

PACIFIC FISHERIES CONSULTANTS



45-626 Halekou Place • Kaneohe, Hawaii 96744 U.S.A. • (808) 599-5867 • FAX (808) 531-0867

DRAFT REPORT

RIGHTS OF NATIVE HAWAIIAN FISHERMEN WITH SPECIFIC REGARD TO
HARVESTING OF BOTTOMFISH IN THE NORTHWESTERN HAWAIIAN ISLANDS
AND WITH REGARD TO HARVESTING OF BOTTOMFISH, CRUSTACEANS,
PRECIOUS CORALS, AND OPEN-OCEAN FISH IN OFFSHORE AREAS
SURROUNDING THE ENTIRE HAWAIIAN ISLAND CHAIN

PHASE 2

MAIN HAWAIIAN ISLANDS AND THE
NORTHWESTERN HAWAIIAN ISLANDS

A Report Prepared For The
Western Pacific Regional Fishery Management Council
Honolulu, Hawai'i

by
Robert T.B. Iversen, B.S.S.
Tom Dye, Ph.D.,
and Linda M.B. Paul, M.S.

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SUMMARY

This report provides the results and conclusions of Phase 2 of a two phase study on native Hawaiian fishing rights undertaken by the Western Pacific Regional Fishery Management Council (WPRFMC), a quasi-Federal government agency. The study investigates whether, under the Magnuson Fishery Conservation and Management Act of 1976 (MFCMA), Public Law 94-265, there are sufficient historical and legal grounds to give native Hawaiian fishermen preferential treatment in various fisheries that have now, and in the past, been undertaken in waters of what is now the U.S. Exclusive Economic Zone (EEZ). These fisheries include species of fish, crustaceans, and precious corals over which the U.S. now claims jurisdiction as the result of the MFCMA.

The EEZ encompasses those waters from three to 200 miles offshore of the entire Hawaiian archipelago, and does not include State of Hawaii territorial waters. State of Hawaii territorial waters extend from the shoreline out to the beginning of the EEZ three miles offshore.

Phase 1 of this study has covered, in a separate report, the potential of preferential rights for native Hawaiian fishermen with regard to the harvesting of certain species of deepsea bottomfish in EEZ waters around certain of the Northwestern Hawaiian Islands (NWHI). These EEZ bottomfishing waters are divided into zones that are now under Federal regulation. These two zones are called the Mau Zone and the Ho'onalu Zone and begin slightly west of Kaula'i Island, and extend to the extreme westward end of the EEZ around the NWHI, which is slightly west of Midway Islands and Kure Island (see figure 1). Bottomfishing for deepsea species in the Ho'onalu Zone is the principal subject of the separate report on Phase 1 of this study. New Federal regulations limit access to fishermen who wish to fish in the Ho'onalu Zone, and control access to fishermen who wish to fish in the Mau Zone. These new Federal regulations into effect on January 1, 1989.

The purpose of this Phase 2 study is to collect, catalog, and authenticate evidence which could provide the necessary historical and legal grounds required for preferential treatment or privileged status of native Hawaiian fishermen in certain fisheries in the EEZ around the entire Hawaiian archipelago, provided certain criteria cited in the MFCMA are met (emphasis added).

It is possible for a fishery management plan (FMP) prepared by the WPRFMC to establish a system of limiting access to a fishery regulated under an FMP to certain fishermen, including indigenous Native American fishermen (emphasis added), if in developing the FMP, the WPRFMC and the U.S. Secretary of Commerce have taken into account the following criteria:

present participation in the fishery; historical fishing practices in, and dependence on the fishery; the economics of the fishery; the cultural and social framework relevant to the fishery; and any other relevant considerations.

Therefore, under the NRCMA, the WRFMC has undertaken both Phase 1 and Phase 2 of this study to determine if the necessary historical and legal grounds exist to give native Hawaiian fishermen preferential treatment under FMPs which limit access to certain fisheries in Hawaii's EEZ. The Phase 2 study also includes information on various species of open ocean fish like tuna, over which the U.S. does not claim jurisdiction [emphasis added].

The research methodologies used in this Phase 2 study included: (a) a review and description of the present day fisheries for deepsea FMP bottomfish, pelagic fish species, crustaceans, precious corals, as well as the fisheries for non-FMP species such as the tunas; (b) a search of the historical literature; (c) interviews with fishermen and kupuna; (d) a search of pertinent legal documents; (e) a search of the archeological literature; and (f) a search of archeological collections concerning all FMP regulated fisheries in Hawaii's entire EEZ, as well as the non-FMP regulated fisheries for tunas. In addition, we obtained information on the fishing histories of both young present day fishermen and older kupuna fishermen, which are presented as affidavits in this report. This is because the terms of reference for this study state that the evidence must be able to withstand legal scrutiny.

We report below the RESULTS AND CONCLUSIONS drawn from the investigations carried on during this study.

BOTTOMFISH. Concerning the bottomfish fishery in the Ho'omalu Zone of the NWHI, we have been unable to verify any bottomfishing for FMP species of bottomfish by native Hawaiians prior to the 1920's, though the scanty archaeological evidence from the NWHI includes a fishhook of the type used in deepsea kaka fishing. Evidence for the Ho'omalu Zone bottomfish fishery begins in the 1930's. There were only two native Hawaiians participating in the Ho'omalu Zone fishery during 1988 and 1989. They are outnumbered by non-native Hawaiian fishermen. We know there have been other native Hawaiian fishermen in this fishery in the past, but we do not know how many, or their names. In 1988, 13 vessels caught an estimated 625,000 pounds of bottomfish with an ex-vessel value of \$1.5 million. There are now eight vessels licensed to fish in the Ho'omalu Zone and 10 in the Mau Zone. The maximum sustainable yield (MSY) of the NWHI bottomfish fishery is about 605,000 pounds per year. Fishery scientists studying these stocks believe that in general there is little evidence the NWHI stocks of bottomfish are stressed.

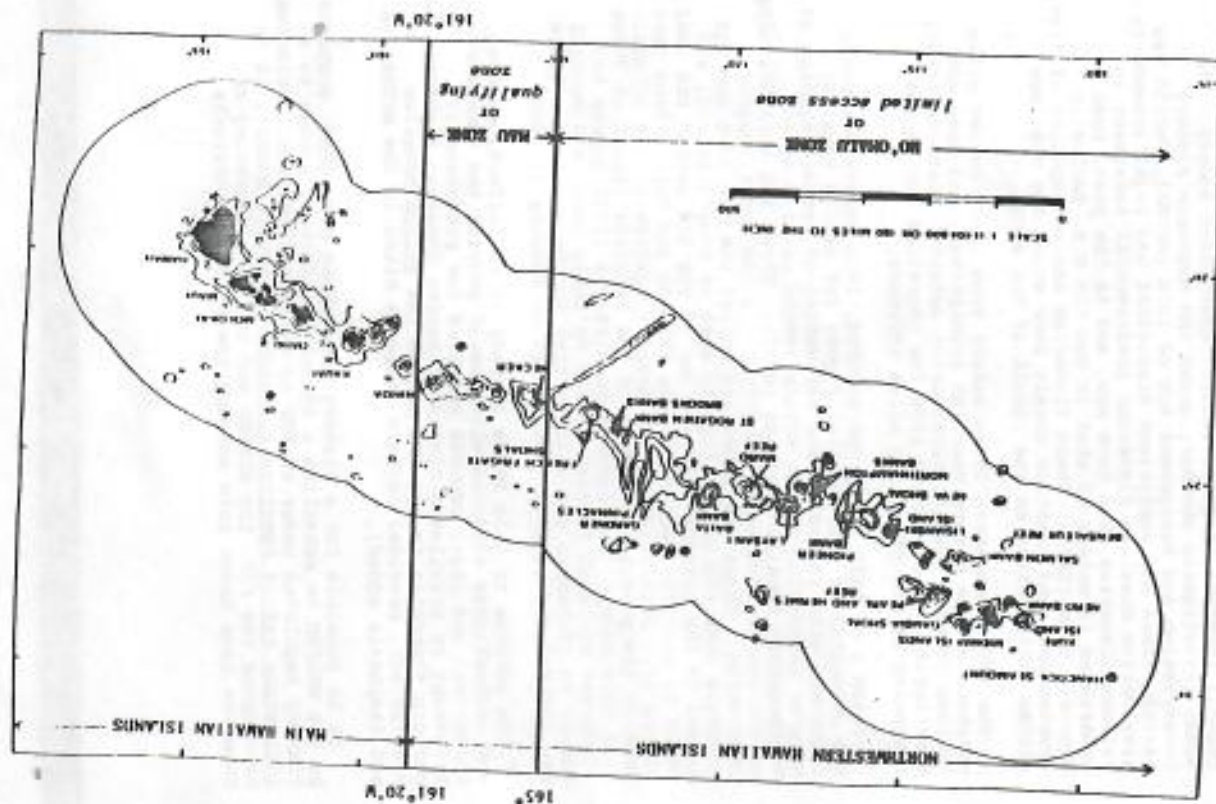


Figure 1. U.S. EEZ of the Northwestern Hawaiian Islands divided into two zones: The Ho'omalu Zone (limited access zone) and the Mau Zone (qualifying zone).

We believe there has been a dependence by native Hawaiians in the present and recent past on FMP species caught in the Ho'oulu Zone, which includes such factors as a dependence on bottomfish for food, cultural, religious, and traditional values which in the past have been shown to exist for fisheries for some of the same species in EEZ waters of the Main Hawaiian Islands (MHI). We state that a legal case can be made to give native Hawaiian fishermen preferential treatment in the MHI, and possibly in the NWHI bottomfish fishery, providing certain criteria are met.

The conclusions of the legal research for the Phase 1 study are the same as those given below for this Phase 2 study. For additional details on the bottomfish fishery for deepsea FMP regulated species in the NWHI, the reader is referred to the separate Phase 1 report, some of which are also included in this Phase 2 report.

In 1988 there was a total of 2,276,000 pounds of deepsea species taken from both areas, 1,651,000 pounds from the deepsea grounds in the MHI and 625,000 pounds from the EEZ in the NWHI. This is in spite of the fact that amount of bottomfishing grounds in the MHI is less than that of the NWHI. The combined ex-vessel value of the catch of bottomfish from both the MHI and NWHI was \$6.0 million in 1988, \$5.3 million in 1987, and \$4.5 million in 1986. Ex-vessel prices of MHI caught deepsea bottomfish are usually higher than NWHI caught bottomfish. This is because, in general they are smaller and thus more desirable, and fresher than NWHI bottomfish due to the longer length fishing trips made by NWHI fishing vessels. Fishery scientists studying bottomfish caught in MHI waters have concluded there is evidence the total catch exceeds the best estimates of MSY and that a persistent pattern of harvesting undersized MHI bottomfish exists.

PELAGIC OPEN OCEAN FISH INCLUDING TUNAS. There are four major types of fishing that catch open-ocean FMP pelagic fishes as well as the non-FMP tunas. These include the longline fishery for pelagic fishes, which in 1988 landed an estimated 6,734,000 pounds of tunas, marlins, sharks, and other smaller FMP pelagic species. Catches of skipjack tuna by the small fleet (eight Honolulu based fishing vessels) were approximately 4,345,000 pounds in 1988, compared to 3,631,000 pounds in 1987. The catch of pelagic species by handline in 1987 was 3,092,723 pounds, mainly caught by the ika-shibi and palu-ahi methods, which are described in this report. Trolling for pelagic species in 1987 totaled 4,227,723 pounds.

CRUSTACEANS. Hawaii's fishery for spiny lobsters and slipper lobsters during 1988 was worth \$4,436,000 for estimated landings of 1,217,000 pounds of spiny lobsters and 187,000 pounds of slipper lobsters. Nine vessels fished in the lobster fishery, which takes place primarily on relatively

shallow water banks in the EEZ around the NWHI. The fishery for two species of deepsea shrimps (*Heterostichus* sp.) has fluctuated widely in the last nine years, as much as 700 percent between years. The combined catch of both species in 1987 was 10,798 pounds worth \$44,135, (1988 data not available). In 1989 a new large deepsea shrimp trapping vessel entered the fishery and reportedly is making very large catches of one species of the shrimp in very deep waters, perhaps 1,500 to 2,000 feet deep.

PRECIOUS CORALS. The fishery for precious pink, gold, and bamboo coral essentially ended in 1978, when a submarine harvested 1,100 pounds on the beds off Makapuu Point, Oahu Island. A new entrant tried dredging for these species in 1989, but was unsuccessful. Landings of black coral (*Antipathes* sp.) have continued, with the latest figures showing 4,341 pounds landed in 1987. Most of this probably came from State of Hawaii territorial waters.

PARTICIPATION BY NATIVE HAWAIIAN FISHERMEN. We have identified numerous native Hawaiian fishermen who have participated in all these fisheries using the methods described above, and some not described, in the present day and recent past. By this we mean going back to the 1920's when some present day fishermen and kupuna fishermen paddled canoes five to ten miles offshore of Miloli'i and Napoopo'o, Hawaii Island. They were trolling for tunas and other pelagic species. Such practices probably reflect techniques used at least until the very early 1900's and perhaps late 1800's, but knowledge of the nature and extent of old Hawaiian fishing techniques we found not to be available from today's kupuna. Consequently, this knowledge must come from other sources, including historical literature and archaeology.

HISTORICAL LITERATURE SEARCH. A review of the major sources on traditional Hawaiian fishing practices was supplemented by a search through the Hawaiian Ethnological Notes at Bishop Museum Library and many minor sources. This literature establishes traditional fishing for bottomfish, aku, and sharks in EEZ waters, suggests that black corals were snagged by hooks in the deepwater bottomfishing grounds, provides equivocal evidence for traditional capture of other pelagic fishes, and no information on the harvest of crustaceans, or of the precious pink, precious gold, and bamboo corals in the EEZ. The historical literature also provides abundant evidence for the social and religious importance of fisheries for bottomfish, aku, and the sharks. We also read the logs of 113 American whalers that visited Kana'i and Miihau Islands, as well as the NWHI, from 1791 to 1878. The reason was to seek evidence that native Hawaiians were fishing in EEZ waters around the NWHI, but we found no evidence that native Hawaiians were fishing in those waters for deepsea fish, or for that matter, for any kind of fish. The logs contained nothing about native Hawaiians fishing.

INTERVIEWS WITH FISHERMEN AND KUPUNA. This was only partially successful. We were unable to identify any kupuna, elders who may or may not have been fishermen, from which to receive authentic, yet unrecorded, kama'aina testimony of fishing practices in EEZ waters around Hawaii dating back to the early 1800's. Apparently such individuals have either died or as the result of infirmities, are unable to be located. We did, however, interview a number of present day and recent day fishermen 60 years old or older who can be considered kupuna. From these individuals, and from a number of younger present day native Hawaiian fishermen, we obtained detailed fishing histories. These histories, were then written down and prepared as affidavits, and are included in this report. We obtained 18 such affidavits that cover all types of Hawaii's FMP fisheries, both in the MHI and NMHI, as well as for fisheries of non-FMP species such as tunas.

LEGAL ANALYSIS AND REVIEW. An extensive review of Federal statutes, primarily the MFCA, and their legislative histories, as well as a search of the Hawaii Revised Statutes, as well as their legislative histories, was made to develop information pertaining to preferential fishing rights for native Americans. A special effort was also made to review the extant literature on Hawaii's konohiki fishing rights. We believe this legal analysis and review was very successful and resulted in a detailed record on the subject of the fishing rights of native Americans, including native Hawaiians, on both a domestic and international law basis.

The review section is very lengthy and forms a major part of this Phase 2 report.

Concerning the legal analysis and review, we state it is an established fact that the Hawaiian people do not have a formal treaty with the U.S. which spells out their fishing rights. They did have, and arguably still have, laws which spelled out those rights, laws which survived the overthrow and annexation into territorial status and many have survived admission into the Union. With each transfer of sovereignty, the U.S. stated repeatedly that it would honor all those extant laws not in conflict with Federal law unless they were cancelled by specific Federal or State Legislation.

Prior to the establishment of EEZs, coastal people could assert rights to high seas resources under two legal theories: (1) effective exercise of sovereign control, and (2) long and continuous usage. If both sovereign control, and continuous usage were present, traditional fishermen could assert an exclusive right to the resource; if continuous usage only established they could still assert a preferential right to the resource. The establishment of historic offshore fishing grounds still in use in the Hawaiian archipelago opens the door to a claim for preferential native Hawaiian fishing rights in the EEZ. However, the fact that the exact

boundaries of this grounds were never established argues against a claim for exclusive, vested fishing rights.

The usage rights of the common people to the fisheries beyond the three mile territorial sea were not repudiated by either the provisional government or the Republic of Hawaii.

Hawaii State law still recognizes "Hawaiian usage" as an exception and qualifier to the common law system of the State. U.S. Federal law recognizes the concept of usage in its direction to Fishery Management Councils to take "historical fishing practices" into consideration when drafting FMPs. Under international law, sovereign States have an obligation to honor preferential fishing rights established through usage and in the U.S., international law is part of Federal common law to the extent that it is not in conflict with any domestic law.

It is not clear, however, which people can be considered the inheritors of these rights. The laws of the U.S. define the term "Native Hawaiian" in at least two different ways. One definition means any descendant of not less than one-half part of the blood of the races inhabiting the Hawaiian Islands prior to 1778. Another definition means any individual any of whose ancestors were natives of the area which consists of the Hawaiian Islands prior to 1778. The latter definition is the most recent.

ARCHAEOLOGICAL LITERATURE AND DATABASE SEARCH. A complete review of archaeological reports held by the State Historic Preservation Office was undertaken to document finds of the remains of FMP taxa in archaeological sites. These finds indicate the widespread importance of bottomfish, tunas, and sharks in prehistoric Hawaii and the great antiquity of these fisheries in the islands. Finds of FMP taxa left as offerings in religious temples and in burials support conclusions based on the historical literature that these fishes were important in the traditional Hawaiian religion. Records of prehistoric fishing gear designed to capture bottomfish, aku, and sharks are contained in a fishhook database that accompanies this report.

DEPENDENCE BY NATIVE HAWAIIANS. In the present and recent past, the dependence by native Hawaiians on catches of FMP species of bottomfish, open ocean pelagic FMP species, pelagic tunas, and crustaceans can be thought of in two ways. One would be the actual consumption of these species by the native Hawaiian fishermen as food, and another can be thought of in monetary terms. In 1900 many native Hawaiian fishermen depended on their catches both as a source of food and as a source of monetary income. The reported commercial landings in 1900 were 6,222,455 pounds, with a value of \$1,083,646. These commercial catches reportedly involved the efforts of 1,571 native Hawaiian men and women. A lot of native Hawaiian

fishermen were involved in these activities, but we do not know the actual number.

CULTURAL, RELIGIOUS, AND TRADITIONAL FACTORS. The historical literature, bolstered by archaeological evidence, provides strong evidence for the significance of several FMP fishes in traditional Hawaiian religion. The aku and the ulua both played crucial roles in sacred ceremonies held in the Iuakini temples. Sharks and aku were both claimed as personal and family gods ('aumakua) by chiefs as well as commoners. In the Hawaiian theory of the supernatural world, 'aumakua were often seen as the incarnation of the supernatural world, 'aumakua were able to change to human form and back again, and were thought and his family followed religious taboos to ensure the continued favor of the gods and success at fishing. Fishermen built numerous temples (heiau ko'a) at which rites related to fishing took place and offerings were frequently made.

Black coral was used medicinally to treat respiratory and certain childhood diseases.

SOCIO-ECONOMIC FACTORS. Present day native Hawaiian fishermen who are involved in one or the other present day fisheries - bottomfishing, catching open ocean FMP pelagic species and non-FMP species like the tunas, and the other FMP fisheries, have an economic dependence on their catches. The native Hawaiian fishermen who we have identified, or speculated as to their numbers, as having taken part in these fisheries, would have a strong economic dependence on their catches. We suggest there is another category of native Hawaiians who also have an economic interest in these fisheries. That category is the consumer who is Hawaiian or part Hawaiian. As described above, there has in the past been a strong cultural and religious connection between native Hawaiians and some FMP bottomfish species, such as snappers. Some present day native Hawaiian consumer of such species may still associate such snappers with traditional beliefs and with their dependence on these snappers for food. They may be frustrated in doing so, however, because such bottomfish can often cost more than other species. Industry sources have told us that Hawaiians buy a large proportion of open ocean fish, especially some of the tunas, because they are less expensive than FMP bottomfish snappers. Many native Hawaiians probably have less disposable income with which to purchase the higher priced fish, and may have to purchase other species instead.

ACKNOWLEDGMENT

The Western Pacific Regional Fishery Management Council Wishes
to Express its Deepest Appreciation

To the

OFFICE OF HAWAIIAN AFFAIRS

For Its Assistance In Many Ways That Have Made It Possible For
This Study To Have Been Conducted On The Potential Of
Preferential Fishing Rights For Native Hawaiian Fishermen

about 40,000 kg., about 25% of the Auau Channel population. The precision of these estimates is probably no better than 33 percent because of the patchiness in distribution and the variability in growth rate in black corals.

What is not known with any certainty is the quantity of black coral which has been harvested since Grigg's 1979 figures. Reported catches of black coral in the years 1979-1982 have ranged between 0 and 1,200 lbs., and it is very likely that recent harvesting of black coral is considerably underreported, as shown in table 11.

Table 11. Landings of black coral in Hawaii, 1983-1987.
Source: Annual statistics published by the HDAR.

YEAR	POUNDS LANDED
1983	1,911
1984	3,128
1985	308
1986	935
1987	4,341

While divers are required to possess commercial fishing licenses and to report their catches, there are no regulations to date that restrict the take of this resource. The problem of management is complicated by the fact that SCUBA divers take underize colonies and sell them to curio dealers, and also, as recently reported, to interior decorators who seek them to decorate homes.

Historical literature search

Methods and sources

This section reviews literature that describes traditional fishing practices, the social and religious framework within which fishermen operated, and the place of certain fish in Hawaiian ritual and cosmology. Special attention is paid to the locations where fishing is said to have taken place, because these accounts comprise the sole source of evidence for traditional fishing within the EEZ. Direct statements attesting to the dependence of native Hawaiians on the various fisheries are lacking. In lieu of these, special attention has been paid to ancillary evidence that relates to the depth of traditional knowledge about the operation of a fishery and the kinds of fish that it produced. In particular, evidence for sophisticated fishing tools and techniques, and a detailed nomenclature for these and the animals they were designed to catch, will be interpreted as indicating a dependence upon a fishery. The literature reviewed here is also the best

evidence for the traditional fisherman's social and religious concerns, since these are not directly preserved in the archaeological record.

Also included in the literature search were the logs of American whalers who visited Kauai and Nihoa Islands, and the NMHI from 1791 to 1878. These logs are part of the Pacific Manuscripts Bureau collection of over 2,000 whalers logs on microfilm in the Hamilton Library, University of Hawaii. Logs of 113 visits by whalers to Kauai, Nihoa, and the NMHI were read to determine if any whalers operating in those areas encountered any native Hawaiian fishermen engaged in fishing activities in present day EEZ waters. There was no reference to any type of fishing activities by native Hawaiian fishermen in any of the 113 logs examined. A list of the whaler's logs examined is found in appendix B.

The social and religious importance of fish and fishing are discussed below in separate sections, though the Hawaiian's holistic conception of the natural, cultural, and supernatural worlds occasionally makes the assignment of evidence to one category or the other rather arbitrary. The lack of clear boundaries between these worlds, and the commingling of descriptions of everyday activities, and economic principles in the reader as lapses in the memory of the writer, due most likely to the rapid social changes that followed contact with the non-Polynesian world, or to fanciful flights of a romantic mind. As the editor of *A Muepapa Kuokoa* wrote in 1866, "we all know that life today is not like that of the past." Anthropologists have been convinced for over sixty years, however, that this mode of expression, so prevalent in the non-European world, is not due to faulty memory or to a romanticization of the past, but is instead an expression of a world view that differs markedly from that of the modern European-derived tradition (Mauss 1969). The challenge for the anthropologist and for the policy maker concerned with traditional Hawaiian social and religious beliefs is to resist the ethnocentrism that arises from the unquestioned assumption that one's own world view is somehow the only correct one. Only then can one begin to appreciate the social and religious significance of fish and fishing in old Hawaii.

Aku fishing

Aku fishing (*Iawai's hi aku*) in old Hawaii was, according to Kenakau, "an aristocratic way of fishing and one that called for proud display" (1976:72). Aku fishing can be divided into two distinct pursuits: casting from a stationary double canoe after aku and kawakawa had been attracted with chum; and trolling a composite bonito hook behind a padded canoe. Both methods required a degree of group coordination unique in Hawaiian food-getting activities and often resulted in large catches made in a very short time (see Kamakau

1976:71-74, Beckley 1883, and Kahaullelo 1902 for descriptions of these fishing techniques). Kamakau remarks that "fishing for aku was greatly enjoyed by the chiefs and rulers in the old days . . . Kamehameha I was accustomed to fishing for these fishes, and they were famous in ancient times" (1976:75). Kamakau also suggests that fishing with chum was an innovation and that trolling was a practice of "the very old days" (1976:74), but the source of his information is not clear.

Aku fishing took place wherever a school of fish happened to come to the surface to feed. The location of a school was signalled by the actions of Hawaiian terns (*noio*) as they dove into the water to feed on the same small fish pursued by the aku. Several accounts indicate that aku fishing often took place far from shore and well within the EEZ. Kahaullelo (1902) relates that in his youth he often fished from 5 to 7 miles offshore, and that the usual practice when fishing with chum from a double canoe was to leave for the fishing grounds at 3:00 AM and to paddle until "the sun had shed its light." Experienced paddlers would almost certainly reach the EEZ in the approximately three hours from 3:00 AM until daybreak. Waterhouse (1898), for example, in a description of deep sea fishing from a canoe off the Kona coast of Hawai'i, estimates that one hour of "hard paddling" took his party about 2 miles offshore. D. Kahaullelo (1863) reported in *Ka Muepapa Kuokoa* that a canoe of fishermen was lost while fishing for aku some seven miles from shore, about the distance that an experienced crew might be expected to travel during a three hour paddle.

The fishing tackle used in aku fishing was extremely sophisticated. The Hawaiian composite bonito hook (*pa hi aku*) is a local form of a general Polynesian type known throughout the region as *pa*. The typical Hawaiian hook consists of a pearl shell shank, a bone point, pig bristle handle, lashing to secure the point and handle to the shank, and a long snood that was attached directly to the fishing rod. Special skill and care was taken in the choice of material and manufacture of the pearl shell shank. Hiroa (1964:334) relates that Kalokuakaiale, a native Hawaiian of Kona, Hawai'i distinguished 14 different types of pearl shell shank on the basis of patterns of color in the shell. Time of day, weather, and sea conditions determined which type of lure was likely to prove most effective (Beckley 1883, Kahaullelo 1902). The parts of the pearl shell lure were all named: *ihu* (head); *mulu* (tail); *puka'ihu* (hole in head for snood); *ihu* (snood); *'uo* (seizing); *hulu* (handle); *lala* (point); *kapuahi* (base of point); *huzu* (hole in point); *hamaa* (gape of point); *'awee* (portion of point which overhangs the shank). Hiroa (1964:333-337) provides a detailed description of Hawaiian composite bonito hooks.

Ahi fishing

The historical literature is nearly silent on the tools and techniques used in ahi fishing, though passing mention is often made to fishing for ahi. Severance (1986) has dealt with this problem in the greatest detail. He notes that smaller ahi are frequently caught while fishing with chum or trolling for aku, and that it is not known if the style of hook used for ahi differed from the style used to catch aku.

Larger ahi were quite possibly caught with the "palu ahi" technique that wraps a baited hook and chum around a stone which is released when it reaches a marked depth (30-70 fathoms) over an ahi koo. Contemporary fishermen use larger rotating hooks with this technique, but the ethnohistoric literature is also unclear whether rotating or larger two-piece jabbing hooks were preferred for this technique. Relatively large ahi could be captured with weaker hooks than one might expect because of the behavior of the fish. When ahi are hooked, they dive deep very fast and the line is allowed to uncoil over the side of the canoe. They stop after reaching a certain depth, and can be drawn back toward the surface with adequate pressure. While this technique may have been practiced, it did not predominate as a popular strategy (Severance 1986:12-13).

Bottom fishing

Kamakau (1976:75) names three types of deep sea fishing grounds: *ku'aula* grounds about 80 fathoms deep; *ka'aka'a* grounds of unspecified depth for amberjack and tuna; and *po'hakialoa* grounds 200, 300, or 400 fathoms deep. Kahaullelo (1902), who fished primarily in the shallow waters between Maui, Lanai, and Kahoolawe puts the depth of *ku'aula* grounds at 50-70 fathoms and the *po'hakialoa* grounds, which he calls *kialoa* or *kaka* grounds, at 200 fathoms, a figure also mentioned by Fornander (1919:184). Newman (1970) argues on functional grounds that 200 fathoms is the deepest that native Hawaiians could fish using handline techniques. The discrepancy between Kamakau's account and the writings of Kahaullelo, Fornander, and Newman may have arisen from Kamakau's assumption that the length of the fishing line accurately measured the depth of the fishing ground. In practice, coir cord lines "belly" considerably in a current, so that it may have been necessary, under certain sea conditions, to use a 300 or 400 fathom line to fish a *ko'a* that was 200 fathoms deep. Kahaullelo (1902) mentions slacking the line between seven and ten fathoms to compensate for the current while fishing at a *ko'a* 50 fathoms deep.

Accepting 80 fathoms as a maximum depth for kūkaula grounds and 200 fathoms as a maximum depth for pōhākiāloa grounds, it is likely that both types of fishing ground were found in the EEZ around all of the islands. The area of sea floor less than 200 fathoms deep within the EEZ is least around the islands of Kauai, where it is found primarily off the Na Pali coast, and Hawaii, where it is found off the leeward North Kona and Kohala coasts. Extensive areas less than 200 fathoms deep are found around the islands of Molokai, Lanai, Kaho'olawe, and Maui. The area of kūkaula and pōhākiāloa fishing grounds at Penguin Bank, off the west end of Molokai, extends over ten miles beyond the outer limit of the EEZ. Thus, there are no environmental reasons to doubt that traditional Hawaiian bottom-fishermen plied the waters of the EEZ.

The common technique for fishing the deep water pōhākiāloa grounds was called *kaka* or *kialoa*. Kahauliello, who often fished using this technique, describes it as follows:

In this kind of fishing, no stone weight was needed to anchor the canoe and it drifted to and fro moving with the current. The line was five *ka'au* in length, with that the equivalent of two hundred fathoms and that was about the depth of the fishing grounds. . . . Two or three men were enough for this type of fishing and each man had from forty to fifty hooks on his line.

This is the way in which it was done. The thread that fastened the hook to the line was a yard or so in length to tie on both hook and a coconut stem [leaf midrib?] to keep them firmly in place. The hooks were fastened at intervals the length of each stem, lest the hooks be mixed up and entangled. This was done until all 40 or 50 hooks were fastened on. Bait was secured in the evening and the hooks of all three fishermen were baited before time. When all was ready then just before daylight they set out for the fishing grounds. Each man let down his line with a stone weight at the bottom of the line to make it sink. . . .

Sometimes all the hooks were taken, sometimes they were not. . . . If all the fishermen were lucky, the canoe was filled. In this kind of fishing, the fishermen went home while it was day. . . . This method of fishing has not been done for more than thirty years here at Lahaina. This kind of fishing has also been called *kialoa* fishing and the fish caught were the *kahala*, *ulaula*, *opaka*, *hapuu*, *keae*, *ulaula niho*, *opēkēpaka*, *hahanui*, *ukikiki*, *lehe*, *uku*, *uluu*, *kahala*, *mahukia*, *oio* and so on (Kahauliello 1902).

Fishing the shallower kūkaula grounds was more time consuming. Kahauliello notes that kūkaula fishermen remained on the ocean "all day long and they returned home late at night. Sometimes they remained out all night" (1902). Unlike *kaka* fishing, where the hooks set themselves, the fish would "snatch" at the kūkaula hook. "Put your hand under the line and lift it up and away from the edge of the canoe, and your hand will feel the tugging of the fish" (Kahauliello 1902). A notable feature of this technique was the bits of coconut husk that were tied to the line at five fathom intervals between 40 and 70 fathoms. These were named, from shallowest to deepest, *kānuku*, *ālo*, *kua*, *kānanamana*, *kaiziki*, *kua-o-kaiziki*, and *kānoe*. These markers signaled the fisherman that a fish had taken the hook and also helped estimate the depth of the bottom. This latter bit of information was often crucial in finding the precise location of a *ko'a*.

The Hawaiians had many names for fishhooks. 21 names of fishhook types, other than lures, octopus hooks, and shark hooks are listed in Pukui and Elbert (1971:58), with distinctions for material (turtle shell, whale ivory, shell, bone, human bone), and form and features of the hook (rotating/jabbing, one piece/two/piece, and presence/absence, location, and number of barbs). Individual parts of the hook were also named: *ka'a*, *ka'i* (snood); *kū'au*, *pou* (shank); *kohe* (inside barb); *lo'e*, *pohona* (bend); *lihi* (portion just below point); *lihi'ou* (point of barbless hook); *lala* (bone or shell point of two piece hook); *maka* (point). Hiroa (1964:325) claims that the profusion of Hawaiian names for fishhooks and their parts is because "Hawaiian terms vary for the different islands not only as regards the parts of a hook but as to the different forms of hooks."

Lines (*aho*) were made of coir cord, apparently by specialists (Kamakau 1976:76), and were stored in gourds containers with fitted tops (Hiroa 1964:351). A stone plummet sinker (*pōhākiāloa*) (see Hiroa 1964:345-346) rounded out a deep sea fisherman's gear.

The winter months of Ho'oulo (October to March) were favored for deep sea fishing; heavy rains often muddied the bottom inshore, making fishing there difficult (Kamakau 1976:77, Kahauliello 1902).

Shark fishing

Kamakau relates that shark fishing was "done in the deep sea out of sight of land. These were not fishes to be found in the *ko'a* fishing grounds -- they swam about and *ka po'e kahiko* caught them far, far out at sea" (Kamakau 1976:75).

The common method of capturing sharks in the deep ocean was with a hook and line. Pukui and Elbert (1971:58) list *makau*, *mano*, *lawa*, and *kīholo* as names for shark hooks. Shark hooks

are described in detail by Miroa (1964:338-342). Kanakau and Beckley describe a specialized method, called *kupalupalu* amo by Kanakau, of fishing for great white sharks (*meghi*) with chum. The two sources disagree on the nature of the chum. Kanakau claims that the common chum was decomposed pig flesh, but that chiefs used dead men for chum (Kanakau 1976:87). Beckley (1983) describes the chum as the livers and "a little of the flesh" of vast numbers of common sharks that had been baked in an underground oven. Beckley claims that the churning would take place for a period of days, until the sharks in the vicinity were "comparatively" tame. Fornander describes a practice of patting sharks until they became accustomed to being touched. In either case, when a shark came close to the canoe a fisherman "slipped a noose over its head with his hands . . . When the snare reached the gills, the fisherman eased it downward to the center of the body, then he pressed a foot on the shark's head, bending it forward as he tightened the noose" (Kanakau 1976:87). Sometimes a snare made of crossed sticks was used to slip the noose over the shark. Kanakau claims that the shark was killed at sea, while Beckley suggests that it was towed to shallow water, where it was stranded and then killed. The men of O'ahu were "famous for just seizing sharks" with their hands (Kanakau 1976:87-88).

Precious coral collection

Black corals were used medicinally to treat various respiratory (Kaaiakamanu and Akina 1922:23-24) and childhood diseases (Kanakau 1964). A detailed description of black coral harvest in old Hawaii appears to be lacking, though Kaaiakamanu and Akina claim that it is found "in deep water where deep sea fish is sought" (1922:23), which suggests that it may have been collected with hook and line.

No mention of the precious pink corals, precious gold corals, or bamboo corals was found in the historical literature.

Crustacea collection

Crustacea were caught by hand, with snares, and perhaps with spears and in traps. None of these methods would have been practiced in the EEZ, and no record of deep-sea crustacea collection was found.

Social importance

There are two linguistic clues to the importance of the FMP species to Hawaiian society. The first, and most general, is the meaning of the Hawaiian word *i'a*. Pukui and Elbert define the term as:

1. Fish or any marine animal, as eel, oyster, crab, whale.
2. Meat or any flesh food.
3. Any food eaten as a relish with the staple (*poi*, taro, sweet potato, breadfruit), including meat, fish, vegetable, or even salt (1971:87).

The primary use of the term to refer to sea creatures is undoubtedly a very old usage, as an ancestral form of the term with this meaning can be reconstructed for the Proto-Austronesian language, which was spoken some 5000 to 7000 years ago in Island Southeast Asia (Bellwood 1979:121). The extension of the term to refer more generally to foods eaten with a staple starch suggests the importance of fish in the Hawaiian diet. Other Polynesian languages make a distinction between staples and relishes, but in these languages fish are simply one among many kinds of relish and do not comprise the focal category of the term.

The second linguistic clue may be found in the large number of names that Hawaiians used to refer to several of the FMP species (see Appendix A). Notable in this regard are the growth stage names for *opakapaka*, white ulua, kahala, aku, and kawakawa, and the varietal names for *ula'ula*, *uku*, and *sahimahi*. This phenomenon, called "polytypy," is widespread in folk biological classifications (Georgeson 1976). Several studies have shown that polytypy is most likely in classes of plants or animals that are culturally significant (Berlin et al. 1974, Conklin 1954, Dye 1983). Possible reasons for cultural significance include economic importance and ritual salience. The presence of polytypy in the Hawaiian names for FMP species thus can support evidence for the social and religious importance of those species.

The importance of fishing to Hawaiian society is reinforced by the prohibitions observed by members of the fisherman's family and others while he was at sea. These prohibitions are summarized as follows:

It was customary with those whose vocation was that of fishing to have certain regulations. Before a person went out fishing he would admonish those who remained at not to do any act which would interfere with the fishing trip. He cautioned them in this wise:

1. The wife was forbidden from committing adultery.
2. Adultery by other inmates of the house of the fisherman was also forbidden.
3. Fighting was forbidden in the house of the person going out fishing.

4. Inquiries such as "where is (the fisherman)" while he was out on the ocean were forbidden.

5. Eating the bait reserved by the fisherman was forbidden.

6. Covetousness during the fisherman's absence at sea was prohibited. If any of these things was violated by those at home while one was out fishing his labor was in vain; by observing the sanctity of the house of those going out fishing success would result (Fornander 1919:118).

Once back ashore the fisherman would divide his fish into those that were taboo to women and those that were free, and would take the taboo fish to the men's house (Kanakau 1976:74). Fish that were taboo to women include the FMP taxa ulua (probably including white ulua, black ulua, and butaguchi), and some sharks (especially the great white shark) (Valeri 1985:116-117).

Religious importance

David Malo begins his account of Hawaiian fishing practices with the statement that "fishing was associated with religious ceremonies" (Malo 1931:208). In Hawaiian cosmogony, as related by the Kumulipo chant, fish were created through the union of Pōhuliuli and Pōhēhēhē, after the creation of corals and mollusks, but before the creation of insects and birds, amphibians, land animals, and humans (Beckwith 1951). Many fish were venerated as family, personal, or professional gods ('aumakua), including the FMP taxa sharks and aku. The relationship of humans to 'aumakua went beyond worship, however. According to Hawaiian beliefs, 'aumakua could "appear in human form or even manifest themselves in living humans" (Valeri 1985:21). Kanakau writes that

most of the sharks who had become supernatural beings were people who had been changed into forms of their shark ancestors. These ancestral sharks, mano kumupa'a, were not beings deified by man; they got their shark forms from the god (1964:74).

He describes the process by which a dead person was transfigured into a shark 'aumakua as follows:

people would take a loved one who had died--a father, mother, child or some other beloved relative--to the keeper of a shark, a kahu mano, or to one who had shark 'aumakua, to be transfigured into whichever shark 'aumakua they wanted, and it was done according to their wishes. The gifts and offerings to the kahu mano were a sow, a bundle of tapa, and a clump of 'awa. If the kahu was

satisfied with the gifts, he would command the persons who owned the body to prepare the ritual offerings for the god, as well as the gift offerings, for the body to become a shark. All was made ready on the sacred day of Kane, the most important day of the kapu periods. At dawn of this day, a fire was lighted at the kuaahu altar of the ko'a shrine or heiau of the ancestral shark. . . . Then the owners of the body and the kahu of the shark god brought the sacrifices and offerings. . . . and also the whole body of the dead person, or a bundle of his bones or some other part of the body, wrapped in a distinctive tapa. The shark would take on the character of the wrapping. . . . The persons who owned the body would thus be able to recognize their own after it became a shark.

The fire was lighted at the ko'a shrine and the food and the offerings were made ready. . . . Then the persons to whom the body belonged and the kahu mano went with the bundled corpse and all the offerings to be given to the shark, while the kahu mano murmured prayers. Then the shark. . . . rose to the surface of the sea and opened its mouth and the [offerings] were poured into it. . . . Then the body was given to it, being placed close to the "belly fin," the halo, of the shark. The kahu mano and the owners of the body returned to the ko'a and made ready their aohai offerings. . . . They offered (the essence) to the god, and when they had finished eating of the aohai 'ai offerings they threw the remainder into the sea. This ended they went home.

The kahu mano, however, took 'awa at dawn and at dusk for two or three days, until he saw clearly the body had definitely assumed the form of a shark and had changed into a little shark, with recognizable marks on the cheeks or sides like a tattoo or an erring mark. After two or three days more, when the kahu mano saw the strengthening of this new shark that had been transfigured, he sent for the relatives who had brought the body to go with him when he took the 'awa. If he had gone constantly, morning and evening, it strengthened quickly, and when the relatives came they would see with their own eyes that it had really become a shark (Kanakau 1964:76-78).

In this way the 'aumakua became related to family groups through bonds of kinship; they became ancestors of Hawaiian people (Valeri 1985:20). Sharks were believed to have engendered chiefly lineages (Beckwith 1940:439, 447), and were often associated with particular chiefs. Kamehameha I was

often associated with the great white shark (Valeri 1985:151). The aku was an 'aumakua of the descendants of Pa'ao, who comprised the chief lineage of priests in old Hawai'i.

Fish, especially game fish, were associated with the major god, Kū (Valeri 1985:15). This association is evident in a fisherman's prayer that was printed in the newspaper *Hee Mawahi* on 15 May 1861, and which mentions several FMP taxa, including ulua, kahala, and ulu'ula.

Arise, O ulua fish, arise, O kahala fish,
Arise, O ulu'ula fish, arise O great kahala fish,
Arise and eat the bait of squid meat,
A tender bait, a delicious one.
And when you have taken the bait, O kahala,
Eat and swallow it,
Swallow it down into your stomach.

O Kū, my god who dwells here in the ocean,
Hold the fish have taken our bait
Hold it fast to our line.
Harken, O Kū, my god who is here in the ocean,
Grant us fish until you are satisfied with the
supply there be any unuttered wish of mine, grant
it.

[The fisherman] calls, O Kū, hold fast our fish.
Ha! I believe my sow has given birth to her young.

Malo's assertion that fishing was associated with religious ceremonies is supported by the prayer's implication that Kū was involved in the fishing through references to "our line," "our bait," and "our fish."

Fishermen carried out their rites at a special class of temple known as heiau ko'a or heiau kū'ula, which were dedicated to any one of a number of gods associated with fishing (Kanakaʻau 1976:133), especially Kū'ula, but including Kinilau, Kamohali'i (the goddess Pele's older brother, an ancestral shark god, [Pukui and Elbert 1971:386]), and Kānezakua or Kaneko'a, two forms of the major god Kane most likely associated with fishponds (Valeri 1985:176). Heiau ko'a were generally built near the sea and could take any number of forms, from simple altars of coral to more elaborate structures with platforms or terraces (Kirch 1985:261; Figs. 220, 221). Stokes, who completed the first survey of Native Hawaiian temple sites in the first decades of this century, opined that heiau ko'a "used to exist on nearly every prominent headland in the group, and many are still in existence" (Stokes in press).

The most common rite held at these temples was an offering of fish from the day's catch. Kanakaʻau describes the distribution of fish after fishing for aku: "First the head fisherman went ashore with fish in his right and left hands

and went into the ku'ula heiau to pay homage to the gods. He cast down the fish for the male 'aumakua and for the female 'aumakua' and, when finished with the offering, returned to distribute the rest of the fish to the fishermen and others (1976:73-74).

Heiau ko'a were also the site of special rites held at the opening of the 'Opelu season. Malo summarizes these rites as follows:

the fishermen would assemble at the ku'ula heiau in the evening, bringing with them their nets of the sort called aei and pigs, bananas, coconuts, poi, and their sleeping apparel, that they might spend the night and worship the god of fishing.

While engaged in this ceremony, all the people sat in a circle; and the kahuna, bringing a dish of water that had in it a coarse sea moss and turmeric, stood in their midst and uttered a prayer for purification . . . With this the ceremony of purification was ended.

All the people slept that night about the sanctuary. It was strictly forbidden for any one to sneak away secretly to his own house to lie with his wife. They had to spend the night at the sanctuary in observance of tabu.

When this service was performed the canoes could put to sea, and the pigs were then laid into the ovens for baking. On the return of the men with their fish, the kahuna having offered prayer, the pork, bananas, coconuts, and vegetables were laid upon the lele [altar]; and the function of the kahuna was ended.

After that the people feasted themselves on the food, and religious services were discontinued by express command, because the prayers had been repeated and the whole business was now fishing was now free to all (1951:209-210).

A fuller description of these rites is presented by K. Kanakaʻau (1919:30-34).

Rites marking the opening of the aku season were stricter than those for the 'Opelu, and were carried out in the Iuakini temple where humans were sacrificed (Valeri 1985:185). At the culmination of these rites, Kahoali'i (a title meaning "royal companion") removes the eye from an aku fish and from a human victim and eats them. From this moment, and for the next six months one can freely fish for aku . . . (Valeri 1985:228).

The ulua fish plays a major role in the sacred rites for the inauguration of the chief's temple, the *luakini heiau*. On the seventh day of the ritual

the priest who catches ulua fish goes out to sea with several fishermen and they try to catch the ulua with lines, using squid for bait. If they do not succeed in catching a fish, they come back to shore and go from house to house, trying with some lie to make the inhabitants come out. If someone does come out they kill him. They thrust a hook in his mouth and carry him to the temple (Valeri 1985:309).

The ulua, or the unlucky human victim, is later sacrificed at the temple.



Figure 2. A view of the King's temple at Kaiakauka, Island of Hawaii, by J. Arago (Freycinet 1839: plate 87; see Wiswell and Kelly 1978: fig. 15). Bishop Museum Neg. 20610.

The importance of fish in religious ritual can be seen in figure 2, which shows an interior view of a temple near

Kailua, Hawaii. In the mouths of two of the wooden images at the right hand side of the figure are fish of an unidentified species, apparently left as offerings to the gods. It is possible that these are not real fish at all, but wooden fish images. Figure 3 is a photograph of a wooden shark image from Pu'ukohola Heiau on Hawaii Island, now held in Bishop Museum. Though the lower portion of the tail has been broken, the shape of the upper portion suggests that the model for this shark tail was the homocercal tail of the great white shark, and not the more common heterocercal tails of the smaller, inshore species of shark.



Figure 3. Wooden shark image from Pu'ukohola Heiau, Hawaii Island. The tail of this image suggests that it was modeled after the great white shark. Bishop Museum Neg. 1677.

Interviews: fishermen and kupuna

Our original intent was to conduct interviews with three types of native Hawaiians who could provide information on present and historical fishing practices carried out in the FMP fisheries enumerated above in EZZ waters surrounding the entire Hawaiian island chain, as well as non-FMP fisheries such as tuna. One type of native Hawaiian informant sought was a fisherman who was actively participating in FMP or non-FMP fisheries, or had done so in the immediate past. We encountered little difficulty in identifying such fishermen. The second type of native Hawaiian informant sought was a person who by age could be considered a kupuna and who might or might not still be an active fisherman. We were successful in locating several individuals who fit this description. We were successful in obtaining what could be considered kama'aina testimony from these kupuna. The third type of native Hawaiian informant sought would be a considerably older kupuna, for example a person in their 80's who might or might not have been a fisherman. However, through the handing down of oral traditions from his or her family members that kupuna might be able to recount authentic, yet unrecorded information concerning native Hawaiian fishing practices in various fisheries were carried on in generations gone by in waters more than three miles offshore (i.e., EZZ waters). This was the type of informant from whom we sought to obtain previously unrecorded kama'aina testimony. We were not successful in locating any such elderly kupuna. Apparently what has happened is that such individuals, who undoubtedly existed in the past, have all died or are of such an age that infirmities make it impossible for them to be a source of kama'aina testimony.

Because we were not successful in locating any very elderly kupuna, we found it unnecessary to use tape recorders to provide an audio record of the fishing histories of those informants who were interviewed. All interviews were carried on in English without any difficulty and there was no need for a person who spoke the Hawaiian language to act as a language liaison between the interviewer and the informant. For interviews conducted on Kawai'i Island, which was the first island chosen in the search for kupuna, we did utilize the services of master fisherman Walter H. Paulo, a native of Miloli'i, and who speaks fluent Hawaiian. It was largely through Mr. Paulo's efforts that we learned that the very elderly kupuna who might have provided unique kama'aina testimony were not to be found. For interviews conducted on O'ahu, Mo'loka'i, and Kaula'i, the services of such a master fisherman were not needed, as other knowledgeable informants confirmed the lack of very elderly kupuna.

In interviewing informants we were faced with two different approaches. One approach would be to conduct a large number of what could be considered informal discussions with

fishermen at dockside, boat launching ramps, and other places where fishermen congregate, and where private conversations are often difficult to conduct. The other approach, and the one that was adopted, was to settle for a relatively small number of privately conducted interviews of native Hawaiian fishermen in which a comprehensive amount of detail was obtained as to their fishing history in FMP fisheries, and also non-FMP fisheries (e.g., tuna fisheries).

This second approach was chosen because the terms of reference for this project are very clear that the evidence produced must be of such a quality as to withstand legal scrutiny. The WPPFMC's request for proposals is very specific in this regard by stating "... the evidence must be of such quality and presented in such a manner so as to withstand any legal question." We decided the best way to produce evidence of present and recent past participation by native Hawaiian fishermen that would withstand legal scrutiny would be to record their fishing histories and then, with their permission, produce their signed and notarized affidavits which set forth the comprehensive history of that individual's fishing background. A list of persons interviewed is given in appendix C.

We were able to secure signed and notarized affidavits from 18 native Hawaiian fishermen, who ranged from 22 to 76 years of age and who, at one time or another, have or are presently participating in the various FMP fisheries, including fisheries for non-FMP tuna species. Interestingly, the fisherman who is 76 is still an active fisherman. The original affidavits are on file in the office of the WPPFMC, and photocopies of each complete affidavit are given in appendix D.

The following is a summary of the fishing histories of these fishermen in FMP fisheries and non-FMP fisheries in offshore areas surrounding the entire Hawaiian island chain.

Henry Andrew Leslie, Jr., a fisherman of 50 percent Hawaiian ancestry aged 76, has been a fisherman almost his entire life, and continues until today to be an active commercial fisherman. Mr. Leslie, who is also known as "piety", is considered by many to be the dean of commercial fishermen on the Kona coast of the Island of Kawai'i. In 1921, when he was 11 years of age, he assisted his father in catching ahi (yellowfin tuna) by the longline and palu-ahi method and catching aku on his father's 36 foot long fishing vessel EHU KAI. This fishing occurred in waters more than 10 miles offshore of Napo'opo'o, which was the residence of the Leslie family. In those years he also assisted the family in catching such bottomfish as opakapaka, onaga, and kaikale using a "kaka line" or bottom longline, in waters up to 900 feet deep more than three miles off Napo'opo'o. He also assisted his family in catching 'Opelu in near-shore waters to

be used as bait for longline fishing in the deeper waters well offshore. He continued these activities until 1929, when at the age of 16 he became a full time commercial fisherman. For the next several years, he was crew aboard the EHU KAI which used the longline method of fishing for various species of tuna, a'u, mahimahi, kaku or barracuda (Sphyraena barracuda), and sharks. In 1930, at the age of 17, he became the captain of the EHU KAI and continued longline fishing for FMP pelagic species and tunas in waters more than three miles offshore of the Kona coast. He continued these fishing activities until 1955 when his father retired and he assumed leadership of the Leslie family's fishing business. Over the next 30 years, he was also the owner and captain of several other longline fishing vessels, the PEARL HARBOR, JOANNA, HULA GIRL, AND MORNING STAR, but by the mid 1960's, he had sold these vessels and acquired the 48 foot long longline fishing vessel MOLOKOHANA I, which he ran as captain in longline fishing until 1979, when the MOLOKOHANA I was sold. He then acquired the 56 foot long longline fishing vessel HANALIKE which is still in use today by the Leslie in fishing for pelagic species in EEE waters off of the Kona coast, and as far south as the McCall and Cross seamounts, which are more than 100 miles offshore. Mr. Leslie also trolled for ahi (yellowfin tuna) from small fishing boats, about 19 feet long, and during the period 1978-1986, trolled for ahi (yellowfin tuna) from such small boats in waters well offshore, and in one instance more than 50 miles offshore. In 1980 Mr. Leslie retired from being the regular captain of the HANALIKE in favor of his son, but until the present day still participates in longline fishing expeditions aboard the HANALIKE as crew, and participates with other family members in catching the 'ope'lu needed for longline fishing bait aboard the HANALIKE.

Abel P. Kabela, a fisherman of 75 percent Hawaiian ancestry aged 69, who lives at Milolii, Hawaii Island, has been a fisherman almost his entire life. In 1925, when he was six years of age, he assisted his father in trolling for aku, ahi (yellowfin tuna) and a'u using pearl shell lures while peddling an outrigger canoe in waters more than five to ten miles offshore of Milolii. He also assisted his father in fishing from a canoe in near shore waters for 'ope'lu and ahi (yellowfin tuna) by the lift net and palu-ahi methods in ko'a two miles off Milolii. He continued his canoe fishing activities in waters five to ten miles offshore of Milolii until 1934. In 1934, at the age of 15, he became a full time commercial fisherman aboard the longline fishing vessel LEILANI, and later became the captain of the longline fishing vessel MIYOJIN MARU and KAIMANA. These longline vessels fished in waters up to 150 miles offshore of the Kona and windward coasts of Hawaii Island for various species of pelagic fish such as aku, ahi (yellowfin tuna) and bigeye tuna, ahupalaha, a'u, a'u ku, ono, mahimahi, and sharks. He continued fishing aboard these longline vessels until 1940 when he entered the U.S. Army. He completed his Army duty in

1946 and returned to Milolii, where for the next ten years he fished in a canoe in waters five to ten miles offshore of Milolii by the trolling method for aku, ahi (yellowfin tuna) and a'u. During 1956-1966 he was the captain of the longline fishing vessel KAIMANA which fished in waters more than three miles offshore of the windward coast of Hawaii Island for aku, ahi (yellowfin tuna), ahupalaha, a'u, a'u ku, mahimahi, ono, and sharks. He returned to Milolii in 1967, and since then has been semi retired but still engages in fishing from a small boat 16 feet long in nearshore waters for aku, ahi (yellowfin tuna), and mahimahi. He also fishes for 'ope'lu by lift net, and for opakapaka and onaga by bottomfishing in waters up to 120 fathoms deep.

Leo A. Ohai, a fisherman of 60 percent Hawaiian ancestry aged 66, who has been a full time commercial fisherman since 1941 in a variety of fisheries, including bottomfishing for FMP species in the Ho'oualu zone of the NWHI, longline fishing for pelagic species include tunas in waters more than three miles offshore of all the NHI and net fishing for akule in nearshore waters of almost all of the NHI and NWHI. In 1941, Mr. Ohai became the captain and owner of the fishing sloop GARDEN ISLAND, which engaged in akule fishing in nearshore waters, but also conducted fishing for FMP bottomfish species in waters more than three miles offshore of Kona, Maui and Hawaii Islands. Bottomfishing species caught included opakapaka, onaga, kalekale, ehu, lehi, uku, white ulua, black ulua, hapu'upu'u, and kahaia. During 1944 and 1945 he was a commercial fisherman aboard the F/V FUKUI MARU, which fished for bottomfish and akule within three miles of Ni'ihau Island. In 1945, he became the captain and owner of the F/V KAMOKIIA, which engaged in bottomfishing for FMP species along the NWHI at what is known as "middle bank" located about 80 miles northwest of Kona Island. In 1952, he built the aku fishing vessel MOKU OHAI and engaged in fishing for aku in waters more than three miles offshore of all the NHI. He sold the F/V MOKU OHAI in 1955, and for the next twenty years he was the captain and owner of a variety of fishing vessels primarily engaged in akule fishing in waters less than three miles offshore around all the NHI. These vessels included the SHIRLEY I, PANAY, MALAHINI, AND KAIMAMALA. In 1975, he purchased and became the captain of the F/V LIBRA, a 58 foot long multi-purpose fishing vessel. Since 1975, the F/V LIBRA has been engaged in the following fisheries:

1. Fishing for akule around all the main Hawaiian Islands in waters less than three miles offshore;
2. Bottomfishing for FMP bottomfish species in waters more than three miles offshore along most of the islands and banks of the NWHI from Pearl and Hermes Reef to the Island of Ni'ihau. These areas include waters in both the Ho'oualu and Mau Zones. Also trapping for bottomfish FMP species in waters

more than three miles offshore of Ni'ihau, Moloka'i, and Kaua'i Islands.

3. Longline fishing for species of ahi (both yellowfin and bigeye tuna), and other pelagic FMP species such as a'u, a'u ku, and ono in waters more than three miles offshore of all the MHI.

4. Trapping for red spiny and slipper lobsters on banks more than three miles offshore on almost all of the banks of the NMHI between Pearl and Hermes Reef and Nihoa Island.

5. Trapping for deepwater ono shrimp in Hawaiian waters more than three miles offshore southwest of Kaua'i Island, and in the Kaiwi channel between O'ahu and Moloka'i Islands.

Walter H. Paulo, a fisherman of 50 percent Hawaiian ancestry aged 45, who originally was from the Kealia-Miloli'i section of the Kona coast of Hawai'i Island, and who has been a fisherman, commercial fisherman, and master instructional fisherman almost his entire life. He began his fishing career in 1932, when at nine years of age, and continuing until 1937, he helped his 'ohana (extended family) catch 'opelu and other shallow water reef fishes from a canoe in nearshore waters off the Miloli'i-Hoopoles area. During this period he also assisted his 'ohana in fishing for aku using pearl shell lures by trolling in an outrigger canoe in waters more than three miles off of Miloli'i for various FMP pelagic species, and such tunas as aku, ahi (yellowfin tuna), and kawakawa. During this period he also fished for aku and ahi (yellowfin tuna) in waters from one to ten miles offshore of the Miloli'i-Hoopoles area by trolling and by the palu-ahi method. This fishing was carried out from an outrigger canoe. In 1937 he became a full time commercial fisherman on board the F/V LEILANI, which fished for ahi (yellowfin and bigeye tuna), shipalaha, a'u, and sharks in waters more than three miles offshore of the Kona and Hilo coasts of Hawai'i Island. In 1939-1940 he was a commercial fisherman aboard the longline fishing vessel MIYOJIN MARU which fished for the above pelagic FMP species, as well as for various species of tuna. This fishing was conducted in waters more than three miles off shore of the Kona coast of Hawai'i Island. In 1941, Mr. Paulo became the alternate captain of the F/V MIYOJIN MARU and conducted longline fishing for the above named species in waters more than three miles offshore of the Kona coast of Hawai'i Island. During 1941 and 1942, Mr. Paulo was employed on a construction project at Palmyra Island, a U.S. possession 960 miles south of Honolulu. Mr. Paulo returned to Hawai'i in 1943 and during 1943-1945, he was the captain of the longline fishing vessels KASUGA MARU and TENJIN MARU which fished for various FMP pelagic species, as well as various species of tuna in waters more than three miles offshore of all the main Hawaiian Islands. During 1945-1947, Mr. Paulo was in the U.S. Army. Upon returning from Army duty, he became a commercial

fisherman during 1947-1948 on board the longline fishing vessels LOHELANI, KOFUKU, and SHINMEI MARU, which fished for various species of tuna, as well as for other FMP pelagic fishes species in waters more than three miles offshore of all the main Hawaiian Islands. During the years 1949-1952, he was a commercial fisherman aboard the fishing vessels MOHI, SAILFISH, ELECTA, and BONITO, which fished for aku using the pole-and-line technique with live bait in waters more than three miles offshore of all the main Hawaiian Islands.

Following his successful career as a commercial fisherman, Mr. Paulo joined the Federal National Marine Fisheries Service (formerly Pacific Oceanic Fisheries Investigations). During the period 1952-1974, Mr. Paulo served successfully as fisherman, skilled fisherman, navigator, and master of several large research vessels of the NMFS. His last position was captain and master of the 163 foot long (632 gross tons) research vessel TOWNSEND CROMWELL which carried out fishery, biological, and oceanographic research missions throughout the tropical central, south, and western Pacific. Since 1974, Mr. Paulo has been employed as a master fisherman by the UNDP program of the Food and Agriculture Organization of the United Nations as a consultant in such Pacific island countries as Western Samoa, Tonga, Niue, Cook Islands, and the Federated States of Micronesia. During 1989, he returned to Miloli'i where he has been a commercial fisherman using the ika-shibi and trolling methods to catch FMP pelagic fishes species and various species of tuna from a 20 foot long boat in waters more than three miles offshore of the Kona coast, Hawai'i Island. When not otherwise engaged, Mr. Paulo directs "Project Opelu" a fishing program designed to help Hawaiian youth in leeward O'ahu learn Hawaiian fishing culture and methods.

Louis K. Agard, Jr., a fisherman of 25 percent Hawaiian ancestry aged 65, whose fishing career started at the age of 11, when he caught inshore reef fish on Kaua'i Island, and later sold his catch at various plantation camps on Kaua'i. He continued such activities until approximately 1942. During 1942 and 1943, he became a full time commercial fisherman aboard the F/V KIVO MARU, which fished using the pole-and-line technique with live bait for aku in waters more than three miles offshore of O'ahu Island, and which delivered its catch to the Hawaiian Tuna Packers Cannery in Honolulu. During 1946-1948, Mr. Agard was the owner and captain of the F/V NAI'A, an 80 foot long sloop which fished primarily for reef fish and akule in waters less than three miles offshore of O'ahu Island and of French Frigate Shoals, one of the NMHI about 440 miles northwest of O'ahu. During the period 1948 - 1950, he was the captain of the 72 foot long F/V SEAHAWK, which engaged in bottomfishing for FMP bottomfish species in the NMHI more than three miles offshore of Necker Island, French Frigate Shoals, "100 fathom bank" (located 10 miles east of French Frigate Shoals). Bottomfishing conducted by the F/V SEAHAWK near French Frigate Shoals took place in

waters now considered to be part of the Ho'omalua Zone of the EEZ around the MHI. During the period 1947-1956, he was also the owner of several other fishing vessels, the support vessel SILVER, and the F/V OCEANIC, which primarily were engaged in fishing for aku in waters less than three miles offshore. During the period 1956-1958, Mr. Agard was also the owner and captain of the fishing vessel MANA, which was used primarily to catch reef fish in nearshore waters around all the main Hawaiian Islands. However, when transiting between the main Hawaiian Islands, the F/V MANA routinely fished for pelagic FMP species, such as a'u, mahimahi, and ono, and for non-FMP species such as various species of tuna. During the period 1958-1963, Mr. Agard was the owner and captain of the F/V MOHI, which fished for aku in waters more than three miles offshore of all the MHI, and that during transits between islands caught other tunas, as well as FMP pelagic species, such as mahimahi, a'u, and ono. During the period 1963-1973, Mr. Agard was the owner and captain of the F/V ALIKA which fished for reef fish in waters less than two miles offshore of O'ahu Island. During part of this period (1967-1973), Mr. Agard was engaged as a fish spotter, flying a Cessna 172 aircraft around all the MHI in search of aku and ulua, and from 1973-1977 he was employed as an aerial fish spotter searching for aku in waters more than three miles offshore of all the MHI. Since 1977, Mr. Agard has been involved in the operation of the F/V AHONUI, which has fished for aku in nearshore waters, and since 1979 has acted as a sales agent for the Tuna Boat Owners' Cooperative, and has also been an independent fish dealer selling a variety of pelagic species, mainly aku, other tunas, mahimahi, and a'u. Mr. Agard is also involved in the operations of the fishing vessels SEA QUEEN and NEPTUNE, which are primarily engaged in the pole-and-line fishery for aku in waters more than three miles offshore of the islands of O'ahu and Moloka'i. Mr. Agard subsequently told us, although this information is not in his affidavit, that during 1969-1970 he fished for ono shrimp from the F/Vs MOHI II and the ALIKA in waters more than three miles offshore of O'ahu Island outside of Honolulu, Pearl Harbor, and Koko Head.

George Lorian Costa, Jr., a fisherman of 25 percent Hawaiian ancestry aged 57, began his career as a commercial fisherman from 1952-1956 when he was a fisherman aboard the longline fishing vessel FLORENCE which fished for pelagic FMP species such as a'u, mahimahi, ono, and sharks, and also non-FMP pelagic species such as ahi (yellowfin tuna), ahi (bigeye tuna), ahipalaha in waters more than three miles offshore of all the MHI. From 1956-1963, Mr. Costa was also a commercial fisherman aboard the aku boat BUCCANEER which caught aku in waters more than three miles offshore of all the main Hawaiian Islands. Since 1963, Mr. Costa has been continuously employed as a commercial fisherman aboard the aku fishing vessel KULA KAI, and his position is that of chief engineer. While he has been a fisherman aboard the F/V KULA KAI, fishing has occurred

In EEZ waters beyond three miles offshore of the following islands of the State of Hawaii: O'ahu, Hawai'i, Maui, Moloka'i, and Ni'ihau. Fishing aboard the F/V KULA KAI in the general vicinity of Ni'ihau Island occasionally occurred 20 to 25 miles west of Ni'ihau Island. While commercial fishing aboard the longliner FLORENCE, and the aku fishing vessels BUCCANEER and KULA KAI, Mr. Costa assisted these vessels in routinely fishing for pelagic FMP species, as well as non FMP species such as tunas, while transiting to and from the fishing grounds from their home ports.

Louis M. Paulo, Sr., a fisherman of 100 percent Hawaiian ancestry aged 55, and who now makes his home at Miloli'i, Hawai'i Island, began his fishing career in 1942, when at eight years of age he assisted his father, uncle, and 'ohana (extended family) in catching 'opelu and moana (goatfish) from a canoe in waters less than three miles offshore of Miloli'i. At that time, he also assisted his 'ohana in catching aku and ahi (yellowfin tuna) by peddling a canoe and trolling with pearl shell lures for these species in waters more than three miles offshore of Miloli'i. He continued to fish for pelagic species in waters more than three miles offshore until 1946. In 1942, when he was 12 years of age, he became a full time commercial fisherman aboard the 38 foot long fishing vessel SANTA MARIA, which fished for the following pelagic species in waters more than three miles off the Kona coast, Hawai'i Island: aku, ahi (yellowfin and bigeye tuna), ahipalaha, a'u, a'u ku, mahimahi and sharks. He continued fishing aboard the SANTA MARIA until 1948. During the years 1948-1950, Mr. Paulo was a fisherman aboard the longline fishing vessel LEILANI which fished for the pelagic species described above in waters more than three miles offshore of the windward coast of Hawai'i Island (i.e., Hilo, Hamakua, and Cape Kumakahi). During 1950-1952, Mr. Paulo joined the Federal National Marine Fisheries Service (formerly Pacific Oceanic Fisheries Investigations), and was a commercial fisherman aboard the fishery research vessels JOHN R. MANNING and CHARLES H. GILBERT, which carried out fishery, biological, and oceanographic research in the central, north, south, and western Pacific. During the years 1953-1958, Mr. Paulo was a commercial fisherman aboard the longline fishing vessel MAALEHU MARU, which fished for pelagic FMP species, and non FMP species such as tunas, in waters more than three miles offshore of the windward coast of Hawai'i Island. In 1959, he became the captain of the longline fishing vessel IWALANI which fished for the pelagic FMP and non-FMP species described above in EEZ waters more than three miles offshore of the windward coast of Hawai'i Island. During 1960-1965, Mr. Paulo was employed in the construction industry in Honolulu, and following an industrial accident, was unable to resume his commercial fishing career until 1971, when he returned to Miloli'i. Since then, Mr. Paulo has concentrated on fishing for a variety of species from a 19 foot long fishing boat in the following fisheries: bottomfishing for opakapaka and onaga

in waters up to 900 feet deep off Milolii; trolling for aku, and ahi (yellowfin tuna) in waters more than three miles offshore; and fishing by the ika-shibi and palu-ahi method for aku, ahi (yellowfin tuna) and ahupalaha in waters more than five miles offshore of Milolii, Hawaii Island.

Clarence Hookala, a fisherman of 50 percent Hawaiian ancestry aged 43, who is a self-employed commercial fisherman and since 1982 has been the captain and owner of the F/V NA ALII KAI, which specializes in bottomfishing for bottomfish FMP species. While bottomfishing aboard the F/V NA ALII KAI, the principal fishing grounds have been in EEZ waters known as Penguin Banks, which is the underwater westward extension of Moloka'i Island, and which is known as good fishing grounds for opakapeka, onaga, kalekale, ehu, lehi, uku, white ulua, black ulua, buteguchi, hapu'upu'u, and kahala. While the NA ALII KAI transited to and from the Penguin Banks fishing grounds from Honolulu, the vessel also caught by the trolling method pelagic FMP species such as mahimahi, ono, a'u, and sharks, all in waters more than three miles offshore of O'ahu and Moloka'i Islands. From 1980-1982, Mr. Hookala was a commercial fisherman and captain of the F/V KOKO, and also engaged in bottomfishing for FMP bottomfish species on Penguin Banks, and also in waters more than three miles offshore of Maui, Moloka'i, Ni'ihau, and Ka'uila Islands. From 1976-1980, he was a self-employed commercial fisherman as the owner and captain of the F/V LADY KANTALA, which conducted bottomfish for FMP bottomfish species in EEZ waters of Penguin Banks, and in waters more than three miles offshore of Maui and Moloka'i Islands. The species caught bottomfishing and trolling by the F/V LADY KANTALA were the same as those described above as having been caught by the F/Vs NA ALII KAI and the KOKO. Mr. Hookala began his commercial fishing career during 1972-1974 when he was employed as a deckhand on the sport charter fishing vessel CORENE C, which fished by the trolling method for pelagic FMP species and non FMP species such as tunas in waters more than three miles offshore of Moloka'i, and O'ahu Islands. Pelagic species normally caught by the CORENE C included aku, ahi (yellowfin tuna), mahimahi, ono, a'u and sharks.

Charles K. Leslie, a fisherman of approximately 60 percent Hawaiian ancestry aged 48, who makes his home at Napo'opo'o, Hawaii Island, began his commercial fishing career in 1948, when at seven years of age, he assisted his father, Henry A. Leslie, Jr., on weekends aboard the tuna longliner PEARL HARBOR. Mr. Leslie was a part time commercial fisherman on the PEARL HARBOR until the mid-1960's when the PEARL HARBOR was sold. During the period 1948-mid-1960's, the PEARL HARBOR primarily fished for the following species of FMP pelagic species and non FMP pelagic species in waters more than three miles offshore of the Kona Coast, Hawaii Island: ahi (yellowfin and bigeye tuna), ahupalaha, a'u, a'u ku, kaku (barracuda), mahimahi and sharks. The PEARL HARBOR also

caught aku and mahimahi by the trolling method more than three miles offshore while enroute to and from the longline fishing grounds. From the mid-1960's, when his father acquired the longline fishing vessel HOLOKOHANA I, until 1970, Mr. Leslie continued to be a commercial fisherman aboard the HOLOKOHANA I, which fished for the above named pelagic FMP species as well as non FMP pelagic species such as various species of tunas in waters more than three miles offshore. The longline fishing vessel HOLOKOHANA I was sold by the Leslie family in 1979 and the 56 foot longline fishing vessel HANALIKE was purchased for the Leslie family's fishing business. From late 1979 to the present, Mr. Leslie has been the full time captain of the HANALIKE, which fishes via the longline method for the above mentioned FMP pelagic species and non FMP pelagic species such as tunas. The grounds fished by the HANALIKE are all more than three miles offshore of the Kona coast of Hawaii Island, and as far south as the waters above the McCall and Cross seamounts, which are in U.S. EEZ waters more than 100 miles offshore. Also, during the years 1977-1980, Mr. Leslie intermittently fished for ahi (yellowfin tuna) via the trolling method from a small 19 foot long boat in waters more than three miles off Napo'opo'o, Hawaii Island.

Barrington G. M. Blomfield, a fisherman of 25 percent Hawaiian ancestry aged 43, at present is a part time commercial fisherman, although in the past he has been a full time commercial fisherman. Mr. Blomfield is employed by the Fire Department of the City and County of Honolulu. Mr. Blomfield's commercial fishing career began during the years 1971-1977 when he fished for reef fish within three miles of O'ahu, Moloka'i, Maui, Lana'i, and Hawaii Islands, using a variety of fishing methods. During 1977-1981, Mr. Blomfield shifted his fishing activities and used SCUBA diving techniques to harvest precious black corals in EEZ waters more than three miles offshore in the Auau Channel between Moloka'i, Maui, and Lana'i Islands. Employing SCUBA techniques, Mr. Blomfield routinely dived as deep as 260 feet to harvest the black corals. In 1984, Mr. Blomfield was also engaged in trapping from a 24 foot long boat for ono shrimp in waters about 10 to 14 miles offshore of Haleiwa, O'ahu, where the water's depth was about 1,800 feet. He also fished for ono shrimp in waters less than three miles offshore of Waianae, O'ahu. Since 1984, Mr. Blomfield has been a part time commercial fisherman capturing various species of reef fish in waters less than three miles offshore of O'ahu Island.

Clayton K. Ching, a fisherman of one-eighth Hawaiian ancestry aged 42, who is a resident of Moloka'i Island, has been a part time commercial fisherman since 1978 when he became the owner and captain of a 19 foot long fishing vessel named HALLELUJAH, which he has used since then in various fishing techniques in EEZ waters more than three miles off Moloka'i and Lana'i Islands. Mr. Ching is also employed by the Hawaiian Telephone Company. During 1978-1981, he fished

from the HALELUJAH in waters more than three miles offshore of Moloaka'i and Lana'i Islands by the trolling method to catch the following species of FMP pelagic species: mahimahi, a'u, ono, and sharks, and non FMP pelagic species such as aku, ahi (yellowfin tuna), and kawakawa. During 1981 he also fished by handline in waters less than three miles offshore of Moloaka'i Island for akule, 'opelu, uku, and several species of ulua. Since 1984, he has concentrated on fishing in EEZ waters more than three miles offshore on Penguin Banks for numerous FMP bottomfish species including opakapaka, onaga, ehu, lehi, uku, hapu'upu'u, kahala, and white ulua. While enroute to and from the bottomfishing grounds on Penguin Banks, Mr. Ching also caught via trolling such pelagic FMP species as mahimahi, ono, a'u, and sharks, and non FMP pelagic species such as aku, ahi (yellowfin tuna), and kawakawa.

Frank A. Medeiros, Jr., a fisherman of 25 percent Hawaiian ancestry aged 39, is a part time commercial fisherman and is also employed by the Kaula'i County Fire Department. Mr. Medeiros' fishing career began in 1957, when at seven years of age, he accompanied his grandfather and other members of his 'ohana (extended family) aboard a 24 foot long fishing boat which fished by trolling in waters more than three miles off Kaula'i Island for such pelagic FMP species as mahimahi, ono, a'u, and sharks, and non FMP pelagic species such as aku and ahi (yellowfin tuna). Mr. Medeiros fished with his 'ohana on this boat from 1957-1965. In 1965, he also fished aboard the 17 foot long boat HAPA HAOLE, and aboard the 28 foot long fishing vessel KALALEO, two boats which both fished by bottomfishing for onaga, uku, kahala, and ulua, and by trolling for pelagic FMP species such as mahimahi, ono, and a'u, and for non-FMP pelagic species such as aku in waters less than three miles offshore of Kaula'i Island. Mr. Medeiros' commercial fishing career began in 1974, when he acquired a 19 foot long boat named ELEU, which he fished from 1974-1983 for FMP bottomfish species such as uku, ulua, kahala, and onaga, and for non FMP pelagic species such as aku, and ahi (yellowfin tuna) in waters less than three miles offshore of Kaula'i Island. In 1983, Mr. Medeiros became the owner of a 30 foot long Radon fishing vessel, also named ELEU, from which he has fished until the present time by trolling for FMP pelagic species such as mahimahi, ono, and a'u, and for non FMP pelagic species such as aku and ahi (yellowfin tuna) in waters more than three miles offshore of Kaula'i Island. At the present time, Mr. Medeiros is concentrating his fishing activities by fishing for FMP bottomfish species such as onaga, opakapaka, ulua, and kahala - all in waters more than three miles offshore of Kaula'i, Ni'ihau, Lehua, and Ka'ula Islands.

Garry D. Kashiue, a fisherman of 100 percent Hawaiian ancestry aged 35, began his commercial fishing career during the years 1968-1971 when he fished from a small boat in waters less than three miles offshore of South Point, Hawai'i Island

by trolling for FMP pelagic species such as ono and for non-FMP pelagic species such as aku, ahi (yellowfin tuna), and kawakawa, and also by the palu-ahi method of fishing for ahi (yellowfin tuna) and ahupalaha. During the years 1972-1974 he was a commercial fisherman aboard the aku boat ELECTA, which fished for aku in waters more than three miles offshore of O'ahu, Moloaka'i, Maui, and Kaula'i Islands. During 1975-1979 he worked in construction on Hawai'i Island. During 1980-1984 he returned to commercial fishing and served aboard the aku boat TRADEWIND, which fished for aku in waters more than three miles offshore of O'ahu, Moloaka'i, Maui, and Kaula'i Islands. During the years 1984-1985 he was a commercial fisherman aboard the longline fishing vessels LIKELIKE, VIKING, AND DRIFTWOOD. These longliners fished for FMP pelagic species such as mahimahi, a'u, a'u ku, and ono in EEZ waters more than three miles offshore of all the MHI, including waters above the Cross Seamount, which is about 100 miles south of Hawai'i Island. During 1986-1988, he was the captain of Hawai'i vessels AIKANE 49 and ST. PETER, both of which fished for FMP bottomfish species on the banks of the Mo'omalu Zone of the NWHI as far west as Gardner Pinnacles and also in waters more than three miles offshore of Nihoa Island. FMP bottomfish species taken included opakapaka, onaga, ehu, kalekale, uku, butaguchi, and hapu'upu'u. During 1988 he also was a commercial fisherman aboard the F/V PATTY ANN, which fished for the above FMP bottomfish species in waters more than three miles offshore of Ka'ula Island and also at "middle bank", which is located approximately halfway between Kaula'i and Nihoa Islands. During 1989, Mr. Kashiue has worked construction, but intends to return to being a full time commercial fisherman as soon as possible.

Moana Alquiza, a fisherman of 50 percent Hawaiian ancestry aged 29, she is the owner and general manager of Kaula'i Fishing Co., an exporter of fresh fish from the Island of Kaula'i. She is also the owner of the F/V LEI MOANA, a 24 foot long Radon type fishing vessel. She began her fishing career in 1985 when she was a commercial fisherman aboard the F/V MARYNICK, a 24 foot long vessel that fished in waters more than three miles offshore of Kaula'i and Ni'ihau Islands and caught by the trolling method FMP pelagic species such as mahimahi, ono, and a'u, and also non FMP pelagic species such as aku, ahi (yellowfin tuna), and kawakawa. The F/V MARYNICK also caught ahi (yellowfin tuna) at night using the ika-shibi method in waters more than three miles offshore. Ms. Alquiza has also worked as a part time commercial fisherman aboard the F/V MARYNICK during the years 1985-1988. During the years 1987-1989, she has worked as a part time commercial fisherman on her boat, the LEI MOANA, which fishes by trolling and the ika-shibi method for the species listed above in waters more than three miles offshore of Kaula'i and Ni'ihau Islands.

Dans A. Johnson, a fisherman of 25 percent Hawaiian ancestry aged 29, is the captain of the F/V KAWAMEE, a fishing vessel that spends most of its time fishing for FMP bottomfish species in the Ho'omaluu Zone and the Mau Zone in EEZ waters around the NWHI. Mr. Johnson became a commercial fisherman aboard the F/V KAWAMEE in 1977 and has been the vessel's captain since 1981. The F/V KAWAMEE has a Federal permit which permits it to fish for FMP bottomfish species in the Ho'omaluu Zone of the NWHI and the area fished by the KAWAMEE are those Ho'omaluu Zone grounds that extend from Pearl and Hermes Reef to the French Frigate Shoals area and thence to the "middle bank" area, which is about halfway between Kauai and Nihoa Islands. Species of FMP bottomfish usually caught by the KAWAMEE in the Ho'omaluu Zone include opakapaka, onaga, kalekale, ehu, lehi, white ulua, black ulua, butaguchi, hapu'upu'u, and kahala. Mr. Johnson has also been a commercial fisherman aboard the following vessels at various times. In 1977 he fished aboard the F/V KEANE for ono shrimp and also bottomfished for FMP bottomfish species in waters more than three miles offshore of O'ahu Island. In 1981 he was a fisherman aboard the F/V PERESA while bottomfishing for FMP bottomfish species and trolling for various species of FMP pelagic species and non-FMP pelagic species such as tuna in EEZ waters more than three miles offshore of the NWHI. He also was a bottomfisherman for FMP bottomfish species while aboard the F/V MAOLE QUEEN during part of 1982 in waters more than three miles offshore of Ka'ula Island, and during part of 1984 he was a bottomfisherman aboard the F/V E.T. for FMP bottomfish species in waters more than three miles offshore of the NWHI.

George L. Costa, III, a fisherman of 60 percent Hawaiian ancestry aged 28, began his career as a commercial fisherman aboard the F/V HAZEL MARIE, a longline vessel which fished for pelagic FMP species and also non-FMP pelagic species such as tunas during fishing operations in waters more than three miles offshore of the NWHI. In 1979, Mr. Costa became a commercial fisherman aboard the aku fishing vessel KULA KAI, and he has continued to be a commercial fisherman aboard the KULA KAI until the present time. In the process, Mr. Costa has worked his way up from being an ordinary fisherman, skilled fisherman, until today when he is the captain of the KULA KAI. Fishing operations aboard the KULA KAI, which uses the pole-and-line technique with live bait to capture aku, usually takes place in waters more than three miles offshore. While he has been a fisherman and captain aboard the KULA KAI, aku fishing operations have taken place in waters more than three miles offshore of O'ahu, Kauai, Molokai, and Nihoa Islands. On some occasions aku fishing operations have taken place 20 to 25 miles west of Ni'ihau Island.

William Kawika Moniz, a fisherman of approximately 40 percent Hawaiian ancestry aged 22, began his commercial fishing career in 1983, when he was a fisherman aboard the

F/V RENEE M., a 17 foot long boat that fished by the trolling method in waters more than three miles offshore of Kauai Island. Fishes caught by trolling aboard the RENEE M. included pelagic FMP species such as mahinahi, ono, and a'u, and also pelagic non-FMP species such as aku, ahi (yellowfin tuna), and kawakawa. Since 1983, Mr. Moniz has also been a commercial fisherman aboard the F/V LEI MOANA, a 24 foot long vessel that fished by the ika-shibi method at night for pelagic non-FMP species such as ahi (yellowfin tuna) and ahupalaha in waters more than three miles offshore of Kauai Island. During the period 1986-1989 he has also been a commercial fisherman aboard the following vessels:

1. The F/V PI'I OLA, a 45 foot long vessel which bottomfished for FMP bottomfish species in waters more than three miles offshore of Nihoa Island for species such as onaga, opakapaka, ehu, kalekale, hapu'upu'u, butaguchi, and ulua, and by trolling in EEZ waters near the weather buoy approximately 25 miles northwest of Nihoa Island for FMP pelagic species such as mahinahi, ono, and a'u, and for pelagic non-FMP species such as aku and ahi (yellowfin tuna).

2. The F/V FORTUNA, a 49 foot long vessel which fished by trolling for the above listed species around the weather buoy northwest of Nihoa Island, and for trolling for the same species in waters more than three miles offshore of Kauai Island.

3. The F/V LEI ALANA, a 40 foot long vessel that has fished by trolling for the above listed species in waters more than three miles offshore between Kauai and Nihoa Islands, and by the palu-ahi method for ahi (yellowfin tuna) and a'u in offshore waters at the same fishing grounds.

Christopher T. M. O'Leary, a fisherman of 25 percent Hawaiian ancestry aged 24, began his Hawaii commercial fishing career in 1985 and 1986 when he was a fisherman aboard the F/V ALEUTIAN SPRAY when the vessel fished for the two spined spiny lobster, or Hawaiian red lobster, and also for slipper lobsters, in waters more than three miles offshore of islands in the NWHI. During 1987, he was a commercial fisherman aboard the F/V PRIZE ONE, which also fished for the red spiny Hawaiian lobster and slipper lobsters in waters more than three miles offshore of islands in the NWHI. During the years 1988 and 1989 he has been a commercial fisherman aboard the F/V ARCHER, which also fished for red spiny Hawaiian lobsters in EEZ waters around islands in the NWHI. During this period the F/V ARCHER also fished by the longline method for pelagic species in waters more than three miles offshore in the EEZ mainly around the NHI. Pelagic species caught by the F/V ARCHER during this period include ahi (yellowfin tuna), ahi (bigeye tuna), ahupalaha, a'u, a'uki (striped marlin), a'u ku, mahinahi, and various species of sharks. Mr.

O'Leary also worked as a commercial fisherman in Alaska during part of 1988.

Other interviews with fishermen

Three other interviews with native Hawaiian fishermen were also held, but these interviews, because of the lack of time, did not result in obtaining their affidavits. These three individuals were:

Edward Malia, a fisherman of 100 percent Hawaiian ancestry aged 55, said that between 1969 and 1986 he had been a commercial fisherman aboard the F/Vs LIKELIKE, DAVY BOY, MANTA, PRINCESS, TWO KI, and LEALEA. Mr. Malia said that these vessels used the longline method of fishing to catch pelagic FMP species and other non-FMP pelagic species such as tunas, in waters more than three miles offshore in the EEZ around both the NWHI and MHI. Species caught included ahi (yellowfin tuna), ahi (bigeye tuna), ahupaiaha, a'u (blue and black marlin), a'u ku, mahimahi, ono, and various species of sharks. Mr. Malia is presently semi-retired and is associated with the Oceanic Libra Corporation, Pier 15, Honolulu.

Malvin Zane, a fisherman of 25 percent Hawaiian ancestry aged 50, said that from 1979 through 1984, he was a commercial fisherman aboard the F/Vs MANTA, LIKELIKE, LEALEA, and KOLEA. Mr. Zane said these vessels used the longline method of fishing in EEZ waters around both the NWHI and MHI to catch pelagic FMP species and other pelagic non-FMP species such as tunas. The pelagic species caught by these vessels during the time Mr. Zane was aboard are the same as those pelagic species listed for Mr. Malia, above. Mr. Zane is also semi-retired and is associated with the Oceanic Libra Corporation, Pier 15, Honolulu.

Mr. James Kahanakai, a fisherman of 50 percent Hawaiian ancestry aged 55, said that at various periods during the years 1960 through 1989 he worked as a commercial fisherman aboard the F/Vs KAREN F, SPACER K (formerly the MARCIA), KAIMI, and LEALEA. Mr. Kahanakai said these vessels used the longline method of catching pelagic species, some of which were pelagic FMP species and some, such as tunas, were not FMP species. The species of pelagic fish, both FMP and non-FMP, caught by these vessels while Mr. Kahanakai was aboard as a commercial fisherman were the same species as those caught by Mr. Zane, and Mr. Malia, and listed above. Mr. Kahanakai is semi-retired and is associated with the Oceanic Libra Corporation, Pier 15, Honolulu.

Hawaiian fishermen who were not interviewed

The owners of several commercial fishing vessels that specialize in lobster and shrimp fishing provided information on some of their crews who they stated were of Hawaiian

ancestry. Mr. Dave Dieter, owner of the F/V HAIDA, which is a lobster fishing vessel, told us there were three commercial fishermen of Hawaiian ancestry who were crew aboard the HAIDA during lobster fishing for the two spined red Hawaiian lobster and slipper lobsters in EEZ waters around the NWHI. Mr. Dieter identified these Hawaiian fishermen as Mr. Lloyd Rogers, Sr. during the years 1984-1988; Mr. William Hookanu, who worked aboard the HAIDA in 1987; and Mr. Richard Walker, who worked aboard the HAIDA during 1989. The F/V HAIDA was at sea at the time of the discussion with Mr. Dieter.

Mr. Steve Kaiser, owner and captain of the F/V PAHIKI, told us that he has fished for the two spined red Hawaiian lobster and slipper lobsters in EEZ waters more than three miles offshore off the islands of O'ahu and Moloka'i since 1983. During that period he said that two of his crew were of Hawaiian ancestry: Mr. Lionel Aguiar during the years 1983-1989, and Mr. Henry Rosa during the years 1985-1989. Mr. Kaiser said that the F/V PAHIKI also fished for ono shrimp during 1986 and 1987 in EEZ waters off O'ahu and Moloka'i Islands, and that Mr. Aguiar and Mr. Rosa were part of his crew during these fishing operations.

Mr. John Young, owner and captain of the F/V SAILFISHER, told us that during 1988 and 1989 the SAILFISHER has been fishing for ono shrimp in EEZ waters of the MHI off the island of O'ahu, mainly in the Waianae and Kaena Point areas. During this time, Mr. Young said two of his crew were of Hawaiian ancestry. He identified them as Mr. Nolan Holl and Mr. Gary Moreira, but that at present neither was a crew member aboard the F/V SAILFISHER.

Native Hawaiian fishermen and non-native fishermen

One of the four categories of evidence to be provided is "that there is present participation by native Hawaiian fishermen (together with non-native fishermen)" [emphasis added] in the fishery for FMP bottomfish in the NWHI and in fisheries for the other FMP and non-FMP species in offshore areas surrounding the entire Hawaiian Island chain. We are unable to present any evidence or statistics that gives a breakdown on commercial fishermen by their ethnic background. Commercial fishing license applications at the HDAR, Department of Land and Natural Resources, do not require applicants to show their ethnic or racial background. It is obvious that there are many more native Hawaiian fishermen in various statewide fisheries than the 18 who volunteered to provide their affidavits. It is beyond the scope of this project to state or even speculate how many native Hawaiian commercial fishermen are employed in fisheries in the State of Hawaii. The State of Hawaii Data Book for 1987 (DBED, 1987), shows there were 2,880 individuals with commercial fishing licenses in 1986. It would be sheer speculation to estimate how many of these commercial fishermen are native Hawaiians.