Ocean acidification is underway and occurring at rates faster than it has in 300 million years. Acidification is caused by the oceans absorbing increasing amounts of carbon dioxide from the atmosphere. Some organisms (shellfish, corals, etc.) have already been impacted and many more are expected to be affected by ocean acidification, including commercially important species.

This briefing will provide a brief overview of ocean acidification, highlighting current regional efforts to research, monitor, and mitigate the impacts of acidification on marine organisms, ecosystems, and industry. The potential economic impacts to fisheries and the shellfish aquaculture industry will also be highlighted.

Speaker Bios

Sarah Cooley: Dr. Sarah Cooley is a research associate at Woods Hole Oceanographic Institute. Cooley received her Ph.D. from the University of Georgia School of Marine Programs (2006) and her bachelors from Haverford College (1999). Cooley uses oceanographic and social science approaches to forecast the total consequences of human-driven changes in the marine inorganic carbon cycle. Anthropogenic changes such as ocean acidification will affect not only the marine environment but also the benefits that marine ecosystems provide to human communities. Recently, she has assessed how ocean acidification could alter protein supply and economic revenue using ocean models and social science datasets. This research incorporates marine chemistry, ecology, sociology, economics, resource management, risk assessment, and decision-making under uncertainty.

Benoit Eudeline: Dr Benoit Eudeline is the production and applied research and development manager for the Taylor Shellfish, Quilcene shellfish hatchery. He has been involved in shellfish research and aquaculture both in France (Ifremer) and on the west coast of the United States for the last 18 years. Research interests include cytogenetics, systems development and optimization for shellfish/seed culture. His current work focuses on understanding water quality and chemistry changes in Dabob Bay and their impact on shellfish larvae survival. This work has led to the development and implementation of a monitoring program at the Taylor hatchery integrating water quality, larvae performance, bacteriology and weather data. The current focus of his research is to assess and understand the relationships between ocean acidification and upwelling in Dabob Bay, and their impact on carbonate chemistry and larvae performance in the hatchery.

Mark Green: Dr. Mark Green received his PhD from the State University of New York at Stony Brook in 1996. Following a one year post-doctoral position with funding through the Department of Energy Mark took a tenure track faculty position at Saint Joseph's College of Maine. Green's early work was the first to show that acids produced in marine sediments contributed to seasonal declines in a small benthic creature known as foraminifera. Green has also shown that several bivalve species show significant mortality in many near shore regions as a result of acid production. More recently, Green has developed a method to 'buffer' corrosive sediments by returning ground clam shell to mud flats. This has shown to increase survivorship of smaller bivalves and also makes sediment more 'attractive' to larval individuals during settlement. Green has a passion for sustainable forms of aquaculture and is an oyster farmer in the Casco Bay, Gulf of Maine. He currently lives on a small island 2 miles off the Maine coast with his wife, 2 children, dog, and cat.

Shallin Busch: Dr. Shallin Busch has been a research ecologist for NOAA Northwest Fisheries Science Center (NWFSC) since 2010. Prior to this she worked with NWFSC as a postdoctoral fellow (2007-2010), received a doctorate in Zoology from the University of Washington (2006), worked for the Smithsonian Tropical Research Institute, and received her bachelors in Ecology and Evolutionary Biology from Princeton University (1998). Her current research focuses on how ocean acidification and climate change may impact North Pacific ecosystems. Working with other members of the NWFSC ocean acidification group, she helped develop a state-of-the-art laboratory for studying the impacts of ocean acidification, hypoxia, and temperature change on coastal marine organisms. Shallin uses this laboratory facility to conduct experiments on species of economic, ecologic, or conservation concern. Shallin incorporates data from her laboratory work and other published data into ecological models to explore how the impacts of ocean acidification and climate change on susceptible species cascade through food webs via trophic interactions. By integrating results from organismal to ecosystem levels, Shallin aims to generate data relevant to management of species and communities in a changing environment.

MARINE CONSERVATION INSTITUTE

Marine Conservation Institute is a nonprofit organization dedicated to protecting marine ecosystems. We work with scientists, politicians, government officials and other organizations around the world to fashion sustainable solutions compatible with healthy, living oceans.

Sustainable Fisheries Partnership

The Sustainable Fisheries Partnership is a global nonprofit that works with the seafood industry to maintain healthy ecosystems, enhance fishing livelihoods and secure food supplies. SFP's Global Ocean Health Program works to help seafood producers and buyers protect their supplies from ocean acidification and related changes in seawater chemistry.

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