Western Pacific Bottomfish and Armorhead Fisheries

Unit 17

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INTRODUCTION

The western Pacific bottomfish fishery geographically encompasses the Main Hawaiian Islands (MHI), the Northwestern Hawaiian Islands (NWHI), Guam, the Northern Mariana Islands, and American Samoa (Table 17-1). In contrast, the pelagic armorhead is harvested from the summits and upper slopes of a series of submerged seamounts along the southern Emperor-northern Hawaiian Ridge. This chain of seamounts is located just west of the International Dateline and extends to the northernmost portion of the NWHI.

The Guam, Mariana Islands, American Samoa, and MHI fisheries employ relatively small vessels on 1-day trips close to port; much of the catch is taken by either part-time or sport fishermen. In contrast, the NWHI species are fished by full-time fishermen on relatively large vessels that range far from port on trips of up to 10 days. Fishermen use the handlining technique in which a single weighted line with several baited hooks is raised and lowered with a powered reel. The bottomfish fisheries are managed jointly by the Western Pacific Fishery Management Council and territorial, commonwealth, or state authorities.

The commercial seamount fishery for armorhead was started by bottom-trawl vessels of the former Soviet Union in 1968. During 1969, Japanese trawlers entered this fishery, and by 1972 the catch per unit of effort (CPUE) (based on Japanese data) peaked at some 54 metric tons (t)/hour (Figure 17-1). The United States has never been a participant. By the end of 1975, the two foreign fleets had harvested a combined cumulative total of some 1,000,000 t of pelagic armorhead. Facing a steady decline in CPUE after 1972, the former Soviet fleet left the fishery after 1975. The combined catch index for all seamounts has remained depressed since the late 1970's. The inclusion in 1977 of the southernmost seamounts (Hancock Seamounts) into the U.S. Exclusive Economic Zone (EEZ) allowed for a small portion of the fishery to be managed in a limited way. A preliminary fishery management plan was developed that year which provided for limited foreign harvesting at the Hancock Seamounts under a permit system during 1978–84. However, catches remained low, and all fishing ceased after 1984. Under the Fishery Management Plan for the Bottomfish and Seamount Groundfish Fisheries of the Western Pacific Region, a 6-year fishing moratorium was imposed on the Hancock Seamounts in 1986. The moratorium was extended for two additional 6-year periods, the latest starting in 1998 and ending in 2004.

SPECIES AND STATUS

Bottomfish

In Hawaii, the bottomfish species fished include several snappers (ehu, onaga, opakapaka), jacks (ulua, butaguchi), and a grouper (hapu'upu'u), whereas in the more tropical waters of Guam, Mariana Islands, and American Samoa, the fishes include a more diverse assortment of species within the same families as well as several species of emperors. These species are found on rock and coral bottoms at depths of 50–400 m. Catch weight, size, and fishing effort data are collected

Table 17-1
Productivity in metric tons and status of western Pacific bottomfish and pelagic armorhead.

Species and area	Recent average yield (RAY)	Current potential yield (CPY)	Long-term potential yield (LTPY)	Fishery utilization level	Stock level relative to LTPY
Bottomfish					
MHI	249	111	254	Over	Below
NWHI	184	222	288	Under	Near
American Samoa	18	34	34	Under	Near
Guam	24	25	25	Full[1]	Near
CNMI[2]	17	78	78	Under	Near
Pelagic armorhead					
Hancock Seamount	0	0	2,123	Over[3]	Below
Total	492	470	2,802		

[1]Approaching full utilization level.
[2]Commonwealth of the Northern Mariana Islands.
[3]Fishing moratorium currently in effect within U.S. EEZ (Hancock Seamounts); fishery considered overfished at seamounts outside U.S. EEZ.

for each species in the five areas. However, the sampling programs vary in scope between the areas. About 90% of the total catch is taken in Hawaii, with the majority of the catch taken in the MHI as compared to the NWHI (Figure 17-2).

Stock assessments, though somewhat limited, indicate that the spawning stocks of several important MHI species (ehu, hapu'upu'u, onaga, opakapaka, and uku) are at only 5–30% of original levels. Onaga and ehu presently appear to be the most stressed among MHI bottomfish species.

Pelagic Armorhead

The seamount groundfish fishery has targeted just one species: the armorhead. Since 1976, this bottom trawl fishery has been almost exclusively conducted by Japanese trawlers fishing the seamounts in international waters beyond the Hancock Seamounts. The fishing grounds comprising the Hancock Seamounts represent less than 5% of the total fishing grounds. The long-term potential yield (Table 17-1) is 2,123 t, but recovery to these former levels has not occurred.

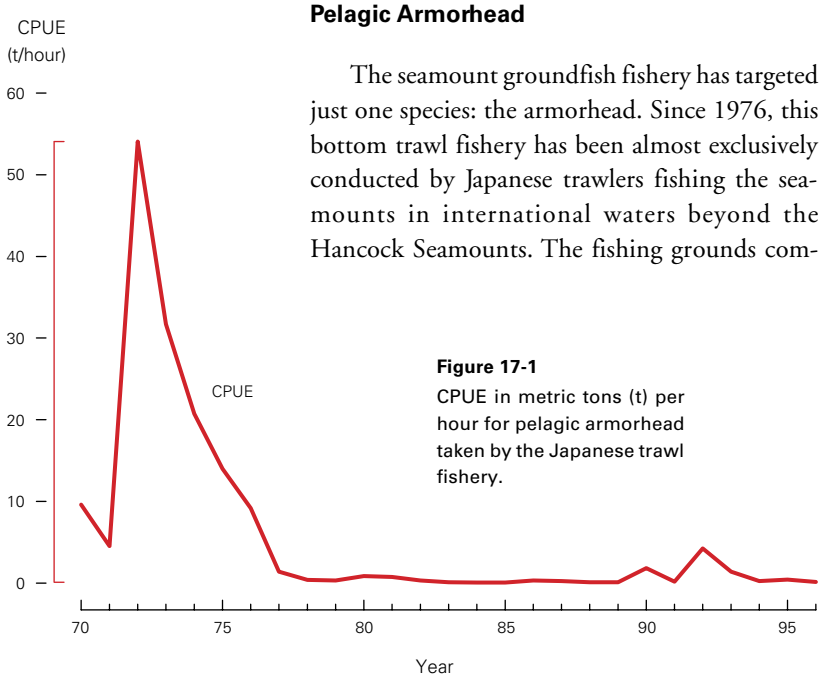


Figure 17-1
CPUE in metric tons (t) per hour for pelagic armorhead taken by the Japanese trawl fishery.

Standardized stock assessments were conducted during 1985–93. Research cruises were focused on Southeast Hancock Seamount, and the armorhead stock was sampled with bottom longlines and calibrated against Japanese trawling effort. Catch rates vary but have not shown the increases expected after the fishing moratorium was implemented (Figure 17-3). Furthermore, the increase in the 1992 seamount-wide CPUE (Figure 17-1) caused by high recruitment was apparently short-lived, as CPUE declined appreciably in 1993 and thereafter. Closure of only the small U.S. EEZ portion of the pelagic armorhead's demersal habitat may not be sufficient to allow population recovery, because these seamounts remain the only part of the fishery currently under management.

ISSUES

Scientific Advice and Adequacy of Assessments

Adequacy of the biological and catch data collected is a primary management concern for the western Pacific bottomfish fishery. For example, the reproductive biology of many of the important species in Guam, Mariana Islands, and Ameri-

can Samoa is unknown, and spawning stock biomass cannot be computed.

Transboundary Stocks and Management Jurisdictions

The primary issue for the armorhead seamount fishery is how to implement some form of management on an international basis to provide conditions more conducive for stock recovery. The recruitment event of 1992 and subsequent stock decline (probably from overharvesting) reinforce the need to implement some form of management if this fishery is to recover to early 1970's levels.

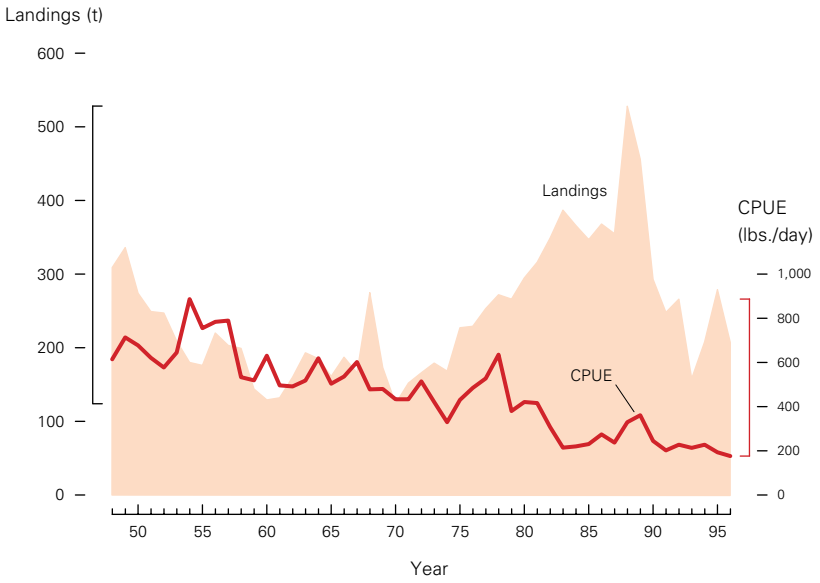
Management Concerns

The spawning biomass of several important MHI bottomfish species (ehu, hapu'upu'u, onaga, opakapaka, and uku) appears to be at about 5–30% of original levels. Thus, overutilization is a concern, and the Western Pacific Fishery Management Council has recommended that Hawaii take action to prevent overfishing because the fishery and the bottomfish habitat are predominantly within state waters. During the past 2 years, the State of Hawaii conducted a series of meetings with fishery managers, scientists, and fishermen to develop a management plan for the state's bottomfish fishery. In 1998, the state established a new administrative rule that governs bottomfishing in state waters and includes restrictions on fishing gear and fishing areas.

Progress

Researchers continue to identify nursery habitat for juvenile snappers and groupers in Hawaii, and age and growth curves have been extended to include early juvenile stages. Improvements have been made in collection of more complete catch-and-effort data from the NWHI fishery. Fishery discard patterns and interactions with sharks and protected species have also been examined.

No progress toward cooperative international management is foreseen for the pelagic armorhead. Cooperative exchanges of fishery data with scientific colleagues in Japan have provided annual commercial catch data by seamount. Recently acquired biological data of importance for future management considerations indicate that armorhead undergo a 2-year pelagic phase prior to recruitment into the fishery and that the seamount populations comprise a single stock.



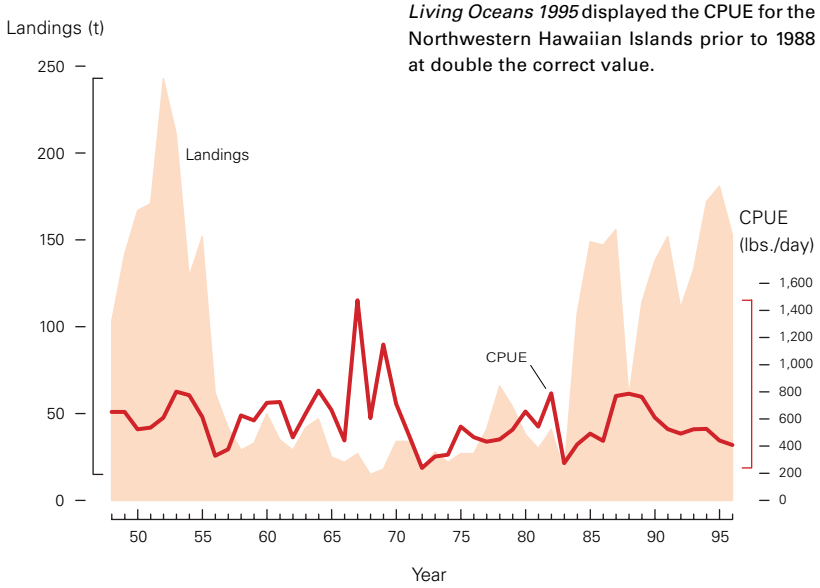


Figure 17-2
Bottomfish landings in metric tons (t) and CPUE in pounds per day at the Main Hawaiian Islands (above) and the Northwestern Hawaiian Islands (below). Note: This figure in *Our Living Oceans 1995* displayed the CPUE for the Northwestern Hawaiian Islands prior to 1988 at double the correct value.

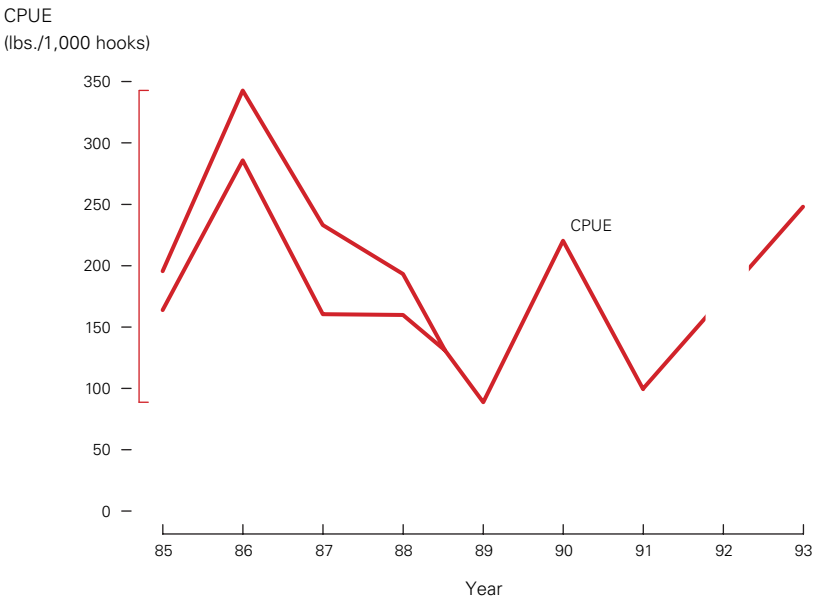


Figure 17-3
Pelagic armorhead CPUE from bottom longline sampling during research cruises. Biannual samples were taken from 1985–88, and annual samples thereafter. No samples were taken in 1992.

FOR FURTHER READING

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