



University of California, Santa Cruz



**PISCO**

Partnership for Interdisciplinary  
Studies of Coastal Oceans

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Dear members of the Interagency Ocean Policy Task Force,

Thank you for the opportunity to describe some of the research projects that I'm involved in and their application to inform management and policy for coastal marine ecosystems. I am a co-principle investigator in a multi-campus research consortium called the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO). PISCO studies coastal marine ecosystems from a variety of scientific perspectives, with the key goal of informing management and policy decisions with sound science.

As a researcher I help to oversee a large-scale, long-term ecosystem monitoring program that has been used to inform a wide variety of management and policy decisions, including:

- identifying the ecological impacts of a recent oil spill here in San Francisco bay,
- revealing emerging threats related to a changing ocean climate such as low oxygen dead zones along the Oregon coast,
- and identifying geographic patterns of ecosystems to inform the design and evaluation of California's unprecedented network of marine reserves and other protected areas.

As co-chair of the Science Advisory Team for California's Marine Life Protection Act (MLPA), I can speak directly to the amazing success of this process in bringing scientists and stakeholders together to design marine protected area networks. However, I have also seen firsthand the frustration that arises when stakeholders and scientists recognize the myriad of non-fishing impacts that humans have on coastal ecosystems. The MLPA is a sectoral spatial planning process that effectively regulates only fishing. While other agencies are contributing as they can, a more holistic spatial planning effort would go far to assure that the successes of the MLPA are not jeopardized by other activities such as water pollution, coastal development, or emerging energy uses.

If we, as a nation, consciously plan how and where different ocean uses will occur, we will be able to identify conflicting and complementary uses, and trade-offs between these uses. It is becoming increasingly clear that we can't have our cake and eat it too when it comes to marine ecosystem services. By explicitly identifying tradeoffs, science can inform policies that maintain the diversity of services provided by coastal marine ecosystems.

One exciting scientific development that I'm engaged in right now is the integration of ecological monitoring programs with the coastal networks of MPAs and the Integrated Ocean Observing System.

In combination, long-term ecological monitoring, reserve networks and ocean observations provide unprecedented tools to:

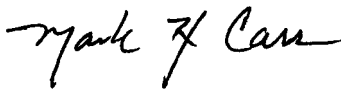
- identify ecosystem-wide effects of fishing to inform ecosystem-based fisheries management
- identify how and why ecosystems are responding to a changing ocean climate,
- and ascertain how both of these impacts effect the resilience of coastal ecosystems.

Simultaneously we're using these insights to inform models that explicitly define the trade-offs in services provided by marine ecosystems. Indeed, we're developing and applying trade-off models now in the MLPA process, models that can be applied to a wide variety of human uses of coastal marine ecosystems.

In conclusion, California's Marine Life Protection Act is one key step toward effective marine spatial planning and already it is providing tremendous opportunities for understanding the ways in which human activities impact ecosystems. The knowledge we gain from integrated monitoring efforts can, in turn, inform effective management of marine ecosystems and the many valuable services they provide.

I would be happy to talk more about this work and thank you again for this opportunity to discuss these issues.

Sincerely,

A handwritten signature in black ink that reads "Mark H. Carr". The signature is written in a cursive, flowing style.

Mark H. Carr  
Professor