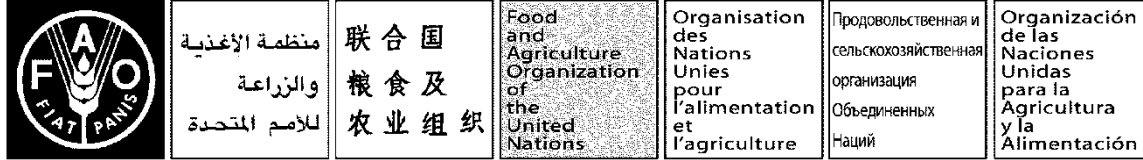
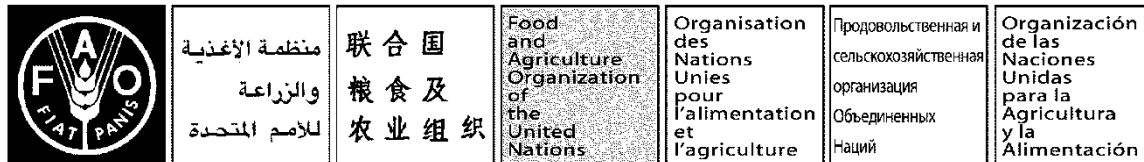


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Western Central Atlantic Fishery Commission (WECAFC)
Scientific Advisory Group
Thirteenth Session
Virtual
Latest developments of FAO's State of Stocks Index (SoSI) and SDG indicator 14.4.1 - outcome of the 9th FIRMS Technical Working Group
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Background

The Food and Agriculture Organization (FAO) has delivered invaluable insights to stakeholders worldwide on the state of fish stocks using the State of Stocks Index (SoSI). FAO's journey in assessing marine fishery stocks began with the first global review of marine fishery resources in 1971. Since then, FAO has continuously monitored the state of world marine fishery resources. The analyses of the state of fishery stocks are regularly published, and since 1995 the summary updates are presented in FAO's flagship biennial publication

"The State of World Fisheries and Aquaculture" Report (SOFIA). The primary objective of these evaluations is to provide a comprehensive overview of global and regional marine fishery resources, supporting policy and management actions that secure the long-term sustainability of fishery resources.

Starting with 146 stocks in 1971, the numbers increased to 500 in 2012 with standardized methodology to ensure the integrity of its time series analyses. In SOFIA 2024, the 2012 list of stocks was slightly increased with 531 stock units based on 445 species; and the current stock assessment methodology presented in this edition classifies fish stocks into three categories—underfished, maximally sustainably fished and overfished—based on a tiered approach to assessments primarily driven by information criteria. Simplified categories and standardized procedures improve consistency and regional comparability, while an uncertainty score highlights data reliability. Challenges in this process include representativeness, reliance on expert elicitation, and the lack of transparency and replicability in the unweighted stock assessments.

SOFIA 2024 also introduced an updated methodology on global fish stocks ([SOFIA 2024](#) page 159 "Evolving the way we assess the status of marine fishery stocks") invoking the following justifications: the fisheries sector is now appreciably different compared to the 1970s, and FAO considers that the time is right for a methodological update to compute and report on the state of world fish stocks, better aligned with national Sustainable Development Goal (SDG) 14.4.1 reporting initiatives, with broader expert participation, more local knowledge and increased transparency, while maintaining the crucial integrity of the time series. This improved methodology seeks to achieve better coverage of global fisheries, more accurate assessments, and greater transparency in frameworks and reporting. By 2025, FAO aims to introduce a new edition of its technical documentation to incorporate detailed comparisons between the old and new methodologies. The updated approach will provide full transparency regarding stock assessments, methods used, and classification results.

With this updated methodology, FAO's State of Stocks Index (SoSI) will now rely on a much-expanded Reference List of Stocks amounting to around 2700 stock units assessed by national or regional agencies. Through a series of consultative workshops held for each FAO area during the period 2023-2024, candidate lists of stocks were compiled by regional experts and from global databases (Global Record of Stocks and Fisheries - GRSF - and national Sustainable Development Goal 14.4.1 reporting).

The new methodology will continue to generate stock status indices at the FAO fishing regions level, where gaps in assessment can be narrowed over time in a process of continuous improvement.

From SOFIA 2026, FAO faces the challenge to ensure its regular update and dissemination on a biennial basis. This can be made possible thanks to FAO's global collaborations for

information sharing organized around its Resources and Fisheries Monitoring System (FIRMS), together with FAO's role of custodian agency to SDG indicator 14.4.1 "Proportion of fish stocks within biological sustainable levels".

SDG indicator 14.4.1

FAO is custodian agency to SDG indicator 14.4.1. Two reporting rounds took place successfully, the first in 2019/20 and the second in 2022/23 and the results were reported in SOFIA 2024 showing a good commitment by countries with close to 100 countries reporting in 2023, and an improvement in the quality of the reports. Still, reporting on SDG14.4.1 remains a challenge for countries with limited capacity, and only 18 WECAFC Member countries have reported on SDG14.4.1 indicator across the two first reporting rounds (17 in 2019/20, 14 in 2022/23), with 9 of them including species/stocks relevant to SoSI. A recent presentation delivered at the thirty-second Session of the Latin American and the Caribbean Commission for Agricultural Statistics (Asunción, Paraguay, 26-28 March 2025) can be accessed at this link <https://openknowledge.fao.org/items/d80fc4b2-8766-4657-9c2f-08ac1ca79f57>.

A third reporting round was launched in November 2024 and the results are now being analyzed however only 9 countries reported to date (interim results considering deadline was March 2025). These will be published in December 2025 in the UNSD SDG portal and as explained below will contribute to SOFIA 2026 State of Stocks Index.

FIRMS Developments

At FSC13 in June 2023¹, the FIRMS partners decided on strategic reorientation matters, affirming Partners commitment to support FAO's updated methodology on SOFIA State of Stocks Index (SoSI), and formulating a set of recommendations for FIRMS to provide effective support to biennial SoSI updates. On the basis of those recommendations, the FIRMS Secretariat together with FAO's Team in charge of SoSI presented² at the RSN meeting (Rome, 5-6 July 2024) to Regional Fishery Bodies (RFB) leaders general principles for supporting a timely data workflow for the biennial production of SoSI. The biennial update process will rely on three major streams:

- FIRMS partners biennial data calls;
- national SDG14.4.1 questionnaire biennial calls;

¹ see [FIRMS FSC13 report](#)

² related presentations can be found at the [meeting site](#), in particular [Agenda Item 8.1 - SOFIA Update-A vision aligned with Blue Transformation](#) and [Agenda Item 8.2 - FIRMS - Maintaining and disseminating SOFIA SoSI under the updated methodology](#)

- FAO's workshops for regions or country assessments where important gaps in coverage or capacity require specific interventions. This last work stream will need to eventually be part of the national SDG Reporting or alternative framework as this approach will be phased out by 2030.

In December 2024, a FIRMS TWG was called to operationalize this overall strategy:

1. Seek practical arrangements with Partners' for support to the development and biennial update of SOFIA SoSI including data workflow / timely data provision.
2. Mobilize additional partners or data providers in gaps regions regarding FIRMS coverage.
3. Provide feedback and recommendations on the new FIRMS web dissemination interface.

The meeting was attended by 58 participants from the FIRMS Secretariat, FAO headquarters staff, 21 partner RFB or Organizations, and 2 invited organizations. meeting documents can be found on the FIRMS TWG9 meeting page <https://www.fao.org/fishery/en/meeting/41467>.

At the meeting, the relationships between the FIRMS, SDG 14.4.1 reporting mechanism and the SoSI report were clarified. Partners were introduced to the revamped FIRMS website just released <https://firms.fao.org/firms/home/en>, and a mock-up of the FAO State of Stock Index corner (<https://firms.fao.org/firms/fao-sofia-sosi/en>) was presented: this new area of the FIRMS website will eventually disseminate the FAO SoSI list of stocks when the updated methodology and index will be published as part of SOFIA 2026.

Participants were also presented the quality tiers for stock status newly introduced in this updated methodology. Tier 1, 2 or 3 are the data quality tier assigned to the stock status by the SoSI team depending on type of assessment and data used. Tier definitions can be found in [SOFIA 2024](#) (p.159). In summary, stock is classified as Tier 1 when status was determined through model-based assessment; in lack of such assessment results, rapid stock status determination assessments are undertaken by the SoSI team during consultative workshops processing FishStat data with the SRA+ method/algorithm – and these stocks are classified as Tier2. Where data is insufficient either as Tier 1 or 2, a weight-of-evidence approach to categorize the status of the stock based on qualitative/semi-quantitative information can be used and Tier 3 is assigned.

Partners were requested to review the pre-final SoSI reference lists of stocks for each FAO major fishing area for which data was available. The reference list included stocks selected during SoSI regional area workshops, as well as FIRMS, historic (e.g. RAM legacy data base records) and recently submitted SDG 14.4.1 stocks. Partners were requested to pay

particular attention to the stocks relevant to their mandate, and to provide indications of the process which will be required for their institution to support the SoSI biennial data call. The TWG reviewed the SoSI for most of the FAO Areas.

The meeting also allowed to finalize a draft procedure for the FIRMS reporting workflow in support to SoSI and then to the SOFIA report. The updated methodology will be published first in a FAO technical paper in June 2025 on the occasion of UNOC3, based on same reference year (2021) as published in SOFIA 2024 (based on the old methodology). In order to support the first update which will be published in SOFIA 2026 (based on reference year 2023), the meeting agreed to proceed with a first FIRMS data call to be issued in mid-January 2025 with reporting deadline end of April 2025. At the end of 2025, the stock status reports provided by the FIRMS partners will be compiled together with the national SDG14.4.1 indicator reports (third round data call issued in November 2024 with reporting deadline March 2025) thus enabling to produce the updated SoS Index for SOFIA 2026.

Results for WECAFC / Area 31

Area 31 was represented by three persons including a stock assessment expert for the Western Central Atlantic (FAO Area 31) member of the SoSI team, the WECAFC Secretary (Ms Yvette Diei Ouardi) and Ms Nancie Cummings (WECAFC-FIRMS focal point, Chair of WECAFC Scientific Advisory Group and Convener of the Working Group on Fisheries Data and Statistics). The stock assessment expert presented the work achieved by the SoSI team on Area 31 and the feedback to a preliminary peer review of the updated reference list of stocks for the Western Tropical Atlantic (FAO Area 31). This presentation is available at: https://www.fao.org/fishery/services/storage/fs/fishery/documents/firms/2024_12_firms_twg9/12-FIRMS_TWG9_inputs_on_area31.pdf. No representative could attend for Area 41.

In Area 31, FAO has traditionally evaluated the status of 40 species or species groups, which included around 60 individual stocks. The status of these stocks has been discussed at the biennial meetings of the Western Central Atlantic Fisheries Commission (WECAFC), after review and comments from the Scientific Advisory Group.

With the updated methodology, the reference list of stocks for Area 31 has been updated to cover 52 species or species groups and 103 stock units (see Table 2). Here it must be specified that the stocks of highly migratory species (Tuna and oceanic sharks) are not accounted in any FAO area but are set apart and presented globally. Among the 103 stocks, 59 units were classified as Tier 1, whereas 44 were as Tier 2. Of the 11 WECAFC DCRF priority species, 5 - *Panulirus argus*, *Aliger gigas*, *Lutjanus analis*, *Lutjanus synagris*, *Hirundichthys affinis* - make up 21 SoSI stocks and the 6 other species are not covered in SoSI (Table 1). 5 species of interest to WECAFC working groups because of shared stocks nature - *Coryphaena hippurus*, *Scomberomorus brasiliensis*, *Scomberomorus cavalla*, *Xiphopenaeus kroyeri*, *Thunnus Atlanticus* - account for 10 SoSI stocks and 4 billfish or shark

species (*Makaira nigricans*, *Istiophorus albicans*, *Xiphias gladius*, *Kajikia albida*) monitored by ICCAT account for 4 stocks. Finally 68 SoSI stocks concern 37 other WECAFC species mostly belonging to DCRF species group 2.

It must be noted here that the SoSI workshop for Area 31 took place in November 2022, prior to the outcome of the second SDG4.4.1 questionnaire round which results were completed in mid-2023. A number of Tier2 assessments undertaken with FishStat data as part of the SoSI Area31 workshop may be substituted in the future SoSI editions by the results reported by countries through the SDG14.4.1 questionnaires if/where sources are properly documented. The results of the currently on-going third round SDG14.4.1 questionnaire call will be considered for SOFIA 2026. As well, any updated regional assessment produced by WECAFC, CRFM or OSPESCA regarding stocks of the SoSI list will be integrated for SOFIA 2026.

Considerations for SAG

The updated methodology will produce an improved stock status index for Area 31 on a biennial basis with the first global publication released in June 2025 for UNOC3 Conference in Nice. Along the spirit of a more collaborative / consultative process of the updated SoSI methodology, WECAFC – FIRMS partner - together with CRFM and OSPESCA - collaborative FIRMS partners - is requested to confirm its contribution to FAO's SoSI. In turn WECAFC will benefit from the continued time series of the index on Area 31 which better reflects the monitoring and assessment efforts of its members.

Beyond the first implementation of the updated methodology, the challenge will be the periodic collation of stock-by-stock status regarding the stocks belonging to FAO SoSI reference list, which must be performed to prepare each subsequent SOFIA biennial edition. As above mentioned, this is being built upon two major dataflows, namely national reporting on SDG indicator 14.4.1 and reporting by Regional Fishery Bodies on shared stocks as part of their FIRMS membership. Some data components may however remain difficult to obtain (e.g. country based that is not covered in SDG reporting) and workarounds will continue to be needed including specific area capacity building workshops.

The TWG9 requested RFB representatives, where applicable, to come back to their constituency reporting on the updated SoSI including requirements for its regular biennial update and role for FIRMS RFB partners. The objective is to foster engagement of WECAFC and its members into contributing to SoSI.

In order to help SAG reviewing options, it is worth presenting the logical sources of the 103 SoSI selected stock records in Area 31:

- 28 stock records for which stock status collation falls under WECAFC-FIRMS operational responsibility, including:

- 8 records under the ownership of WECAFC or sub-regional partners CRFM or OSPESCA regional working groups which collation falls under the WECAFC-FIRMS process. In the absence of recent available stock status for these WECAFC sub-regional stocks, the SoSI team will have to undertake a rapid assessment (Tier 2) for future SoSI updates; for this first updated SoSI edition, this was the case for 5 out of the 8 sub-regional stocks.
- 20 tier1 records under national ownership which collation has occurred as part of the WECAFC-FIRMS process (most of which concern species group2 stocks of USA coastal states - e.g. Louisiana, Florida, Mississippi)
- 4 stock records under ICCAT ownership concerning billfishes and oceanic sharks. Those are reported by ICCAT through FIRMS data calls.
- 31 stock records submitted by 3 countries as part of their national reporting on SDG14.4.1 indicator, 30 of which produced by NOAA published as part of their FSSI (USA framework for SDG14.4.1 Indicator). These records will be collated by FAO on a biennial basis as part of FAO's SDG14.4.1 custodianship role.
- 40 stock records produced by FAO-SoSI team based on expert knowledge, most of which are Tier 2 rapid assessments concerning national assessments.

The decisions on this reference list were essentially made during a SoSI regional consultative Area31 workshop (Miami, November 2022), i.e. before the results of the second reporting round on questionnaire SDG14.4.1 (March 2023). This also explains why many assessments (nearly 50%) were made by the FAO SoSI team based on rapid assessment method (Tier 2). Over 60 stock records concerning species of interest to SoSI were reported in 2023 through the SDG14.4.1 questionnaire by 9 countries, and these will be updated or completed by the results of the currently on-going third round questionnaire (deadline March 2025). SAG should note that where relevant stock units are submitted with well documented assessments, these may be used as part of future FAO's SoSI editions where these can advantageously substitute FAO's Tier 2 assessment approach. Therefore, WECAFC should encourage the countries to report for these SoSI species their stock status through future SDG14.4.1 data calls, and contribute to build those countries capacities on assessment.

Finally, any updated regional assessment produced by WECAFC, CRFM or OSPESCA regarding stocks of the SoSI list will be integrated in the SoSI SOFIA 2026 and subsequent editions. In this respect, WECAFC with contributions of CRFM-OSPESCA partners is expected to respond to FIRMS data call issued in January 2025 (deadline April 30).

Recommendations for SAG consideration:

Cover Note

Noting that fisheries for members of the Western Central Atlantic Fisheries Commission, in particular for African, Caribbean, Pacific (ACP) countries and the Small Islands Developing States (SIDS) from the Caribbean are important for food security and nutrition, as source of livelihoods, income earnings, and also source of foreign exchange for national governments.

Acknowledging that for many years, the Caribbean regional data deficiencies and limited statistical information have been impeding national policy-making and fishery management in a regional context of shared marine resources.

Towards the needs for improvements in data and statistics during WECAFC 14 (6–9 February 2012, Panama) and 15 (26–28 March 2014, Trinidad and Tobago), the EU expressed the need for increased attention to improved fisheries data and information collection as the basis of better fisheries management in the region. The identified data gaps continue to undermine any significant effort to improve fishery management. This need was considered so pressing that one of the four technical Focus Areas in the WECAFC Strategic Plan 2014–2020 was dedicated to this topic and the current Programme of Work

Recalling the “Review of fisheries management performance and conservation in the Western Central Atlantic Fishery Commission (WECAFC) area” in 2015 identified a number of challenges in data and statistics in support to fisheries management, including: inadequate legislation; challenges for cooperation with stakeholders with regard to acquisition of data and information on a routine basis; a weak data and information base for supporting fisheries management. The need to strengthen and maintain a quality statistical monitoring system was considered key to the success of immediate fisheries management needs¹.^[1]

Despite some regional European Union (EU) and Food and Agriculture Organization (FAO) programmes aiming at improving statistics in the Caribbean region, a lack of capacity to collect and exchange data and information, and to analyze the status and trends of fishery resources and regional data policies remains. In the meantime, environmental trends as well as extreme weather events suggest that climate change and variability are already impacting the region’s fisheries, in some cases severely.

Towards the need for information on the state of fisheries, status determinations in Area 31 were first summarized for SAG X and WECAFC 19 (2022) providing managers in the region for the first time synthesized information on data and statistics in the region for use in science

based management. The state of fisheries document was updated for SAG XI and WECAFC 18 (2022). The second version (2022) incorporated suggestions made on the previous 2019 version, such as the status of main fisheries resources, more extensive information on recreational fisheries, consideration of sargassum influxes and socio-economic aspects of fisheries, and a section on the main policy frameworks in the WECAFC region. The 2022 version was a full update from the 2019 version. For SAG XII (2023) only an abbreviated update on the state of fisheries in the region and an update on aquaculture production and value were presented because the period of time between the intersession and SAG XII was less than one year.

Recalling for SAG XIII the state of fisheries in the region was fully updated to include landings through 2024. In addition, a new tier-based methodology developed by FAO (SOFIA) for the assessment of the status of stocks was presented, which includes for the Western Central Atlantic (FAO Area 31) a total of 104 stock units (without including major tuna stocks). The new methodology provides Members evidence of continued interest improvements in producing science based data and statistics for use in management and monitoring.

Preamble

- **Recognizing that the new** updated SOFIA methodology will produce an improved stock status index (SoSI) for Area 31 on a biennial basis with the first global publication released in June 2025 on the occasion of UNOC3 (Nice, France)
- **Acknowledging** that the updated methodology incorporates inputs through a collaborative/transparent/consultative process of the updated SoSI methodology involving, WECAFC – FIRMS partners- together with CRFM and OSPESCA - all currently collaborative FIRMS partners
- **Noting that** WECAFC members will benefit from the continued time series of the index for Area 31, which better reflects the monitoring and assessment efforts of its members.

- **Continuing to Recognize that** some challenges will persist: the need for the periodic collation of stock-by-stock status regarding the stocks belonging to FAO SoSI reference list, which must be performed to prepare each subsequent SOFIA biennial edition. FIRMS' TWG9 invited its partners including WECAFC to provide reporting commitments on shared stocks of WECAFC priority species as well as to act as a collation channel of its members' published Tier 1 national stock assessments.
- **Acknowledging** that the updated SOFI methodology produces stock status determinations that are being built upon two major dataflows, namely national reporting on the Sustainable Development Goal (SDG) indicator 14.4.1 and reporting by Regional Fishery Bodies on shared stocks as part of their FIRMS membership.
- **Affirming** that beyond the first implementation of the updated methodology, *the challenge will be the periodic collation of stock-by-stock status regarding the stocks belonging to FAO SoSI reference list, which must be performed to prepare each subsequent SOFIA biennial edition.*
- **Re-affirming that** some data components may however remain difficult to obtain (e.g. country based that is not covered in SDG reporting) and workarounds will continue to be needed including specific area capacity building workshops.
- **Acknowledging** that the FIRMS TWG9 encouraged and requested RFB representatives to report to their constituencies on the updated SoSI including requirements for its regular biennial update and role for FIRMS RFB partners.
- **Recognizing that the objective is to foster engagement** of WECAFC and its members into contributing to SoSI.

ADOPTS in conformity with Article 6 of the WECAFC Revised Statutes **the RECOMMENDATIONS that:**

- **The Commission should encourage its Members to continue to Acknowledge and endorse the new status of stocks methodology (SoSI) and to encourage Members to continue to recognize** the importance of supporting the WECAFC-FIRMS and SDG processes in the SoSI development
- **WECAFC together with CRFM and OSPESCA are committed** to respond to FIRMS biennial data calls in respect of their respective mandate for reporting on 28 SoSI stocks, starting with the current 2025 FIRMS datacall;
- **The Commission should encourage its Members to report the status of their national stocks** through current and future questionnaire calls on SDG indicator 14.4.1 and to integrate in their national reference list of stocks the stocks relevant to SoSI list;
- **The Commission should mobilize resources for its working groups to produce the assessments** on the 9 species of priority interest to WECAFC and for its Members' to develop capacity on assessment and reporting on SDG14.4.1 in close collaboration with SoSI and FIRMS teams.

Table 1: SoSI stocks, WECAFC priority species and operational processes for their biennial updates

Operational data process	SoSI selected stocks					Other stock recorded in FAO's historical database relevant to SoSI selected species			
	FAO-SoSI workshop	SDG14.4.1 questionnaire	FIRMS partnership data calls		TOTAL	SDG14.4.1 questionnaire	FIRMS partnership data calls		TOTAL
			FIRMS-WECAFC	-CRFM	ICCAT		WECAFC-FIRMS	SFP	
WECAFC priority species (group 1)									
<i>Aliger gigas</i>	9	1				10	9	1	10
<i>Panulirus argus</i>		3	4			7	7	6	13
<i>Lutjanus synagris</i>	2					2	3		3
<i>Lutjanus analis</i>		1				1	4		4
<i>Hirundichthys affinis</i>			1			1			0
<i>Cynoscion acoupa</i>						0		1	1
<i>Epinephelus striatus</i>						0	3		3
<i>Lutjanus purpureus</i>						0	1	1	2
<i>Macrodon ancylodon</i>						0		1	1
<i>Cynoscion virescens</i>						0		1	1
<i>Farfantepenaeus subtilis</i>						0		2	2
Other WECAFC species with shared stocks (group 2)									
<i>Coryphaena hippurus</i>			1			1	1		1
<i>Xiphopenaeus kroyeri</i>				2		2	2		2
other WECAFC species (group 2)	25	22	20			67	31	11	42
ICCAT species (species group 3 - basis 5 (billfishes, tuna-like))	4	4			4	12	3		3
GRAND TOTAL	40	31	28	4	103	64	28	92	

Table 2 – List of SoSI stocks for Area 31

Species scientific name	DCRF species group	Location	sosi_tier	Operational data process
<i>Aliger gigas</i>	G1	The Bahamas	2	FAO-SoSI
<i>Aliger gigas</i>	G1	Jamaica	2	FAO-SoSI
<i>Aliger gigas</i>	G1	Mexico	2	FAO-SoSI
<i>Aliger gigas</i>	G1	Puerto Rico	2	FAO-SoSI
<i>Aliger gigas</i>	G1	USA Virgin Islands	2	FAO-SoSI
<i>Aliger gigas</i>	G1	Dominican Republic	2	FAO-SoSI
<i>Aliger gigas</i>	G1	Belize	2	SDG1441
<i>Aliger gigas</i>	G1	Nicaragua	2	FAO-SoSI
<i>Aliger gigas</i>	G1	Honduras	2	FAO-SoSI
<i>Aliger gigas</i>	G1	Turks and Caicos	2	FAO-SoSI
<i>Hirundichthys affinis</i>	G1	Eastern Caribbean	2	FIRMS-WECAFC
<i>Lutjanus analis</i>	G1	USA South Atlantic and Gulf of Mexico	1	SDG1441
<i>Lutjanus synagris</i>	G1	Mexico	2	FAO-SoSI
<i>Lutjanus synagris</i>	G1	Cuba	2	FAO-SoSI
<i>Panulirus argus</i>	G1	Saint Thomas/Saint John	1	SDG1441
<i>Panulirus argus</i>	G1	Puerto Rico	1	SDG1441
<i>Panulirus argus</i>	G1	Saint Croix	1	SDG1441
<i>Panulirus argus</i>	G1	Cuba	1	FIRMS-WECAFC
<i>Panulirus argus</i>	G1	Center Caribbean stock - from Cuba eastwards to the Greater and Lesser Antilles and then southwards to Venezuela	2	FIRMS-WECAFC
<i>Panulirus argus</i>	G1	Western Caribbean stock - from Mexico to Colombia	2	FIRMS-WECAFC
<i>Panulirus argus</i>	G1	Northern Caribbean stock - USA, Bahamas and the Turks and Caicos islands	2	FIRMS-WECAFC

Arca zebra	G2	Venezuela	2	FAO-SoSI
Archosargus probatocephalus	G2	USA Florida east coast	1	FIRMS-WECAFC
Archosargus probatocephalus	G2	USA Florida west coast	1	FIRMS-WECAFC
Archosargus probatocephalus	G2	USA Louisiana waters	1	FIRMS-WECAFC
Balistes capriscus	G2	USA Gulf of Mexico	1	SDG1441
Brevoortia patronus	G2	USA Gulf of Mexico	1	FIRMS-WECAFC
Brevoortia tyrannus	G2	USA Atlantic coast	1	FAO-SoSI
Callinectes sapidus	G2	USA Louisiana waters	1	FIRMS-WECAFC
Callinectes sapidus	G2	Mexico	2	FAO-SoSI
Callinectes sapidus	G2	Venezuela	2	FAO-SoSI
Carcharhinus limbatus	G2	North Atlantic	1	SDG1441
Carcharhinus plumbeus	G2	North Atlantic	1	SDG1441
Centropomus spp	G2	Mexico Gulf of Mexico	2	FAO-SoSI
Centropomus undecimalis	G2	Venezuela	2	FAO-SoSI
Centropristis striata	G2	USA Southeast Atlantic	1	SDG1441
Coryphaena hippurus	G2	Western Tropical Atlantic	2	FIRMS-WECAFC
Crassostrea virginica	G2	USA Louisiana waters	1	FIRMS-WECAFC
Crassostrea virginica	G2	Mexico	2	FAO-SoSI
Cynoscion nebulosus	G2	USA Mississippi waters	1	FIRMS-WECAFC
Cynoscion nebulosus	G2	USA Louisiana waters	1	FIRMS-WECAFC
Cynoscion nebulosus	G2	Mexico Gulf of Mexico	2	FAO-SoSI
Cynoscion regalis	G2	USA Atlantic coast (stock unit from Florida to Massachussetts)	1	FIRMS-WECAFC
Epinephelus morio	G2	Mexican Gulf of Mexico	1	FIRMS-WECAFC
Epinephelus morio	G2	USA Gulf of Mexico	1	SDG1441

Epinephelus morio	G2	USA Southeast Atlantic	1	FIRMS-WECAFC
Holothuriidae	G2	Nicaragua	2	FAO-SoSI
Hyporthodus niveatus	G2	USA Gulf of Mexico	1	FAO-SoSI
Hyporthodus niveatus	G2	USA Southeast Atlantic	1	SDG1441
Lutjanus campechanus	G2	USA Gulf of Mexico	1	SDG1441
Lutjanus campechanus	G2	USA Southeast Atlantic	1	SDG1441
Lutjanus campechanus	G2	Mexico Gulf of Mexico	2	FAO-SoSI
Lutjanus griseus	G2	USA Gulf of Mexico	1	SDG1441
Menticirrhus littoralis	G2	Mexico Gulf of Mexico	2	FAO-SoSI
Menticirrhus littoralis	G2	USA Gulf of Mexico	2	FAO-SoSI
Micropogonias furnieri	G2	Venezuela	2	FAO-SoSI
Mugil cephalus	G2	USA Florida West coast	1	FIRMS-WECAFC
Mugil cephalus	G2	USA Louisiana waters	1	FIRMS-WECAFC
Mugil cephalus	G2	USA Florida East coast	1	FIRMS-WECAFC
Mugil cephalus	G2	Mexico Gulf of Mexico	2	FAO-SoSI
Mugil liza	G2	Venezuela	2	FAO-SoSI
Mycteroperca microlepis	G2	USA Gulf of Mexico	1	SDG1441
Mycteroperca microlepis	G2	USA Southeast Atlantic	1	SDG1441
Mycteroperca phenax	G2	USA Gulf of Mexico	1	FIRMS-WECAFC
Octopus maya, Octopus vulgaris	G2	Mexico	2	FAO-SoSI
Ocyurus chrysurus	G2	USA Southeast Atlantic	1	SDG1441
Ocyurus chrysurus	G2	Cuba	2	FAO-SoSI
Ocyurus chrysurus	G2	Venezuela	2	FAO-SoSI
Ocyurus chrysurus	G2	Mexico	2	FAO-SoSI
Opisthonema oglinum	G2	USA Gulf of Mexico	2	FAO-SoSI

Opisthonema oglinum	G2	Venezuela	2	FAO-SoSI
Opisthonema oglinum	G2	Cuba	2	FAO-SoSI
Penaeus aztecus	G2	USA Gulf of Mexico	1	SDG1441
Penaeus aztecus	G2	USA South Atlantic	1	SDG1441
Penaeus duorarum	G2	USA Gulf of Mexico	1	SDG1441
Penaeus duorarum	G2	USA South Atlantic	1	SDG1441
Penaeus setiferus	G2	USA Gulf of Mexico	1	SDG1441
Penaeus setiferus	G2	USA South Atlantic	1	SDG1441
Pogonias cromis	G2	USA Louisiana waters	1	FIRMS-WECAFC
Pogonias cromis	G2	Mexico Gulf of Mexico	2	FAO-SoSI
Rhomboplites aurorubens	G2	USA Gulf of Mexico	1	SDG1441
Rhomboplites aurorubens	G2	USA Southeast Atlantic	1	SDG1441
Sardinella aurita	G2	Eastern Venezuela	2	FAO-SoSI
Sciaenops ocellatus	G2	USA South west Florida	1	FIRMS-WECAFC
Sciaenops ocellatus	G2	USA North west Florida	1	FIRMS-WECAFC
Sciaenops ocellatus	G2	USA Southeast Atlantic	1	FIRMS-WECAFC
Seriola dumerili	G2	USA Gulf of Mexico	1	SDG1441
Seriola dumerili	G2	USA South Atlantic	1	SDG1441
Thunnus atlanticus	G2	Western Tropical Atlantic	1	FAO-SoSI
Xiphopenaeus kroyeri	G2	Suriname	1	FIRMS-WECAFC-CRFM
Xiphopenaeus kroyeri	G2	Guyana	1	FIRMS-WECAFC-CRFM
Istiophorus albicans	G3	Western Atlantic	1	FIRMS-ICCAT
Kajikia albida	G3	Atlantic	1	FIRMS-ICCAT
Makaira nigricans	G3	Atlantic	1	FIRMS-ICCAT
Scomberomorus brasiliensis	G3	Southeastern Caribbean	2	FAO-SoSI

<i>Scomberomorus cavalla</i>	G3	USA Gulf of Mexico	1	SDG1441
<i>Scomberomorus cavalla</i>	G3	USA Southeast Atlantic	1	SDG1441
<i>Scomberomorus cavalla</i>	G3	Southeastern Caribbean	2	FAO-SoSI
<i>Scomberomorus cavalla</i>	G3	Dominican republic	2	FAO-SoSI
<i>Scomberomorus cavalla</i>	G3	Mexico	2	FAO-SoSI
<i>Scomberomorus maculatus</i>	G3	USA Gulf of Mexico	1	SDG1441
<i>Scomberomorus maculatus</i>	G3	USA South Atlantic	1	SDG1441
<i>Xiphias gladius</i>	G3	North Atlantic	1	FIRMS-ICCAT