	منظمة الأغذية والزراعة للأمم المتحدة	联合国 粮食及 农业组织	Food and Agriculture Organization of the United Nations	Organisation des Nations Unies pour l'alimentation et l'agriculture	Продовольственная и сельскохозяйственная организация Объединенных Наций	Organización de las Naciones Unidas para la Agricultura y la Alimentación
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WESTERN CENTRAL ATLANTIC FISHERY COMMISSION (WECAFC)

SEVENTEENTH SESSION

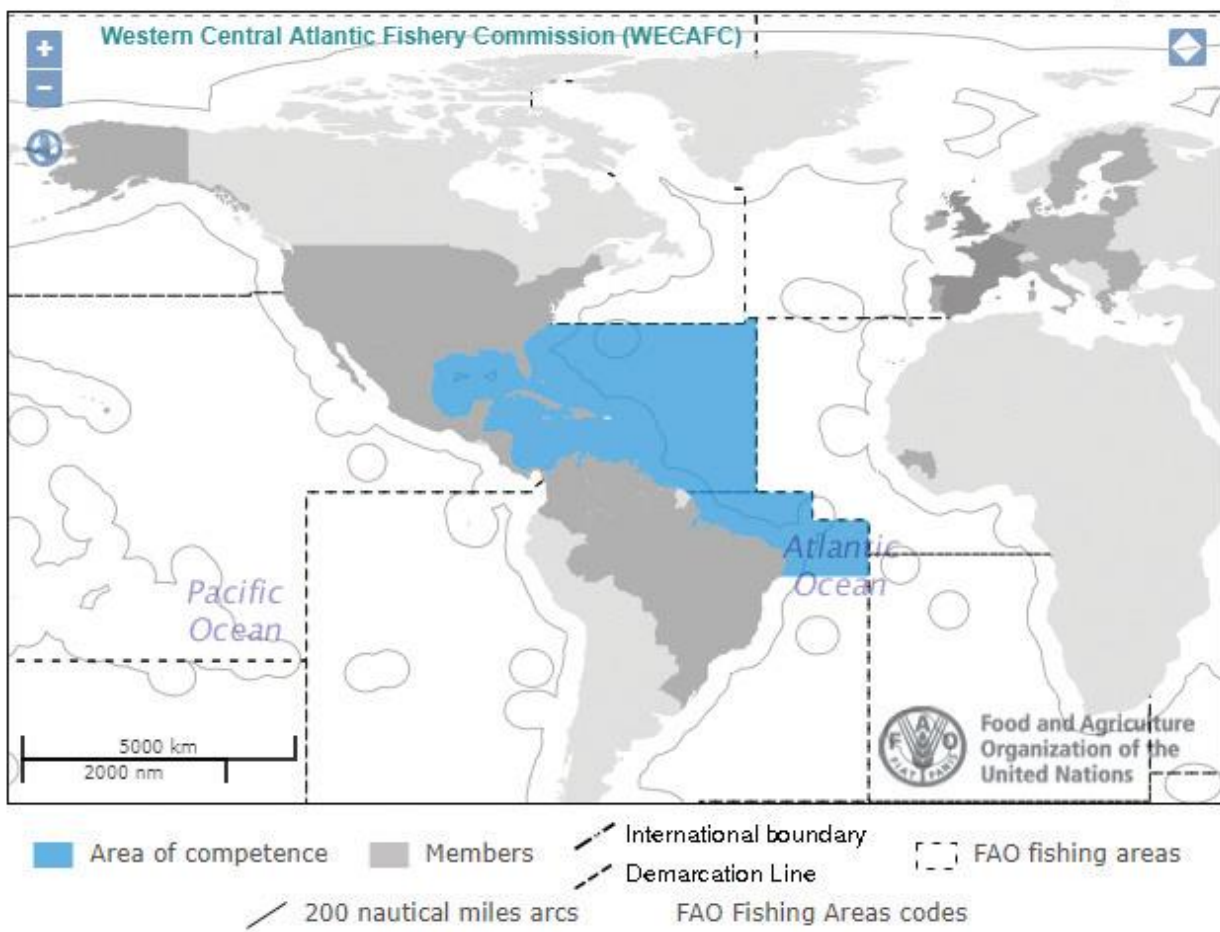
Miami, United States of America, 15-18 July 2019

State Of Fisheries and Aquaculture in the WECAFC Area

This document provides an update of the status of fisheries in the Western Central Atlantic Fisheries Commission (WECAFC) area. Although WECAFC region includes FAO Statistical Area 31 and a portion of Area 41 (northern Brazil) as reflected in Figure 1, this document focusses on Area 31.

STATE OF FISHERIES AND AQUACULTURE IN THE WECAFC AREA

Fig. 1 Map of the WECAFC area*



* www.fao.org/fishery/rfb/weca/c/en

Acronyms

CC4FISH	Climate Change Adaptation of the Eastern Caribbean Fisheries Sector Project
CFMC	Caribbean Fishery Management Council
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CL	carapace length
CLME	Caribbean Large Marine Ecosystems
CLME+	Caribbean and North Brazil Shelf Large Marine Ecosystems
CRFM	Caribbean Regional Fisheries Mechanism
FAD	Fish Aggregation Devices
GDP	Gross Domestic Product
GEF	Global Environment Facility
ICCAT	International Commission for the Conservation of Atlantic Tunas
IGFA	International Game Fish Association
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
NDF	Non-Detriment Finding
OECS	Organization of Eastern Caribbean States
NDP	Net Domestic Product
OSPESCA	Organización del Sector Pesquero y Acuícola del Istmo Centroamericano
OT	Overseas Territories
SDG	Sustainable Development Goals
SICA	Sistema de la Integración Centroamericana (Central American Integration System)
SIDS	Small Island Developing States
TAC	total allowable catch
TBF	The Bass Federation
TURF	Territorial Use Rights in Fisheries
USD	United States of America dollars
USSR	Union of Soviet Socialist Republics
UWI	University of the West Indies
VMS	Vessel Monitoring Systems
WB	World Bank
WECAFC	Western Central Atlantic Fishery Commission

Executive summary

1. Overall, the region under the mandate of the Western Central Atlantic Fishery Commission (WECAFC) is an area with limited fisheries resources. In 2017, marine catches in the Western Central Atlantic (FAO fishing area 31)¹ are 1.5 million tonnes, far below the record of 2.4 million tonnes reached in 1984. The WECAFC area is thus among the areas with the lowest catches among world oceans, similar to the Southeast Atlantic with 1.3 million tonnes, the Southwest Atlantic where capture production decreased from 2.4 to 1.5 million tonnes; and the Southwest Pacific with less than 1 million tonnes. All other FAO fishing areas report higher catch. WECAFC marine catch accounts for less than 2 percent of total world capture fisheries. It has to be noted, however, that capture fisheries in the WECAFC area are subject to heavy underreporting. Aquaculture production is 370 000 tonnes², or less than 1 percent of total world aquaculture production.
2. On average, fisheries and aquaculture account for about 1 percent of the Gross Domestic Product (GDP) in the WECAFC area. Despite the relatively low production, it has to be considered that the fish³ catch in the WECAFC area concentrates on high value species, such as spiny lobster, Queen Conch and shrimp. It is also to note that fishing is a part of the folklore and the culture, especially in the Caribbean islands; it also plays an important role for the tourism industry, a major economic activity in these countries. Two subregional organizations are active in fisheries management, the Caribbean Regional Fisheries Mechanism (CRFM) and the Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OSPESCA), but overall the WECAFC area is without a Regional Fisheries Management Organization (RFMO). Although restricted to the United States of America, the Caribbean Fishery Management Council (CFMC) plays also a noticeable role, supporting significantly work of some regional working groups such as Queen Conch, Spiny lobster, etc.
3. In several countries the fisheries are still open access fisheries, and resources are often overexploited. Some other countries, for instance Belize and Mexico, are in the forefront of tenure and access rights to the fisheries resources. WECAFC could become a center of excellence for fisheries management based on these examples.
4. Fish consumption is high in some Caribbean countries/territories such as Guyana, Montserrat, and Turks and Caicos, but the average across the whole WECAFC is only half the world average, leveraged down by the relatively low consumption and high population of the Latin American countries. WECAFC countries are net importers of fishery products, with a strong dependence on imports in some islands countries. On the other hand, exports of high value species is important in several countries.
5. Fisheries plays a vital part in several rural areas of Caribbean countries. Indigenous fishers play a significant role on the Caribbean coast of Central America. Women play a central role in the post-harvest sector of fish in the WECAFC countries, a role which is often overlooked by policy makers.

¹ The most difficult task when drafting this text was the selection of countries, footnotes will explain which countries are included. In this case, all countries, also non WECAFC member countries are included

² In this case, all WECAFC member countries producing in the WECAFC area were taken, including the United States of America and Honduras for the freshwater fish aquaculture close to the Atlantic ocean

³ Unless otherwise specified, throughout this publication, the term “fish” indicates fish, crustaceans, molluscs and other aquatic animals, but excludes aquatic mammals, reptiles, seaweeds and other aquatic plants.

6. Looking at the overall context, governance is weak in several WECAFC member countries, as the contribution of fisheries to the Gross Domestic Product (GDP) is limited, while climate change, extreme events, and coastal pollution are impacting negatively the performance of the fisheries sector in the WECAFC area.

INTRODUCTION

7. The present document provides a non-exhaustive synthesis on the fisheries and aquaculture sector in the WECAFC area⁴, with production statistics from the Western Central Atlantic (FAO fishing area 31); it addresses all sub-sectors and describes the various relevant facets, such as production, post-harvest, fish consumption and trade. The document also frames the information presented in the context of emerging issues in the sub-region and describes some of the current management arrangements. Its lay-out follows the one of the FAO Fisheries and Aquaculture country profiles. This is the first attempt to present such an overview to a WECAFC Commission meeting.

METHODOLOGY

8. The main sources of the compilation were the FAO Fisheries and Aquaculture Profiles (FAO, 2019a) for the WECAFC area and the FAO FishStatJ (FAO, 2019b) extractions. The main problem experienced was the fact that some of the countries have access also to other oceans. For these countries only the capture production from the Western Central Atlantic, as determined in FAO FishStatJ, was considered. For aquaculture, production in the WECAFC marine area and freshwater aquaculture from areas bordering the Western Central Atlantic were taken into account. Freshwater and inland fish production was included, but was even more difficult to determine, therefore for inland fisheries only those countries bordering only the Western Central Atlantic were taken into account. For the human population, only those people living on the coast of the Western Central Atlantic were included⁵. The part on governance was based on websites of WECAFC, CRFM and OSPESCA, plus the relevant country profiles.

General Area Overview

9. The Western-Central Atlantic⁶ encompasses all marine waters of the Western Central Atlantic bounded by latitudes 35° N and 5° N, longitude 40° W and the coast of the American continent (Fig. FAO31.1) comprising approximately 14.5 million km². The total water area under national jurisdiction amounts to 50%, while the high seas, mostly in northeastern part cover, 50% of FAO Area 31. The continental shelf area covers 1.64 million km² and is widest around the Gulf of Mexico, Central America (Yucatan Peninsula, Honduras, Nicaragua), north of Guyana, Surinam, and French Guiana, and around some islands and offshore banks (e.g. The

⁴ In the following the WECAFC area is the FAO Area 31, the Western Central Atlantic

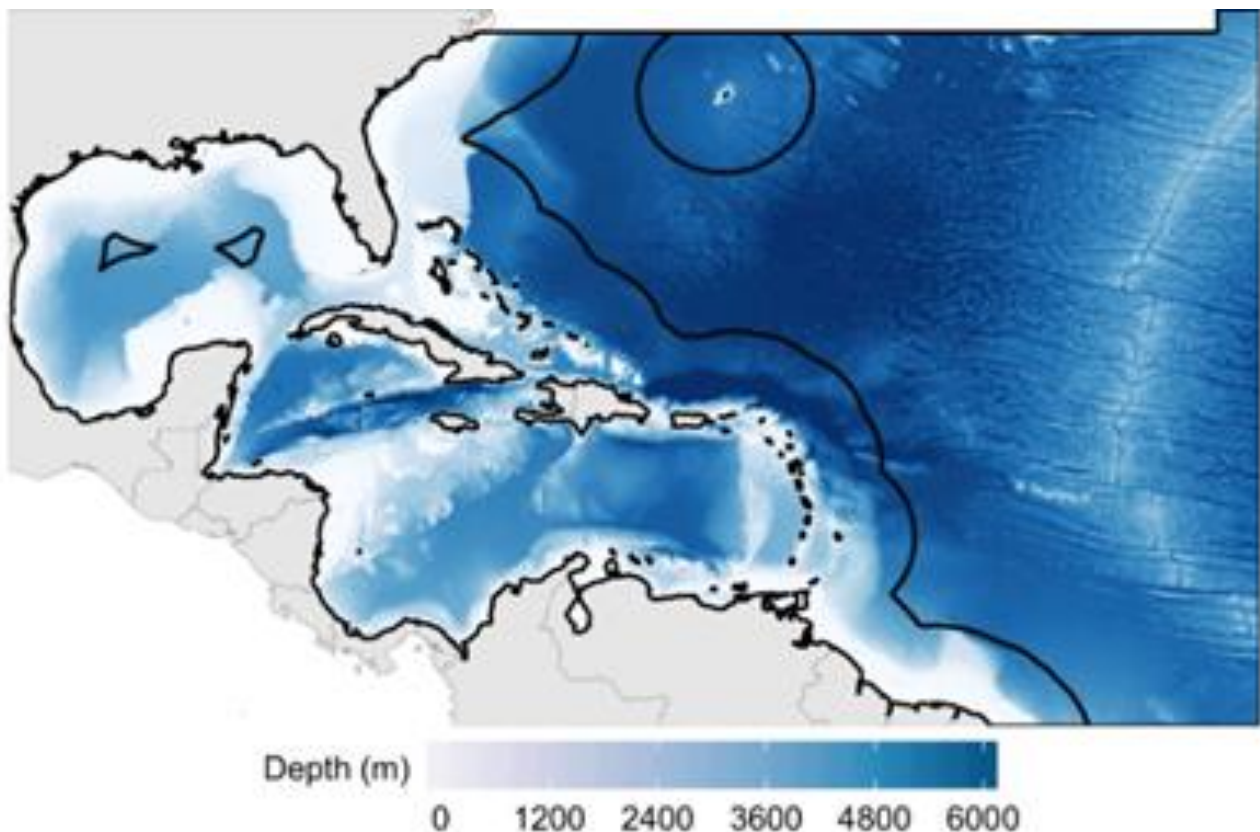
⁵ in the case of the United States of America Georgia, South Carolina, Florida, Alabama, Mississippi, Louisiana, and Texas. In the case of Mexico, Tamaulipas, Veracruz, Tabasco, Campeche, Yucatan, and Quintana Roo. For Colombia Antioquia, Cordoba, Sucre, Atlántico, Magdalena, and La Guajira. For Honduras Atlantide, Colon, Gracias a Dios, Cortez, and Bay Islands.

⁶ More information: <http://www.fao.org/fishery/area/Area31/en>

Bahamas, Cuba, Pedro Bank)⁷. The Western-Central Atlantic also includes a large number of islands with very limited shelf area and large areas of deep ocean within the Caribbean Sea and the Atlantic (Fig. 1). FAO Area 31 is one of the most diverse areas of the world's oceans in terms of biodiversity and biogeographic features (Oxenford and Monnereau, 2018).

10. The productivity of the region is heterogeneous with alternating areas of high and low productivity. As a result, this area has a high diversity of marine species, especially in the Caribbean, which is considered a global hotspot of marine biodiversity (Roberts et al., 2002).

Fig. 2 FAO Area 31 (WECAFC) bathymetry (depth) and 200 nautical miles coastal line



Source: courtesy from - FAO 2019 under press

Production

11. In 2017, the Western Central Atlantic supplied 1.5 million tonnes of fish⁸ and fisheries products for an estimated 94 million people. It represents 1.6% of total world capture fisheries production⁹; in the year 1984 this share was more than 3%. Many commercially targeted fish stocks are currently overfished or fully exploited. Main producing countries in volume are the United States of America, Mexico, Brazil (only catch in the Western Central Atlantic) and the

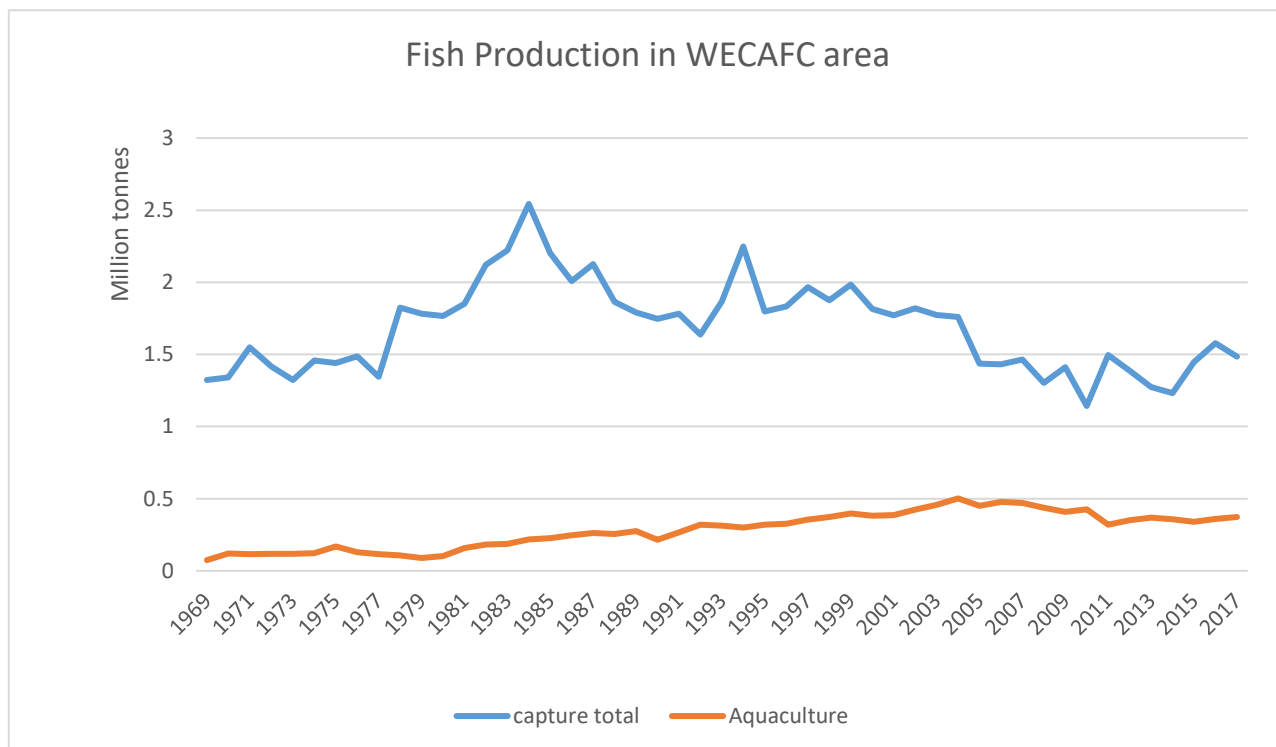
⁷ http://www.fao.org/fishery/docs/STAT/by_FishArea/Fishing_Areas_list.pdf

⁸ Unless otherwise specified, throughout this publication, the term “fish” indicates fish, crustaceans, molluscs and other aquatic animals, but excludes aquatic mammals, reptiles, seaweeds and other aquatic plants.

⁹ It should be noted, that in several WECAFC working group meetings, it has been underlined that production is probably underestimated, especially with regard to the landings of the artisanal fisheries.

Bolivarian Republic of Venezuela. The production trend line shows a more or less continuous downward trend since the mid 1980s, with some stabilization in the more recent years.

Fig. 3 WECAFC fish production, capture and aquaculture (in tonnes)



Source: FAO FishStatJ 2019

MARINE CAPTURE SUB-SECTOR

Main Resources

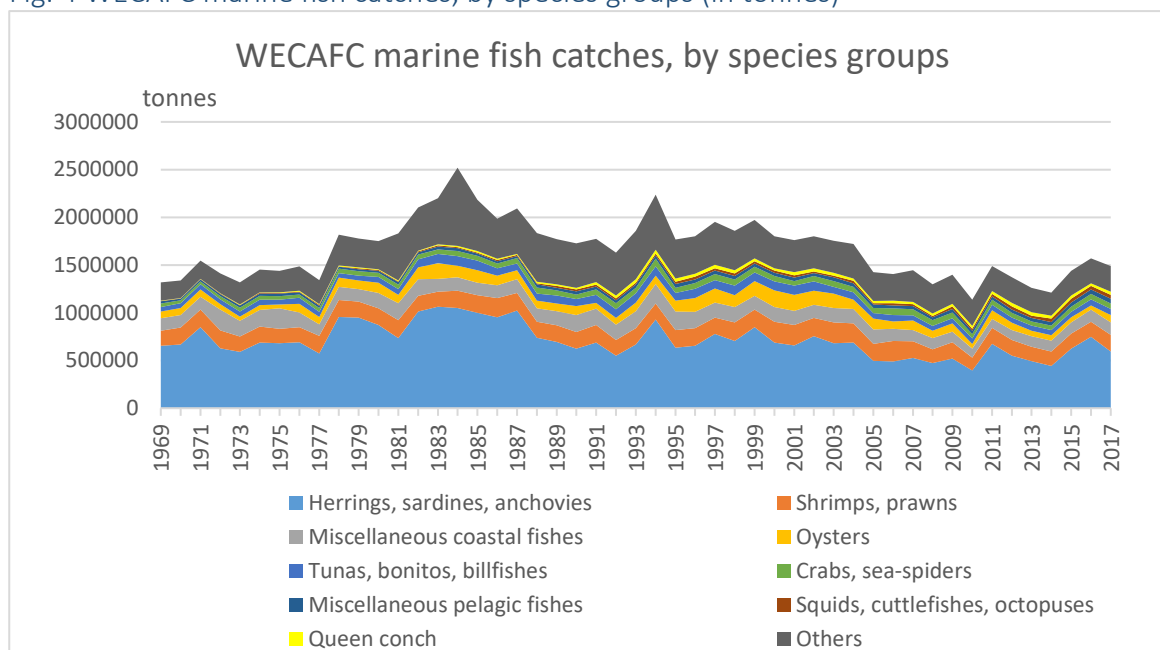
12. Species of interest to fisheries include molluscs, crustaceans (lobster, penaeid shrimps, crabs), coastal fishes occupying various substrata (soft bottom or reefs), large migratory fish species, and deep-slope fish species (FAO, 2016).

Catch Profile and Catch Trends

13. Fish catches in the WECAFC area fluctuated between 1.2 and 1.6 million tonnes over the past decade (2008-2017). This total is well below the 2.4 million tonnes reached in 1984, or the average of 1.8 million tonnes of the nineties of the last century. In addition, it is estimated that IUU fishing equates to 20–30 percent of the reported landings, with a value of USD 700 to USD 930 million per year (FAO 2018).

14. In 2015-2017, 12 species made up 77% of the reported catch: Gulf menhaden, Round sardinella, Marine fishes nei, American cupped oyster, Northern brown shrimp, Northern white shrimp, Blue crab, Queen conch, Atlantic seabob, Caribbean spiny lobster, Ark clams, and Mexican four-eyed octopus.

Fig. 4 WECAFC marine fish catches, by species groups (in tonnes)



Source: FAO FishStatJ 2019

15. By far the main species group landed in WECAFC area is small pelagic fish. This species group accounts for between 40 and 50 percent of total production. The main species in this group is the Gulf menhaden (*Brevoortia patronus* - part of group herring, sardines, anchovies) mainly caught by the United States of America fleet. Other important species groups are shrimps, for which production was 173 000 tonnes in 2017, which is about 50 000 tonnes below the record reached in 2003. All other species groups recorded relatively stable production over the last decade.

Table 1 Per capita marine capture fish production (2017)

Countries listed in decreasing order of per capita fish production

Selected Countries / Overseas Territories (OT)*	per capita fish production (in kg)
Suriname	80.93
Turks and Caicos Is.	63.79
Guyana	55.63
Anguilla	54.14
British Virgin Islands	42.86
Antigua and Barbuda	35.17
Bahamas	30.39
Nicaragua WECAFC area	28.80
Saint Vincent/Grenadines	27.65
Grenada	24.04
Saint Kitts and Nevis	17.67
Mexico WECAFC area	15.69
Belize	14.55
Bonaire/S.Eustatius/Saba	14.44
Saint Lucia	11.49

Selected Countries / Overseas Territories (OT)*	per capita fish production (in kg)
Saint Barthélemy	11.11
United States of America WECAFC area	10.97
Dominica	10.89
Martinique	9.89
Guadeloupe	9.66
Trinidad and Tobago	9.62
French Guiana	9.36
Venezuela, Boliv Rep of	7.10
Sint Maarten	7.03
Bermuda	6.30
Jamaica	5.36
Montserrat	5.20
Barbados	5.11
US Virgin Islands	4.34
Honduras WECAFC area	3.43
Curaçao	3.14
Saint-Martin	2.25
Cayman Islands	2.16
Cuba	1.78
Haiti	1.54
Aruba	1.45
Dominican Republic	1.39
Costa Rica WECAFCC area	1.37
Guatemala WECAFC area	1.05
Colombia WECAFC area	0.87
Puerto Rico	0.44

(*): For countries or OT bordering the Atlantic and Pacific oceans, only the population in the WECAFC area was used for the calculation.

Source: Calculation by author¹⁰, based on FAO FishStatJ, NOAA Fisheries of the United States of America, and UN population statistics and Wikipedia information on regional population.

16. As the WECAFC area is home to heterogeneous countries and economic structures, table 1 above tries to identify the relative importance of fish production, by dividing the annual production in 2017 by the population. Table 1 shows that fisheries are important in Suriname, Turks and Caicos Islands, Guyana and Anguilla, with per capita fish production exceeding 50 kg per year. On the other end of the scale, there are countries like Dominican Republic, Costa Rica, Guatemala, Colombia and Puerto Rico, where the per capita fish production is below 1.40 kg. In some of these countries, such as Guatemala, the artisanal fisheries production is under recorded, which results in this low figure. In fact, the production is probably far higher. As a curiosity, the state of Louisiana in the United States of America has the highest per capita production of the whole area with 125 kg per person.

¹⁰ Helga Josupeit, Senior Advisor, INFOPECA

Table 2 Marine Capture Production, number of fishers in the WECAFC area and marine capture production per fisher

Countries in alphabetical order*	Marine capture (tonnes)	Year	Production per fisher	Marine fishing (number employed)
Anguilla	758	2017	3.85	197
Antigua and Barbuda	3165	2015	1.67	1,894
Aruba	149	2017	0.08	1,932
Bahamas	11418	2017	1.27	9,000
Barbados	1361	2012	0.45	3,005
Belize	3430	2015	1.62	2,116
Bermuda	384	2017	1.18	325
Bonaire/S.Eustatius/Saba	361	2017	4.20	86
British Virgin Islands	1196	2012	9.57	125
Cayman Islands	125	2012	0.07	1,800
Colombia	5367	2014	0.10	55,182
Costa Rica	530	2016	0.14	3,886
Cuba	20378	2013	5.25	3,879
Dominica	784	2017	0.86	912
Dominican Republic	12711	2012	1.51	8,399
French Guiana	3110	2013	6.43	484
Grenada	2850	2014	0.81	3,500
Guadeloupe	5400	2013	5.58	967
Guatemala	358	2012	0.03	12,908
Haiti	15900	2012	0.32	50,000
Honduras	6457	2014	0.35	18,622
Jamaica	14923	2017	0.61	24,469
Martinique	3800	2013	3.71	1,024
Mexico	289454	2017	1.27	227,182
Montserrat	31	2016	0.27	115
Nicaragua	25966	2017	1.17	22,247
Panama	1210	2015	0.03	37,277
Puerto Rico	2002	2013	1.59	1,263
Saint Kitts and Nevis	954	2017	1.41	677
Saint Lucia	2091	2017	0.65	3,214
Saint Vincent and the Grenadines	3014	2017	1.08	2,800
Suriname	25723	2009	7.03	3,657
Trinidad and Tobago	12063	2012	1.13	10,715
Turks and Caicos Islands	2105	2017	8.10	260
United States of America (WECAFC area)	801985	2017	5.17	155,000
US Virgin Is	484	2014	1.67	289
Venezuela (Bolivarian Republic of)	222609	2016	2.63	84,638

Source: Calculation by author, based on FAO FishStatJ, NOAA Fisheries of the United States of America, various FAO Fisheries and Aquaculture Country Profiles and UN population statistics and Wikipedia information on regional population. Generally the reference year was 2017, but for some countries the year of production is the year for which the latest employment figures are available

(*) For countries where employment data are available

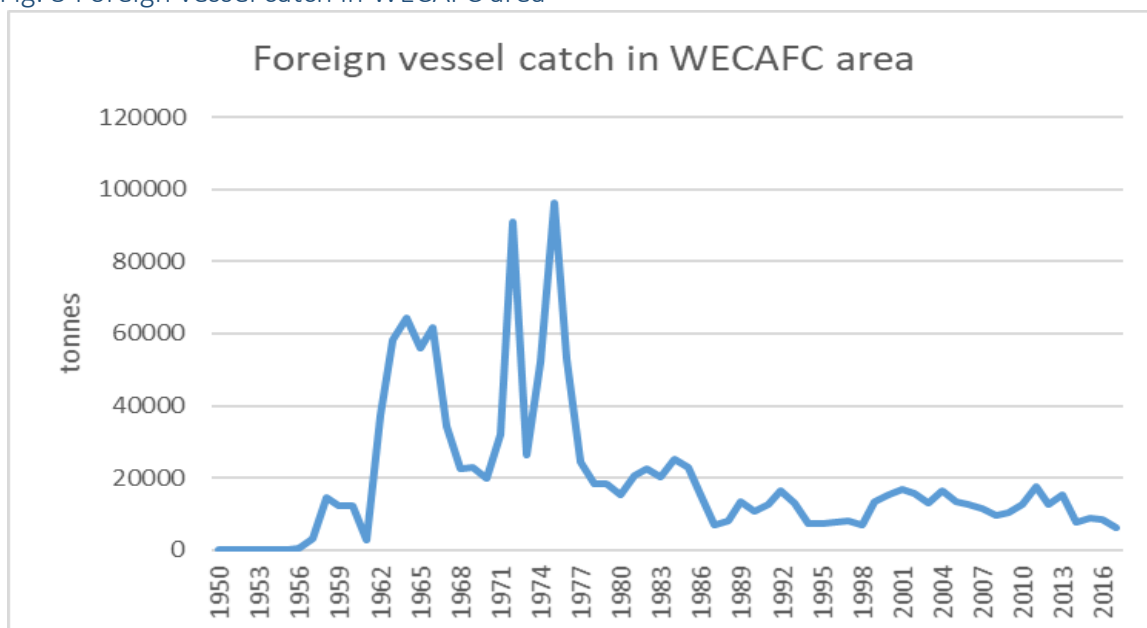
17. Table 2 presents the production per fisher. In countries where the industrial fisheries are important, the per capita production of each fisher is high, at around 5 tonnes per year. These countries include French Guiana, Suriname and the United States of America. For the Caribbean Small Island Developing States (SIDS), the per capita production is around 1 tonne per fisher per year. The Central American countries stand out for the low production per fisher, which can allude to the fact that the production on the Caribbean coast mainly concentrates on lobster, a high value species, with a low production quantity.

Foreign Fishing Fleets

18. Due to the enforcement of EEZs in many WECAFC countries, foreign fleet catches have gone down over the last decades. The main participants in the foreign catch used to be the former Union of Soviet Socialist Republics (USSR) and Japan. The main decrease occurred after the 1960s and 1970s after the establishment of EEZs. The decreasing trend in recent years (from 2011 onwards) may be related, among others, to catch quotas, as for example Spain's swordfish fishery and ICCAT regulations. In the 1970s catches by all foreign fleets were almost 100 000 tonnes per year, while in 2017 this catch was a mere 6 300 tonnes, with a constant downward trend during the last decade. Even in the years of the highest production, catches by foreign vessels never accounted for more than 5 percent of total catches in the WECAFC area.

19. According to a recent analysis of fishing activity footprint based on AIS data (FAO, 2019 under press), foreign activity in Area 31 is limited to about 40 to 50 Chinese and Spanish drifting longliners targeting tuna and operating mostly in the north-eastern high seas part of the region, in the competence area of the International Commission for the Conservation of Atlantic Tunas (ICCAT). According to ICCAT, longline fishing effort during the last decade extended pretty much over all the region, including the Gulf of Mexico.

Fig. 5 Foreign vessel catch in WECAFC area



Source: FAO FishStatJ 2019

Description of Catches by Species

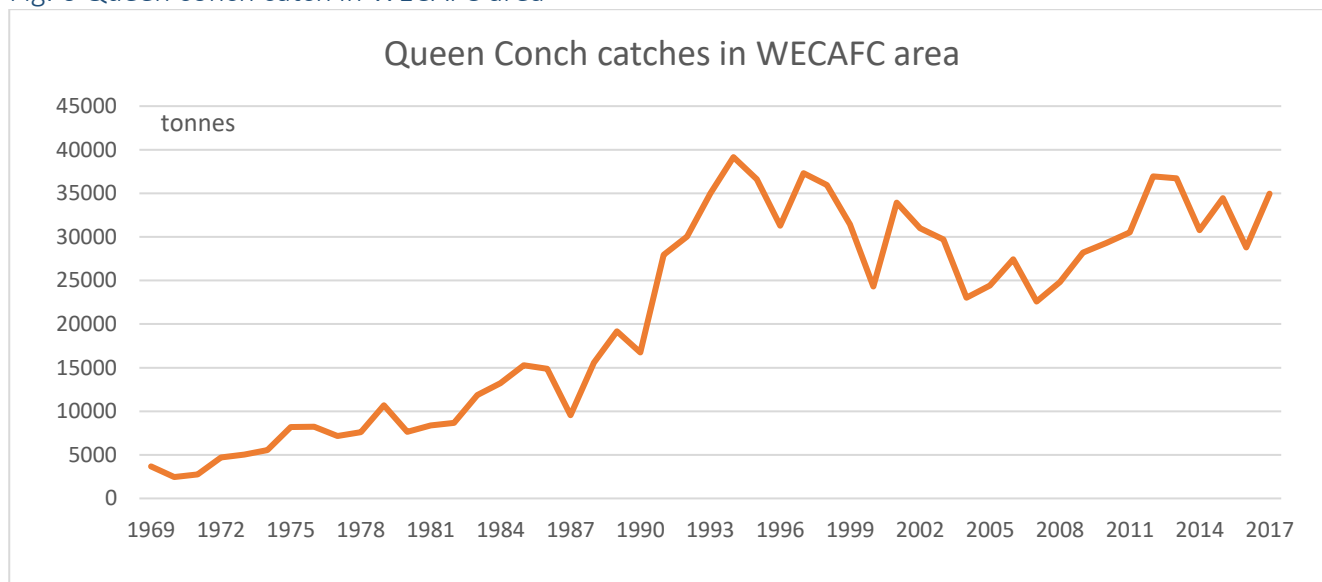
20. In the following paragraphs six species groups (Queen conch, Caribbean spiny lobster, common dolphinfish, sea cucumber, flying fish and shrimp/seabob) are described in detail, which are stocks with high regional importance. Therefore, for example, Gulf menhaden the main species caught will not be discussed, as it is of relevance only for one country, the United States of America. Likewise, tuna resources will not be discussed, as they are not covered by WECAFC, but rather by ICCAT.

Queen conch

21. The Caribbean Queen conch (*Strombus gigas*) is a gastropod belonging to the Strombidae family. It inhabits the waters of Bermuda, southern Florida, southern Mexico, Major and Lesser Antilles, the Bolivarian Republic of Venezuela and Brazil. The Queen conch is easily recognizable by its large pinkish shell, reaching a length of 30 cm and weighing some 2 kg. The meat is sold either fresh or dried, and used to prepare salads or chowder. The shells are utilized in pottery and jewellery. The Queen Conch fishery has a long tradition in the Caribbean region, however the commercial fishery has only been expanding since the early eighties. This has been due to the relatively recent increase in demand for conch meat both within the Caribbean and in other markets, particularly in the United States of America. The growing tourism industry has also increased the demand for shells and jewellery.

22. Queen conch catches take place in 36 countries and overseas territories. In terms of volume, value and socioeconomic significance, *S. gigas* is the principal marine species regulated under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in the Caribbean.

Fig. 6 Queen conch catch in WECAFC area



Source: FAO FishStatJ 2019

23. In 1992, continuing concerns over the species' overexploitation led the CITES Members to list the Queen conch under CITES Appendix II. Some countries are banned from exports under CITES.

Table 3 Queen Conch catches by main producing countries (in tonnes)

(click [here](#) to view dynamic map for Queen Conch 2010-17 average catch by country)

County	2010	2011	2012	2013	2014	2015	2016	2017
Nicaragua	5970	5641	7662	9857	11994	11161	9260	11020
Jamaica	3300	3000	4125	3750	3750	3750	3750	3750
Bahamas	5273	5625	5893	5642	4178	4045	2696	3289
Belize	2395	2908	3626	3060	2152	2349	2776	2776
Turks and Caicos Is.	4642	3735	2524	2143	1236	1257	1493	1857
Dominican Republic	256	1870	2187	2218	1842	1447	1634	1755
Antigua and Barbuda	690	1267	3937	3349	1648	1583	1583	1583
Others	6785	6454	6982	6700	3981	8864	5614	8930
Total	29311	30500	36936	36719	30781	34456	28806	34960

Source: FAO FishStatJ 2019

24. Total Queen conch production reached a peak in 1994 with 40 000 tonnes, before declining to a low of 22 500 tonnes in 2007. As Queen Conch is subject to management measures at national level, production has stabilized in recent years to 30 000-35 000 tonnes. At present the main producer of Queen Conch is Nicaragua with 11 000 tonnes in 2017, followed by, Jamaica, Bahamas and Belize.

25. With the decline of shallow water populations of conch, traditional fishing (gear types) methods such as long hooked poles, tangle nets and free diving have been replaced in some countries by SCUBA and compressor (Hookah) diving techniques.

Caribbean spiny lobster

26. The Caribbean spiny lobster (*Panulirus argus*) catches exceeded 40 000 tonnes in the year 2000 to decline to 30 300 tonnes in 2017. Caribbean spiny lobster landings are declared by 26 countries, but 6 countries Bahamas, Honduras, Nicaragua, Cuba, United States of America and the Dominican Republic, accounted for almost 90% of production in 2017 (table 4). It is interesting to note that the production by Honduras has expanded in recent years, thus overtaking Nicaragua. It is worth noting that a change in the EEZ delimitation of Honduras, Nicaragua and Costa Rica has resulted in changes of jurisdictions and availability of lobster fishing areas; this occurred after the regional management of Caribbean spiny lobster fisheries the Regional Regulation OSP 02-09 was adopted in 2009.

Table 4. Caribbean spiny lobster catches (in tonnes)

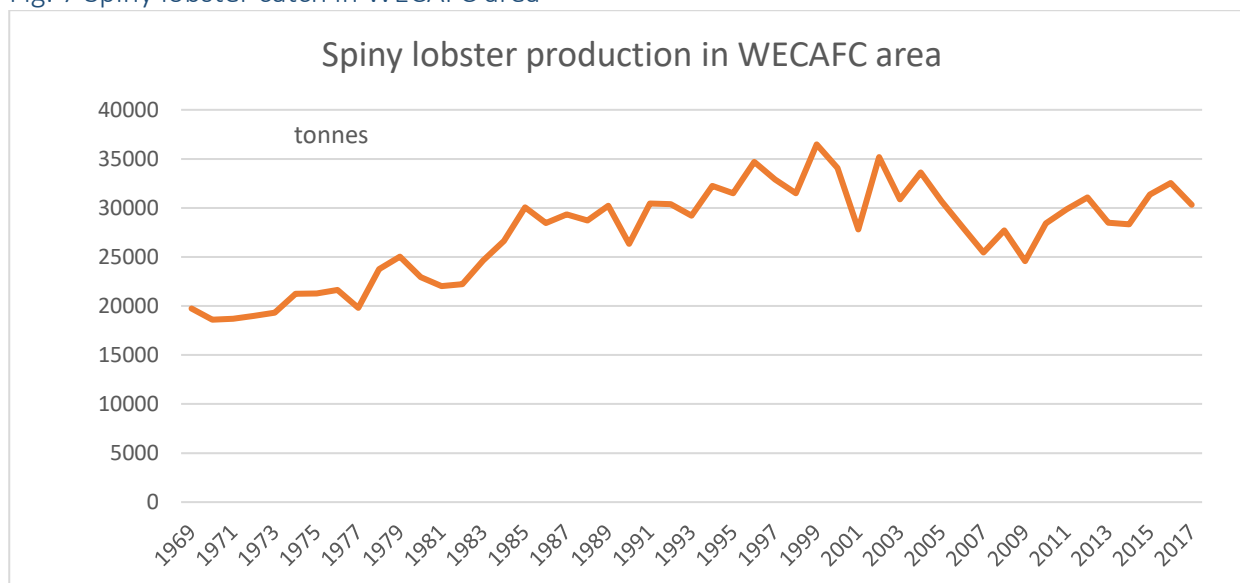
(click [here](#) to view dynamic map for spiny lobster 2010-17 average catch by country)

County	2010	2011	2012	2013	2014	2015	2016	2017
Bahamas	9692	8505	9761	6088	6569	6526	8482	7709
Honduras	4118	4313	5322	4972	4502	6156	6100	6100
Nicaragua	3690	3971	4249	4278	4724	6473	5567	5031
Cuba	4458	5010	4467	4621	4371	4035	4634	4147
United States of America	2615	2638	1785	2760	2532	2690	2453	1743
Dominican Republic	1001	2568	2505	2542	2454	1282	1562	1677
Others	2840	2844	2991	3226	3173	4207	3725	3910
Total	28414	29849	31080	28487	28325	31369	32523	30317

Source: FAO FishStat J 2019

27. The Caribbean spiny lobster fisheries are generally artisanal or small scale, with the exception of Honduras, Nicaragua and Cuba, where the fisheries are largely industrial. Traps and *casitas cubanas* are the main form of fishing devices, while diving (SCUBA, free and hookah) are the main forms of fishing.

Fig. 7 Spiny lobster catch in WECAFC area



Source: FAO FishStatJ 2019

28. The First meeting of the OSPESCA/WECAFC/CRFM/CFMC Working Group on Caribbean spiny lobster, Panama City, Panama, 21–23 October 2014 and the Second meeting held 2–23 March 2018, Santo Domingo, Dominican Republic, noted that more stock assessments should be carried out in the region; and those currently conducted need harmonization in data collection and analysis. The fact that landings have been maintained at reasonably constant levels up until recently probably reflects the fact that fisheries in some countries have progressively extended to deeper waters, for example in Jamaica, Dominican Republic, Honduras and Nicaragua.

Table 5 Estimated status of Caribbean spiny lobster by country – based on the best available information Stock status (2014)

Stock Status	Countries
Underexploited	None
Fully fished or stable	Anguilla, Antigua and Barbuda, Belize, The Bahamas, Cuba, Mexico, Nicaragua, Saint Vincent and the Grenadines
Overexploited.	Grenada, Haiti, Jamaica and Saint Lucia
Unknown	Brazil, Caribbean Netherlands, Dominican Republic, France, Honduras, Panama, United States of America

Source: Report of the First Meeting of the OSPESCA/WECAFC/CRFM/CFMC Working Group on Caribbean Spiny Lobster , Panama City, Panama, 21–23 October 2014 and Second meeting held 2-23 March 2018, Santo Domingo, Dominican Republic

29. The total biomass, spawning biomass and recruitment in lobster stock in Belize declined as a result of high fishing mortality. Similar results were found for the lobster stock in Nicaragua where fishing mortality was found to be too high and exploitation rates were not sustainable. An assessment for Turks and Caicos Islands concluded that overfishing was occurring in 2005 and 2006. The assessment provided baseline information for determining a TAC in 2007. An assessment of the spiny lobster fishery in the Bolivarian Republic of Venezuela indicated that the stock was overexploited, and current biomass was estimated at 14 percent of virgin biomass.

Common dolphinfish (Mahi mahi)

30. Total production of common dolphinfish (*Coryphaena hippurus*) has declined from 6 000 tonnes to 3 500 tonnes in recent years. The Bolivarian Republic of Venezuela is the main producing country with about one third of the total production in the WECAFC area (table 6), but also the main player responsible for the decline. There are many information gaps in relation to the catch, as about half of the production recorded for 2017 was estimated, based on previous years' production or on other knowledge. Common dolphinfish is an important target species for sports fisheries, and is not subject to catch-and-release regulations from the large game fishing associations (The Bass Federation (TBF) and International Game Fish Association (IGFA)). NOAA NMFS produces catch statistics for recreational fisheries in the United States of America for the South Atlantic, Gulf of Mexico and Caribbean. In 2016 the United States of America recreational catch in the WECAFC area were 4 247 tonnes, so slightly higher than total reported commercial landings in Area 31. This shows that a substantial share of the catch does not appear in the current FAO production statistics.

Table 6 Common dolphinfish production (in tonnes)

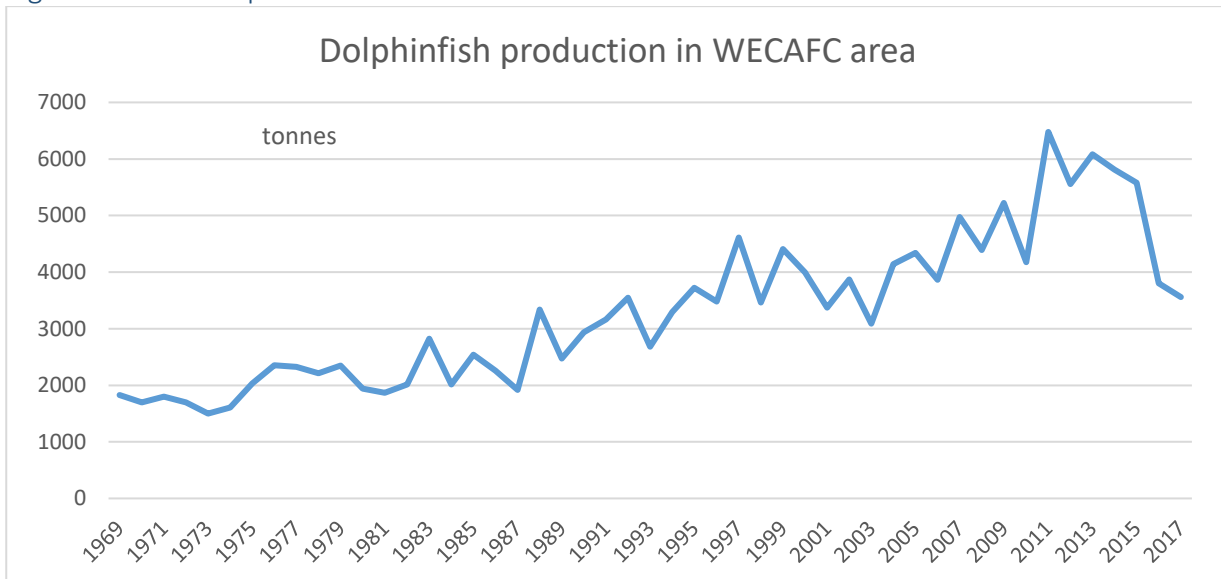
(click [here](#) to view dynamic map for Dolphinfish 2010-17 average catch by country)

County	2010	2011	2012	2013	2014	2015	2016	2017
Venezuela, Boliv Rep of	900	1535	1580	1500	1500	1290	1091	1125
Barbados	465	505	459	514	500	500	405	185
Dominican Republic	259	517	140	142	137	199	393	422
Saint Lucia	352	473	504	387	407	505	435	403
Guadeloupe	410	515	400	470	390	350	390	390
Martinique	250	250	250	275	274	290	300	300
Dominica	180	149	136	107	278	295	186	228
Others	1408	2534	2088	2690	2324	2152	600	506
Totals -	4174	6478	5557	6085	5810	5581	3800	3559

Source: FAO FishStatJ 2019

31. Common dolphinfish is an excellent food fish, and important for food security in the Caribbean islands and Bolivarian Republic of Venezuela. Only a small part of the landings is exported. Common dolphinfish is not identified through any trade codes, therefore trade of this species goes unrecorded.

Fig. 8 Common dolphinfish catch in WECAFC area



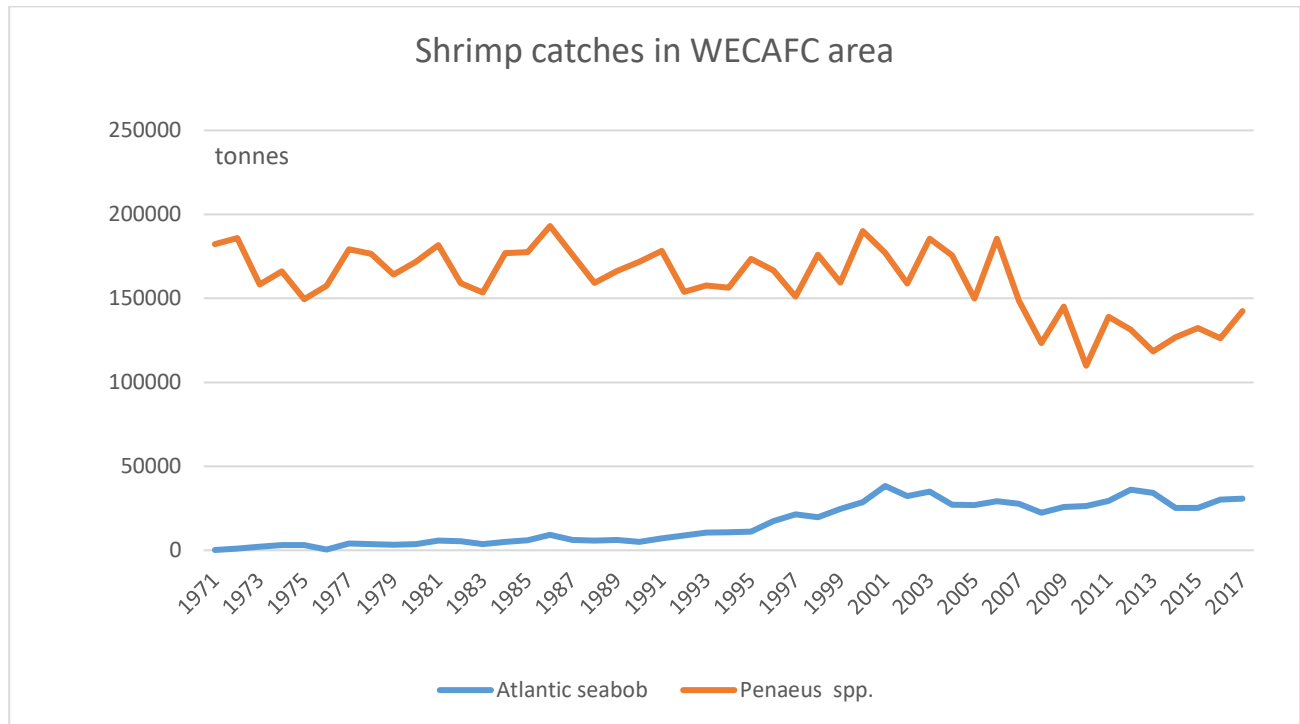
Source: FAO FishStatJ 2019

32. The life cycle of common dolphinfish is short and its catchability in the Eastern Caribbean is highly affected by the occurrence of sargassum seaweeds. In years with lots of sargassum it appears that various fisheries catch relatively more juvenile common dolphinfish, which may affect the resource status in the mid-term. The limited scientific information available on the size of the stock(s), spawning areas, migration patterns and life cycle and fisheries mortality rates makes it impossible to assign a stock status for the region.

Shrimp¹¹

33. Shrimp catches in the WECAFC area reached a peak of 217 000 tonnes in 2003 and have declined since, though in recent years a certain levelling off of the downward trend can be observed. In 2017 total production of shrimp in the WECAFC area was reported at 175 000 tonnes.

Fig. 9 Shrimp catch in WECAFC area



Source: FAO FishStatJ 2019

34. The main shrimp species produced in the Western Central Atlantic is the Northern brown shrimp (*Penaeus aztecus*) with a reported production in 2017 of 60 000 tonnes. This species has experienced the most severe decline from almost 80 000 tonnes in 1990 to a low of 35 464 tonnes in 2010. The catches have recovered in recent years. The second major shrimp species, the Northern white shrimp (*Penaeus setiferus*) showed significant oscillations between 22 000 tonnes and 64 000 tonnes during the last three decades. Both Northern brown and white shrimp species are essentially caught in the Gulf of Mexico by the United States of America and Mexico. Some *Penaeus* resources in the WECAFC area are under stress, but production has stabilized in recent years. The seabob resource is not overfished, and the fishery in Suriname is certified by the Marine Stewardship Council (MSC). Atlantic seabob, mainly caught by Guyana and Suriname, is stable in production at 30 000 tonnes.

¹¹ Under the commercial name shrimp, two main resources are identified, *Penaeus* spp and *Xiphopenaeus kroyeri*, commonly called the Atlantic seabob.

Table 7 Shrimp and seabob catches in WECAFC area, by species (tonnes)

(click on the species name to view dynamic map for each shrimp species 2010-17 average catch by country)

Species Name	2010	2011	2012	2013	2014	2015	2016	2017
Northern brown shrimp	35464	61358	54583	55823	56871	64148	52254	59913
Northern white shrimp	46693	46504	53613	42492	46785	44765	55787	55250
Atlantic seabob	26439	29489	36073	34243	25203	25322	30147	30697
Northern pink shrimp	6575	6498	4163	4276	7717	9405	7408	13258
Penaeus shrimps nei	17848	19665	16185	12369	11883	11186	5999	8825
Whitebelly prawn	526	830	603	685	695	856	805	1086
Natantian decapods nei	1456	1728	1690	1624	1824	1419	1171	1073
Rock shrimp	983	1872	165	601	682	293	218	312
Royal red shrimp	342	429	473	588	400	289	134	195
Total	136326	168557	167548	152701	152060	157683	156416	173179

Source: FAO FishStat J 2019

35. The main shrimp producing country in the WECAFC area is the United States of America with 60 percent of total production. In fact, the United States of America was the main responsible for the improvement of catches in recent years. Mexico and Guyana produce about 20 000 tonnes per year, with some fluctuations during the period under observation.

Table 8 Shrimp and seabob catches in WECAFC area, by country (tonnes)

(click on the country name to view dynamic map for aggregated shrimp species catches 2010-17, note that Rock and Royal Red shrimp species are not included)

Country	2010	2011	2012	2013	2014	2015	2016	2017
United States of America	88960	108537	106809	97896	103011	101382	99065	109010
Mexico	12108	21697	19389	13452	17641	22853	20476	25367
Guyana	19066	20827	25948	24738	17800	18997	21550	23451
Suriname	8808	8950	9110	8953	6266	6821	8051	8030
Venezuela, Boliv Rep of	240	2468	2463	2500	2575	2276	2556	2635
Nicaragua	2383	1736	901	1235	1163	1556	1155	1035
Honduras	1698	1585	667	1080	1185	1000	1000	1000
Others	3063	2757	2261	2847	2419	2798	2563	2651
total	136326	168557	167548	152701	152060	157683	156416	173179

Source: FAO FishStatJ 2019

Sea Cucumber

36. Increased pressure on sea cucumber stocks exists in the WECAFC area driven by strong market demand in Asia. Sea cucumber catch reached 6 600 tonnes in 2017, which compares to 468 tonnes in 2010. The main producing country is Nicaragua with 5 758 tonnes. A precautionary approach should be recommended, as the resource status is virtually unknown.

Table 9 Sea cucumber catches in WECAFC area, by species (tonnes)

(click on the country name to view dynamic map for average Sea cucumber catches 2010-17)

Country	2010	2011	2012	2013	2014	2015	2016	2017
Nicaragua	390	311	377	690	1191	1965	4724	5758
Mexico	...	1732	1283	2649	1200	643	1887	714
Honduras	0	967	1965	996	189	100	100	100
Haiti	...	20	20	20	20	20	20	20
Belize	24	68	56	587	476	98	18	18
Total	468	3100	3701	4942	3084	2826	6749	6610

Source: FAO FishStat J 2019

Flying Fish

37. Flying fish do not reach anymore the Barbadian fishing grounds in great numbers. Flying fish is fundamental in Barbadian culture and food security. At present, flying fish is imported from those WECAFC countries which still have access to the flying fish resource.

Table 10 Flying fish catches in WECAFC area, by country (tonnes)

(click on the country name to view dynamic map for Flying fish catches 2010-17)

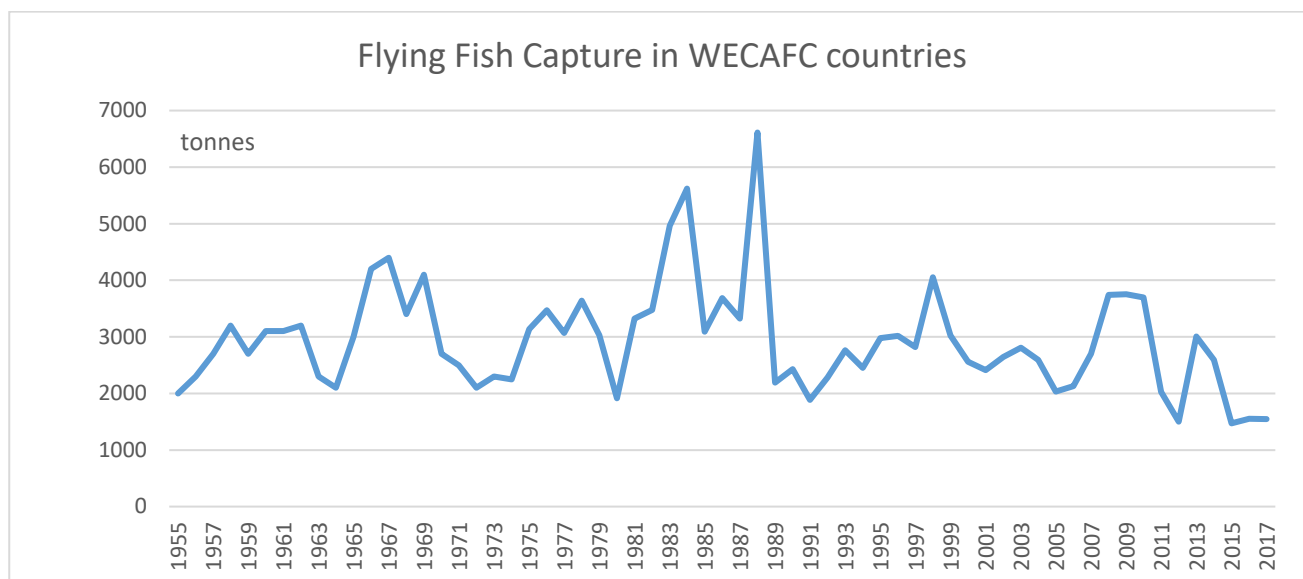
Country	2010	2011	2012	2013	2014	2015	2016	2017
Brazil	1056	982	1069	923	1114	1000	1000	1000
Barbados	2424	908	354	1909	1314	378	469	469
Martinique	65	55	45	43	42	45	48	48
Grenada	8	5	1	9	16	16	16	16
Saint Kitts and Nevis	35	32	26	17	20	33	17	9
United States of America	0	24	0	0	0	0	0	4
Saint Lucia	109	22	4	107	85	0 0	1	1
Total	3697	2028	1499	3008	2591	1472	1551	1547

Source: FAO FishStatJ 2019

38. Barbados used to be the main flying fish producer in the WECAFC area. As the below graph shows, catches of flying fish have gone down, from 6 600 tonnes in 1988 to 1 547 tonnes in 2017. At present Brazil is the main producer of flying fish, with about 1 000 tonnes. Barbados production is apparently now stable at 470 tonnes¹².

¹² Note that landings for Barbados in 2016 and 2017 are FAO estimates

Fig. 10 Flying fish catch in WECAFC area



Source: FAO FishStatJ 2019

INSTITUTIONAL FRAMEWORK

39. The present meeting of WECAFC will discuss in detail all issues of coordination among the main groups and organizations involved in governance of fisheries in the WECAFC area, thus in this summary only the key points will be highlighted. Main regional governance arrangements include WECAFC, ICCAT, CRFM and OSPESCA. CRFM works mainly with the Anglophone Caribbean countries and OT, while OSPESCA works with the Spanish speaking Central American countries. WECAFC covers additional countries and has thus a mandate of creating cohesion and involvement in its working area. The coordination between WECAFC and ICCAT is still not very well developed, but would be important on various aspects, including the responsibilities for certain species of tuna like coastal pelagic fish, or good coordination between data collection frameworks of ICCAT and WECAFC. The additional discussion which will be a key element of this WECAFC meeting is the decision on transforming WECAFC into a Regional Fisheries Management Organization.

40. The Western Central Atlantic Fishery Commission¹³ (WECAFC) was established in 1973 by Resolution 4/61 of the Food and Agricultural Organization of the United Nations (FAO) Council under Article VI (1) of the FAO Constitution. Its statutes were amended by the FAO Council at its Seventy-fourth Session in December 1978 and by the Hundred and Thirty-first Session of the FAO Council in November 2006. Membership is open to coastal States whose territories are situated wholly or partly within the area of the Commission or States whose vessels engage in fishing in the area of competence of the Commission that notify in writing to FAO Director-General of their desire to be considered as members of the Commission. Current membership is 34 countries/territories and include Antigua and Barbuda, Bahamas, Barbados, Belize, Brazil, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, European Union, France, Grenada, Guatemala, Guinea, Guyana, Haiti, Honduras, Jamaica,

¹³ <http://www.fao.org/fishery/rfb/wecafc/en>

Japan, Mexico, the Netherlands, Nicaragua, Panama, Republic of Korea, Saint Kitts and Nevis, Saint Lucia, Saint Vincent/Grenadines, Spain, Suriname, Trinidad and Tobago, United Kingdom, United States of America, and the Bolivarian Republic of Venezuela.

41. The general objective of the Commission is to promote the effective conservation, management and development of the living marine resources of the area of competence of the Commission, in accordance with the FAO Code of Conduct for Responsible Fisheries, and address common problems of fisheries management and development faced by members of the Commission.

42. The work of the Commission is guided by the following three principles:

- promote the application of the provisions of the FAO Code of Conduct on Responsible Fisheries and its related instruments, including the precautionary approach and the ecosystem approach to fisheries management;
- ensure adequate attention to small-scale, artisanal and subsistence fisheries; and
- coordinate and cooperate closely with other relevant international organizations on matters of common interest.

43. WECAFC has the following main functions and responsibilities:

- to contribute to improved governance through institutional arrangements that encourage cooperation amongst members;
- to assist its members in implementing relevant international fisheries instruments, in particular the FAO Code of Conduct for Responsible Fisheries and its related International Plans of Action;
- to promote, coordinate and, as appropriate, undertake the collection, exchange and dissemination of statistical, biological, environmental and socio-economic data and other marine fishery information as well as its analysis or study;
- to promote, coordinate and, as appropriate, strengthen the development of institutional capacity and human resources, particularly through education, training and extension activities in the areas of competence of the Commission;
- to promote and facilitate harmonizing of relevant national laws and regulations, and compatibility of conservation and management measures;
- to assist its members in and facilitate, as appropriate and upon their request, the conservation, management and development of transboundary and straddling stocks under their respective national jurisdictions
- to seek funds and other resources to ensure the long-term operations of the Commission and establish, as appropriate, a trust fund for voluntary contributions to this end;
- to serve as a conduit of independent funding to its members for initiatives related to conservation, management and development of the living resources in the area of competence of the Commission.

44. WECAFC is an active member of the FAO-supported Regional Fishery Body Secretariats' Network (RSN), which provides a forum for promoting consultation and regional dialogue, addressing priority issues of common concern and fostering ongoing cooperation and exchange of information¹⁴.
45. The International Commission for the Conservation of Atlantic Tunas¹⁵ (ICCAT) is an inter-governmental fishery organization responsible for the conservation of tunas and tuna-like species in the Atlantic Ocean and its adjacent seas, and therefore covers the tuna resources in the WECAFC area. ICCAT has 52 members, of which 25 are new since 2000: Albania (2008), Algeria (2001), Angola, Barbados (2000), Belize (2005), Brazil, Canada, Cabo Verde, China, Côte d'Ivoire, Curaçao (2014), Egypt (2007), El Salvador (2014), Equatorial Guinea, European Union, France, Gabon, Ghana, Grenada (2017), Guatemala (2004), Guinea, Guinea-Bissau (2016), Honduras (2001), Iceland (2002), Japan, Liberia (2014), Libya, Mauritania (2008), Mexico (2002), Morocco, Namibia, Nicaragua (2004), Nigeria (2007), Norway (2004), Panama, Philippines (2004), Republic of Korea, Russian Federation, Saint Vincent and the Grenadines (2006), Sao Tome and Principe, Senegal (2004), Sierra Leone (2008), South Africa, Syrian Arab Republic (2005), Trinidad and Tobago, Tunisia, Turkey (2003), United Kingdom, United States of America, Uruguay, Vanuatu (2002) and Venezuela (Bolivarian Republic of). ICCAT compiles fishery statistics from its members and from all entities fishing for these species in the Atlantic Ocean, coordinates research, including stock assessment, on behalf of its members, develops scientific-based management advice, provides a mechanism for Contracting Parties to agree on management measures, and produces relevant publications.
46. The Caribbean Regional Fisheries Mechanism¹⁶ (CRFM) is a specialized institution of the Caribbean Community (CARICOM). The CRFM was established by means of an international agreement signed on 4 February 2002. This agreement entered into force upon signature of any seven Member States or Associate Members of CARICOM, which happened on the same day. The organization adopted its own rules of procedure on 5 August 2002 and was officially inaugurated in Belize City, Belize, on 27 March 2003.
47. According to its founding document, the objectives of the CRFM are three:
- a) "the efficient management and sustainable development of marine and other aquatic resources within the jurisdictions of Member States;
 - b) the promotion and establishment of co-operative arrangements among interested States for the efficient management of shared, straddling or highly migratory marine and other aquatic resources;
 - c) the provision of technical advisory and consultative services to fisheries divisions of Member States in the development, management and conservation of their marine and other aquatic resources."
48. Current membership is 17 countries, including Anguilla, Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saint Lucia, Saint Kitts and Nevis, Saint Vincent/Grenadines, Suriname, Trinidad and Tobago, Turks and Caicos Is. The CRFM Member States cooperate with the Dominican Republic through a Memorandum of Understanding.

¹⁴ www.fao.org/fishery/rsn

¹⁵ <http://www.fao.org/fishery/rfb/iccat/en>

¹⁶ <http://www.fao.org/fishery/rfb/crfm/en>

49. The Organización del Sector Pesquero y Acuícola del Istmo Centroamericano¹⁷ (OSPESCA) is under the Council of Ministers of the Sistema de la Integración Centroamericana (SICA). Member countries of SICA are Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, and Dominican Republic. OSPESCA's headquarters are based in San Salvador. The executive committee meets every second year. Technical review is provided by the scientific working groups. The secretariat is one director assisted by project staff if projects are executed.

50. Members of OSPESCA are:

- a) Council of Ministers, which is the highest authority of OSPESCA representing at the political level, responsible for regional policy decisions,
- b) The Committee of Deputy Ministers, which is the Executive level of the Organization and directs, orients, monitors and evaluates the implementation of policies, programmes and regional projects,
- c) The Commission of Directors of fisheries and aquaculture, which is the scientific and technical level of OSPESCA, responsible for ensuring scientific and technical regional brackets,
- d) Two organizations of civil society who represents small-scale and large-scale fishing and aquaculture producers. They assume an advisory role and their participation is highly important under the OSPESCA's governance model. They are: CONFEPESCA and OECAP.

MANAGEMENT APPLIED TO SELECTED FISHERIES

51. Fishing in most Caribbean countries is based on open access fisheries; however, some WECAFC countries have some type of tenure and fishing rights.

Queen conch

52. A number of Caribbean countries have been implementing their own national Queen Conch fishery management programs, in part in response to advances in coordinated regional efforts in recent years.

53. Several WECAFC countries have kept their Queen Conch fisheries largely closed since several years. Other countries have substantially regulated their Queen Conch fisheries. Countries variably regulate the minimum shell length of Queen Conch; the minimum unclean or clean meat weight; impose restrictions on fishing techniques; establish permanent or temporal closed areas or seasons; and/or determine annual catch and export quotas. The Organization of Eastern Caribbean States (OECS) succeeded in harmonizing rules (i.e., minimum shell length of 178 mm and 225 g unclean meat weight) as part of the 1991 OECS Common Fisheries Surveillance Zones Agreement, which is designed to improve regional cooperation between member states.

54. The CITES listing requires that a Management Authority of an exporting State issue an export permit. This certifies that the specimens to be traded were legally acquired (determined by the Management Authority of the Exporting Party), and that exports are not detrimental to the

¹⁷ <http://www.fao.org/fishery/rfb/ospesca/en>

survival of the species. These conditions are laid down in Article IV of the Convention. The Significant Trade Review, conducted by the CITES Animals Committee, is an external auditing process to ensure compliance with CITES requirements. It involves revision of scientific and management information, consultations with range States, and the implementation of targeted, country-specific recommendations. *Strombus gigas* has been included in the Review twice (1995–1999 and 2001–2005). The major exporting countries undertook considerable efforts to meet the Review recommendations, contributing to considerable and lasting changes in Queen Conch trade policies in Belize, Colombia, the Dominican Republic, Honduras and Jamaica, for example; and resulting in trade suspensions for Grenada and Haiti. The Review served as a catalyst for funding and technical support, research efforts, and improved understanding of the ecology and management of the species.

55. Regional bodies such as OSPESCA, WECAFC and CFRM, and CFMC as a national body, have actively supported regional cooperation and coordination of Queen Conch management and utilization.

56. There remains a need to support and build capacity, improve enforcement of fisheries management and trade provisions, and enhance regional approaches towards sustainable use of and trade in the species.

57. The CFMC/OSPESCA/ WECAFC/CRFM/CITES Working Group on Queen Conch prepared in 2014 and 2015 a regional Queen Conch Fisheries Management and Conservation Plan, which was endorsed by WECAFC16 in 2016. This Plan incorporates the following management measures:

- 1) Harmonized and simplified categories of Queen Conch meat conversion factors.
- 2) Improvement of catch and effort monitoring programs.
- 3) A synchronized regional closed season.
- 4) Non-Detriment Finding (NDF) for export of Queen Conch meat and its by-products.
- 5) Licensing of all Queen Conch fishers, processors and exporters.
- 6) Adoption of stricter regulations on autonomous diving techniques.
- 7) Coordination in patrolling.
- 8) Extended use of satellite based Vessel Monitoring Systems (VMS) systems for boats with a length exceeding 10 meters.
- 9) Continuous education and outreach programs for stakeholders.
- 10) National level Queen Conch conservation and management plans.
- 11) Traceability of Queen Conch throughout the value chain.
- 12) Develop collaborative arrangements needed to generate habitat maps at the scale needed for better fisheries management.
- 13) Adoption of sub-regional mechanisms to evaluate the fishery potential of Queen Conch using fishery dependent and independent factors.
- 14) Progressive inclusion of co-management strategies.

58. The 10th meeting of the CRFM Ministerial Council held on 15th June 2016 in Jamaica, approved this Regional plan recognizing that it is a regional framework document and that each country would need to develop their own national Queen Conch Management Plans, customized to address their national priorities and local characteristics as considered appropriate and necessary.

59. Aware that technical advice needs to go further and develop mechanisms for the progressive implementation of the Regional management plan, the 3rd meeting of the

CFMC/OSPESCA/WECAFC/CRFM/CITES Queen Conch Working Group, held 30 October to 1st November 2018 in Panama City, established the scientific and technical advisory, and the education and outreach subgroups.

60. The efforts of some WECAFC member countries should be highlighted and commended in setting a moratorium on Queen Conch following thorough surveys. This can be used as inspiring good practices for other member countries.

Caribbean spiny lobster

61. Most countries in the region have some type of management measures in place for Caribbean spiny lobster fisheries. OSPESCA member countries apply the common management system (OSP 02- 09). The exceptions are Nicaragua and Honduras, where the restrictions on scuba diving still have to be applied.
62. In past years, Caribbean spiny lobster fisheries in the region have taken important steps towards improved, joint and regional integrated management through the ratification, at the highest political level in most countries, of the Strategic Action Programme (SAP) for the CLME+ region, which includes a specific strategy for Caribbean spiny lobster. A Memorandum of Understanding between the Central America Fisheries and Aquaculture Organization (OSPESCA for its Spanish acronym) and the Caribbean Regional Fisheries Mechanism (CRFM) and its Joint Action Plan, the draft Regional Management Plan (MARPLESCA for its Spanish acronym) and the CRFM, FAO/WECAFC and OSPESCA Memorandum of Understanding (MOU) for an interim coordination mechanism for sustainable fisheries (ICM) are expected to foster the implementation of the SAP objectives in relation to sustainability of Caribbean spiny lobster fisheries. Furthermore, in 2015, 17 CRFM member countries adopted the “St George’s Declaration on the Conservation, Management and Sustainable Use of Caribbean Lobster (*Panulirus argus*)”.
63. With regard to input management measures, closed seasons are a commonly used measure, ranging from 2 to 6 months. Only a handful of countries do not apply a closed season. In several countries, Caribbean spiny lobster can be caught only with traps. Harpoons and/or scuba diving are prohibited in many countries. The majority of countries also have some type of licensing for fishers or fishing vessels in place.¹⁸
64. An important issue, that is often overlooked, is the fact that there are several management measures in the CRFM lobster countries, essentially strong conservation and management programmes are in place with minimum harvest sizes from 76.2 mm carapace length (CL) in Jamaica and Belize to 95 mm in several islands in the eastern Caribbean. Differences in minimum sizes are explained because of different coastal and deep waters fishing areas among countries.
65. Quotas and territorial rights for Caribbean spiny lobster fisheries are not common, only Cuba, the United States of America and Nicaragua have total allowable catches (TACs) and the former two have Territorial Use Rights in Fisheries (TURFs) for Caribbean spiny lobster.

¹⁸ For details on countries applying different catch systems consult the report from the first meeting of the OSPESCA/WECAFC/CRFM/CFMC Working Group on Caribbean spiny lobster, Panama City, Panama, 21-23 October 2014

66. WECAFC countries apply a wide variety of technical control measures for Caribbean spiny lobster. Generally, minimum sizes are required, but some countries also have maximum sizes. Several countries require that the species be landed alive, which helps the release if the size limits are not respected.
67. The findings of the First Meeting of the OSPESCA/WECAFC/CRFM/CFMC Working Group on Caribbean spiny lobster, Panama City, Panama, 21–23 October 2014, admits that in the majority of countries (Brazil, Caribbean Netherlands, Dominican Republic, France, Honduras, Panama, United States of America) the stock situation is unknown. The table on the various management measures applied for Caribbean spiny lobster in WECAFC countries shows that there is a confusing variety of management measures in place. Only OSPESCA countries have a common system. OSPESCA’s draft Management Plan of Spiny lobster (MARPLESCA) is being tabled at WECAFC17 for a region wide/WECAFC endorsement.
68. The difficulty in applying the prohibition of scuba diving for lobster production in Nicaragua and Honduras is another important gap for lobster management. International attention on scuba diving and its impact on divers’ health is growing in the top lobster market, the United States of America. In 2013, a pledge was formed among US lobster dealers and importers to ban scuba diving and promoting alternative ways of catching lobster. Ten companies signed in on this initiative, which targets especially the Honduran lobster production. Most importantly, Red Lobster, a well-known restaurant chain in the United States of America, which buys around 40% of the lobsters exported from Honduras joined actively this initiative and has observers on the ground ensuring that only scuba diving free lobster is reaching the Red Lobster restaurants in the United States of America.
69. The second meeting of the OSPESCA/WECAFC/CRFM/CFMC Working Group on Caribbean spiny lobster, Santo Domingo, Dominican Republic, 21–23 March 2018, made the following recommendations: 1. WECAFC members and partners implement the elements made available and discussed, in terms of scientific knowledge, methods and relevant measures, management measures that were collectively agreed by the working group and actions under the Strategic Action Programme (SAP) for the CLME+ region. 2. WECAFC Members consider scaling-up the OSPESCA initiative on common assessment methodologies for stock assessment to the entire Caribbean region or wherever relevant in subregions with stocks of Caribbean spiny lobster. 3. WECAFC members adopt and implement the updated Regional Management and Conservation Plan of Caribbean Spiny Lobster developed by the OSPESCA Ecolobster CLME+ sub- project. 4. WECAFC Members are encouraged to develop and implement Catch Documentation Schemes in accordance with voluntary guidelines adopted or traceability systems for fishery products to improve the traceability of Caribbean spiny lobster products through the value chain, and support the combat against illegal fishing, ensure food safety and data generation in support of decision making for fishery management.

Common dolphinfish

70. The common dolphinfish fishery is currently not covered under any management regime in the WECAFC area. However, the CRFM Forum endorsed precautionary management measures for the common dolphinfish to counter the landing of large numbers of juveniles associated with the sargassum seaweed.

71. The Caribbean Large Marine Ecosystem (CLME) project carried out a governance assessment for large pelagics fisheries in the area in 2012, which included also common dolphinfish, and some efforts were made by CRFM towards drafting a sub-regional fisheries management plan. However, the level of the catches in recent years did not trigger regional fisheries management interest among the WECAFC members so far. It seems that the management of common dolphinfish fisheries is low on the priority list. The CLME+ Strategic Action Programme calls however under strategy 5B for increased attention to large pelagics conservation and fisheries management.
72. The main gaps and shortcomings are the lack of scientific information on the resource and of good fisheries production and trade statistics, which makes any assessment difficult. As the resource seems to be a real regional resource, the countries of the region that are involved in common dolphinfish catches would need to increase their data collection efforts and stock assessment should be done at a regional level. The increase in FADs deployment, particularly in the Eastern Caribbean, could have an impact on the migration patterns of the species, according to some concerned scientists, but conclusive evidence on this matter is lacking. The CRFM/WECAFC /IFREMER/JICA-CARIFICO Working Group' developed a FADs fisheries management plan. The 3rd meeting of the moored FAD Working Group held in May 2019 in Puerto Rico included as a priority action in the 2019-2021 Workplan to review the CRFM Sub-Regional Management Plan for FAD Fisheries in the Eastern Caribbean, adapt to a broader WECAFC regional moored FAD management plan and support Member Members' efforts to develop national FAD (co-) management plans.

Sea cucumber

73. Despite WECAFC Resolution WECAFC/16/2016/6 “on sea cucumber fisheries management and aquaculture”, which calls upon members to apply a precautionary approach to sea cucumber fisheries and that no fishing for the species should be allowed without having appropriate management plans and regulations in place, various governments in the region have not taken the necessary action to stop or reduce sea cucumber fisheries. Control mechanisms for sea cucumber fisheries are not in place.

Flyingfish

74. Barbadians have fished for this species for several hundred years, meaning that the flyingfish is not only highly commercially important, but has also become intertwined with the island's history, culture and way of life. Barbados is often referred to in tourist literature as ‘The Land of the Flyingfish,’ cou cou and flyingfish is a traditional Barbadian recipe which has been passed down through generations and become the nation's national dish, a flyingfish features on the Barbadian one dollar coin. A number of sports teams also take their names from this species. Clearly, flyingfish are important to Barbados not just economically, in terms of employment and fishing jobs, but hold deep cultural significance to the nation.
75. The Flyingfish Dispute was a dispute between the Caribbean nations of Barbados and Trinidad and Tobago in 2007. The dispute was sparked by the changing migratory patterns of flyingfish which saw this species move away from Barbados and into the waters of Trinidad and Tobago. As flying fish are massively important to the economy, food security and culture of Barbados this led to a significant disagreement between the nations which required the intervention of the international Permanent Court of Arbitration to resolve. At the end, the two countries

agreed to a compromise, under which Barbadian fishers can fish for flyingfish in Trinidad and Tobago waters.

76. The CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean at its Second and Third meetings held in June 2013 and March 2014, respectively, developed a subregional management plan. Acknowledging the shortcomings in flyingfish data collection and analysis, as well as limitations in current national fisheries management frameworks and following the precautionary, ecosystem and participatory approaches to fisheries management, with the ultimate objective to safeguard the socio-economic well-being of the fishers, the flyingfish industry in the sub-region and the ecosystem that sustains the flyingfish fishery, the updated Sub-regional FMP proposes the following: 1. Development and implementation of national management plans for flyingfish fisheries, consistent with the sub-regional fisheries management plan, by the 2015/2016 flyingfish season, or as soon as is practically possible; 2. Annual reporting by States on progress made in development and implementation of national fisheries management plans and submission of data in an agreed, standardized format, to the respective Secretariats; 3. Establishment of an authorized national entry (license/permit) system for flyingfish fisheries, which enters into force for the flyingfish fisheries season 2015/2016, or as soon as is practically possible; 4. Conduct of an assessment to estimate stock abundance of flyingfish prior to any significant development in the fishery; 5. Adoption of a precautionary sub-regional total annual catch trigger point of 5 000 tonnes; 6. Implementation of a precautionary sub-regional freeze on expansion of flyingfish fishing effort and/or fishing capacity applied to all authorised vessel types, should the agreed catch trigger point be realized, to be followed by reassessment of resource status and adaptive management; 7. Strengthen current national data collection systems to facilitate improved assessment and management of the resource as well as monitoring and evaluation of implementation of national and sub-regional fisheries management plans. This plan is presently under revision by the CLME+ flyingfish sub-project.

Fishing communities

77. Fishing communities are an important part of the culture and economy of WECAFC countries, and specifically in Caribbean SIDS. Even in Central America, fishing communities on the Caribbean coast play an important cultural role, very often these communities are home to indigenous communities, such as the Miskitos in Honduras and Nicaragua, Guna in Panama, and various indigenous tribes on the Caribbean coast of Colombia. In some islands, fishing is the only economic activity in rural areas, thus maintaining the social structures. In some countries fisheries in rural areas is considered the activity of last resort for the rural poor. Fishing communities play a key role in sustainable management of the resources, noting that best available information in support of the implementation of the ecosystem approach to fisheries entail scientific evidence as well as local and indigenous/traditional knowledge from these communities. This is dully recognised in existing and soon to be endorsed plans and related mechanisms.

78. Countries are encouraged to report on SDG indicator 14.b.1 as this would provide insights on the recognition of the role of small-scale fisherfolks, their access to marine resources and to markets and the progress on preserving their livelihoods and reducing poverty.

INLAND FISHERIES SUB-SECTOR

79. This analysis takes into account only the countries bordering exclusively the Western Central Atlantic. Obviously, Brazil, Colombia, Mexico, and the United States of America also have production in the areas bordering the Western Central Atlantic, but it is not possible to extract the Western Central Atlantic component of their total inland production.
80. For the countries included in the analysis, total freshwater fish production in the WECAFC area was 28 000 tonnes in 2017, with 80 percent caught by the Bolivarian Republic of Venezuela. Main species produced are *Prochilodus mariae* (6 900 tonnes in 2017) and *Doraops zuloagai* (1 900 tonnes in 2017), mainly produced in the Bolivarian Republic of Venezuela.
81. Overall, inland fisheries play a limited role in many WECAFC countries. In several island countries there exists no inland basins or rivers, so freshwater fish production is nil.

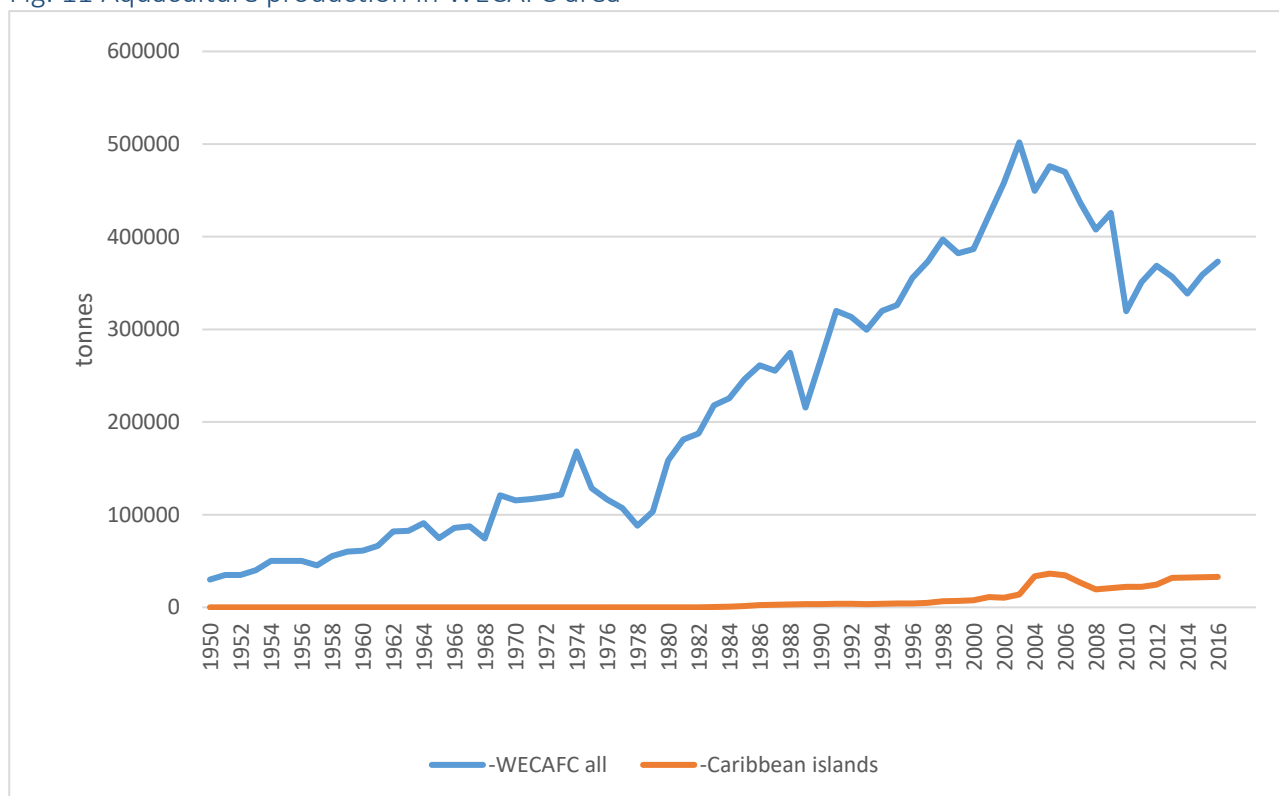
AQUACULTURE SUB-SECTOR

General trends

82. With very few exceptions, like Mexico, most countries and territories in the WECAFC region are “data poor” in terms of data collection, regular reporting to FAO or both.
83. The aquaculture sector in the WECAFC area is dominated by production from the United States of America. Out of the 370 000 tonnes of aquaculture production in the area¹⁹ in 2017, 44 percent was Channel catfish and 33 percent cupped oysters. Figure 10 shows that total aquaculture production declined from the 500 000 tonnes reached in 2007, mainly due to lower catfish production in the United States of America.

¹⁹ For those countries bordering different oceans, the inland freshwater aquaculture production known to be close to WECAFC shores were included in the analysis, such as catfish production from the United States of America and tilapia from Honduras.

Fig. 11 Aquaculture production in WECAFC area



Source: FAO FishStatJ 2019

84. Taking out the United States of America from the aquaculture production, the picture becomes different and not very positive. Aquaculture production of other WECAFC countries and OT expanded until 2007, from which date the production stayed stable at 100 000 tonnes with some up and downs. Production is primarily tilapia from Honduras and whiteleg shrimp from the Bolivarian Republic of Venezuela. Aquaculture production in Caribbean Islands is still quite low at 37 000 tonnes, mainly carp production in Cuba where it is important for food security. These numbers show that aquaculture production in Caribbean SIDS is still limited. Several investment initiatives were developed over the years, but many had to close down, also as a result of competition from imported fish, which can be produced at lower costs.

85. Among factors that have impacted aquaculture production in recent years, is the disease problem of the Belizean shrimp culture, which declined from 7 000 tonnes in 2014 to 1 100 tonnes in 2017. Tilapia production in the area showed several ups and downs, peaking at 36 000 tonnes in 2006, to go down to 22 000 tonnes in 2011 and 2012, after which production stabilized at 32 000 tonnes.

86. Development of “regional hatcheries” of marine bivalves to boost “unfed” aquaculture in order to harness natural productivity has been recommended for some time, but without a breakthrough.

Aquaponics

87. Aquaponics, a combination of aquaculture and hydroponics, is expanding, and this simple idea is gaining traction worldwide on scales ranging in size from table-tops to hectares. It enjoys a

global groundswell of interest and support from farmers, consumers, teachers and governments. In the Caribbean, the birthplace of aquaponics, several converging factors make aquaponics an especially exciting opportunity: youthful populations can use aquaponics to efficiently co-produce fish and vegetables, creating value and livelihoods through import substitution while at the same time addressing consumer demand for healthy, local food by using techniques that are more efficient, less damaging and more climate resilient. However, successful adoption requires farmers and development partners to overcome significant blocking issues, and care should be exercised to manage expectations and target interventions to particular beneficiary groups with higher chance of success.

88. Access, availability and affordability of inputs are the biggest blocking issues to further development of the aquaponic sector. Expensive startup costs, and high risk to these costly assets from theft and natural disaster, are major constraints to investment. Although technical production skills are generally strong among veteran farmers, incoming farmers need technical backstopping and training programmes for basic production technologies. Aquaponics is making headway as a grassroots, bottom-up movement, with social benefits reinforcing the financial and environmental impacts. Development partners have an important role in shaping the path that aquaponics development will take, but should be cognizant that this farmer-driven movement is bigger than any single organization.

RECREATIONAL FISHERIES SUB-SECTOR

89. The recreational and sport fisheries subsector contributes significantly to the economy of the Caribbean island countries. This sector creates income through related expenditures by tourists, and creation of employment. The recreational and sport fisheries target game fish, such as marlins and sailfishes, as well as bone fish.

90. In the United States of America, 6 million residents of Atlantic Coast states participated in marine recreational fishing. All participants, including visitors, took nearly 37 million trips and caught a total of nearly 210 million fish. In the Gulf of Mexico, 2.7 million residents of Gulf Coast states participated in marine recreational fishing. All participants, including visitors, took almost 21 million trips and caught over 144 million fish. Nearly 64 percent of the trips were made in west Florida, followed by more than 12 percent in Alabama, nearly 11 percent in Louisiana, over 7 percent in Mississippi, and almost 6 percent in Texas. The most commonly caught non-bait species (numbers of fish) were spotted seatrout, gray snapper, red drum, sand seatrout, and red snapper.

91. The recreational fisheries sector is less documented for Caribbean islands states, but it is important for the local industry. In the Bahamas, this sector contributes with more than USD 500 million annually to the national economy through related expenditures by tourists, and provides employment for some 18 000 Bahamians. The recreational and sport fisheries target game fish, such as marlins and sailfishes, as well as bone fish. In other Caribbean countries recreational fisheries is similarly important. Tensions between commercial and recreational fishers were reported in several WECAFC countries, which often are managed by the authorities in favor of the recreational fishers.²⁰

92. The GEF funded, World Bank implemented and FAO executed Caribbean Billfish Project conducted numerous studies on billfish stocks status, billfish values, the economic impact of

²⁰ Reference in various FAO Fisheries and Aquaculture Country Profiles

recreational fisheries, rights-based management approaches for pelagic fisheries, fisheries legislation, and recreational fisheries statistics in 2016 and 2017, a fisheries performance indicators study, willingness to pay study for recreational/game fishing, review of recreational fisheries governance best practices and conducted pilot demonstration activities in Grenada and the Dominican Republic, which developed viable business cases for billfish management and conservation. The project informed and facilitated the improved management of billfish species that are considered bycatch among international longline fleets targeting high value tunas. It leveraged the concerning stock statuses, importance to regional food security and the high value use of billfish species among tourism generating recreational fisheries to improve management as summarized in the now published Caribbean Billfish Management and Conservation Plan²¹.

POST-HARVEST SECTOR

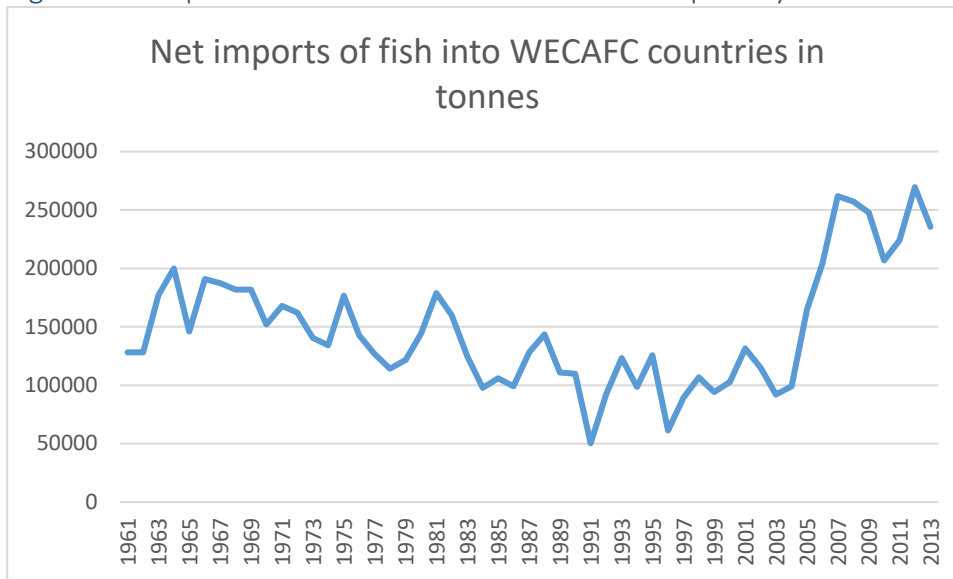
Fish Utilization

93. Similar to other areas in the world, the post-harvest sector in the WECAFC area, especially its small-scale part, is in the hands of women. Fish marketing has generally been carried out by women. In Central America, women of the Garifuna tribe are predominant as fish marketers.
94. WECAFC countries have similar utilization patterns for fishery products. All locally produced fish goes to the fresh fish market. In addition some canned small pelagics, wet salted cod and cured herring, coming from imports, are consumed. Some shrimp is consumed in frozen form. In addition, frozen tilapia fillets and frozen pangasius fillets are imported from China and Viet Nam respectively.
95. The WECAFC area²² is a net importer of fishery products. The below graph shows that net imports of fish for human consumption increased in recent years, to reach 250 000 tonnes (live-weight equivalent). These net imports are going mainly to the Caribbean, namely to Jamaica, Dominican Republic and Trinidad and Tobago. Main exporting countries to the region are Norway, Canada, and in recent years, China and Viet Nam. In some WECAFC countries, imports account for more than two thirds of fish supply.

²¹ <http://www.fao.org/3/CA3366EN/ca3366en.pdf>

²² In this paragraph, those countries with other oceans than the Western Central Atlantic are excluded, as it is impossible to determine the trade from just their WECAFC area.

Fig. 12 Net imports of fish into WECAFC countries in quantity terms

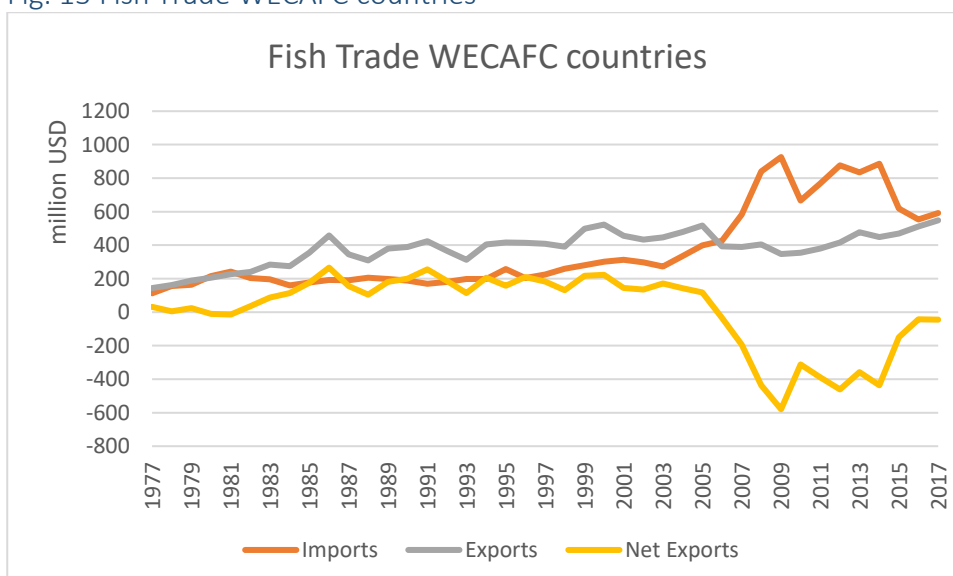


Source: FAO Balance Sheets in FAO FishStatJ

96.Imported fish comes in cans (mackerel and sardines) from Thailand and Chile, with cured cod (klipfish) coming from Norway and cured herring from Canada. Some shrimp is consumed in frozen form.

97.Though the region is a net importer of fishery products, for some species, export earnings are important. In 2017, in value terms, fish imports were USD 590 million, while exports reached USD 548 million. The main fish exporting countries from the region were Guyana, Suriname, and Cuba. It is interesting to note that, in value terms, the WECAFC area has not always been a net importer. At the beginning of this century, this area was a net exporter of fishery products in value terms. The below chart shows the development of fish trade since 1977. As the region is exporting high value fish products (shrimp, lobster and Queen Conch) and imports low value products such as small pelagics and canned tuna, the importance of fish trade for food security becomes evident. The exports earnings from fish trade allow the countries to import, sometimes at low tariffs, fishery products for food of their people.

Fig. 13 Fish Trade WECAFC countries



Source: FAO Balance Sheets in FAO FishStatJ

SOCIO ECONOMIC CONTRIBUTION OF THE FISHERY SECTOR

Role of Fisheries in the National and Regional Economy

98. Surprisingly, fisheries and aquaculture are not important in their contribution to the Gross Domestic Product (GDP) in WECAFC countries. The value ranges from a contribution of a mere 0.01 percent to a high of 2.26 percent in Suriname and 3 percent in Belize. These figures are also low because the present system of calculation just looks at the first hand sales of fish products (ex vessel or ex farm prices) and does not take into account the whole value chain, which would probably increase the value by 3 times or so.

99. Among the various indicators under SDG 14 “Conserve and sustainably use the oceans, seas and marine resources for sustainable development,” there is one indicator on the contribution of fisheries to the GDP. The SDG indicator 14.7.1 “Sustainable fisheries as a percentage of GDP in small island developing States, least developed countries and all countries” has two concepts implied – contribution of fisheries to the GDP, and sustainability of the fisheries. More information on the indicator’s methodology is available in Document WECAFC/XVII/2019/21.

100. Indicator 14.7.1 is able to provide a robust and internationally applicable measure for the economic contribution of sustainable marine capture fisheries, providing an important tool to countries for publicizing the real importance of fisheries in their national economy, ensuring a more balanced allocation of resources that can benefit the sector. According to the global results, the contribution from sustainable marine capture fisheries increased in least developed and SIDS countries; in particular for SIDS countries, the indicator value increased from 6.69% in 2011 to 13.68% in 2015, taking into consideration that fishing activities prevail with more relevance from the social, economic and environmental perspective to the local communities and indigenous people in those countries. For other regions of the world, the share has been overall increasing as a result of improved management from governments and relevant fishing bureaus.

101. Regarding WECAFC member countries, proportion of fisheries and aquaculture to GDP was available for 23 countries according the SDG 14.7.1 methodology. Countries are encouraged to collaborate with FAO to increase the availability and/or precision of their data, by providing otherwise unavailable inputs for the calculation of the indicator. Data could be received through existing processes (i.e. FAO questionnaires of capture and aquaculture production) or others planned to be established.

Table 10 Contribution of fisheries and aquaculture in WECAFC area to the GDP

Country or OT*	Share of fish in GDP (in decreasing order)
Belize	3.00
Suriname	2.26
Grenada	1.30
Antigua and Barbuda	1.00
Bahamas	1.00
Turks and Caicos	0.82
Br. Virgin Islands	0.80

Country or OT*	Share of fish in GDP (in decreasing order)
Curaçao	0.70
Saint Vincent and the Grenadines	0.61
Guyana	0.60
Panama	0.60
Saint Lucia	0.50
Dominica	0.45
Jamaica	0.45
Dominican Republic	0.30
Trinidad and Tobago	0.30
Bolivarian Republic of Venezuela	0.26
Guatemala	0.25
Colombia	0.17
Saint Kitts and Nevis	0.17
Cayman Isl.	0.05
Mexico	0.05
Bermuda	0.02

Source: Authors calculations based on Primary data of SDG 14.7.1 (UNSD), and various FAO fisheries country profiles

(*) Only those WECAFC countries or OTs, for which figures for fish are available, therefore some countries could not be covered

Food Security

102. The below graph shows the main developments of per capita consumption of food fish²³ in the Caribbean and Central America. From these considerations the United States of America, Colombia and Mexico were excluded, as it is impossible to specify the fish consumption just in the WECAFC area of these three countries.

103. Fish consumption is higher in the Caribbean countries, compared with the Central American countries. However, the below graph shows that fish consumption in the Caribbean has declined over the past decades, from a 12.7 kg in 1987 to 9.0 kg in 2013 – the latest year of calculations of per capita consumption by FAO.

104. On the other hand, fish consumption in Central America²⁴ shows an increasing trend from 2 kg in 1962 to 6 kg at present. The gap between the two consumption areas has thus decreased from 10 kg in the eighties of the last century to 3 kg at present. It has to be noticed that fish consumption in both areas is below the world fish consumption average.

105. The average figures hide the huge importance of fish in many countries and OT, for instance in Anguilla, Antigua and Barbuda, Aruba, and Turks and Caicos Isl., where per capita fish

²³ The term “food fish” refers to fish destined for human consumption, thus excluding fish for non-food uses. The term “consumption” refers to apparent consumption, which is the average food available for consumption, which, for a number of reasons (for example, waste at the household level), is not equal to food intake.

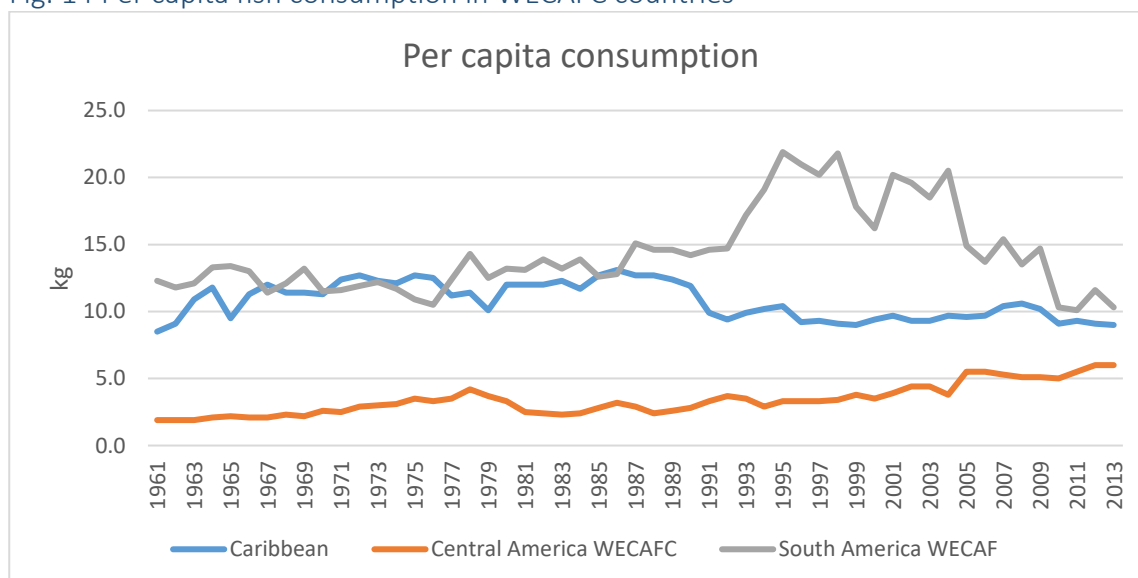
²⁴ Excluding Mexico

consumption exceeds or approached 50 kg per year. However, given the low population in these countries, they are not impacting the average fish consumption in the region.

106. Two other issues have to be considered when talking of fish consumption in the area that is heavy underreporting of small-scale fisheries catch in many countries, including subsistence and self-consumption of fish, which never enters official statistics. The other issue is the presence of tourists, especially in the Caribbean islands, which distorts the per capita consumption.

107. Fish consumption in the four countries and OT that are bordering the Caribbean area from the South American side – French Guiana, Guyana, Suriname and Bolivarian Republic of Venezuela – used to exceed 20 kg per capita, but has declined recently to only 10 kg, exclusively due to the changes in fisheries production and imports in the Bolivarian Republic of Venezuela.

Fig. 14 Per capita fish consumption in WECAFC countries



Source: Calculation by author, based on FAO FishStatJ 2019

Employment

108. The total employment in the fisheries sector is difficult to identify, as these data are not often published or easily available. The below table gives estimates, based on the available FAO Fisheries and Aquaculture Profiles and on some country publications such as the NOAA publication on economic importance of fisheries in the United States of America.

Table 11 Share of fishers* in population in WECAFC area (2017)**

Country/OT in alphabetical order	Number of fishers	population (in million)	Share of fishers in total population
Antigua and Barbuda (2015)	1877	0.009	2.09%
Bahamas	9300	0.377	2.47%
Barbados (2012)	3000	0.285	1.04%
Belize (2015)	2716	0.332	0.82%
Bermuda	277	0.061	0.45%
Cayman Isl. (2015)	100	0.058	0.17%

Country/OT in alphabetical order	Number of fishers	population (in million)	Share of fishers in total population
Colombia (2014)	40000	13.85	0.29%
Costa Rica	2500	4.872	0.05%
Cuba (2013)	7479	11.266	0.07%
Curaçao	120	0.161	0.07%
Dominica	1383	0.072	1.92%
Dominican Republic (2012)	10900	10.404	0.10%
French Guiana (2013)	2800	0.300	0.93%
Grenada (2014)	3500	0.106	3.50%
Guadeloupe (2013)	2500	0.466	0.54%
Guatemala	1000	0.400	0.25%
Guyana	10000	0.760	1.32%
Haiti (2012)	15000	10.317	0.15%
Honduras	7500	2.420	0.31%
Jamaica	14923	2.784	0.70%
Martinique (2013)	2500	0.404	0.62%
Mexico	100000	18.400	0.54%
Nicaragua	20000	0.700	2.86%
Kingdom of the Netherlands	400	0.025	1.60%
Panama	1000	0.557	0.18%
Saint Kitts and Nevis	954	0.054	1.61%
Saint Lucia	3150	0.182	1.14%
Saint Vincent and the Grenadines	3000	0.109	2.75%
Suriname	8000	0.570	1.40%
Trinidad and Tobago (2012)	12063	1.341	1.20%
Turks and Caicos	2105	0.033	6.40%
USA	155000	73.100	0.21%
Boli. Rep- of Venezuela (2016)	95000	32.400	0.29%
Total	567352	186.971	0.30%

Source: Authors calculations based on various FAO fisheries country profiles and –Fisheries Economics of the United States, 2016 Fact Sheet
 (*) only for countries where employment statistics in fisheries are available, fish farmers are not included
 (**) if not otherwise stated

Rural development

109. Fisheries and related activities are important for rural development in WECAFC countries, especially in Caribbean SIDS. It is estimated that in many rural areas, 15% of the labour force is working full-time or part-time in the fisheries sector or related business. Fisheries is part of the culture in many countries, where fishing is carried out as a traditional and part time activity, together with other activities.

110. The importance of women in the fisheries sector is highlighted in various policy papers in the WECAFC region. The most recent one is the Declaration of the 8th Special Meeting of the Ministerial Council of the CRFM, Barbados, October 2018, in which it is spelt out that “the Council accepted that international and national norms regarding issues pertaining to gender, youth, and decent work be adhered to, and be incorporated into all CRFM policies, protocols, programmes, and plans.” Official employment statistics on the contribution of women to the

fisheries sector are deficient, also as their function is mainly in the secondary sector, such as processing and marketing.

TRENDS AND DEVELOPMENT

Constraints and Opportunities

111. The fisheries sector development in WECAFC countries and especially Caribbean SIDS is generally hampered by the lack of a proper legal, policy and planning framework. Fisheries sector governance is also constrained by the limited availability of data and information for management and development of capture fisheries (commercial and recreational). In addition, the fishery resources available in the WECAFC area are generally low, and resources are often over-exploited.

Government and Non-Government Sector Policies and Development Strategies

112. The standing of fisheries in the overall national development strategies is generally low in the WECAFC region, and the developing countries of this area generally do not have a fishery sector policy. As a consequence, the daily politics and ad-hoc issues are largely not conducive for sustainable fisheries management and development. This low standing of fisheries in the overall political decisions is due to the fact that fisheries are not contributing a lot to the official economy of the countries.

113. However, there are some improvements where fisheries policies are being developed. For instance Bahamas recently drafted a Fisheries Act and the draft National Policy and the Strategic Plan for Fisheries and Aquaculture Development and Management in The Bahamas 2017-2022. Jamaica tries to protect the remaining fish resource by establishing no-take zones, in this effort, the government is helped by various non-governmental organizations. Trinidad and Tobago prepared a new Fisheries Law that should replace the outdated law which is one century old. Thus, opportunities for the government fisheries policy in the future lies in the approval of the Fisheries Management Bill and its implementation. The accession to the Port State Measures Agreement will help to fight IUU Fishing. The development of a proper national Plan of Action to Prevent, Deter and Eliminate IUU Fishing also could be an opportunity to safeguard the domestic fisheries resources.

Research

114. There are several research institutes in the region, carrying out important scientific work. There are fisheries research facilities in the United States of America, Colombia, Cuba, Mexico, French Islands, French Guiana and the Bolivarian Republic of Venezuela. The University of the West Indies (UWI), based in Jamaica, has courses on fisheries and aquaculture technology. UWI has established the Port Royal Marine Laboratory which engages in education, research and community outreach to better understand and value marine systems, and develop effective methods for marine conservation and restoration.

Foreign Aid

115. The WECAFC area has received several foreign aid fundings. Below is a list of ongoing major projects in the area. This list is by no way exhaustive.

116. The UNDP/GEF project “Catalysing Implementation of the Strategic Action Programme for the Sustainable Management of shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems” (CLME+) Project is implemented between 2015-2020.

117. Strategies and Sub-Strategies of this project include:

Strategy 1: Enhance the regional governance arrangements for the protection of the marine environment

Strategy 2: Enhance the regional governance arrangements for sustainable fisheries

Strategy 3: Establish and operationalise a regional policy coordination mechanism for ocean governance with initial focus on shared living marine resources

Strategy 4: Enhance the governance arrangements for ecosystem-based management of reefs and associated ecosystems (e.g. seagrass beds, mangroves, reef slopes and coastal lagoons)

Sub-Strategy 4A: Enhance the governance arrangements for implementing an ecosystems approach for spiny lobster fisheries

Sub-Strategy 4B: Enhance the governance arrangements for implementing an ecosystem approach for the Queen Conch fisheries

Strategy 5: Enhance the governance arrangements for implementing an ecosystem approach for pelagic fisheries

Sub-strategy 5A: Enhance the governance arrangements for implementing an ecosystem approach for flyingfish fisheries

Sub-strategy 5B: Enhance the governance arrangements for implementing an ecosystem approach for large pelagics fisheries

Strategy 6: Establish governance arrangements for implementing ecosystem-based management of the Guianas-Brazil continental shelf

118. The Climate Change Adaptation of the Eastern Caribbean Fisheries Sector Project (CC4FISH) project is financed by Global Environment Facility (GEF), and is implemented from 2017 to 2020. Its objective is to increase resilience and reduce vulnerability to climate change impacts in the Eastern Caribbean fisheries sector, through introduction of adaptation measures in fisheries management and capacity building of fisherfolk and aquaculturists.

119. The components of the project are:

- 1) Increased awareness and understanding of climate change impacts and vulnerability for effective climate change adaptation in the fisheries and aquaculture sector;
- 2) Improved resilience of fisherfolk and coastal communities and aquaculturists
- 3) Climate change adaptation mainstreamed in multilevel fisheries governance
- 4) Project Management, Monitoring and Evaluation.

120. The Sustainable Management of Bycatch in Latin America and Caribbean Trawl Fisheries (REBYC-II LAC) is a partnership between six countries and regional organizations to better manage bycatch and support the sustainable development of trawl fisheries and the people who depend on them. Over a five year period (2015-2020), the REBYC-II LAC project aims to reduce food loss and encourage sustainable livelihoods by improving the management of bycatch and minimizing discards and sea-bed damage, thereby transforming bottom trawl fisheries into responsible fisheries. Participating countries are Brazil, Colombia, Costa Rica, Mexico, Suriname, and Trinidad and Tobago.
121. FAO also implemented the Caribbean sub project of the World Bank (WB) led Ocean partnerships for sustainable fisheries and biodiversity conservation: models for innovation and reform. This project came to an end in December 2018. The objective of this sub project were to help Caribbean countries in a better managed billfish fisheries.
122. The European Union, through the ACP Fish project implemented various project activities in the Caribbean region, namely Component 1: Improved fisheries policies and management plans, Component 2: Reinforced control and enforcement capabilities, Component 3: Reinforced national and regional research strategies and initiatives, Component 4: Developed business supportive regulatory frameworks and private sector investment, and Component 5: Increased knowledge sharing on fisheries management and trade at regional level.
123. Following are projects supported by the EU-DG Mare implemented over the past couple of years, under the ambit of WECAFC:
- Support to the establishment of an RFMO in the WECAFC region Project, which aims to enable the process towards the establishment of a Regional Fisheries Management Organization (RFMO) in the WECAFC region
 - Support to implementation of the Regional Plan of Action to deter and eliminate Illegal, Unreported and Unregulated Fishing in the Western Central Atlantic Project. To contribute to enhancing the regional governance for sustainable fisheries in the WECAFC member states through an effective prevention, deterrence and elimination of IUU fishing and establishment of a regional fisheries management body entrusted with an enforcement mandate.
 - Support to the implementation of the Regional Plan for the Management and Conservation of Queen conch (*Strombus gigas*) in the WECAFC area (Recommendation WECAFC/16/2016/1). To contribute to effective conservation, responsible management and trade of Queen Conch in the Caribbean region
 - Support to the creation of a regional database and associated transversal WECAFC, CRFM, OSPESCA, IFREMER and CFMC Working Group on fisheries data and statistics (WECAFC).

Challenges for the fisheries and aquaculture sector

Climate Change²⁵

124. The fisheries sector of the Caribbean's Small Island Developing States (SIDS) is one of the most vulnerable to climate change in the world. The climate change impacts on the Caribbean fisheries sector, such as warmer sea temperatures, rising sea levels, coral bleaching, sargassum influxes and more frequent high-intensity storms and hurricanes, are already disrupting fishing operations and infrastructure, fish landings, fisher livelihoods and coastal communities. Socio-economic impacts on the sector are a decline in food security and nutrition and an increase in poverty among people who rely on the fisheries sector for their livelihoods. Some of the expected negative outcomes of climate change on fisheries include a drop in fish populations; food safety risks; negative economic impacts; possible strains in fisheries-related international agreements; and the increased likelihood of conflict. There is a knowledge gap in species-level responses and socio-economic impacts in this region, particularly within the Caribbean, in the context of climate change and justifies the need for increased attention to this kind of research,
125. It is important to mainstream climate change into fisheries management planning at multiple levels. While several countries have already been engaging in some adaptation measures, for example in the development of mobile apps for improving early warning and safety at sea, a lot still remains to be done. The FAO, under the CC4FISH project, is supporting countries in the region in assessing the vulnerability to climate change of coastal fishing communities. The project delivers capacity-building opportunities such as business skills training to improve record keeping to facilitate access to loans and insurance, safety-at-sea training, and the development of additional livelihoods, including aquaponics and seamoss farming. CC4Fish supported CRFM in the development of Development of a Protocol to Integrate Climate Change Adaptation and Disaster Risk Management in Fisheries and Aquaculture into the Caribbean Community Common Fisheries Policy.
126. At the national level, adaptation activities within the framework of the international climate change regime (the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement) are set out in countries' five-year Nationally Determined Contributions (NDCs). Within WECAFC, a total of 24 independent nations have submitted NDCs of which 14 (mostly the Caribbean SIDS) specifically mention the fisheries sector primarily highlighting its vulnerability to climate change. Only two of these countries make specific reference to fisheries in terms of mitigation strategies, although ten countries list some aspect of fisheries within their stated adaptation plans.
127. In recent years, unusual levels of sargassum in the region caused probably by climate change have negatively impacted fishermen, by tangling in motors, engines, nets and lines, affecting the catches of target species such as flying fish and common dolphinfish, and rendering beaches inaccessible to boats .

²⁵ Main reference is Chapter 9 of Barange, M., Bahri, T., Beveridge, M.C.M., Cochrane, K.L., Funge-Smith, S. & Poulain, F., eds. (2018) Impacts of climate change on fisheries and aquaculture: synthesis of current knowledge, adaptation and mitigation options. FAO Fisheries and Aquaculture Technical Paper No. 627. Rome, FAO. 628 pp. with Oxenford and Monnereau as authors.

Extreme Events

128. Fishing and fish farming communities, fishing and aquaculture installations and equipment, as well as marine and inland water ecosystems, are all affected by hazards. Extreme events, such as marine heatwaves, tsunamis, tropical cyclones, storm surges, coastal and general floods have the greatest impact on the sector. Human-induced disasters such as toxic and chemical spills, nuclear plant accidents, land-based pollutants, and wilful discharge of oil, petroleum products and chemicals also impact fisheries heavily, and may affect the health of the entire aquatic ecosystem. In the Caribbean, prevalence of events such as storms and hurricanes increases the chances of impacts on an often artisanal and small-scale fisheries sector. For example, Hurricane Maria (2017) caused damages of USD 2 million and losses of USD 1 million in the fisheries sector alone, including damaged and destroyed vessels, engines, gear; infrastructural damage (roofs, fuel pumps, freezer rooms, storage spaces); and loss of fishing days.

COASTAL POLLUTION

129. The Caribbean coast is being endangered by pollution, development and overuse. The capacity of Caribbean countries to treat sewage has not kept up with the large numbers of tourists. Cruise ships - a major component of the Caribbean's tourism market – are major polluters because they release sewage offshore. Mangrove and coral reef areas have been contaminated by fertiliser from farms, and the reefs have been further degraded by human contact and destructive fishing practices. As the Caribbean relies largely on tourism, harm to coastal areas could have major economic effects.

130. UN Environment's Waste Management Outlook for Latin America and the Caribbean, released in October 2018 finds that plastic waste contributes 10 percent of total waste. This number is steadily increasing every day. Waste management, and in particular, the disposal of plastics has been a great concern for Caribbean ministers; who in October 2018 endorsed the Caribbean Waste Management Action plan which includes among others – the priority of reducing plastic waste.

131. The major sources of coastal and marine pollution originating from the land vary from country to country. The nature and intensity of development activities, the size of the human population, the state and type of industry and agriculture are but a few of the factors contributing to each country's unique pollution problems. Pollution is discharged either directly into the sea, or enters the coastal waters through rivers and by atmospheric deposition.

132. In the Northern Brazil Shelf legal and illegal mining activities are a major source of pollution for marine areas.

133. Marine pollution and coastal degradation have become serious development issues in the Caribbean. Early evidence of marine pollution was mainly anecdotal, but within the last 10-15 years, work conducted by universities and research institutions in the region has provided the beginnings of a database that identifies several common marine pollution problems.

134. In respect of the various issues mentioned above that increasingly pose serious risks to the sector, and leveraging FAO's strategic objective 5 of strengthening the resilience of rural

communities, it is worth mentioning CC4Fish's investment to develop national capacities in assessing damages and losses induced by disasters in fisheries and aquaculture.

CONCLUSIONS AND RECOMMENDATIONS

135. Overall, the Western Central Atlantic Fishery Commission (WECAFC) is an area with limited fisheries resources. At present catches are 1.5 million tonnes, far below the record of 2.4 million tonnes reached in 1984. Thus, WECAFC catch accounts for less than 2 percent of total world capture fisheries. Aquaculture production is still limited, with 370 000 tonnes, or less than 1 percent of total world aquaculture production. Inland fisheries are not well developed in WECAFC countries. However, a substantial underreporting of catches has to be taken into account.
136. In average, fisheries and aquaculture account for about 1 percent of the creation of the Gross Domestic Product (GDP) in the WECAFC area. It has to be noted that the fish catch in the WECAFC area concentrates on high value species, such as lobster, Queen Conch and shrimp.
137. Fish consumption is high in some island nations and territories such as Guyana, Montserrat, and Turks and Caicos, but the average per capita consumption is 9 kg, roughly in line with the average of the Latin America and Caribbean region (10.2 kg), but about half of the world average consumption.
138. WECAFC countries are net importers of fishery products, both in quantity and in value terms. Some island countries depend heavily on imports for their food security. Exports concentrate on Queen Conch, spiny lobster and shrimp.
139. This apparent relatively low importance of the sector as might show-up from the national accounts hides another reality of the importance of the sector. Studies have shown that in several countries fish catches are underreported, and a better statistical reporting would probably show that fisheries are more important in the creation of the GDP. The high value of exported species generates national income which allows countries to import fish hence to fulfil population needs for fish in food security. The fishery sector also generates positive impacts in other sectors: fishing is a part of the culture, especially in the Caribbean islands; it also plays an important role for the touristic industry, a major economic activity in these countries. The sector, still too often informal, plays locally an important role in maintaining livelihoods in coastal areas.
140. The challenges that the fisheries and aquaculture sector is facing in the WECAF area are climate change, extreme events, and coastal pollution, as these are affecting negatively the performance of the fisheries. Several projects are already active trying to improve resilience of fishers.
141. Main recommendations for the WECAFC area are:
- To foster the implementation of the endorsed fisheries management plans and the effective enforcement of regulations where they exist, at sub-regional or national level
 - to increase research on fish resources,
 - to update the legislative framework,

- to improve statistical collection, especially in the small-scale fisheries sector,
- to identify the production of inland aquaculture and inland capture fisheries in national statistics,
- Indeed Countries are encouraged to collaborate with FAO to increase the availability and/or precision of their data, by providing otherwise unavailable inputs for the calculation of the indicator. Data could be received through existing processes (i.e. FAO questionnaires of capture and aquaculture production) or others planned to be established. Reporting on the four SDG 14 indicators, SDG 14.4.1, 14.6.1, 14.7.1, 14.b.1 is essential.
- to better integrate fisheries in food security policies in the countries,
- to eliminate open access fisheries and to develop proper tenure systems,
- to integrate climate resilience in national policies.

Annexes

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