

COSTA RICA FISHERIES DATA REPORTING TO RFMOs: CHALLENGES AND IMPROVEMENTS

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ABSTRACT

Within the conservation and management measures adopted by the Tuna Regional Fisheries Management Organizations, requests for fisheries data are constantly made to members and cooperating non-members. The Costa Rican fisheries authority has faced challenges and limitations in providing adequate attention to these data requests, which has led to some compliance issues within RFMOs. The research aimed to improve the capacity of the Costa Rican fishery's authority (INCOPECA) to implement these measures. For this purpose, a review and analysis of the active conservation and management measures available on the IATTC website were carried out. In addition, the perceptions and knowledge of key actors involved in the data reporting process were collected through questionnaires. It was found that 16 out of 62 measures include fisheries data requests in which at least one of the Costa Rican fisheries is involved. The challenges most mentioned by INCOPECA officials were the lack of human resources and knowledge about the internal dynamics and operational functioning of RFMOs. A five-step procedure is proposed as the most effective way to improve actions related to data reporting. Identifying the conservation and management measures resulted in a process that allows Costa Rica to compile synthesised and easily accessible information, including compliance deadlines and the specific fisheries involved in each measure.

Keywords: data reporting, RFMOs, regional fisheries management, Costa Rica

Table of Contents

1	INTRODUCTION	4
2	BACKGROUND	5
2.1	Regional Fisheries Management Organizations.....	5
2.2	Costa Rica's participation in RFMOs	6
2.3	RFMO compliance issues: Costa Rica.....	7
2.4	Description of Costa Rican fisheries	8
2.5	Costa Rican Fisheries Authority	10
2.6	Data collection and statistics of Costa Rican Fisheries.....	11
2.6.1	Small-scale fishery.....	12
2.6.2	Medium-scale and advanced fishery.....	13
2.6.3	Purse seine sardine fishery.....	13
2.6.4	Foreign purse seine tuna fishery	13
3	METHODOLOGY	14
3.1	IATTC conservation and management measures.....	14
3.2	Perception and knowledge of the actors involved.....	15
3.3	Procedure to improve data reporting.....	16
4	RESULTS AND DISCUSSION.....	16
4.1	IATTC conservation and management measures involving Costa Rican fisheries	16
4.1.1	Case study 1: resolution C-21-06 Conservation measures for shark species, with special emphasis on the silky shark (2022-2023).....	18
4.1.2	Case study 2: resolution C-03-05 on data provision.....	20
4.2	Perception and knowledge of the actors involved.....	22
4.3	Institutional procedure.....	24
5	CONCLUSIONS AND RECOMMENDATIONS	26
6	ACKNOWLEDGEMENTS.....	26
7	REFERENCES	27
8	APPENDICES	31

List of Figures

Figure 1. Location of the IATTC Convention Area in the Eastern Pacific Ocean (Source: https://www.iattc.org/images/WebPics/EPOmap.jpg).....	6
Figure 2. Location of the ICCAT Convention Area in the Atlantic Ocean (Source: https://www.iccat.int/img/misc/ConvArea.jpg).....	7
Figure 3. Costa Rica location, showing the Pacific Ocean Exclusive Economic Zone (blue polygon).....	9
Figure 4. Location of INCOPECSA offices around the Pacific and Caribbean coast.....	12
Figure 5. Catches reported by Costa Rica by fishing gear (LL: longline, LP: pole-and-line, NK: unknown, PS: purse seine).....	21
Figure 6. Costa Rican fisheries should report fisheries data to the RFMOs according to the INCOPECSA official's responses.....	22
Figure 7. Procedure to respond to RFMO data requests.....	25

List of Tables

Table 1. Characteristics of the commercial fisheries in Costa Rica (Source: Fisheries and Aquaculture Law and the register of licenses for fishing vessels of the Costa Rican Institute of Fisheries and Aquaculture).....	10
Table 2. Functions of the INCOPECSA bodies responsible for data collection.....	11
Table 4. Species and fisheries covered by the Antigua Convention caught by Costa Rican fisheries.....	17
Table 3. Catches reported by Costa Rica during 2019 to IATTC.....	21
Table 5. Challenges, good practices, and future improvements based on the responses of the INCOPECSA officials.....	23

1 INTRODUCTION

Fisheries data is a complex concept referred to as a set of valuable data that needs to be compiled, processed, and analysed in order to be able to manage a fishery according to sustainable parameters. There are different uses of fisheries data involving several players and users from biological stock assessments by scientists, economic strategic planning by fleets, fishing industry and fishery monitoring, and political allocation decisions adopted by policy makers, including national and international public administration managers. There are requirements that the data must satisfy, depending on the end-user: timeliness, level of detail, accuracy, accessibility to users, coverage or completeness, and the credibility of the data collection process (National Research Council, 2000).

Over the years, fisheries data requests from different international organisations have increased, leading to implementation and compliance issues for certain flag and coastal states. Some of the challenges and shortcomings could be caused by the limited human resources to attend to these tasks, lack of knowledge of dealing with key data requirements, and absence of trained officials and technical experts.

Fisheries data requested from Regional Fisheries Management Organizations (RFMOs) resolutions and recommendations (conservation and management measures) are no exception to this reality. Costa Rica's insufficient capacity to implement these conservation and management measures has caused some compliance issues within the RFMOs. These non-compliance issues should be taken seriously, as some countries (e.g., United States of America) consider them constitutive of, or evidence for, illegal, unreported, and unregulated (IUU) fishing activities (NOAA, 2021).

This research represents the first analysis of how Costa Rica, through the Costa Rican Institute of Fisheries and Aquaculture (INCOPESCA), seeks to improve its capacity to comply and implement conservation and management measures adopted by RFMOs. Findings made through the institutional and administrative framework analysis based on available literature and practical problems flagged and addressed through the responses to targeted questionnaires will serve as reference material. In addition, a detailed review of the relevant conservation and management measures help to map and identify which aspects of data collection should be improved. Ultimately, by improving fisheries data reporting processes, member or cooperating states contribute better quality fisheries data to assist RFMOs in developing stock assessments for the highly migratory commercial species under its remit.

The following specific objectives were proposed to improve INCOPESCA's capacity to fulfil the requests for fisheries data required by the RFMOs:

1. Identify RFMOs conservation and management measures requesting fisheries data from Costa Rican fisheries.
2. Outline challenges, good practices and future improvements, based on the perception and knowledge of the key actors involved in the fisheries data reporting process to RFMOs.

3. Propose a procedure to improve data reporting to RFMOs based on available organizational resources and institutional capacity.

2 BACKGROUND

2.1 Regional Fisheries Management Organizations

RFMOs are the fisheries-related regional bodies responsible for ensuring the conservation and sustainable use of straddling and/or highly migratory species in the High Seas and the corresponding Exclusive Economic Zones (United Nations, 1982). These intergovernmental organizations provide a formal platform to both flag states (fishing nations) in international waters and coastal states within whose jurisdiction straddling and highly migratory fish stocks are found in order to achieve agreement and implementation of sustainable management measures (Gilman & Kingma, 2013).

Five RFMOs carry out data collection, scientific monitoring, conservation, and management of tuna and tuna-like resources and other species, namely the Commission for the Conservation of Southern Bluefin Tuna (CCSBT), the Inter-American Tropical Tuna Commission (IATTC), the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Indian Ocean Tuna Commission (IOTC), and the Western and Central Pacific Fisheries Commission (WCPFC) (Kolody, Eveson, Preece, Davies, & Hillary, 2019). They are established by a foundational treaty or another primary law instrument that includes the area and competence, the objective and functions of their governing bodies such as the commission, council and any other subsidiary bodies, and the duties and obligations of the members. Countries join these organisations to become contracting parties ratifying or acceding to the treaties (Koehler, 2013). There is also the possibility of becoming a cooperating non-contracting party, having many of the same rights and obligations that contracting parties have.

RFMOs are led by a commission composed of members and cooperating non-members representing coastal countries adjacent to the convention area and other states (or political [*fishing*¹] entities) interested in the fishery resources. RFMO fisheries management is regulated under a combination of technical regulations, catch and effort restrictions, and monitoring, control, and surveillance (MCS) measures. These conservation and management measures are mainly based on scientific advice obtained from scientific assessment (Koehler, 2013; Fischer, 2020). The scientific advice quality depends on the fisheries data submitted by the members, which often rely on the support of different entities, for example, the fishing industry, to get catch data (Haas, McGee, Fleming, & Haward, 2020).

RFMOs are challenged by the goals set by the Code of Conduct for Responsible Fisheries, which claims that fisheries management should be based on best scientific advice leading to either the level of certainty required for the long-term management or the precautionary approach that ensures short term adequate management while reaching science-based certainty (FAO, 1995). In any event, consistent and reliable data produced by strong data collection programs in a time series

¹ i.e. Chinese Taipei

is necessary. The principle of "no data-no management" can be accepted as without reliable data, it is not possible to develop stock assessments that could help identify the stock's status and maximum sustainable yield as required by international law and management best practices.

2.2 Costa Rica's participation in RFMOs

Costa Rica and the United States of America were the founding member countries of the first RFMO, the IATTC, in 1949 (Haas, McGee, Fleming, & Haward, 2020). Costa Rica is currently one of the 21 members and five cooperating non-members of this organization, whose convention area is in the Eastern Pacific Ocean (Figure 1), (Pentz & Klenk, 2019). Costa Rica as a member of the IATTC has the responsibility to provide information to facilitate the development of the commission's objective of ensuring the long-term conservation and sustainable use of the fish stocks covered by this convention. The information required shall be statistical or biological, relating to fishing activities and actions taken to implement the measures (IATTC, 2003)

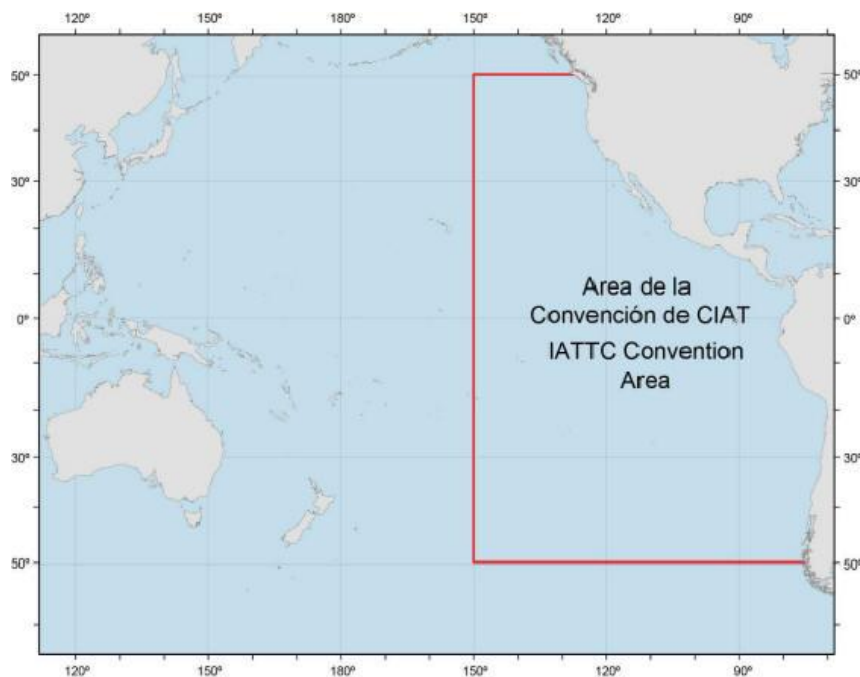


Figure 1. Location of the IATTC Convention Area in the Eastern Pacific Ocean (Source: <https://www.iattc.org/images/WebPics/EPOMap.jpg>).

In the Atlantic Ocean, Costa Rica has participated as a Cooperating Non-Contracting Party in the ICCAT since 2016. To attain this status, ICCAT requests countries to provide information, when it is available, about historical data of their fisheries in the convention area (Figure 2), including nominal catches, number, type, and name of vessels, fishing effort, and fishing areas. Furthermore, ICCAT requires all data adopted in the recommendations, the vessels' number and characteristics and information on research programs (ICCAT, 2003).

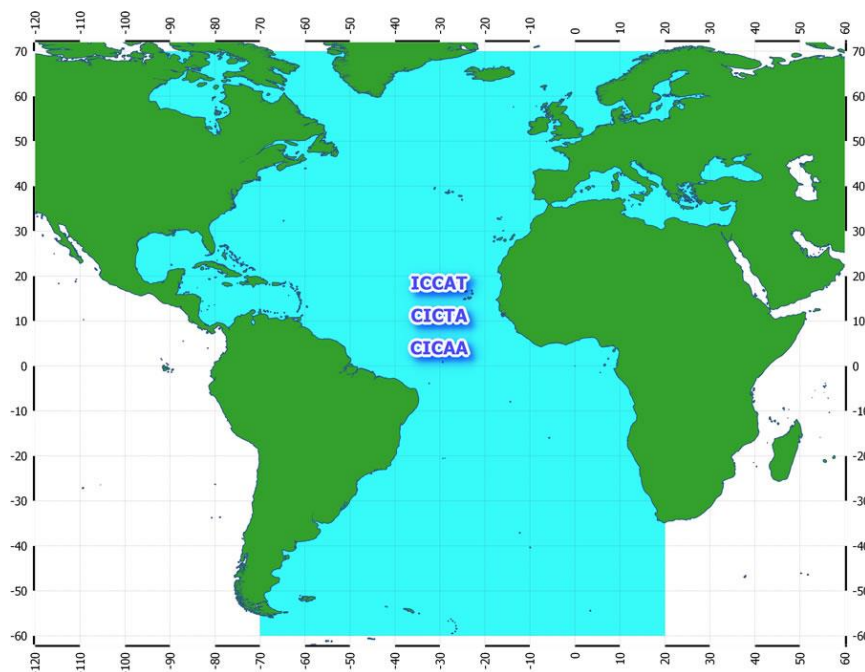


Figure 2. Location of the ICCAT Convention Area in the Atlantic Ocean (Source: <https://www.iccat.int/img/misc/ConvArea.jpg>).

2.3 RFMO compliance issues: Costa Rica

Performance and compliance by a member state to an RFMO depend on the delivery of products drafted in the management measures as adopted. Due to the nature of the several measures in effect, members and cooperating non-members must provide several types of data and reports that imply a continued follow-up process in the local fisheries authority.

Koehle (2013), after a general revision of available RFMOs meeting reports and other documentation, including IATTC and ICCAT, found that providing catch and effort data, reporting bycatch, and non-implementation of national or RFMOs onboard observer programs are part of some common compliance issues that countries deal with. These constraints have caused difficulties for bycatch assessment and conventional stock assessments conducted by the RFMO (FarFish, 2019; García-Horcajuelo et al., 2020; IATTC, 2021).

In the IATTC, Costa Rica has faced compliance problems due to a lack of implementing the observer programme onboard longline vessels. Within the IATTC, vessels that do not record or report their catches made in the convention area may be involved in illegal, unreported and unregulated fishing activities when a member or cooperating non-member submits duly documented information from the vessel. Sanctions for such vessels include prohibiting the marketing, import, landing and transshipment of species covered by the Convention (IATTC, 2019a).

In the case of ICCAT, Costa Rica has been associated with overharvesting, non-submission of designated ports and lack of implementation of shark and marlin requirements, among others (ICCAT, 2020). ICCAT has recommendations involving the prohibition of retention of ICCAT species (ICCAT, 2015) and trade measures (ICCAT, 2013) for countries that repeatedly fail to comply. Due to the failure to report data, the Compliance Committee decided to apply these measures to Costa Rica (ICCAT, 2020; ICCAT, 2021). Costa Rica is currently following up on each of these problems with the assistance of the ICCAT Secretariat.

In addition, there are equivalent sanctions or measures by states or individual entities that require certification of fisheries. These certifications can be provided by the concerned country or by an independent entity to ensure access to a market.

The National Marine Fisheries Service of the USA, a National Oceanic and Atmospheric Administration (NOAA) line office, developed a biennial report identifying nations or entities whose vessels have been engaged in IUU fishing, bycatch of protected species, unsustainable fishing for sharks on the high seas, or whose own actions or failures undermine conservation measures of an RFMO. In 2021 Costa Rica and another six countries were identified as failing coastal and flag states to effectively manage and control their fleet and fisheries consistent with conservation management measures adopted by ICCAT and for failing to provide essential statistical data and other required information to ICCAT. In the case that Costa Rica does not take sufficient measures to ensure a positive certification, the USA may take specific measures to prohibit imports of certain fish or fish products and deny port privileges to and entry into navigable waters of the United States by Costa Rican-flagged fishing vessels (NOAA, 2021).

2.4 Description of Costa Rican fisheries

Costa Rica is a Central American country with a small land territory (51.100 km²) but a vast marine area of 613,683 km² (Quesada Alpízar, 2006; INCOPESCA, 2020b). Ninety-six per cent of its total marine surface is located in the Pacific Ocean, while four per cent is in the Caribbean Sea (Figure 3). The presence of numerous bays and gulfs, together with a wide continental shelf and the large size of its exclusive economic zone (EEZ), contribute to the high productivity of the Pacific Ocean as compared to the Caribbean Sea (BIOMARCC-SINAC-GIZ, 2013; Sánchez-Jiménez, Fujtani, MacMillan, Schlüter, & Wolff, 2019; UNCTAD, 2019a).



Figure 3. Costa Rica location, showing the Pacific Ocean Exclusive Economic Zone (blue polygon).

There are four categories of commercial fishing in Costa Rica (Asamblea Legislativa, 2005) (Table 1):

1. Small-scale commercial fishery involves fishers using mostly small, motorised fiberglass boats, known as "pangas", and different fishing gears (gillnet, handlines, longlines, among others).
2. The medium-scale commercial fishery is similar to small-scale commercial fishing regarding their target species and the fishing gear used in coastal areas (within 3-5 nm). However, medium-scale fishing consists primarily of surface longline targeting large pelagic species in places about 40 nm offshore.
3. The advanced commercial fishery operates within the EEZ and on international waters using surface and mid-water longlines. Their target species are large pelagic fish.
4. The semi-industrial commercial fishery represents the national purse seiners targeting sardine and foreign purse seiners fishing for tuna.

Table 1. Characteristics of the commercial fisheries in Costa Rica (Source: Fisheries and Aquaculture Law and the register of licenses for fishing vessels of the Costa Rican Institute of Fisheries and Aquaculture).

Classification	Fishing area	Vessel length size	Main target species	Main fishing gears
Small scale	Up to 3 nm from the coast	4-14 m	Demersal and coastal fishes and crustaceans	Gillnet and bottom longline
Medium-scale	Up to 40 nm from the coast	7-20 m	Demersal, coastal, and large pelagic fishes	Gillnet and bottom and surface longline
Advanced	Beyond 40 nm from the coast	9-28 m	Large pelagic fishes	Surface and mid-water longline
Semi-industrial	Not applicable National waters	20-22 m 57-78 m*	Sardine Tuna	Purse seine Purse seine

* Length of the foreign purse seiners fishing between 2019-2020 with a fishing license.

According to the fishing license registry of the Costa Rican Institute of Fisheries and Aquaculture, the small-scale fishery has 1,861 registered vessels, of which 1,698 are fishing in the Pacific and 163 in the Caribbean. However, the fishing effort could be higher as not all fishers may have fishing licenses (Fernández Carvajal, 2013). Two hundred twenty-eight vessels are reported in the medium-scale fishery, 214 in the Pacific and 14 in the Caribbean (less than 16.5 m in length). The advanced fishery counts 129 ships operating in the Pacific. The semi-industrial sardine fishery is represented by three licensed vessels in the Pacific. The number of foreign purse seine vessels fishing for tuna in the Pacific EEZ may vary depending on access to national fishing capacity and access to a fishing licence.

2.5 Costa Rican Fisheries Authority

The Costa Rican Institute of Fisheries and Aquaculture (INCOPECA) is a governmental institution established in 1994 to manage, regulate and promote fishing and aquaculture in marine and inland waters within the EEZ of Costa Rica under an ecosystem-based approach. The fisheries, aquaculture, economic and social policy is led by a board of directors who implement management measures through specific legal regulations (UNCTAD, 2019b).

INCOPECA is headed by a board of directors and an executive president, the highest-ranking official for governance and administration purposes. The directorate of administration and finance, the directorate of fisheries and aquaculture development, and the directorate of fisheries and

aquaculture management are responsible for attending, implementing, and supporting different institutional requirements.

The bodies involved in fisheries data collection include the management and development directorates, mainly fisheries and aquaculture information, research, registry, inspection, market promotion departments and regional offices. Their functions related to data recording required for reporting to different international organisations are detailed in Table 2.

Table 2. Functions of the INCOPECA bodies responsible for data collection.

Bodies	Functions
Fisheries and aquaculture information department	Design and implement systems and procedures for collecting, processing, and recording/digitising national fishery and aquaculture statistics.
	Provide statistical information on fishery and aquaculture production to all the institution's agencies and external users.
Research department	Establish and implement the data collection, processing, and analysis program to evaluate fishery and aquaculture resources.
	Generate information for compliance with regulations and data requirements of the different resolutions issued by national and international organisations.
Registry department	Collect and process primary data on landings from the fishing fleet.
	Keep a registry of fishers, vessels, transporters, fish collection centres, processing plants, fishmongers, exporters, and importers in the corresponding region.
Inspection department	Supervise and authorise the landing and marketing of fishery products according to current regulations.
	Verify that all individual fish caught as landed meet the size specifications allowed to enter the market.
	Monitor vessels through the vessel monitoring system to generate timely and appropriate information.
Regional offices	Keep a registry of fishers, vessels, transporters, fish collection centres, processing plants, fishmongers, exporters, and importers in the corresponding region.
	Collect and process primary data on landings from the fishing fleet of the respective region and coordinate with the Fisheries and Aquaculture Information Department for data consolidation.
Market promotion department	Keep a record of exports and imports of fishery and aquaculture products.

2.6 Data collection and statistics of Costa Rican Fisheries

Fishery statistics are managed by the Department of Fisheries and Aquaculture Information of INCOPECA. This department stores landing data from small-scale, medium-scale, advanced and semi-industrial fisheries on the Microsoft Access database. All data are collected by institutional

technicians or inspectors working in regional offices in the country's primary fishing communities (Figure 4).

The research department performs occasional biological sampling of the small-scale, medium-scale and advanced fisheries. Sampling is based on gathering data on the fishing trip, fishing gear, and length and weight of the species landed. The biological sampling data is stored in a Microsoft Access database managed by the research department.

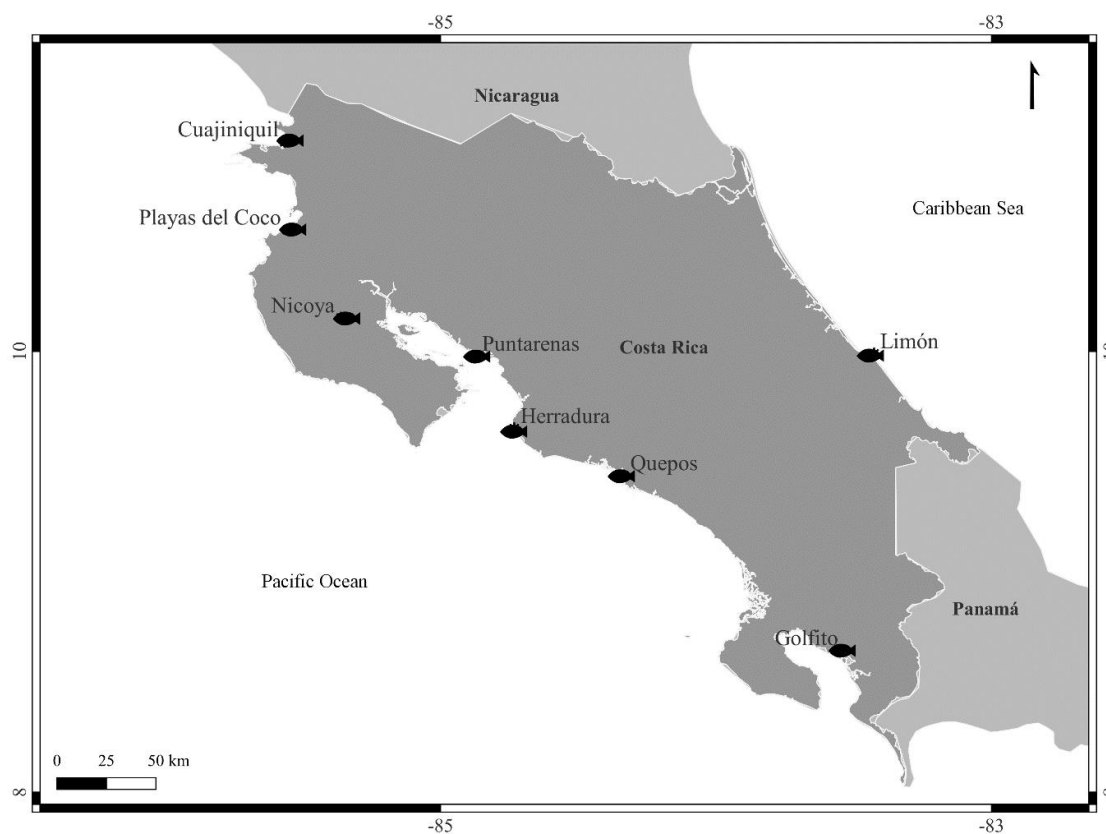


Figure 4. Location of INCOPECSA offices around the Pacific and Caribbean coast.

2.6.1 Small-scale fishery

The small-scale fishery data collection programme is based on a monthly record of species or commercial groups landed in the Caribbean and Pacific fishing communities. Sale notes from fishmongers or fish collection centres, where the fishers sell their catch, are the source of data. Some small-scale fishery landings, those involving large pelagic species sharks, are inspected using a landing inspection form. This form includes general information about the vessels, fishing gear, fishing area, number of fishing sets, the number of individuals by species and their corresponding total weight.

2.6.2 *Medium-scale and advanced fishery*

In the case of the medium-scale and advanced fishery using surface longline, landing data collection is carried out by institutional inspectors who fill out, in situ, a landing inspection form (the same mentioned regarding small-scale fisheries). Before landing, the vessel's captain must submit completed fishing operations registration, the fishing set record and the transshipment (if applicable) registration forms to the inspector (INCOPECSA, 2018). One hundred per cent of the landings are currently inspected in the Caribbean and the Pacific using landings inspection forms. Still, the fishing operations registration form, the fishing set record form and the transshipment registration form are not being implemented in the Caribbean due to some changes that need to be made to the form.

2.6.3 *Purse seine sardine fishery*

Landings by the sardine purse seine fishery are monitored and recorded by an institutional inspector using the same landing inspection form. Nowadays, the fishing operation record and set record forms are used in the purse seine sardine fishery. This fishery only operates in the Pacific.

2.6.4 *Foreign purse seine tuna fishery*

In order to explain who collects data on this fishery, it is first necessary to characterise the operation of the purse seine fleet fishing in the Costa Rican Pacific EEZ. While Costa Rica has the right to authorise fishing vessels (national or foreign) to operate within its EEZ and national fishing vessels in the high seas, such ability is conditioned to the rules adopted by IATTC to recognise the operation of the purse seine fleet operating in the Eastern Pacific Ocean (EPO).

IATTC's resolution C-02-03 mandates "to use the Regional Vessel Register ("the Register") with any subsequent modifications that do not increase the total capacity of purse-seine vessels established in the register, as the definitive list of purse-seine vessels authorized by the participants to fish for tuna in the EPO" and imposed that only vessels allocated with portions of the "well capacity" level recognized by CPCs can enter into the registry. Costa Rica was then allocated with a "well capacity" of 9364 m³ that it can use to allow vessels entering the IATTC regional registry, either national or foreign under time-conditioned leases or concessions (IATTC, 2012).

Although no purse seine vessels are flagging Costa Rican flag, tuna purse seine catch is required as raw material for the operation of some few tuna cannery industries in Costa Rica. That is the alleged cause for admitting that foreign-flag tuna purse seine vessels obtain fishing licenses to operate in the national EEZ and the rationale for establishing a limited catch quota to purse seine vessels in the area, allowing that longline Costa Rican flag vessels obtain higher access to the tuna resources in the national EEZ.

The executive branch supported by the Ministry of Agriculture and Livestock and INCOPECSA is responsible for allocating partial volumes of the fishing capacity recognised by IATTC (MAG, 2012). The temporary authorisation issued to foreign vessels, as described above, does not of itself

grant the right to carry out fishing activities in the Pacific EEZ. Therefore, a fishing license must be obtained to fish in this area, and all catch caught within the EEZ must be landed and reported in Costa Rican ports for processing by the national industry (INCOPECA, 2020a).

In addition, the quota for tuna fishing in the EEZ is established by the INCOPECA board of directors based on technical criteria provided by the Director of Fisheries and Aquaculture Management. Fishing licences are valid for 60 days or until the end of the fishing trip and are granted until the maximum quota is reached. Quota control is done by inspection of landings and notifications of the processing industry (INCOPECA, 2020a). According to INCOPECA's open-access register of purse seine vessel licences during 2019-2021, only Venezuelan and Nicaraguan flag vessels have used Costa Rican licences.

According to the IATTC C-12-06 resolution, the member or cooperating non-member receiving a loan or concession, as the flag government of the vessel, shall be legally responsible for all the activities of the vessel relating to compliance with the rules, recommendations, and resolutions of the agreement on the International Dolphin Conservation Program (AIDCP) and the IATTC (IATTC, 2012). That means the member or cooperating non-member holding the concession authorised by Costa Rica will be responsible for reporting fisheries data to the IATTC.

As a result, Costa Rica is responsible and liable for collecting data arising from the operation of its national fleet and the foreign fleet operating in its EEZ, while foreign vessels flagging foreign flags and holding national "well volume" are under the purview of the concerning flag state. IATTC ensures that all vessels operating in the "Antigua Convention Area" (former EPO) provide data to IATTC's scientific staff for standard processing and regional scientific use.

3 METHODOLOGY

At the beginning of the research, it was intended to analyse IATTC and ICCAT separately, but due to time constraints with carrying out a detailed analysis of the relevant legislative provision and the lack of response of questionnaires from ICCAT officials, the work was limited to IATTC. The number of vessels registered in the IATTC was also considered a priority compared to the vessels operating in the Costa Rican Caribbean. The methodology of this research was structured according to the procedures to meet each objective listed above.

3.1 IATTC conservation and management measures

Catch, effort, bycatch, fishing vessel registration, onboard observer programme and conservation measures were defined as priority fisheries data for this research. Priority level was defined to provide attention to conservation and management measures requiring continuous monitoring and implementation of existing provisions. Taking this as a starting point, the active conservation and management measures available on the IATTC website were identified and analysed one by one, looking for fisheries data requirements. Deadlines, fisheries, or vessels involved and data to be reported were extracted from each resolution and grouped in a table for easy reference.

One of the categories used by the IATTC to indicate which fisheries must comply with the requirements of the conservation and management measures is "*all those vessels fishing for species under the purview of the Antigua Convention*". This category generated the following question: Which Costa Rican fisheries are required to report data to the IATTC? In order to identify these fisheries, it was taken into account that the interest species of the Convention are tuna and tuna-like species and other species (i.e., associated or dependent species or species sharing the same ecosystem based on the ecosystem approach) caught by vessels fishing for tuna and tuna-like species. Therefore, these species were searched in the national production statistics for 2019 using expert criteria.

Two case studies were carried out to examine the requirements of one recent management measure and assess how Costa Rica has implemented one active consolidated management measure. The analysis process consisted of suggesting actions to implement in each of the resolutions proposed.

Case 1: it was decided to analyse the resolution C-21-06 conservation measures for shark species, with particular emphasis on silky sharks (2022-2023) for biological and socio-economic reasons. Biological because it requires immediate attention due to its conservation status and socio-economic because it also includes one of the most important target species for the medium-scale and advanced longline fishery in terms of landings (Pacheco Chaves, Alfaro Rodríguez, Marín Alpízar, Carvajal Rodríguez, & González Rojas, 2020).

Case 2: to identify how Costa Rica has reported catch data to the IATTC, catch reports from 2019 were analysed considering the requirements of the resolution C-03-05. This resolution lists the fisheries that must report data and present the structure of how data should be reported. In addition, public domain data available on the IATTC website on catches in the Eastern Pacific Ocean by year, flag, gear, and species were plotted to identify how the IATTC has recorded the historical catch. Microsoft Excel was used to plot trends in catches by gear.

3.2 Perception and knowledge of the actors involved

The perception and knowledge of key actors from diverse backgrounds (scientists, operators, scientific data, control authorities, etc.) about data reporting processes to RFMOs, were collected using a mixed questionnaire of closed and open-ended questions to maximize the gathering of qualitative knowledge. The participants involved in the questionnaires were data officials who collect, process and report fisheries data to RFMOs in Costa Rica and other countries (Spain, Iceland) and data officials from RFMO.

Google forms were used to distribute the questionnaires between the participants during January 2022. Questionnaires could be consulted on the following links:

Countries:

https://docs.google.com/forms/d/e/1FAIpQLScSRwUUEu5dQQ_NniHddXEK0eHMcHsrv5wHU-WDemduZ_CdDg/viewform?vc=0&c=0&w=1&flr=0

RFMOs:

https://docs.google.com/forms/d/e/1FAIpQLSf8ioFeJ_3sQkWL84HIKDZ3ytu-LpTUZwKINC2xqPMoAZ3Qtw/viewform?vc=0&c=0&w=1&flr=0

A compilation of challenges, best practices and future improvements relating to the data reporting process were made, using the responses to questions 13-16 of the country questionnaire and the complete RFMO questionnaire.

Data gathering was done following purposive sampling. This nonprobability sampling is not based on theories and does not require a defined number of participants. In this sampling technique, the researcher considers what needs to be known and identifies and selects competent and knowledgeable individuals about the research topic (Etikan, Abubakar Musa, & Alkassim Sunusi, 2016).

To guarantee the confidentiality of the information provided in the questionnaires, the results will be grouped by institution, country and RFMO. This protocol was explained to respondents during the distribution of the questionnaires.

3.3 Procedure to improve data reporting

A general procedure was elaborated through a holistic analysis of the conservation and management measures identified and by extracting the main ideas underlying the perceptions and knowledge indicated in the questionnaires by the actors involved in the data reporting processes. In addition, for visual representation, a data flow diagram was designed to support procedures and improve understanding of where gaps lie for the proper follow-up and compliance of RFMO requirements.

4 RESULTS AND DISCUSSION

4.1 IATTC conservation and management measures involving Costa Rican fisheries

Based on the analysis made on all relevant and active IATTC conservation and management measures, it was found that 16 out of 62 measures include fisheries data requests in which at least one of the Costa Rican fisheries is involved (Appendix 1). Many conservation and management measures were therefore not considered because they neither included requests for fisheries data, nor included species that are not caught by national fisheries (i.e. Pacific bluefin tuna), nor referred to fisheries where other states are responsible for providing data, such as the tuna purse seine fishery.

Deadlines for data submission vary widely between conservation and management measures with requests including specific dates, annual reports, information that can be submitted at any time and even unspecified dates. Also, the fisheries involved in each measure vary widely, with fleet segment specified in some of them but indicating that it applies to all fisheries or fleets covered by the Antigua Convention in others.

With regards to the small-scale, medium-scale, advanced, semi-industrial purse seine sardine fisheries, Costa Rica has to comply with a conservation and management measure related to

"vessels fishing for fish stocks covered by the Antigua Convention" (Table 4). Recreational fishing should be included here because it interacts with species of concern to the Convention, but currently, the institution does not have catch statistics available for that fishery. In the Eastern Tropical Pacific, purse seine, longline, pole and line, artisanal and recreational fisheries account for almost all the catches recorded by the IATTC. At least six of the species considered to be covered by the Antigua Convention identified in this work are included in the IATTC report on the tuna fishery, stocks, and ecosystem in the Eastern Pacific Ocean that summarise catch and effort of the fisheries for species covered by the IATTC's Antigua Convention (IATTC, 2020).

Table 3. Species and fisheries covered by the Antigua Convention caught by Costa Rican fisheries.

Species	Medium-scale and advanced fishery catch (mt)	Small-scale fishery catch (mt)	Semi-industrial herring fishery catch (mt)
Silky shark	2,354.5	123.7	
Tuna	1,556.9	102.8	0.1
Common dolphinfish	1,340.9	326.4	
Swordfish	1,044.8	21.9	
Blue marlin	524.1	26.1	
Striped marlin	486.8	15.9	
Pelagic thresher	381.4	24.9	
Indo-Pacific sailfish	347.3	27.3	
Blue shark	98.3	1.6	
Scalloped hammerhead	36.8	5.4	
Wahoo	15.4	0.9	
Smooth hammerhead	10.0	0.2	
Black tip shark	8.3	0.6	
Bigeye thresher	4.7		
Black marlin	1.2		
Tiger shark	0.6	0.2	
Whitenose shark	0.5	0.2	
Shortfin mako	0.5		
Bull shark	0.4		

In general terms, the different Costa Rican surface and mid-water longline fishery segments are involved in 100% of the measures identified. The main challenge for the fleet segment over 20 m length-over-all (LOA), approx. 20 vessels, has been the non-implementation of the onboard observer programme requested by resolution C-19-08 (IATTC, 2019b). The resolution requests that each member and cooperating non-member shall ensure that at least 5% of fishing effort (expressed in fishing days or hooks deployed) caught by these vessels carries onboard a scientific observer. The reasons for non-compliance are multiple and range from limited or no space on

vessels, long fishing trips (3 to 5 months), and financial constraints. The situation on bycatch reporting can be temporarily solved by encouraging fishers to report discards and releases indicating the status (dead or alive) of Mobulid rays, turtles, and oceanic whitetip sharks on their logbooks, along with secured inspections upon landings.

The IATTC is assessing electronic monitoring systems as a potential tool for monitoring both purse seine and longline vessels (IATTC, 2021), as proposed by the Costa Rican delegation to the Commission meeting in 2021. Using the WCPFC as a benchmark, electronic monitoring was found to be a tool that could record 78% of the data reported by observers onboard longline vessels. Due to its functionality, the authors recommend its use in future research and monitoring programmes in global longline fisheries (Emery, et al., 2018). IATTC has already started a process to identify the components for electronic monitoring systems that could be adopted soon.

Compared to large longliners and purse seiners or other fleets targeting tunas or tuna-like species, the Costa Rican small-scale or artisanal fisheries are characterised by low catches of those species covered by the Convention. Considering the data collected from this fishery, it is possible to respond to the request for total annual aggregated catch data in resolution C-05-03 on data provision. However, the data may be of poor quality because it is based on sales notes collected at fish collection centres.

The sardine purse seine fishery represents a case that should be analysed in detail because one of its vessels is approved for tuna fishing, and in 2019 catch data shows 0.1 metric tons. Due to the relatively low volume and the patchy information available, it is not clear if this reporting should be done, although there is no reason to exclude this fishery considering the mandate contained in the Antigua Convention and current management measures do not create any exemption when tunas are caught, or are intended to be caught, according to the fishing license issued. Further analysis of its historical catch would allow knowing its importance in the catch composition regarding tuna catches.

The following pair of case studies will attempt to put into context a proposal to implement a recent resolution (Case Study 1) and a review of fisheries data reported to a consolidated resolution (Case Study 2).

4.1.1 Case study 1: Resolution C-21-06. Conservation measures for shark species, with special emphasis on the silky shark (2022-2023).

During the review of this resolution, it was determined that this regulation represents a good case study for Costa Rica because it could improve some of the inspection and data collection processes. Likewise, good data collection and reporting practices in compliance with the resolution can be established during landings by foreign tuna purse seiners of silky sharks.

Under the current dynamic of the foreign purse seine fishery in the Pacific EEZ, in which vessels are required to land all the catch in Costa Rican ports and the Costa Rican fishing authority inspects 100% of the landing process, a suitable scenario is provided to address two aspects requested in this resolution. The first relates to that in the absence of the governmental flag state authorities at the landing site, any unintentionally silky shark caught and frozen may not be sold or bartered but

may be donated for domestic human consumption purposes. The second is that silky sharks surrendered in this way will be reported to the IATTC secretariat.

The following actions are proposed to achieve timely attention to these requests:

1. It is unclear who authorises the donation of unintentionally retained sharks and to whom the unintentionally retained sharks can be donated. Is this a decision of the shipowner/fishing company or of the Costa Rican authorities? Furthermore, it is not clear who is responsible for reporting sharks surrendered in this way to IATTC. The IATTC should be consulted for clarity on procedures.

2. In the case that the fisheries authority where the landing takes place is responsible, it would be advisable that the INCOPECA Directorate of Fisheries and Aquaculture Management should generate guidelines for action to the inspector, in addition to providing a database to register possible cases.

One of the requirements of this management measure indicate that cooperating and non-cooperating members shall require longline vessels whose fishing license does not include sharks as a fishing target, but catches sharks incidentally, to limit the bycatch of silky sharks. The measure indicates a maximum of 20% of the total catch per fishing trip by weight. When analysing the fishing licenses of vessels using longlines (medium scale and advanced), it was found that 33% include sharks as part of the type of fishing authorised, and 67% include the category of large pelagic species (where sharks are included). In this sense, the catch limit does not apply to the Costa Rican longline fishery.

Multi-species fisheries using surface longlines are required to limit the catch of silky sharks of less than 100 cm total length to 20% of the total number of silky sharks caught during the trip. In Costa Rica, these fisheries are represented by vessels included in small-scale, medium-scale, and advanced commercial fisheries. Limiting shark catches of this size should be tackled by improving science-fishing sector collaboration. Training for fishers and an onboard observer programme for the longline sector should be implemented under a fisheries-science partnership to help them better identify, handle, and release juvenile silky sharks.

The landings inspection platform and the biological monitoring carried out by the research department should follow up on the percentage control. Finally, Costa Rica should consider submitting a proposal to increase the total length proposed in this resolution since, according to scientific literature, the size at sexual maturity for both male and female silky sharks is greater than 100 cm (Bonfil, 2008; Hoyos-Padilla, Ceballos-Vázquez, & Galván-Magaña, 2012; Galván-Tirado; Galván-Magaña, & Ochoa-Báez, 2015).

Given that in Costa Rica, the retention of silky sharks is allowed, it is recommended to systematise the control and inspection processes carried out on 100% of the vessels at the time of first landing so it can be provided to the IATTC. Once the pupping shark areas are identified, adopted, and notified by the commission, the monitoring can proceed through INCOPECA's vessel monitoring system.

The research and fisheries and aquaculture information departments should identify the vessels at the beginning of each year and define the closure period for not using steel leaders for those multi-species fisheries that have captured more than 20% of silky sharks in weight on average in a year. The registry department should notify the vessel owners and the longline sector about the closure period. The closure period should be applied during the months where the highest percentages are found, but the appropriate adjustments will be made when a recommendation is received from the IATTC.

The registry department should consider this resolution for new vessels entering the fishery and keep the updated record of the vessels and the period each vessel operator or owner has committed to enforcing this resolution. The information recorded by the registry department must be sent to the IATTC director before October 1 of each year. The National Coast Guard Service, which carries out surveillance functions at sea, should be notified of the closure period of each vessel. The research department could conduct a general evaluation of the closure period to check the effectiveness.

The proposal to prohibit the use of steel leaders for three months on multi-species longline vessels represents a measure to limit shark mortality. However, it has been found the catch and mortality rates of sharks in longline fisheries may be underestimated when monofilament leaders are used (Afonso, Santiago, Hazín, & Hazin, 2012). So, findings such as these should be considered for future resolution discussions. This measure is complex, and its monitoring is a challenge in Costa Rica and could be viewed as a voluntary measure by fishers.

Costa Rica should continue to comply with silky shark catch data requests on time with data provision (C-03-05) and shark conservation (C-05-03) measures. Training institutional inspectors could improve data collection to avoid mixing similar species.

Cooperation between the fisheries authority and the fishing sector is essential to implement this resolution. Good communication must be maintained, and regulations that lead to confrontation must be avoided (Jennings, Kaiser, & Reynolds, 2001).

4.1.2 Case study 2: Resolution C-03-05 on data provision

Resolution C-03-05 establishes several options for reporting catch data for all vessels fishing for species covered by the Convention. Costa Rica's 2019 report shows catch data for national longline vessels grouped by species or species group, by the fishing trip, data on the number of fishing sets and the number of fish caught. As a result of the review, inconsistencies were detected regarding reporting data including a) data from vessels fishing in the Caribbean Sea; b) fishing trips where only coastal demersal species were landed; and c) the absence of some shark species recorded during the biological monitoring (Pacheco Chaves, Alfaro Rodríguez, Marín Alpízar, Carvajal Rodríguez, & González Rojas, 2020).

Through a comparative analysis of the catch data reported by Costa Rica and the data published by the IATTC, it was found that the data are generally grouped into eight species and three groups of species (Table 3). In addition, an error was identified in the catch assigned to *Tetrapturus*

angustirostris (shortbill spearfish), which corresponds to *Makaira nigricans* (blue marlin). This error should be reported to the IATTC to update the historical catch data.

Table 4. Catches reported by Costa Rica during 2019 to IATTC.

IATTC Code	Scientific name	Common name	Catch (mt)
BET	<i>Thunnus obesus</i>	Bigeye tuna	23
BLM	<i>Makaira indica</i>	Black marlin	1
BUM	<i>Makaira nigricans</i>	Blue marlin	3
DOX	Coryphaenidae	Dolphin fishes	1340
MLS	<i>Tetrapturus audax</i>	Striped marlin	495
MZZ	Osteichthyes	Unidentified marine fishes	35
SFA	<i>Istiophorus platypterus</i>	Indo-Pacific sailfish	355
SKH	Euselachii	Various sharks	3041
SSP	<i>Tetrapturus angustirostris</i>	Shortbill spearfish	513
SWO	<i>Xiphias gladius</i>	Swordfish	1041
YFT	<i>Thunnus albacares</i>	Yellowfin tuna	1490

Based on catch data available in the IATTC public domain (Figure 5), a consistent reporting of catches from the longline fishery and a gap in information from the foreign purse seine fishery has been observed since 1991. The lack of historical catch data for the purse seine tuna fishery is explained because the IATTC allocates the catch to the vessel's flag state. However, Costa Rica has created its national register by setting up a requirement before the temporary authorisation of fishing capacity. This requirement is based on the vessel owner agreeing to allocate his historical catch data to Costa Rica according to the national capacity utilized (MAG, 2012).

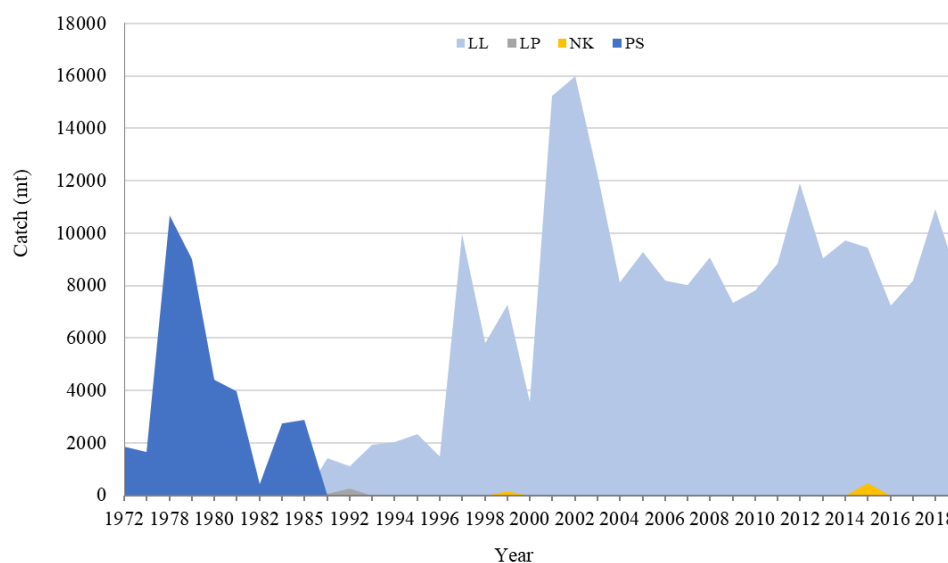


Figure 5. Catches reported by Costa Rica by fishing gear (LL: longline, LP: pole-and-line, NK: unknown, PS: purse seine).

4.2 Perception and knowledge of the actors involved

The questionnaires were answered by eight INCOPECSA officials and one response from Spain and Iceland. At the RFMO level, only one response was provided from the IATTC Secretariat.

INCOPECSA officials are clear about the RFMOs to which data should be reported. Most of them indicated that the fisheries that should report data are longline and purse seine; however other responses included small-scale fishery and all fisheries targeting species covered by the organisations (Figure 6). The analysis presented in the previous section clarifies any uncertainty about which fisheries are required to report data.

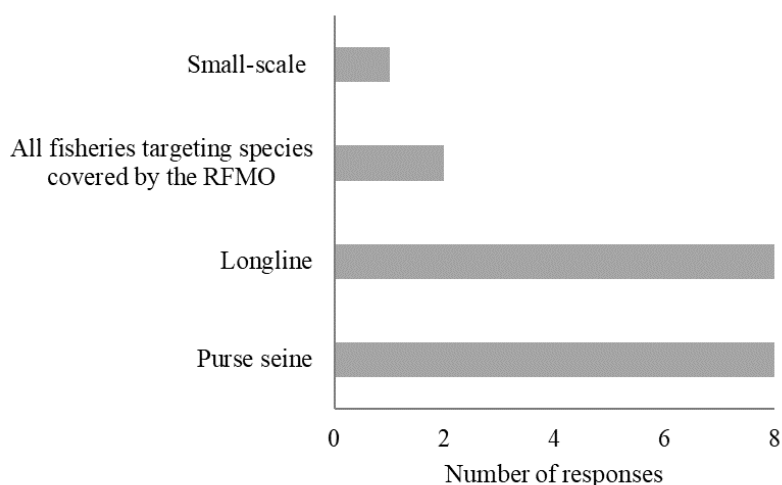


Figure 6. Costa Rican fisheries should report fisheries data to the RFMOs according to the INCOPECSA officials' responses.

Catch data were indicated as the primary source of information to be reported. However, other important data mentioned were effort, bycatch, landing records, management and conservation measures, vessels records, export data, authorised ports, discards, releases, round weight, steel leaders' closure, length, observer onboard data and vessel logbooks. Considering that most of the data are included in the measures identified in this work, it is evident that there is a satisfactory level of general knowledge of the data requested by IATTC.

However, there are several challenges to be improved according to the experience of INCOPECSA officials (Table 5). The most frequently challenges mentioned were the lack of human resources and lack of knowledge about the internal dynamics and operational functioning of RFMOs. From the RFMO side, the IATTC identified the lack of specialized and trained human resources as one of the constraints faced by developing countries to comply with data reporting adequately. In addition, IATTC identified other limitations related to financial resources; political will and related constraints in resources because of the priority given to economic sectors of the national economy and society other than fisheries; strong institutions; robust legal and judicial system, the permanence of trained personnel in their positions; and incentives, economic, financial, social and otherwise, to recruit and retain trained staff in the public administration.

Table 5. Challenges, good practices, and future improvements based on the responses of the INCOPESCA officials.

Challenges	Good practices	Future improvements
Outdated and paper-based data recording forms.	Use of landing inspection forms and fishing logbook.	Improve database and information technologies in general.
Lack of adequate software for data handling.	Dialogue with the fishing sector is promoted.	Continuity of the working group on data reporting and implementation of periodical meetings.
Communication problems between the parties involved.	Attention to RFMO issues is developed through an institutional working group.	Improvement of the academic level of officials in charge of in situ data collection.
Knowledge concentrated in a few employees (i.e., data officials)	Partial improvement database.	Prioritise attention to the RFMO data issue and strengthen it with more employees.
Lack of human resources to attend to the processes.	Officials committed despite existing limitations.	Improve data collection programs.
Lack of knowledge about the functioning of RFMOs.	National regulation is available.	Request training to RFMOs for the proper implementation of conservation and management measures
Responding to data requests without proper timing.		The Fisheries Information Department should have an official trained in RFMO issues.
Limited knowledge of stock assessment included in processes.		Establish and implement an onboard observer program. Evaluate electronic monitoring systems.

Spain appears to have a robust system for collecting, processing, analysing, and reporting data from its fisheries due to its participation in five tuna and tuna-like RFMOs. The main challenge of data reporting is problems in specific fisheries and fleet segments due to a lack of observer data processing. Asking the RFMO secretariat for timetables and simplifying forms were the improvements indicated for the future. Among the good practices, the participation of the Spanish Institute of Oceanography (IEO) in the elaboration of tasks requested by RFMOs was highlighted. Another improvement would be promoting better communication with the IATTC and ICCAT secretariats to request assistance.

Iceland participates in ICCAT as a contracting party, and its fisheries are longline and sport fishing. Iceland has three staff members from the Fisheries Management Department responsible for data reporting processes. The problems identified in their fisheries are related to the non-reporting of tuna caught as bycatch in some fisheries and difficulties working in the ICCAT registration system. Good communication with fishing companies was identified as a good practice. As a future improvement, it is proposed to improve the ICCAT software to make it more user-friendly and consider some improvements in the national registration system if tuna catches increase.

INCOPESCAs challenges and future improvements related to technological developments, updating of sampling forms, capacity building of human resources and improvement of data collection methods should be tackled with the support of the RFMOs. For these purposes, consideration should be given to the special funding available for strengthening the institutional capacity of developing countries and territories for the sustainable development of fisheries for highly migratory species (IATTC, 2014).

INCOPESCA's internal problems can be improved through better coordination and implementation of clear processes. Because compliance with RFMO obligations is in the hands of the authorities and entities at the national level, prioritisation on RFMO issues and political will is needed. The IATTC Secretariat collaborates by reminding the countries of their obligations and the corresponding deadlines and monitoring compliance.

4.3 Institutional procedure

All the INCOPESCA actors involved in data reporting processes mentioned it is essential to develop more robust institutional procedures to comply with RFMO conservation and management measures. Despite the existence of a dedicated working group to deal with the data reporting process, it was documented that there are still challenges to their effective functioning and performance. Ideally, a single technical working group should manage both RFMOs, with a coordinator and at least one staff member from the research, fisheries information, registry and inspections departments who works or has worked on data reporting processes.

The figure of a lead coordinator should have the crucial role of continuously monitoring the conservation and management measures in force and calling regular meetings. Follow-ups and meetings should be planned based on a timetable that includes deadlines for each resolution. It is recommended that this lead coordinator is an official appointed by the Executive Presidency of INCOPESCA, taking into account the significant workload involved in the continuous follow-up of conservation and management measures.

A general aspect that needs to be considered throughout the process is the workload these activities represent for the different departments. However, as the information requires collaborative data analysis between the fisheries and aquaculture information department and the research department, it should be scheduled to start working one month in advance.

Given this feedback, the proposed procedure presented below serves as a protocol for action with five steps to exchange information between different actors with clear designated responsibilities (Figure 7):

1. Coordinator notification

The lead coordinator initiates the process by notifying the working group of the conservation and management measures to which a response is due.

2. Working group data request

The working group should be in charge of assessing and conducting the necessary data requests to the relevant departments to fulfil the requirements of the conservation and management measures. A prior discussion of the resolution among working group members provides a clear idea of what should be sent to the RFMO and requested from each department.

3. Working group data analysis

The working group analyses the data provided by the different departments following the requirements and templates requested in the conservation and management measures. A consolidated report is then generated and sent to the Directorate of Fisheries and Aquaculture Management to the attention of the director for decision.

The working group could identify gaps in data collection, formulate suggestions on remedial actions or improvements, and facilitate exchanging information and sharing knowledge among the members.

Figure 7 shows some types of information that should be entered during this procedure. Most of the data can be provided by the fisheries research department.

4. Director approval

The Director of Fisheries and Aquaculture Management is responsible for approving the report prepared by the working group and sending it to the Executive President of INCOPECSA.

5. Submission to RFMO

The INCOPECSA Executive President concludes the process by formally notifying and sending the information to the relevant RFMO.

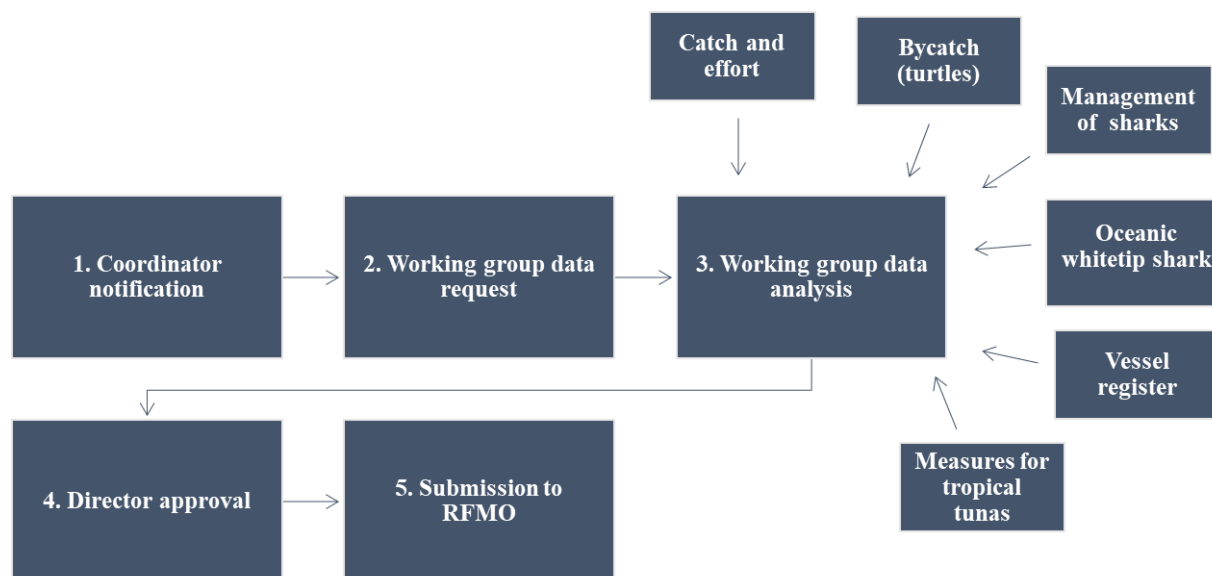


Figure 7. Procedure to respond to RFMO data requests.

5 CONCLUSIONS AND RECOMMENDATIONS

With the analysis carried out in this document, crucial information was documented to improve INCOPECA's capacities to report fisheries data to RFMOs. Identifying the conservation and management measures, their nature objectives and purposes resulted in a process that allows Costa Rica to have synthesised and easily accessible information on the measures to be complied with, deadlines and the fisheries involved.

The Directorate of Fisheries and Aquaculture Management should implement strong guidelines on performance review on institutional compliance of RFMOs. The procedure for proper attention to the data reporting process presented in this research, with emphasis on the presence of a lead coordinator, should be included in this guideline. This can be considered for the rest of the data requirements from other international organisations.

Political and institutional will and human and financial resources are needed to improve the data reporting process. As these are part of Costa Rica's challenges, it is recommended to initiate a dialogue with the fisheries sector and the industry to identify options for support. These sectors should be aware of the challenges and the commercial consequences of non-compliance with the measures.

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8 APPENDICES

Appendix 1. Fisheries data to be reported, deadlines and the fisheries or vessels involved in each IATTC resolution.

Resolution or recommendation	Title	Fisheries data requested and deadline	Vessels or fisheries involved
C-03-05	Data provision	By June 30 of each year: Catch and effort data by species and fishing gear	Vessels targeting species covered by the Convention
C-04-05	Consolidated resolution on bycatch	Urge governments with vessels targeting species covered by the Convention to provide the required bycatch information as soon as possible. Voluntarily: data on bycatches of sea turtles.	Vessels targeting species covered by the Convention
C-05-03	Conservation of sharks caught in association with fisheries in the Eastern Pacific Ocean	Each CPC shall annually report data for catches, effort by gear type, landing and trade of sharks by species, where possible, in accordance with IATTC reporting procedures, including available historical data. CPCs shall send to the IATTC Secretariat, by May 1 , at the latest, a comprehensive annual report of the implementation of this resolution during the previous year.	Vessels targeting species covered by the Convention
C-11-02	Mitigate the impact on seabirds of fishing for species covered by the IATTC	Members and cooperating non-Members (CPCs) shall report to the IATTC on their implementation of the IPOA-Seabirds, including, as appropriate, the status of their National Plans of Action for reducing incidental catches of seabirds in longline fisheries. -CPCs shall inform the IATTC, by September 1, 2011, and annually thereafter , of the mitigation measures that their flag vessels plan to employ in the implementation of this resolution. -CPCs shall provide annually to the IATTC any available information regarding interactions with seabirds involving their flag vessels in the fishery, including bycatches of seabirds and details of seabird species and all relevant information available from observer or other monitoring programs.	Longline
C-11-05	List of longline fishing vessels over 24 meters (LSTLFV) authorised to operate in the eastern Pacific Ocean	Each CPC shall notify the Director of any changes affecting the LSTLFV List at any time they occur .	Longline fishing vessels over 24 meters

Resolution or recommendation	Title	Fisheries data requested and deadline	Vessels or fisheries involved
C-11-10	Conservation of oceanic whitetip sharks caught in association with fisheries in the Antigua Convention Area	CPCs shall record inter alia, through the observer programs, the number of discards and releases of oceanic whitetip sharks with indication of status (dead or alive) and report it to IATTC.	Fisheries covered by the Convention
C-15-04	Conservation of mobulid rays caught in association with fisheries in the IATTC convention area	CPCs shall record, inter alia through the observer programs, the number of discards and releases of Mobulid rays, indicating the status (dead or alive) and report it to the IATTC, including those surrendered under paragraph 3.	Fisheries with inter alia through observer programs. Except for small-scale and artisanal fisheries exclusively for domestic consumption.
C-16-05	Management of shark species	CPCs shall require their fishers to collect and submit catch data for silky and hammerhead sharks and shall submit the data to the IATTC in accordance with IATTC data reporting requirements. - CPCs shall also record, through observer programs or other means, for purse-seine vessels of all capacity classes, the number and status (dead/alive) of silky sharks and hammerhead sharks caught and released and report it to the IATTC.	Fisheries covered by the Convention.
C-17-02	Conservation measures for tropical tunas in the eastern Pacific Ocean during 2018-2020 and amendment to resolution C-17-02	Each CPC shall submit to the Director, by July 15 of each year , a national report on its updated national compliance scheme and actions taken to implement these measures, including any controls it has imposed on its fleets and any monitoring, control, and compliance measures it has established to ensure compliance with such controls.	Purse seine: 4-6 class capacity. Longline > 24 m length. Pole-and-line, troll, and sportfishing vessels, and purse-seine vessels of IATTC capacity classes 1-3 (182 metric tons carrying capacity or less) and longline vessels less than 24 meters length overall, are not subject to these measures, except those related to the management of FADs.

Resolution or recommendation	Title	Fisheries data requested and deadline	Vessels or fisheries involved
C-18-06	Regional vessel register	Each CPC shall supply to the Director with the information requested in paragraph 2. -Each CPC shall promptly notify the Director of any modifications to the information listed in paragraph 2. -Each CPC shall also promptly notify the Director with the information requested in paragraph 4. -CPCs shall notify the Director by June 30 each year of their vessels, excluding recreational fishing vessels, on the Regional Vessel Register flying their flag that were actively fishing in the IATTC Convention Area for species covered by the Convention from January 1 to December 31 of the previous year.	Vessels that have been authorised to fish in the Antigua Convention Area for species covered by the Convention. The record shall contain only vessels that fly the flags of CPCs.
C-19-04	Mitigate impacts on sea turtles	CPCs shall report to the Director annually, by June 30 (beginning in 2022), the information in paragraph 4 in a standardised format, unless it is already submitted in accordance with other requirements, such as observer programs.	Purse seine / longline

Resolution or recommendation	Title	Fisheries data requested and deadline	Vessels or fisheries involved
C-19-05	Conservation measures for shark species, with special emphasis on the silky shark (2020-2021)	Silky sharks surrendered according to paragraph 2 shall be reported to the secretariat. CPCs shall inform the IATTC Secretariat the use of certification procedures indicated paragraph 4. -Data derived from the control and inspection measures mentioned in paragraph 4 shall be communicated to the secretariat, in accordance with IATTC data submission requirements. -CPCs shall notify the Director, before October 1 of 2020 , the single period of restricted use of steel leaders referred to in paragraph 7 which will be observed for the calendar year. -CPCs shall require the collection and submission of catch data for silky sharks, in accordance with IATTC data reporting requirements. -CPCs shall also record, through observer programs and other means, for purse-seine vessels of all capacity classes, the number and status (dead/alive) of silky sharks caught and released and report it to the IATTC.	Purse seine / longline
C-19-08	Scientific observers for longline vessels	CPCs shall submit operational data collected by observers from the previous year, consistent with the Minimum Data Reporting Standards (Annex B), to the Director no later than June 30 of each year . -Unless otherwise specified by the SAC, CPCs shall submit other reporting under this resolution by March 31 of each year .	Longline fishing vessels greater than 20 meters length.
C-20-06	Tropical tuna conservation in the EPO during 2021 Pursuant to RES C-20-05	Each CPC shall submit to the Director, by July 15 of each year , a national report on its updated national compliance scheme and actions taken to implement these measures, including any controls it has imposed on its fleets and any monitoring, control, and compliance measures it has established to ensure compliance with such controls.	Purse seine: 4-6 class capacity and longline > 24 m length that fish for yellowfin, bigeye, and skipjack tunas in the Convention Area. Pole-and-line, troll, and sportfishing vessels, and purse-seine vessels of IATTC capacity classes 1-3 (182 metric tons carrying capacity or less) and longline vessels less than 24 meters length overall, are not subject to these measures, except those related to the management of FADs.

Resolution or recommendation	Title	Fisheries data requested and deadline	Vessels or fisheries involved
C-21-04	Conservation measures for tropical tunas in the eastern Pacific Ocean during 2022-2024.	Each CPC shall submit to the Director, by July 15 of each year , a national report on its updated national compliance scheme and actions taken to implement these measures, including any controls it has imposed on its fleets and any monitoring, control, and compliance measures it has established to ensure compliance with such controls	Purse seine: 4-6 class capacity and longline > 24 m length that fish for yellowfin, bigeye, and skipjack tunas in the Convention Area. Pole-and-line, troll, and sportfishing vessels, and purse-seine vessels of IATTC capacity classes 1-3 (182 metric tons carrying capacity or less) and longline vessels less than 24 meters length overall, are not subject to these measures, except those related to the management of FADs.
C-21-06	Conservation measures for shark species, with special emphasis on the silky shark (2022-2023)	Silky sharks surrendered according to paragraph 2 shall be reported to the secretariat. CPCs shall inform the IATTC Secretariat of the use of certification procedures indicated in paragraph 4. -Data derived from the control and inspection measures mentioned in paragraph 4 shall be communicated to the secretariat, by IATTC data submission requirements. -CPCs shall notify the Director, before October 1 of 2020 , the single period of restricted use of steel leaders referred to in paragraph 7 which will be observed for the calendar year. -CPCs shall require the collection and submission of catch data for silky sharks, in accordance with IATTC data reporting requirements. -CPCs shall also record, through observer programs and other means, for purse-seine vessels of all capacity classes, the number and status (dead/alive) of silky sharks caught and released and report it to the IATTC.	Purse seine / longline