW Climate College Lecture #4

Title: Climate impacts on California's marine waters
Speakers: Lisa Levin, Scripps Institute of Oceanography
Gretchen Hofmann, University of California, Santa Barbara
Date: April 21st, 2014 (Monday)
Time: 2:00PM – 4:00PM
Location: CDFW San Diego Field Office and Laboratory, 3883 Ruffin Road, San Diego, CA
WebEx: Lecture also available via WebEx. We encourage CDFW staff participating remotely to watch the lectures together by reserving a conference room with DSL. The powerpoint presentation will be posted in advance to minimize interruption for remote users due to WebEx or bandwidth complications.

Registration for Lecture #2

[CDFW STAFF CLICK HERE TO REGISTER](#) - Please register at least two days prior to the lecture.

[ALL OTHER PARTICIPANTS:](#) If you are not a CDFW staff member please provide your name, email address, organization, and if you intend to participate in-person or via WebEx.

Speakers:

Dr. Lisa Levin is Director of the Center for Marine Biodiversity and Conservation and Distinguished Professor at the Scripps Institution of Oceanography in La Jolla, California.

Before moving to Scripps in 1992 she was Assoc. Professor in the Dept. of Marine Earth and Atmospheric Sciences at North Carolina State University in Raleigh.

Dr. Levin is a marine ecologist who studies benthic ecosystems in the deep sea and shallow water. Together with her students Dr. Levin has worked with a broad range of taxa, from microbes and microalgae to invertebrates and fishes. Her recent research has emphasized 3 major themes: (1) the structure, function and vulnerability of continental margin ecosystems, particularly those subject to oxygen and sulfide stress; (2) wetland biotic interactions as they mediate marsh function, invasion and restoration; and (3) larval ecology of coastal marine populations with emphasis on connectivity and response to ocean acidification and deoxygenation. The deep ocean covers over half of the planet but most of it is less well known than the surface of the moon.

Dr. Levin's research has been conducted over the past 3 decades on the margins of the Pacific, Indian and Atlantic Oceans using ships, submersibles and remotely operated vehicles (ROVs) to sample and conduct experiments. She has participated in over 35 oceanographic expeditions around the world and served as Chief Scientist on 12 of these.

She is the author or co-author of more than 175 scientific publications. Dr. Levin has served as North American editor of the journal *Marine Ecology*, as founding editorial board member of the *Annual Reviews of Marine Science*, as past contributing editor for *Limnology and Oceanography*

and *Marine Ecology Progress Series*, and has edited 5 special volumes on aspects of deep-sea biodiversity.

Dr. Levin is a 'Fellow of the Association' of AAAS in Biological Sciences, a recently elected Fellow of the American Geophysical Union, and recently served as Pogo Visiting Professor in Namibia and South Africa. In 2011 she was the Anton Bruun Memorial Lecturer at the Intergovernmental Oceanographic Commission and in 2012 gave the Sverdrup Lecture at the American Geophysical Union Meeting. She has participated as steering committee member of the Census of Marine Life programs on chemosynthetic ecosystems (ChESS) and continental margins (CoMARGE), and the US Ocean Carbon Biochemistry Program, and in working groups for the US National Academy of Sciences, SCOR, SCOPE, NCEAS, and INDEEP. For many years she served on the San Diego Wetlands Advisory Board, the San Diego Bay Technical Advisory panel, and as faculty manager of the UCSD Kendall Frost Marsh Reserve.

Within UCSD she has won the Chancellor's Associates Faculty award for Excellence in Research, and has served at various times as representative to the UC Marine Council, Assoc. Dept. Chair, Chair of the Committee on Academic Personnel, and head of the Biological Oceanography Curricular Group. Dr. Levin is presently the inaugural holder of the Elizabeth Hamman and Morgan Dene Oliver Chair in Marine Biodiversity and Conservation Science at Scripps Institution of Oceanography.

Dr. Gretchen Hofmann is an eco-physiologist whose research focuses on the effects of climate and climate change on the performance of marine species. In particular, her recent work investigates the impact on marine organisms of rising atmospheric CO₂ concentrations via global warming and ocean acidification. Dr. Hofmann studies how such environmental changes influence the regulation of mechanisms within the body that impact development, geographic distribution and survival.

To study the effects of temperature on physiological performance Dr. Hofmann has conducted research at broad geographic scales examining species across climates, information which may also be used as a proxy for predicting the response of organisms in one location through time under climate change scenarios. She has also done extensive work in Antarctica studying marine fishes and invertebrates that are highly evolved to polar climates and may be particularly sensitive to global warming. Her research has explored the specific temperature responses of these polar organisms, and identified physiological mechanisms which these and other more temperate species may employ in response to thermal stresses in their environments.

Dr. Hofmann is also involved in research on ocean acidification, or the gradual reduction in ocean pH by the seawater's uptake of atmospheric CO₂. Recent government reports project ocean acidification to increase over the next century and have significant impacts on shell-forming organisms as they build and maintain their hard structures. However the overall physiological response that organisms will have under these "acidified" seawater conditions is still being determined. Studies by Dr. Hofmann and her collaborators are identifying key developmental challenges for the sensitive larval stages of marine species in acidified waters, and gene pathways that may play a role in those processes. She is also investigating the combined effects of temperature and acidity, in order to better understand how marine species will cope with the dual challenges of global warming and ocean acidification in the coming century.

Optional additional webinars:

- U.S. Fish and Wildlife Service [Climate Academy](#) – archived webinars



ITEP is planning 2 **Tribal Climate Change Webinar Series** for this spring: 1) a 4-part webinar series, tentatively in March and April, will focus on impacts of climate change in the Pacific Northwest. We are collaborating with Kathy Lynn at the University of Oregon and the USDA Forest Service Pacific Northwest Research Station and have received input from the Pacific Northwest Tribal Climate Change Network; and 2) a 4-part webinar series in May and June, intended for a national tribal audience, will focus on climate change impacts, traditional knowledge and climate change, and communicating about climate change. More information about the two webinar series will be available in the coming months.

The **Events page on the Tribes & Climate Change website** is in calendar format: www4.nau.edu/tribalclimatechange/events.asp.