ACTION 29 Engage the scientific community in efforts to improve baseline monitoring of ocean acidification and hypoxia effects in the Estuary

Research and monitor the potential threats to the Estuary of ocean acidification and hypoxia.

TASK 29-1 Convene scientists from around the San Francisco Estuary, including from leading marine laboratories and universities, to identify potential impacts of ocean acidification and hypoxia on beneficial uses of the state's waters. Build a conceptual model that can inform design and implementation of monitoring approach.

BY 2018 Convene workshop and complete a meeting summary with recommended actions.

TASK 29-2 Expand monitoring efforts by deploying equipment such as high precision ocean acidification sensors at the Romberg Tiburon Center for Environmental Studies at San Francisco State University as well as by adding complementary sensors across the Estuary. Link monitoring efforts to the outer coast and Bay. Build on existing monitoring efforts.

BY 2020 Deploy and maintain monitoring equipment.

BACKGROUND

Although ocean acidification is a global phenomenon, emerging research indicates that the West Coasts of the United States and Canada will face some of the earliest, most severe changes in ocean carbon chemistry. However, the current status and impacts of ocean acidification on the San Francisco Estuary are largely unknown.

Advice from Bay Area and West Coast experts is needed to understand the likely impacts of ocean acidification in the Estuary and to develop cost effective monitoring strategies. Not only is ocean acidification a global effect of increasing atmospheric carbon dioxide levels, but it is also exacerbated in urbanized, eutrophic estuaries (local hypoxia and acidification go hand-in-hand). A growing body of research indicates that ocean acidification might affect water quality and biological communities in the Bay, but it is not clear where this problem should sit on the priority list for water quality managers or regulators. In particular, ocean acidification could impact species such as the Olympia oyster (now making a local recovery and considered a useful shoreline protection builder); Chinook, coho, and steelhead salmon; as well as the pelagic food web. Impacts can be complicated by changes in nitrogen cycling.

This CCMP action supports the recommendations of a report from the West Coast Ocean Acidification and Hypoxia Science Panel calling for better monitoring. According to the report, the proposed monitoring network should 1) support the needs of decision-makers; 2) measure an array of physical, chemical, and biological values; 3) build on ongoing efforts; 4) develop and sustain intellectual capacity. Groups such as the Greater Farallones National Marine Sanctuary and the San Francisco Bay National Estuarine Research Reserve have already begun to integrate some of these monitoring protocols into planning efforts.

OWNERS

SF Estuary Institute (Task 29-1)
SF Estuary Partnership (Tasks 29-1, 29-2)
SF State University's Romberg Tiburon Center for Environmental Studies (Task 29-2)

COLLABORATING PARTNERS

CA Ocean Protection Council, CA Ocean Science Trust, Central and Northern California Ocean Observing System, Greater Farallones National Marine Sanctuary, SF Bay National Estuarine Research Reserve, US Environmental Protection Agency

NEXUS

Action 5
Goal 1
Objectives b, c