

## WESTERN CENTRAL ATLANTIC FISHERY COMMISSION (WECAFC)

### EIGHT SESSION OF THE SCIENTIFIC ADVISORY GROUP (SAG)

Merida, Mexico, 3-4 November 2017

### Review of the State of Fisheries in FAO Area 31<sup>1</sup>

#### Introduction

1. This document is intended to update the state of fisheries in the region of the Western Central Atlantic Fisheries Commission (WECAFC), as presented in the VII<sup>th</sup> Session of the Scientific Advisory Group and the XVI<sup>th</sup> Session of the Commission, by adding current information on reported landings up to 2015 and reviewing recent assessment reports for different species. This document only covers FAO Area 31 (Western Central Atlantic, Fig. 1).

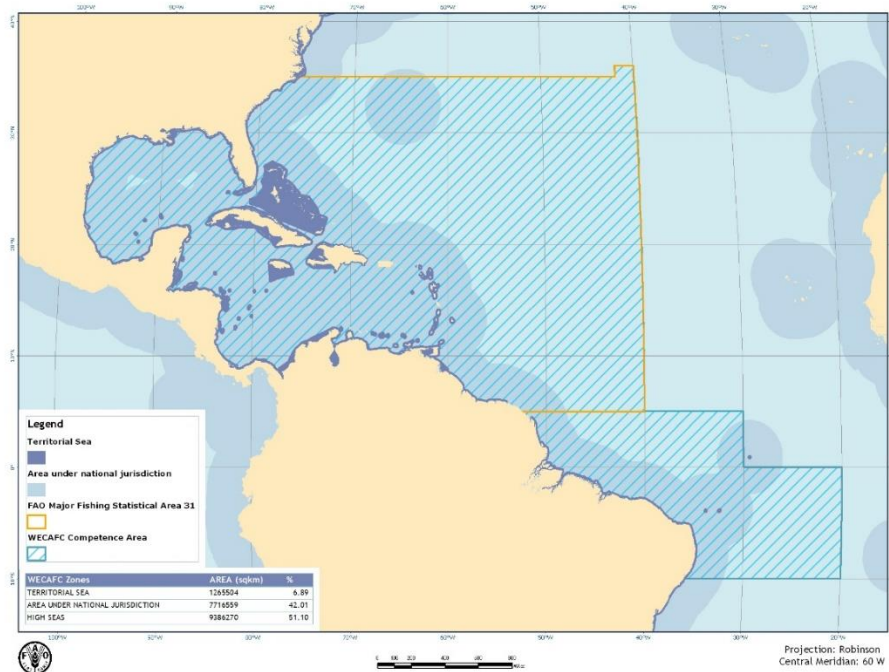


Figure 1. Area of competence of the Western Central Atlantic Fisheries Commission (FAO Statistical Area 31 is delineated in light orange)

2. WECAFC covers nearly 15 million km<sup>2</sup> of marine area extending from Cape Hatteras in North Carolina, United States of America (35°N) to south of Cape Recife, Brazil (10°S). This area covers the south-east coast of the United States, the Gulf of Mexico, the Caribbean Sea and the north-east coast of South America. Approximately 51% of the mandate area is in areas beyond

<sup>1</sup> Prepared by Jeremy J. Mendoza FAO Consultant

national jurisdiction (ABNJ) and around 81% corresponds to waters with depths greater than 400 m. Except for Northern Brazil which is included in FAO Area 41, the rest of the management area corresponds to FAO Area 31 (Table 1 and Fig. 1). The Caribbean Sea supports the highest species diversity in the Atlantic Ocean and is a global-scale hot spot of marine biodiversity (Roberts *et al.*, 2002). This species diversity supports industrial and small-scale fisheries along the region which target mollusks, crustaceans and fishes inhabiting from shallow coastal areas to deep abyssal slopes. The productivity of the Western Tropical Atlantic is quite heterogeneous; the most productive regions are related to riverine input and upwelling systems, especially in the Gulf of Mexico and along the Northeastern shelf of South America. Also, coral reefs, coastal lagoons, mangrove forests and seagrass beds are highly productive and sustain important fishery resources. The diversity and complexity of these coastal and marine ecosystems represents a serious challenge for fisheries research and management in this area.

Table 1. Location and area of major shelf zones in the WECAFC area (Stevenson, 1981)

LOCATION	AREA (km <sup>2</sup> in 1000s)	FAO AREA
Continental shelf		
USA Southeast coast	110	31
Gulf of Mexico	600	31
Yucatan-Eastern Venezuela	250	31
Guyana, Suriname, French Guiana	200	31
Northern Brazil	360	41
TOTAL continental shelf	1520	
Islands		
Islands and offshore banks	380	31
GRAND TOTAL	1900	

### Profile of Landings

3. Information on landings are reported to FAO on a yearly basis by member countries. Only commercial landings are reported, excluding information on other components of catch, such as discards and recreational landings. The commercial landings data provided to FAO must be used with caution to infer status of different species and/or species groups and ideally should be complemented with information from stock assessments, trends in effort or catch per unit of effort, and other sources (i.e. expert knowledge). However, due to diverse causes (i.e. high species diversity, limited technical and financial resources, relative importance of diverse small-scale fisheries) in many cases such additional information is not available.

4. At present FAO landings data cover the period from 1950 to 2015. As the early years (1950s to 1970s) reflect the period of development for most fisheries in the region, for presentation purposes only the period from 1975 to 2015 will be covered in the present document. Total landings from Area 31 peaked at 2.5 million tonnes in 1984, landings then declined steadily until 1992 when 1.6 million tonnes were reported. Subsequently landings increased and stabilized above 1.7 million tonnes between 1993 and 2004, afterwards landings declined more or less steadily until 2014 when a minimum of 1.2 million tonnes was reported. In 2015 total landings increased slightly and reached 1.4 million tonnes. To a great extent the

evolution of landings has been driven by variations in ISSCAAP group 35 (herrings, sardines and anchovies), which represent the main proportion of total landings (Fig. 2).

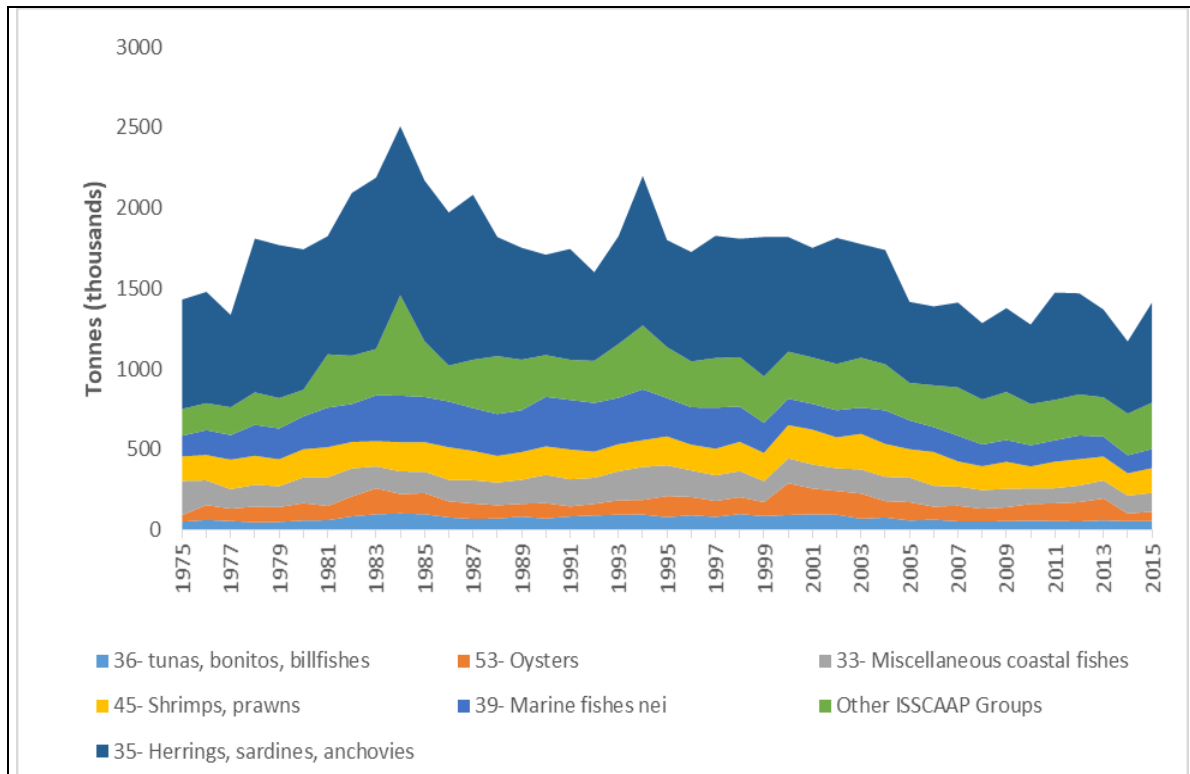


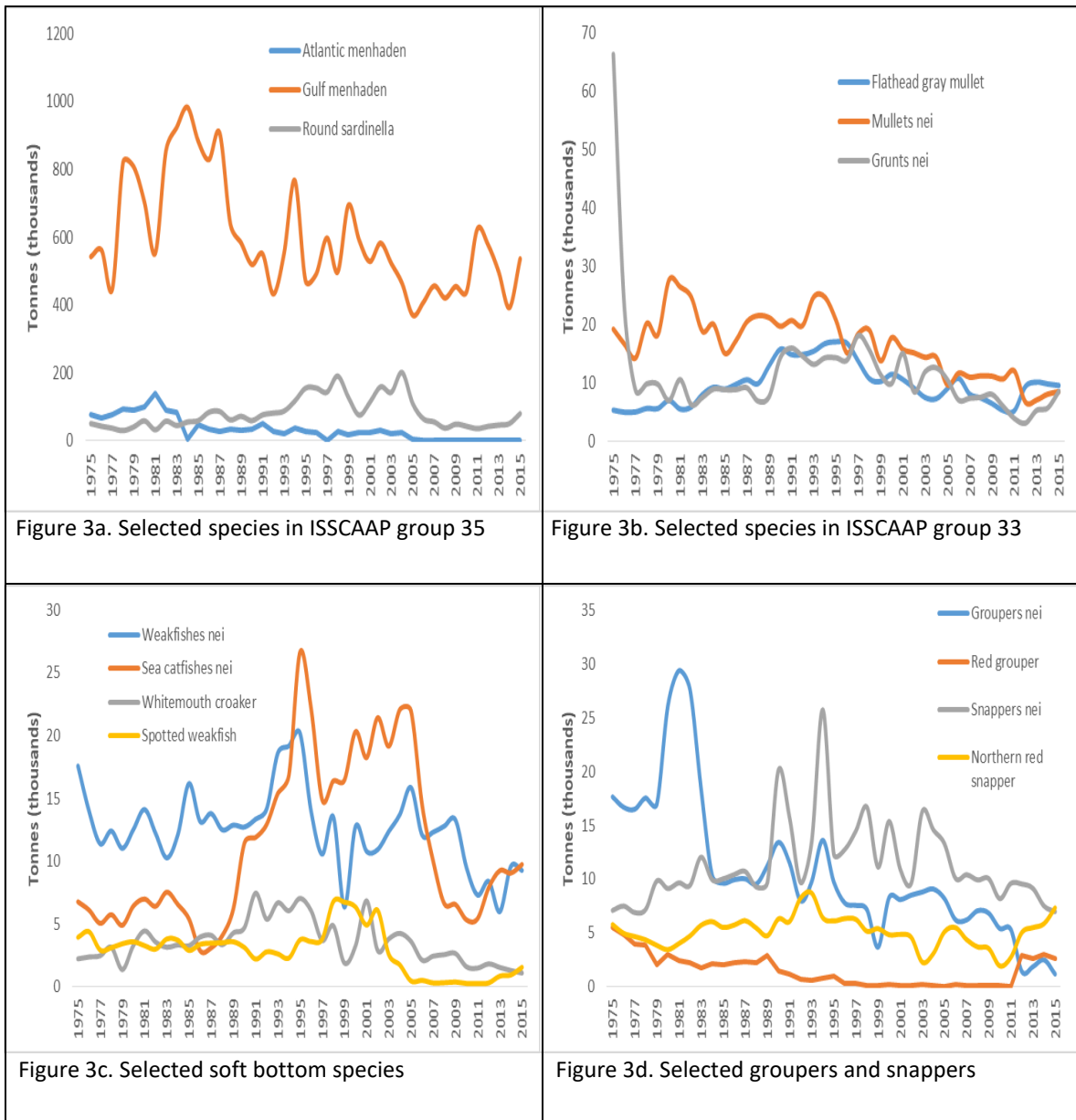
Figure 2. Total reported landings (in thousand tonnes) by ISSCAAP groups in the Western Central Atlantic (1975-2015).

5. Landings from ISSCAAP group 35 represented 48% of total landings reported in 2015. The most important species in this group is Gulf menhaden (*Brevoortia patronus*), reported mainly by the United States of America, with reported landings of 536 129 tonnes in 2015, followed by round sardinella (*Sardinella aurita*), landed mainly in Venezuela, with total landings in 2015 of 79 850 tonnes. Both species showed an increase over landings in 2014 that represented overall more than 170 000 tonnes. On the other hand, Atlantic menhaden (*Brevoortia tyrannus*) has presented historically low levels over the last decade (Fig. 3a).

6. The Flathead grey mullet (*Mugil cephalus*), reported mainly by the United States of America and Mexico, has shown stability in landings over the last four years with values around 9 600 tonnes after minima recorded in 2010 and 2011. Mulletts nei (family Mugilidae), mainly reported by Mexico and Venezuela, continued to show a slight increase in 2015 reaching 8 456 tonnes after the minimum observed in 2012. While grunts nei (family Haemulidae), mainly landed in Mexico, Venezuela and Cuba, showed a similar pattern reaching a total of 8 477 tonnes in 2015 (Fig. 3b).

7. A selection of soft bottom demersal fishes from ISSCAAP group 33, such as Sea catfishes nei, mainly landed in Mexico and Venezuela, continued to increase after the minimum observed in 2010 and reached 9 700 tonnes in 2015. The spotted weakfish (*Cynoscion nebulosus*), reported by

Mexico and the United States of America, also continues to show an increasing trend from Mexican landings after minima observed during the period 2005-2012. Weakfishes nei, mainly from Mexico, Venezuela and French Guiana, showed relative stability in 2014-2015 around 9 300 tonnes. Whitemouth croaker (*Micropogonias furnieri*), reported only by Venezuela, continued its decreasing trend in 2015 (fig. 3c).



8. Groupers nei (family Serranidae), reported in recent years mainly by Dominican Republic and Venezuela, continued to show a decreasing trend up to 2015; however, this decrease may be partially explained by changes in taxonomic resolution from reports by the United States of America. Snappers nei (family Lutjanidae), reported mainly by Venezuela, Mexico, Dominican Republic, and Antigua and Barbuda, showed a decreasing trend mainly from Venezuelan landings in recent years. Northern red snapper (*Lutjanus campechanus*), reported by Mexico and the

United States of America, continued the recent increasing trend and reached 7 333 tonnes in 2015. While Red grouper (*Epinephelus morio*), reported by the United States of America and Dominican Republic, shows stable landings around 2 700 tonnes since 2012 (Fig. 3d). Red grouper landings from Mexico, which is a main producer, are reported as part of the group Groupers, seabasses, nei.

9. ISSCAAP group 36 includes tunas and tuna-like fishes. Skipjack tuna (*Katsuwonus pelamis*) is presently reported mainly by Venezuela and Suriname and landings increased slightly in 2015 and reached 3 247 tonnes. Yellowfin tuna (*Thunnus albacares*) landings, reported among others by Venezuela, Suriname. Trinidad and Tobago, Grenada and Mexico, have been relatively stable over the last decade around 14 000 tonnes and reached 12 540 tonnes in 2015. Albacore tuna (*Thunnus alalunga*), of which the major producers are Taiwan, Venezuela, and Saint Vincent and the Grenadines, has continued its slight recovery and reached 4 093 tonnes in 2015. Landings of Atlantic bonito (*Sarda sarda*) showed an increase to 2 946 tonnes mainly from reports by Mexico (Fig. 3e).

10. Other species from ISSCAAP group 36, such as Blackfin tuna (*Thunnus atlanticus*), reported mainly by Cuba, Grenada, Venezuela and Saint Lucia, continued to decrease and reached 1 284 tonnes in 2015. Swordfish (*Xiphias gladius*) landings decreased to 2 787 tonnes after a recent peak just above 5 000 tonnes in 2005. Atlantic sailfish (*Istiophorus albicans*) and Wahoo (*Acanthocybium solandri*) also showed a decreasing trend in recent years; landings of Atlantic sailfish reached 636 tonnes in 2015, while landings of Wahoo reached 994 tonnes at the end of the series (Fig. 3f).

11. King mackerel (*Scomberomorus cavalla*) landings, mainly from Mexico, United States of America, Venezuela, Trinidad and Tobago, and Guyana, increased to 10 507 tonnes mainly from Mexican reports. Atlantic Spanish mackerel (*Scomberomorus maculatus*), reported by Mexico and the United States of America, showed a slight decrease but remained at recent relatively high levels with landings of 9 162 tonnes in 2015. On the other hand, landings of Serra Spanish mackerel (*Scomberomorus brasiliensis*) and cero (*Scomberomorus regalis*) have remained at recent historically low levels in 2014-2015 (Fig. 3g).

12. ISSCAAP group 45 includes several species of highly valued crustaceans. Northern brown shrimp (*Farfantepenaeus aztecus*), Northern pink shrimp (*Farfantepenaeus duorarum*) and Northern white shrimp (*Litopenaeus setiferus*) are reported mainly by Mexico and the United States of America. Northern brown shrimp has been fluctuating around 51 000 tonnes over the last decade and showed an increase to 61 376 tonnes in 2015. Over the last three years landings of Northern white shrimp have been stable around 42 000 tonnes. Northern pink shrimp landings have been increasing since 2012 and reached 9 000 tonnes in 2015. Penaeus shrimps nei, reported mainly by Mexico, Venezuela, Nicaragua and Honduras, have continued to decline and reached a recent minimum of 11 000 tonnes in 2015. Atlantic seabob (*Xiphopenaeus kroyeri*) landings are reported to FAO mainly by Guyana, Suriname, the United States of America and Mexico. Overall landings have decreased somewhat in recent years and reached 25 347 tonnes in 2015 (Fig. 3h).

13. Caribbean spiny lobster (*Panulirus argus*) landings are reported to FAO by 27 coastal and island nations from Area 31, among which the Bahamas, Cuba, Honduras, Mexico, Nicaragua and the United States of America are the major producers. Overall fishery landings peaked in 1999 at 35 787 tonnes and since then have decreased to 31 320 tonnes in 2015. Blue crab (*Callinectes*

*sapidus*) landings are reported mainly by Mexico, the United States of America and Venezuela. Total landings of blue crab peaked in 1994 at 74 827 tonnes, since then landings have dropped somewhat and remained relatively stable reaching 51 009 tonnes in 2015. Around 30 coastal and island nations report Stromboid conchs *nei*, among which the most important producers are Nicaragua, Bahamas, Jamaica, Honduras, Dominican Republic, Turks and Caicos, and Belize. Total landings have recovered in recent years and reached 35 068 tonnes in 2015 (Fig. 3i).

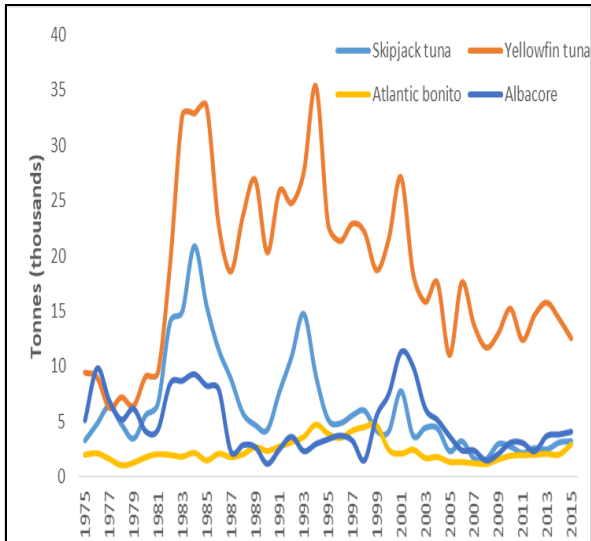


Figure 3e. Selected species in ISSCAAP group 36

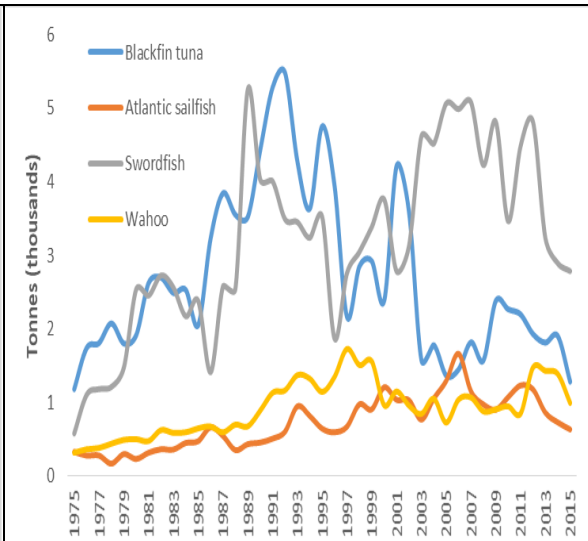


Figure 3f. Selected species in ISSCAAP group 36

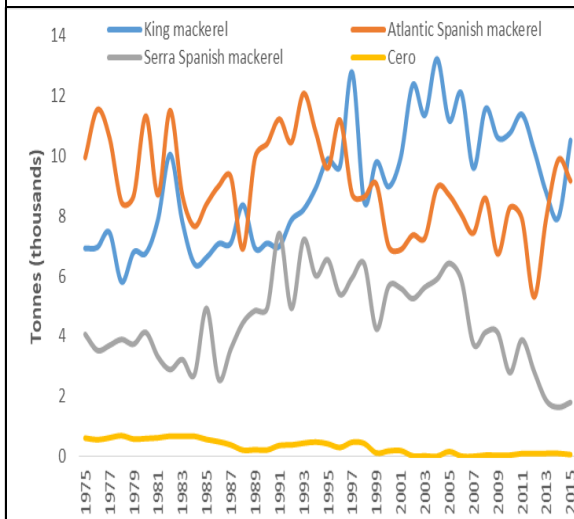


Figure 3g. Selected species from ISSCAAP group 36

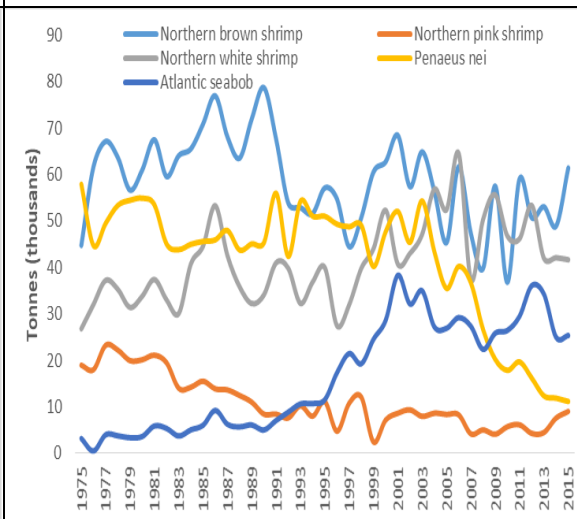
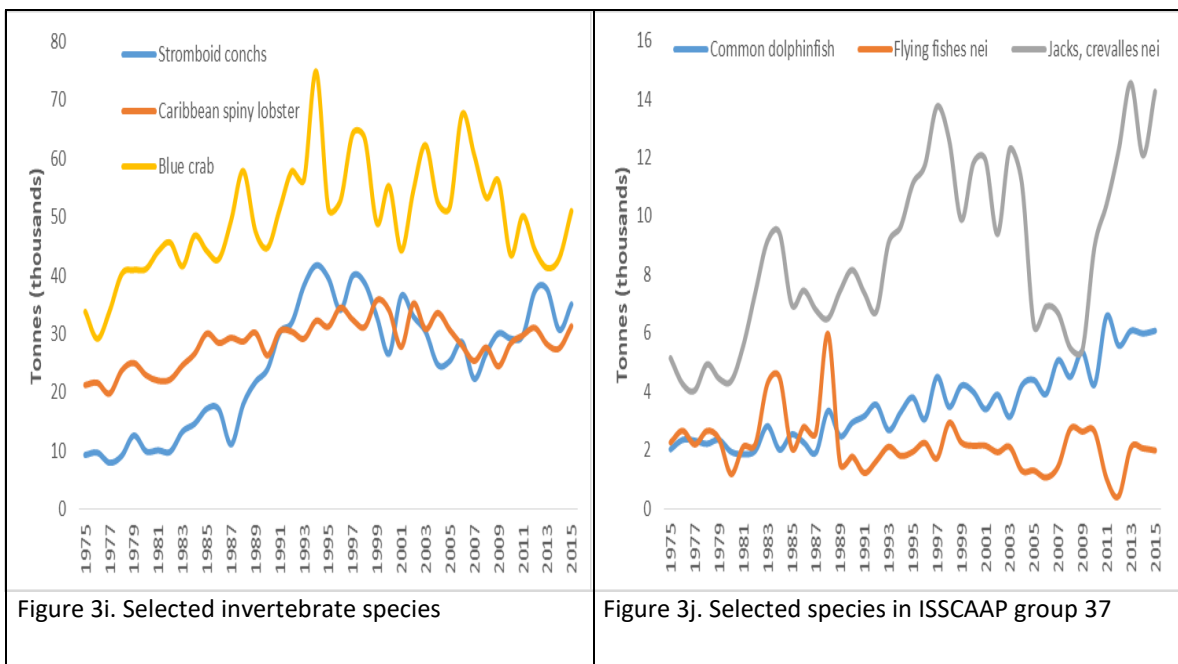


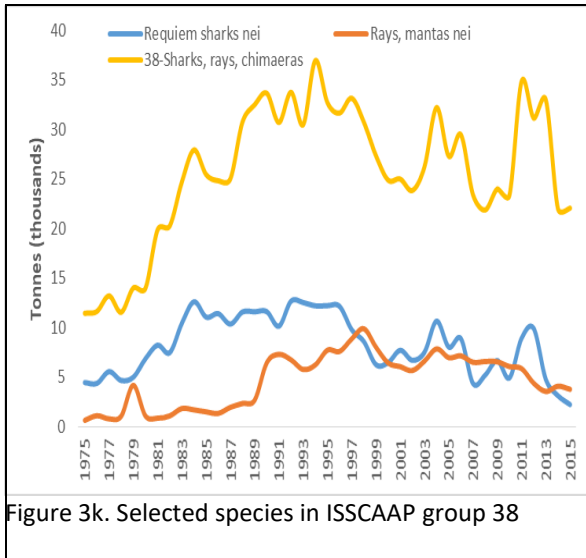
Figure 3h. Selected species from ISSCAAP group 45

14. Common dolphinfish (*Coryphaena hippurus*) landings are reported mainly by France, Venezuela, Saint Lucia, Barbados and the United States of America. Landings have shown a more or less continuous increase and have stabilized around 6 000 tonnes from 2013 to 2015. Flying fishes *nei* are reported mainly by Barbados, after a sharp drop in 2011 and 2012 landings recovered and stabilized around 2 000 tonnes from 2013 to 2015. However, data for 2014 and

2015 are carry over estimates from 2013 landings data. Ramlogan *et al.* (2017) reported a reduction in flying fish landings, especially during the 2015 fishing season, which was associated with reduced catchability of flying fish due to a particularly strong Sargassum influx event in the Eastern Caribbean. Jacks, crevalles nei are reported mainly by Mexico and Venezuela, after recent minima observed from 2005 to 2010 landings have recovered and reached 14 246 tonnes in 2015 (Fig. 3j).

15. Landings from ISSCAAP group 38 (Sharks, rays, chimaeras) peaked at 37 000 tonnes in 1994 and then declined more or less continuously until 2002 when around 24 000 tonnes were reported; since then landings have fluctuated between 22 000 tonnes and 35 000 tonnes reaching 22 057 tonnes in 2015. Requiem sharks nei (Family Carcharhinidae), reported mainly by Mexico and Venezuela, show an overall decreasing trend since the mid 1990s and reached 2 200 tonnes in 2015; this decrease in recent years is partly due to increased taxonomic resolution for certain species (Blue shark, Atlantic sharpnose shark and Blacktip shark, among others) included within this group. Landings of Rays, mantas nei, reported mainly by Mexico, Venezuela and Cuba, have been decreasing steadily since the early 2000s and reached 3 800 tonnes in 2015; a significant recent decrease in reports by Mexico may be attributed to increased taxonomic resolution as reports for Southern stingray (*Hypanus americanus*) started in 2011 and represented 3 200 tonnes in 2015 (Fig. 3k).





### Resource Status and Fisheries Management

16. There are several institutional arrangements among countries in the region in order to promote and facilitate the responsible utilization of the fisheries and other aquatic resources within Area 31. Each organization has a different geographical coverage and mandate: Western Central Atlantic Fisheries Commission (WECAFC) of the FAO, the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Caribbean Regional Fisheries Mechanism (CRFM), the Caribbean Fisheries Management Council (CFMC), the Latin American Organization for Fishery Development (OLDEPESCA), the Central American Organization for the Fisheries and Aquaculture Sector (OSPESCA), the Association of Caribbean States (ACS), the Organization of Eastern Caribbean States (OECS), and the fisheries authorities of the different nations in Area 31. However, despite the relatively large number of existing arrangements, information available for management purposes still needs improvement.

17. Information on the status of the stocks was collected from all the institutional sources referred to above and by searching the World Wide Web. This information allowed to update the stock status of several species and species groups. Table 2 is used by FAO to synthesize information on the status of stocks in area 31. It includes 33 species/stocks that are allocated both a stock status and a level of uncertainty on status determination. The following paragraphs provide information on stock status determination for these groups, as well as for other species for which recent stock assessments were available.

18. For Flathead grey mullet recent assessments were available for the states of Florida (Chagaris et al., 2014) and Louisiana (West et al., 2016a). In Florida the assessment indicated that stocks (west and east coasts) were not overfished and that overfishing was not occurring. Subsequently, in 2014 and 2015 there has been a decrease in commercial and recreational landings reported by the National Marine Fisheries Service (NMFS) in the state of Florida. For the state of Louisiana assessment results indicated that the grey mullet stock was neither overfished nor experiencing overfishing. In Mexico landings have remained relatively stable over the last

decade and in Venezuela for 2014, the most recent year reported, landings (1 396 tonnes) represented 15 percent of the mean peak landings for the period 1992-1996.

19. For Red grouper (*Epinephelus morio*) the most recent stock assessment indicates overexploitation and overfishing in the USA Southeastern Atlantic coast (SEDAR, 2017a). In the USA Gulf of Mexico with data up to 2013 the stock was neither overfished nor experiencing overfishing (SEDAR, 2015), recent NMFS Gulf of Mexico landings for 2014-2015 have remained relatively stable. In Mexican waters of the Gulf of Mexico assessments results indicated that for 2010 the stock was overexploited (DOF, 2014a), and recent FAO landings data, for the group in which it is reported, have remained relatively stable from 2011 to 2015. There are no recent assessments for Nassau grouper (*Epinephelus striatus*), but due to declining trends the Nassau grouper is classified as endangered on the IUCN red list and threatened under the USA Endangered Species Act (Sherman *et al.*, 2016) and is considered overfished in the United States Caribbean region (NOAA, 2016) and in Cuba (Baisre, 2018). A recent assessment of gag grouper (*Mycteroperca microlepis*) in USA Gulf of Mexico waters indicated that the stock was not overfished nor experiencing overfishing (SEDAR, 2016a). A gag grouper stock assessment for the Southeastern coast of the USA indicated that the stock was not overfished but that it was experiencing overfishing in 2012 (SEDAR, 2014a), and NMFS data show reduced landings for 2013-2015 for this stock. Snowy grouper (*Hyporthodus niveatus*) was assessed in the USA Gulf of Mexico by data-limited methods (SEDAR, 2016b) and most stock indicators showed high probabilities of overfishing and overfished conditions.

20. Grunts (family Haemulidae) are reported mainly by the USA, Mexico, Venezuela, Cuba, Colombia and Dominican Republic. There are no recent stock assessments available for species within this family. Landing histories from Cuba and Colombia show significant declines and are considered overexploited in Cuba (Baisre, 2018), while landings from Venezuela and Mexico show significant recoveries in recent years. Data from commercial catch rates of the grunts complex in the state of Florida, USA, where most of the grunts are landed from this country, suggests full exploitation (FWRI, 2016a).

21. Several taxonomic groups are included in Mulletts nei. These include Mulletts nei, White (*Mugil curema*), Lebranche (*Mugil liza*), Bobo (*Joturus pichardi*) and Parassi (*Mugil incilis*) mulletts. These species are reported by several countries including the United States of America, Mexico, Venezuela, Colombia, Dominican Republic and Cuba, among others. The overall trend in the time series for Mulletts nei is decreasing since 1980, when a maximum of 25 457 tonnes was reached, until 2015 when 1 180 tonnes were reported. However, this trend in recent years is misleading as it is apparently mainly the result of improved taxonomic reporting to FAO by the United States of America and Mexico. However, Mulletts nei show significant decreases in Colombia and Cuba (see also, Baisre, 2018). Landings of Lebranche mullet are mainly from Venezuela and considering the landings history it would seem that Lebranche mullet is fully exploited in Venezuela.

22. The largest proportion of landings from the family Sciaenidae are reported as Weakfishes nei by Venezuela, Mexico and French Guiana. Landings from Venezuela reached a peak of 20 045 tonnes in 1995 and a minimum of 400 tonnes was reported in 2013, and later increased to 3 518 tonnes in 2015. Mexico and French Guiana data only cover the period 2005-2015 and show relatively stable landings in recent years. In the United States the black drum (*Pogonias cromis*) has been assessed using data-limited methods along the Atlantic coast (Maine to Florida) as a single stock, and it is considered not overexploited nor overfished (ASFMC, 2015a). In USA waters

of the Gulf of Mexico, where most of the landings occur for this species occur, it is considered abundant and not overfished by the Gulf States Marine Fisheries Commission (GSMFC), but no formal recent assessments were available. A stock assessment of Spotted weakfish (*Cynoscion nebulosus*) in waters of the state of Louisiana (USA) indicated that the stock was neither overfished nor experiencing overfishing (West *et al.*, 2014). On the other hand a stock assessment in waters of the state of Mississippi indicated overexploitation (Leaf *et al.*, 2016). Squeteague (*Cynoscion regalis*) is reported only by the United States of America in Area 31. Landings in 1980 reached 4 682 tonnes and then decreased significantly and reached 15 tonnes in 2015. A stock assessment for the Atlantic coast of the United States (FAO Areas 21 and 31) indicated that the stock was overfished but not experiencing overfishing in 2014 (ASMFC, 2016). Red drum (*Sciaenops ocellatus*) is only reported by the United States of America. Landings reached a peak of 2 510 tonnes in 1976 and then decreased abruptly and reached 58 tonnes in 2015. The most recent assessment indicates that the Southern Atlantic stock (from South Carolina to Florida) is likely not experiencing overfishing, but it was not possible to establish if the stock was overfished or not (ASMFC, 2017a). In the USA waters of the Gulf of Mexico a data limited assessment indicated that the stock was not overfished (SEDAR, 2016b).

23. For Northern red snapper (*Lutjanus campechanus*) the most recent assessments estimated that the USA South Atlantic stock was overfished and experiencing overfishing (SEDAR, 2017b), while the Gulf of Mexico stock was also overfished but not experiencing overfishing (Cass-Calay *et al.*, 2015). In Mexico Northern red snapper FAO landings reached minima in 2004 and 2010 at or below 1 000 tonnes and was considered overfished (Carta Nacional Pesquera, 2012), recent increases in landings are attributed to fishing in non-traditional areas. Vermillion snapper (*Rhomboplites aurorubens*) is reported by Mexico, Puerto Rico and USA. Total landings show a peak in 2005 at 4 055 tonnes and then declined to 2 304 in 2015. The most recent assessment in USA waters of the Gulf of Mexico indicated that the stock was not overfished nor undergoing overfishing (SEDAR, 2016c). An assessment from the Southeastern coast of the USA indicated that the stock was not overfished nor experiencing overfishing in 2011 (SEDAR, 2012a). Recent landings (2012-2015) from NMFS for this stock have been within estimated MSY limits. An assessment report for Mutton snapper (*Lutjanus analis*) from the Southeast Atlantic and Gulf of Mexico USA waters indicated that the stock was neither overexploited nor experiencing overfishing in 2013 (O'Hop *et al.*, 2015). Recent landing reports from NMFS have been below the Allowable Biological Catch limit. In Cuba Mutton snapper is considered overfished based on national landing reports (Baisre, 2018).

24. Atlantic menhaden (*Brevoortia tyrannus*) is only exploited by the USA in Area 31. FAO landing reports indicated a maximum of 139 874 tonnes in 1981, which then declined sharply and reached 377 tonnes in 2015. However, the stock of Atlantic menhaden extends beyond Area 31 as it is distributed from the waters of the state of Maine to those of the state of Florida. The most recent assessment for this stock, with data up to 2016, indicated that the stock was not overfished nor undergoing overfishing (ASMFC, 2017b). Atlantic thread herring (*Opisthonema oglinum*) is reported to FAO in Area 31 mainly by the USA, Venezuela and Cuba. Landings from Venezuela and the USA show significant declines, but there are no assessments available for these stocks. In Cuba it is estimated to be fully fished (Baisre, 2018). Gulf menhaden (*Brevoortia patronus*) is only reported to FAO by the United States of America. The most recent stock assessment (SEDAR, 2013a) used data for the period 1977-2011 and indicated that the stock was not overfished and overfishing was not occurring. Recent landings have been below levels recorded in 2011. Round sardinella (*Sardinella aurita*) is reported to FAO in Area 31 by Venezuela, the USA and Mexico.

Venezuela is the major producer and for the period 1950-2015 accounted on average for more than 95% of total landings. Landings have been increasing since a minimum of 34 753 tonnes in 2011 to 79 243 tonnes in 2015. This recent trend may indicate that the stock is recovering from an overfished condition.

25. The most recent assessment for Albacore tuna (*Thunnus alalunga*) indicated that stock status in the North Atlantic had improved and was not overfished nor experiencing overfishing (ICCAT, 2016a). In the case of Western Atlantic Skipjack tuna (*Katsuwonus pelamis*) the stock was assessed in 2014 and results indicated that the stock was unlikely to be overexploited (ICCAT, 2014). For Yellowfin tuna (*Thunnus albacares*) a single stock for the Atlantic Ocean is used for management purposes by ICCAT and most of the landings are reported from the Tropical Eastern Atlantic (FAO Areas 34 and 47). The most recent assessment (ICCAT, 2016b) indicated that the Yellowfin tuna stock was slightly overfished (biomass 5% below  $B_{MSY}$ ) but not undergoing overfishing in 2014. Atlantic bonito (*Sarda sarda*) landings are reported by a number of countries in Area 31, among which the most important are Mexico, Venezuela, and to a lesser extent Trinidad and Tobago, the United States of America and France (Martinique). Overall landings show an increasing trend until the 1990s when peak production reached 4 740 tonnes in 1994, landings then dropped to a low of 1 187 in 2008, and later increased to 2 946 in 2015 mainly due to landings from Mexico, while landings from Venezuela and Trinidad and Tobago remained at historically low levels. There are no data on migratory movements or stock structure of Atlantic bonito in the Western Central Atlantic. Atlantic bonito is within the different species under ICCAT, but no stock assessments are available due to insufficient data (ICCAT, 2017a).

26. Atlantic sailfish (*Istiophorus albicans*) is reported mainly by Venezuela, Grenada, Dominican Republic and Cuba. In the most recent assessment of the Western Atlantic stock (ICCAT, 2016c), due to uncertainty in different model estimates, the working group recommended that landings should not exceed current levels. Bigeye tuna (*Thunnus obesus*) landings are reported to FAO by several regional and Asian countries. Most of the landings are associated with longliners from Japan, Taiwan (Prov. Of China) and Korea, while main producing countries from the region include Venezuela, and Saint Vincent and the Grenadines. For management purposes ICCAT considers a unit stock for the Atlantic Ocean. The most recent assessment estimated that the stock was overfished and undergoing overfishing in 2014 (ICCAT, 2015a). Atlantic bluefin tuna (*Thunnus thynnus*) is reported mainly by the United States of America and Mexico, the most recent assessment for the Western Atlantic stock indicates that the resource is not undergoing overfishing, but it was not possible to estimate biomass reference points (ICCAT, 2017b). Swordfish (*Xiphias gladius*) is reported mainly by Spain and the United States of America in Area 31. Landings peaked at 5 255 tonnes in 1989, after a decline in the 1990s landings increased to exceed 4 000 tonnes during most of the period 2003-2013, but then declined to 2 786 tonnes in 2015. For management purposes ICCAT considers three stocks: Mediterranean, North Atlantic and South Atlantic. The most recent assessment for the North Atlantic stock estimated that the stock was neither overfished nor undergoing overfishing (ICCAT 2017c). Blackfin tuna (*Thunnus atlanticus*) is reported to FAO by several mainland and island nations in Area 31. Main producers are Venezuela, Dominican Republic, Cuba, France (Martinique and Guadeloupe) and Saint Lucia. Overall landings showed a peak in 1992 at 5 480 tonnes and later declined to reach 1 284 tonnes in 2015. Several country series showed declining trends, except for Cuba and to a lesser extent Saint Lucia. ICCAT considers that available data are insufficient to assess the resource (ICCAT, 2017a).

27. Atlantic Spanish mackerel (*Scomberomorus maculatus*) landings are reported by Mexico and the United States of America in Area 31, with Mexico being the major producer. Atlantic Spanish mackerel assessments have been done for the South Atlantic and Gulf of Mexico regions of the USA. In the South Atlantic assessment results indicated that the stock was neither overfished nor experiencing overfishing (SEDAR, 2012b) and recent NMFS landings have been below estimated MSY levels. In the Gulf of Mexico, results indicated that the stock was neither overfished nor experiencing overfishing; however, no clear determination of stock status was made from the assessment, as the independent reviewers differed on the appropriateness of the assessment for establishing these determinations (SEDAR, 2013b). In Mexican waters no assessments are available, but based on landing statistics Atlantic Spanish mackerel is considered fully exploited (Carta Nacional Pesquera, 2012), which is consistent with recent FAO landings data. Cero (*Scomberomorus regalis*) landings are only reported by island states in Area 31, among which the most important are Puerto Rico, Dominican Republic and France (Martinique and Guadeloupe). However, most of the country time series are incomplete. Overall landing reports showed that production exceeded 500 tonnes from 1958 to 1986 with peaks of 800 tonnes in 1959-1960 and 1971-1972; however, landings have declined considerably since 1987 and reached 71 tonnes in 2015. King mackerel (*Scomberomorus cavalla*) landings are reported to FAO by a number of countries, among which the most important are Mexico, USA, Venezuela, Dominican Republic, and Trinidad and Tobago. Total landings increased during most of the time series and reached a peak of 13 214 tonnes in 2004, and later decreased somewhat reaching 10 507 tonnes in 2015. Stock assessments of King mackerel have been made in USA waters of the South Atlantic and Gulf of Mexico coasts. In the South Atlantic assessment results indicated that the stock was not overfished nor undergoing overfishing (SEDAR, 2014b). In the Gulf of Mexico assessment results indicated that the King mackerel stock was not overfished nor undergoing overfishing (SEDAR, 2014c). Data for 2014 and 2015 from NMFS landing reports for both stocks have remained relatively stable. In Mexican waters the stock is considered to be fully exploited in accordance with the landings history of the species in the Gulf of Mexico area (Carta Nacional Pesquera, 2012), which is supported by recent FAO landings data. There are no data on migrations or stock structure for King mackerel in the Southeastern Caribbean, if a single stock is assumed in this area it is likely that the stock is fully exploited based on the combined landings histories of Venezuela and Trinidad and Tobago. Landings of Serra Spanish mackerel (*Scomberomorus brasiliensis*) are reported to FAO in Area 31 by Venezuela, Trinidad and Tobago, Guyana and Grenada, with Venezuela and Trinidad and Tobago being the major producers. Total landings increased more or less steadily until 1991 when peak landings of 7 419 tonnes were reached, landings remained above 4 000 tonnes until 2007, but later decreased gradually until 2015 when 1 804 tonnes were reported. This general pattern is similar for Venezuela and Trinidad and Tobago and the landing histories suggest that Serra Spanish mackerel is overexploited in these two countries.

28. Sharks, rays, chimaeras are reported by several countries, among which the major producers are Mexico, Venezuela, Cuba and Spain. Total landings from this group peaked at 36 982 tonnes in 1994 and have since then declined to reach 22 067 tonnes in 2015. Blue shark (*Prionace glauca*) landings are mainly reported by Spain. Total landings peaked at 11 569 tonnes in 2011 and declined sharply to 2 064 in 2015. This highly migratory species has been recently assessed by ICCAT and results indicated that Blue shark in the North Atlantic is likely not overfished nor experiencing overfishing (ICCAT, 2015b). Shortfin mako shark (*Isurus oxyrinchus*) landings are mainly reported by Spain. Overall landings reached 537 tonnes in 2012 and decreased to 130 tonnes in 2015. The most recent assessment by ICCAT of the North Atlantic stock of Shortfin Mako shark estimated that the stock was overfished and undergoing overfishing (ICCAT,

2017d). Also, at present there are 2 species of sharks (Daggernose shark, *Isogomphodon oxyrinchus*, and Oceanic whitetip shark, *Carcharhinus longimanus*) and three species of batoids (Small-tooth sawfish, *Pristis pectinata*, Large-tooth sawfish, *Pristis pristis*, and Bancroft's numbfish, *Narcine bancroftii*) which are classified as Critically Endangered by the IUCN Red List of Threatened Species in the region. Additionally, the Scalloped hammerhead, *Sphyrna lewini*, the Great hammerhead, *Sphyrna mokarran*, and the Bigeye thresher shark, *Alopias superciliosus*, are classified as Endangered by the IUCN (WECAFC, 2017).

29. The United States of America is the major producer of Blue crab (*Callinectes sapidus*) in FAO Area 31. A stock assessment was carried out for blue crab in USA waters of the Gulf of Mexico (GDAR, 2013) based on 2 stocks: an eastern stock centered on Tampa Bay in the state of Florida and a western stock centered on the coast of the state of Louisiana, and also including the coasts of the states of Alabama, Mississippi and Texas. The base model found that both stocks in 2011 were not overfished nor undergoing overfishing, although the Western stock was in a depressed state and approaching an overfished limit. An assessment of blue crab in Louisiana waters, where most of the landings of the Western Gulf of Mexico stock come from, indicated that in 2015 the stock was overfished and experiencing overfishing (West et al., 2016b). Blue crab is considered fully exploited in Mexican waters of the Gulf of Mexico (Carta Nacional Pesquera, 2012), which is consistent with recent FAO data. In Venezuela blue crab landings reported to FAO cover the period 1990-2015. Landings increased significantly from 2 353 tonnes in 1990 to a maximum of 18 701 tonnes in 2007. Landings in Venezuela remained above 14 900 tonnes until 2010 but later declined steeply to reach 3 900 tonnes in 2015. This landing history suggests that blue crab is overexploited in Venezuela.

30. Caribbean spiny lobster (*Panulirus argus*) landings are reported to FAO by 27 coastal and island nations from Area 31, among which the United States of America, Mexico, Cuba, the Bahamas, Nicaragua and Honduras are the major producers. Overall fishery landings peaked in 1999 at 35 787 tonnes and since then have decreased slightly to 31 320 tonnes in 2015. Several country reports (Anguilla, Antigua and Barbuda, Belize, Bahamas, Mexico, Nicaragua, Cuba) indicate a fully fished or stable status, while for other countries (Caribbean Netherlands, Dominican Republic, France, Honduras, Panama and United States of America) the status of stocks is unknown (FAO, 2015). In Puerto Rico the stock is considered to be undergoing overfishing, but is not overfished (NOAA, 2016). A major issue regarding assessment and management of Caribbean spiny lobster is stock connectivity through larval drift. For example, in the most recent stock assessment in waters of the United States of America it was not possible to clearly establish stock status due to uncertainty in recruitment sources (SEDAR, 2010). At present efforts by regional and national institutions are underway in order to collect data and assess the resource from a Caribbean wide perspective (FAO, 2015).

31. The most recent assessment for northern brown shrimp (*Farfantepenaeus aztecus*) in USA waters of the Gulf of Mexico (Hart, 2016a) indicated that the resource was not overfished nor undergoing overfishing. The Northern brown shrimp is considered to be fully exploited in Mexican waters of the Gulf of Mexico (Carta Nacional Pesquera, 2012, DOF, 2014b), which is consistent with recent reported landings to FAO. Northern pink shrimp (*Farfantepenaeus duorarum*) is reported to FAO by the United States of America, Cuba and Mexico. The United States of America reports the largest proportion of landings in Area 31. The most recent assessment in Gulf of Mexico waters of the USA determined that Northern pink shrimp was neither overexploited nor undergoing overfishing (Hart, 2016b). In Mexico Northern pink shrimp is considered overfished

(Carta Nacional Pesquera, 2012; DOF, 2014c), but landings have shown a significant increase in 2014 and 2015 which may indicate that the stock entered a recovery phase. Northern white shrimp (*Litopenaeus setiferus*) landings are reported to FAO by the United States of America, which is the main producer in these records, and Mexico. The most recent assessment in Gulf of Mexico waters of the USA indicated that the resource was not overfished nor experiencing overfishing (Hart, 2016c).

32. *Penaeus shrimps nei* are reported to FAO by 15 countries bordering the Western Central Atlantic. The major producers are Mexico, Venezuela, Suriname, Guyana, Nicaragua and French Guiana. Overall landings show a steep decline over the last decade which may be partly explained by increased taxonomic resolution in reports from Mexico. Venezuela has been traditionally the second largest producer of this group in the area and after minima observed in 2009 and 2010, following the trawl ban, recent landings have increased and reached 2 276 tonnes in 2015. Landings from Suriname peaked during 1970-1975, when landings exceeded 6 900 tonnes, landings have declined significantly in recent years and reached 511 tonnes in 2015. In Guyana landings peaked at 8 652 tonnes in 1978 and since then have declined considerably to 500 tonnes in 2015, and in French Guiana landings peaked in 1995 at 4 455 tonnes and started to decline sharply after the late 2000s and reached 759 tonnes in 2015. Other nations such as Honduras and Colombia also show apparent overexploitation of stocks, as landings in 2015 were below 30% of landings in years of maxima. Redspotted shrimp (*Farfantepenaeus brasiliensis*) are landed by several countries in Area 31, but are only reported to FAO by the USA and French Guiana, with only one year of data each in the time series. However, the species is exploited by other countries in the region and, for example, in Mexico it is considered overexploited (DOF, 2014d). Rock shrimp (*Sicyonia brevirostris*) landings are reported to FAO only by the USA. Landings show strong yearly fluctuations with a period of high catches during the 1990s, when landings peaked at 4 409 in 1998, since then there has been a decrease to 708 tonnes in 2015, this landing history suggests that rock shrimp are overexploited in USA waters of Area 31 (see also, FWRI, 2016b). In Mexico the rock shrimp is considered overexploited (DOF, 2014d). Royal red shrimp (*Pleoticus robustus*) is only reported by the USA in Area 31. The landings history shows important fluctuations with a peak in 2013 at 589 tonnes and then decreased to 289 tonnes in 2015. This suggests that royal red shrimp is fully exploited in United States waters of the Western Central Atlantic.

33. Several species of Stromboid conchs are exploited in Area 31 of which the Queen conch (*Lobatus gigas*) is the most important fishery resource. Total landings reached a maximum of 41 727 tonnes in 1994 and later declined to 22 334 tonnes in 2007, but have recovered in recent years and reached 35 068 tonnes in 2015. To a great extent this increase is related to landings from Nicaragua which represented only 890 tonnes in 2007 and reached 11 400 tonnes in 2015. For some major producers such as Bahamas, Belize and Nicaragua the stocks are considered to be fully exploited or stable, however for other major producers such as Honduras, and the Turks and Caicos stock status is unknown (FAO, 2016). In Dominican Republic, also a major producer, the shallow water fraction is considered overexploited (FAO, 2016). In Caribbean waters of the United States of America the species is listed as overexploited (NOAA, 2016). In Mexico there are fishing bans for Yucatan and Chinchorro Bank (Carta Nacional Pesquera, 2012), in Panama the fishing ban was extended for an additional five years in 2009, and in Colombia the fishery was closed in 2010-2012 and reopened during a short period in 2013-2014 under a quota system (FAO, 2016a). Recently, a Regional Queen Conch Management and Conservation plan was adopted and expert agreement was reached on harmonized conversion factors for different forms of conch meat processing in the region (FAO, 2016a, 2016b).

34. American cupped oyster (*Crassostrea virginica*) is only reported by the USA and Mexico. The USA has traditionally been the major producer and landings peaked at 147 012 tonnes in 2000, since then landings have decreased substantially and reached 7 954 in 2015. Biomass estimates of American cupped oysters in Louisiana, which accounts for most of the landings from the USA in Area 31, indicate resource overexploitation (Louisiana Wildlife and Fisheries, 2015). In Mexico, landings have been much more stable and peaked at 56 599 tonnes in 1989 and later decreased slightly and reached 50 044 in 2015. The resource is considered fully exploited (Carta Nacional Pesquera, 2012), which is supported by stable landings in recent years in FAO data. Mangrove cupped oyster (*Crassostrea rhizophorae*) landings are reported mainly by Venezuela and Cuba, but also by Colombia and Dominican Republic. Overall landings show a peak of 6 878 tonnes in 1990 and later decreased sharply to 29 tonnes in 2015. The landings history in Venezuela suggests overexploitation. On the other hand, Cuba stopped reporting the species in 1997, albeit the series in the previous years were above 1 800 tonnes, Baisre (2018) reported a reduction of national landings from Cuba of 68%. For this species along its range habitat degradation and coastal pollution are also important factors affecting fisheries production.

35. Calico scallop (*Argopecten gibbus*) is only reported by the USA in Area 31. The data is characterized by several pulses related to recruitment variations. Landings reached a peak of 400 000 tonnes in 1984 and the last pulse was observed in 1994-1995 with peak landings of 74 325 in 1994; since then there have been no landing reports to FAO for this species. Among Other Scallops, Pectens, American sea scallop (*Placopecten magellanicus*) is reported only by the USA in Area 31. Landings of this species are highly irregular and showed peak catches of 3 966 tonnes in 1978 and of 5 749 in 1987, since then landings have dropped markedly and only 2 tonnes were reported in 2015. However, it should be noted that the northern part of Area 31 is the southern distributional range of this temperate species and the population is assessed as a single stock for FAO areas 21 and 31. The most recent stock assessment indicated that the stock was not overfished nor experiencing overfishing (ASMFC, 2014). The Atlantic bay scallop (*Argopecten irradians*) is also reported only by the USA. The landing history shows strong fluctuations with peaks of 2 917 tonnes in 1968 and 2 625 tonnes in 1986, landings have since then dropped steeply and no landings were reported in 2014 and 2015. This would indicate an overfished condition for the species in area 31. However, habitat loss and toxic algal blooms have also been indicated as drivers of population decline in FAO areas 21 and 31 (Oreska et al., 2017).

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Table 2. Stock status based on FAO classification. (F: fully exploited; O: overexploited; U: non-fully exploited; L: low; M: medium; H: high)

Name	Species	Main fishing countries in 2015	State 2013	Uncertainty 2013	State 2015	Uncertainty 2015	Sources
Flathead grey mullet	<i>Mugil cephalus</i>	Mexico, USA, Venezuela	F/O	M	F, F, O	M	Carta Nacional Pesquera, 2012; Chagaris et al. 2014; West et al. 2016a
Groupers		Mexico, USA, Venezuela	O	M	F/O	L	DOF, 2014a; SEDAR 2017a; SEDAR 2015; Baisre 2018
Grunts, sweetlips nei	<i>Haemulidae</i>	Venezuela, Mexico, Cuba	F/O	M	F/O	H	FWRI 2016a; Baisre 2018
Mullets nei	<i>Mugilidae</i>	Mexico, USA, Venezuela	?		F/O	H	Based on landing histories
Sciaenids	<i>Sciaenidae</i>	Venezuela, USA, Mexico	F/O	M	F/O	M	ASMFC, 2015a; West et al. 2014; ASMFC, 2016; ASMFC 2017a
Snappers	<i>Lutjanidae</i>	Mexico, USA, Venezuela	O	M	F/O	M	SEDAR, 2017b; Cass-Calay et al., 2015; O'Hop et al., 2015; Baisre 2018
Other Miscellaneous coastal fishes					F/O	H	Based on landing histories
<b>33-Miscellaneous coastal fishes</b>							
<b>34-Miscellaneous demersal fishes</b>					F	M	Landing histories
Atlantic menhaden	<i>Brevoortia tyrannus</i>	USA	F	L	F	L	ASMFC 2017b
Atlantic thread herring	<i>Opisthonema oglinum</i>	Venezuela, Cuba	?		F/?		
Gulf menhaden	<i>Brevoortia patronus</i>	USA	F	L	F	M	SEDAR, 2013a
Round sardinella	<i>Sardinella aurita</i>	Venezuela	O	L	F/O	H	Landings history Venezuela
Other Herrings, sardines, anchovies					O, F	H	Landing histories
<b>35-Herrings, sardines, anchovies</b>							
Albacore	<i>Thunnus alalunga</i>	Taiwan, Venezuela			F	L	ICCAT, 2016a
Atlantic bonito	<i>Sarda sarda</i>	Mexico			F/O	H	Landing histories
Atlantic Spanish mackerel	<i>Scomberomorus maculatus</i>	Mexico, USA	F/O	M	F	M	SEDAR, 2012b; SEDAR, 2013b
Cero	<i>Scomberomorus regalis</i>		?		?		
King mackerel	<i>Scomberomorus cavalla</i>	Mexico, Venezuela, USA, Trinidad Tob	F/O	M	F	M	SEDAR, 2014b; SEDAR 2014b; Carta Nacional Pesquera, 2012
Serra Spanish mackerel	<i>Scomberomorus brasiliensis</i>	Trinidad Tob, Venezuela, Guyana	F/O?	H	O	H	Landing histories

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Skpkack tuna	<i>Katsuwonus pelamis</i>	Venezuela, Cuba			F	L	ICCAT, 2014
Yellowfin tuna	<i>Thunnus albacares</i>	Mexico, USA, Venezuela			O	L	ICCAT, 2016b
Other Tunas, bonitos, billfishes					O, F	M	ICCAT, 2012a; ICCAT, 2015a; 2017b; 2017c
<b>36-Tunas, bonitos, billfishes</b>							
<b>38-Sharks, rays, chimaeras</b>		Cuba, Mexico, Spain, Venezuela	?		F/O	M	ICCAT, 2015b; ICCAT, 2017d
<b>39-Marine fishes not identified</b>					F	H	Global landing history Area 31
<b>42-Crabs, sea-spiders</b>	<i>Callinectes sapidus</i>	Mexico, USA, Venezuela	?		F/O	M	West et al., 2016b; Carta Nacional Pesquera, 2012
Caribbean spiny lobster	<i>Panulirus argus</i>	Bahamas, Cuba, Honduras, Nicaragua	F/O	M	F	H	FAO, 2015
Other Lobsters, spiny-rock lobsters							
<b>43-Lobsters, spiny-rock lobsters</b>							
Atlantic seabob	<i>Xiphopenaeus kroyeri</i>	Guyana, Suriname, Mexico	F	L	F	M	CRFM, 2014; CRFM, 2012; Carta Nacional Pesquera, 2012
Northern brown shrimp	<i>Penaeus aztecus</i>	Mexico, USA	F	L	F	L	Hart, 2016a; Carta Nacional Pesquera, 2012; DOF, 2014
Northern pink shrimp	<i>Penaeus duorarum</i>	Mexico, USA	F, O	M	F/O	M	Hart, 2016b and landing histories
Northern white shrimp	<i>Penaeus setiferus</i>	USA	U, ?	M	F	L	Hart, 2016c
Penaeus shrimps nei	<i>Penaeus spp</i>	Mexico, Nicaragua, Venezuela	F/O?	H	F/O	H	Landing histories
Redspotted shrimp	<i>Penaeus brasiliensis</i>		O	H	O	H	DOF, 2014d
Rock shrimp	<i>Sicyonia brevirostris</i>	USA	?		O	H	DOF, 2014d
Royal red shrimp	<i>Pleoticus robustus</i>	USA	?		F	H	Landing history
Other Shrimps, prawns					F	H	Landing histories
<b>45-Shrimps, prawns</b>							
Stromboid conchs nei	<i>Strombus spp</i>	Bahamas, Nicaragua, Jamaica	F/O	M	F/O	H	CRFM, 2012; NOAA, 2016; FAO 2016
Other Abalones, winkles, conchs		Mexico			F	H	Landing history
<b>52-Abalones, winkles, conchs</b>							
American cupped oyster	<i>Crassostrea virginica</i>	Mexico, USA	F/O	M	F/O	M	Louisiana, Wildlife and Fisheries, 2015; Carta Nacional Pesquera, 2012
Other Oysters					O	H	Landing histories

October 2017

**E****53-Oysters**

Calico scallop	<i>Argopecten gibbus</i>	USA	?	?		Pulse fishery highly dependent on recruitment.
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Other Scallops, pectens		USA		O, F	M	ASMFC, 2014 and landing history
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**55-Scallops, pectens**