

# The flyingfish fishery of Grenada

PAUL E. PHILLIP AND JUSTIN RENNIE

**Abstract:** Flyingfish, primarily *Hirundichthys affinis*, landings have declined sharply over the last 12 years from around 866.7 mt per year in 1978 to 11.5 mt in 1990. The importance of flyingfish as a component of the total fish catch in Grenada has also declined from representing 42% of the total catch in 1978 to just 0.64% in 1990. The decline in importance of flyingfish as a food fish and increased importance as a “bait fish” have contributed to the decline. The traditional fishing techniques (hook and line and dip net) have now been replaced by the surface gillnet. There is a strong possibility that the flyingfish fishery may be rejuvenated as a “bait fishery” to supply bait for the developing longline fishery.

## DESCRIPTION OF THE FISHERY

### Fishing techniques, past and present

Fishing for flyingfish has never really been an independent fishery in Grenada, but has always been closely associated with the fishing of large oceanic pelagics.

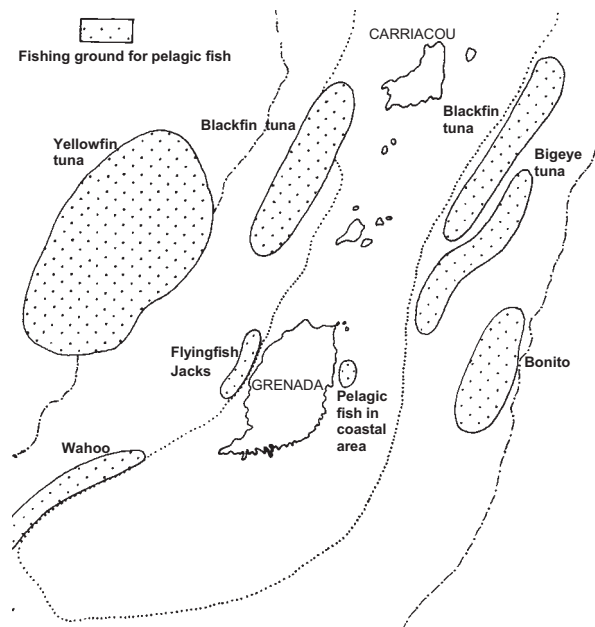
The materials and techniques used to catch flyingfish have changed with the development of the offshore pelagic fishery. Prior to the 1960s, most oceanic pelagics including the flyingfish were targeted from small sailboats, 6-8.5 m (20-28 ft) in length. Flyingfish were caught for bait and when plentiful were also caught to supplement the landed catch. From 1960, small, mechanised offshore pelagic boats, 6-8.5 m (20-28 ft) in length were developed with the introduction of small inboard and later outboard engines, which eventually replaced the traditional sailboats. In the 1980s longlining was introduced which necessitated the use of larger boats of 8.5-12.8 m (28-42 ft) in length, in the offshore pelagic fleet. Ironically, as larger boats have been introduced to the fleet, so the landings of flyingfish have declined drastically, despite a marked increase in the landings of the large oceanic pelagics.

In the early fishery, flyingfish were attracted to the drifting boats with “fresh” (macerated fish) dumped overboard, and coconut palm leaves which were tethered to the boat and spread on the surface, serving to aggregate spawning flyingfish as they came to lay eggs on the floating material. Flyingfish were subsequently scooped up by a handheld “bazaar” (dip net). Flyingfish were also caught using short handlines and small hooks. Today, most flyingfish are caught

using a “flyingfish net” (surface gillnet). They are caught primarily as bait for the larger pelagics, although some of the smaller boats still take flyingfish to supplement the landed catch.

### Fishing area and landing sites

Flyingfish are found in all the offshore waters around Grenada, but are caught chiefly off the west coast in areas where the large oceanic pelagics (primarily yellowfin tuna and billfishes) are targeted (Figure 1).



**Figure 1. Fishing grounds for oceanic pelagic species around Grenada.**

The main landing sites for flyingfish are on the north and west coasts (Figure 2), where fishermen target large oceanic pelagic species, and include Sauteurs, Duquesne, Victoria, Gouyave and St. George's (Melville Street and Carenage). The two most important landing sites are Melville Street and Gouyave (Figure 2). Landing, storage and marketing facilities at these sites differ according to their location and importance, and are summarised in Table 1.

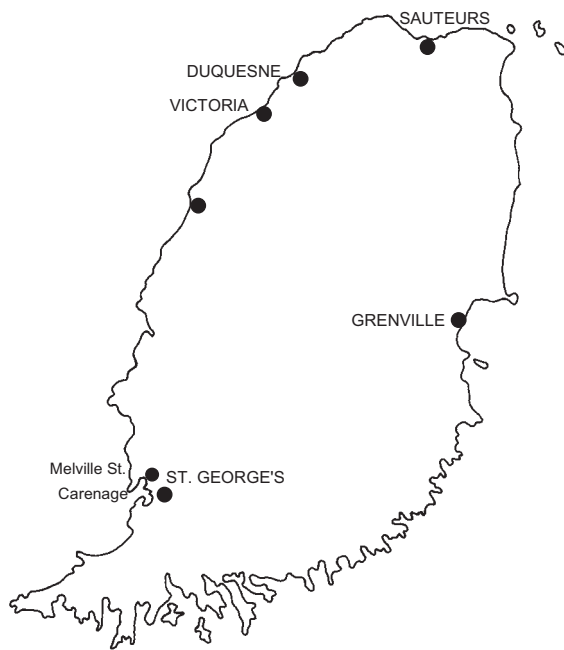


Figure 2. Main flyingfish landing sites around Grenada.

Table 1. Facilities at flyingfish landing sites in Grenada.

Landing site	Landing/market facilities	Storage facilities	Other facilities
Sauteurs	beach/market	chillroom	ice machine
Duquesne	beach/market	chillroom	
Victoria	slipway/market	chillroom	
Gouyave	beach, jetty/market	chillroom	ice machine
St. George's: Melville St.	jetty/market	chillroom	
St. George's: Carenage	harbour/market	chillroom	

## Estimated current flyingfish catch and effort

Since flyingfish are not a major component of the commercial catch and therefore landings seldom pass through the markets for weighing, data on flyingfish landings are taken by the market clerks on the basis of rational estimates. Weights are estimated according to the number of specially designed basketfuls, which are landed. Baskets are estimated to contain 240 fish when full and weigh 22.7 kg (50 lb). Actual total catches of flyingfish and other species are estimated by multiplying the recorded landings by a factor of 1.75.

No records are kept of fishing effort for flyingfish and therefore the catch per unit of fishing effort is not known. Landings however show a distinct seasonal pattern, with most flyingfish being landed between November and June (Table 2).

The total annual catch of flyingfish has declined considerably over the last few years (Table 2). One of the reasons for this decline is that surface longlining for oceanic pelagics has become increasingly lucrative and popular over the last 8 years, with a shift in effort away from flyingfish as an important food fish. Flyingfish are now caught primarily as bait and are therefore not recorded as landed catch.

## Proportion of the total fish catch

According to fish landing data the relative importance of flyingfish has declined steadily from the late 1970s (49% of the pelagic catch, 42% of the total catch) to 1990 (0.89% of the pelagic catch, 0.62% of the total catch; Figure 3). Again this reflects the switch in effort of pelagic fishers to the longline fishery, which has resulted in an increase in the overall catch of large oceanic pelagics and a decrease in the landings of flyingfish.

## Landed value of catch

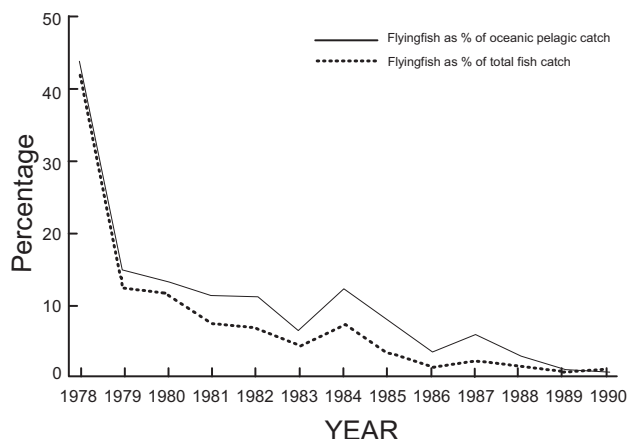
There is a Government controlled wholesale and retail pricing system for most of the commercially important species (including the oceanic pelagic species, the inshore pelagic species and the demersal species). The regulated wholesale price for flyingfish is EC\$ 1.00 / lb (EC\$ 2.20 / kg) and the regulated retail price is EC\$ 1.25 / lb (EC\$ 2.75 / kg). However, in reality marketing transactions disregard this pricing system and flyingfish are generally sold by number, with wholesale and retail prices fluctuating according to market supply and demand. Market prices for flyingfish are generally lower than the regulated price, with flyingfish normally being bought wholesale at 5 to 7

**Table 2. Estimated total flyingfish landings (kg) in Grenada.**

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total catch	Monthly mean
1981	3,971	3,777	3,678	0	0	0	0	0	0	3,800	7,381	2,611	49,220	4,102
1982	17,139	31,856	2,483	2,664	787	1,030	8,485	0	0	0	1,151	2,609	60,567	5,047
1983	10,158	12,461	5,131	3,185	8,270	6,270	1,658	0	2,930	0	2,867	7,544	60,475	5,040
1984	18,073	67,165	9,000	1,193	4,495	676	0	0	0	0	48	4,208	104,859	8,738
1985	24,740	21,325	1,598	0	318	120	0	0	0	24	0	3,818	51,942	4,329
1986	16,191	8,690	3,512	204	1,135	1,249	0	0	0	0	166	2,493	33,640	2,803
1987	39,025	11,208	541	202	900	1,289	0	702	0	0	69	2,218	56,154	4,679
1988	17,492	13,036	652	0	1,774	835	0	0	0	0	0	872	34,661	2,888
1989	7,317	795	0	262	0	60	41	0	0	0	76	0	8,552	713
1990	279	74	40	30	778	26	0	0	0	457	764	9,098	11,545	962

fish per EC\$ 1.00 and retailed at 3 to 5 fish per EC\$ 1.00. However, no records are kept of market prices.

Using the regulated price, the approximate value of the estimated total catch of flyingfish over the last 10 years is summarised in Table 3. The value of the total flyingfish catch has dropped from an estimated EC\$ 108,000 per year (wholesale) or EC\$ 135,000 (retail) in 1981 to around EC\$ 25,000 per year (wholesale) or EC\$ 32,000 (retail) in 1990. The importance of flyingfish as a baitfish for the larger oceanic pelagics remains high but cannot be estimated in monetary terms.



**Figure 3. The relative importance of flyingfish in Grenada shown as a percentage (by weight) of the oceanic pelagic catch and of the total fish catch.**

### Employment generated by the flyingfish fishery

The flyingfish fishery forms an integral part of the offshore pelagic fishery, which employs an estimated 505 fishermen, fish vendors and boat builders (Table 4).

**Table 3. Landed value (EC\$) of the estimated total flyingfish catch in Grenada based on Government regulated prices.**

Year	Wholesale	Retail
1981	108,283	135,354
1982	133,247	166,559
1983	133,044	166,305
1984	230,689	288,361
1985	114,273	142,841
1986	74,009	92,511
1987	123,538	154,423
1988	76,255	95,319
1989	18,814	23,518
1990	25,398	31,748

**Table 4. Employment generated directly by the oceanic pelagic fishery in Grenada.**

Employment	Full-time	Part-time
Fishermen	328	72
Fish vendors	58	15
Boat builders	24	8
Total	410	95

### Flyingfish species composition & size structure of the catch

The main species of flyingfish caught in the waters of Grenada is *Hirundichthys affinis*. *Cypselurus heterurus* and *Exocoetus obtusirostris* are also known to be caught, although proportions of different species remains unknown since they are not separated by species on landing, but simply pooled and recorded as "flyingfish".

## **DEVELOPMENT AND MANAGEMENT OF THE FLYINGFISH INDUSTRY**

### **Catch and effort data collection system**

There are six landing sites at which flyingfish are landed (Table 1, Figure 2). At each of these a Market Clerk records the total weight of fish by species landed at the market. These data are then forwarded to the Statistical Department of the Fisheries Division for further processing.

Flyingfish are generally not weighed, but the weight estimated by volume (1 basket = 22.7 kg). Records of flyingfish landings are not kept separately by boat, such that there is no estimate of fishing effort for this species. The OECS data collection system designed for Grenada (Finlay *et al.* 1988) has not yet been implemented.

### **Recent fishing agreements and negotiations**

At present, Grenada has no special agreement with any of the neighbouring islands over fishing rights, as far as the flyingfish fishery is concerned. However, the OECS countries are now working out an agreement for a common zone for oceanic pelagics and this of course, would include the flyingfish.

### **Recent legislation pertaining to flyingfish**

Grenada has no fishery legislation pertaining specifically to the flyingfish fishery.

### **Planned future directions for the industry**

With the further development of the longline fishery for oceanic pelagics, it has been suggested that a "bait fishery" should be developed so that the longline vessels can leave for the fishing grounds with bait already onboard. The "bait fishery" would target flyingfish, which would then be landed, packaged, frozen and stored for use by the longline fishery.

## **REFERENCES**

- Finlay, J., J. Rennie, R. Mahon and A.A. Rosenberg. 1988. A fishery data collection system for Grenada. pp 105-120. In: Mahon R. and A.A. Rosenberg (eds). Fishery data collecting systems for eastern Caribbean islands. OECS Fishery Report No. 2.