
STANFORD LAW SCHOOL SYMPOSIUM

Emerging Perspectives on the Law, Science, and Policy of Dynamic Marine Conservation

MAY 10-11, 2013

AT STANFORD LAW SCHOOL
STANFORD, CALIFORNIA, USA

*Special thanks Stephen Neal, Stanford Law '73,
for his significant support of this event.*



Stanford Law School | Environmental & Natural Resources
Law and Policy Program



WELCOME!

During the next two days, you're invited to actively participate in exploring cutting-edge issues in dynamic marine conservation. Climate change, urbanization, invasive species, overfishing, energy exploitation – these and other impacts are challenging traditional marine conservation methods. At this symposium, we'll share the latest law, science and policy vital to successful marine conservation in a rapidly changing world. We hope you will leave this symposium empowered with the latest knowledge of marine conservation and energized from sharing in interdisciplinary dialogues among leading experts.

SCHEDULE

Time	Event	Location
DAY 1: FRIDAY MAY 10		
8:00-8:45	Registration	Law School Room 290
8:45-9:00	Welcome and Introduction: Meg Caldwell Center for Ocean Solutions and Stanford Law School	Law School Room 290
9:00-10:00	Keynote: Jane Lubchenco Stanford Distinguished Visitor and former NOAA administrator	Law School Room 290
10:15-12:00	Panel 1: Dynamic Management of Global Fisheries in a Changing Environment Natalie Ban University of Victoria • Daniel Dunn Duke University Alistair Hobday Commonwealth Scientific and Industrial Research Organisation (CSIRO) • Rashid Sumaila University of British Columbia	Law School Room 290
12:00-1:15	Lunch Viewing of Wave Glider Marine Robot	Crocker Garden
1:15-3:00	Panel 2: Coordinating International Governance for Marine Conservation Jeff Ardron Institute for Advanced Studies in Sustainability - Potsdam • David Freestone Sargasso Sea Alliance Ann Powers Pace University Law School • Nicholas Robinson Pace University Law School	Law School Room 290
3:15-4:45	Panel 3: Modeling and Protection of Dynamic Marine Ecosystems Daniel Costa University of California- Santa Cruz • Ben Lascelles BirdLife International • Sal Jorgensen Monterey Bay Aquarium	Law School Room 290
5:15-7:15	Dinner and Film by John Weller	Stanford Faculty Club
DAY 2: SATURDAY MAY 11		
8:00-8:45	Late Registration	Law School Room 290
8:45-9:45	Keynote: Kristina Gjerde International Union for the Conservation of Nature and Monterey Institute of International Studies	Law School Room 290
10:00-11:45	Panel 4: Fisheries Governance in Dynamic Systems Eric Gilman Hawaii Pacific University and Sustainable Fisheries Partnership • Martin Hall Inter-American Tropical Tuna Commission Elizabeth Havice University of North Carolina – Chapel Hill • D.G. Webster Dartmouth University	Law School Room 290
11:45-1:00	Lunch Viewing of Wave Glider Marine Robot	Crocker Garden
1:00-2:45	Panel 5: Ecological and Cultural Considerations in MPA Formation and Management Eddie Game The Nature Conservancy • Ole Varmer U.S. Dept. of Commerce and NOAA • Aulani Wilhelm NOAA	Law School Room 290
3:00-4:45	Panel 6: Ocean Conservation Evaluation & Monitoring Gregg Casad U.S. Coast Guard • Philip McGillivray U.S. Coast Guard • Hugh Possingham University of Queensland Greg Poulos Cox, Wootton, Griffin, Hansen, & Poulos, LLP	Law School Room 290
4:45-5:15	Closing Remarks: Larry Crowder Center for Ocean Solutions and Stanford University	Law School Room 290
5:15-6:00	Reception	Crocker Garden
6:30-8:15	Speaker Dinner (Speakers only)	Stanford Park Hotel
DAY 3: SUNDAY MAY 12		
9:00-12:00	Group Teaming Sessions (Speakers only)	Neukom First Floor, Stanford Law School

SPEAKERS



KEYNOTE Kristina M. Gjerde is senior high seas advisor to the International Union for the Conservation of Nature (IUCN). She is a recognized expert in international marine environmental law and serves as an advisor to governments, international organizations, scientific institutions and non-governmental organizations. Gjerde has been a member

of the World Economic Forum's Ocean Governance Agenda Council and served on the Marine Advisory Task Force of GLOBE International (Global Legislators Organization for a Balanced Environment). Recently, she was appointed adjunct professor at the Monterey Institute of International Studies. She has published widely on fisheries, shipping, law of the sea and marine conservation issues including in *Conservation Letters*, *International Journal of Marine and Coastal Law* and (forthcoming) in "Rule of Law for Nature – New Dimensions and Ideas in Environmental Law" (Cambridge University Press).

Gjerde specialized in admiralty law at the New York City law firm of Lord, Day & Lord. She was a research fellow at the Marine Policy Center of the Woods Hole Oceanographic Institution and research fellow/guest lecturer at the University of Hull Law School (UK), and represented WWF at the International Maritime Organisation in London. In 2003, she was awarded a three-year Pew Fellowship in Marine Conservation. Gjerde co-founded and serves on the boards of the Global Ocean Biodiversity Initiative, the Sargasso Sea Alliance and the High Seas Alliance. She is a graduate of New York University School of Law.



KEYNOTE Jane Lubchenco is a Distinguished Visitor at Stanford's Haas Center for Public Service and a visiting fellow at the Center for Ocean Solutions. Previously, she was appointed by President Obama as undersecretary of commerce for oceans and atmosphere, and administrator of the National Oceanic and Atmospheric Administration (NOAA).

A marine ecologist and environmental scientist, she is an expert on climate change and interactions between the environment and human wellbeing.

During her tenure at NOAA, the agency crafted and implemented the United States' first official policy on oceans, worked on restoring fisheries to sustainability and profitability, and restructured the nation's weather satellite program to ensure the continuity of climate and weather observations from space. Special attention was given to healthy oceans and coasts, and preparing the U.S. for severe weather, disasters and climate change. She also led NOAA's response to the BP Deepwater Horizon oil spill in the Gulf of Mexico in 2010 and NOAA's modeling and tracking of radioactive material and debris from the 2011 tsunami that resulted from the earthquake in Tohoku, Japan.



Jeff Ardron is a senior fellow at the Institute for Advanced Studies in Sustainability (IASS), based in Potsdam, Germany. His research focuses on global maritime governance, particularly in the high seas, with an eye on how institutions will have to adapt in our era dominated by human impacts and activities. He is particularly interested in bridging

science, technology, law and policy as well as in 'disruptive technologies' and their potential to circumvent governance bottlenecks. He is president of the board for the Pacific Marine Analysis and Research Association (PacMARA) in British Columbia, Canada, an organization he co-founded to better link science to marine policy issues. Interested in stakeholder participation, he developed analytical methods to incorporate local knowledge along side scientific data in planning. He is a frequent guest lecturer and consults widely, recently for marine planning projects in West Africa, Chile, Canada and the United Kingdom.



Natalie Ban is an assistant professor at the University of Victoria's School of Environmental Studies in British Columbia, Canada. She obtained her undergraduate and master's degrees in geography and environmental studies from McGill University in Montreal and worked for several years in marine conservation in British Columbia before

completing her Ph.D. in resource management and environmental studies at the University of British Columbia's Fisheries Centre. Most recently, Natalie spent four years in tropical north Queensland performing postdoctoral work at the Australian Centre of Excellence for Coral Reef Studies at James Cook University.



Meg Caldwell is executive director of the Center for Ocean Solutions and directs the Environmental and Natural Resources Law & Policy Program at Stanford Law School where she is a lecturer. She is also an honorary professor in the Global Change Institute at the University of Queensland, Australia. From 2004-2007, she served on and chaired the California Coastal

Commission and was on the board of the California Coastal Conservancy. From 2004 to 2011, she was a member of the California Marine Life Protection Act Blue Ribbon Task Force that helped the State of California establish the largest network of marine protected areas in the nation. Meg earned her B.S. in business administration from the University of California at Berkeley and her J.D. from Stanford Law School.



Lieutenant Commander Gregg Casad serves as the U.S. Coast Guard's liaison officer to NOAA and the Department of State's Bureau of Oceans and International Environment and Scientific Affairs where his primary responsibility is to coordinate the USCG's review of domestic and international living marine resource policies. Casad develops USCG's feedback

to interagency positions for international and regional fishery management organizations, domestic legislation and international fisheries treaties related to illegal, unreported and unregulated (IUU) fishing. Casad also provides subject matter expertise to capacity building activities addressing IUU fishing. Previously, Casad served onboard the Coast Guard Cutters ALERT and ORCAS as a deck watch and maritime law enforcement officer, and as a senior policy analyst and manager for living marine resource enforcement program. He holds a bachelor's degree from the U.S. Coast Guard Academy and a master of marine affairs with a graduate certificate in environmental management from University of Washington.



Daniel Costa is a distinguished professor of ecology and evolutionary biology at the University of California at Santa Cruz and holds the Ida Benson Endowed Chair in Ocean Health. His research focuses on the ecology and physiology of marine mammals and seabirds, including recording the movement patterns of highly migratory marine mammals and seabirds in an effort

to understand their habitat needs. He co-founded the Tagging of Pacific Predators program, a multidisciplinary effort to study the movement patterns of 23 species of marine vertebrate predators in the North Pacific Ocean. He is a member of the Integrated Climate and Ecosystem Dynamics program, the Census of Marine Life, Southern Ocean Global Ocean Ecosystem Dynamics (GLOBEC), Climate Impacts on Oceanic Top Predators (CLIOTOP) and the Southern Ocean Observing System. He completed his Ph.D. at University of California, Santa Cruz. He has published over 300 scientific papers.



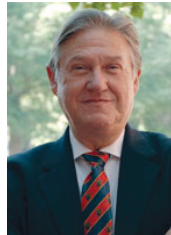
Larry Crowder is science director at the Center for Ocean Solutions, a professor of biology at Stanford's Hopkins Marine Station and a senior fellow at the Stanford Woods Institute for the Environment. He orchestrates COS's many working groups that are delving into climate change, coastal hypoxia, marine pathogens and other areas. Larry's research centers on predation

and food web interactions, mechanisms underlying recruitment variation in fishes, population and food web modeling in conservation biology, and interdisciplinary approaches to marine conservation. Prior to joining COS, he was a professor of marine biology at Duke University. He is widely published and extensively quoted in the media. Larry received his Ph.D. in freshwater ecology and food webs from Michigan State University.



Daniel Dunn is a Nippon Foundation Doctoral Fellow and a James B. Duke Fellow with the Marine Geospatial Ecology Lab at Duke University where he focuses on ecosystem-based fisheries management, pelagic conservation and marine spatial planning in a changing ocean. His research has focused on applying spatio-temporal management measures to reduce bycatch

and discards, increase fishing selectivity and objectively allow fisheries to participate in MSP. He is particularly interested in the development of dynamic spatio-temporal fisheries management measures and MPAs. Daniel sits on the Scientific Steering Committee of the Global Ocean Biodiversity Initiative (GOBI) and is the lead of its Dynamic Pelagic Working Group. He was also a liaison for the Census of Marine Life to the Secretariat to the Convention on Biological Diversity (CBD). Daniel is a Ph.D. candidate at Duke University investigating dynamic management of ocean resources as part of the Nereus Program.



David Freestone is the executive director of the Sargasso Sea Alliance. He is a visiting scholar and adjunct professor at the George Washington University Law School. Previously he worked at the World Bank, retiring in 2008 as deputy general counsel and senior adviser. He is the founding editor of the *International Journal of Marine and Coastal Law* (now in its 28th year) and

general editor of the book series "Legal Aspects of Sustainable Development." In 2007 he was winner of the Haub Gold Medal Prize for Environmental Law. Freestone has published some 20 books and more than 150 scholarly papers on law of the sea and international environmental law. His recent books include "The 1982 Law of the Sea Convention at 30: Successes, Challenges and New Agendas" and "The Law of the Sea: Progress and Prospects."



Eddie Game leads conservation planning R&D for The Nature Conservancy's Central Science team and is helping evolve its planning methods to place greater emphasis on valuing nature, human wellbeing, engagement with other sectors and adapting to climate change. He has also worked in fisheries and marine conservation for the Australian government. Eddie

has published over 25 peer reviewed articles on climate change adaptation, conservation planning, efficient monitoring and other topics. He authored the manual for the conservation planning software, Marxan, and has written for magazines including *Outdoor* and *Australian Geographic*. Eddie has been nominated as an outstanding early career researcher by the Australian Academy of Science and was the recipient of the Great Barrier Reef Foundation's inaugural prize for innovative concepts to conserve the reef in the face of climate change. Eddie completed his Ph.D. at the University of Queensland where he now holds an adjunct faculty position.



Eric Gilman is a marine research scientist with Hawaii Pacific University, College of Natural Sciences and senior fisheries scientist with the Sustainable Fisheries Partnership. His research examines marine fisheries science and governance, ecosystem-level effects of pelagic fisheries, gear technology mitigation of problematic fisheries bycatch and mangrove ecosystem responses to climate change and adaptation options.

Eric worked for the Pohnpei Port Authority in the Federated States of Micronesia and held a position on the cabinet of the Governor of the Northern Mariana Islands. In addition to positions at Audubon Society and Blue Ocean Institute, Eric was a visiting scientist at the Food and Agriculture Organization of the United Nations. He joined IUCN's Global Marine Programme as a marine fisheries advisor and was with the Global Biodiversity Information Facility in Copenhagen. Eric consults to companies on tuna product supply chains. He earned a Ph.D. from the University of Tasmania School of Geography and Environmental Studies, Australia, an M.Sc. from Oregon State University Department of Oceanography and a B.A. from Wesleyan University.



Martin A. Hall is principal scientist and head of Bycatch Programs of the Inter-American Tropical Tuna Commission (IATTC), the Regional Fisheries Management Organization. The tuna-dolphin program he directed reduced dolphin mortality in the tuna purse seine fishery to less than 1 percent and dolphin populations have begun to recover.

Hall helped develop and implement the international agreements addressing the tuna-dolphin issue and management measures yielding bycatch reductions. In 2003, he initiated a program to mitigate sea turtle bycatch by longline vessels. This program, currently underway from Peru to Mexico, was developed with technical support from NOAA and Overseas Fishery Cooperation Foundation (OFCF)-Japan, among others. For a decade he has worked to reduce bycatch in the tuna fishery and more recently, on shark conservation issues. He has taught courses on bycatch at several universities. He earned a degree from the University of Buenos Aires and his Ph.D. from the University of Washington.



Elizabeth Havice is an assistant professor of international development and globalization in the Geography Department at the University of North Carolina, Chapel Hill. Her work focuses on the political economy of resource regulation, and production and consumption in natural resource systems, especially the tuna industry. Specific research projects include the political

economy of tuna property rights and access, political economy and ecology of capture fisheries in contemporary capitalism, and globalization and supply chain management. With others, she edited a special issue of the *Journal of Agrarian Change* that is devoted to investigating capitalist dynamics and social

processes in fisheries systems. Havice earned her Ph.D. at the University of California, Berkeley in environmental science, policy and management and her B.S. from the University of Wisconsin, Madison in zoology, conservation biology and environmental studies.



Alistair Hobday is a principal research scientist at Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) Marine and Atmospheric Research where he leads CSIRO's Marine Climate Impacts and Adaptation research and is co-chair of the international CLIOTOP (Climate Impacts on Top Ocean Predators) program. His

research spans a range of topics including dynamic spatial management, movement and migration of large pelagic species and determining the environmental influence on distribution, abundance and behaviour of marine species. Alistair focuses on investigating the impacts of climate change on marine resources and developing adaptation options to underpin sustainable use into the future. He has been involved in a number of publications on the impacts of climate change on fisheries and aquaculture, and determining adaptation options.



Sal Jorgensen is a research scientist at the Monterey Bay Aquarium. Through electronic tagging, he and other scientists have discovered that white sharks along the California coast belong to a small and isolated population traveling throughout the Northeast Pacific, even into San Francisco Bay. This information on the local white shark population size and distribution is

relevant for effective management to safeguard this protected species. Sal completed post-doctoral research at Stanford University in California. He earned his Ph.D. in ecology at the University of California, Davis and his B.A. in environmental studies focusing on conservation and restoration at Sonoma State University, Calif..



Ben Lascelles works for the BirdLife International Secretariat in Cambridge, United Kingdom, a partnership of conservation organizations operating in over 100 countries and territories working to conserve birds, their habitats and global biodiversity. He is the coordinator for the identification, delimitation and designation of marine Important Bird Areas (IBAs)

for 350 species of seabirds worldwide, resulting in a list of over 3000 sites for inclusion in the first global inventory of priority sites for seabird conservation. Ben also leads BirdLife's work on inputting data to a range of policy processes aimed at developing marine protected areas. In addition, Ben represents BirdLife on a range of international groups such as on the Scientific Steering Committee of the Global Ocean Biodiversity Initiative, the World Seabird Union, High Seas Alliance, Sustainable Ocean Initiative and the UN Pool of Experts on the World Ocean Assessment.



Phil McGillivray is science liaison for the U.S. Coast Guard where he coordinates science issues for the Pacific Ocean area. His responsibilities include management of science conducted using Coast Guard aircraft, buoytenders and other assets as well as high latitude science conducted on icebreakers managed by the Coast Guard. He previously worked in the Office

of Secretary of Defense after post-doctoral work at NOAA in Monterey, Calif. through a joint appointment with the Naval Postgraduate School. Earlier, he completed post-doctoral work at the Marine Science Institute of the University of California, Santa Barbara. His experience includes more than two years at sea on research vessels and submersibles, and employment at the NOAA oceanographic laboratory in Miami, Florida. He earned a Ph.D. in ecology from the University of Georgia with work on biogeochemical fluxes at fronts along the Gulf Stream.



Hugh Possingham is professor of mathematics and professor of ecology at the University of Queensland, Australia and a vice-chancellor's senior research fellow. He is director of the Australian Research Council's Centre of Excellence for Environmental Decisions and director of The National Environment Research Program hub for Environmental

Decisions. The Possingham lab developed the world's most widely used conservation planning software, Marxan, which was used to develop Australia's federal marine reserve system. Hugh coauthored two scientific consensus statements that led to Australia's marine reserve system. Many governments and NGOs use his lab's work for the allocation of funding to threatened species recovery and solving other conservation conundrums. Hugh is founding member of The Wentworth Group of Concerned Scientists, chief editor of Conservation Letters, and involved with Council of the Australian Academy of Science and several NGO scientific advisory committees. He coauthored "The Brighlow Declaration" and 350 refereed publications. He currently directs two research centers.



Gregory W. Poulos is a founding Partner of Cox, Wootton, Griffin, Hansen & Poulos, LLP, a San Francisco based law firm specializing in maritime law. Poulos' practice focused on representation of shipowners and charterers, commercial fishermen, marine terminals and other entities involved in the commercial maritime industry. Poulos was named a Proctor in Admiralty by the Maritime Law

Association of the United States. He was chosen to serve as chair of the Maritime and Transport Law Committee of the International Bar Association and as the chair of the Pacific Admiralty Seminar. Poulos was named as one of the best maritime lawyers in the United States by *Best Lawyers* from 2010 through 2012. Poulos is on the Strategic Advisory Board for Liquid Robotics, a company developing an autonomous robotic marine platform. He received his undergraduate degree from University of California, Davis and his J.D. degree from Tulane University.



Ann Powers is a faculty member of Pace Law School's Center for Environmental Legal Studies where she teaches environmental courses including the law of oceans and coasts, international environmental law, UN diplomacy and water quality. Her scholarship includes articles on emerging ocean issues, water pollution trading programs and citizen litigation. Professor

Powers has worked with the United Nations Environment Programme (UNEP) and the International Union for the Conservation of Nature (IUCN) including the Oceans, Coasts & Coral Reefs Specialist Group of the IUCN Commission on Environmental Law and the IUCN Academy of Environmental Law. She serves as ABA Section of Environment, Energy and Resources' (ABA/SEER) liaison to the Law Academy and is the International Council of Environmental Law's (ICEL) representative to the UN. She has served on the American Bar Association's Standing Committee on Environmental Law, the Board of Directors of the Environmental Law Institute and the National Research Council's Board on Environmental Studies and Toxicology. Previously, she worked for a major regional U.S. environmental group and for the U.S. Department of Justice's Environment and Natural Resources Division.



Nicholas A. Robinson is a professor at Pace Law School and a professor adjunct at Yale University School of Forestry & Environmental Studies. He was legal advisor for International Union for the Conservation of Nature (IUCN), chaired its Commission on Environmental Law and now chairs its Legal Specialists Group on Arctic Environmental Law. In 1978, he inaugurated Pace Law

School's environmental legal studies. He was general counsel of the New York State Department of Environmental Conservation and a delegate to the bilateral USA-USSR negotiations on cooperation in environmental protection. He serves on the Environmental & Social Advisory Council to the European Bank for Reconstruction and Development (EBRD). He has chaired the Environmental Law and International Environmental Law Committees of the New York City Bar and served on the Board of the Environmental Law Institute. Robinson edited the travaux préparatoires for the 1992 Rio Earth Summit's "Agenda 21 and the UNCED Proceedings" and "Capacity Building for Environmental Law in the Asia and Pacific Region" for the Asian Development Bank. He co-edited the UN Environment Programme's Manual on International Environmental Law and helped draft the UN World Charter for Nature. He is a graduate of Brown University, Rhode Island and Columbia University School of Law, New York.



Rashid Sumaila is a professor and director of the Fisheries Economics Research Unit at the University of British Columbia's Fisheries Centre. He specializes in bioeconomics, marine ecosystem valuation and the analysis of global issues such as fisheries subsidies, illegal fishing and the economics of high and deep seas fisheries. He also studies how emerging threats to the ocean such as climate

change and oil spills are likely to impact the economics of fisheries worldwide. He has worked in fisheries and natural resource projects in Canada, Europe, Africa and Asia. Sumaila has published over 135 articles in academic journals including *Science*, *Nature* and the *Journal of Environmental Economics and Management* and is widely quoted in the media. Sumaila is the recipient of numerous awards including the Leopold Leadership Fellowship, the Pew Fellowship for Marine Conservation, Craigdarroch Award for Societal Contribution, the Zayed International Prize for the Environment and the Peter Wall Institute Senior Early Career Scholar Award.



Ole Varmer has been a legal adviser at the U.S. Department of Commerce since 1987. He joined the International Section of NOAA Office of the General Counsel in 1998 where he has worked on international issues involving the law of the sea, biological diversity, heritage (natural and cultural), jurisdiction, zones and boundaries in the marine environment. Previously he was the

lead attorney in the establishment of numerous marine protected areas (MPA) including national marine sanctuaries in the Florida Keys, Stellwagen Bank and Thunder Bay and in the negotiation of the international agreement to protect *RMS Titanic* in high seas off Canada. Ole was also the lead attorney for the inscription of Papahānaumokuākea Marine National Monument as a World Heritage Site. He is on the Legal Working Group of the Sargasso Sea Alliance assisting in the establishment of high seas MPA to protect the Sargasso Sea habitat and ecosystem. Ole has published widely on the law of underwater cultural heritage.



D.G. Webster is an assistant professor at Dartmouth University, New Hampshire, where she teaches political economics. Her main research interest is in understanding feedbacks within global scale social-ecological systems (SESS). Webster teaches courses related to global environmental governance, green business, marine policy and environmental economics. Her book “Adaptive

Governance: The Dynamics of Atlantic Tuna Management” posited and tested her vulnerability response framework. It won the International Studies Association’s Harold and Margaret Sprout Award in 2010. She is currently examining new methods for exploring SESS through a new book project and is the lead PI on a multi-institutional project called “Fishscape: Modeling the Complex Dynamics of the Fishery for Tropical Tunas in the Eastern Pacific Ocean” which is funded through the National Science Foundation’s Coupled Natural and Human Systems program. She earned her Ph.D. from the University of Southern California’s Political Economy and Public Policy program.



John Weller is a critically acclaimed photographer, writer and filmmaker based in Boulder, Colorado. He is the driving force behind “The Last Ocean,” an outreach project that has catalyzed an international movement to protect the Ross Sea. He also authored “Great Sand Dunes National Park: Between Light and Shadow,” a book of photography and essays that sprang from

annual trips to the park where he observed the interconnections within the ecosystem. He is a SeaWeb Fellow and was awarded a Pew Fellowship in Marine Conservation in 2009. John’s work has been shown in prestigious museums and galleries, and is part of private and corporate collections across the world. He has had more than 20 one-man photography shows since 1999, and his work has been published in numerous magazines. He earned a degree in economics from Stanford University.



‘Aulani Wilhelm is superintendent, National Oceanic and Atmospheric Administration (NOAA) at the Papahānaumokuākea Marine National Monument in Hawaii, the largest conservation area in the U.S. and a World Heritage Site. Encompassing 140,000 square miles, it is one of the largest marine protected areas in the world and a globally recognized, best practice model for

the governance and management of marine ecosystems for both natural and cultural heritage values. During her tenure, the monument was designated a Particularly Sensitive Sea Area under the International Maritime Organization. Wilhelm is the founder of Big Ocean: A Network of the World’s Large-Scale Marine Managed Areas and vice-chair of the U.S.-based Pacific Islands Climate Change Cooperative. She serves on several boards and committees in Hawaii that support the integration of conservation, culture and community including Mālama Hawaii, Hawaii Green Growth Initiative and Hawaii Conservation Alliance. She is also a volunteer for the Polynesian Voyaging Society.

ABSTRACTS

PANEL 1: DYNAMIC MANAGEMENT OF GLOBAL FISHERIES IN A CHANGING ENVIRONMENT

How can we manage fisheries successfully to ensure future generations can continue to eat seafood? This panel examines social-ecological aspects of fisheries, what “dynamic” management entails and the challenges of dynamic management and conservation in the face of climate change and ‘bad’ economics. Natalie Ban uses the social-ecological systems framework to provide examples of ecological, social and governance characteristics that may influence fisheries management outcomes. Daniel Dunn explores what differentiates dynamic from static management measures, illustrating the diverse definitions of “dynamic” with the example of “move-on” rules – event-triggered, targeted, temporary closure of part of a fishery when a catch or bycatch threshold is reached. Alistair Hobday examines the role of dynamic ocean management of marine resources in a changing climate, using Australia as a case study. Rashid Sumaila addresses the impact of ‘bad’ economics on fisheries management and conservation under climate change.

PANEL 2: COORDINATING INTERNATIONAL GOVERNANCE FOR MARINE CONSERVATION

This panel will provide an overview of the many overlapping existing jurisdictional frameworks for international marine governance and identify several key geographical and jurisdictional gaps in these frameworks. Panelists will then take a closer look at how these gaps are beginning to be addressed (or failing to be addressed) through local, national and international processes in the Sargasso Sea and Pacific Island States. Panelists will draw lessons from land-based governance practices, particularly those pertaining to the land-sea interface. Finally, panelists will make recommendations for how emerging challenges, such as providing legal stewardship for phytoplankton, may be addressed through innovative multilateral agreements and legal mechanisms.

PANEL 3: MODELING AND PROTECTION OF DYNAMIC MARINE ECOSYSTEMS

Presentations will discuss the dynamic and migratory nature of many ocean species and how our understanding of their behavior should inform our marine conservation policies. The panelists will consider a cross-section of migratory species, from marine birds to white sharks to marine mammals, looking for the principles behind their movement and ways to design marine protected areas that will be effective across all species. This panel will discuss some key techniques that have led to an increased understanding of the physical, biological and ecological dynamics at play in the ocean including electronic tagging to monitor animal movement, genetic mapping of populations and remote sensing of the ocean environment from tags on migratory species. Panelists will review how this influx of data on the spatio-temporal distributions of endangered migratory ocean species can be used to better protect these species and to help identify ecologically or biologically sensitive marine areas (EBSAs). Finally, this panel will discuss how this new information can be used to better assess population viability and enable a more accurate picture of the health of the ocean ecosystem.

PANEL 4: FISHERIES GOVERNANCE IN DYNAMIC SYSTEMS

Panelists will explore the political economy and ecosystem-based approaches to international fisheries governance. A historical overview of the co-evolution between fisheries and management will be followed by discussion of contemporary issues such as the increasing role for demand-side regulations in combination with monitoring and enforcement mechanisms. Drawing on cases of tuna fisheries management, this panel will explore the power dynamics between the institutions and industries that shape fisheries governance and challenge conventional approaches to treating fisheries management and the fishing industry as isolated actors in marine governance. Within the context of international fisheries, panelists will assess the obstacles to implementing ecosystem-based fisheries management and the limitations inherent in the design of international fisheries governance structures.

PANEL 5: ECOLOGICAL AND CULTURAL CONSIDERATIONS IN MPA MANAGEMENT

This panel will address the challenges and opportunities in developing and managing marine protected areas (MPAs), including areas of significant cultural or natural heritage. What are the most successful approaches to MPA formation and management, and what legal, political, cultural and ecological factors must be considered? What role do MPAs play in the dynamic environment of climate change, ecosystem evolution and human development, and how can they best fulfill that role? How can we form and use networks of MPAs to achieve global marine conservation goals? In answering these questions, panelists will present case studies from across the globe, including Melanesia, Hawaii, France and the North Atlantic high seas.

PANEL 6: OCEAN CONSERVATION EVALUATION AND MONITORING

These talks will explore the extent to which dynamic marine areas can be monitored and enforced in light of the current state of technology, best-practice methodologies, the legal regime and the surrounding politics. The cross-disciplinary panel of scientists, scholars and practitioners will provide insight into technologies such as the use of autonomous marine vehicles, the impact of recent United States Supreme Court decisions and recently proposed U.S. regulations on the use of such technologies, the politics and equity considerations driving the political agendas and the feasibility of enforcement.

SPECIAL THANKS

SYMPOSIUM PLANNING COMMITTEE

- **Meredith Bennett**, early career fellow, Center for Ocean Solutions
- **Meg Caldwell**, executive director, Center for Ocean Solutions and director, Environmental and Natural Resources Law & Policy Program, Stanford Law School
- **Myriah Cornwell**, program analyst, The David and Lucile Packard Foundation
- **Marta Darby**, J.D. candidate 2014, Stanford Law School
- **Kara Fisher**, research assistant/intern, Center for Ocean Solutions
- **Julia Forgie**, J.D. candidate 2014, Stanford Law School
Stanford School of Earth Sciences, E-IPER, M.S. 2014
- **Joel Minor**, J.D. Candidate 2014, Stanford Law School
Stanford School of Earth Sciences, E-IPER, M.S. 2014
- **Peter Mulligan**, Ph.D. candidate in chemical engineering, Stanford University
- **Sam Saunders**, J.D. candidate 2014, Stanford Law School
- **David Weiskopf**, Stanford Law School, J.D. 2013
Stanford School of Earth Sciences, E-IPER, M.S. 2013

COMMUNICATIONS AND ADVERTISING COMMITTEE:

- **Eric Cline**, graphic designer, TerraGraphica
- **Nora Deans**, communications manager, Center for Ocean Solutions
- **Karen Marvin**, communications consultant, Center for Ocean Solutions

SYMPOSIUM LOGISTICAL COMMITTEE

- **Jackie Del Barrio**, associate director of programs, Stanford Law School
- **Nancy Easterbrook**, associate director of development, Corporate & Foundation Relations, Stanford University
- **Trish Gertridge**, director of programs, Stanford Law School
- **Adam Hepworth**, J.D. candidate 2013, Stanford Law School
- **Erin Lee**, program group administrative assistant, Stanford Law School
- **Chidel Onuegbu**, associate director of Student Affairs, Stanford Law School
- **Julie Yee**, journal business manager, Stanford Law School
- **Stanford Law School Facilities Dept**

MODERATORS

Panel 1: Julia Forgie, J.D. candidate 2014, Stanford Law School
Stanford School of Earth Sciences, E-IPER, M.S. 2014

Panel 2: David Weiskopf, Stanford Law School, J.D. 2013
Stanford School of Earth Sciences E-IPER, M.S. 2013

Panel 3: Peter Mulligan, Ph.D. candidate in chemical engineering,
Stanford University

Panel 4: Myriah Cornwell, program analyst, The David and
Lucile Packard Foundation

Panel 5: Sam Saunders, J.D. candidate 2014, Stanford Law School

Panel 6: Marta Darby, J.D. candidate 2014, Stanford Law School

Sunday Moderators: Meredith Bennett, early career fellow,
Center for Ocean Solutions / Kara Fisher, research assistant/intern,
Center for Ocean Solutions

THANK YOU TO OUR DONORS

Stephen Neal, Stanford Law School '73

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John Weller, photographer, filmmaker and author, Weller Media

Liquid Robotics, Inc. for the Wave Glider

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