

Evolution of the Fisheries Fleet in Barbados: Causes and Implications

STEPHEN WILLOUGHBY¹ and ROBERT G. CECIL²

*¹Division of Fisheries
Government of Barbados
Bridgetown, Barbados*

*²Dept. of Geography, University of Western Ontario
London, Ontario, N6A5C2 Canada*

ABSTRACT

This paper covers a half century of evolution of the Barbados fisheries fleet, from early 1950 to the present, with an emphasis on local efforts and causes. Using oral history, archives, and media files, three major evolutionary stages are identified, along with a few minor deviations. The trigger mechanisms that fostered each stage are discussed in some detail. Where possible, the roles of government and entrepreneurs are identified. The social and economic implications of the changes are reviewed for the various stages.

KEY WORDS: Evolution, causes, implications

INTRODUCTION

The current Bajan fishing fleet is the cumulative expression of elements of fisheries that have been part of the scene for more than 50 years. The fleet has evolved from inshore sail boats, to offshore deep-sea vessels. But, there are still remnants of old boat styles, equipment and methods in use today. So to a certain extent, while parts of the fleet are modern, others, in a sense, are a functioning historical exhibit. Several types of fishing vessels were introduced over the last 50 years. Many were unsuccessful and fell by the way, while others are presently represented in the local fishing fleet. The present Barbadian fishing vessels range from small open, wooden boats, propelled by oars to large offshore, inboard-powered, steel hull longliners with hydraulic steering and outfitted with the latest navigation and communication equipment.

The objective of this paper is to trace the evolution of the Barbadian fishing fleet from the 1950s to the present, focusing on the vessels that were successfully introduced to, and retained by, the fishing fleet over the past fifty years and on the factors that may have been responsible for the success.

THE PRE-INDEPENDENCE FLEET

By the early 1950s the local fishing fleet was using open wooden vessels powered by sails. They were 6 to 8 metres in length, fitted with two sails - a main sail and a jib - and carried ballast of up to one ton of scrap iron. These vessels were cumbersome and unstable. Sail designs, and the shifting of the ballast led to

Proceedings of the 52nd Gulf and Caribbean Fisheries Institute

many capsizings and drownings, as many old fishermen remember. The government was alarmed.

During the early 1950s the sailboat fleet was severely damaged by a hurricane. This led to the introduction of a new boat called the Calvert, similar in structure to the sail boat. The keel was different and the ballast was more stable, but this slower boat did not gain favor with the fishermen. Simultaneously, small open boats, propelled either by oars or outboards, were used mainly for inshore demersal fishing. These boats, as they are called, are still in use currently.

Fisheries officials saw motorisation as the way forward. They were looking for speed, stability and maneuverability, and pressed for change. The odd motorized boat had appeared before, but the process began in earnest in the 1950s. The fleet went from five motorized boats in 1951 to 446 in 1959 (Wiles 1959). Sail boats co-existed with them for awhile, but eventually disappeared.

These new motorised vessels, called launches, ranged between 7 and 10 m in length and carried engines of 10 to 15 hp, amidship. The cabins evolved also over time, leading to more shelter and more storage space. The launches, which are still very much in use, never fished beyond the sight of land.

Three events catalysed the transition: devastation of the sail boats by a hurricane; availability of timber from felled trees; and, government, seizing the opportunity, offering loans, up to \$2,160.00 to acquire motorized boats.

The media covered the advent of the new boats, but only in factual terms, with little or no commentary. It reported that a new type of boat was built, with a view to modernizing the fishing industry, and that fishermen were experimenting with the boat (*Advocate*, January 10 and April 9, 1952). The first cement designs did not catch on (Bair, 1962). But, when wood became the building material, the boats were praised by the Fisheries Officer. He was particularly pleased with the co-operation between the people in the industry and the government (*Advocate*, August 16 and December 14, 1955). The 1961 - 1965 Development Plan, however, was calling for professional advice to design better boats (Hess 1961). It is noteworthy that the call for better boat designs has continued, on and off, in the media to this day.

By the end of the 1970s the launches were bigger; 8 to 12 metres, and faster, using 45 to 180 hp outboard motors. These faster vessels reduced the travel time to and from the fishing ground, allowed for fishing further afield than sailboats, and landed larger catches.

The matter of fisheries infrastructures became a crucial element in the evolution of the fleet, in the late 1960s and 1970s, when very little attention was paid to handling, marketing and distribution of fish. Also the cold storage facilities at the Barbados Marketing Corporation were not adequate.

By the late 1970s and early 1980s larger and faster day boats, up to 36 feet with 180 hp engines, were well in evidence, and they were fully equipped (Mahon,

Oxenford and Hunte 1985). In fact, those same authors noted that between 1978 and 1980, as a result of increasing costs of operating day boats, two long-range ice boats, with 8 to 10 tons capacity, were introduced by entrepreneurs. Therefore, it would appear that cost factors were becoming causal factors in the evolution of the fleet.

The larger catches of the 1970s compared with the 1950s, often gave rise to gluts, in a fish distribution system that was essentially coastal, with little movement inland, and few infrastructures for storing, transporting and handling fish. There was a lot of spoilage, and prices dropped a great deal in such situations. The handling of the fish on board the launches, without ice, also damaged the product. The implementation of ice boats was an idea whose time had come.

ICE BOATS

As the day boat owners wrestled with marketing problems, the evolution of the fleet was ongoing. Out of a desire to land larger catches came the introduction in the mid 1970s of a long-range vessel capable of fishing further afield, staying at sea for several days, and carrying ice to sea. These vessels, called iceboats, were promoted in the 1973-77 Development Plan (Government of Barbados). The first iceboat introduced in the mid 1970s failed due to consumers' resistance to iced fish. But, by 1980 there were three iceboats, between 13 and 15 m in length, registered with the Fisheries Division. The iceboats departed from the traditional design and fishing pattern of the launches. One of the iceboats was made from ferro-cement with the wheelhouse and cabin forward and an icehold aft. The other two iceboats were wooden with a wheelhouse and a cabin aft. One carried a freezer while the other was fitted with an icehold. However, it was the former design that took favour with the local fishermen. These vessels made trips lasting 4 to 14 days, instead of less than one day as did the launches. They took ice to sea and iced the fish as soon as they were caught.

By 1983 the number of iceboats had grown to 20. Prior to 1983 the iceboats were having problems with crews, and finding markets for their catches. There was a high turnover in crew, as many fishermen were untrained and, therefore, did not have the skills required to operate the iceboats. Fishermen skilled in navigation, seamanship and fish handling were scarce. They were accustomed to leaving early in the morning and returning in the evening the same day. They did not fish beyond the sight of land, nor did they pay much attention to the care of the catch.

Fishermen who were used to being at sea for short periods were expected to stay fishing for up to two weeks, a change that caused a great deal of uncertainty. There is no doubt that the change had sociological impacts on the fishermen, especially on their personal and family relationships. It is astounding that men

Proceedings of the 52nd Gulf and Caribbean Fisheries Institute

who fished on day boats were able to transform themselves into offshore sailors, with very little if any formal training, such as seamanship, navigation, safety at sea, fish handling, and the like. Also, it must have meant changing their mind sets considerably. However, no studies were conducted to examine the changes in behaviour. But it is known that catches improved.

By 1989, there were 59 ice boats in the fleet (Hunte and Oxenford). They were between 12-18 m in length, with 5 to 12 tons capacity ice holds. Many of the boats were converted day boats, 70% being wooden and 30% fibreglass. The boats employed the same fishing techniques for catching large pelagics and flying fish as the day boats. Those authors said that the change from day boat to ice boat represented the second major structural transition undergone by the Barbados pelagic fleet.

The media explained the nature of the ice boats to the public in 1983. A great deal of emphasis was put on the ice component of the operation, an important consideration in an island where fresh fish was valued above all other. The media lauded them as bringing a new thrust to fishing (*Advocate*, October 22, 1983). Jones (1984) singled out ice availability, and the reduced costs of operating bigger boats, as major factors in the adoption of larger vessels. Yet, the evolution was not without problems, particularly as day boat owners modified their crafts almost as if they wanted to keep pace with the ice boats. According to FAO (1982), the day boats, in most cases had engines that were grossly overpowered, causing unnecessarily high fuel consumption. The fishermen overpowered their vessels, because they could return to base quicker, and in time to catch the afternoon market, in order to receive higher prices for their fish. Construction and maintenance of the day boats was becoming expensive and difficult due to lack of timber. So, as the ice boats ascended, the day boats evolved too, but apparently not always in the directions most desired by the experts.

The development of the iceboat was catalysed by several private and public sector initiatives. In the latter case, government officials recognising the economic and social importance of the fishing industry, provided a fisheries complex, in the south of the island, at Oistins. It was equipped to furnish all the necessary modern amenities required to store, process and sell fish.

The opening of the complex ushered in a new era in fisheries development in Barbados. The new facilities afforded the users the opportunity to land a better quality fish, by icing the catch at sea, and to reduce post-harvest spoilage, by handling the fish under hygienic conditions and icing or chilling fish for short term storage. Consequently, a better quality fish product was available to the consumers.

When the complex opened, there was a universal lack of training in all aspects of seafood handling. So, the government moved swiftly to provide all manner of training, for individuals involved in all facets of fisheries operations.

The private sector focused on acquiring iceboats, whether as a newly constructed vessel or a converted launch. Many of the new iceboats were fibreglass vessel made by a local boat building company, that was opened in the early 1980s to capitalise on the high demand for iceboats. However the majority of the first iceboats were wooden.

Within two years of the opening of the complex in 1983 the number of iceboats doubled from 20 to 51, but markets were not keeping pace. Consequently, there was intense competition among iceboats, as they landed supplies that outstripped demands, but their numbers grew. Boat owners either converted their wooden launches to iceboats or purchased new ones.

The emergence of small processing plants, capitalising on the large quantity of cheap fish in the market, was a major factor in the development of the iceboats. The processors filleted and froze the fish. They also introduced vacuum packed flying fish. The processors also developed foreign markets. At that point in time you had a sort of symbiosis, the processors needed large amounts of fish, and the boats could supply them, with the day boats still satisfying the consumers' day to day needs. The processed fish was sold to supermarkets, restaurants and hotels. The product became available all year round, which was a new situation for Barbados, where the availability of fish was always seasonal. Moreover, the fish were already processed, filleted and boned.

In the late 1980s, the future of the iceboats as a viable investment started to look doubtful. Iceboat owners were faced with gluts, a high turnover in crew, consumers' resistance to ice-fish and rising maintenance cost. Also, Oistins was straining under its load. During this period fishermen often took two to three days to get rid of their fish. In many cases the fish spoiled before they could be sold.

One way that the fishermen met the challenges facing them was to create the freezer iceboat. They needed to stay at sea longer. So, the fishermen resorted to installing insulated shells of old domestic freezers in their boats, to store and ice fish at sea. Consequently, they were able to increase the time spent at sea and the sizes of their landings.

As with the development of the launches the owners invested in iceboats despite the uncertainty of markets for fish. The vendors, who purchased significant quantities of fish from launches, were not initially interested in iced fish from the iceboats, as consumers really did not accept the product, and it was not unusual for the quality of the iced fish to be poor, as a result of bad handling practices. It took several years to convince the vendors and the consumers that iced fish, if handled properly, was superior in quality to fish from launches, and to convince the fishermen of the importance of proper handling of fish at sea.

Proceedings of the 52nd Gulf and Caribbean Fisheries Institute

Eventually, demands for filleted fish emerged. New markets for them opened in restaurants, supermarkets, hotels and households. Also, there were noticeable changes in the lifestyles of Barbadians, who were becoming more health conscious, were turning to fish. They preferred a product that was already filleted, easy to handle, store and prepare. Consequently, the demand for the filleted product increased. Pressure was now placed on the vendors to supply filleted products, and they bought more iced fish. People began to eat out more, and restaurants increased their purchases of fish.

Processing plants were built as the ice boat emerged, a factor which encouraged their development. The ice boats were bringing in large catches, much larger than the day boats, and they needed some outlets. They were landing more fish than they could sell. Now the patterns of sales were changing. They could not sell all of their fish on the same afternoon, and the processors were offering different outlets to ice boats. They were buying whole catches from them. The fishermen, boat owners, vendors and processors all benefited from the renewed activities in the fishing industry.

The ice boats were a comparatively expensive addition to the evolutionary line. Yet, other than a thesis by McConney (1987), there are no systematic studies analyzing the reasons why individuals adopted new fishing vessels. McConney studied the owners who operate ice boats. He concluded that ice boat acquisition stemmed from the owners' knowledge of the industry, and their calculations of profitability. It was pure and simple entrepreneurship.

An alternative explanation, on the introduction of two long-range ice boats, was attributed to the increasing costs of operating day boats (Mahon, Oxenford, and Hunte 1985). There are no other studies of the reasons for boat acquisitions and adoption of new vessels.

LONGLINERS

Longliners did not become popular until the early 1990s, although the first longliner entered the fleet in the 1980s. The longliners, like the iceboats, carry an ice hold but differ in being larger, outfitted with longline gear, and in targeting tuna and swordfish. The lengths of the vessels reach as high as 25 m and carry engines as high as 800 hp. The number of longliners in the fishing fleet moved from about 4 in 1990 to 23 in 1997.

The role of longliners was summed up, in a specific vein, by the Sunday Sun: "Longlining is seen as the key to fishing. The first Fisheries Officer tried the technique, but nothing came of it, because the boats and the equipment were not adequate. Fairly large boats were needed. The ice boat "Supertest" was the first. The owner studied at the Fisheries Institute in Trinidad and Tobago. Also, when the American longliners were here in 1981, a couple of the current entrepreneurs were on those American boats, in some capacity or other. Now there are 11

locally-owned longliners at the Bridgetown Fisheries Complex, ranging from 38 to 46 feet. Four of the boats were made locally. The others are made of glass reinforced plastic fibreglass. The boats cost \$400,000.00, while a converted day boat would only cost \$40,000.00 (August 27, 1989).

In the late 1980s, the development of longliners was stimulated by a development agency's, institutional strengthening project (Crown Agents 1990). Other factors included the sight effect of American longliners operating from Barbados, and their practice of transshipping their catches through local processors. The opening of the second fisheries complex, in Bridgetown in the late 1980s, was also instrumental in stimulating the development of the local Bajan longline fishery.

Crown Agents personnel conducted experimental longline fishing and provided training for fishers. Some local fishers served as crew on board the American longliners, which enabled them to learn the skills needed for longline fishing. Concurrently, local processors gained valuable experience in the shipping of fish to American markets, while obtaining tremendous information about those markets' demand for tuna and swordfish, at a price that was more attractive than that of local markets. The local processors used their acquired knowledge to access the American markets for their products. So a "foreign experience" element entered the "equation" at this point.

The climate was now right for investment in longliners. There was an outlet in the USA for the local longline catches, at profitable returns. Moreover, the Bridgetown Fisheries Complex at the time provided adequate facilities for off-loading local longliners and handling their catches. However, much of the investment in longline fishery came from outside of the fishing sector, as many fishers did not have the financial resources to acquire longliners. The investors were targeting primarily tuna and swordfish, mainly for the export market, which is still the case today.

The government also assisted in these latter phases of boat development. In the 1980s the government had obtained an international aid project, which looked at longlining. Authorities conducted a number of trials around the island. They also did some training of fishermen, in longlining techniques and the operation of navigation equipment. The Barbados Fisheries complex allowed fishermen to off-load their catch next to the dock, unlike Oistins where boats had to be off-loaded on the jetty, which was a less efficient situation.

OUTBOARD LAUNCHES: A PRACTICAL RETURN TO OLDER

During the early 1990s there was a noticeable proliferation of launches with outboard engines. The register of local fishing vessels showed records of outboard launches in the 1960s but they were never popular. The outboard launches re-

Proceedings of the 52nd Gulf and Caribbean Fisheries Institute

emerged in the mid 80s, but because of the focus of iceboats their increasing numbers went almost unnoticed, until the early 1990s.

The outboard launches evolved out of changes to the traditional moses and launches. In the case of the moses a cabin was added. Many of these converted moses (outboard launches) shifted from fishing on the reefs to fishing offshore for flying fish and dolphin during the pelagic fishing season.

In the case of original launches the outboard engines replaced the traditional inboard engines. It was usually the smaller launches that were fitted this way. Other outboard launches were deliberately constructed as launches to carry an outboard engine. By 1993 there were 82 outboard launches. It was usually the less fortunate fishers who used outboard engines in their launches.

Also, it is still not uncommon for some moses boats, especially those with higher-end specifications, to engage in activities aimed at landing flying fish. They are quite capable of conducting inshore fisheries operations, especially when their traditional demersal resources are in their off-season phase.

There were two major factors that favoured the proliferation of outboard launches during the late 1980s and early 1990s. During this period, money was difficult to acquire to purchase the expensive inboard engines. In addition, the repair and maintenance costs of inboard engines began to increase as the government started to phase out the free inboard repair service that was offered by the Fisheries Division. Therefore, vessel owners were forced to pay for the service in the private sector. Consequently, many fishermen found themselves faced with un-affordable acquisition and repair costs for inboard engines. Therefore, many persons opted for the less costly outboard engines, even though many experts felt that in the long term the outboard engines would be more expensive.

VIEWS OF THE EXPERTS AS THE EVOLUTION PROCEEDED

Over the years, the structures of all boats, including those now in use, have come under expert scrutiny. None is seen as ideal, in terms of naval architecture, nor is any accorded the distinction of being a particularly efficient vessel. Crown Agents (1990) sounded an ominous note about the day boat fleet, suggesting that it might eventually fail completely. They saw the boats as unprofitable, and not able to cover either loans or depreciation. The day boats are old, and there is no renewal. The implications of such observations are extremely serious. But, they stand, more or less, alone, as they fail to heed or cite other analysts. For example, they might have looked more closely at Hunte and Oxenford (1989), who saw a traditional fleet component existing side by side with a modern one. Hunte and Oxenford draw their recommendations from sound data.

Some concerns have been raised about the ice boats that have been adapted for longlining. As in years past, the government continued its ongoing search for a new design for the boats. One concern was a need to increase the crews' work

space (Advocate, January 28, 1990). Some ice boats went through a refurbishing and lengthening process, to allow the fitting of a mini longline reel, with 3 to 5 miles capacity (Jones 1993). But that process was not advocated universally by a consulting firm. The latter saw ice boats as being designed primarily for the capture of flying fish. Crown Agents (1990) saw the ice boats suited for the pursuit of flying fish, but being far from ideal. The craft are unsuited for the open Atlantic.

Another view on this subject was provided by Hunte, McConney, Oxenford and Dharmaratne (1994). They make reference to earlier work by Hunte, in the late 1980s. That earlier study suggested that, for longlining, boats similar in size to the ice boats should be used, but modified to include hydraulic spools and perhaps 10 to 15 miles of longline. The report then informs the reader that five ice boats, between 38 and 42 ft., had been outfitted for long-lining. One local manufacturer was constructing a 52-foot GRP boat for long-lining. There were two 75-foot longliners, but no 100-foot vessels. A final recommendation was that 40 to 50 foot boats were suitable for longlining, and that 100 foot boats were unsuitable. Seventy-five foot boats were considered to be marginal.

In the recent past, the issue of boat design, and hence the evolution of the vessels of the fleet, was still ongoing, more in terms of detail than radical change. The issue appeared in the media a number of times in 1997 (Advocate, June 20, June 22, and June 23). Fishermen are still questing for better boat designs up to this day.

INDIVIDUAL INITIATIVES DURING THE EVOLUTION OF THE FLEET

The systematic literature does not offer any insights into individual initiatives as the fleet evolved. Such coverage is the province of the media. Over the years, the press has criticized boat designs occasionally, and some entries have speculated on the inability of the rank and file fishermen to be able to afford newer and bigger boats. Now and then, the papers cover the arrival of some "unique" boat, with some fanfare. No such boat has survived the sands of time.

The more noteworthy efforts coincide with the advent of the ice boats and the general trend towards bigger and costlier vessels. In 1981, one man suggested that glass-reinforced plastic be used as the basic material for the boats (Advocate, September 10, 1981).

In 1982, there was an article about a man who had a \$200,000 boat, said to be the biggest boat in Barbados. The owner had a mini mart, and was a small fanner. He was arguing about fishing, with some fellows and decided to "plug into. His only problem was getting ice (Advocate, November 17, 1982).

Every now and then somebody was trying something new in fishing boat design. In 1983, there was a man interviewed who was launching a multi-purpose boat, which he considered would be lucrative. It would fish all year long, not just

Proceedings of the 52nd Gulf and Caribbean Fisheries Institute

in the flying fish season. He had all manner of new and modern equipment on board. (Nation, May 20, 1983). The media also pointed out that some owners were modifying their moses boats into "punts", i.e., putting cabins on them in order to go to sea longer. One man, a janitor, who was in the process of such a conversion, caught the attention of the press (Nation, January 27, 1987). There were a few other occasional entries of a similar nature, with no follow up. None of the boats was ever used as a fleet prototype.

In 1995, the media ran a story on a man in the island who was building a 42-foot fibreglass boat himself. The article went on to say that a firm in Barbados used to build such boats, but had not produced any in recent years. The man doing the building had visited several boat-building places in the United States. He chose his own design, from what he saw, and was now building his own boat. He was working with a local shipwright (Advocate, January 7, 1995).

Individual initiatives seem to have occurred as independent events. Less than a dozen are mentioned over five decades. So, on average, such initiatives have been few and far between. But, they have occurred, and, by all appearances, they have been independent of "standard development forces".

It would seem that individuals would opt for boats that were bigger, and better equipped, than those in the erstwhile contemporary fleet. The newspaper would put the stress on bigger, and the implications were always that, somehow, such boats would perform in some outstanding form. Basically, the reporting amounted to signalling that the boats had arrived, but the articles made no provision for either a *priori* or a *posteriori* analysis.

Each entry, regardless of the date, either said, or suggested, that the boats were the results of entrepreneurship, and that they would create jobs, and generate incomes. Also, such boats could normally sail further, and stay out longer, than the day boats. So, such innovative vessels were attempted to evolve out of the existing types. It would be interesting to measure the extent of the influence of the presence of such vessels on contemporary and/or future entrepreneurs.

None of the individual initiatives are given credit for influencing the evolution of the fleet as a whole. Whether or not they did is left to be determined. At this point, neither the popular press, nor the systematic literature, gives any indication of major influences in boat evolution generated by individual initiatives. But, if nothing else, those initiatives attest to the capital-generating efforts and capacities of individual owners. Each new vessel, increasingly costlier through the years, must have required funds in excess of those normally available to the average day boat owner. Unfortunately, the popular press missed the opportunity to contribute to historical analysis, by overlooking the entrepreneurial aspect of capital formation for such ventures. In retrospect, individual initiatives attest to the independent spirit of the owners. In short these efforts attested to

positive individualism, which is something that economic developers should study in great detail.

SOCIO-ECONOMIC IMPLICATIONS OF BOAT EVOLUTION

Some socio-economic implications of boat evolution have been touched on, from time to time, primarily in the popular press. In the early 1950s, it seemed that government loans were a necessary part of the fishing scene. Their availability meant that boat crews could aspire to owning their own boats (Advocate, August 11, 1951).

At that juncture the costs of the new boats was still within reach of the average fishermen, if given financial help. The government did step in and the development process went into operation at the level of existing participants. So, the socioeconomic conditions favoured the industry's active participants. Unfortunately, the owners did not repay their loans very well (Cecil 1988). However, the "small" man was still at the very centre of the economic development of that early period.

When the second major wave of innovation brought the ice boats, there was one major socio-economic implication above all others. In simple terms, the Fisheries Officer saw the ice boats menacing the owner of smaller vessels. He summed up his views in the press as follows: rising fuel costs, and the effects of inflation on boat building, equipment, and other fishing costs, will force many of Barbados' small fishermen out of business in the near future. It costs \$40,000 to launch a 35 foot boat, and over \$100,000 for larger and better vessels. He also said that, if one had that kind of money, one would probably want to invest it elsewhere (Nation, May 11, 1982).

The sizes of boats received some notice. It was seen that sizes would change, and, in turn, ownership patterns would change, leaving "the little fellow" behind. The articles in the 1980s seem to have vindicated the earlier ones, especially where boat ownership was concerned. By 1984, they were being referred to as "the mighty giants", collectively capable of becoming dominant in the fishing industry. And, when there was too much fish, the small producers would loose out, not the ice boats. One article went as far as to identify a peasant/ice boat dichotomy, explaining that the larger boats would knock out the peasants. The article, purely and simply, implied class warfare (Advocate, January 28, 1984).

It is not yet clear whether or not the ice boats will indeed "knock out" the "peasant" day boats, or whether the latter will be severely curtailed. One thing for certain, is that there are still a lot of day boats in operation. Conversely, ice boats are not guaranteed survival by their mere existence. They too can go out of operation. An 1989 article about the man reputed to have begun the ice boat era, is a case in point: "In 1979, (he) really began the ice boat era. He saw a rosy future in them, and indeed there was. But, it has not been so for the past five

Proceedings of the 52nd Gulf and Caribbean Fisheries Institute

years. Flying fish are scarce. They are plentiful in Trinidad and Tobago, but Bajan fishermen can not fish there. However, fish from that country is coming into Barbados. His boat is now up for sale, and his son, a master fisherman, is out of the business" (Sunday Sun, May 28, 1989).

The exit from fisheries of the man who pioneered ice boats was explained in terms of increased resource scarcity, coupled with exclusion from the flying fish stocks that swim the waters of Trinidad and Tobago. So, his losses stem from biology and geopolitics. One wonders if those two factors have harmed other boats (Cecil 1999). Unfortunately, the media's sample of one leaves no grounds for a proper analysis. But, it does put a human face on the first owner of an ice boat.

Of course the actual vagaries of fishing affect the lives of those who practice the art. Boats are lost at sea, e.g., a \$100,000 ice boat sinks after hitting a log (Advocate, March 28, 1991). Unfortunately, lives are also lost. In the days of sail boats there was a heavy loss of life at sea, with an average loss of 12 people a year, from the 1930s to the 1950s (Nation, July 12, 1994). The day boats are safer, but not that safe. Lives are lost every year, albeit fewer than during the sail boat era. The question remains as to whether the ice boats and longliners are the safest vessels yet to be used in Barbados. Indications are that such might be the case.

The evolution of boats, especially in times of major change, i.e., first motor boats, then ice boats, seems to trigger considerable socioeconomic impact. Looking strictly at the press, the main effect appears to be in ownership patterns. The "little man" looses out, while entrepreneurs take over ownership. Only when the motor boats wiped out the sail boats was the little man able to compete. But, the ice boats are in a different financial league than the day boats, forming a distinct fleet, separate from the day boat fleet. However, both fleets operate in the same storage and market spaces, and competition is, apparently, fierce.

As early as 1986, a warning was sounded, by Hunte and Oxenford (1989) which effectively points to an "evolutionary boundary" being reached with the advent of longliners. Fifty-foot, or so, longliners seem to be the end of the evolutionary line, in terms of the growth of the size of boats, and of their functions. In their writings, bigger boats are either discouraged or not recommended.

In a country such as Barbados, evolution may never reach the levels of technological sophistication found in large developed countries. There are limits to growth and modernization. In fact, less than modern vessels, such as day boats, may prove to be highly desirable. Will master plans ever discuss limits, co-operation, competition, and differential development, and plan for each identifiable sector separately?

CONCLUSION

The government was instrumental in one major evolutionary phase, when the fleet adopted engines over sails. Otherwise, as the media points out now and again, government financing did help to launch bigger boats. But, the ice boats and longliners that sail from Bajan shores were all launched by private initiatives. Granted, the government backed many financially, but the boats were designed and adopted privately.

On the whole, the evolution of the fishing fleet is only partial. The fleet still exhibits many elements that represent technology, techniques, and operational organizations that are really quite historical. They co-exist quite harmoniously with the most recent modern inputs found in fisheries the world over. Consequently, the key to approaching an analysis of the Bajan fleet is to recognise the comparatively wide heterogeneity of the fleet, not only in its outward appearance, but in all its technological elements. Moreover, the human elements add their own heterogeneous dimensions to the fleet. Furthermore, no design is ideal.

The evolution of the fishing boats is one of the prime indicators of development, and in a true sense of economic development, as the evolution is concurrent with increased technological sophistication, which brings the sector into increasingly higher levels of financial activities.

There have been several major changes in the nature of Bajan fishing crafts over the last half century. The literature on evolution as such is sparse, but reasons for change have surfaced in some studies and in the popular press. In the latter case, the focus is often on an individual entrepreneur's reasons for launching a boat with innovations that distinguish it from its counterparts in the fleet.

As we near the 21st century, the Bajan fleet is a mixture of vessels that differ in size, sophistication, equipment and technological organisation. The fleet is a veritable continuum of boats ranging from the traditional to the modern. Evolution has gone on for over half a century, but excepting sail boats, elements of all the stages in the evolutionary continuum are still about and in use. This evolution will continue to proceed if only in an incremental way. But, the fleet has reached a plateau for the time being.

LITERATURE CITED

- Advocate*, Daily newspaper. Advocate Publishing Company, Bridgetown, Barbados.
- Bair, A. 1962. *The Barbados Fishing Industry*, Geography Department Publication Number 6, McGill University, Montreal. 57 pp.
- Cecil, R.G. 1988. The heterogeneity of southeastern Caribbean inshore fisheries: a problem for industry wide development planning, *Caribbean Studies* 21(1-2):215-236.

Proceedings of the 52nd Gulf and Caribbean Fisheries Institute

- Cecil, R.G. 1999. *Half a century of fisheries in Barbados: a quest for socioeconomic interpretations in the systematic literature and the popular press*. Fisheries Division Report No.1. Fisheries Division, Ministry of Agriculture and Rural Development, Barbados. 165 pp.
- Crown Agents for Overseas Governments and Administrations. 1990 *Institutional Strengthening of the Fisheries Division of the Ministry of Agriculture, Food and Fisheries*, Barbados, Final Report, Vol., 1, Technical Co-Operation ATN/SF-2474 BA, St. Nicholas House, Sutton, Surrey. unpaginated.
- FAO. 1982. *Report of the Barbados Fisheries Development Project Preparation Mission, Main Text And Annex I To 10*, FAO, unpaginated. Government of Barbados. *Development Plan 1973-77*. unpaginated.
- Hess, E. 1961. *Barbados: Fisheries Development Programme, 1961-1965*, Barbados Government Printing Office, Bridgetown, 41 pp.
- Hunte, W. and P. McConney. 1983. *Barbados: National Report on Fisheries Statistics*, Multilith Working Paper. 41 pp.
- Hunte, W., P. McConney, H. Oxenford, and G. Dharmaratne. 1994. *A Feasibility Study of Longline Fishing in Barbados*, Technical Report for the Barbados Development Bank, Bellairs Research Institute. 191 pp.
- Hunte, W., and H. Oxenford. 1989. The Economics of Boat Size in the Barbados Pelagic Fishery. *Proc. Gulf Carib. Fish. Inst.* 37:78-85.
- Jones, R.V. 1984. *Some Notes on Fisheries*, Multilith Document for Internal Circulation in Fisheries Division, unpaginated.
- Jones, R.V. 1993. *Information Note: Expert Consultation on the Development of Offshore Fishing Craft for the Caribbean Region*, Curacao. 4 pp.
- Mabon, R., H. Oxenford, and W. Hunte. 1985. *Development Strategies for Flying Fish Fisheries of the Eastern Caribbean*, Proceedings of an IDRC-sponsored Workshop at the University of the West Indies, Cave Hill, Barbados, October 22-23, 1985. 148 pp.
- McConney, P.A. 1987. *Small-scale Fisheries Planning in Barbados: The Roles of Information Exchange and Participation*. MES Thesis, Dalhousie University, Halifax. 138 pp.
- Nation*: Daily newspaper, Nation Publishing Company, Bridgetown, Barbados.
- Sunday Sun*, Nation Publishing Company, Bridgetown, Barbados.
- Wiles, D. 1959. Mechanization of the Barbados Fishing Fleet *West Indies Fisheries Bulletin*. 4:1-12.