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National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
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RECENT TRENDS IN THE HAWAII MARKETS FOR MAHIMAHI AND ONO

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A Final Report Fulfilling Requirements of a
National Marine Fisheries Service Contract
(Purchase Order No. 82-JJA-00452)

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PREFACE

This report was prepared under contract (Purchase Order No. 82-JJA-00452) by BT and Associates of Honolulu, Hawaii. The contract objectives were to document the rising price and demand for mahimahi and ono (wahoo) in Hawaii since 1975 and to comment on the factors which led to this growth. The report represents a unique contribution to understanding the commercial fishery and seafood marketing practices because the personnel involved in BT and Associates are active participants in Hawaii's seafood industry. The auction data also provide an important insight into the relative role of the fresh fish auctions in seafood marketing in Hawaii. Since the report was prepared under contract, the statements, findings, conclusions, and recommendations herein are those of the contractor and do not necessarily reflect the view of the National Marine Fisheries Service.

Samuel G. Pooley
Industry Economist

March 17, 1983

1.0 BACKGROUND AND PURPOSE

BT and Associates was contracted by the Honolulu Laboratory of the National Marine Fisheries Service to conduct a study of recent trends in the marketing of mahimahi and ono in the State of Hawaii. The purpose of the study was threefold:

1. Document the rising price and demand for fresh mahimahi and ono since 1975 using summarized data from the United Fishing Agency, Ltd. (U.F.A.);

2. For the two species, explain the upward trends in demand and price which the data demonstrate; and

3. Determine whether there is any competition between sales of fresh, locally-caught mahimahi and ono, and establish the degree of interaction between sales of fresh mahimahi and imported frozen fillets of this species.

In a letter dated 20 January 1983, Sam Pooley, Industry Economist for the Honolulu Laboratory, requested that several other questions be considered for the final report. To the extent that these questions pertain to marketing, rather than harvesting issues, BT and Associates has attempted to address them in the final report.

2.0 METHODS

Except for summarized data obtained from U.F.A., this study relied entirely on interviews. Mr. Frank Goto, General Manager of U.F.A., was interviewed at length, and representatives of the following firms provided valuable information:

<u>Fish Wholesalers/Retailers</u>

Maeda Fish Market Ltd.
U. Okada & Company Ltd.
Wing Sing Corporation
Ahi Fishing Company Ltd.
Fishland Market Ltd.
Wakamatsu Fish Market

Volcano Isle Fish Inc.
Maui Seafoods
Tamashiro Market Inc.
Horimoto Fish Market Inc.
Tropic Fish & Vegetable Center Inc.

Frozen Food Distributors

Okuhara Foods Inc.
Young's Meat & Provision Co., Inc.
A.H. Hansen Sales Ltd.

3.0 HISTORICAL TRENDS

3.1 Mahimahi

Relative to other locally-caught species, fresh mahimahi has been a fairly high priced item in Honolulu since at least 1970, when it was served primarily by a few exclusive restaurants. The Willows Restaurant, in particular, was noted for its fresh mahimahi. At that time, mahimahi was more of an incidental catch than a targeted species, so the supply of fresh fish was even more inconsistent than at present.

The principal market for the commercial catch, made by the tuna pole-and-line fleet and tuna longline fleets, was exclusive restaurants, whereas most of the mahimahi taken by recreational trollers was probably used for home consumption. The historical emphasis in the fish marketing sector has been on aku, ahi, and other fishes having red or pink flesh, as these were the preference of the local population who were the major consumers of fresh seafoods. Although the landed price for mahimahi has edged steadily upwards since about 1950, the average price has increased more sharply since about 1973.

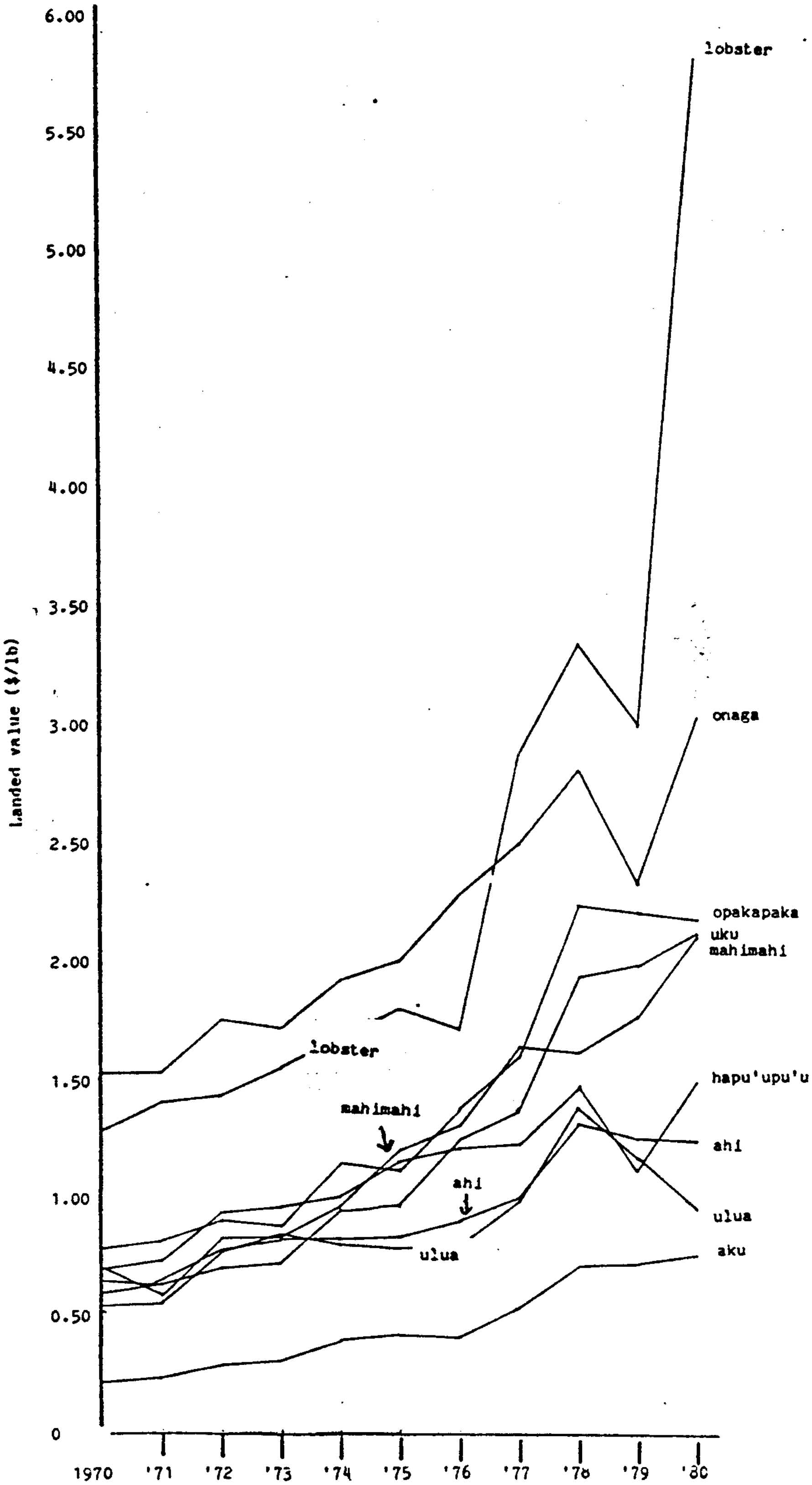
Figure 1 presents a comparison of 1970 to 1980 trends in the average State of Hawaii ex-vessel price for selectedspecies of whole fish and shellfish. The rising price of mahimahi is, over the long term, similar to other white-fleshed fish species, such as opakapaka, uku, and onaga, which are in demand by the same market (i.e., restaurants) which buys most of the mahimahi. The long-term rise in the ex-vessel price for more traditional species, such as aku and ahi, has been more gradual, as indicated by the less steep slopes graphed in Figure 1 for the latter group of species. The difference in price slopes for mahimahi and other white-fleshed species, compared to the more traditional red-fleshed fish, has no doubt caused fishing effort to be spread over a broader resource base in the 1970's than in the previous decade.

3.2 Ono

In the early 1970's ono received a lower price and was more of an incidental catch than mahimahi. Like mahimahi, ono was taken by fishermen seeking more valuable red-fleshed species, and a consistent supply was therefore lacking. Unlike mahimahi, which is caught by tuna pole-and-line and longline vessels as well as by trollers, ono is taken predominantly by trolling.

Ono began to be served by restaurants at a much later date than mahimahi. Based on the number of pieces sold through the Honolulu fish auction, ono reached a level of supply and market demand in 1981 equivalent to that of mahimahi in 1976. About 4,300 pieces of ono were sold in 1981, compared to 4,700 pieces of mahimahi sold in 1976. As restaurants become aware of

Figure 1 - 1970-1980 Trends in the Average Ex-vessel Price for Selected Whole Fish and Shellfish Species, State of Hawaii



substitutes for the often limited and high-priced supply of fresh mahimahi, the share of the market captured by ono and equivalent species will increase.

4.0 RECENT TRENDS

4.1 Mahimahi

The price of fresh mahimahi has climbed gradually upwards in recent years. Table 1 documents the increase in average price and fish landings based on a summary of transactions at U.F.A. during the 1975-1981 period. During this period, the average price of mahimahi rose 39%, from $1.83 per pound to $2.55 per pound. The total number of fish sold increased 180%, from approximately 4,000 in 1975 to nearly 11,000 in 1981. Total landed weight increased 128%, from 76,000 pounds in 1975 to about 173,000 pounds in 1981. The average weight of fish sold through the auction was somewhat smaller (14-16 pounds) in 1979-1981 period, compared to earlier years (18-20 pounds average). This phenomenon is probably the result of catches of smaller mahimahi by trolling around the fish aggregation devices, first deployed in 1979.

The availability of mahimahi in Hawaiian waters is distinctly seasonal, with peaks in abundance during the spring (March-April) and the fall months (October-November). The small boat operations which characterize the main Hawaiian Islands' fishery are sustained by a diversity of fish resources.

The small boats target seasonally-available resources, such as mahimahi, during periods of maximum abundance but divert

Table 1 - Recent Trends in Annual Mahimahi Transactions
Through the United Fishing Agency, Ltd.
Honolulu, Hawaii

	YEAR						
	1975	1976	1977	1978	1979	1980	1981
Total number of fish sold	3,918	4,754	6,145	5,328	7,814	8,687	10,957
Month of lowest number	January	January	February	December	January	September	January
Month of highest number	April	April	April	November	October	April	October
Total weight of fish sold (lbs.)	75,965	96,365	110,741	97,795	112,832	142,158	173,135
Average weight per fish (lbs.)	19.39	20.28	18.02	18.35	14.44	16.37	15.81
Total sales value ($)	$139,101	$190,738	$233,441	$223,062	$242,407	$341,653	$440,749
Average price per pound ($/lb.)	$1.83	$1.98	$2.11	$2.28	$2.15	$2.41	$2.55
Month of lowest average price	April/June ($1.56)	October ($1.53)	November ($1.80)	November ($1.43)	April ($1.56)	May ($1.55)	April ($1.94)
Month of highest average price	July ($2.80)	August ($3.04)	March ($3.17)	December ($4.60)	January ($4.95)	August ($4.55)	February ($5.12)

Source: United Fishing Agency, Ltd. records.

fishing efforts during the off-seasons. The smallest number of pieces of fresh mahmahi are sold in the winter months, usually December or January, and the largest number are sold during the spring (usually April) or fall (usually October). Because of the inconsistency in the supply and price of fresh mahimahi, transactions between wholesalers and retailers are on a day-to-day or week-to-week basis, with no formal contracts or purchasing arrangements.

Although mahimahi can be sold for prices of $4.50-$5.00 per pound during months of low availability, more important for the long-term income of fishermen is the base level price. In 1981, the average price dropped to only $1.94 per pound during the months of peak sales, compared to a low monthly price of $1.55 per pound in earlier years. The U.F.A. data indicate that the demand for fresh mahimahi, as measured by total weight of fish sold, has increased by 128% since 1975, with no indication of softening in the near future. Harvesting of this species continues to be more attractive each year, as indicated by the steady rise in average sales price. Even with rising prices, wholesalers buy all the available mahimahi.

A minimum estimate of the 1981 commercial catch of mahimahi is 239,000 pounds. Only in Hawaii are such large quantities of fresh mahimahi sold, and this species has assumed the position of the unofficial "State fish." The daily auction conducted by the U.F.A. is the principal channel for sales of fresh mahimahi in Hawaii. The price received for fresh mahimahi depends to a great degree upon the demand anticipated by the wholesalers who buy fish through the auction. Because the supply is so uncertain, the price structure may vary considerably from day to day.

4.2 Ono

The price of fresh ono has climbed sharply in recent years. Table 2 documents this increase based on a summary of transactions at U.F.A. in 1975, compared with those in the 1979-1981 period. The average price of ono rose approximately 200%, from only $0.67 per pound in 1975, to $2.06 per pound in 1979. Between 1979 and 1981, the increase moderated, as the average price climbed only from $2.06 to $2.46 per pound. The total number of fish sold through the fish auction also increased remarkably between 1975 (about 600 fish) and 1979 (1,900 fish). This sharp rise in total ono landings has continued since 1979 with about 4,300 fish sold in 1981. Total landed weight increased oveer 400%, from 19,000 pounds in 1975 to over 102,000 pounds in 1981. The auction sales data indicate that catches of ono, and presumably fish effort for this species, are increasing at a more rapid pace than are landings of fresh mahimahi.

Over six times more pieces of mahimahi than ono were sold at the auction in 1975, but by 1981, only 2.5 times more pieces of mahimahi than ono were auctioned. In terms of total revenues, fresh mahimahi sales generated over ten times more income for fishermen than did ono sales in 1975. By 1981, mahimahi sales produced only 1.75 more revenue for fishermen than did ono. The gap between these two species in terms of relative landings and revenues has closed rapidly since the late 1970's. As with mahimahi, the average weight of the ono sold through the auction

Table 2 - Recent Trends in Annual Ono Transactions Through the United Fishing Agency, Ltd. Honolulu, Hawaii

	YEAR			
	1975	1979	1980	1981
Total number of fish sold	599	1,903	3,429	4,318
Total weight of fish sold (lbs.)	19,023	50,792	85,749	102,139
Average weight per fish (lbs.)	31.76	26.70	25.01	23.65
Total sales value ($)	$12,782	$104,598	$183,891	$251,097
Average price per pound ($/lb.)	$0.67	$2.06	$2.15	$2.46

Source: United Fishing Agency, Ltd. records has been getting smaller in recent years, probably as a consequence of placement of fish aggregation devices. Like mahimahi, the availability, and thus price, of fresh ono is relatively erratic. In Hawaiian waters, ono occurs in maximum abundance during the winter months.

5.0 REASONS FOR RECENT TRENDS

5.1 Mahimahi

According to the informants, the increasing price and demand for fresh, locally-caught mahimahi result from a combination of circumstances, some of which are local in scale and some of which are nationwide trends:

* A general increase in seafood consumption, both in Hawaii and nationwide, due to health conscious consumers.
* A growing population of transient and resident Caucasians who are familiar with and have a preference for fresh mahimahi.
* The popularity of the "Hawaii" label in mainland U.S. markets.
* Convenience in preparation.

5.1.1 Health Concerns

The U.S. population, as a whole, became more health consicious in the 1970's, with more attention given to good diets and exercise. The dietary benefits of eating fish, rather than red meat, became appreciated, and consumer acceptance of seafoods increased throughout the U.S. Consumer appreciation of quality and freshness of fish products grew with the increase in the overall demand for seafood.

5.1.2 Familiarity with Fresh Mahimahi

There seems to be a cultural correlation between the ethnic groups which reside in Hawaii and their taste preference in fish. Asian, Hawaiian and other non-Caucasian groups have always had a definite preference for red-fleshed fish whereas Caucasians prefer white-fleshed fish. Prior to 1970, mahimahi was more highly esteemed by resident Caucasians than by other ethnic groups, and with a growing population of mainlanders visiting and moving to Hawaii, the demand for white-fleshed fish grew to a significant level. Prior to this influx of tourists and new residents, the primary consumers of fish were non-Caucasian residents.

Awareness of fish and the seasonal availability of mahimahi in a few restaurants caused greater demand for this species. Primarily as a result of the competitive nature of the restaurant business, fresh mahimahi bacame established as a menu item among the exclusive restaurants in Honolulu. Tourists and new residents were introduced to other species of white-fleshed fish through their initial experience with fresh mahimahi, supplies of which continued to be inconsistent or seasonal. More people began to prefer and request fresh fish; more restaurants began serving fresh seafood; restaurant chefs learned how to prepare mahimahi according to the taste preferences of tourists; and the fish wholesale and distribution network expanded to provide the fresh product.

The primary market for fresh mahimahi in Hawaii remains in Honolulu, the center of tourism. Although mahimahi sold through the fish auction supplies a large share of this market, some fishing vessels sell directly to wholesalers. The development of an impressive tourist industry on Maui has created a secondary market of considerable proportion for fresh mahimahi. Considering the increase of visitors and the expanding Caucasian resident population on Maui, the per capita consumption of white fish on that island may now be the highest in the State. A rough measure of the extent of the Maui market, compared to Oahu, is the number of seafood restaurants on each island. Honolulu magazine's 1982 restaurant guide lists restaurants on Oahu and on the island of Maui. The Maui market is supplied in large part with mahimahi landed on Oahu.

5.1.3 The "Hawaii" Label

Previous visitors to Hawaii and military personnel have become aware of fresh fish and, upon their return home, advise others about fresh mahimahi. Television and advertising promote the "Hawaii" label on the mainland, and a variety of products, including fresh mahimahi, are marketed under the "made in Hawaii" label. These circumstances have made possible high-priced export markets for fresh mahimahi, as well as establishing a steady clientele of tourists who can appreciate and pay for the fresh product at Hawaii restaurants.

Tourists who are in the fish wholesale or retail business on the West Coast have been sufficiently impressed with mahimahi that, in some instances, they have arranged to import this item for sale on the mainland. Fresh mahimahi is even shipped to outlets in the U.S. midwest. The availability of mainland outlets allows some of the local mahimahi caught during seasonal peaks in abundance to be shipped out, so that gluts do not greatly depress prices in the local fish market. The percentage of the total mahimahi catch which is exported is certainly no more than 5%,and only the largest wholesalers are involved in export transactions. The price of fresh mahimahi is consistently high, so that it is generally purchased as a restaurant fish. Restaurant demand is so great that little mahimahi is sold over the counter at fish markets or supermarkets.

5.1.4 Convenience in Preparation

The marketing and processing capabilities of the Hawaii fishing industry have expanded significantly since 1975. Fresh mahimahi is routinely filleted for sale to restaurants. The boneless fillets are a highly convenient product form for use by restaurant chefs. The chefs need only cut individual meal sized (6 ounce) portions of fish from the fillets, and this savings in labor is an important economic advantage for the restaurants. Although the yield of saleable product from mahimahi is similar to that from ono, opakapaka and other restaurant species, the body shape and average size of individual fish make it somewhat easier to fillet.

The shelf life of freshly-caught mahimahi is from 5 to 7 days, and most restaurants usually maintain an inventory of mahimahi, which is frozen for short periods. In placing orders with wholesalers, restaurant purchasing agents have to balance their previous investment in inventory against current availability and price. A restaurant having little inventory may have to pay higher than average prices in order to assure availability of fresh mahimahi. The variability in supply and price, coupled with steady demand, causes the price and also the profit margin of a fresh mahimahi dinner at a Waikiki restaurant to fluctuate considerably throughout the year. Restaurants can list frozen mahimahi dinners on their menus at a fixed price but usually sell fresh mahimahi dinners at a fluctuating price. Some restaurants try to get the maximum from their mahimahi purchases by taking the fish heads for soup stock, but other restaurants do not want the heads.

5.2 Frozen Mahimahi Imports

Noting the rising demand for the "State fish" but the lack of a consistent supply, one or two Honolulu wholesalers in 1970-1971 began to make speculative purchases of frozen mahimahi in Japan for import to Hawaii. Mahimahi is not a popular fish in Japan or Taiwan, but it is caught in large quantities by those nations' distant-water tuna longline fleets. Through bulk purchasing, the Honolulu buyers were able to obtain low prices and uniformity of the frozen product in filleted form.

The availability of a consistent supply of frozen fillets made it possible for exclusive restaurants to back up the limited fresh fish supply and to print mahimahi on the menus with assurance. The low cost of the frozen imported product gave fast-food and general public restaurants the opportunity to serve mahimahi as a low budget menu item. The only way to provide every tourist with the experience of eating the best known fish in Hawaii is through frozen fillets. Although frozen fillets are sold through retail markets, they are most widely used by the large number of restaurants which serve the general public, rather than an exclusive clientele. Two relatively independent markets--differentiated by their demand for fresh or frozen mahimahi--have thus developed. There is little, if any, competition between the two product forms because of major differences in both quality and price. The declared value of frozen mahimahi imports from Taiwan and Japan averaged $0.76 per pound in 1980, compared to an average sales price of $2.41 per pound for fresh mahimahi sold through the fish auction. Although a few 50-pound cases of frozen mahimahi fillets are transshipped to the U.S. mainland each year, the imported fish is, for the most part, consumed in Hawaii.

Imports of frozen mahimahi fillets totalled an estimated 6 million pounds in 1980, compared to an average of 2.6 million pounds per year prior to 1975. The quantity and value of mahimahi imports are estimated in Table 3 for the 1972-1981 period. Taiwan supplies most of the imports. Smaller quantities are shipped from Japan, and some mahimahi fillets originate in Latin America and are shipped directly from Equador or are transhipped to Hawai through Los Angelas. During the summer months, Hawaii distributors rely on large seasonal catches of fillets imported in frozen form from Taiwan and Japan. The Latin America fillets augment the reduced supply from Asian nations during the winter.

Table 3 - Weight and Value of Frozen Mahimahi Fillets Imported to Hawaii, by Country of Origin, 1972 - 1980

YEAR	COUNTRY OF ORIGIN: Taiwan		Japan		Ecuador		TOTAL	
	Weight (1,000 lbs.)	Value ($1,000)	Weight (1,000 lbs.)	Value ($1,000)	Weight (1,000 lbs.)	Value ($1,000)	Weight (1,000 lbs.)	Value ($1,000)
1972	1,620	977	661	392	N.A.	N.A.	2,281	1,369
1973	2,541	1,052	153	67	N.A.	N.A.	2,694	1,119
1974	1,406	842	439	271	N.A.	N.A.	1,845	1,113
1975	2,098	1,927	680	526	N.A.	N.A.	2,778	2,453
1976	1,876	1,411	394	280	N.A.	N.A.	2,270	1,691
1977	2,750	2,020	382	253	N.A.	N.A.	3,132	2,273
1978	3,385	2,203	202	146	200	124	3,787	2,473
1979	4,147	2,745	177	131	183	107	4,507	2,983
1980	3,767	2,844	368	299	N.A.	N.A.	4,135	3,143

Note: N.A. = not available

Source: IA 254, U.S. Imports for Consumption and General Imports, District 32, Custom District by Country of Origin by TSUA Number by Unit Control and Method of Transportation, Foreign Trade Division, Bureau of the Census, Department of Commerce.

Taiwanese mahimahi is considered to have better quality than that from other sources, and wholesalers generally consider purchases from Latin America only when the Taiwanese product cannot be obtained (Evering, 1980).

Mahimahi is shipped to Hawaii as frozen, skin-on, boneless, trimmed fillets, which are often graded and priced by weight gradations. In the initial years of import, wholesalers could purchase the frozen fillets for about $0.30 per pound, but in recent years, the price has been $0.75-0.80 per pound. Retailers pay about $1.00-1.20 per pound. In recent years, approximately 7 major wholesalers and many more smaller wholesalers have been involved in importing mahimahi from Taiwan. A standard order from one wholesaler would be one container load (30,000 pounds) per month. Several of the large wholesalers occasionally bought directly from Taiwanese export firms, but most used a broker who combined orders. The Taiwanese fillets are distributed directly to retailers, whereas the fillets from Latin America arrive in larger lots (250,000 pounds) and are frequently held in storage and withdrawn when supply is short. Three or four large shipments are purchased each year directly from Latin America fish dealers or through New York brokers.

In April 1979, a case of histamine (scombroid) poisoning in Hawaii was attributed to a mahimahi fillet from Taiwan. The U.S. Food and Drug Administration (FDA) delayed the sale of approximately 25% of incoming shipments of frozen mahimahi until tests were made. Histamines are difficult to detect because their presence is far from uniform in batches of fish. The risk of histamine poisoning is greatly increased by poor handling of mahimahi by exporters. In the summer and fall of 1980, several more incidents of histamine poisoning occurred, and every container of frozen fillets was blocklisted by the FDA, which means that all shipments into the U.S. are automatically detained until the importer can prove that it conforms to required standards by means of laboratory analysis of samples. There is no discrimination between mahimahi fillets from various origins. Although the testing of samples can be completed within a few days after seizure, the FDA takes months to review the laboratory results and complete the paperwork necessary to release the frozen fish for sale. Not only are distributors' initial costs for fish purchases tied up, but storage fees are incurred during the delays. The cost of the delay, plus the loss of several lots of the product, rejected by the FDA, caused an outflux of dealers handling mahimahi imports in Hawaii. There was a reduction in imports from Taiwan and Japan in 1980, possibly caused by the confusion in the market. The reduction forced some buyers to accept New Zealand snapper fillets as a substitute for mahimahi in the spring of 1981 (Evering, 1980).

Frozen mahimahi is becoming a more expensive source of protein, because the extra cost of meeting quality standards, as well as the cost of the FDA delays in releasing the product for sale, are being passed on to consumers. Nevertheless, there does not appear to be a slackening of demand for this product. Because of the major differences in the price for fresh and frozen mahimahi, the fast-food and general public restaurants which are the major buyers of the frozen fillets are not generally able to substitute fresh mahimahi if their frozen supply is interrupted.

5.3 Fresh Ono

Comparison of Table 2 with Table 1 indicates that the gap in total landings and revenues which existed between fresh mahimahi and fresh ono as recently as 1975 is closing rapidly. The explanation for the sharp rise in the demand and price for ono is that it has been preceived as a close equivalent to mahimahi by the restaurants which serve fresh white-fleshed fish and has found market acceptance. The supply of locally-caught mahimahi is highly seasonal and extremely limited considering the high demand for this fish. It is not possible for restaurants to offer fresh mahimahi throughout the year, and chefs have looked to other white-fleshed fish, including ono and opakapaka, as substitutes. Unlike mahimahi, the other species are not available in frozen form as a back-up to the fresh product. Therefore, ono, opakapaka, ulua, swordfish, and other species which complement or substitute for the more popular mahimahi are generally served as "fish of the day" or as specials. The price of a fresh ono dinner at one popular restaurant has increased from $7.50 to $12 over the past four years.

All of the white meat species upon which restaurants rely are subject to seasonal limits in availability, so it is necessary for chefs to rely on the full array. Their purchases are based on the affordability, as well as the availability, of the preferred species. The restaurant demand for white meat fishes is too great to be satisfied by the combination of fresh mahimahi and ono and their seasonal abundance in Hawaiian waters does not greatly overlap, so there is no competition between the species.

Ono (wahoo) is not as widely available in the world's oceans as is mahimahi so no system has developed to import a frozen product to Hawaii. Ono is sometimes imported to the U.S. from India and other parts of Asia as frozen steaks or fillets, but is not available in steady supply.

6.0 CONCLUSIONS

The rising demand for locally-caught, fresh mahimahi is a result of acceptance among the Caucasian tourist and resident populations of Hawaii, and the strong association of this species with the "Hawaii" label. The shift toward greater seafood consumption among a health-conscious American population has contributed to greater awareness and preference for fresh seafoods in general.

The great demand in restaurants for fresh mahimahi, coupled with the relatively low supply, has raised the price significantly, causing an increase in fishing effort for this species. The bulk of the fast-food and general public restaurants in Hawaii cannot afford to put high-priced fresh mahimahi on their menus, but large imports of frozen mahimahi fillets have made low-budget meals feasible for such establishments. The fresh and frozen products each have their own niches, and the difference in price and quality keep both niches available. The relatively independent markets cannot do without either product form.

Fresh ono is rapidly gaining the same market acceptance and status as fresh mahimahi in the restaurants which serve white meat fish to tourists. The supply of fresh ono is as limited as that of fresh mahimahi, and the price of both will continue to climb as long as the tourist experience in Hawaii includes a fresh fish dinner. In fact, market opportunities may exist for other white meat species if they could gain market recognition and acceptance comparable to mahimahi and ono.

It should be remembered that the demand for fresh mahimahi, ono, and other white meat species is strongly correlated with the success of the tourist industry in Hawaii. A decline in that industry could have major repercussions on the market situation, and it may be advisable for the private sector to have a contingency plan for such an occurrence.

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