**Artisanal Fisheries in St. Vincent and the Grenadines**

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The State of St. Vincent and the Grenadines lies in the eastern Caribbean. It is of volcanic origin and very mountainous. The Grenadines form a chain of small islands (some of which are uninhabited) and extensive reefs extending south to the island of Grenada. There is a great variation in the coastline and this variation, to a large extent, determines the distribution of fish landing sites particularly on the main island. The east coast faces the Atlantic Ocean and comprises a number of long stretches of high energy beaches making it impossible to use these beaches as landing sites. The west coast faces the Caribbean Sea and on this side there are many small beaches all low energy. Tides are microtidal being less than 2 m and there are many shallow and midwater reef systems interspersed with isolated patches of Thalassia.

Fishermen total about 2,050 and fishing is done by four types of boats varying in length from 23 - 45ft: (1) Double-enders using sail and sometimes an outboard auxiliary engine of about 9 hp; (2) Fiber glass piogues with outboard engines of from 25 to 55 hp; (3) Dug out canoes with outboard engines of from 25 to 55 hp, and (4) Sloops greater than 40 ft using sails only (Table 1).

In the Grenadines demersal species are fished all year round with multiple hooked drop lines, bottom longlines (palang) and trammel nets. On the island of St. Vincent, however, there are two distinct fishing seasons during the year: (1) A low season from July to December when demersal species are fished using bottom drop lines and traps and (2) A high season from January to June when fishing is mainly by: trolling for pelagics on their migratory run, beach seining for inshore pelagics, and gill netting for balyhoo (Hemiramphus balao). In both seasons boats put to sea early morning and return seldom later than 5:00 p.m. Crews vary in number from three to five.

There are no accurate data on landings and whatever figures exist should be regarded as estimates only. Landing figures for St. Vincent indicate 800 tons annually. These figures reflect landings at the Kingstown market only, and do not include landings from at least 10 other landing sites on the island. It is estimated that the landings in the Grenadines are just as high as those recorded at the Kingstown market. Production level is estimated at about 2-3tons/boat/year and this reflects the limitations of craft and gear. To some extent though this low level is due mainly to shortcomings in landing facilities,

Table 1. Survey of the artisanal fishery of St. Vincent and the Grenadines (1981)

| Place | Fishermen (No) | Seines (Beach) | Gill Nets (Flying Fish) | Gill Nets (Balyhoo) | Nets (Trammel) | Nets (Cast) | Nets (Dip) | Nets (Turtle) | Pots (Fish) | Planked Open or Sail +20' | Planked Open or Oar -20' | Dug +20' | Dug Out -20' | Fibre +20' | Glass -20' | Decked Sailing | Motors Inboard | Motors Outboard |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wallilabou/ Chateaubelair | 50 | 11 | 2 | 4 | 3 | 4 | | | 15 | 10 | 30 | | | | | | | 5 |
| Petit Bordel/ Rose Bank | 80 | 7 | | 1 | 2 | 2 | | | 12 | 8 | 60 | | | | | | | 10 |
| Troumaca/ Coulls Hill Bay | 20 | 2 | | 1 | 2 | 2 | | 2 | 5 | 4 | 20 | | | | | | | 3 |
| Cumberland Bay | 30 | 2 | | 1 | | | | | 3 | | 10 | | | | | | 5 | 5 |
| Wallilabou/ Barrouallie | 350 | 10 | | 6 | 1 | | 3 | | 12 | 20 | 60 | | | | | | | 3 |
| Layou | 80 | 8 | | 2 | | 1 | | | 7 | 10 | 30 | | | | | | | 4 |
| Buccament | 70 | 5 | | | | | | | 14 | 10 | 10 | | | | | | | |
| Clare Valley/ Campden Park | 130 | 13 | | 1 | 3 | 1 | | 2 | 4 | 5 | 15 | | | | | | 1 | 50 |
| Kingstown | 130 | 4 | | 3 | 3 | 2 | 10 | | 25 | 5 | 30 | 30 | | 30 | 4 | | | 20 |
| Arnos Vale | 60 | 2 | | | 1 | 4 | | | 16 | 15 | 15 | | | 4 | | | | 15 |
| Calliaqua | 50 | 2 | | | | 7 | | | 12 | 10 | 15 | | | 4 | | | | |
| Shipping Bay (Biabou) | 20 | | | | | 3 | | | | | 10 | | | | | | | 4 |
| Sandy Bay/ Fancy | 60 | | | | | 1 | | | | 10 | 20 | | 4 | | | 10 | | 2 |
| Bequia | 600 | 18 | | | 23 | 130 | 4 | 32 | 100 | 60 | 150 | | | | | | 2 | 90 |
| Canouan | 80 | 3 | | | 2 | 30 | | 8 | 40 | 10 | 10 | | | | | | | 6 |
| Mayreau | 40 | 2 | | | 1 | 4 | | 3 | 50 | 5 | 10 | | | | | | | 3 |
| Union Island | 80 | 4 | | | 30 | 11 | | 18 | | 20 | 40 | | | | | 10 | 5 | 20 |
| Total | 2,050 | 91 | 2 | 19 | 76 | 200 | 17 | 65 | 614 | 202 | 535 | 30 | 4 | 38 | 4 | 20 | 13 | 240 |

distribution and marketing all of which have the cumulative effect of discouraging any increase in fishing effort.

On the mainland, fish are landed at 10 recognized landing beaches all along the west coast. Six of these are more active than the others. In the Grenadines the main landing beaches are on Bequia, Canouan, and Union Island, but just as on the mainland, adequate landing facilities are absent. Throughout the territory no basic facilities exist for handling and selling fish properly, storage of fishing gear, rest facilities and other amenities.

No reliable data exist on the state of the fish resources accessible to fishermen, but the degree of fishing effort in the beach seine fishery suggests that both the pelagic and demersal species taken by that fishery are possibly nearing the limits of exploitation. As for other inshore fisheries, a variety of reef-dependent species are taken, e.g., queen conch, spiny lobster, parrot fish, white sea urchins, black coral, staghorn coral and various "tourist items" such as the puffer fish and shells. It is reasonable to assume that there are many offshore fishing grounds which could provide increased landings of snapper, grouper and related species which are not presently being exploited by the fishermen due to craft and gear limitations.

Some marine mammals are also taken. Whaling is done from the Grenadine island of Bequia and from Barrouallie on the northwest coast of St. Vincent. One humpback whale migratory path is between Greenland and the eastern Caribbean and the calving grounds, isolated in the Grenadines. The sperm whale is also taken. There is limited effort in this fishery as only one boat is involved. This is more of a traditional fishery since the effort has not increased over the last decade and there is no indication of increased effort in the near future.

The whaling which takes place from Barrouallie is notable for the diversity of species taken. The most common species is the blackfish or pilot whale of which 2,400 were landed between 1962 and 1970. Other species caught include the killer whale and the beaked whales of the Ziphius species. The bottlenose dolphin as well as two species of ocean dolphins (Stenella) are also taken.

The utilization of marine mammals is a source of food either fresh, dried or salted, and as oil, supports only a limited number of families. Overseas markets for oil have declined drastically due to pressure from marine mammal conservationists as well as from the signatories of CITES. This fishery is therefore on the decline and there is no indication that the entire whaling fishery will ever have more than the four boats presently engaged in the fishery. Apart from the above, young fishermen are not attracted to the fishery, principally because of the prevailing market conditions and the high-risk nature of the fishery while at sea.

A study of the Kingstown fish market records shows that the quantities of fish delivered at the market are fairly evenly distributed throughout the year with higher landings occurring between March and June (Fig. 1). In St. Vincent about half of the total quantities of fish landed comprises robins and jacks taken by beach seine. The high peak landings in March-April

reflect the higher catches evidenced during the pelagic season. The average annual landings in the Grenadines is about 900 tons of which about 800 tons are exported to Martinique. This is a demersal fishery.

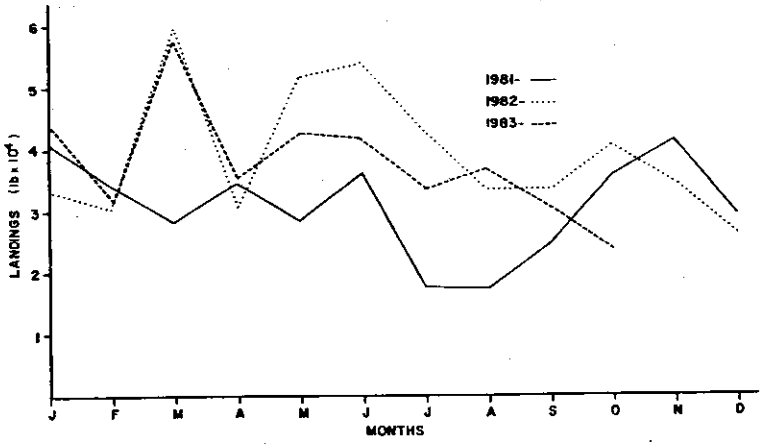


Figure 1. Fish landings at the Kingstown Market, 1981-1983.

Problems and Suggested Solutions.--The artisanal fishing industry has many problems that are characteristic of artisanal fisheries in other developing coastal states and these are essentially: (1) Fisheries administration, (2) Inadequate knowledge of potential resources, (3) Craft limitation, (4) Gear limitation, (5) Inadequate landing facilities/storage, (6) Marketing/Distribution difficulties, (7) Handling and processing problems and (8) Training.

Fisheries Administration.--The fisheries division consists of a Fisheries Officer assisted by two American Peace Corps volunteer workers. There is no clerical assistant, no extension staff, and funds for development are minimal. There is a vacant position of Fisheries Assistant.

The Development Corporation and formerly the St. Vincent Agricultural and Cooperative Bank offers loans to fishermen for the purchase of vessels and engines, but little use is made of this facility since the conditions governing the assistance are very stringent and there is little understanding among the loan officers as to the importance of (1) the particular needs and problems of the fishermen and (2) the resource potential of a fishery. Thus, loans have been given to fishermen to enter the lobster fishery when it is known that this resource is already heavily overfished and that the existing protective legislation is unenforceable. Generally, loans are granted on the basis of colateral almost exclusively.

Inadequate Knowledge of Potential Resources.--Several minor resources certainly do exist, but the potential is unknown since no research has been done in these area: river eels, marine

molluscs (for shell collection as well as for consumption, e.g., Citarum pica), corals, sponges, algae, sea cucumbers, sea urchins and turtles.

Because little work has been done on the shelf resources it is difficult to evaluate their potential. Estimates of shelf productivity, however, have been placed at 5 kg/ha/yr (Monro 1977).

Offshore trolling catch rates range from 200-300 lb/boat/day on average with two lines during the high season. For a shelf area of 180,000 ha, this yields over 11 kg/ha/year. Gear and craft limitations are some of the factors influencing these figures and catch rates could be higher with their improvement as well as with a knowledge of the true potential yield.

Craft Limitations.--Although some of the artisanal boats have a range of 40-50 miles offshore, the type of vessel used and layout are unsuitable for increased productivity and variation of methods necessary for increased production. Where new vessel types may be introduced it is desirable that it be of a type which is reasonably familiar to local fishermen. Some of these types may be found in the neighboring island of Barbados. Considerations should be given to working space and ice boxes.

Gear Limitations--Increased production could result from the introduction of such fishing methods as reel fishing for snapper and grouper; multiple-line trolling and gill netting for large pelagics such as dolphin, wahoo and tuna; longlining for shark; small boat pair trawling; raft fishing and light attraction. Cost/benefit studies of each new method should first be carried out and then compared with catch rates obtained by use of previous gear with all their limitations.

Landing Facilities/Storage.--The only significant landing site where some sort of facilities exist is in Kingstown. These are limited to simple provisions for marketing only. Small, sometimes unused market sheds are found at some of the other landing sites on the mainland, Bequia and Union Island. Depending on the needs of each landing site, facilities should include beach head water and fuel supply, a beaching and launching system, jetties and/or moorings, covered landing areas with sufficient space for handling, sorting and weighing fish, flake ice machines, chill rooms, storage or lockers for fisherman's gear, rest facilities for the fishermen and others as may be required, engine repair shop, fish and chandler stores and general shops.

Marketing Distribution.--Marketing of fish is done either on the beach site directly to the consumer, through the Kingstown Market, or in the case of the Grenadines, directly to the "ice boats" for marketing in Martinique. The overall system needs improvement. The object should be to establish an effective system for the collection, distribution and marketing of fish which will ensure that the fishermen obtain satisfactory prices for their catches, and that the consumers throughout the island obtain sustained supplies of good quality fish at fair prices all year round.

Since 1979 fish prices have been controlled; the latest schedule having come into effect August 1982. Six grades have been established with prices ranging from $0.50/lb, e.g., scarus, to $2.70/lb for grade 1 fish, e.g., tuna. These are landed prices. Retail prices range from $0.60/lb to $3.00/lb respectively. There is also some variation according to area. Understandably, the schedule has antagonized fishermen whose livelihood, already threatened by diminishing returns, is made even more difficult through being unable to raise the prices when fish are scarce. In reality, however, the prices are widely ignored since consumers are sometimes eager to purchase above the scheduled price when catches are low.

Handling and Processing.--There exists no organized system of handling and processing. The only processing done is dry salting on a domestic scale in the Grenadines largely of second grade fish. The objective of better handling and processing would result in reduction of waste due to spoilage, prolonged shelf life, a wider market perhaps regionally and generally offering the consumer a wider variety of fish products utilizing species which when fresh would normally either be rejected or enjoy at best a low consumer preference.

Training.--If the artisanal fishery in the State is to be developed then training must be available on at least two levels: (1) at the level of adminstration, for proper management (2) at the level of the fisherman for increased productivity. The majority of fishermen have learned their skill on the job as there exists no government owned training institution for this purpose. School curricula, both primary and secondary, do not include subjects covering the marine environment and fisheries. However, the training problem may soon be overcome as far as the artisanal fisherman is concerned since fisheries and navigation are now being taught at the Richmond Vale Academy. The course being offered is of a 2-year duration and the possibility exists of introducing short courses for adult fishermen on an ad hoc basis. At the administrative level it is anticipated that the University of the West Indies would expand its facilities to accommodate this great need in the region.