From: "Ed Kimura" <emkimura@earthlink.net>
To: <CClemente@waterboards.ca.gov>, <mporter@waterboards.ca.gov>, "'Michelle...
Date: 2/9/2009 11:43 AM
Subject: larval dispersal Re MLMP

FYI-

I came across this important survey article late last week that I believe is very relevant to the MLMP. Note that it was just published last month.

The MLMP does not address the significance of connectivity. The MLMP proposes to seek out a site someplace in the SoCal Bight, approximately 450 km from the border to Pt Conception. The MLMP assumes that the local genetic populations of larvae including the benthic invertebrates are the same throughout this coastal region. But the article on page 446 states that this long held concept that the demographics of the larval pool is open over hundreds to thousands of kilometers is not longer valid. Many studies over the past decade have contradicted this notion. In fact there is a continuum of larval dispersal from closed locations to completely open. Therefore, without detailed larval dispersal information of a local reference area (not the coastal and lagoon zone impacted by the impingement and entrainment stresses from the Encina Power Station), how can the proposed MLMP mitigate the impacts?

The article reinforces the need to take an ecosystems-based approach to develop a mitigation plan. I have doubts that it is possible given the time and resources needed to carry this out.

Ed

Abstract
Annual Review of Marine Science
Vol. 1: 443-466 (Volume publication date January 2009)
(doi:10.1146/annurev.marine.010908.163757)

First published online as a Review in Advance on September 23, 2008

Larval Dispersal and Marine Population Connectivity

Robert K. Cowen <javascript:popRef('a1')> and Su Sponaugle <javascript:popRef('a1')>

Division of Marine Biology and Fisheries, Rosenstiel School of Marine and Atmospheric Science, University of Miami, Miami, Florida 33149; email:

rcowen@rsmas.miami.edu; ssponaugle@rsmas.miami.edu

Connectivity, or the exchange of individuals among marine populations, is a central topic in marine ecology. For most benthic marine species with complex life cycles, this exchange occurs primarily during the pelagic larval stage. The small size of larvae coupled with the vast and complex fluid environment they occupy hamper our ability to quantify dispersal and connectivity. Evidence from direct and indirect approaches using geochemical and genetic techniques suggests that populations range from fully open to fully closed. Understanding the biophysical processes that contribute to observed dispersal patterns requires integrated interdisciplinary approaches that incorporate high-resolution biophysical modeling and empirical data. Further, differential postsettlement survival of larvae may add complexity to measurements of connectivity. The degree to which populations self recruit or receive subsidy from other populations has consequences for a number of fundamental ecological processes that affect population regulation and persistence. Finally, a full understanding of population connectivity has important applications for management and conservation.

Acronyms

Terms

<http://arjournals.annualreviews.org/doi/full/10.1146/annurev.marine.010908.163757?amp;searchHistoryKey=%24%7BsearchHistoryKey%7D> Full Text

<http://arjournals.annualreviews.org/doi/pdf/10.1146/annurev.marine.010908.163757> PDF