

## The flyingfish fishery of St. Lucia

PETER A. MURRAY AND SARAH GEORGE

**Abstract:** Flyingfish (primarily *Hirundichthys affinis*) is an important component of the traditional pelagic fishery in St. Lucia. Approximately 94 mt of flyingfish are landed annually, accounting for 25-30% of the total pelagic landings. The estimated annual value of the flyingfish catch is in excess of EC\$ 200,000. The pelagic fleet comprises approximately 400 open boats which fish on a daily basis for oceanic pelagic species from November to June. Approximately 2,000 full and part-time fishermen are involved in this fishery. Expansion of the fishing fleet is planned and local fisheries yield is expected to increase over the next 5 years. Catch and effort data are recorded at 11 of 16 landing sites. The fishery remains unmanaged.

### DESCRIPTION OF THE FISHERY

#### Fishing techniques, past and present

The St. Lucian flyingfish fishery is a traditional one. Fishing techniques have changed little over the years, apart from the gradual introduction of surface gill nets since 1967, and mechanisation of the sail-powered fleet over the last 20 years. The pelagic fishing fleet comprises approximately 400 open canoes, fibreglass pirogues and wooden transom boats 5 to 9 m in length. The majority of the boats are canoes of the traditional Carib dugout construction with plank gunwales and are capable of taking three crew and between 0.5 mt and 1.3 mt of fish depending on the boat size (Figure 1). They are powered by outboard engines (10-75 hp) and may carry oars and sails as an auxiliary power source (Murray *et al.* 1988). All the boats in the fleet exploit offshore pelagic species, of which flyingfish is a major component during the season in which they can be caught (mid November-June).

They fish approximately eight to ten hours a day, leaving the beach in the early morning and returning to sell the catch between mid-afternoon and evening. On reaching the fishing grounds, the boat is allowed to drift and the three crewmen position themselves in the bow, centre and stern of the canoe. An artificial raft of dried banana leaves is tied alongside the boat and leaf trash may be shredded into the water. A surface gill net is set about nine metres from the boat and pulled alongside as fish gather in it. It may then be used to encircle the artificial raft and trap fish. One of two different mesh sizes may be used (stretched mesh 19 mm or 25 mm) depending on the average size of the fish on any one

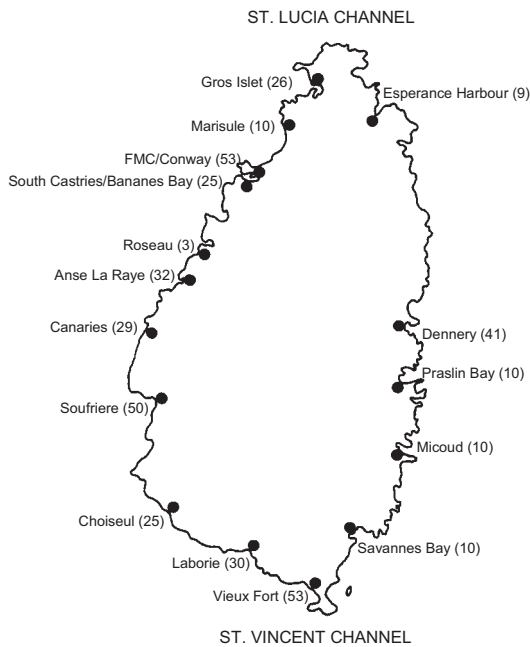
day. Macerated fish is thrown into the water to attract the shoal. Single-hook lines are used to catch the first of the fish. If they congregate in large enough numbers, a shallow dipnet with a split bamboo frame (a “callie”) is used to scoop them up.



**Figure 1. Typical canoes used in the pelagic fishery for flyingfish and other large pelagics, on the haul out ramp at the FMC landing site in Castries.**

#### Fishing area and landing sites

The boats fish for flyingfish mostly northwest and southwest of the island, approximately 12 to 15 miles offshore. Flyingfish are however believed to be landed, at least occasionally, at all landing sites located in the coastal towns, villages and settlements (Figure 2). Extension officers have recently indicated that fishermen on the east coast over the past 2-5 years have not fished for flyingfish deliberately but have gone preferentially for the larger pelagics, catches of flyingfish being incidental.



**Figure 2. Fish landing sites in St. Lucia, showing the approximate number of boats operating from each location (in parentheses).**

### Estimated current flyingfish catch and effort

Approximately 94 mt (C.I. =  $\pm 10.22$ ) of flyingfish are estimated to have been landed annually between 1980 and 1989 inclusive (Table 1). The decline in the landed weight during the mid-1980s (Table 1), was previously thought mainly to reflect marketing difficulties. However, recent work by Mahon *et al* (1990), suggests that landings of pelagic species within the region are, in general, highly variable from one annual season to another, and this they suggest may be due to either variability in the actual abundance or to availability (catchability) of the fish.

The fishing season for the offshore pelagics including flyingfish begins in mid-November and runs until late June/early July. Catch per unit effort data for flyingfish collected in 1990 shows the flyingfish seasonality clearly (Table 2). There appears to be a bimodal pattern of abundance with a minor peak in January and a major peak in March (Figure 3).

**Table 1. Estimated total landings of flyingfish.**

Year	Estimated Catch (mt)	
	Flyingfish	Total fish
1980	97.63	481
1981	106.67	526
1982	95.96	473
1983	94.86	467
1984	95.71	472
1985	119.20	602
1986	87.68	432
1987	67.18	331
1988	84.04	414
1989	91.33	450
1990	45.46	532*

Source: Department of Fisheries, St. Lucia, unpubl. data  
\* First estimate

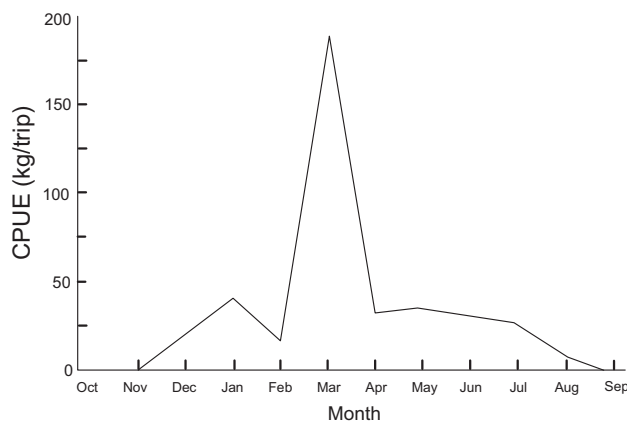
**Table 2. Flyingfish catch and catch per unit effort for 1990.**

Month	Flyingfish	
	CPUE (kg/trip)	Total catch (kg)
January	41.20	19,414.46
February	16.84	639.24
March	187.59	10,958.73
April	32.31	840.63
May	34.84	6,532.62
June	31.43	6,636.02
July	26.67	328.17
August	7.64	60.24
September	-	0
October	-	0
November	-	0
December	22.32	89.90

Source: Department of Fisheries, St. Lucia, unpubl. data

### Proportion of the total fish catch

Flyingfish and dolphinfish are the two most important species (by weight) landed by the artisanal fishery. Flyingfish account for approximately 20% of the total fish catch, and 25% to 30% (26.4% in 1989) of the pelagic catch. They may in reality account for an even higher proportion of the total fish catch, since statistics collectors' records tend to be more heavily biased against flyingfish than other species as a result of the often late return of the flyingfish boats.



**Figure 3. Seasonality of flyingfish in St. Lucia as indicated by 1990 catch and effort data.**

### Economic value of the catch

The flyingfish catch may be sold directly to the public at landing sites, transferred to markets by vendors, or landed at and sold directly to the St. Lucia Fish Marketing Corporation (FMC). Surplus catch used to be damp-salted and carried inland by vendors. This practise has stopped as a result of cheap chicken being introduced onto the market. Salting, smoking and drying are done at home to preserve flyingfish for the “off season”. In such cases the product is usually not resold. The FMC has, over the years, blast frozen and stored large quantities of flyingfish for resale as whole fish. Experimental boning at the FMC was not profitable as a result of the high wholesale price of flyingfish compared with imported frozen, dried and salted fish (Martin Fevriere, Manager, FMC, pers. comm., 1991). Marketing the catch at the peak of abundance remains a problem.

The maximum, government controlled, price for whole flyingfish is set at EC\$ 2.50 per pound. However, the price fluctuates widely and has been known to drop to as low as fifteen fish to the dollar. The average price paid by the FMC in 1986 was EC\$ 1.00 per pound (25c to 30c a fish). At the Castries Market, flyingfish was sold at an average price of EC\$ 1.32 per pound (40c a fish). The estimated landed value of the catch is around EC\$ 238,400 a year. Boned flyingfish fetch a higher price (EC\$ 1.00 a fish) but are sold mainly to hotels.

Canoes cost between EC\$ 3,000 and EC\$ 5,000, fibreglass pirogues from EC\$ 15,000 to EC\$ 25,000, wooden transom-boats from EC\$ 500 to EC\$ 1,000, and outboard engines from EC\$ 4,000 to EC\$ 6,000 and gear approximately EC\$ 2,000.

The per capita income of fishermen is highly variable and very difficult to estimate.

### Employment generated by the fishery

There are approximately 2,000 full and part-time fishermen. Approximately 90% of these catch flyingfish during the season (mid-November to June). There are in the order of 50 vendors operating at the main landing sites of Castries, Dennery and Vieux Fort. Until 1988, the Laborie Fishermen’s Co-operative had a small processing plant for flyingfish which employed 10 persons, eight of whom were involved in scaling and boning for the public as well as the hotel market. This facility is no longer operative. In addition, around the island, villagers may rent freezer space to fishermen to store surplus catch. Occasionally, a truck and driver are hired to transport surplus flyingfish catch to inland and rural areas. Salting and smoking are done at home for family consumption only.

There are about nine boat builders on the island. However, apart from the fishermen themselves, the number of individuals who are involved in boat and engine maintenance is not known.

### Species composition and size structure of the flyingfish catch

At least two types of flyingfish are taken in offshore waters. The main species is the same as the Barbados flyingfish i.e. *Hirundichthys affinis*. A second flyingfish (known as “denn”) is caught less frequently, and usually on hook and line. This species is probably *Cypselurus cyanopterus*. Length frequency data for the offshore flyingfish caught in December show a mean length of 24.6 cm FL and are given in Figure 4. A third species of flyingfish known as the “tee-wai” is caught nearshore in ballyhoo nets, particularly in the summer. These fish are small at maturity and it may take 20 fish to weigh a pound.

## DEVELOPMENT AND MANAGEMENT OF THE FLYINGFISH INDUSTRY

### Catch and effort data collection system

There are at present 10 statistics collectors recording flyingfish landings at 11 of the 13 landing sites around the island. These individuals record the total catch for each boat “sampled” at each site, 11 out of every 12 fishing days. Estimated total catch is derived using a factor, calculated each year, which allows for: the areas not covered by collectors; days on

which collectors do not work; and fish which are not seen by collectors while they are on duty (Murray *et al.* 1988).

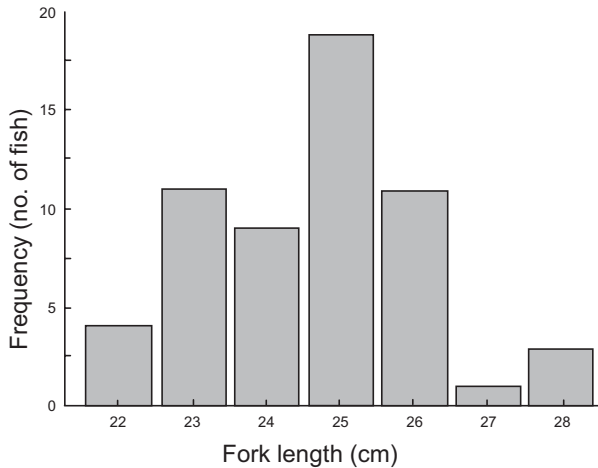


Figure 4. Length frequency of flyingfish taken by the St. Lucia fishery in December.

### Recent fishing agreements and negotiations

A maritime boundary representing an equidistant line between Martinique and St. Lucia was legally established by agreement between the governments of the French Republic and St. Lucia in 1981 (Figure 5). This agreement came about in recognition of the need to effect a precise delimitation of the respective maritime areas in which the two states exercise sovereign rights. This was particularly pertinent to the question of fishing rights over which a number of incidents between fishermen of the two nations had occurred.

At present there is no formal delimitation of the maritime area between St. Lucia and St. Vincent. The mid-line is assumed and amicable relations between these neighbouring OECS countries negates any need for a formal treaty at this time.

### Recent legislation pertaining to flyingfish

At present there is no fisheries legislation pertaining specifically to flyingfish. The pelagic fishery, of which flyingfish is a major component, remains a free-access, unmanaged fishery.

### Planned future directions for the industry

The population of St. Lucia is increasing at about 4% annually. At present, approximately EC\$ 3 million to EC\$ 6 million of fish are imported annually. It is hoped that the local fisheries yield will be increased over the next five years to help meet the increasing protein needs and reduce the food import bill. It is also hoped that the fishery may develop so fishing techniques become more efficient and thus reduce the cost of locally caught and processed fish. This may allow processing of flyingfish at competitive prices for export.

The fishing fleet will hopefully be expanded by the introduction of fibreglass pirogues with ice boxes and inboard engines. Such boats might remain at sea for several days. There are plans to build fishing harbours at Dennery and at Vieux Fort. The FMC is undertaking some experimental marinating and smoking of flyingfish. The price of the end-product seems, however, to limit market demand.

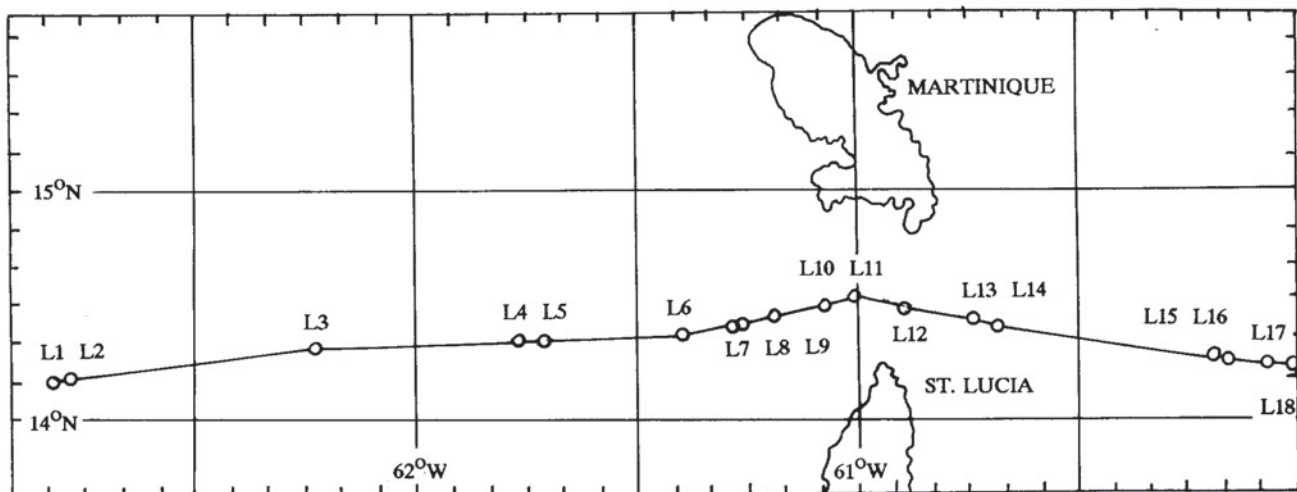


Figure 5. Legal maritime boundary between St. Lucia and Martinique.

## REFERENCES

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- Murray, P., J. Charles and R. Mahon. 1988. Fishery Data Collection System for St. Lucia. pp 140-149. In: R. Mahon and A.A. Rosenberg (eds.). 1988. Fishery data collection systems for eastern Caribbean islands. OECS Fish. Rep.2.