

Fish Preferences and Prejudices in a Small Caribbean Island: A Study of Fish Consumption Patterns in St. Vincent Based on a Household Survey¹

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RESUMEN

El éxito en los planes y proyectos del mercadeo de pescado en la región del Caribe depende, en gran parte, del buen conocimiento de las preferencias y prejuicios para las diferentes clases de alimentos marinos. El hábito de consumo, y los factores de demanda afectados por estos hábitos (factores económicos y cultural/tradicional), son muy complejos y varían notablemente de lugar a lugar en el Caribe. Igualmente, la elección del pescado por el consumidor está influenciada por factores no económicos tales como textura y color de la masa, si el pescado está fresco, salado o nevado, el empleo del pescado en platos tradicionales y otros valores culturales. Desafortunadamente, las complejidades señaladas, en los mercados pesqueros del Caribe, son poco conocidas, y ello presenta serios obstáculos a la realización del potencial amplio de los mercados de peces en la región y puede resultar en un colapso de los planes de mercadeo.

Yo realicé una investigación de campo durante tres meses en los mercados pesqueros de la isla St. Vincent, representativa de las Islas de Sotavento vecinas en tener una industria pesquera en pequeña escala y un relativamente simple método en el sistema de mercadeo y distribución. El propósito principal del estudio fué la de investigar las preferencias alimenticias isleñas en diferentes niveles socio-económicos y poder interpretar ambos factores que afectan los hábitos de consumo del pescado entre los habitantes de St. Vincent.

En la recopilación de datos he dependido primordialmente de un cuestionario hogareño consistente en: (1) información personal; (2) información de la dieta hogareña; (3) la importancia de la carne en oposición al pescado; y (4) el grado de "afición" (o preferencia) para 35 diferentes clases de peces evaluados en una escala de uno a cuatro.

La encuesta hogareña claramente identificó: (1) especies de peces altamente estimados; (2) especies de peces más populares en los hogares de bajos ingresos; (3) alimentos marinos que son localmente asequibles y generalmente baratos, pero cuya demanda está limitada debido a la resistencia del consumidor a su gusto, color, textura y preparación; (4) alimentos marinos generalmente escasos en los mercados pesqueros; (5) la relación de demanda entre "pescado salado" y localmente pescado; (6) en la distribución de los mercados pesqueros de St. Vincent.

THE PROBLEM

The success of fish marketing schemes and projects in the Caribbean region depends, to a large extent, on good local knowledge of fish preferences and prejudices (likes and dislikes) for various edible marine products. Habits of fish consumption and the demand factors that affect those habits (environmental, economic, cultural/historical and psychological) are

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complex and vary considerably from place to place in the Caribbean islands and mainland coasts. There is also a significant variation in the kinds of seafood demanded and purchased by different cultures and socio-economic groups in the region. A cursory glance at the Caribbean fish markets reveals a wide range of choice and demand for different kinds of seafood. For example, whale meat is highly regarded in Bequia Island and parts of St. Vincent, but it is virtually unknown in other places in the Caribbean. Shark meat is becoming an important flesh food in Trinidad, but it meets stiff consumer resistance elsewhere. At the same time, some fish (for example, red snappers, Spanish and king mackerel, dolphin, and "salt fish" imported from Canada) enjoy widespread popularity and demand in the region.

Unfortunately, the above-mentioned complexities of the Caribbean fish markets are often not considered in development schemes. Social scientists have yet to do empirical studies on the nature and distribution of fish consumption habits in the Caribbean and other developing regions, and the ways of thinking and behaving about seafoods that are peculiar to each place, culture and socio-economic group. The lack of fish marketing intelligence at the local or community level is a major obstacle to realizing the potential of fish markets and may even result in the collapse of fish marketing projects. For example, in 1961 the British-sponsored Colonial Development and Welfare Organization planned and financed the construction of a fish collecting station on the island of Canouan, in the Grenadines, near the southern extremity of the Lesser Antilles. At the station, fish were purchased from Grenadine fishermen, stored in cold storage lockers and then transported by motor vessel 50 km to the primary fish market at Kingstown, St. Vincent. But few fish were sold, and after a brief period of operation the fish collecting scheme was bankrupt. The main reason given by government officials for the collapse of the scheme was that Vincentians exhibited a strong prejudice against purchasing chilled and iced fish, since they felt that only "bad" fish were treated in this manner, and that chilling, icing or freezing fish adversely affects its flavor and resulted in a product having less nutritional value. The bias against iced fish is undoubtedly due to the fact that vendors frequently place their fish in ice after they have been exposed for sale and have already begun to spoil. They are then iced overnight for possible sale the next day.

Vincentians, like other people living in the Caribbean, are normally highly cautious in making purchases of fish. Although many species of seafood are available to Vincentians, less than a score of species are preferred by the majority of the consumers and only if these same fish are sold fresh and show no signs of discoloration of the eyes, or other evidence of decomposition. Tradition is also an important factor in determining preferences for fish. Vincentians are unlikely to make a purchase unless they are well-acquainted with the fish through long and well-established use in their diet, usually through several generations.

The above complexities of fish consumption habits in the Caribbean demand further investigation. In 1974, I undertook geographical field work in St. Vincent for the purpose of investigating the island's fish preferences and prejudices, and to attempt to understand the economic, cultural and

organoleptic factors that may account for the fish consumption habits of its inhabitants.

ST. VINCENT FISH MARKETING SYSTEM

St. Vincent is representative of neighboring Windward Islands (Grenada, The Grenadines, St. Lucia, Martinique, Dominica) in possessing a small-scale fishery and a relatively simple fish marketing and distribution system, in which the bulk of the fish is sold fresh to customers on the beaches or through fish stalls located at population centers.

The primary fish marketing facility is Kingstown (population estimated at 25,000), which is dependent on two sources for fish: local production from the west coast of St. Vincent, and area imports from the northern Grenadine Islands, lying south of St. Vincent. Local production supplies mostly schooling fish caught by beach haul seines and smaller quantities of porpoise, "blackfish" or pilot whales, tuna, jacks and sharks. Except for some Carib Indian fishing activity at Sandy Bay, there is little fishing on the exposed east coast of the island. The Grenadines yield mostly higher priced fish caught by deep-water handlining and trolling (snappers, grouper, kingfish, dolphin).

Secondary fish marketing facilities (both open beaches and stalls) are located at several points on the south coast, the island's resort center and high-income residential area, the west coast settlements of Layout, Barrouallie, and Chateaubelair and Bequia Island in the Grenadines (Fig. 1). A small amount of seine-caught fish is also transported by car from the west coast landing sites to open air markets in the interior and to east coast settlements.

At present, St. Vincent's fishery is operating at a low level of efficiency. Fishermen are often frustrated in their efforts to find reliable and profitable markets for their catch. Gluts occur frequently, resulting in large losses of fish, while at other times fish is in short supply. Government attempts to establish a central outlet for fish, in which fish is purchased from the fishermen, stored and sold at regulated prices, have failed. In 1974, one official estimated that over 80% of the nearly 1 million kg of fish landed in St. Vincent was sold on the "black market," outside the fish collecting facility in Kingstown, and at prices above the maximum set by the authorities.

METHODOLOGY

The data on St. Vincent's fish consumption habits were gathered mainly from a household questionnaire which was divided into four parts: (1) personal information; (2) questions pertaining to the importance of fish in the diet of the informant and members of the household; (3) the informant's "degree of preference" for selected kinds of seafood available in the fish market; and (4) the informant's reasons for his preference for each seafood listed in the questionnaire.

A total of 35 species and families of seafood, and several categories of fish preparations (for example, "iced fish") were selected for the questionnaire (see Table 1 for the list of seafood and fish preparations used in the survey). The sample of 35 fish was selected from 60 or more species available in St.

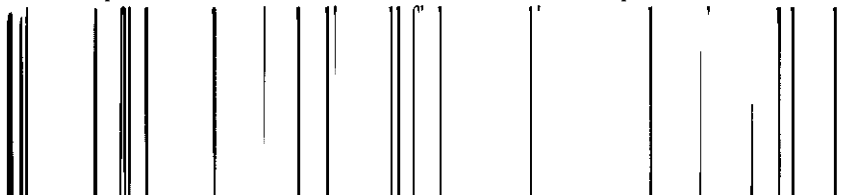


Table 1. Categories of Fish Preferences

Category I Fish with an average rating of over 3 (very good to excellent)*

redfish or snappers	<i>Lutjanus</i> spp.
blem or bream	<i>Etelis oculatus</i>
red hind	<i>Epinephelus guttatus</i>
grouper	<i>Epinephelus</i> spp.
kingfish or king mackerel	<i>Scomberomorus cavalla</i>
dolphin	<i>Coryphaena hippurus</i>

Category II Fish with an average rating of 3 or slightly below (good)*

jacks, jackfish or bigeye scad	<i>Selar crumenophthalmus</i>
robin or round scad	<i>Decapterus punctatus</i>
cavalli	<i>Caranx</i> spp.
bonito	<i>Thunnus</i> spp.
barracuda	<i>Sphyraena barracuda</i>
cod/dried, salted	<i>Gadus morhua</i>

Category III Fish and fish preparations with an average rating of above 1, but less than 2 (fair or somewhat poor)

iced or chilled fish	any species
corned fish or locally cured fish	any species
porpoise	mainly <i>Stenella</i> spp.
blackfish or pilot whale	<i>Globicephala macrorhyncha</i>
ballyhoo or half beak	<i>Hemiramphus</i> spp.
gar	<i>Tylosurus</i> spp.
skipjack	<i>Katsuwonus pelamis</i>

Category IV Fish with an average rating of less than 1 (unacceptable)

shark	
mainly dusky, brown, blackfin	<i>Eulamia</i> spp.
reef fish	
redman or squirrelfish	<i>Holocentrus</i> spp.
parrot fish	<i>Scarus</i> spp.
angel fish	<i>Holacanthus</i> sp.
croaker or drum	<i>Sciaenidae</i> spp.
small fish	
jacks (less than 16 cm)	<i>Selar crumenophthalmus</i>
robin (less than 12 cm)	<i>Decapterus punctatus</i>
anchovies	<i>Anchoa</i> spp.
sprat	<i>Harengula</i> spp.

*Seafoods with a good or excellent rating seldom available in the fish market: humpback (*Megaptera novaeangliae*); spiny lobster, conch, hawksbill turtle.

weight of 1,500 kg and selected seafoods that were sold only in small quantities; namely, humpback whale meat, spiny lobster, conch, turtle, shark and 5 species of "reef fish."

With some exceptions (whale meat, shark, shellfish, turtles and all fish preparations), the fish enumerated in the household survey were selected from the "Fresh Fish Schedule" under the Statutory Rules and Orders of St. Vincent, that established maximum wholesale and retail prices for different

grades of fish sold in the island's fish market. Some of the "fish" in the questionnaire were lumped together in families (for example, snappers, cavalli, sharks), rather than identified as individual species.

For each of the 35 seafoods listed in the survey, the informant was asked to state his/her degree of preference, based on the following numerical rating: 0-never ate it, 1-unacceptable (doesn't like), 2-acceptable (fair), 3-good (like), and 4-excellent (like very much). Following the numerical rating response, the informant was asked the following questions: (1) for fish rated "0" — "Why haven't you ever eaten the fish?" [If a negative comment was given, the comment was noted, and the fish was rated as "unacceptable." If the fish was simply unknown to the informant, the rating was left at "0"]; (2) for fish rated "1" — "Why don't you like the fish?"; (3) for fish rated "3" and "4" — "Why do you like the fish?" The above reasons given by the informant for his/her preference ratings were reinforced by the following questions: "What is your (or your family's) favorite fish?" "Why?" And, "What kinds of fish did you eat (or serve) over the past 7 days, and why did you select these fish?"

The question why people prefer particular kinds of fish over others is rather complex, involving both cultural and psychological aspects (such as traditional foods and individual preferences caused by childhood experiences), as well as the availability of fish in a particular area, problems of transportation, and economic considerations. The usual informant is often unable to define the values which govern his/her choice of fish because they are not thought of explicitly, but are part of a non-verbal implicit system of reference. The usual frames of reference are: (a) taste and other organoleptic factors, (b) status, (c) money and (d) health. The interviewers were asked to pay particular attention to offhand comments on the above values attached to different kinds of fish and to note them when they were expressed by the informant.

Limitations on time permitted the use of only 48 questionnaires of which half were located in Kingstown and outlying neighborhoods, and the remainder in the south, west and interior portions of St. Vincent, and in Bequia Island. The interviews each averaged over an hour and included every major socio-economic group and occupational category in the mini-state. Two able assistants with health and nutrition backgrounds, and well-acquainted with Kingstown, interviewed 30 of the 48 households. As expected, the interviewers met some resistance from a number of informants that resulted in sketchy notes, but others provided good, incisive comments on their fish consumption habits, their fish preferences and reasons for their preferences. These comments, together with the data gathered from approximately 30 other respondents, including fishermen, fish vendors, shopkeepers and government officials, provided the bulk of the material used in this study.

In addition to the interviews, an important part of this study was to define, generally, the islands' fish marketing areas, based on place-to-place differences in the fish consumption habits and preferences for the various kinds of seafood (see Table 2 and Fig. 1).

Table 2. Distribution of Fish Markets in St. Vincent

Market Area and Population Range	Occupation/Income Groups	Importance of Fish in Diet	Major Fish Consumed	Other Fish Consumed
I. KINGSTOWN -high and middle income neighborhoods, under 10,000	High and middle income. Professional people. Property owners, business, clerks, government employees, skilled laborers.	Moderate fish consumption; at least three times weekly for middle income; less for high income.	redfish, hind blem, dolphin, kingfish.	bonito, cavalli, grouper, barracuda spiny lobster, turtle, whale meat.
II. KINGSTOWN -low income neighborhoods, 15-20,000	Low income, and high unemployment; unskilled laborers.	Moderate fish consumption, but erratic, depending on financial situation.	jacks, robin, cavalli, salt codfish.	blackfish, porpoise, skipjack, corned fish, ballyhoo, conch, turtle, whale meat, reef fish.
III. LEEWARD COAST -(other than Kingstown) 25-30,000	Mostly low incomes. Agricultural laborers, fishermen; some shopkeepers.	High fish consumption. Fish eaten five or more times weekly.	jacks, cavalli, redfish, robin, blackfish, porpoise, salt codfish.	ballyhoo, bonito, skipjack barracuda, reef fish, shark.
IV. SOUTH COAST under 5,000	Mostly high and middle income. Professional people; businessmen; residential tourists.	Moderate fish consumption, at least three times weekly.	Basically same as "I".	Basically same as "I".
V. INTERIOR AND WINDWARD COAST 35-40,000	Mainly low income. Agricultural laborers; small farmers, a few shopkeepers.	Low consumption, except for small amounts of salted cod eaten regularly.	salt codfish; fresh and iced jacks robin.	very little of any other kind of fish.
VI. ST. VINCENT GRENADINES 6,000	Low and middle income; few high income. Mostly seamen and fishermen; some shopkeepers, resort owners, resort workers, and service personnel.	Very high fish consumption. Fish eaten at least once daily by most people.	redfish, blem, kingfish, dolphin, cavalli, bonito, hind, grouper, barracuda.	robin, ballyhoo, reef fish, turtle, conch, spiny lobster, whale meat.

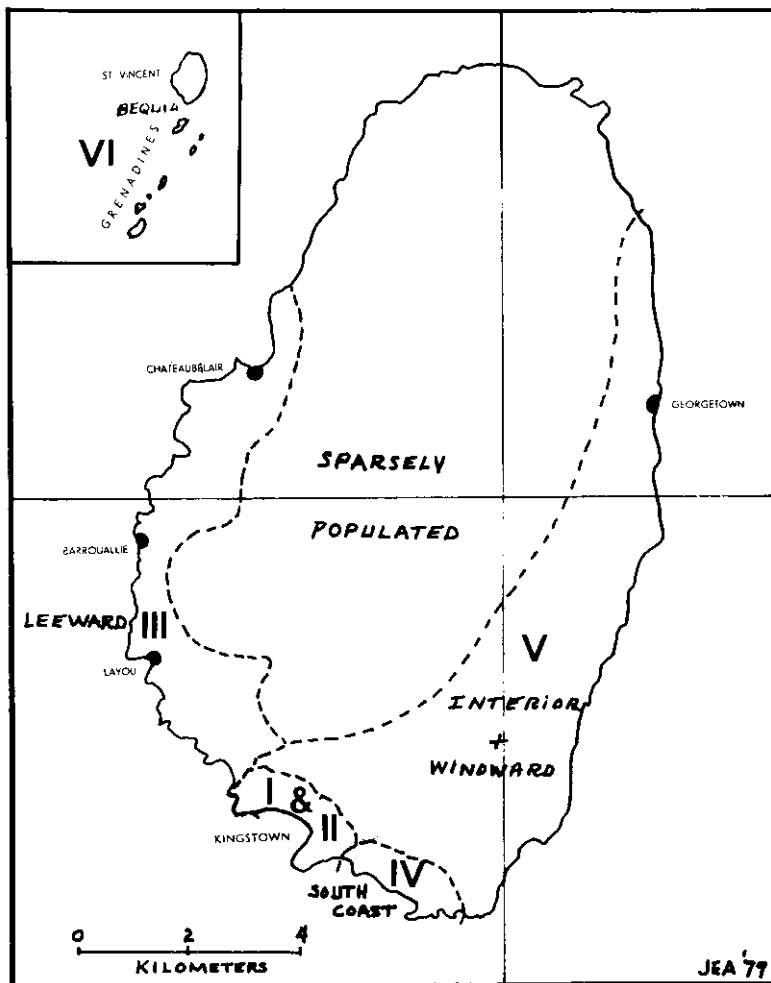


Figure 1. St. Vincent marketing areas and population ranges.

Categories of Fish Preferences

The numerical ratings for each seafood sampled in the questionnaire were averaged and grouped into four fish preference categories, ranging from excellent, or most highly liked fish, to unacceptable, or least liked fish (see Table 1 "Categories of Fish Preferences"). Significantly, the most popular fish (Categories I and II) were in a tight average range of between 2.7 and 3.6 out of a possible 4.0, while the highest rating of fish in Category III was only 1.9, leaving a wide gap (from 1.9 to 2.7) between fish that were considered "good" or "excellent" and fish rated as only "fair" or "unacceptable."

The four fish preference categories and the informants' reasons for their preferences are described below under "Opinion Survey Results," followed by a discussion and interpretation of the results.

OPINION SURVEY RESULTS

Category I: Fish most highly valued by Vincentians, with nearly 90% of the informants reporting a "3" or "4" rating (good or excellent), are listed in Table I. In their evaluation of the high-ranking fish, consumer comments focused mainly on sensory factors. All the fish listed in Category I were reported as having the following positive qualities: "sweet" taste, "strong" or firm texture and "pure" or white color.

Informants described the flesh of redfish (snappers) and blem as being "sweet," "moist" and of good taste. Large-size specimens of both species were preferred because they were less "bony" and the flesh lifted easily from the skeleton. Red hind was liked for its flavor, firm texture and keeping-qualities, in that it didn't "taint" as fast as other fish. Groupers were liked for their sweet taste, moist flesh and ease in steaking.

Dolphin was preferred for its long, white flakes, separated easily from its large bones, its white color and flavor. Kingfish (king mackerel) was highly esteemed for its moist, fine texture, delicate flavor and aroma, but according to several informants, the flesh had to be basted liberally with lime juice to reduce its oil flavor and "firm up" the flesh. Kingfish and dolphin also had the frequently mentioned and preferred qualities of being large fish, easy to cut and relatively free of bones.

Based on the survey results, the main consumers of fish in Category I were middle income people, of whom the majority reported having served the highly preferred species two or more times in the 7 days preceding the interview. By contrast, high and low income informants reported eating the fish less often.

Low and middle income groups thought of the highly-rated fish in prestigious terms, in that the fish were served on Sundays and holidays, on special occasions and to guests, in competition with other flesh foods.

A common complaint among all segments of the population, as noted in the interviews, was that certain kinds of fish in Category I were often scarce or unavailable for long periods of time in the market. A second criticism, heard most often among low income and middle income informants in St. Vincent, was the excessively high retail price of the fish, which in 1974 was being sold by fishermen and fish vendors, on the black market, at prices substantially above the government price controls set at 95 cents (E.C.), valued at 50 cents (U.S.), per pound (454 grams) live weight for "Grade I" fish. In Bequia, none of the informants mentioned any significant problem with fish in Category I. The same informants said they had good access to the fish and reported eating the well-liked species at least three times weekly.

Category II: Fish listed in Category II (see Table 1) received different numerical ratings depending largely upon individual incomes. High and middle income households tended to rate the fish in the "acceptable" or "2" range, while the majority of low income households gave the same fish at least a "good" or "3" rating, providing the fish were in good condition at the time of purchase and not of small size.

Two seine-caught fish, jacks and robin, comprised between 40% and over 50% of the total annual fish production of St. Vincent, the bulk of which were consumed by poor families living in Kingstown and the west coast

settlements. The low income informants commented favorably on the eating qualities of jacks and robin, but gave preference to large-sized jacks over robin and smaller specimens of both species. According to one fish vendor, jacks having a length of less than 16 cm and robin with less than 12 cm had virtually no demand, because consumers regarded the small-sized fish as being "fleshless" and full of small bones. In addition to the positive sensory qualities, several informants living in Kingstown and other west coast settlements commented favorably on the fact that jacks and robin were usually available and in good supply in local markets. There was, however, considerable criticism of the rapidly rising price of the seine-caught fish, although they were at least 50% cheaper than fish in Category I.

Cavalli and bonito (*Thunnus* spp.) were not as well liked by the general population as redfish, dolphin and other fish listed in Category I; however, there was wide individual disagreement in the preference ratings awarded to the two large families of fish. The majority of low-income informants in St. Vincent and most of those interviewed in the Grenadines liked the "strong" flavor of cavalli and bonito and to some, the rich flavor, as well as the dark color of the flesh, denoted good nutritional and health-giving qualities. The detractors, mainly those with middle and high incomes, recognized the same features for cavalli and bonito, that is, dark flesh and strong-tasting, but discussed them in negative terms. Some commented that the fish were too rich to eat and upset the stomach, while others stated that the fish had a bad flavor and smell.

Like cavalli and bonito, the individual preference ratings for barracuda were sharply contrasting. Approximately one-third of the 48 respondents interviewed in the survey had never eaten barracuda, of whom 7 believed the fish to be poisonous. Most of the remainder (23) gave the fish a "good" or "excellent" rating, commenting mainly on its firm texture, good taste, lack of small bones and ease of preparation for cooking. Nearly all the Bequia informants liked the fish and ate it regularly, while Vincentians gave mixed preference ratings that cut across all income levels.

In 1974, St. Vincent imported from Canada nearly 230,000 kg of dried, salted codfish which, on a fresh weight basis (estimated at 800,000 kg before processing), was nearly equal to the amount of fish produced locally. Unlike the seafoods produced locally, salted codfish or "salt fish" was widely distributed and sold in all parts of the state of St. Vincent, except for its Grenadine dependencies. The product was given high preference ratings among agricultural laborers living in the interior and unskilled and semi-skilled workers residing in the towns and villages. Lower preference ratings were reported among middle and high income informants. The positive sensory qualities of salt fish focused on its aroma and taste, described as "spicy" and its flaky texture. Frequently mentioned non-sensory qualities were its keeping-qualities, a "no-worry" product that could be stored away in the cupboard for a long time without becoming tainted, its easy availability (only walking distance to a nearby shop) and the fact that it could be purchased in small quantities, from 0.25 to 0.5 lb (116-232 grams) at a time, which didn't require a large outlay of cash. Like jacks and robin, the main criticism of salt fish was its high price. Although a significant number of

middle and high income households reported eating salt fish, they did so only occasionally and liked it less than any of the fish listed in Category I. Several of the informants thought that salt fish was a "country food" or the kind of food that country people eat, while others thought it was too salty, "fresh" or fishy-tasting.

Less than 15 of the 48 informants reported eating each of the following seafoods: humpback whale, conch, spiny lobster and hawksbill turtle. These seafoods were generally highly regarded for their sensory and eating qualities but they were seldom available in the market.

Only nine informants, five from St. Vincent and the remainder from Bequia, mentioned eating the flesh of humpback whales, which were caught and processed by a small Bequia fishery. All nine interviewees gave a good or excellent preference rating to whale meat, and compared its taste and texture to beef. Five other informants, all Vincentians, refused to buy or eat whale flesh because they were repelled by its red color and strong smell.

Conch was also well-liked by all the Bequia informants and five others from St. Vincent, who purchased or gathered the seafood on an irregular basis. In addition to good taste, especially when served in a spicy stew, the meat was thought to be good for increasing one's strength and virility. The remainder of the informants (39) interviewed in the household survey had never purchased or tasted conch and made no negative comments about it.

Spiny lobster commanded the highest price of any seafood in St. Vincent and Bequia. Most of the catch was transported from the Grenadines to St. Vincent, where it was sold to restaurants, hotels and other resort establishments. A small amount of spiny lobster was also purchased by high income informants who characterized the seafood as a delicacy, served on Sundays and special occasions. Only a few of the middle income and low income informants reported buying it.

Turtle meat (mainly from the hawksbill) was also highly preferred for its culinary qualities of taste and texture. Fourteen informants, representing all income groups, reported eating it, and buying it when it was available. The green turtle (*Chelonia mydas*) was not listed in the survey because of its rarity. *Category III*: The seafood types listed in Table 1, Category III, had limited demands and shared generally low ratings on the preference scale. Except for iced jacks and robin which had fairly widespread distribution, the market for the Category III seafoods was limited to low income households located in Kingstown and other west coast settlements.

Iced fish received "fair" and "unacceptable" ratings, together with the following comments: "it has no taste," "tastes bad," "it is tainted," and "it's not good for you." There were no positive comments.

Informants also negatively evaluated "corned" fish (locally caught fish that has been cured by salting and drying), commenting mainly on its poor keeping qualities, coarse texture, strong smell and flavor and the fact that the product was often "tainted," or partially decomposed when offered for sale.

An estimated 4,000-5,000 kg of porpoise meat was sold in St. Vincent in 1974. The meat, sold fresh, retailed from \$1.00 to \$1.40 (E.C.) per kilogram, making it one of the cheapest seafoods in the island. However, few informants ate the meat on a regular basis, and the preference ratings were low. Negative

comments focused on the appearance of the meat, described as "dark" and "bloody," and its sensory qualities, characterized as having a "soft," mushy flesh and a peculiar smell, "not like other fish" (most Vincentians thought of porpoise as a kind of fish). Bequia informants gave porpoise a higher rating, but the only positive qualities of the seafood mentioned by Vincentians were its cheap price and availability in Kingstown, and Barrouallie, where most of the porpoise was caught by a small whaling fishery.

The same fishery (above) specialized in the hunting of "blackfish," the local name for pilot whales, which were cured by salting and drying for the market in Kingstown and other west coast communities. Although corned blackfish was the cheapest source of meat in St. Vincent, retailing in 1974 for less than \$1.00 per kg, it had only limited appeal, even to the low income informants, who reported being repelled by its rank, strong odor that smelled like it was partially spoiled, and the unhygienic way in which the meat was displayed. Approximately half of the low income respondents of St. Vincent never ate blackfish, nor did any of middle and high income individuals. In Bequia, blackfish meat was an unknown product.

Ballyhoo, or halfbeak, was almost exclusively consumed by low income respondents in St. Vincent having good access to the coast and the primary fish market in Kingstown, although it had only a fair preference rating. Respondents noticed that it was a "clean fish" (not much guts in it) but it was bony and didn't have much flesh.

In 1974, skipjack landings exceeded 1500 kg. Preference ratings among the three informants (all from St. Vincent) who recognized the fish were low, but no specific reasons were given for the low ratings.

Category IV: The fish in Table 1, Category IV, including shark, "reef fish," and "small fish," had virtually no demand. At least 80% of the informants had never eaten the seafoods, or found them "unacceptable."

Only one informant, from St. Vincent, reported eating shark meat, but only after the fisherman who landed the shark convinced him that the meat was good to eat and made suggestions on how to cook it. Since then, the informant stated that he had been "looking for shark to buy because the meat is good to eat and it costs next to nothing." Most fishermen, interviewed outside of the survey, admitted catching shark occasionally, when trolling for other fish, and dispatching them at sea, because there is no one to buy them. However, two fishermen kept shark for their own use, citing its firm texture, lack of bones and ease in preparing the meat for cooking.

St. Vincent's population tend to resist purchasing shallow reef fish. The majority of persons interviewed were not accustomed to eating reef fish and could not identify by name most of the reef species that appeared in the "St. Vincent Fish Schedule" that listed the fish for sale and their maximum retail prices in the island. Examples of frequently unidentified fish were: redman, parrot fish, angel fish, old wife, and croaker. One informant grimaced at the thought that anyone would buy a fish named "old wife," equating the peculiar name of the fish with its desirability as a food. Others mentioned that reef fish were too small to have much meat. In contrast to St. Vincent, the Bequia informants were able to identify most of the reef fish and gave a somewhat higher, though mixed preference rating, for each individual species.

As previously stated, there was no demand for small fish of scarcely any species — even when the fish was offered at low prices. Informants explained that small fish were bony, coarse, hard to prepare for cooking and lacked sufficient flesh for good eating. However, several of the persons interviewed, outside of the household survey, stated that they used sprats and small jacks and robin for bait, or as a “mask” for chumming.

Interpretation of the Survey Results

The eight species and families of fish listed in Category I comprised from 12-15% of the total fish production (by weight) of St. Vincent and area imports from the northern Grenadines, for an estimated total of between 120,000-150,000 kg of fish. Still, the supply of the highly-preferred fish was greatly exceeded by the market demand which, together with strong inflationary pressures, has resulted in more than a doubling of the retail price of the fish in a 10-year period from \$1.10 (E.C.) per kilogram, live weight, in 1964, to at least \$2.50, valued at \$1.25 (U.S.), in 1974.

Part of the problem of fish scarcity in St. Vincent was due to the fact that nearly all of the fish, traditionally imported from Bequia and sold by Bequia fishermen in Kingstown, were being diverted to Martinique by trading vessels. At the same time, Vincentian fishermen were selling an increasing amount of their redfish, blem, dolphin and kingfish to restaurants and resort facilities on the south coast, reducing the amount available for local customers. Fortunately, however, the demand for certain species of the highly valued fish was being met, to some extent, by fishermen from the neighboring island of St. Lucia who were engaged in deep-water handlining for redfish, grouper and blem in the waters east of St. Vincent and the northern Grenadines for the market in Kingstown.

The fish in Category I had widespread acceptance and demand in both St. Vincent and its dependency, Bequia, cutting across all income levels. The fish were not only highly-esteemed for their sensory characteristics, described earlier, but they were also high-status foods, which heightened their market appeal to all the income groups.

As noted before, the main consumers of fish in Category I were the middle income households. By contrast, the high income households tended to make larger purchases of beef, including imported cuts, pork, frozen meats and less of fish, while the low income households, representing over half of the island's population, couldn't afford to buy the high-priced fish on a regular basis and only if they had good access to the landing sites. Virtually none of the fish were distributed inland and relatively little was available to the poor, west coast settlements north of Kingstown. The great bulk of the fish was sold fresh in Kingstown and in the high-class residential and resort areas on the south coast. Only Bequia, with good access to well-stocked fishing grounds and having a sizeable force of highly skilled fishermen, had a reasonably good supply of the fish. But, even in this island, complaints were voiced that fish was in short supply because so much of the catch was being sold to Martinique.

The fish in Category II is the working man's fish, with nearly the entire amount being consumed by agricultural laborers, small independent farmers,

and unskilled and semi-skilled laborers in the towns, and even having some acceptance in the middle class households. The fish in Category III comprised nearly 80% of the total weight of fish consumed in St. Vincent, (including "salt codfish" converted to its fresh-weight equivalency).

The popularity of "salt fish," jacks and robin stems from an unusual combination of cheapness, availability, preferred taste and texture and use in traditional dishes. Since early colonial times the mainstay of Vincentian flesh foods has been dried, salted codfish or "salt fish," imported from mainland North America. One outstanding advantage of salt fish over local fish was its superior keeping qualities in which the fish could be stored for an indefinite period of time without deterioration. It was also the cheapest source of protein in the plantation islands and laborers soon developed a liking for its agreeable flavor and strong aroma. A traditional saltfish dish is "boujou," which consists of pieces of codfish added to cucumbers, tomatoes, cooking oil and spices, and eaten with breadfruit and other starchy foods.

Salt codfish is the only fish with island-wide distribution, being sold from the ubiquitous "shops," or small retail outlets that are often located in places difficult to reach with fresh fish. Thus, easy availability, together with keeping qualities and taste, is a key factor in explaining the popularity of the imported fish.

The advantages of dried, salted codfish over other flesh foods appear overwhelming, but the precipitous increase in the price of cod in recent years, from \$1.10 cents E.C. a kg in 1964 to over \$3.30 a kg in 1974, has prompted low income households to substantially reduce their purchases of the imported fish and to increase their demand for the lowest priced fish produced locally. The critical demand for cheap sources of protein in St. Vincent has focused mainly on jacks and robin, which, in 1974, had a retail price at only 36% of the price of codfish (based on non-converted weight). The "seine fish," mainly jacks and robin, have long been consumed by the island's inhabitants and their use in traditional food dishes is an important factor in their popularity. The following statements, written in the 1830's by a visitor to St. Vincent, are still applicable:

"how many families are there at this moment, whose dinner consists daily of jack-fish and either a roasted plantain or yam. The jack-fish is indeed an excellent fish, resembling the herring in size and somewhat in flavour also. The [Negroes] are very fond of jackfish and it is the colonists daily fare."

Then, as now, a favorite midday meal of Vincentian households is "boilene," a nutritious fish stew in which gutted fish is "cooked up" in potatoes, tannias, dasheens, yams, rice, and served with breadfruit and plantains. In St. Vincent the most common fish served with boilene is jack-fish. Interestingly, the desirability rating for jacks was higher than that for saltfish. This is contrary to the popular notion that West Indians universally prefer to eat the imported codfish over fish caught locally. Some informants pointed to the excessively salty taste of the saltfish (which had to be leached in water) and to its dryness (oil had to be added), features not found in fresh fish. On the occasions when seine-caught fish were delivered fresh to country settlements, customers often returned recently purchased salt cod fish to the shops for a refund and used

the money to buy a cellophane package of the seine fish.

One peculiar feature of jacks, robin and salt codfish is their mixed preference ratings given by the different income groups, with low income households assigning higher values to the fish than the higher income households. The chief reason for the mixed preference ratings is that the seine-caught fish and imported cod have long been cheap, staple flesh foods in the diet of poor Vincentians, while those with higher incomes tend to purchase the more expensive fish caught by handlining and trolling. As such, jacks, robin and salt fish are identified among the higher income groups as the "workingman's fish," fish of the laboring population, or of the "country people," and therefore have less status (and a lower preference) than the high priced fish. Among the low income households, the same fish are seen as almost necessities and remain popular and highly preferred kinds of seafood, despite the fact that they are not "cheap" fish today.

The mixed preference ratings for cavalli and bonito seem to be based more on individual tastes than by income group. A significant finding is that, contrary to majority opinion, some individuals seem to prefer fish having dark meat and strong flavor and aroma to those with white meat and more bland flavor and aroma. The dark-fleshed and strong flavored fish were also thought to be more "healthy" and "better for the blood" than seafoods not having these qualities. Barracuda also had mixed preference ratings, cutting across all income levels. It was the only fish identified in the survey that was not eaten because of the fear that the fish was poisonous.

In Categories III and IV are included "underutilized" seafoods and fish preparations which are relatively cheap and often available in the fish market but whose demand remain low and erratic because consumers are repelled by certain organoleptic factors, characteristic of these seafoods. The fish in these categories comprised less than 10% of the total fish production of St. Vincent, of which porpoise, "blackfish," and "iced fish" were the most important.

One of the distinguishing features of meat consumption habits is St. Vincent is the utilization of cetaceans. Specifically, this includes various species of porpoise, short-finned pilot whales and humpbacks (*Megaptera novaeanglie*). Cetaceans were first hunted in the Windward Islands by New England whalers in the 18th and 19th centuries and, through culture contact with the Yankees, a number of West Indians learned boatbuilding and whaling technology. Small whaling fisheries were established in Bequia in the 1860's and, shortly after the turn of the century, in Barrouallie, a farming and fishing settlement located 20 km north of Kingstown. In a typical year Barrouallie whalers land over 200 blackfish, which are butchered and "corned" for sale, mainly for the Saturday market in Kingstown. In the course of chasing blackfish, whalers harpoon a fairly large number of porpoise and its flesh is sold fresh in Kingstown and west coast settlements. A small humpback fishery is also located in Bequia. Although the flesh of the humpback is highly regarded and commands a high price in St. Vincent, where it is called "beef," it is available in Kingstown only a few months every 1 or 2 years. In contrast to humpback meat, porpoise and corned blackfish are available throughout the year and the meat of both is inexpensive, selling for approximately \$1.00 (E.C.) per kg, or less than the retail price of jacks. Still,

in 1974, the demand was low because of the aforementioned negative sensory factors. Efforts to sell porpoise in the country were unsuccessful because the inland populations were unaccustomed to preparing or eating its flesh, while a good demand for the cetacean existed in Bequia which had a long and well-established tradition of eating the flesh of sea mammals.

Another underutilized food resource was blackfish. The main drawback to increasing the consumption of blackfish was the poor method of its preparation and display. The corned blackfish meat was sold in bundles consisting of several strips of charcoal-colored meat of uneven size and quality and displayed in large baskets set on a crowded street near the Kingstown fish market. The appearance of the meat covered with flies and its strong rank odor turned away all but the poorest customers. Informants commented that more of the product would be sold if the vendors would simply salt and dry the meat uniformly and display their product more attractively under hygienic conditions.

The negative aspects of iced fish have already been discussed, but the long Vincentian bias against the product appears to be breaking down, particularly among inland populations that have poor access to the fish landing sites. In recent years, fish vendors have made successful trips into the interior and east coast settlements with jacks and robin packed in crushed ice. However, one agricultural laborer noted that "ice fish is being forced on us, we like fresh fish better when we get it." In St. Vincent, at least, cheap, fresh fish remains the favorite fish of the majority of the island's inhabitants, over any kind of processed fish.

Locally cured fish was only occasionally available in the fish markets and the few informants who tasted it reported that the product was of uneven quality, often "tainted," and had poor keeping qualities. It was much inferior to the dried, salted codfish of Canada. In St. Vincent, most of the corned fish was consumed by fishermen and members of their household, for personal use rather than for sale.

Species of shark, gar, ballyhoo and a wide variety of reef fish had little commercial value and were generally unavailable in the leading fish markets. The bulk of this seafood was consumed by fishermen themselves, or was traded near the fishermen's residences at beach landing sites. In contrast to many places in the Caribbean, St. Vincent's population tend to resist purchasing shallow reef fish. The majority of persons interviewed were not accustomed to eating reef fish and could not identify by name most of the reef species that appeared in the "St. Vincent Fish Schedule" that listed individual species for sale in the island.

SUMMARIZED RESULTS OF SURVEY

Fish consumption habits vary significantly even within small areas; different geographical breakdowns are needed to distinguish the different markets for different kinds of fish and fish products. For example, the study clearly depicted a considerable difference in fish preferences and fish consumption habits between Bequia and the west coast of St. Vincent, and between Kingstown and the interior portions of the island, even at the same income level.

Those fish of large size, white solid flesh exhibiting a "sweet" flavor and pleasant odor were given the highest preference ratings. Another group, of medium size, with darker, softer flesh and more strongly flavored were in less demand. The smallest sizes, with small bones and coarse texture, were least preferred.

In St. Vincent, with a generally homogeneous population, the chief differences in fish consumption habits are among different income groups rather than race, culture or ethnic affiliation. There existed significant individual or personal preferences for certain kinds of fish which exceeded general fish preferences based on income groupings. Thus, some individuals rated cavalli, bonito and barracuda as excellent, while others rated the same species as poor or fair.

An important subjective factor in explaining the preference rating for each kind of seafood is the status value attached to that seafood. In St. Vincent, the high status fish (species in Category I) are in high demand by all segments of the population, including low-income households. This creates a heavy demand pressure for relatively few species of fish and constant scarcity of the high status fish. In contrast, the low status fish, or fish associated with "country people" and "laborers" (species in Categories II, III, and IV), tend to be underutilized, although their nutritional value may be equal to the high status and high priced fish.

A second subjective factor in determining the preference for fish is its sensory qualities, which in some instances are more important than price and income level in determining what kind of seafood will be purchased. To illustrate, the study identified several cheap sources of seafood (porpoise, pilot whale, shark) which were shunned by the majority of poor people because of their aversion to certain features of the marine life, including its flesh color, taste, texture, smell and names' connotation. The sensory factor in determining demand also applies to the way the fish is prepared and displayed for sale. The trade in blackfish was seriously hampered by the unhygienic conditions in which it was carried out, and all locally cured seafoods were of inferior quality.

The preference for each type of seafood or species is closely related to the availability over several generations of use. In St. Vincent, the fondness for jacks has long been established for populations living on the west coast, having good access to sheltered and well stocked fishable waters.

The price of fish and income levels are obviously important determinants of demand. As noted, the demand for the traditional saltfish has eroded somewhat among the inland populations of St. Vincent as a result of its high price, while the demand for the non-traditional but cheaper iced fish has increased. The low purchasing power of St. Vincent's population is the main factor in inhibiting the consumption of both local and imported fish. Even the lowest-priced species of fish are too expensive to be eaten on a regular basis by a substantial number of low income people.

The study identified several species of underutilized seafood in St. Vincent (namely, porpoise, short-finned pilot whales, shark, certain reef fishes and tunas) that were not being exploited to a greater extent because of low or no demand. At the same time, some species of snapper and grouper were being

fished heavily in the northern Grenadines to help satisfy the high demand for these species. Less than 20 species of fish were in good demand in St. Vincent, from 60 or more species that were available to the island's inhabitants.

It was clear from the survey that, with the exception of a few selected and well-known species, the majority of interviewees were unaware of the kinds of fish available to them. This points to the fundamental lack of "fish knowledge" in the island, and to the lack of education and advertisement in promoting fish as an important part of the diet. The ignorance about local fish and how to prepare them were undoubtedly important factors in inhibiting the demand for fish.

CONCLUSIONS AND RECOMMENDATIONS

St. Vincent, like its neighbors, is a small and densely populated island (population estimated at 100,000 in 1975) and like the developing lands elsewhere in the Caribbean, the majority of its inhabitants are poor with many suffering from malnutrition. From a nutritional standpoint, it is tragic that there are families in St. Vincent who cannot buy the cheapest seafoods offered in the fish markets.

The problem of protein deficiency is obvious, but the solution will be difficult. Eggs, milk and beef are expensive and in short supply, the price of imported meat, including the popular dried, salted codfish, is becoming prohibitive, and where every strip of arable land must be cultivated in crops, there is little opportunity to expand livestock production. The only practical solution to meeting the protein needs of St. Vincent and other crowded places in the Caribbean, where purchasing power is low, is to increase the consumption of locally-caught fish.

To help solve the above problem, several national and international agencies, mainly the British Colonial Development and Welfare Scheme, U.S. Fish and Wildlife Service, and the Caribbean Organization (Commission) and the Food and Agriculture Organization, and local governments have been active in promoting the development of Caribbean fisheries and marine resources, with good results.

In the past, the goal of fishery development was to increase the fish catch, mainly through capital improvements and the introduction of modern technology to the artisanal fisheries (boat engines, hull materials and design, plastic nylon line, nylon nets, etc.). In recent years, emphasis has been placed on fish marketing; namely the development of fish storage and distribution facilities, and price controls. Still lacking, however, is fish marketing intelligence at the local level, of the kind described in this study, which defines consumer preferences and prejudices for different kinds of fish and the demand factors that may account for the fish consumption habits. Although the household survey undertaken in St. Vincent had a limited sample and did not include all of the seafood consumed in the island, it nevertheless revealed a complex fish market—even for a small island with a relatively homogeneous population—which points to the need of fish marketing intelligence at different geographical scales.

Only through a demand analysis of fish and fish products, in the form of a fish opinion survey and the intelligence data gathered from that survey, can

fish market development schemes and projects hope to realize a more efficient utilization of locally available marine products. I, therefore, propose that: (1) a systematic survey be undertaken of the fish preferences and prejudices in the Caribbean region; (2) a questionnaire be used for this purpose, emphasizing the kinds of seafood consumed, and the determinants of demand for each species, including environmental, economic, cultural/historical, and psychological factors; (3) the questionnaire should sample the major socio-economic and culture groups in the region, as well as each place ranging in scale from local to national levels, in order to identify the different fish markets; (4) a description and evaluation be made of the determinants of demand for different seafood products in each of the fish markets, including supply (availability of stocks), price accessibility, income levels, competing forms of meat, sensory, psychological and other factors; (5) a grading system be set up to rate fish according to odor, fat content, color, flakiness, firmness, coarseness and moisture content, and that the fish be listed in groups with similar eating characteristics for possible dissemination of these qualities to the public through the media and fish promotion schemes; (6) maps be prepared showing the different fish markets, together with a description of each market for comparative purposes and references (Fig. 1); (7) the data, gathered from the survey, be made available to interested government and private agencies and personnel for possible action in fish marketing education, promotion, and development schemes.

Since the underutilized fish represent an obviously untapped and potentially rich source of protein throughout the Caribbean, more emphasis should be placed on increasing the market "acceptability" of the underutilized species than to expanding the catches of fish already being used. Funds need to be committed to modify the current attitudes and habits of consumers toward the use of certain seafoods.

The overriding fish marketing problem in the Caribbean remains one of providing low cost seafood, at acceptable quality, to the malnourished. The cheapest and most practical way of doing this is not to increase the fish catch through modern fishing technology, or through the construction of storage and distribution facilities, but to reach the consumers themselves, through education, promotion, and advertisement of the desirability of all kinds of marine life available to them.

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