Visual Survey Workshop April 2014

NOAA fisheries SWFSC Habitat Ecology Team

Mary Yoklavich, Tom Laidig, Diana Watters, Lisa Krigsman, Andrew Taylor, and David Huff
NMFS, SWFSC, Santa Cruz

SUMMARY

The Habitat Ecology Team conducts research in direct response to the mandates of the Magnuson-Stevens Reauthorization Act of 2006, with a focus on deep-water California demersal communities. Our goal is to provide sound scientific information to ensure the sustainability of marine fisheries and the effective management of marine ecosystems, with objectives to 1) improve stock assessments, especially of overfished rockfish species in complex habitats; 2) characterize fish and habitat associations to improve EFH identification; 3) contribute to MPA design & monitoring, and to Integrated Ecosystem Assessments; and 4) understand the significance of deep-sea coral habitats.

We use a variety of survey tools and approaches to improve our assessments of demersal fishes, macro-invertebrates (including members of deep-water coral communities), and associated seafloor habitats in water depths from 20 to 900 meters off central and southern California.

AT A GLANCE

Survey frequency:	Annually
Survey initiated:	early 1990's
Survey goal:	Stock and habitat assessments; distribution data
Current vehicle:	HOV
Make/Model:	Dual DeepWorker Nuytco, Canada
Target species:	Benthic fish and inverts
Unit of measurement:	Density (fish/km^2)

SURVEY AREA

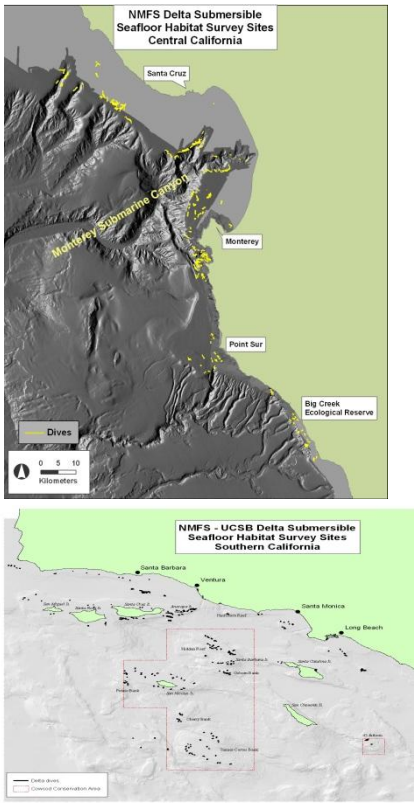

Figure 21.–Map of survey locations: Top central California; Bottom Southern California.

METHODS

Survey design:	Random stratified
Depth surveyed (m):	20-900; typically 100-350
Camera definition:	High Definition
Data recorded:	Mini DV/hard drive
Vehicle lights:	LED and halogen
Sample unit: transect	#/km2; Line and strip
Length/time of unit:	10 or 15 min
Max sea state:	20 knot winds/6' seas
Habitat reviewed?	Yes, from video.
Video review software:	Access

RESULTS

We conduct non-extractive, visual surveys of juvenile and adult life stages of numerous Pacific Coast demersal species using remotely operated vehicles (ROV), manned submersibles, scuba, laser line scan, and towed cameras, coupled with seafloor maps of the continental shelf and upper slope off California. These surveys have resulted in habitat-specific assemblage analyses on multiple spatial scales; fishery-independent stock assessments; baseline monitoring of MPAs; documentation of marine debris on the seafloor; and are being used in the California-NOAA-USGS Seafloor Mapping Program.

We have completed approximately 700 dives, which includes 1800 transects over 21,000 min (349 hrs). There are 26 publications related to this work, most of them peer-reviewed.

MANAGEMENT

Data produced from our surveys have been used in stock assessments (e.g., Cowcod) and submitted to the Pacific Fisheries Management Council as part of Pacific Groundfish EFH review. Results of our early surveys were used to design and implement MPAs off central California. Our 2007-8 surveys were used to gather baseline fish and invertebrate information (species and densities) in these newly created MPAs.

FUTURE DIRECTIONS

In 2014, we plan to use a SeaBed AUV and drop camera to survey deepsea coral and sponges off northern California in 800-1200 m. We are synthesizing our data, and producing predictive distributional maps to determine areas of high abundance of fish and coral species.

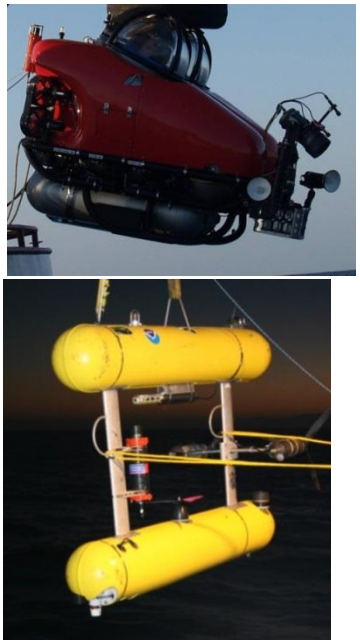

Figure 22. The Dual DeepWorker submersible (top) and the NWFSC/PIFSC AUV (bottom)

CONTACT

Tom Laidig, Habitat Ecology Team
National Marine Fisheries Service
110 Shaffer Dr.
Santa Cruz, CA 95060
(831) 420-3942

RECENT COLLABORATORS

NOAA NMFS NWFSC, Seattle and Newport
NOAA NMFS AFSC, Seattle
University of California Santa Barbara and Santa Cruz
Moss Landing Marine Laboratories
Oregon State University
US Geological Survey

U.S.-Canada Technical Sub-Committee (TSC) of the Canada-U.S. Groundfish Committee Presents:

Visual Survey Methods Workshop

April 8 & 9, 2014

Project Profiles of Workshop Participants

Workshop Co-chairs:

Kristen Green, Dayv Lowry, Lynne Yamanaka

Alaska Fisheries Science Center, Sand Point, Seattle, WA