Technical Announcement

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Minerals Management Service
Pacific OCS Region

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Reproductive Ecology and Body Burden of Resident Fish Prior to Decommissioning

OCS Study MMS 2009-019

The Minerals Management Service (MMS), Pacific OCS Region, announces the availability of a new environmental study report, *Reproductive Ecology and Body Burden of Resident Fish Prior to Decommissioning.*

All of the 27 oil and gas platforms (23 Federal, 4 State) offshore southern California have finite economic lives, and some may be nearing the end of that life span. Existing MMS regulations require complete structure removal for platforms in federal waters. Complete removal will have effects on the lives of organisms living on and around these structures. The process by which decisions are made as to the disposition of these platforms is called decommissioning, and in federal waters, these decisions involve detailed environmental reviews by the MMS.

Among the outstanding questions still remaining is that of contamination and body burden in resident fishes residing around oil and gas platforms. The most common contaminants discharged at platforms are hydrocarbons and trace metals. However, the contaminant load in platform fishes must be seen against the background levels of fishes in the region. That is, the contaminants present in platform fishes must be compared to that of the fishes in nearby natural areas in order to establish the relative importance of such contaminants to the region.

Knowledge of the contaminant levels in platform-inhabiting fishes is of importance as it may affect reproduction. In order to analyze the environmental consequences of platform decommissioning on local or regional fish populations, the fate of young fishes recruiting to those populations and the general pollution load carried by fishes at platforms need to be known. This is especially true when the platforms are known to harbor large numbers of juveniles and resident reproducing adults of species that are regionally depleted by fishing and being considered for listing under the Endangered Species Act.

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Adults observed at the platform are reproductively mature and potentially produce larvae that ultimately replenish populations in natural areas. Adults, themselves, may migrate between platforms and natural areas. Any assessment of the impacts of platform removal on local and regional fish populations must consider the reproductive ecology of the species of interest, the general body burden of contaminants that the fish are carrying and their reproductive capability.

Thus, the goal of this study was to fill gaps in information about the heavy metal body burden and potential reproductive impairment of fishes living around oil and gas platforms. This goal was met through three tasks. Task 1 was to compare heavy metal contaminant levels in several important fish species living around platforms and natural coastal areas. Task 2 determined whether otoliths (fish ear bones) carried heavy metal signatures derived from platforms. Unique signatures of elements (including heavy metals) incorporated in otoliths potentially can be used to measure the extent to which platforms function as nurseries and contribute to the replenishment of regional populations in natural areas. If a platform "fingerprint" is identified, otolith microchemistry can also be useful for identifying adult fish that have moved between platforms and natural areas. Task 3 was to contrast the reproductive capabilities (as measured by egg atresia) of fishes living around oil platforms and natural areas. Reproductive impairment has direct implications for regional populations. If there is no apparent impairment but contamination is present, there may be indirect implications for larval development and survival of the subject species.

This report is available from the Minerals Management Service Pacific OCS Region by referencing OCS Study MMS 2009-019. The report may be downloaded from the MMS website through the Environmental Studies Program Information System (ESPIS) and is also available in PDF at http://www.mms.gov/omm/pacific/enviro/Studies/2009-019-Reproductive-Ecolog.pdf. The report is available for viewing in PDF on the University of California at Santa Barbara's Marine Science Institute website at: www.lovelab.id.ucsb.edu. Additionally, requests for the report can be made through the following contacts:

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MMS Pacific Region Website: www.mms/omm/pacific.gov