

**Milton Love**

## **Delta in the Cowcod Conservation Areas**

*web site:* <http://www.id.ucsb.edu/lovelab/index.html>

In response to a drastic decline in population levels of many rockfish species and lingcod over the past several decades, the Pacific Fisheries Management Council established two Cowcod Conservation Areas off Southern California in 2001. (Cowcod are a species of rockfish.) Fishing for all groundfish is prohibited in about 4,300 square miles, except in nearshore waters shallower than 20 fathoms (37 meters). This move is part of an international effort to establish Marine Protected Areas (MPAs) for the preservation and recovery of marine populations. However, there is growing concern in many quarters that mechanisms are not in place to assess whether the MPAs accomplish their intended purposes.

In the Cowcod Conservation Areas, a team of fish biologists, fisheries scientists, and specialists in habitat mapping has begun an intensive program to assess the current status of the groundfish species and their benthic habitats. The research team is headed by Milton Love (University of California Santa Barbara) and Mary Yoklavich (NMFS Santa Cruz Lab), with scientists from Sea Grant Marine Extension Program, the California Department of Fish & Game, Moss Landing Marine Laboratory, and Washington State University.

During a highly productive 30-day research cruise in sunny, calm weather off southern California, the scientific team completed an astonishing 124 dives in the manned submersible Delta. These dives were systematic transects to visually inventory groundfishes, macro-invertebrates, associated habitats, and locations of fishing gear on the seafloor. Delta visited every major offshore bank inside the Cowcod Conservation Areas, as well as designated sites outside the MPA. One of the target species was cowcod, a rockfish species with a current population at 4-11% of the unfished level; the divers saw more than 250 cowcod ranging from 6cm (2.4in) young-of-the-year to a few enormous survivors larger than 100cm (40in). The data for each species will be analyzed for fish populations and size distribution, habitat associations, habitat quality, and other characteristics that can establish a baseline for tracking effectiveness of the MPA.

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