

**Monterey Bay National Marine Sanctuary
Conservation Working Group Recommendation to Sanctuary Advisory Council
Regarding Climate Change**

June 5, 2009

The serious problems associated with ocean acidification were detailed in a compelling presentation by Dr. Richard Freely at the February 12, 2009 Joint Meeting of the Advisory Councils of the Monterey Bay and Gulf of the Farallones National Marine Sanctuaries. The two Sanctuary Advisory Councils adopted a joint resolution recognizing the seriousness of climate change impacts to Sanctuary resources and urging the West Coast Regional Offices of the Sanctuary Program to take a leadership role in addressing these impacts. This proposal is intended to follow up on the adopted joint resolution.

The Monterey Bay National Marine Sanctuary (MBNMS) Conservation Working Group (CWG) has reviewed and discussed a report titled "Ocean Acidification and the Channel Islands National Marine Sanctuary" [hereinafter Ocean Acidification Report]. The Ocean Acidification Report provides extensive background information regarding the impacts of ocean acidification on Sanctuary resources and includes recommendations for the Sanctuary to address this important issue including research, monitoring, education and leadership actions. A summary of these recommendations is attached below.

The Ocean Acidification Report was adopted by the Channel Islands Sanctuary Advisory Council (SAC) on September 19, 2008 and by the Gulf of the Farallones SAC on December 11, 2008. The CWG believes that the Ocean Acidification Report provides a useful first step in a broader Sanctuary response to climate change. Accordingly, the CWG unanimously recommends the following to the MBNMS Advisory Council:

1. The MBNMS SAC should formally adopt the recommendations contained in the Ocean Acidification Report.
2. The MBNMS should work with the Research Advisory Panel, Conservation Working Group, Sanctuary Education Panel and Business and Tourism Activities Panel to implement the recommendations of this report and to identify additional actions that may be warranted regarding the issue of climate change and the Sanctuary.
3. MBNMS's activities regarding climate change and ocean acidification should be integrated into the Sanctuary Conditions Report.
4. The MBNMS should pursue opportunities to position the Sanctuary as a sentinel site for research and action related to climate change. For example, the Sanctuary might pursue grant funding for research on climate change impacts on the ocean or funding to enable local harbors to reduce impacts of climate change through subsidies for biodiesel, etc.

Recommendations excerpted from “Ocean Acidification and the Channel Islands National Marine Sanctuary: cause, effect, and response”

1. Research. CINMS should prioritize the organization of a baseline of physical and biological oceanographic data relevant to understanding the local effects of ocean acidification, systematically identify data gaps and research needs, and begin forming partnerships with researchers and institutions that can illuminate those dynamics and fulfill those needs.

- a. In order to identify research and monitoring needs, CINMS staff should identify the important physical and biological oceanographic parameters relevant to ocean acidification within the Channel Islands, and then determine whether or not these data are being collected within the Sanctuary region. Such information could help shape the scientific efforts of the Sanctuary’s academic and federal research partners, and provide the background necessary for coordinating needed monitoring efforts. Two important examples include:
 - i. Cataloging the Sanctuary’s calcifying organisms and determining which would be good candidates for long term study;
 - ii. Identifying the most important physical oceanographic parameters relative to tracking ocean acidification-related changes, and determining which (if any) of the Sanctuary’s research partners are gathering data on these parameters.
- b. CINMS should compile and organize the gaps and needs it identifies among the research currently underway. This list of needs could be highly useful for coordinating the Sanctuary’s overall research program, for consultation with potential new research partners, and in helping shape the strategic plans of research funding entities such as Sea Grant and the Ocean Protection Council.
- c. Numerous opportunities for useful research partnerships exist for CINMS, which it should actively pursue. In addition to providing research guidance based on the list of gaps and needs it compiles, CINMS could provide critical logistical support to facilitate academic and federal scientists. CINMS should identify, and communicate with, researchers and institutions that are investigating ocean acidification and dynamics along the West Coast, to determine which potential partnerships should be pursued.

2. Monitor. CINMS and its research partners should create an organizational framework to track changes in acidification-related physical and biological indicators over time, including how the Sanctuary’s calcifying species and their ecosystems are affected by changes in pH and carbonate saturation.

3. Educate. CINMS should help Sanctuary stakeholders and the public develop an increased awareness of the causes and potential effects of ocean acidification.

- a. Ocean acidification should be integrated into the public education and outreach efforts of CINMS staff and volunteer personnel like the Channel Islands Naturalist Corps. Such outreach could be refined as relevant research and monitoring efforts begin to illuminate the details of how ocean acidification will affect CINMS qualities and resources.

4. Lead. CINMS staff should seize the opportunity to address ocean acidification through leadership among local ocean users, the public, and within the National Marine Sanctuary Program and NOAA. CINMS leadership actions are needed in two areas: (a) CO₂ emissions reduction, and (b) management planning and coordination.

a. Emissions reduction

i. CINMS should pursue the completion of an audit of CO₂ emissions associated with Sanctuary operations, and identify measures that can reduce, offset, and ideally eliminate such emissions toward a goal of operational carbon neutrality. The Sanctuary should work to complete this audit within one year, so that specific measures to reduce emissions can begin being included within Sanctuary budgetary planning within upcoming budget cycles. Channel Islands National Park already serves as an excellent model in this regard through the operation of its biodiesel-fueled vessels. 162 CINMS staff should work to emulate this example and improve upon it, and then publicize their efforts among Sanctuary users, the general public, and the other NMSP sites.

ii. CINMS staff should work collaboratively with its stakeholders to reduce CO₂ emissions from all activities and uses associated with the Sanctuary. This could be initiated by including CO₂ emissions inventorying and reduction measures as prominent components for the next CINMS management plan update, asking CINMS user groups to inventory and reduce their emissions in a parallel timeline to the Sanctuary's own efforts, and soliciting CINMS users for ideas on how the Sanctuary can meaningfully and efficiently contribute to reducing the carbon intensity of CINMS uses.

b. Management Planning

i. Include study and action plans for CO₂-related climate change effects, including ocean acidification, sea level rise, and temperature changes, in future CINMS management planning efforts. Coordinate with the West Coast Regional Director to identify any multi-site efficiencies for this planning.

ii. The CINMS superintendent should advocate within the National Marine Sanctuary Program for NOAA to support individual sites in improving their understanding of ocean acidification and its resource management implications.

iii. The CINMS superintendent should also encourage, where appropriate, the NMSP director and NOAA to set overarching policy on ocean acidification, and take actions to help individual sites to protect their resources from its adverse effects.