

Cooperative Survey of Rockfish and Whiting Resources Off California, Washington, and Oregon, 1977: Introduction

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Pacific coast rockfish (genera *Sebastes* and *Sebastes*) dominate commercial bottomfish landings in California, Oregon, and Washington. In 1977, 22,900 metric tons (t) of rockfish were landed by commercial fishermen, making up 38 percent of the total bottomfish landings. In addition, at least 2,600 t of rockfish (excluding Puget Sound, Wash., catches) were caught by recreational fishermen during the same year.

The Pacific ocean perch, *Sebastes alutus*, is the most abundant rockfish in the eastern North Pacific Ocean; the species was studied extensively after its rapid and drastic decline due to over-exploitation by foreign trawlers in the 1960's. In contrast, only limited research was carried out on rockfish other than Pacific ocean perch, and when the U.S. Fishery Conservation and Management Act of 1976 was enacted, information needed to manage all of the rockfish resource was quite sketchy. Shortcomings in existing knowledge of biology and stock conditions for all rockfish species made it apparent that an intensive survey of these resources would be desirable.

A 3-day workshop was convened in January 1976 at the National Marine Fisheries Service's Northwest and Alaska Fisheries Center (NWAFC), Seattle, Wash., to assess the extent of information on the resource. The work-

shop was attended by representatives of the California Department of Fish and Game, National Marine Fisheries Service, Oregon Department of Fish and Wildlife, Oregon State University, Washington State Department of Fisheries, and the University of Washington.

A rockfish survey coordinating committee was established at this meeting to develop a cooperative pilot survey in 1976 and a coastwide survey of rockfish and Pacific whiting, *Merluccius productus*, resources in 1977. Meetings between representatives of NMFS and the Polish Sea Fisheries Institute (Gdynia, Poland) in 1977 served to coordinate Polish research efforts with those of the other agencies involved in the rockfish surveys.

Following completion of the 1977 survey, the participants analyzed data on specific areas of interest and responsibility, summarized the results, and prepared reports for a symposium held in July 1978 in Seattle. The papers in this issue, 42(3-4), of *Marine Fisheries Review* were among those presented at the symposium. Results of oceanographic studies carried out during the survey were also presented at the symposium and are available in an article by Ingraham and Love (1978).

The information included in this collection of papers substantially increases our knowledge of Pacific rockfish resources and suggests several important avenues of future research for these species. The magnitude and nature of a latent resource of potential importance (shortbelly rockfish, *Sebastes jordani*) is outlined. Also provided is information on the abundance, age composition, growth, fecundity, and size at

maturity for those species that are important commercially: Pacific ocean perch; bocaccio, *Sebastes paucispinis*; chilipepper, *S. goodei*; yellowtail rockfish, *S. flavidus*; and canary rockfish, *S. pinniger*. Patterns in age composition indicated that significant northward migrations of shortbelly rockfish, chilipepper, bocaccio, and yellowtail rockfish occur over the course of their juvenile and adult lives, and a similar phenomenon is suspected in the case of splitnose rockfish, *S. diploproa*, and Pacific ocean perch.

Many rockfish larvae appear to spend several months in the pelagic zone, and this migration is possibly an adaptation to counterbalance the southerly transport that characterizes this region (particularly between Cape Blanco and Point Conception) during much of the year (Bakun et al., 1974). The age composition data together with the results of biochemical genetic studies that were carried out in conjunction with the survey suggest that a much higher degree of intermingling of Pacific coast rockfish stocks takes place than was previously thought to be the case.

Survey results for Pacific whiting were equally useful and supplemented existing knowledge of this important resource considerably. Biomass estimates indicated that the abundance of Pacific whiting increased sharply between 1975 and 1977, due partly to the recruitment of a strong 1973 year class to the stock. This information proved useful in evaluating the status of the Pacific whiting resource and contributed to the decision to increase the Total Allowable Catch for 1979.

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Literature Cited

- Bakun, A., D. R. McLain, and F. Mayo. 1974. The mean annual cycle of coastal upwelling off western North America as observed from surface measurements. *Fish. Bull.*, U.S. 72:843-844.
- Ingraham, W. J., Jr., and C. M. Love. 1978. Oceanographic conditions off California to Vancouver Island in the summer of 1977. *Mar. Fish. Rev.* 40(2):24-28.

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