

# **Artisanal Fisheries and Resource Management in the British Virgin Islands**

**STEVE ALIMOSO and JULIE OVERING**  
*Conservation and Fisheries Department*  
*Road Town, Tortola, British Virgin Islands*

## **ABSTRACT**

Artisanal fisheries of the British Virgin Islands are largely small scale, semi-commercial, and based on the multispecies resources that exist in shallow water on the continental shelf. Apart from enforcing the present fisheries legislation, measures are being taken to protect certain shelf and coastal areas known to be important breeding and nursery areas for fish. A data collection system to provide resource information for formulating improved fishery management and development plans is being established. Some coastal management actions are being carried out to improve and/or prevent further degradation of the coastal resources; this is in view of the knowledge that the quality of coastal areas is vital for breeding adult fish as well as for survival and growth of juveniles of many species of shallow water fish stocks harvested by the fisheries. Problems connected with the development and management of the fisheries are outlined and discussed.

**KEY WORDS:** Artisanal fisheries, data, fisheries enforcement, frame survey, fisheries management, fish marketing.

## **INTRODUCTION**

[Metadata, citation and similar](#)

0,000 km<sup>2</sup> forming an underwater plateau which is somewhat smooth and level, averaging 60-90 m below the surface, except for the higher relief of islands and many underwater rocks and corals. At the 200 m depth (100 fathom) contour, into deeper water, which is approximately one third of this shelf area, lies within the territorial BVI waters.

Fisheries in the BVI are of two types; artisanal and recreational fisheries. Recreational fisheries consist of pleasure fishing boats, which employ handlines near or at the edge of the shelf, and sporting launches aimed at catching big game fish such as billfishes. Artisanal fisheries operate mostly inshore on the shelf, in water less than 70 m deep. These multigear fisheries exploit shallow water reef fish using small fishing craft. The purpose of this paper is to: 1) describe the artisanal fisheries of the BVI based on recent survey data; and 2) to outline the present fisheries management measures. Problems connected with management and development of the fisheries are also discussed.

### ARTISANAL FISHERIES

In a recent survey, data were collected on several basic fishery characterizations which enabled us to describe the size and structure of the BVI artisanal fisheries (Alimoso and Davies, 1991). Results of the survey revealed that there are approximately 280 artisanal fishermen operating in the BVI. Half of this number own fishing craft and gear while the other half are helpers or employees of the gear owners. Figure 1 shows the fishermen's average age structure. Fifty-one percent of the fishermen are 50 years old or younger.

There are 142 fishing boats in use, most of which are constructed of fiberglass (59%) or wood (39%). Metal hulled boats are very few (2%). Most of the boats are small, 80% being 7.5 m (21 feet) or less (Figure 2). The fishing boats operate from 32 landing sites scattered along the coast. Most of the sites are small; twenty-three sites accommodate between one and four fishing boats (Figure 3).

A variety of fishing gears are used, but fish traps, which number about 5000, are the most important gear type. Another popular gear, but perhaps less important, is the handline; there are approximately 400 handlines. While fish traps and handlines are widely distributed in BVI, the less popular fishing gears such as gillnets, seine nets, turtle nets, trolling equipment and small longlines are restricted to certain landing sites.

Although 75% of the fishermen market their own catch in the countryside near to their home landing site, there are a few (25%) who deliver fish to the BVI Fishing Company, a Government owned complex, though not fully committed to do so. Sixteen percent of the fishermen export their catch to the USVI, and still others (20%) sell their catch directly to hotels and restaurants.

Previous attempts to enumerate fishermen, gear, and other characteristics of the artisanal fisheries in the BVI were carried out by Peacock (1975), Klausung (1998) and Walters (1984) but the surveys were of very short duration, lasting a few days, and did not cover the entire fishery. However, assuming that the estimates obtained in these surveys were reliable, it appears that the population of fishermen has doubled over the past eight years (Figure 4).

Except for some estimates based on circumstantial evidence, data on the quantity of fish caught by the artisanal fishermen are not available in the BVI. Our own best estimate of the total catch in 1990 from the fishery, calculated from the current number of fishing boats and casual knowledge of catch rates and fishing effort, is 1,400 tons (3.1 million pounds).

### FISHERIES MANAGEMENT

The BVI government has adopted some measures which are meant to reduce possible risk of depletion of the exploitable fish stocks. These measures are in the form of a Fisheries Ordinance, some coastal management actions, and legislation for the protection of certain marine areas from human interference.

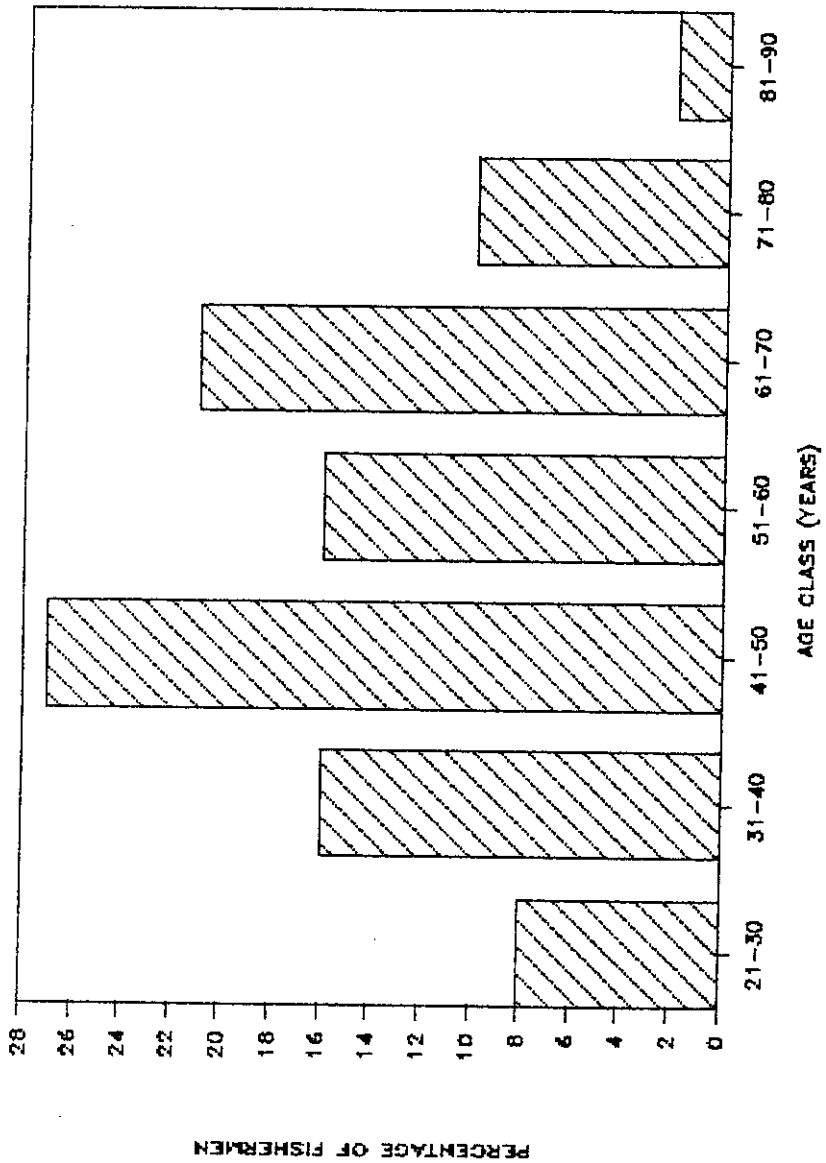


Figure 1. The age structure of artisanal fishermen in the British Virgin Islands.

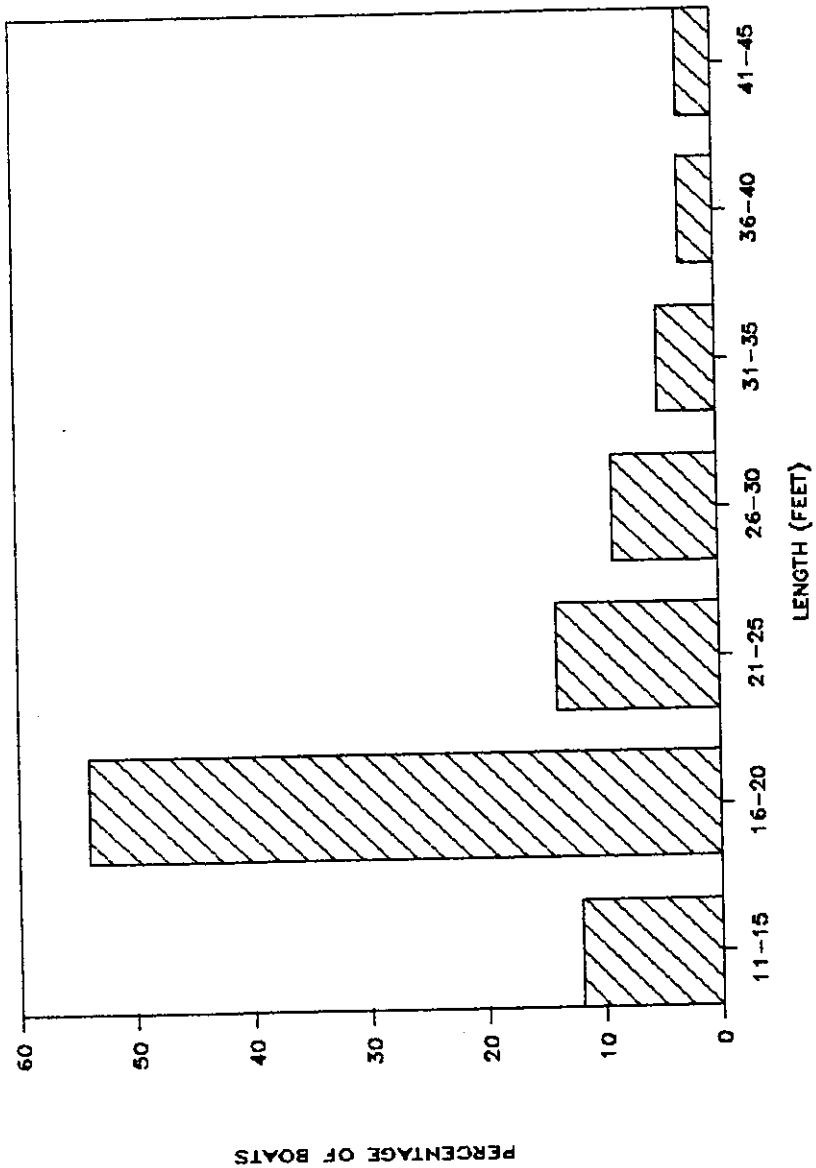
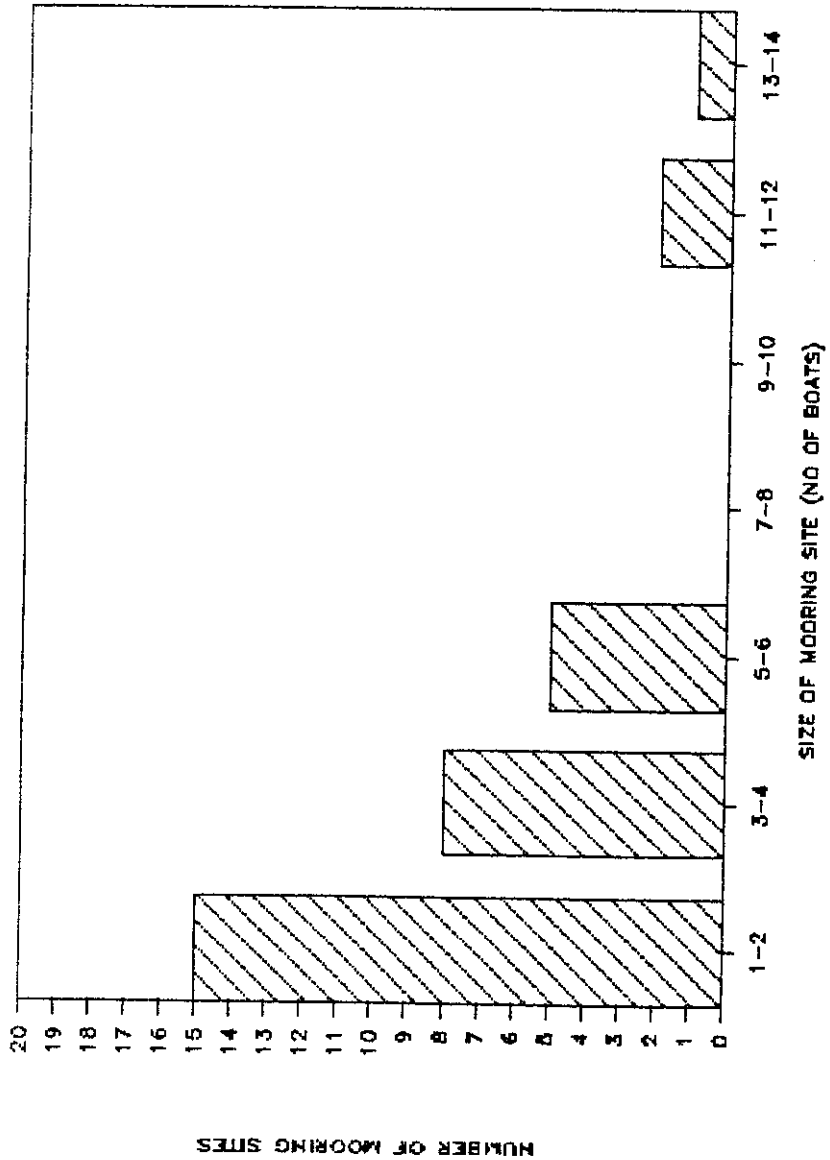


Figure 2. The size composition of the fishing boats used by artisanal fishermen in the British Virgin Islands (N = 142).



**Figure 3.** The size composition of landing sites used by artisanal fishermen in the British Virgin Islands. The size of the landing site is determined by the number of fishing boats landing fish at the site.

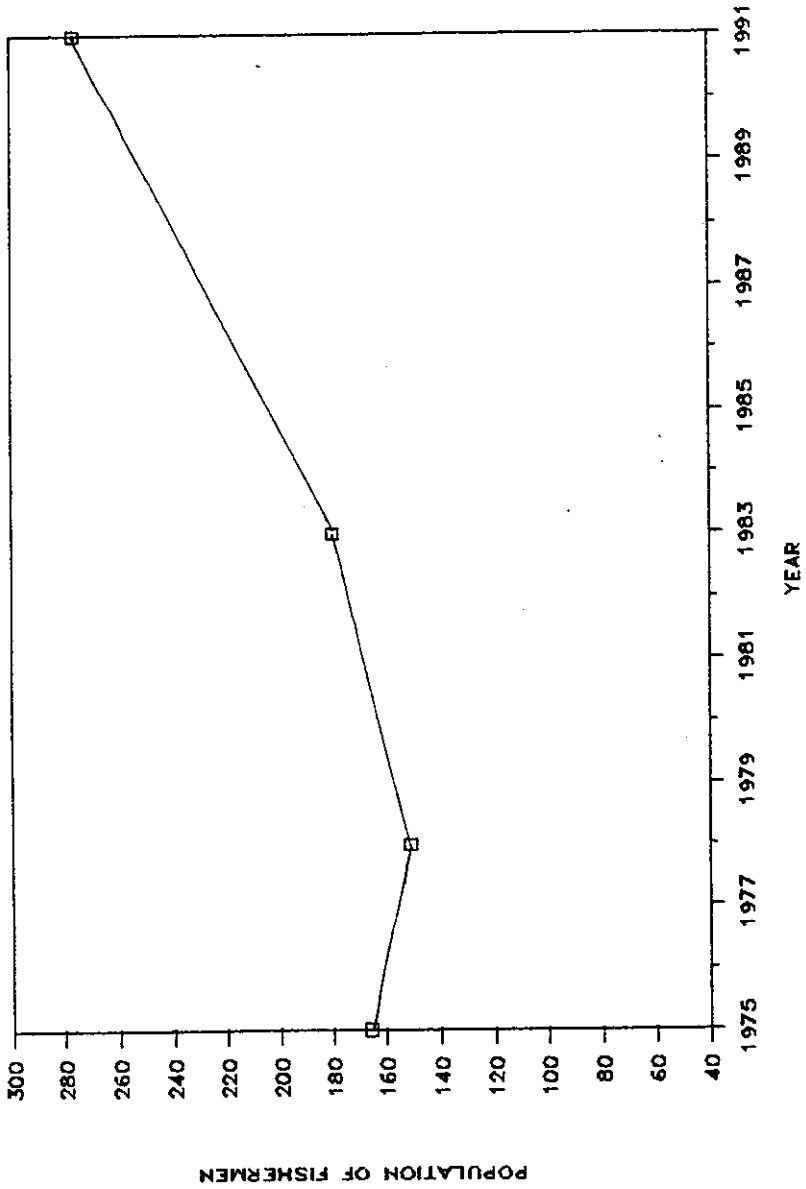


Figure 4. The trend in the population of artisanal fishermen in the British Virgin Islands from 1975-1991.

The Fisheries Ordinance and Fisheries Rules have not changed over the years since their establishment in 1979 and 1982, respectively. A brief and, perhaps, adequate description of the content of fisheries legislation in the BVI is given by Walters (1984). However, it should be noted here that at present, only the control of the harvesting of the spiny lobster, *Panulirus argus*, is specifically mentioned in the rules with limits on length and weight. The rule that imposes a minimum fish trap mesh size of 1 1/2 inches (38 mm) is meant to protect the juveniles of some of the finfish species normally targeted by artisanal fishermen.

Fisheries legislation in the BVI also provides for the protection of certain marine areas. The areas protected are those which are important for maintaining or enhancing recruitment to the exploited fish stocks. For example, the Horse Shoe Reef near the island of Anegada was declared a protected area in May, 1990 under the Fisheries Ordinance.

#### FUTURE STOCK AND HARVEST DATA GATHERING

##### Fisheries Data

Artisanal fisheries catch or stock data are not available in the BVI. There is no recorded information on fish stocks or harvestable surplus, catch data, species composition, or other pertinent biological information. Without the data, it is not possible to determine the current status of the fishery and, therefore, impossible to determine the essential management actions needed. As a result, the present scarce human and financial resources are probably being misdirected into management actions which do not provide as much benefit as they could otherwise.

The BVI Department of Conservation and Fisheries has recently started a move to acquire data. Using the frame survey data already gathered to construct a sampling framework, the Department has designed a sample-based system for collecting catch-effort data (Alimoso, in press) aligned with that of Caddy and Bazigos (1985). We intend to begin field work as soon as possible. When collected, the catch-effort data will be used to make preliminary estimates of sustainable yields using a suitable surplus yield model, perhaps the version suggested by Munro (1986). Also being planned is routine test fishing with standardized gear which will be as close as possible to the gears used by fishermen. Routine fishing activities will provide samples of the species composition of the catches, length-frequency samples and as much as possible of other biological data (scales, otoliths, gonad weight, etc). This data will provide information on the catch composition of the artisanal fishery together with estimates of the various parameters required in dynamic pool fisheries management models for each species (K, to L, Z, M). Because of manpower limitations, emphasis will be placed on collecting the more important species. Fisheries data, along with other relevant data being collected in the coastal and reef monitoring programs, will greatly improve the management of artisanal

fisheries in the BVI. Future legislation will include fisheries rules which specify size, weight and seasonal restrictions for specified stocks. Closed areas can be declared as necessary. Fishing effort quotas will be established so that the licensing system will not only generate revenue for the Government but, more importantly, will be a means of controlling fishing effort to reduce the possibility of depleting fish stocks.

### **Law Enforcement Strategy**

Various control measures on fishing activities, manifested in fisheries law, are aimed at achieving the rational exploitation of the available fish resources. Fishermen who do not comply with these measures are to be penalized to avoid precedents that might encourage those not in compliance to break the law in the future. Furthermore, restrictions and control measures connected with protection of areas and coastal management should be enforced effectively. Therefore, enforcement is an essential deterrent in fisheries management. In the BVI, enforcement is far from being adequate because of insufficient staff and financial support problems. In addition, fisheries laws need to be improved, including adoption of coastal management legislation.

As a solution to the operational aspects of enforcement, negotiations to cooperate with the Police are taking place so that during the course of police patrols, fisheries regulations will also be enforced. Since patrols will be conducted simultaneously, expenses are likely to be lower than when fisheries patrols are conducted separately. Therefore, police patrol experience and equipment (boats and planes) will facilitate fishery regulation enforcement as an economical option for the BVI.

### **FISH MARKETING**

Fish marketing appears to be an important factor in the development and management of the fishery industry in the BVI. Briefly, the basic problem is that as a result of an unorganized fish marketing system: (a) fishermen spend less time fishing than they should if they were not cleaning and selling their own catch; (b) there is coastal damage due to the establishment of many small landing sites in an effort by individuals or small groups of fishermen to find a convenient place for the sale of their fish; and (c) as a direct result of (a), investment by fishermen into a potentially more profitable offshore, deepwater fishery is hampered.

Some of these facts have been known for some time, prompting the Government to establish a fish marketing complex in 1983, the BVI Fishing Company, to provide a ready market for artisanal fishermen's catch (CDB, 1980; Walters, 1984). The objectives of establishing the complex have not been met since the bulk of the catch is not delivered to the complex. Most fishermen



prefer to sell their catch in the open places at or near the landing sites, to local hotels and restaurants, or to export their catch.

There are several options open to the government in dealing with the fish marketing problem in the BVI, but the option that appears to conform with the government's intention to encourage and assist the development of the local fishing industry is as follows: 1) the Government could initiate a detailed examination of the present fish marketing system, suggest corrections on the aspects that have proved to be unsuccessful, and provide funds for purchasing appropriate equipment and training, 2) appropriate legislation connected with the operation of the marketing system should be introduced and effectively enforced, 3) since a project such as this takes some time to be fully productive, the government should monitor the progress of the project from the beginning until it is satisfied that the aims have been achieved.

#### LITERATURE CITED

- Alimoso, S.B. (in prep.) A sample-based method for estimating catch and fishing effort from the artisanal fisheries of the British Virgin Islands.
- Alimoso, S.B. and S.J. Davies. 1991. Frame survey of the artisanal fisheries of the British Virgin Islands. *BVI Conservation and Fisheries Department Technical Report No. 7.*
- Blok-Meewig, J. 1990. Mangrove systems of the BVI; Resource mapping and assignment to protection categories. *BVI Conservation and Fisheries Department Technical Report No. 5.*
- Caddy, J.F. and G.P. Bazigos. 1985. Guidelines for statistical monitoring. *FAO Fisheries Technical Paper No. 257.*
- Caribbean Research Institute. 1969. Study of the fisheries potential of the Virgin Islands. *Virgin Islands Ecological Station Special Report.* Contribution No.1.
- CDB. 1980. Caribbean Development Bank appraisal report on fisheries development. BVI. BD 43/80 (AR 80/10 BV).
- Klausing, J.H. 1978. Feasibility study for a medium scale industry. UNIDO, DP/ID/SER.A/186.
- Munro, J.L. 1986. Caribbean coral reef fishery resources. *ICLARM studies and reviews, 7.*
- Peacock, N.A. 1975. Marine Resources of the British Virgin Islands. Unpublished MS, BVI Conservation and Fisheries Department.