

RESEARCH HIGHLIGHT

A QUESTION OF FISH

Addressing an Issue with Far-Reaching Social and Economic Consequences

After decades of controversy about the effect of oil platforms on the marine environment—not to mention the ocean view—the time for informed decisions about what to do with non-operational structures is rapidly approaching. Twenty-seven platforms still stand off the Southern California coast; 19 of these are in the Santa Barbara Channel. In accordance with one stipulation of the oil leases that permitted platform construction and operation in the first place, oil companies agreed to remove the structures when they ceased producing or were shut down permanently for any other reason. Although not all platforms are ready for decommissioning, many are rapidly approaching that point.

But debates rage on. Should the platforms be pruned to 90 feet below the surface so ships can pass overhead? Or toppled to the ocean floor? Dragged to another location? Or should the companies remove every last piece of steel? While abundant studies have demonstrated that the huge, structurally complex platforms serve as artificial reefs that attract great quantities of marine species and may harbor as many as do the area's rocky reefs, no one to date has settled a critical question. To what extent do the platforms contribute to marine population and biomass at the larger, more important regional scale that encompasses the natural reef habitat?

In a study that will address that question and assist managers in determining which decommissioning option is best, marine ecologist Hunter Lenihan, of the Donald Bren School of Environmental Science and Management, is evaluating the platforms' ecological role in a regional rather than an isolated context. Supported by a two-year, \$112,400 award from the U.S. Department of Interior, Lenihan is working with fishery biologist/population ecologist and project co-PI Andrew J. Brooks, technician Matthew Kay, and several graduate and undergraduate student assistants to compare the population dynamics of platform versus reef fish from two scientifically optimal platforms and five natural reefs from Anacapa Island to Ventura. The rigorous research model involves counting the fish populations of two noncommercial fish with very different life histories—the Blackeye Goby, *Coryphopterus nicholsii*, and the Pile Surfperch, *Damalichthys vacca*—in order to understand the degree to which the platforms act as sources or sinks for fish in relation to the natural reefs. (In this case, source populations are those that continually supply individuals to



Marine ecologist Hunter Lenihan, of the Bren School, climbs aboard the research vessel Sojourner after a visual SCUBA survey of fish populations in the Channel Islands National Marine Sanctuary.

sink populations, while sink populations either have net losses or contribute little to population maintenance, and thus are better targeted for fishing than sources.) Thus, if platforms provide additional habitat that helps sustain regional populations, some form of platform preservation would make good ecological sense. But if they merely create a redistribution of individuals from more productive natural reefs in the area without being biologically productive—thus harboring only sink populations—retaining the structures would be ecologically unjustifiable.

Lenihan is also co-principal investigator on a companion study in which researchers at the Marine Science Institute are establishing the productivity of fish prey and predators to further enhance platforms' and natural reefs' role in the marine food web.



Research technician Stephanie Mutz tags fish for observation by injecting them harmlessly with a spot of paint before returning them to the channel.

"Relative Importance of POCS Oil Platforms on the Regional Population Dynamics of Reef Fishes in the Eastern Santa Barbara Channel" is administered by the Marine Science Institute.

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For more information: <http://fiesta.bren.ucsb.edu/~lenihan/>