

## Dolphinfish fisheries in the Caribbean region\*

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**SUMMARY:** Dolphinfish are targeted throughout the Western Central Atlantic region by recreational fishers, small-scale artisanal fishers, and small longliners. They are also taken as by-catch on large-scale commercial longlines. Catches are highly seasonal and exhibit considerable interannual variability. According to the landing statistics provided by countries to FAO, dolphinfish ranked seventh overall in reported average annual landings of large pelagic fishes in the Western Central Atlantic from 1989 to 1993. Yellowfin tuna, Spanish mackerel, skipjack tuna, king mackerel, swordfish and Atlantic bonito ranked ahead of dolphinfish. There is a trend of increasing total annual landings from about 1,700 mt in 1970-74 to about 2,800 mt in 1989-1993. Landings are reported to FAO by only eight countries, whereas dolphinfish are known to be caught in most of the region's 34 countries. By-catch on longlines and recreational landings are also largely unreported. Therefore, it is likely that the reported landings are a substantial underestimate. The relative importance of dolphinfish to pelagic fisheries varies from one part of the region to another. In the Lesser Antilles it is the most important large pelagic fish in terms of amounts landed. The absence of a large-scale commercial fishery targeting dolphinfish appears to have resulted in a lack of recognition of its contribution, particularly in developing countries of the region. Consequently, its biology and assessment have been neglected in relation to the attention given to other large pelagic fishes, mainly tunas and tuna-like fishes which have been the focus of ICCAT assessment activities.

*Key words:* dolphinfish, Caribbean, large pelagic

### INTRODUCTION

The "Wider Caribbean" area includes the Caribbean Sea, the Gulf of Mexico, the northeast coast of South America and the southeastern Atlantic coast of the USA. This is also the area referred to as the Western Central Atlantic (WCA) by FAO. It is their Fishery Statistical Area 31. The Western Central Atlantic Fishery Commission (WECAFC) covers all of this area as well as some of Fishery Statistical Area 41 to the south (to 10°S, and to 30°W) (Fig. 1).

The oceanography of the Caribbean region is highly variable both spatially and temporally. Four

of the largest river systems in the world - the Amazon, Orinoco, Rio Grande and Mississippi Rivers - have a considerable influence on the north coast of South America and the Gulf of Mexico (Muller-Karger, 1993). Most Caribbean islands are more affected by the nutrient-poor North Equatorial Current, which enters the Caribbean Sea through the passages between the Lesser Antilles. Those islands with appreciable shelf area exhibit significant coral reef development. From Isla Margarita west to Mexico, the continental shelf is also extensively occupied by coral reefs at shallow depths. Seagrass beds and mangroves are also common coastal habitats.

There is no current comprehensive review of Caribbean fisheries. However, an overview can be obtained from some early reviews (Klima, 1976;

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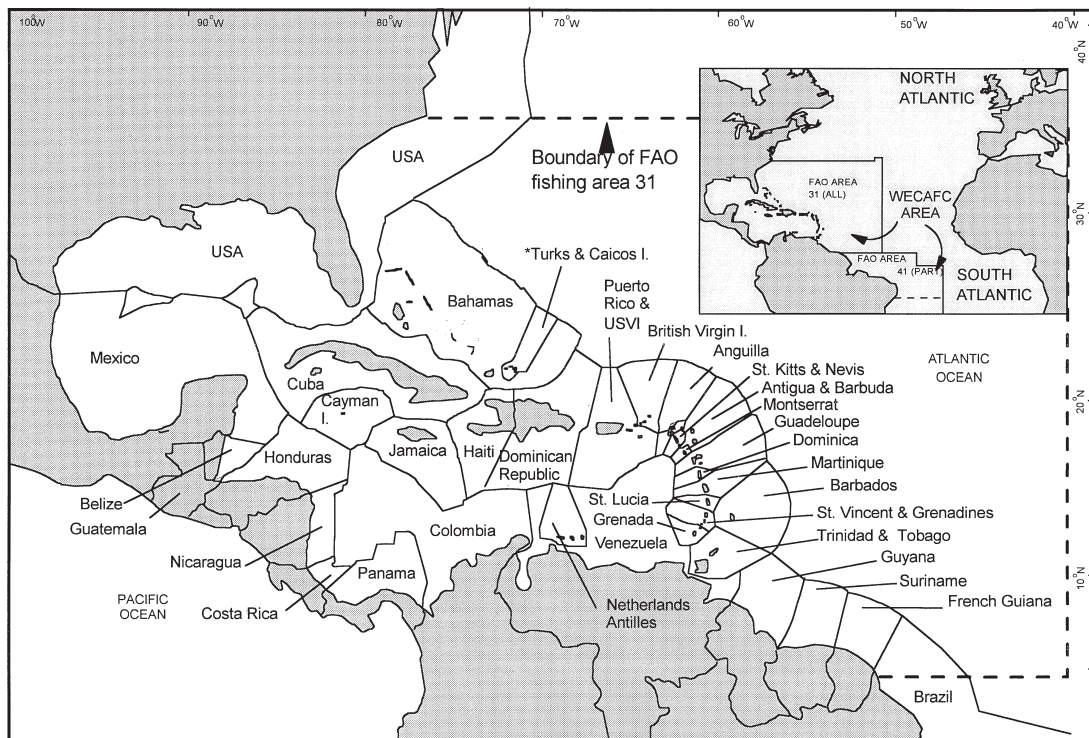


FIG. 1. – The wider Caribbean region and Western Central Atlantic Fishery Commission area showing approximate EEZs of countries (adapted from Mahon, 1996).

Stevenson, 1981) and from some recent ones that address particular geographical areas or resource types (Mahon, 1990; Oxenford, 1991; FAO, 1993; Mahon, 1996).

The fisheries of the Caribbean Region are based upon a diverse array of resources. The fisheries of greatest importance are for offshore pelagics, reef fishes, lobster, conch, shrimps, continental shelf demersal fishes, deep slope and bank fishes and coastal pelagics. There is a variety of less important fisheries such as for marine mammals, sea turtles, sea urchins, and seaweeds. These fishery types vary widely in state of exploitation, vessel and gear used, and approach to their development and management. The relative importance of these fisheries varies widely among the countries, depending mainly on the amount of coastal shelf and whether the shelf habitats are mainly coral reefs or river discharge influenced.

In general, shelf resources (e.g. lobster, conch, reef fish, shrimps) are either fully exploited or already overexploited, particularly near shore (FAO, 1993; FAO, 1994). Optimizing the returns from these resources will require rehabilitation and management.

In the Western Central Atlantic, large pelagic fishes comprised only 4% of total fishery landings

between 1986-1990 (Mahon, 1996). However, these resources, mainly tunas and swordfish, are considered by most countries to hold some potential for development. During the period 1989-1993, dolphinfish ranked seventh in importance by weight amongst reported landings of large pelagic fishes from this region (3.3% by weight) (Mahon, 1996). The relative importance of dolphinfish appears to vary considerably from one part of the region to another in the period 1989-1993. Distant water fleets fishing in the area do not report any dolphinfish landings. Nor do countries of South and Central America. For the USA and Mexico the dolphinfish contribute only 2.6% of landings of large pelagics. For the Greater Antilles the percentage is 4%, whereas for the Lesser Antilles it is 40% (Mahon, 1996).

#### TRENDS IN FISHING EFFORT FOR LARGE PELAGICS

There are no commercial fisheries outside of the USA that target dolphinfish exclusively, although in some fisheries dolphinfish may be the main species caught. Dolphinfish are generally only one component of multispecies fisheries for large pelagics. At times, they are only by-catch in fisheries directed at

tuna and swordfish. Therefore, in order to evaluate trends in fishing effort that may affect dolphinfish, it is necessary to consider trends in overall effort for large pelagic species. In this section I examine trends in fishing fleets, gear and, where possible, fishing effort for the various types of fisheries which target large pelagics in the WECAFC Region. I follow the categorisation of large pelagics into coastal species (*Scomberomorus* spp., dolphinfish, cobia) and oceanic species (swordfish, billfishes, yellowfin tuna, bluefin tuna, bigeye tuna, albacore, skipjack tuna, Atlantic bonito, Atlantic black skipjack tuna, frigate tuna, wahoo) used by the US National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center (SEFSC) (SEFSC, 1994).

### Artisanal and small-scale fleets

Large pelagic species have been exploited by local artisanal and small-scale fishers throughout the Caribbean from the earliest recorded times (e.g. Brown, 1945; Caribbean Commission, 1952). In most countries these fisheries were coastal, using small vessels such as canoes and pirogues for trolling. These methods continue to be used in many countries, but there have also been intermittent improvements in vessels and gear in several countries.

Estimates of the numbers, types and activities of artisanal/small-scale vessels are widely scattered throughout the literature. Since most of the small vessels are used to fish a variety of species, estimates of the numbers of these vessels do not accurately reflect the fishing effort being directed at large pelagic fishes in general, or dolphinfish in particular. Availability of many large pelagic species is highly seasonal, particularly to artisanal vessels which do not venture far from shore (e.g. Mahon *et al.*, 1990). Therefore, during the off-season, vessels may fish for demersal species, or small coastal species. Even within a single fishing trip, fishing effort may be divided between fishing for demersals and pelagics. In islands of the southeastern Caribbean, the focus of a trip may be primarily large pelagic fishes, or during the flyingfish season a combination of this species (*Hirundichthys affinis*) and large pelagics. In other countries of the region, with more extensive coastal shelves and associated demersal fisheries, similar vessels may fish for large pelagics only incidentally while travelling to and from demersal fishing areas, or may occasionally focus on large pelagics when they are available.

In the southeastern Caribbean small-scale fishers depend upon the association of dolphinfish and other pelagics with drifting objects (Gomes *et al.*, 1988). Most fishers interviewed in Barbados, Tobago, Grenada, St. Vincent and St. Lucia reported seeking drifting objects on fishing trips. Dolphinfish did not seem to have a preference for any particular type of drifting object, being equally attracted to natural objects and those of human origin.

Details of fishing for dolphinfish in Barbados are provided by Oxenford (1985). For trolling, flyingfish is the preferred bait. The method of fishing a school of dolphinfish found under a drifting object is described, including keeping one live fish on a short line near the boat to keep the school nearby.

Despite the lack of quantitative information on trends in numbers of various types of vessels, recent development trends in local fleets in the eastern Caribbean do indicate that there is a trend of increasing artisanal and small-scale fishing effort directed at these large pelagic species. The cases presented below illustrate trends in the development of fleets and fishing effort for large pelagics that are assumed to be similar to those taking place in countries throughout the region.

In Grenada, in the Lesser Antilles, longline fishing for pelagics, introduced in the early 1980s with assistance from Cuba, was adopted by the troll fishing fleet on the island's west coast. By 1993 there were 110 converted, or locally purpose-built, small longliners fishing 1-day trips, and seven Japanese-built short-stay longliners (Samlalsingh, 1995). In addition to the increased number of vessels, there were considerable changes in the size of vessels, gear used and fishing power. Over the 10 year period of development of these vessels, the catch per trip of target species increased from 43 to 120 kg.

The neighboring countries of St. Vincent and the Grenadines and St. Lucia have also emphasised an increasing harvest of large pelagic fishes. Both have seen recent increases in fishing capacity. In St. Lucia, 40 new 9 m vessels (not all fishing for large pelagics) and 5 new 15 m longline vessels were introduced between 1989 and 1992. In St. Vincent and the Grenadines five new 12.5 m multipurpose vessels equipped with longline and trolling gear were acquired from Japan in 1991 (Mahon and Singh-Renton, 1992). Previously, the fleet in St. Lucia consisted of about 300 canoes and skiffs, 5-8 m in length, while that fishing for large pelagics in St. Vincent and the Grenadines consisted of pirogues 6-8 m in length (Mahon and Rosenberg, 1988).

Several other Lesser Antillean countries, members of the Organization of Eastern Caribbean States, reported initiatives aimed at increasing pelagic fishing, ranging from the introduction of longline gear on artisanal vessels to the acquisition of new small-scale longline vessels (OECS, 1992).

Trinidad and Tobago has also increased its longline fleet. In 1988 two locally owned longline vessels began surface longlining. By 1992, eight vessels (14-23 m in length) were in operation (Mahon and Singh-Renton, 1992).

Recently there has also been a significant expansion in the fishing capacity for large pelagics in Barbados. Between 1962 and 1979 the number of vessels fishing for pelagic fishes (flyingfish and large pelagics) was relatively constant at about 400. However, during that period the fishing power of these day-trip trolling vessels more than doubled from 35 kg/day to 76 kg/day due to increased boat and engine size (Oxenford and Hunte, 1987; Mahon *et al.*, 1990). In 1979, the development of a new fleet of larger vessels with ice holds, capable of staying at sea for 7-14 days, and thus fishing further from base, began with the introduction of one vessel. By 1989, 82 such vessels were in operation. Most were locally built and many were equipped with longline gear. Towards the end of this period, there were several joint ventures with USA vessel owners. Barbados remains committed to further development of its longline fleet.

In Venezuela, there are two artisanal fleets that have increasingly targeted dolphinfish in recent years. There is a gillnet fleet in the central coastal area, and a longline fleet operating from Isla Margarita in the east. Details of these fleets and their fishing operations are provided by Arocha *et al.* (1999). These fleets have recently begun to target dolphinfish, showing a steady increase in landings from 1991 to 1997.

Most of the information on catches and catch rates of dolphinfish in the eastern Caribbean is based on vessels which employ the more traditional method of trolling. The proportions of dolphinfish caught by the small longliners that have recently been introduced in many countries has seldom been documented. A US swordfish longline vessel fishing in the vicinity of Grenada reported only 0.3% of its catch by weight as dolphinfish (Mahon, 1993). In local vessels targeting surface species, mainly yellowfin tuna and sailfish in Grenada fishing at depths of 30 - 90 m, the proportion of dolphinfish was higher, being in the range of 3-5% (Samlalsingh, 1995; Samlalsingh *et al.*, in press).

## Large-scale commercial

Large-scale commercial fleets have been fishing for large pelagics in the Caribbean region since the late 1950s. Most of the fishing effort has been by longliners, but since the early 1970s there have been purse seine and tuna pole and line vessels as well. There is little documentation regarding the catches of dolphinfish by large-scale commercial fleets targeting tunas with longlines, purse seines and pole and line.

The US swordfish fleet which expanded its operations throughout the Caribbean over the period 1987-1993, reports an overall by-catch of dolphinfish of 2.66 fish/1,000 hooks (data provided by the US National Marine Fisheries Service, Southeast Fisheries Science Center (NMFS SEFSC)). Considerable further analysis of these data are required to determine the spatial and seasonal variation in dolphinfish catches.

The ICCAT database provides the best available information on fishing effort by large-scale commercial fisheries in the western central Atlantic. The database includes fishing effort and catch by country, gear, year, month and square (10°, 5° or 1° on the side). Most data for longliners are recorded by 5° squares and those for surface fisheries by 1° squares. Trends in fishing effort are shown by country for longlines, purse seines and bait boats (Fig. 2). In the case of longlines, the trends are shown for two sets of squares, (1) those in the Atlantic, mainly to the east of national EEZs, and (2) those mainly in the area of national EEZs (Fig. 2). This analysis follows that presented by Mahon (1996).

In the late 1950s, there was a steady increase in Japanese longline fishing effort in the western central Atlantic from 1958 through 1966, in both groups of squares. The decline in Japanese effort in the late 1960s was accompanied by an increase in Taiwanese longline effort from 1967 to the mid-1970s in both areas, and in Korean longline effort from 1974 through 1979. The fleets comprising this succession of peaks were targeting yellowfin tuna. There was a second peak in Taiwanese effort in this area in 1986, primarily in the Atlantic to the east of the EEZs, targeting albacore. In later years, longline activity by Cuba is concentrated mainly between 1984 and 1987. The growth of Venezuela's large commercial fleets shows clearly from 1981 to 1985, and the increased activity of swordfish vessels from the USA is evident from 1986 onward (Fig. 2). The distribution of longline fishing effort by 5° square in

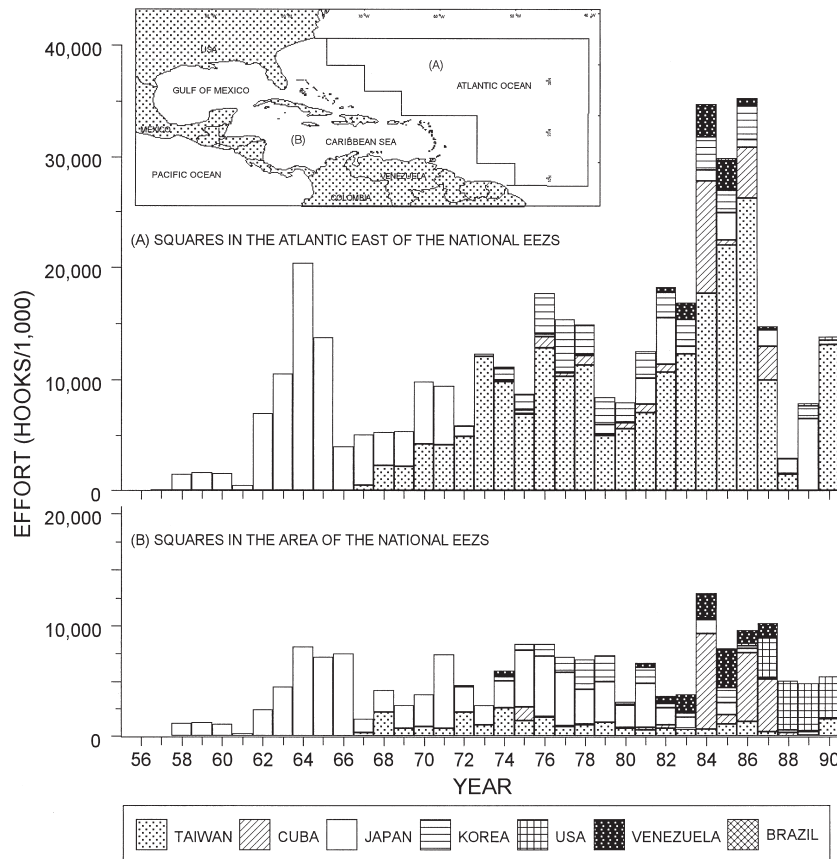


FIG. 2. – Trends in longline fishing effort by countries reporting landings in the WECAFC area. The data are shown for two areas: (A) data reporting squares in the Atlantic east of national EEZs; and (B) squares in the area of national EEZs.

the WECAFC area for all countries combined for the period 1986-1990 shown by Mahon (1996) suggests that longline effort and catch in the Caribbean Sea are low in comparison to that in the Atlantic Ocean east of the island arc.

The Venezuelan tuna fishing fleet includes large purse seiners, small and large longliners and small baitboats. The Venezuelan purse seine tuna fishing fleet only began to expand rapidly in the early 1980s, increasing from five vessels in 1982, with a capacity of 5,600 short tons, to 25 vessels in 1988, with a capacity of 29,700 tons Weidner and Hall (1993). These vessels range in size from 900-1,500 gross registered tons (GRT). The purse seine fleet fishes mainly in the eastern tropical Pacific, but does catch appreciable amounts of tuna in the western central Atlantic.

In 1992, the Venezuelan longline fleet consisted of two large longliners (about 60 m), which operate primarily in the western Atlantic, and about 80 small vessels (20-25 m) using about 33 km of longline. The small-scale fleet in general appears to be expanding, as there were only 58-60 vessels operat-

ing in 1990-1991. The exact number of these which target tuna is uncertain, with reports ranging from 15 to 33 vessels (Weidner, 1993). Eslava and Gaertner (in press) report four large longliners and only 15 small ones, noting that the latter fleet had declined recently due to difficult economic times in Venezuela. Arocha *et al.* (1999) report that dolphin-fish have been a component of the by-catch of the longline fleet since the 1960s.

Cuba's tuna fleet, of 1 purse seiner and 10 longliners over 500 GRT reported to be operating in 1989, is believed to have been fishing primarily off West Africa. However, some activity by Cuban longliners was reported in the WECAFC area between 1984 and 1987. Details of the small-scale domestic fleet which fishes for large pelagics in the vicinity of Cuba are not readily available. Rodriguez (1989) indicates that there were about 60 small-scale pole and line fishing vessels and about 80 small-scale longliners in operation in Cuba in 1988.

Most commercial fishing for large pelagics in the WECAFC area by the USA is by small-scale fleets for coastal pelagics. Two notable exceptions are the

longline fleet fishing for yellowfin tuna in the Gulf of Mexico (Browder and Scott, 1992), and the swordfish longline fleet. The latter shifted its operations south through the Caribbean and down to the north coast of South America from about 1986 through 1991 and withdrew partially in subsequent years.

### Recreational

Throughout the Caribbean, dolphinfish are an important component of recreational fishing. There are few records of quantities caught by recreational fishers. Furthermore, the lack of information on the numbers of recreational vessels and their patterns of fishing makes it impossible to estimate the catch of this component of the fishery. A questionnaire survey by Schmeid (1989) is the most complete compilation of information for the countries of the wider Caribbean. Of 40 countries/islands surveyed, 27 replied, but many respondents were unable to supply

quantitative information on the numbers of anglers (12/27 respondents provided), private vessels (17/27) or charter vessels (19/27) present in their countries.

Recreational fishing can be considered in three parts: fishing tournaments; charter boat fishing, usually by tourists; and regular fishing from privately owned pleasure craft (private fishing). There are local and international fishing tournaments for large pelagics throughout the Caribbean region. Many of these are aimed at billfish, but other species are also often caught. Between 1991 and 1994, 18% of the catch at the St. Lucia Annual International Billfish Tournament was dolphinfish (De Beauville-Scott, in press).

In a questionnaire survey of Caribbean countries, 11 of 18 countries listed dolphinfish as one of the top five marine species sought in tournaments, whereas 10 of 20 countries listed it as one of the top five species caught (Schmeid, 1989). In Puerto Rico, in a 1978 survey, dolphinfish was named as the most sought after sport fish (CFMC, 1983).

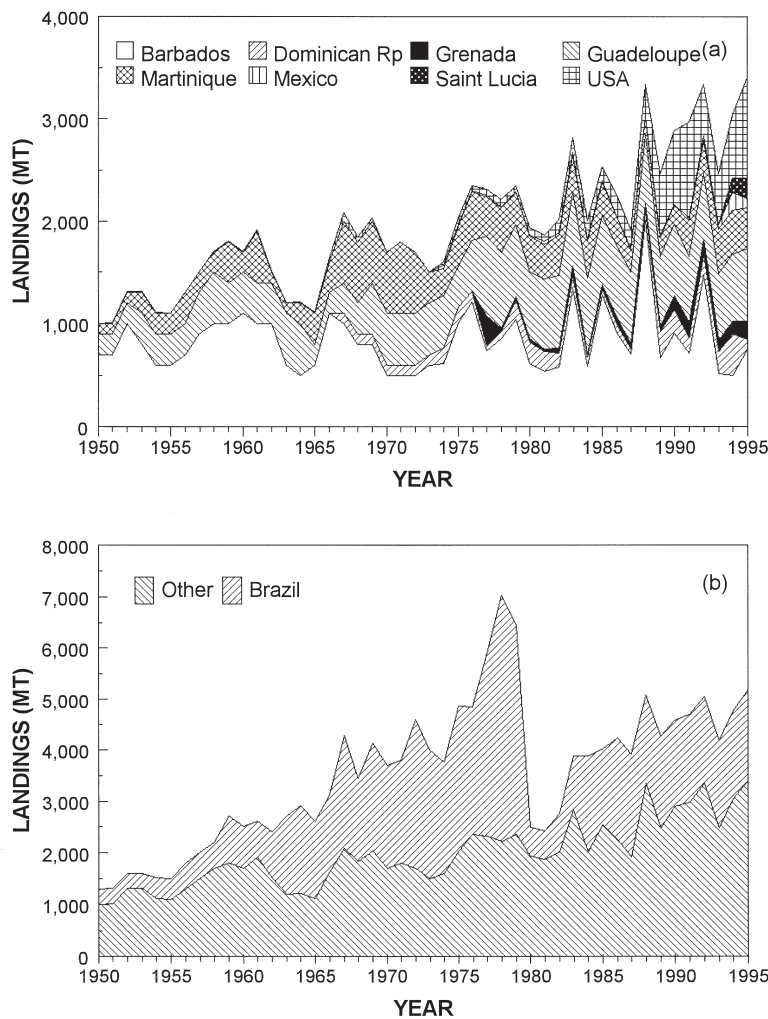


FIG. 3. – Reported dolphinfish landings from the Western Atlantic: (a) Caribbean countries, and (b) from Brazil and the total for all Caribbean countries.

TABLE 1. – Dolphinfish fisheries in countries of the wider Caribbean region (R = recreational, A = artisanal, C = commercial). For countries not reporting dolphinfish, landings of unidentified fishes that could include dolphinfish are shown in three categories: unidentified marine fishes (UIM), unidentified pelagic fishes (UIP) and unidentified tuna-like fishes (UIT).

Country	Fisheries	Dolphinfish landings		Avg. ann. unid. landings (1990-94)		Comments and sources
		mt	Period	mt	Type	
<b>Countries reporting dolphinfish landings to FAO</b>						
Barbados	RAC	821	1990-1994			About 50% of total landings (Oxenford, 1985)
Dominican Republic	RAC	242	1990-1994			FAO. No details provided by Appeldoorn and Myers (1993)
Grenada	RAC	135	1990-1994			Comprised 17.9% of large pelagic landings at Grenville, east coast, and 8.0% and 7.2% at west coast sites 1981-1989 (Mahon <i>et al.</i> , 1990)
Guadeloupe	RAC	656	1990-1994			FAO
Martinique	RAC	345	1990-1994			Comprised 9% of large pelagic landings (Sacchi <i>et al.</i> , 1981)
Mexico	RAC	59	1990-1994			FAO
USA	RC	657	1990-1994		UIM	FAO
<b>Countries not reporting dolphinfish landings to FAO</b>						
Anguilla	RA			112	UIM	No specific information on dolphinfish (MRAG, 1993)
Antigua and Barbuda	RA			884	UIM	
Aruba	RA			232	UIM	Important in recreational fisheries only (Bahamas Dept. Fish., 1992)
Bahamas	RA			466	UIP	
				115	UIM	
Belize	R			384	UIM	
Bermuda	RA			119	UIM	
Brazil	RA				UIM	
British Virgin Islands	RAC			934	UIM	No specific information in MRAG (1993), 0.9 mt landed at BVI Fishing Co. Ltd. In 1987, comprising 0.9% of fish landed at that facility, mainly incidental catch to reef fish fishery. Recreational fisheries mentioned by Walters (1983)
Cayman Islands	R			119	UIM	
Colombia	R	15	1992	3386	UIT	Not listed by MRAG (1993). Dolphinfish was second most important species in the artisanal catch in 1993 (11%) (INPA, 1993, 1994). Listed as incidental catch in deepwater fishery, but not as a major species in fisheries around San Andres/Providencia archipelago (Mow de Peters, 1988)
		92	1993	2684	UIM	
Costa Rica	R			65	UIM	No mention in Paez (1991) or Baisre (1993). Former gives annual landings down to 0.3 mt. Dolphinfish are mentioned by Roig and de la Maza (1952)
Cuba	AC			22096	UIM	
Dominica	RAC	72	1992	677	UIM	Comprised 12.1% (25 mt) and 13.% (65 mt) of total landings in 1984 and 1985 (Anon. 1985, 1986). 1992 catch from Guiste <i>et al.</i> (1996)
French Guiana	R	Neg		3171	UIM	No reports of dolphinfish. Unlikely in nearshore fisheries due to river influences.
Guatemala	R			102	UIM	Dolphinfish are not taken by domestic fisheries (Phillips and Charles, 1993)
Guyana	R	Neg		35969	UIM	
Haiti	RA			3476	UIM	No mention of dolphinfish by Appeldoorn and Myers (1993)
Honduras	RAC			535	UIM	
Jamaica	RAC	110	1981	7200	UIM	Comprised 6% (34 mt) of pelagic and 0.03% of total landings in 1963, 3.6% (27 mt) of pelagic and 0.2% of total in 1970, and 25% of pelagic and 1.5% of total in 1981 (Sahney, 1983, Mahon, 1995)
Montserrat	RAC			143	UIM	MRAG, (1993)
Netherlands Antilles	RAC			568	UIM	
Nicaragua	R			694	UIM	Zaneveld (1962)
Panama	R				UIM	No mention in Garcia (1989) which includes spp. with landings down to 0.1 mt
Puerto Rico	RAC			305	UIM	
				107	UIP	CFMC (1983), Appeldoorn and Myers (1993), Perez <i>et al.</i> (1993)
				79	UIT	
St. Kitts/Nevis	RAC			254	UIM	Mentioned by Olsen (1983)
St. Lucia	RAC	211	1993	781	UIM	
St. Vincent/Granadines	RAC	48	1995	1132	UIM	19% of total landings in 1993 (Gobert and Domalain, 1995), and 43.2%-36.0% of pelagic landings from 1984-1989 (Mahon <i>et al.</i> , 1990).
Suriname	R	0		9010	UIM	Comprised 38.2% of pelagic landings from 1979-1989 (Mahon <i>et al.</i> , 1990). 1995 landings from OECS (1996)
Trinidad/Tobago	RC			2661	UIM	
Turks and Caicos Islands	R			303	UIM	No catches of dolphinfish have been noted (Charlier, 1993)
US Virgin Islands	R			741	UIM	Mentioned as a recreational species but not listed as a commercial species by Kenny and Bacon (1983)
					UIM	Not listed as a species caught by longlines (MRAG 1993). Comprised 6.9% of recreational catch (Olsen and Wood, 1983). Comprised 7% (1.4 mt), 4% (1.2 mt) and 16% (3.6 mt) of recreational catch in St. Thomas in 1983, 1984 and 1985 (Brandon, 1988). CFMC (1983), Appeldoorn and Myers (1993)
Venezuela	RC	697	1997			
						Arocha <i>et al.</i> (1999). Not included in Herrera-Teran (1988), which lists species with landings down to 1 mt. Recreational importance in Machado and Jaen (1983)

Dolphinfish are also a significant component of private fishing. In Venezuela, records from a single yacht club show that between 1961 and 1981 dolphinfish comprised 17.6% (numbers) of the catch (Machado and Jaen, 1983). In Puerto Rico in 1979 the percentage (numbers) was 14.33% (CFMC, 1983).

### Fish attracting devices (FADS)

Despite the tendency for dolphinfish and other large pelagics to occur in association with drifting objects (Oxenford, 1985; Gomes *et al.*, 1998), FADs are not in common use by commercial or recreational fishers in the Caribbean (Gomes *et al.*, 1998). There have been some studies of the efficacy of FADs in the Caribbean area. Friedlander (1992) found that the majority of fish caught trolling around FADs were dolphinfish (64.2%), and catch rates were higher than in a control area. Commercial and recreational fishers report increased catch rates for dolphinfish when trolling around FADs placed off the west coast of Barbados (*pers. com.* S. Willoughby, Barbados Fisheries Division).

### TRENDS IN LANDINGS

There is an overall increasing trend in dolphinfish landings reported to FAO by countries in the Western Central Atlantic (Fig. 3). However, only eight of about 34 states report dolphinfish landings (Table 1). Brazil also reports a steady increase in landings from the southwest Atlantic. However, this appears to have been in two phases, with a steep increase in 1950-1978, followed by a sharp drop in 1978-1980, and another period of increase through to 1995 (Fig. 3). Although Venezuela does not report dolphinfish landings, Arocha *et al.* (1999) provide estimates of landings showing an increasing trend from 50 mt in 1990 to 607 mt in 1997.

Dolphinfish are known to be caught in the large majority of countries that do not report them (Table 1). There are several reasons why they may not be reported.

- The catch may be mainly by-catch in large-scale commercial longline fisheries and may not be considered consequential. The countries that

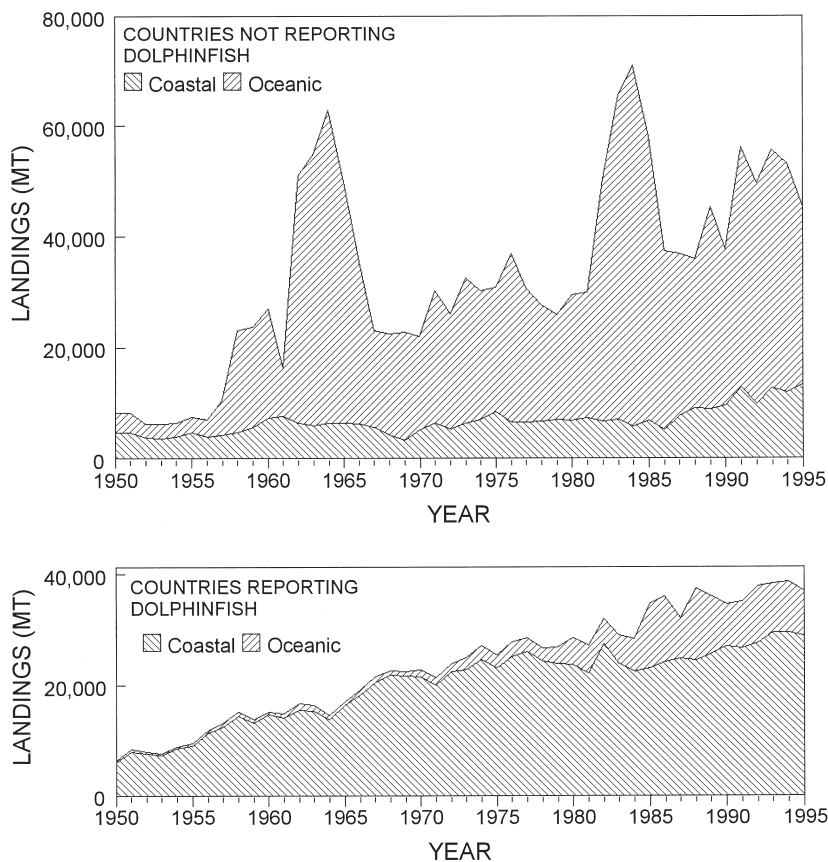


FIG. 4. – The reported landings of coastal and oceanic large pelagics from the Western Atlantic



report dolphinfish are those for which coastal pelagics are most important (Fig. 4). Countries with well developed small scale trolling and longline fisheries catch a high proportion of coastal pelagics, including dolphinfish.

- The fisheries may be primarily recreational. Recreational catches are not reported by any country except the USA.
- Data collection and reporting systems may not be sufficiently well developed to record, or to report recorded catches to the species level. The data may be collected or estimated at the detailed level but aggregated for reporting because national staff do not appreciate the importance of reporting the data by species.

The literature and FAO data shown in Table 1 suggest that dolphinfish are most important in the eastern Caribbean. Western Caribbean countries, Mexico excepted, do not frequently refer to dolphinfish as a significant species in their national reports and publications describing fisheries. In the eastern Caribbean, fishing areas for dolphinfish appear to be most commonly located to the east of the island chain.

## CONCLUSIONS

Dolphinfish are widely distributed in the western central Atlantic, where they are caught by a wide variety of fisheries: artisanal, small-scale commercial, large-scale commercial and recreational. The growth in all these fleets over the past 20-30 years suggest that exploitation of dolphinfish has been intensifying. The data reported to FAO show a steady increase in landings. However, it is clear that the reported landings are substantially lower than the actual landings. Many countries do not report their dolphinfish landings separately from other species, and few countries report recreational landings.

Although there is no dramatic evidence of a decline in this resource, the lack of information on the quantities of dolphinfish landed should be a matter of urgent concern to all countries that exploit this species.

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