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USA FISHERIES ACTIVITIES IN THE CENTRAL AND WESTERN
PACIFIC, 1986-87

(Paper prepared by NMFS Honolulu Laboratory Staff)
(July 1987)

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The following highlights some of the fisheries activities of the USA in the central and western Pacific:

1. The USA-Pacific island nations' tuna access agreement was "initialed" on 2 April 1987 at Port Moresby, Papua New Guinea. Signatories included 12 of 16 island nations belonging to the Forum Fisheries Agency. Two other nations have initialed the treaty since the April 2nd session, and hopes are high that the two remaining nations will sign. Before the agreement can be implemented, several procedural activities will take place, e.g., governments' approving the treaty.

2. Hawaii's skipjack tuna fishery continued its recent trend of declining landings. Hawaii's skipjack tuna landings for 1986 was an estimated 1,200 metric tons (t), a dramatic decline from the annual average of 5,000 t landed in the 1950's. Although the low availability of skipjack tuna has been a major factor for the decline in recent years, the availability of "season size" fish appeared to be reasonably good in 1986. The low catch for 1986 was attributed to a reduced fleet size and a reported self-imposed catch limit by the industry to maintain market supplies and prices. The fleet, which is now down to eight active vessels, has had no new vessels enter the fishery over the past several decades, and with the 1985 closure of the only tuna cannery in Hawaii, additions to the fleet are not expected until a new market develops.

In 1986 the Honolulu Laboratory organized a workshop and a subsequent planning meeting to review the Hawaii skipjack tuna fishery, identify problem areas, and seek possible solutions. In the planning session, it was noted that many high-priority problems were related not to research but to marketing, insurance, and economic issues. The problems identified in the research areas concerned baitfish and the need to define the inter-relationship of skipjack tuna fished in Hawaii and at other locations.

3. The commercial lobster fishery in Hawaii landed 520 t (whole weight) of spiny and 485 t of slipper lobsters in 1986, a record high for the slipper lobster. The \$6.0 kk ex-vessel value of the catch also represented an all-time high for this 10-year-old fishery.

The fishery is managed by the Western Pacific Fishery Management Council, one of eight councils established by the USA government. Presently, minimum size regulations for the spiny and slipper lobsters are 50 mm and 56 mm tail width for the spiny and slipper lobster, respectively. Minimum size values were established based on maintaining a healthy spawning biomass. The Council plans to undertake a study to review the merits of a limited entry scheme for the lobster fishery.

To prevent mortality of "shorts" and berried female lobsters that are returned to the sea, the Southwest Fisheries Center Honolulu Laboratory conducted a series of experiments to determine the optimal size of escape gaps to be used. Because the two lobster species differ in minimum size length regulations and in morphological configurations—the slipper being relatively flat compared to the spiny lobster—the optimal size computed for the two species was a compromise. The escape gap proposed to the Council was a set of two panels of four circular escape holes, each 67 mm in diameter, placed horizontally 15 mm apart and within 85 mm of the bottom. The panels are at opposite sides of the trap.

4. In early 1987, seven commercial trollers from the USA fished for surface albacore in the Southern Hemisphere. This is the second year that USA trollers have fished for albacore in the South Pacific. The seven vessels caught 1,000 t of albacore compared to only 108 t caught by two vessels in 1986. The 1987 catch was off-loaded in Papeete, Tahiti.

For the second year, the NOAA research vessel TOWNSEND CROMWELL accompanied these commercial trollers to collect environmental and biological data. Additionally, all viable albacore caught on the CROMWELL were tagged and released. The tagging by the CROMWELL and the commercial vessels for 1986 and 1987 were as follows:

	<u>1986</u>	<u>1987</u>
CROMWELL	21	426
Commercial vessels	702	ca.400

The research initiative is part of an international cooperative program that currently involves the USA, New Zealand, France (ORSTOM), and the South Pacific Commission.

To date there have been two tag recoveries from the USA tagging efforts. Both tagged fish were caught on longline gear from vessels off-loading in American Samoa. The tag release and recovery data were as follows:

	<u>First Recovery</u>	<u>Second Recovery</u>
Date of tag release	9 March 1986	28 February 1987
Location of tag release	40 20'S 145 50'W	39 43'S 151 04'W
Date of recovery	16 April 1987	26 April 1987
Location of recovery	38 23'S 133 45'W	38 23'S 145 38'W

One of the interesting findings from this study of the South Pacific albacore was the presence of large numbers of juvenile jack mackerel, Trachurus murphyi, in the stomachs of albacore caught by the CROMWELL.

This species supported a harvest of 2.4 million metric tons in 1984, primarily in fisheries executed off Chile and Peru. Because the CROMWELL's areas of operation was 1,200 miles south of French Polynesia, the question is raised of a possible large population of jack mackerel in the high seas, far from the islands.

5. In 1986, the Honolulu Laboratory initiated a project to assess the population size of Hawaiian anchovies (nehu), *Encrasicholina purpurea*, in Pearl Harbor. The State of Hawaii is considering diverting the fresh water flowing into Pearl Harbor by streams and underground springs for land-based use. What impact this freshwater diversion will have biota is the problem to be addressed. The focus of the research is the nehu, the principal baitfish species for the pole-and-line fishery for skipjack tuna. To date, the nehu population in Pearl Harbor has been estimated at 0.5 to 5.0 t. The technique used to assess the population is the egg production method developed by scientists of the Southwest Fisheries Center in La Jolla.

As part of the nehu assessment study, Honolulu Laboratory scientists were successful in maintaining nehu in captivity for an extended period. One group of post-larval nehu placed in a tank still has a few survivors after 11 months in captivity. This is believed to be the first successful attempt to hold tropical anchovies in captivity for long periods. An unexpected benefit of the nehu holding experiment was the discovery that nehu spawn in captivity without any difficulty, e.g., without resorting to hormone injections. Once the nehu reached maturity, spawning took place in the tank every evening. The maximum survival of nehu larvae achieved to date has been 89 days. The single survivor was at a stage just prior to assuming adult characteristics.

6. A program to help the USA-Pacific island territories collect and publish fishery statistics on a routine basis reached a milestone early in 1987 with the publication of Volume 2 of "Fishery Statistics of the Western Pacific." Volume 2 included the statistics for the Territory of Guam for the period 1979-84. Volume 2, which was issued in early 1986, included monthly and annual summaries of fishery statistics for the State of Hawaii (1979-84), American Samoa (1982-84), and Commonwealth of the Mariana Islands (1979-84). Plans are to produce these statistics on an annual basis for the future.

7. The Honolulu Laboratory conducts routine examinations of "stranded" turtles. Scientists and conservationists are becoming concerned with the increased incidence in Hawaii of green sea turtles with neoplastic tumors on the head, neck, mouth, or the soft tissues at the bases of the flippers. In 1986 and 1987, Honolulu Laboratory scientists examined 165 stranded green sea turtles; 38% had visible signs of neoplastic tumors. That the tumors may be a factor contributing to the increased number of stranded animals is cause for concern.

8. The research program on the endangered Hawaiian monk seal achieved a milestone during the year. One of the successful projects has been a "head-start" program at Kure Atoll where female pups born at the

atoll were placed in an enclosed area for safe keeping for a period extending to 7 months.

With the natural population, there has been virtually no survival of pups to adulthood since the 1970's, and the Kure population currently is only a fraction of the population of several decades ago. The milestone was the birth of a pup by a female head-start graduate from the first year of the program. The data provide firm evidence that the Hawaiian monk seal is capable of reproducing at age 6.

To accelerate the Kure rehabilitation program, eight pups born at French Frigate Shoals were added to the Kure population. These pups were abandoned by their mothers for some unknown reason and would have perished if they had not been removed to Honolulu and fed over several months.

Of the 15 female pups processed through the head-start program at Kure Atoll, 14 are still living, thus demonstrating the success of the program.

9. The tuna tracking work continued during the 1986-87 period. Recent efforts have been directed toward the vertical and horizontal movements of skipjack tuna and mahimahi, Coryphaena hippurus. Unlike the yellowfin tuna, the skipjack tuna appeared to remain in the vicinity of the fish aggregating devices (FADs) during day and night; the yellowfin tended to move away from the FAD during the night. The limited data on mahimahi suggested that they knew their location relative to the FAD. Mahimahi generally stayed in the surface zone during the day and in deeper water during the night.

10. The papers presented at the workshop on snappers and groupers held in Honolulu in 1985 have been published in "Tropical Snappers and Groupers: Biology and Fisheries Management," edited by Honolulu Laboratory scientists Jeffery J. Polovina and Stephen Ralston. The book is published by Westview Press in their Ocean Resources and Marine Policy Series.

11. A quantitative study of the impact of artificial reefs on the fish populations has been completed by J. J. Polovina of the Honolulu Laboratory and I. Sakai of Otaru, Japan. The study examines long-term fisheries data collected before and after the deployment of large-scale artificial reefs in waters off Hokkaido, Japan. The most pronounced finding was the reported increase of the octopus population from pre-reef placement: Each 1,000 cubic meter of artificial reef volume increased the octopus catch by an estimated 4% or about 1.8 kg/cubic meter. Similar impact for other important fish species (e.g., flatfishes and Atka mackerel) in the vicinity of the artificial reefs was not demonstrated; thus, while the reefs aggregated these species, they did not increase the stocks.

12. The Honolulu Laboratory is currently conducting an assessment of the deepwater shrimp resource in the Hawaiian Islands archipelago. In 1981, a large catcher-processor operation using three catcher vessels fished in the Hawaiian Islands for deepwater shrimp, principally Heterocarpus laevigatus. For economic reasons, the company went out of business in 1984, and presently the shrimp are only caught by a few small-scale fishermen to meet

local needs. Still, catch records kept by one of the catcher vessels clearly show that a substantial resource exists. Over a 14-month period, 75 t of shrimp were taken by one boat, with an average catch per unit of effort of 12 kg/trap-night. Catch rates were highest around the main islands and diminished to the northwest. Recent assessment work aboard the TOWNSEND CROMWELL has shown that the shrimp are highly vulnerable to the large pyramidal traps developed by the company. An assessment cruise is planned for September to estimate the standing stock of H. laevigatus around several of the main islands of the Hawaiian archipelago.

13. The status of several Fishery Management Plans (FMPs) developed by the Western Pacific Fishery Management Council is as follows:

- a. Crustacean FMP--The FMP went into effect on 9 March 1983. Currently the plan is being modified to include management of the slipper lobster.
- b. Bottomfish and Seamount Groundfish FMP--The FMP went into effect on 27 August 1986. A limited entry structure has been developed to provide access only to vessels engaged in that fishery in the Northwestern Hawaiian Islands prior to August 1985. The limited entry amendment has been approved by the Council and is being reviewed by government offices in Washington, D.C. (This status applies to the spiny lobster FMP as well.)
- c. Pelagic FMP--The FMP went into effect on 23 March 1987 and includes under its management strategy the several species of billfishes, mahimahi, wahoo, and pelagic sharks.
- d. Precious Coral FMP--The FMP went into effect on 29 September 1983 and includes the pink, gold, and bamboo corals. The FMP does not include the black coral under its management regulations.

14. In early 1987, the TOWNSEND CROMWELL conducted bathymetric work in coastal waters of Niue in response to a request by the Government of Niue. The bathymetric data were summarized and published as chartlets. In addition, scientists aboard the CROMWELL provided Niue government officials with some advice on management of fishery resources, especially snappers and groupers.

15. Additional activities related to Pacific island nations included discussions on assessment and management of bottomfish resources held in late July 1987 between Honolulu Laboratory scientists and Dr. A. Lewis of the Fiji fisheries department in late July 1987. The meetings were held in Honolulu. Similar discussions are scheduled to be held with scientists from the fisheries department of Tonga in August 1987.

16. Enclosed as Appendix A is a list of technical reports produced by the Honolulu Laboratory in 1986.

17. Enclosed as Appendix B is a list of technical reports produced by the Honolulu Laboratory up to June 1987.

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