

Collaborative Optically-assisted Acoustical Survey Technique (COAST) for surveying the distributions, abundances, and lengths of demersal fishes, by species

David A. Demer, John Butler, George R. Cutter, Jr., Kevin Stierhoff*, Kyle Byers, David Murfin, Josiah Renfree, Scott Mau, and Thomas S. Sessions

SWFSC, La Jolla, CA

The Collaborative Optically-assisted Acoustical Survey Technique (COAST) was developed at the Southwest Fisheries Science Center to survey rockfish dispersions and abundances, by species, throughout the Southern California Bight (SCB). The technique uses historical fishing maps to initially define the survey sites; active acoustics to map the dispersion and abundance of rockfish; and video and still images to estimate the mixture of species and their sizes. The cameras are deployed from a remotely-operated vehicle. The physical oceanographic habitat is sampled using a conductivity, temperature, and depth sensor with a dissolved oxygen sensor and an acoustic Doppler current profiler, and the seafloor is imaged and classified using new multifrequency biplanar interferometric techniques. Automated data processing algorithms will be explained, and some results will be presented from the 2004–2005 and 2007–2008 surveys of 44 sites distributed throughout the SCB.

Using mesohabitat information to improve abundance estimates for west coast groundfish: A test case at Heceta Bank, OR

W. Waldo Wakefield^{1*}, Julia E.R. Clemons¹, Ian J. Stewart², and Curt E. Whitmire¹

¹NWFSC, Newport, OR; ²NWFSC, Seattle, WA

Historical in situ observations of benthic fishes and invertebrates represent an opportunity for establishing fishery-independent benchmark estimates of abundance from specific time points and in both trawlable and untrawlable habitats. Depending on the original intended purpose of a given study, the direct count data may be nonrandom in nature. The objective of this talk is to show how a new method for treating such data was used by combining in situ fish observation data and a habitat map to estimate fish abundance. We evaluated whether increased resolution of habitat information could improve the precision of population estimates. For this study we used an existing and previously published data set from Heceta Bank, OR. Heceta Bank is one of the largest rocky banks along the U.S. west coast containing a diverse array of habitats supporting numerous species of commercially important groundfish, including a diverse assemblage of rockfishes (*Sebastes* spp.). We looked at fish observations relative to the variables of habitat type, depth, backscatter intensity and relative elevation (i.e. topographic position index) and post-stratified the data according to levels of sampling effort. We also looked at two levels of habitat detail: four habitat types, and ‘hard’ vs. ‘soft’ substrate. We then calculated the density and variance of fish species for each habitat type and then estimated fish abundance for a select group of groundfish species. Based on these results it appears that improved precision of more geographically comprehensive abundance estimates may be achieved through presurvey stratification based on currently available habitat information.

Modeling habitat relationships for rockfish to improve fishery-independent survey biomass estimates

Chris Rooper*, Michael Martin, and Paul Spencer

AFSC, Seattle, WA

Rockfish species are notoriously difficult to assess using multispecies bottom trawl survey methodology. Typically, biomass estimates have high coefficients of variation and can fluctuate outside the bounds of biological reality from year to year. This is thought to be due in part to their patchy distribution related to very specific habitat preferences. We modeled the distribution of 12 commercially important and abundant rockfish species including Pacific ocean perch (*Sebastes alutus*) and shortspine thornyhead (*Sebastolobus alascanus*) in the Gulf of Alaska. The Pacific ocean perch trawl survey biomass estimate

PROCEEDINGS

11TH NATIONAL STOCK ASSESSMENT WORKSHOP

Characterization of Scientific Uncertainty in Assessments to Improve Determination of Acceptable Biological Catches (ABCs)

JOINT SESSION OF THE NATIONAL STOCK AND HABITAT ASSESSMENT WORKSHOPS

Incorporating Habitat Information in Stock Assessments

1ST NATIONAL HABITAT ASSESSMENT WORKSHOP

Moving Towards a National Habitat Science Program

Hosted by the Southeast Fisheries Science Center, Southeast Regional Office, and Office of Science and Technology
St. Petersburg, FL
May 17–20, 2010

Edited by Kristan Blackhart

November 2010

NOAA Technical Memorandum NMFS-F/SPO-112



**U.S. Department
of Commerce**

Gary Locke
Secretary of Commerce

**National Oceanic and
Atmospheric Administration**

Jane Lubchenco, Ph.D.
Administrator of NOAA

**National Marine
Fisheries Service**

Eric C. Schwaab
Assistant Administrator for Fisheries

Copies of this document may be obtained by contacting:

Office of Science and Technology, F/ST
National Marine Fisheries Service, NOAA
1315 East West Highway
Silver Spring, MD 20910

An online version is available at <http://www.st.nmfs.noaa.gov/>

The mention of trade names or commercial firms does not imply endorsement by the National Marine Fisheries Service, NOAA.

This publication may be cited as:

Blackhart, K. (ed.) 2010. Proceedings. 11th National Stock Assessment Workshop: Characterization of scientific uncertainty in assessments to improve determination of acceptable biological catches (ABCs); Joint Session of the National Stock and Habitat Assessment Workshops: Incorporating habitat information in stock assessments; and 1st National Habitat Assessment Workshop: Moving towards a national habitat science program. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-F/SPO-112, 153 p.