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REPORT OF THE ISSF WORKSHOP ON THE IMPORTANCE OF TROPICAL TUNA FISHERIES OF LARGE AND SMALL SCALES



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Report of the ISSF Workshop on the Importance of Tropical Tuna Fisheries of Large and Small Scales

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ABSTRACT

Understanding the contributions of different fisheries to tuna-stock and bycatch impacts is important for designing effective monitoring and management measures. The workshop examined how tropical tuna fisheries of different scales are defined, monitored and managed across the four tropical tuna Regional Fisheries Management Organizations (t-RFMOs), and whether available data could support comparisons of their impacts. A principal finding was that no common RFMO-wide definition of small-scale (SSF), intermediate-scale (ISF) or large-scale fisheries (LSF) exists across the t-RFMOs. The use of terms such as artisanal, coastal and large-scale varies by organization and conservation and management measure. Vessel size alone does not adequately characterize fishery impacts, and fleets comprised of smaller vessels should not be assumed to have lower impacts. Available RFMO data can support comparisons among fisheries of different scales for some gears and fleets, but gaps in catch and bycatch information limit these analyses. Bycatch information is generally less complete than target-tuna information, especially for data-limited small-scale fisheries and longline fleets with low observer coverage. The workshop identified priorities for harmonized fleet characterization and minimum data collection and reporting standards, improved data quality and uncertainty reporting, risk-based monitoring, better alignment between reporting and management measures, and cross-RFMO cooperation. In doing so, it would be more useful to classify fisheries using various criteria rather than a single one, such as vessel size. These improvements would strengthen the basis for assessing fishery impacts and determining appropriate management responses across fleet sectors.

The workshop was informed by presentations from experts from FAO, the t-RFMOs and others, as well as by a study commissioned for the workshop (Harley, 2026).

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The International Seafood Sustainability Foundation (ISSF) — a global coalition of seafood companies, fisheries experts, scientific and environmental organizations, and the vessel community — promotes science-based initiatives for long-term tuna conservation, FAD management, bycatch mitigation, marine ecosystem health, capacity management, and illegal fishing prevention. Helping global tuna fisheries meet and maintain sustainability criteria to achieve the Marine Stewardship Council certification standard is ISSF's ultimate objective. To learn more, visit iss-foundation.org, and follow ISSF on Facebook, X, Instagram, YouTube, and LinkedIn.

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LIST OF ACRONYMS

Acronym	Meaning
CMM	Conservation and Management Measure
CPC	Contracting Party or Cooperating non-Contracting Party
CWP	Coordinating Working Party on Fishery Statistics
EM	Electronic monitoring
FAO	Food and Agriculture Organization of the United Nations
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
IOTC	Indian Ocean Tuna Commission
ISF	Intermediate scale fisheries (not SSF or LSF)
LOA	Length overall
LSF	Large-scale fisheries
MCS	Monitoring, control and surveillance
t-RFMO	Tuna Regional Fisheries Management Organization
SSF	Small-scale fisheries
WCPFC	Western and Central Pacific Fisheries Commission

1. INTRODUCTION, BACKGROUND AND OBJECTIVES

Global catches of tropical tunas (bigeye, skipjack and yellowfin) currently amount to 5.5 million tonnes annually and constitute an important source of protein and livelihoods (ISSF 2026). These catches are taken by a wide spectrum of fisheries, ranging from small coastal vessels to large distant-water vessels both using a range of different gears. Sustainable management of these tuna stocks hinges on the ability to monitor catch and effort across all sectors of the fisheries; however, current management frameworks, monitoring and data availability differ substantially along this continuum. Larger industrial fleets are often subject to more intensive monitoring and vessel-specific requirements, while information on smaller fishing vessels is frequently less complete and monitoring requirements are fewer. These information gaps for the smaller-scale sectors of these fisheries pose potential risks to accurately assess the status of these stocks, which serve as the basis for management measures. At the same time, the terms used to describe fishery scale—such as artisanal, coastal, small-scale, medium-scale, industrial and large-scale—are not consistently defined across t-RFMOs, their members, or even within some t-RFMOs regulations.

Recognizing the need to strengthen the characterization of small-scale, large-scale and intermediate-scale tuna fisheries to serve as the foundation upon which size-based frameworks within the t-RFMOs could be developed/enhanced, ISSF convened the workshop to examine definitions, data availability, governance and impacts of tropical tuna fisheries operating at different scales. The workshop was informed by presentations from experts from FAO, the t-RFMOs and others, as well as by a study commissioned for the workshop (Harley, 2026). A list of participants is provided in **Appendix 1**, and the presentations are included in **Appendix 2**.

Participants also recognized that many improvements discussed in the workshop would require substantial technical and financial capacity that is not currently available to all t-RFMO members. Strengthening data collection and management, particularly for data-limited fisheries, therefore needs to be considered together with capacity-building support.

2. DEFINITIONS AND FLEET CHARACTERIZATION

The workshop found that there are no common t-RFMO definitions for SSF, ISF or LSF vessels or fisheries. Contrary to a simple assumption that LSF is uniformly defined by a 20 m or 24 m vessel-length threshold, the presentations showed that definitions and thresholds are t-RFMO- and conservation measure-specific. Some measures use vessel length, while others use carrying capacity, fishing area or operational characteristics, and some use terms such as “artisanal”,“small-scale” or "large scale" without defining them. Likewise, “artisanal”, “small-scale” and “coastal” should not be treated as universally interchangeable: they overlap in some t-RFMO statistical systems or national contexts but not across all t-RFMOs.

Participants identified three approaches to achieve more consistency in vessel classifications for tuna fisheries:

(a) One approach to achieve consistency could be to use the FAO Matrix for the Characterization of Fishing Activities (Savoré, 2022), or something similar, to score and characterize major tuna-catching fleets, and then cluster them into different fleet classes.

(b) Another approach could be to use simple size thresholds (e.g., <12 m LOA for SSF, >=24 m for LSF and 12-24 m for intermediate ones), although workshop participants recognized this approach as overly simplistic, because a single length criterion cannot capture how vessels actually operate. Where such thresholds are used, national data collection requirements may provide insights into thresholds that are common to many t-RFMO members.

(c) A third approach could be to define as SSF only those tuna-targeting fleets identified by Gillett (2011), plus any other similar ones that have emerged in the intervening period, in addition to LSF (e.g., >=24 m) and intermediate ones.

Regardless of the adopted approach, the aim would be to achieve more consistency in classification. However, strict criteria/classifications may not be possible as some fleets are composed of different vessel types/sizes.

Across these approaches, participants emphasized that fleet characterization should, where feasible, consider more than vessel length, to better characterize vessels and their potential activity/impact. Relevant descriptors used in various studies include carrying capacity, fishing area, trip duration and autonomy, propulsion and mechanization, preservation and storage of catch, gear, target species, fishing mode and fleet segment. Recreational fisheries should also be characterized explicitly rather than assumed to fall within a size scale.

The Workshop noted that the FAO SSF Guidelines (FAO, 2015) deliberately do not define SSF. The purpose of a common characterization would be analytical comparability, not necessarily adoption of a universal label, nor a basis for reducing support to SSF. Neutral categories or “types” could be used if terms such as "small-scale" or "artisanal" create legal or political difficulties. Any classification used for management should also be designed with awareness that it may influence the resolution with which members collect and report future data.

3. CATCH DATA AVAILABILITY

A central question considered by the workshop was whether, once a workable vessel or fishery classification is established for fisheries targeting tunas, nominal catch data held by t-RFMO Secretariats can be assigned to SSF, ISF and LSF categories without requiring substantial external expertise. **Table 1** provides a summary. “Available at the Secretariat” does not necessarily mean that the data are in the public domain.

3.1 IATTC

IATTC catch reporting under Resolution C-03-05 is principally organized by species, gear, year and spatial resolution rather than by a universal vessel-scale field. As a result, nominal catches cannot generally be divided directly into small-, intermediate- and large-scale components across all gears, and bycatch reporting, which is less consistent, is also generally organized by gear. The feasibility of assigning catch to scale differs substantially by fishery and gear.

IATTC classifies purse-seine vessels into six size classes based on a vessel’s carrying-capacity in metric tonnes (mt). Classes 1–5 cover vessels up to 363 mt and Class 6 covers vessels above 363 mt. This system, in use since the 1950s, is not a formal definition of SSF or LSF, but it provides a practical basis for grouping vessels by scale. Class 6 vessels must carry an observer under the AIDCP (100% coverage), and observers record species-specific information for several bycatch groups. Vessels in Classes 1–5 are generally not required to carry observers except in specific circumstances (e.g. when one or several wells are sealed), or on a voluntary basis, so coverage is much less complete, although voluntary and national programs provide additional information (current observer rates are ~50%).

For longline, several regulatory thresholds coexist. The large-scale tuna longline vessel list applies to vessels >24 m LOA; observer requirements (5% coverage) apply to vessels >20 m; and electronic monitoring standards distinguish small (<20 m), medium (20–24 m) and large (>24 m) longliners. Scientific work is also developing a five-category longline framework (large-scale, advanced medium-scale, medium-scale, small-scale commercial and small-scale coastal) that combines vessel length together with operational attributes such as autonomy, fishing area, propulsion, preservation, equipment, and mothership use (Fuller et al. 2026).

Overall, IATTC can currently assign target tuna and bycatches to vessel scale most confidently for Class-6 purse-seine vessels. For longline, the scale categories are still being developed, and low observer coverage limits the reliability of bycatch estimates.

3.2 ICCAT

ICCAT offers a different route to scale-based attribution. Task 1 nominal catch is reported by species, fleet and gear, and Task 2 catch-and-effort data use the same fleet concept. Where CPCs use dedicated fleet codes for artisanal, industrial or other nationally-defined segments, catches can therefore be identified for those segments across gears. However, most CPCs report under a single fleet, with catches separated only by gear (e.g. longline, purse seine or baitboat). The ST01 form, used to report Task 1 Fleet Characteristics (T1FC), provides information on vessel size, tonnage, vessel numbers and fishing effort. However, T1FC data are not directly linked to Task 1 Nominal Catch (T1NC) or Task 2 records. Additionally, submission of the ST01B form, which covers small-scale fleets, is optional, so this information is often unavailable for the fleets where it would be most useful for scale-based analyses.

The principal limitation is comparability. Fleet is a CPC-defined concept, and some CPCs distinguish artisanal or coastal fleets while others submit catches under a single fleet. This does not necessarily reflect a choice not to segment. Reporting a separate fleet requires the capacity to collect and estimate Task 1 and Task 2 catch-effort and size data at that level. For small-scale fisheries, this can be challenging because of large numbers of vessels, dispersed landing sites, multiple gears and limited sampling resources. Where this capacity is lacking, CPCs may report small-scale catches together with other fleets or report them separately without the corresponding Task 2 data. The same gear code may also be used for both smaller and industrial fisheries. In such cases, detailed fleet-characteristic information does not by itself permit nominal catch to be disaggregated by fishery scale. ICCAT therefore has potentially broad analytical capacity, but it depends on CPCs being able to collect and report data consistently at the fleet segment level.

The same Task 1 structure is used for tuna and non-tuna species, so non-tuna catches (including landings and discards) can potentially be associated with differentiated fleet segments. The statistical system is therefore better suited to identifying nationally-defined fleet segments than to applying one harmonized Commission-wide scale classification.

3.3 IOTC

IOTC provides one of the clearest existing routes among the four t-RFMOs for assigning tuna and tuna-like nominal catch to broad fishery categories. Historically, its data reporting framework distinguished longline, surface and coastal fisheries. Coastal fisheries corresponded broadly to artisanal fisheries, while longline and surface fisheries were treated as industrial. Historical nominal catch series can therefore be aggregated into broad artisanal and industrial fishery types.

In 2022, the IOTC Secretariat introduced a revised fishery definition for data reporting that describes fisheries through combinations of fishing purpose, area of operation, vessel-length class, gear and gear configuration, fishing mode and target species (IOTC Secretariat, 2022). The framework moves away from a simple artisanal/industrial dichotomy toward small-, medium- and large-scale fishery types.

The revised framework is not restricted to a single gear and is especially relevant because coastal fisheries can be multi-gear, including gillnets, small purse seines, ringnets, longlines, handlines and trolling. CPCs are starting to use the revised fishery codes in data submissions, and this is expected to continue in the future. However, a reconstruction of historical records may be more difficult. For non-IOTC species, retained-catch reporting can be mandatory or voluntary depending on the gear group.

3.4 WCPFC

WCPFC annual catch estimates are reported by flag, fleet, gear and species. Fleet codes can sometimes distinguish components such as coastal or small-scale fleets, but fleet-based size differentiation is not a universal mandatory catch-reporting field. The Commission also receives the number of active vessels by flag, fleet and gear for specified gears, with gear-specific vessel-size categories. These vessel statistics provide useful fleet structure but are not directly linked to annual catch estimates in a way that allows all catches to be assigned to vessel-size classes.

Operational logbook data provide a basis for scale-based analysis for the principal industrial purse-seine, longline, pole-and-line and troll fleets. These data can be linked to the vessel record, which contains vessel length and tonnage, and therefore can potentially be aggregated into vessel or fleet size categories. Coverage of operational data is lower and detailed vessel data is generally lacking for other gears, including important handline and other small-scale fisheries in the region. Annual catch estimates from some artisanal fisheries and several other fisheries also remain uncertain or incomplete.

Observer data are primarily available for purse seine and longline, with much higher coverage in purse seine (generally aiming for 100% in the high seas and multiple EEZs while for longline coverage is around 5%). Observer data are important for bycatch estimation but do not provide equivalent information across all fleet scales. Overall, WCPFC can reconstruct scale for particular fleet/gear combinations—especially where operational data link catches to vessel characteristics—but its catch reporting is not a universal catch-by-scale system.

Summary

***Table 1**. Comparison of the ability of the four tropical tuna RFMOs to assign target catches and bycatches to different vessel size groups.*

t-RFMO	Tuna catch by scale	Non-tuna catch / bycatch by scale	Main route to differentiation
IATTC	Partial; strongest for purse seine and increasingly possible for longline.	Partial and uneven; strongest for observed large purse seiners; limited for longliners >20m.	Purse-seine capacity classes; longline size/operational classifications.
ICCAT	Partial and potentially across gears when CPC fleet segments are reported separately; not by vessel size class, as a fleet may include vessels of different sizes.	Potentially partial; reported non-target catches and discards can follow fleet segmentation, while observer-based bycatch information and its coverage vary by fishery.	CPC-defined fleet × gear reporting.
IOTC	Yes for broad historical artisanal/industrial types; moving toward small/medium/large multidimensional categories.	Potentially attributable when reported, but non-IOTC species retained catch reporting is voluntary.	Fishery type combining area, vessel size, gear and other attributes.
WCPFC	Partial/indirect; strongest where operational data can be linked to vessel records.	Limited/indirect and uneven by gear.	Fleet/gear codes, gear-specific vessel-size categories and linked operational data.

4. GOVERNANCE AND THE USE OF VESSEL SCALE IN t-RFMO FRAMEWORKS

The Conventions and conservation and management measures of the four t-RFMOs do not provide a common legal classification of fishery scale; where measures define scale, they do so for their own purposes. The IATTC, ICCAT and IOTC Conventions do not establish general definitions of artisanal, small-scale, medium-scale, industrial or large-scale fishing vessels. The WCPFC Convention is different in that it expressly recognizes the interests of artisanal, subsistence and small-scale fishers, including in provisions concerning developing States, but it does not technically define those categories. Across all four organizations, CMMs

more commonly use purpose-specific thresholds or descriptors rather than a single scale definition. **Table 2** provides a summary.

***Table 2**. Definitions of vessel scale in the Conventions and CMMs of the four tropical tuna RFMOs.*

t-RFMO	Convention	Examples in measures/data frameworks	Character
IATTC	No general scale definitions.	Resolution C-11-05, which establishes a list of longline vessels authorized to fish tuna and tuna-like species, applies to longline vessels >24 m; C-19-08 on longline observer coverage applies to vessels >20 m; C-22-03 defines "large-scale tuna fishing vessels" for transshipment by fishing area/target species; C-24-09 on electronic monitoring standards uses <20 m, 20–24 m and >24 m longline categories for the purposes of camera placement; C-25-09 on silky sharks excludes vessels <12 m using manually-operated gear and that do not deliver to motherships; purse-seine capacity classes are operational rather than formal SSF/LSF definitions. C-25-01 on tuna conservation measures applies to purse-seine vessels of size Class 4–6 and longline vessels >24 m. The terms "artisanal" and/or "small-scale" are referenced in several Resolutions with no corresponding definition: C-03-05 (data provision); C-04-05 REV (bycatch); C-04-04 (sea turtles); C-25-08 (sharks); C-25-09 (silky shark).	Measure- and gear-specific; overlapping thresholds.
ICCAT	No general scale definitions.	Bluefin tuna measure defines "small-scale coastal vessel" using at least 3 of 5 criteria (including <12 m LOA, territorial waters, short trips and small crew). Tropical-tuna measures recognize SSF without a universal definition.	CPC fleet segmentation plus species/measure-specific definitions.
IOTC	No general scale definitions.	Historical statistical framework treated coastal as artisanal; transshipment measure defines large-scale tuna vessels using a ≥24 m/RAV criterion; newer data framework uses multidimensional small/medium/large fishery types.	Movement toward multidimensional fishery characterization.
WCPFC	Recognizes artisanal, subsistence and small-scale fishers but does not define them.	Tropical-tuna CMM uses "artisanal small-scale vessels" in a reporting exemption without defining the phrase; other measures use vessel-size and gear thresholds.	Social recognition in Convention; operational management mainly by size, gear and geography.

The workshop noted that differential treatment of vessels across different fisheries sectors can have important consequences. SSF or smaller vessels may be exempt from particular reporting, observer coverage, retention or management provisions, while other measures use different size thresholds for similar fleets. Such differences may be justified by operational feasibility or development considerations, but they can also create gaps between management obligations and the data required to evaluate their effects (Haas & Shahid, 2026). Vessel length alone is especially problematic as a proxy: a relatively small vessel may operate in the high seas, have substantial fishing power or interact significantly with vulnerable species, while a larger vessel may operate in a very different fishery context. In addition, SSF may broadly define a class of vessels participating in a fishery, but it does not define the overall scale of the fleet (e.g., total number of vessels). This can influence the impact of the fleet as a whole, which may not be 'small' relative to total fishery removals.

The governance challenge is therefore not simply to agree on terminology. It is to make the relationship among fishery characterization, data requirements and management obligations transparent and internally coherent. This is particularly important when exemptions based on vessel size or an undefined "artisanal/small-scale" category affect the availability of information needed for stock assessment, bycatch evaluation or compliance monitoring.

Article 24 of the UN Fish Stocks Agreement requires States to take account of the special requirements of developing States when establishing conservation and management measures. This includes safeguarding fisheries access and avoiding adverse effects on subsistence, small-scale and artisanal fishers, women fishworkers and indigenous people in developing States, particularly small island developing States. However, the absence of an agreed definition of small-scale fisheries across t-RFMOs could complicate consistent implementation of these safeguards. According to Harley (2026), the challenge is to identify the fisheries concerned and design monitoring and reporting requirements appropriate to their characteristics, capacities and potential impacts, with support where needed, while giving effect to these safeguards.

5. IMPACTS ON TROPICAL TUNAS

Available fishery information is insufficient from many RFMO members to fully quantify the relative contributions of SSF, ISF and LSF to fishing mortality. Across t-RFMOs, key uncertainties remain around catch and fishing effort, and spatiotemporal distribution of both, species and size composition of the catch, and fleet characterization, across all fleets. Although these limitations exist for most fleets, they are not homogeneous among fisheries and should be made explicit when comparing impacts across scales.

The impact of a fishery can be described in several ways. Catch volume is the simplest metric, but it does not capture differences in selectivity, age composition or biological effect. More informative analyses can estimate fishing mortality or the contribution of individual fisheries to spawning-biomass depletion (so-called "impact plots"; see Wang et al. 2009). Such analyses require fisheries to be identified explicitly within stock assessments and are particularly feasible with assessment models such as Stock Synthesis and MULTIFAN-CL. Where assessment fisheries can be mapped to broader scale categories, results can be presented both by the detailed assessment fishery and by SSF, ISF and LSF groupings.

The supporting review (Harley, 2026) identified several patterns from available stock-assessment impact analyses. Industrial purse-seine fisheries dominate impacts on skipjack, while fisheries catching smaller bigeye can contribute disproportionately to spawning-biomass depletion relative to their catch weight. Non-industrial fisheries are particularly important for yellowfin in the Indian and western Pacific Oceans, and various fisheries in the region also contribute to impacts on bigeye. These findings do not provide a complete comparison among harmonized SSF, ISF and LSF categories, but demonstrate that existing assessments already provide useful fishery-specific evidence of relative impacts, even though the data available for the various fisheries can be quite different in terms of their uncertainty.

Participants stressed that “small-scale” should not be equated with “small impact.” Biological impact is an empirical question and depends on total removals, selectivity, effort, spatio-temporal overlap with stocks and other characteristics. Likewise, uncertainty about a poorly monitored fishery should not be interpreted as evidence of low impact.

The workshop discussed the need to distinguish compliance with reporting requirements from the underlying quality and uncertainty of fisheries data. The workshop also noted that there is no common approach to characterize and communicate fisheries-data quality and uncertainty. Existing scoring systems can describe reporting performance, but a broader framework could communicate confidence in catch, effort, size-composition and fleet-characterization data and indicate how uncertainty should be reflected in assessments and management evaluations.

6. OTHER ECOLOGICAL IMPACTS AND BYCATCH

Participants reviewed information on sharks, rays, turtles, marine mammals and other non-target or vulnerable species. Through standard t-RFMO processes, operational and bycatch information is generally most complete for industrial purse-seine fisheries. Major gaps occur at both ends of the scale continuum: data-limited SSF are difficult and costly to monitor representatively, while some intermediate and large-scale fisheries —especially longline and smaller vessel purse-seine fleets— have low observer coverage.

The workshop considered that a uniform monitoring model is unlikely to be efficient for all fisheries. Small-scale fisheries may involve thousands (or tens of thousands) of vessels and landing sites, multiple gears and highly variable activity, making routine at-sea observer programs impractical (although advances in Electronic Monitoring technologies could provide future solutions). Conversely, the absence of routine observers should not preclude estimation. Targeted fishery-specific studies, port and landing-site sampling, self-reporting,

electronic monitoring where feasible, and human observer programs can be used in combination according to fishery characteristics.

Risk-based monitoring is especially relevant for vulnerable species. Rather than assuming that all SSF have similar bycatch profiles, monitoring can prioritize fisheries and locations where significant interactions are plausible. The IATTC targeted assessment of shark catches in artisanal coastal fisheries (Ovando et al. 2023) was discussed as an example of a focused approach that can generate information for subsequent estimation and prioritization.

Additional information may also be available outside routine t-RFMO submissions, including scientific literature, FAO databases, Marine Stewardship Council assessment and audit reports and other technical studies. Such sources may help characterize fleets and identify potential impacts, although their methods, coverage and compatibility with t-RFMO datasets need to be evaluated before use.

7. ADDRESSING DATA AND GOVERNANCE GAPS

A recurring theme during the workshop was the value of greater harmonization among t-RFMOs without imposing a single simplistic definition of scale. Harmonization can focus on common descriptors and code lists—such as vessel dimensions, fishing mode, area of operation, mechanization, gear configuration and fleet category—so that different regional classifications can be mapped onto a comparable analytical framework.

The Coordinating Working Party on Fishery Statistics (CWP) provides an existing mechanism for this work. Current international code lists cover core components such as vessel types, fishing gears, and species, but additional standardized descriptors would better characterize fisheries along the small-to-large-scale continuum. The FAO Matrix approach (Savoré, 2022) offers one possible framework for testing whether multidimensional descriptors can be converted into comparable fishery classes.

The workshop also identified a need for closer alignment within each t-RFMO between data collection requirements and management measures. Different vessel-size thresholds across measures can create situations in which a fleet is subject to a reporting requirement but exempt from the related management provision, or vice versa. Such inconsistencies can reduce both data completeness and management effectiveness. Review should therefore focus on coherence among existing measures and on the operational characteristics and impacts of fisheries, rather than assuming that a single vessel-length threshold reliably identifies SSF.

Improved access to standardized fisheries data is another component of harmonization. Global products such as the FAO-FIRMS Global Tuna Atlas can support comparative analysis, but only if underlying gear and fleet codes are internally consistent and sufficiently disaggregated. Public-domain rules and confidentiality safeguards also affect whether data can be used for independent analyses and cross-t-RFMO comparisons.

8. CONCLUSIONS

The workshop concluded that tropical tuna fisheries occur along a continuum of scale that is not adequately represented by a universal vessel-length threshold or by assuming that particular gears are inherently small-scale or large-scale. Existing t-RFMO systems already contain many of the building blocks needed for improved vessel or fleet characterization —vessel records, fleet codes, gear categories, operational data and fishery-specific classifications— but these components are unevenly linked to catch and bycatch information.

The four t-RFMOs provide different examples of how scale can be reconstructed. IATTC purse-seine capacity classes provide a strong gear-specific basis; ICCAT fleet segmentation can identify nationally-defined fishery

components across gears; IOTC has an emerging multidimensional scale framework; and WCPFC can link much of the industrial operational data to vessel characteristics while annual catch reporting remains primarily fleet- and gear-based.

It should not be assumed that fleets made up of smaller vessels necessarily have a lower impact than fleets made up of larger vessels. Asche and Smith (2026) found that healthy fish stocks and environmental sustainability in general are independent of scale but highly dependent on governance. Improving understanding of relative impacts will require better characterization of fisheries, clearer descriptions of data quality and uncertainty, more complete and risk-based monitoring of target and non-target catches, and closer alignment between data-reporting and management requirements. Cross-t-RFMO cooperation can improve comparability while allowing each organization and its members to retain classifications suited to regional fisheries and governance needs.

9. RECOMMENDATIONS

The workshop recommendations are consolidated below, in no particular order. Many will require collaboration among relevant players and t-RFMO capacity-building support for members with limited data-collection and management resources.

9.1 Tuna RFMOs, Secretariats and scientific bodies

- Work with CPCs to develop comparable ways to characterize fisheries along the small-to-large-scale continuum, preferably using multiple descriptors rather than vessel length alone. A common framework does not need to impose common labels; mappable fishery “types” could be sufficient.
- Review existing CMMs and data-reporting requirements to identify contradictory or inconsistent vessel-size criteria and improve alignment between management obligations and the information needed to evaluate them. Vessel length alone should not determine exemptions where fisheries may have significant target-stock or bycatch impacts. In general, impacts should be evaluated before exemptions are warranted.
- Expand and standardize information routinely reported on vessel characteristics and operational fishing activities, including vessel specifications, gear and configuration, catch, effort and relevant spatial/temporal attributes, while reusing existing reporting systems where possible.
- Develop a common approach to characterize and communicate fisheries-data quality and uncertainty, and guide how uncertainty categories should be reflected in stock assessments, management evaluations and impact analyses.
- Stock assessments should identify all major fisheries separately, state which fleets comprise each assessment fishery and identify any fleets that are not included and explain why. Assessment outputs should support fishery-specific impact analyses.
- Consider making stock-assessment input and output files publicly available once assessment results have been endorsed by the relevant scientific body, with safeguards for confidential information where necessary, so that fishery-specific impact analyses and independent examination of assessment results can be undertaken.
- Assist CPCs in improving target-catch and bycatch information for data-limited fisheries through risk-based pilot studies and targeted sampling, combining observer programs, port sampling, self-reporting and electronic monitoring as appropriate to each fishery.
- Work toward characterizing the catch composition of fisheries beyond only the species currently designated for special reporting, recognizing practical and capacity constraints.

- Review public-domain data rules to address legitimate confidentiality concerns while maximizing availability of data needed for science, transparency and cross-t-RFMO comparison.
- Maintain accessible, up-to-date compendia of active management measures so that data requirements, exemptions and management provisions can be compared across t-RFMOs.

9.2 CPCs, FAO and the CWP

- Facilitate cross-t-RFMO review and harmonization of vessel, catch, effort and size-reporting concepts, including evaluation of whether the FAO Matrix can provide a common framework for characterizing tuna fisheries along the size scale continuum.
- Develop or standardize code lists for additional fishery descriptors relevant to scale, including vessel dimension types, areas of operation, fishing modes, mechanization and preservation/storage characteristics, in coordination with t-RFMO Secretariats.
- CWP and FIRMS partners should consider addressing inconsistencies in gear definitions used in the FIRMS Global Tuna Atlas, including duplicate or inconsistent codes, “gear not known” records and aggregation of distinct fisheries under a single code. Common visualization conventions could also improve comparability.
- Update global reviews of bycatch in purse-seine, longline and other tuna fisheries to reflect current fisheries, monitoring systems, available data, and bycatch mitigation practices.

9.3 Other organizations and data initiatives

- Maintain and support shared information resources that synthesize bycatch mitigation and fishery information, including BMIS, where these resources continue to meet t-RFMO and research needs.
- Explore systematic ways to identify and evaluate relevant information from sources such as MSC assessments, scientific publications and technical reports, while documenting data provenance, representativeness and compatibility with Rt-FMO datasets.

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AI Disclosure

Artificial Intelligence was used to prepare an initial draft report from written notes and presentations. The report was then reviewed and revised by participants for its final version.

Appendix 1. Workshop participants

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Appendix 2. Workshop presentations

The slides from six presentations made during the workshop are included here. Four of the six presentations were made by t-RFMO staff who were previously asked the following questions to provide consistent context among them:

1. Does your organization define any of the following, and how? Industrial; Large-scale; Medium-scale; Small-scale; Artisanal
2. Does your organization receive tuna catch data classified by any of the categories in (1)? Is this a requirement or is it optional?
3. Does your organization receive other (non-major commercial tuna species) catch data classified by any of the categories in (1)? Is this a requirement or is it optional?
4. Does your organization regulate any of the categories in (1) differently?
5. Does your organization have a vessel register that differentiates vessels by the categories in (1)?
6. Please provide any other information that you think would be useful to the workshop

ISSF Workshop on the Importance of Tropical Tuna Fisheries of Large and Small Scales

Leanne Fuller, Jon Lopez, Daniel Fuller, Salvador Siu, Marlon Román, Joydelee Marrow, Sylvain Caillot, Nick Vogel, Ricardo Belmontes, Jean-Francois Pulvenis, and Alexandre Aires da-Silva

Bilbao, Spain | June 30 - July 2, 2026

IATTC / Antigua Convention Framework

1 Does IATTC define any of the following and how?

Industrial | Large-scale | Medium-scale | Small-scale | Artisanal

"artisanal" — ✗ NOT DEFINED

APPEARS IN 7 Resolutions:

- C-03-05 – Data Provision (par. 5b*)
- C-04-05 Rev.2 – Consolidated Bycatch (par. 6)
- C-04-07 – Sea Turtles Program (par. 2)
- C-15-04 – Mobulid Rays** (par. 5; defined)
- C-23-09; C-25-05 – Dorado (preamble & par. 1)
- C-25-09 – Silky Sharks (2026–2028) (preamble)

Used descriptively (e.g., "artisanal vessels", "artisanal fishery", "artisanal longline"). No formal definition provided in any resolution.

"small-scale" — ✗ NOT DEFINED

APPEARS IN 3 Resolutions:

- C-04-07 – Sea Turtles Program (par. 2)
- C-15-04 – Mobulid Rays** (par. 5; defined)
- C-25-08 – Sharks (par. 15)

Appears as "small-scale artisanal fisheries" in C-04-07. In C-25-08, used as "small scale, coastal fisheries" (no hyphen; paired with "coastal", not "artisanal"). No standalone definition given.

"industrial" — ✗ NOT DEFINED

APPEARS IN 3 Resolutions:

- C-23-09 – Dorado refers to data provision in C-03-05 (preamble)
- C-25-05 – Creation of a WG on Dorado to include artisanal & industrial fishing industries (par. 1)
- C-25-09 – Silky shark (preamble)

Used in IATTC scientific/background documents (e.g., SAC reports, working group papers) but absent from binding resolution language.

"large-scale" — ✓ DEFINED

APPEARS IN 2 Resolutions:

- C-22-03 – Transshipments (title & footnote)
- C-11-05 – Positive List of Longline Vessels (>24 m LOA) (title & par. 1)

DEFINED in C-22-03 (footnote 1): "Large-scale tuna fishing vessels are defined as all vessels fishing beyond areas of national jurisdiction or beyond each CPC-controlled areas and targeting tuna or tuna-like species."

* Exempts '*artisanal vessels*' from reporting effort; catch data reported as total annual catches

**Note: Resolution requirements exclude 'small-scale' and 'artisanal' fisheries used exclusively for domestic consumption; defined as <1.99 net tonnage (1969 International Convention on Tonnage Measurement of Ships).

1 Does IATTC define any of the following and how?

Industrial | Large-scale | Medium-scale | Small-scale | Artisanal

Resolution	Terminology used	Context	Definition	Notes
C-04-05 Rev.2 Consolidated Bycatch	artisanal	§6 (actions): study "species of large pelagic fish of interest to the **artisanal fishery**, particularly dorado"	No	Descriptive reference; no size, gear or operational criteria.
C-03-05 Data Provision	artisanal	§5(b): catch data from "**artisanal vessels**" may be reported as total annual catches only, without effort data	No	"artisanal" is not formally defined or equated with a size threshold.
C-04-07 Sea Turtles Program	artisanal small-scale	§2: high-priority research on "interaction between **small-scale artisanal fisheries** and bycatch of sea turtles in coastal areas"	No	Both terms used as modifier; coastal context implied but neither term defined
C-25-09 Silky Sharks 2026-28	artisanal industrial	Preamble: "fishing effort that affect the fishing mortality of sharks by multi-species longline fleets, both **artisanal and industrial**, in the coastal countries"	No	Preamble only. Describes the multi-species longline fleet context. Neither "artisanal" nor "industrial" is defined.
C-25-08 Sharks	small-scale	§15: data collection program shall include "monitoring of shark catches in **small scale, coastal fisheries**, as identified in SAC-15-10, by 2026"	No	No definition provided. The term references SAC-15-10 for scope.
C-22-03 Transshipments	large-scale	Title + operative text: "**large-scale** tuna fishing vessels" (LSTFVs) and "**large-scale** tuna longline fishing vessels" (LSTLFVs)	Yes – footnote 1	Defined as: vessels fishing beyond national jurisdiction or CPC-controlled areas, targeting tuna/tuna-like spp.
C-11-05 Positive List of Longline Vessels	large-scale	Title + operative text: establishes authorized list of "**large-scale** longline vessels" (>24 m LOA) permitted to fish in the EPO	Proxy (>24 m)	No explicit definition clause; vessel size threshold (24 m LOA) acts as de facto operational proxy

1 Does IATTC define any of the following and how?

Industrial | Large-scale | Medium-scale | Small-scale | Artisanal

PURSE-SEINE

ANSWER: Yes, to an extent

Vessels classified by **carrying capacity (mt)**

Not by 'industrial', 'small-scale', or 'artisanal' labels

Originally in short tons (1953); updated to metric tons (1996)

Classes used to determine observer obligations & closure applicability

Res. C-03-05 + Annual Reports 1953, 1996

Six Purse-Seine Size Classes

Class 1 < 46 mt	**Class 4** 182 – 272 mt
Class 2 46 – 91 mt	**Class 5** 273 – 363 mt
Class 3 92 – 181 mt	**Class 6** > 363 mt

Classes 1–5: informally referred to as "Small" purse-seine; observers not required except under special circumstances (e.g. sealed wells Res. C-12-08)

Class 6: "Large" purse-seine 100% observer coverage

Annual Report 1996 (p.216) | Classification applies to conservation measures, not formally as 'industrial' or 'artisanal'

1 Does IATTC define any of the following and how?

Industrial | Large-scale | Medium-scale | Small-scale | Artisanal

Longline Definitions in IATTC Resolutions

C-11-05 LSTLFV List	C-19-08 Observer Coverage	C-22-03 Transshipment	C-24-09 Electronic Monitoring	C-25-09 Silky Sharks
Vessels > 24 m LOA must be authorized to fish in the Convention Area	Vessels > 20 m LOA must carry a scientific observer	"Large-scale tuna fishing vessels" = all vessels targeting tuna beyond national jurisdiction	3 LL categories: Small (<20 m) Medium (20–24 m) Large (>24 m)	Vessels < 12 m LOA using manually operated gear & no mothership delivery are excluded from application

⚠ **Challenge: Inconsistent terminology and size thresholds across active resolutions, due to the Resolution's purpose**

CASE 1 — Scale Terminology Used Without a Formal Standardized Definition

- "artisanal" — used in C-04-05, C-03-05, C-04-07, and C-25-09 (preamble) — never formally defined in any resolution
- "industrial" — appears in C-25-09 preamble alongside "artisanal" — no definition provided
- "large-scale" — defined in C-22-03 (footnote 1) as vessels fishing beyond national jurisdiction targeting tuna — the only scale term with a formal definition

CASE 2 — Size Thresholds With No Associated Scale Terminology

- C-19-08 (>20 m LOA) — Observer / EMS coverage
- C-25-09 (<12 m LOA) — Exclusion from resolution application (manually operated gear, no mothership)

1 Does IATTC define any of the following and how?

Industrial | Large-scale | Medium-scale | Small-scale | Artisanal

Recommendations by the EBWG to characterize and classify Longline fleets

Ongoing Work EBWG-02 & -03 Recommendations

EB-02 | 2024 Staff tasked to characterize/classify longline fleets; Staff produced SAC-16-09 presented at EB-03 (2025)

*"the staff, in coordination with CPCs, develop and present to the Commission results of a process **to characterize and classify the longline fleets and their fisheries in the Convention Area,** distinguishing their dynamics and differentiated impacts, as well as the catchability of species, whether directed, associated or incidental."*

3 categories: Large-scale, Medium-scale, Small-scale (feedback: further separate 'true' large scale & 'true' pangas with outboard motors)

EB-03 | 2025 Continue work and include precise evaluations on individual aspects of each fleet; Staff produced an updated document: SAC-17-07 presented at EB-04 (2026)

*"that the work initiated and described in SAC-16-09 be continued, so that in coordination with the CPCs, field work and **more precise evaluations** on individual aspects of each fleet, the different segments exclusively of the **longline** fleets **targeting species under the Commission's mandate** can be distinguished."*

Revised from 3 to 5 categories: Large-scale, Advanced Medium-scale, Medium-scale, Small-scale commercial, Small-scale coastal

1 Does IATTC define any of the following and how?

Industrial | Large-scale | Medium-scale | Small-scale | Artisanal

⚠ **Key Challenge: Vessel classification terminology and definitions vary substantially across countries — it is difficult to define vessel characteristics that apply uniformly across all CPCs.**

Phase I | SAC-07-06b(ii) & SAC-07-06b(iii)

Belize, Costa Rica, El Salvador, Guatemala, Nicaragua, Panama (prior to 2015; contemporary information from CRI & PAN)

- Characterized EPO LL fleets into three broad types: distant-water LL, coastal State LL, and multi-species/multi-gear artisanal
- Highlighted substantial variation in "artisanal" fisheries across countries — different terminology, categories, and definitions used by each CPC
- Number of vessel sub-categories varied widely by country
- Classification criteria varied by country: vessel length (LOA), net registered tonnage (NRT), distance from coast, gear type, and autonomy — applied inconsistently across CPCs

Phase II | SAC-16 INF-V

Expanded to Mexico, Ecuador, Peru

- Confirmed and expanded Phase I findings: substantial variation and dynamics in "artisanal" fisheries by country persist across different categories/definitions

Collectively, both phases informed the LL vessel categories proposed in SAC-16-09 and updated in SAC-17-07

1 Does IATTC define any of the following and how?

Industrial | Large-scale | Medium-scale | Small-scale | Artisanal

Characteristic	Cat. 1 Large-Scale LL	Cat. 2 Adv. Medium-Scale LL	Cat. 3 Medium-Scale LL	Cat. 4 Small-Scale Commercial LL Likely REV Adv Sm-Scale	Cat. 5 Small-Scale Coastal LL Likely REV Sm-Scale
Autonomy	Months - year+	25-90 days	<25 days	<5 days	<5 days
Vessel length	>30 m	20-30 m	10-20 m	<10-12 m	<10 m
Fishing area	Primarily high seas / EEZ	May fish outside EEZs, primarily within EEZs	May fish outside EEZs, primarily within EEZs	National jurisdiction	National jurisdiction / coastal*
Propulsion	Diesel inboard	Diesel inboard	Diesel inboard	Diesel/gas inboard	Gasoline outboard *
Preservation	Advanced freezing (ultra-low)	May have adv. freezing	Ice (port + at sea)	Ice	Ice
Equipment	Sophisticated / mechanical	May have sophisticated / mechanical	Some fish-finding / mech. or manual	Basic / manual	May have basic / manual
# of hooks	>2,500	1,000-2,500	500-2,000	<=1,000	<=1,000
Mothership	NA	May operate as mothership	May operate as mothership	NA	May operate as catcher vessel
Target species	Tunas, billfish, sharks	Tunas, billfish, sharks, dorado	Tunas, billfishes, sharks, dorado, large pelagics	Switches: dorado to tunas, billfish	Switches: dorado to tunas, billfish
Seasonality	No seasonality	No seasonality	May change seasonally	May change seasonally	May change seasonally

*SAC-17-07 Table 8;Range extends when Cat. 5 vessels operate as catcher vessels with a mothership (may fish beyond EEZ). * Outboard propulsion is the key discriminator between Cat. 4 and Cat. 5. Both small-scale categories may use gears other than longline & switch target species depending on season and market conditions.*

1 Does IATTC define any of the following and how?

Industrial | Large-scale | Medium-scale | Small-scale | Artisanal

Longline Mothership Definition (SAC-17-07, Table 8)

A longline Mothership vessel is a longline vessel which tows up to 10 small-scale coastal longline vessels and provides material support. The function of the mothership vessel is to actively fish, supply water, fuel, provisions, bait and other fishing supplies, and to store the catch.

Actively Fishing	Supply Support	Fish Storage	Extended Range
Mothership participates directly in fishing	Fuel, water, provisions, bait for catcher vessels	Stores catch from up to 10 small-scale longline vessels	Extends trip duration of small-scale longline vessels; may operate outside the EEZ

SAC-17-07 Table 8 | Applies to Category 2 (Advanced Medium-Scale), Category 3 (Medium-Scale) and Category 5 (Small-Scale) as potential mothership/catcher vessel

2 Does IATTC receive tuna catch data classified by any of the categories in (1)?

NO Tuna catch data are provided pursuant to the main Resolution on Data Provision (C-03-05) and its associated technical specifications by gear type and area, not by vessel scale/size category.

How data ARE reported under Res. C-03-05 and its corresponding technical specifications

TASK I – Annual Catch Totals Catch & Effort Statistics	TASK II / Level 3	TASK II / Level 2	TASK II / Level 1	Length Frequency
§2.1 Catch Statistics: Gross annual removals & disposition (retained/discarded) by species, gear & year — round weight in metric tons §2.2 Effort Statistics: Number of fishing vessels by gear operating in the Convention Area per calendar year	Aggregated 5°×5° / month — mandatory minimum	Aggregated 1°×1° / month — encouraged	Set-by-set logbook data with gear config & target species; staff collects this data for most PS vessels	By set position or grid position — best available resolution
Required	Required	Encouraged	Encouraged	Encouraged

Annual totals (no spatial breakdown)

Spatially disaggregated (by area/gear/species)

Exceptions under C-03-05 §5: "*Artisanal*" vessels (§5b) and recreational fishing vessels (§5c) — total annual catches only, no effort data.

Resolution C-03-05 (2003) — data provision by gear type; no vessel-size category breakdown required

3 Does IATTC receive other (non-major commercial tuna species) catch data classified by any of the categories in (1)? Is this a requirement or is it optional?

PARTIAL — IATTC receives non-major commercial tuna species catch data by gear type, not by vessel scale category (exception: observer data for purse-seine vessels, which informally distinguishes "small" vs. "large")

Non-Commercial Tuna & Bycatch Species Received	How Data Are Classified
• Non-Commercial Tuna species (e.g., Bonitos: *Sarda* spp.; Black Skipjack: *Euthynnus lineatus* – see *Fishery Status Reports* e.g., SAC-17-01) • Bullet & frigate tunas (*Auxis* spp.) — see *Ecosystem Considerations Reports* e.g., EB-04-01 • Observer-reported bycatch (sea turtles, sharks, rays, large pelagic fishes, forage fishes) — see *Ecosystem Considerations Reports* e.g., EB-04-01 • Noting: PS SC6 observer data most comprehensive source for bycatch spp. • Shark species (resolution C-25-08); developing and strengthening data collection programs for small-scale coastal fisheries (ABNJ Tuna Projects Phases 1&2)	• By gear type — per C-03-05 • NOT by vessel size category

Res. C-03-05 | SAC-17-01 (Fisheries Status Report) | EB-04-01 (Auxis spp.) | Observer coverage: Class 6 PS (100% since 1993)

4 Does IATTC regulate any of the categories in (1) differently?

Partial — multiple resolutions apply different measures based on vessel size thresholds

Resolution	Measure	Applies to	Exempt / Reduced requirements
C-25-01	Tuna Conservation / Closures	PS Class 4–6 (closures) & LL > 24 m LOA (BET total annual catches)	PS Class 1–3 (except FAD measures - # of active FADs); LL < 24 m exempt
C-11-05	LSTLFV Authorized List	LL vessels > 24 m LOA	All others — general Vessel Register (C-24-07)
C-19-08	Observer on LL	LL vessels > 20 m LOA (5%)	LL vessels ≤ 20 m LOA
La Jolla Agreement 1992	Observer on PS	Class 6 purse-seiners (100% since 1993)	Class 1–5* purse-seiners (limited obs. cov. National Programs)

* Noting the voluntary TUNACONS observer program provides data on bycatch species for PS Class 1–5 vessels (nearly 50% coverage 2025)

Resolutions C-25-01, C-11-05, C-19-08 | La Jolla Agreement (1992 / AIDCP) for Class 6 PS | C-18-06 for general vessel register

5 Does IATTC have a vessel register that differentiates vessels by the categories in (1)?

Two registers, with partial scale-based differentiation

The general register (C-24-07) does not distinguish by size; the LSTLFV List (C-11-05) is a separate positive authorization list for LL > 24 m

Regional Vessel Register

Res. C-18-06 (as amended by C-24-07)

- Covers **ALL** vessels (regardless of gears deployed) authorized to fish in the Antigua Convention Area
- All CPCs' flag vessels — **no size threshold**
- Does NOT differentiate by industrial / small-scale categories

LSTLFV List

Res. C-11-05 (Large-Scale Tuna LL Fishing Vessels)

- Applies to **longline vessels > 24 m** LOA only
- Positive authorization list — vessels NOT on list are deemed unauthorized to fish, retain, transship, or land tuna in the EPO
- Maintained separately from the general vessel register
- Effectively the only size-based vessel list in IATTC

Resolution C-18-06 (as amended by C-24-07) | Resolution C-11-05 | Vessel register publicly available at iattc.org

6 Other potentially useful info: Benefits of classifying vessels & other relevant information

Why better fleet classification matters for IATTC

Resolve Ambiguous Terminology

'Artisanal', 'small-scale', 'industrial', 'large-scale' are referenced in resolutions without formal definitions, creating inconsistent CPC reporting

Strengthen Data Collection

Clear categories enable consistent reporting (C-03-05) and improve total estimates of removals — especially for small-scale fleets

Clarify Compliance Obligations

Help CPCs determine which vessels are mandated, encouraged, or exempt from specific measures

Guide Science & Conservation

Information on vessel characteristics helps guide science projects (e.g., BHRPs, ERAs, EMS), which contribute to best available science-based advice to inform CMMs

SAC-17-07 | EB-02 & EB-03 recommendations | Ongoing: Commission adoption of classification framework pending

6 Other potentially useful info: Benefits of classifying vessels & other relevant information

Summary of CPC Commentary — SAC-17-07

Data Gaps & Reporting Coverage

Significant data gaps exist for smaller-scale vessels. Compliance with existing reporting resolutions remains a priority, and support for CPCs to meet data obligations should be strengthened.

Overlapping Categories & Boundary Cases

How should vessels that straddle multiple category definitions be handled?

Scope Beyond Longline

Some vessels deploy gear other than longline (e.g., gillnet). Categories based solely on LL characteristics risk excluding or misclassifying vessels using other gear types.

Adaptive Fishers & Category Evolution

Fishing strategies evolve — fishers regularly adapt gear, area, and targeting. Categories must remain flexible enough to accommodate change while staying meaningful for management.

Scientific vs. Policy Application

Concern raised that classification categories are better suited for scientific purposes than for policy. Adoption as binding policy could have unintended influence on other RFMOs.

SAC-Endorsed Recommendation

"That a case-by-case analysis of the currently applicable resolutions be conducted to identify the vessel and fleet categories subject to each resolution's obligations — based on the characterization in SAC-17-07 and recognizing the value of this process for scientific and management work."

Points of Agreement: CPCs broadly support continued work on the classification framework. Consensus that categories should be refined iteratively, balancing scientific precision with practical applicability in policy and management contexts.

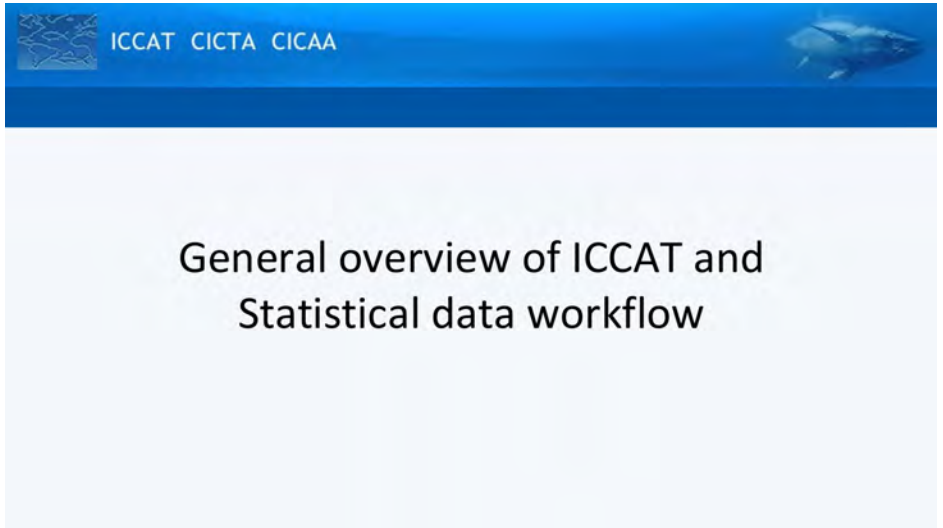
SAC-17-07 | Fleet Classification — CPC Commentary Summary | June 2026

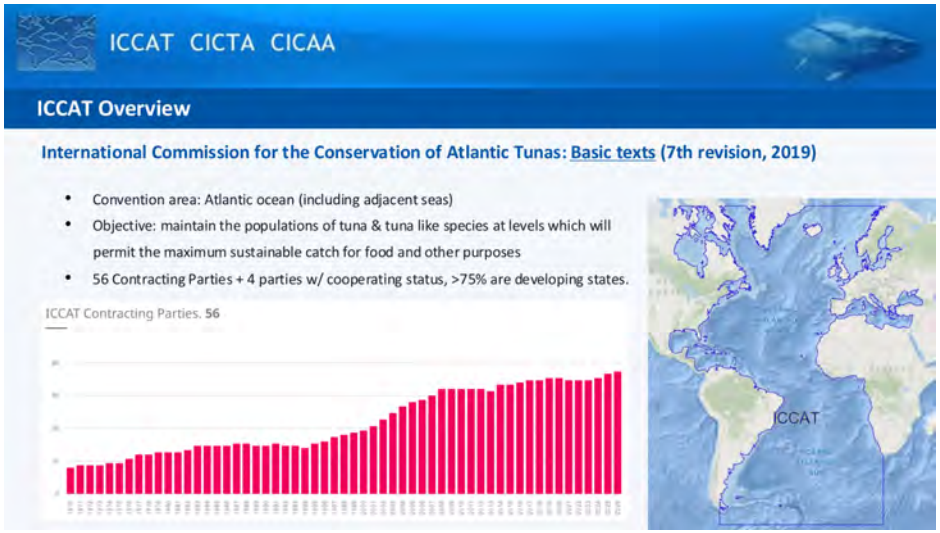
CIAT IATTC



Questions


Importance of Tropical Tuna Fisheries of Large and Small Scales
ICCAT Secretariat
Meeting: ISSF Workshop on the Importance of Tropical Tuna Fisheries of Large and Small Scales
Bilbao, Spain, June 30 - July 2, 2026
ICCAT CICTA CICAA


ICCAT CICTA CICAA
General overview of ICCAT and Statistical data workflow


ICCAT CICTA CICAA
ICCAT Overview
International Commission for the Conservation of Atlantic Tunas: Basic texts (7th revision, 2019)
Convention area: Atlantic ocean (including adjacent seas)
Objective: maintain the populations of tuna & tuna like species at levels which will permit the maximum sustainable catch for food and other purposes
56 Contracting Parties + 4 parties w/ cooperating status, >75% are developing states.
ICCAT Contracting Parties. 56
ICCAT


ICCAT CICTA CICAA
Stats data requirements workflow
CPCs
ICCAT Secretariat
DATA PROVISION
SCRS
Scientific advice
DATA COMPILATION
Compilation
Validation
Transformation
Reporting
DATA INTEGRATION
Compilation
Validation
Harmonization
Dissemination
OUTPUTS
Data completion summaries
Task 1-3 datasets
CATDIS / EFFDIS
Ad-hoc requests
ADVICE
COMMISSION
ANNUAL REPORT

ICCAT CICTA CICAA

Reporting obligation

Task-1 (annual)	• T1FC (fleet characteristics) • T1NC (nominal catches)	✓
Task-2 (monthly)	• T2CE (catch & effort) • T2SZ (size frequency samples) • T2CS (CPC catch-at-size)	✓
Task-3 (monthly or better)	• ST07 (support vessels) • ST08 (PS FAD deployment) • ST09 (Domestic observer prog.) :: allowed quarterly (for now) • ST13 (Traplines)	✓
Biological sampling (specimen based)	• Biological data (GBYP case: the main precursor) • Morphometry • Reproduction • Stomach content • Otoliths • Microconstituents • Tissues • Genetics • Parasitism • etc. • Maturity	…
Tagging (CTAG & ETAG)	• TG01 (Survey reports) • TG02 (CTAG Release/Recovery events) • TG03 (ETAG Release/Recovery events) • (next ?) ETAG raw data	…

ICCAT CICTA CICAA

Data submission

Standardized forms, single platform: IOMS

All the statistical forms needed to submit statistical or compliance data to the Secretariat are available on the ICCAT website

- Previously, those Excel forms were submitted via email
- Starting this year, all CPC must use the new IOMS system developed by the Secretariat

IOMS Main Features

- Electronic submission of forms
- Data validation and consistency checks
- Real-time access and updates for CPCs and the Secretariat
- Secure storage and traceability of all submitted information

IOMS

ICCAT CICTA CICAA

Data publication

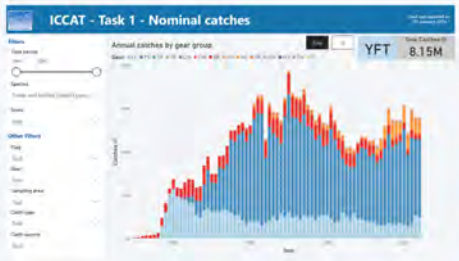
Public databases, exports and dashboards

Every year, the ICCAT secretariat provides on its website an updated version of all the standardized publications

- SCRS Catalogue
- Nominal catch information
- Sample fishing statistics and fish sizes

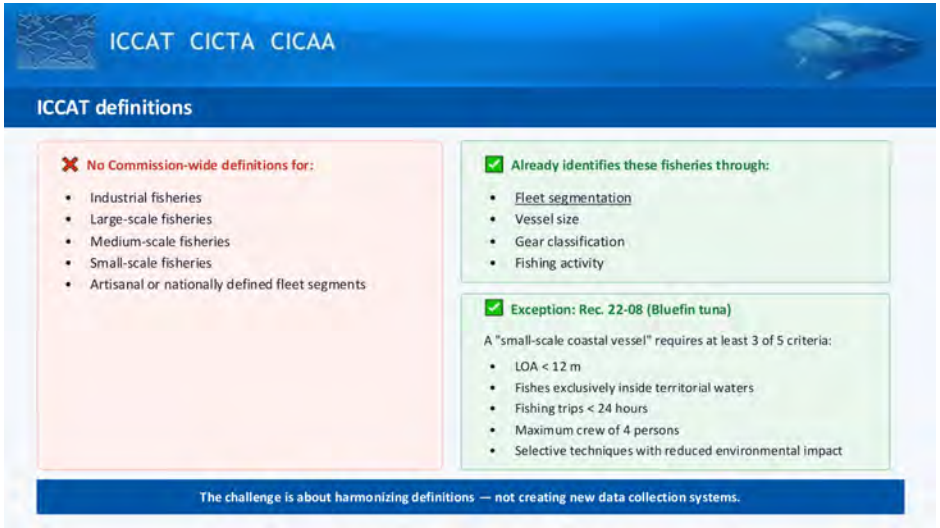
Multiple public dashboards are also published

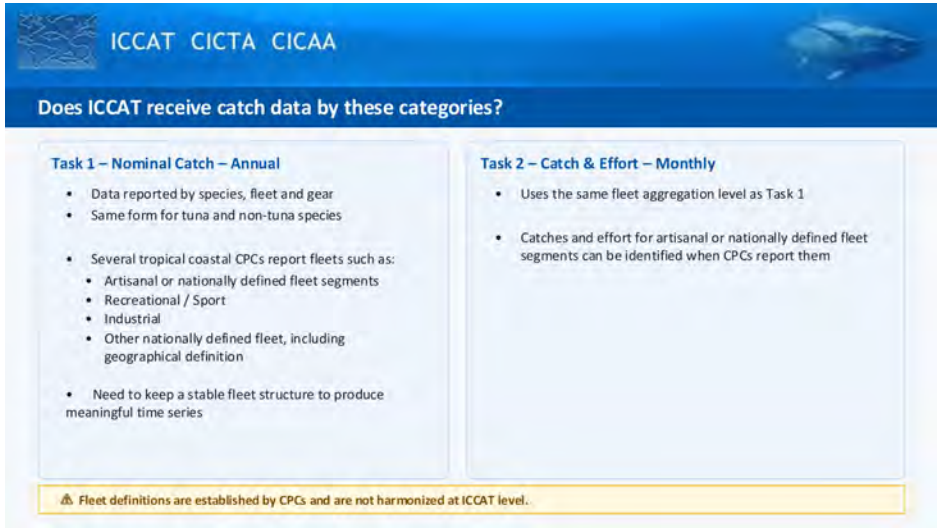
- Developed with Power BI
- Allowing rapid visualization
- Including GIS features

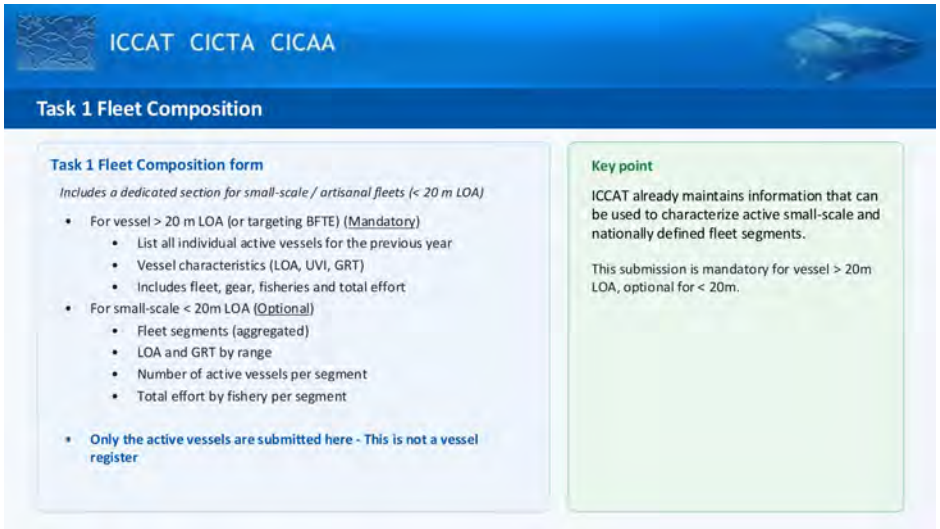


ICCAT CICTA CICAA

How ICCAT Characterizes and Monitors Fisheries Activities


ICCAT CICTA CICAA
ICCAT definitions
No Commission-wide definitions for:
Industrial fisheries
Large-scale fisheries
Medium-scale fisheries
Small-scale fisheries
Artisanal or nationally defined fleet segments
Already identifies these fisheries through:
Fleet segmentation
Vessel size
Gear classification
Fishing activity
Exception: Rec. 22-08 (Bluefin tuna)
A "small-scale coastal vessel" requires at least 3 of 5 criteria:
LOA < 12 m
Fishes exclusively inside territorial waters
Fishing trips < 24 hours
Maximum crew of 4 persons
Selective techniques with reduced environmental impact
The challenge is about harmonizing definitions — not creating new data collection systems.


ICCAT CICTA CICAA
Does ICCAT receive catch data by these categories?
Task 1 – Nominal Catch – Annual
Data reported by species, fleet and gear
Same form for tuna and non-tuna species
Several tropical coastal CPCs report fleets such as:
Artisanal or nationally defined fleet segments
Recreational / Sport
Industrial
Other nationally defined fleet, including geographical definition
Need to keep a stable fleet structure to produce meaningful time series
Task 2 – Catch & Effort – Monthly
Uses the same fleet aggregation level as Task 1
Catches and effort for artisanal or nationally defined fleet segments can be identified when CPCs report them
Fleet definitions are established by CPCs and are not harmonized at ICCAT level.


ICCAT CICTA CICAA
Task 1 Fleet Composition
Task 1 Fleet Composition form
Includes a dedicated section for small-scale / artisanal fleets (< 20 m LOA)
For vessel > 20 m LOA (or targeting BFTE) (Mandatory)
List all individual active vessels for the previous year
Vessel characteristics (LOA, UVI, GRT)
Includes fleet, gear, fisheries and total effort
For small-scale < 20m LOA (Optional)
Fleet segments (aggregated)
LOA and GRT by range
Number of active vessels per segment
Total effort by fishery per segment
Only the active vessels are submitted here - This is not a vessel register
Key point
ICCAT already maintains information that can be used to characterize active small-scale and nationally defined fleet segments.
This submission is mandatory for vessel > 20m LOA, optional for < 20m.


ICCAT CICTA CICAA
Gear classification and artisanal / recreational fisheries
Gears commonly associated with artisanal / recreational fisheries
Handline (HAND)
Trolling lines (TROL)
Traps (TRAP)
Gillnets (GILL)
Rod-and-reel (RR)
Haul seine (HS)
Artisanal / recreational fisheries can often be identified through a combination of:
Fleet segment / national category
Vessel size
Gear type
Volume of catches
Species composition

ICCAT CICTA CICAA

For Tropical tunas, does ICCAT Regulate Differently by Fleet Scale Category?

No. ICCAT does not define or regulate tropical tuna fisheries by fleet scale (industrial / artisanal / small-scale). Regulation is structured around two axes: **species management maturity** and **CPC-level quota category. (Rec 24-01)**

Axis 1 — Species Management Maturity

BET	**TAC:** 73,011 t (2025–2027) **Allocation:** Individual CPC quotas **Compliance:** Payback, triggers, weekly reporting **Status:** Most developed framework
YFT	**TAC:** 110,000 t — unallocated by CPC **Allocation:** Under discussion (2025–2027) **Compliance:** Limited — review if exceeded **Status:** Framework under development
SKJ	**TAC:** None **Allocation:** None **Compliance:** CMP adopted for W. Atlantic (2024) **Status:** Early-stage management

Axis 2 — CPC Quota Category (BET example)

Category A *Large quota holders*	Individual binding quotas (e.g. EU, Japan) Annual capacity plans — mandatory Monthly/weekly catch reporting Payback & carry-over rules apply
Category B *Mid-tier quota holders*	Individual binding quotas (e.g. Brazil, Ghana) Annual capacity plans — mandatory Monthly/weekly catch reporting Same payback rules as Category A
Category C *Small harvesters — collective pool*	Collective pool 6,100 t; trigger at 1,575 t Capacity plan only if >500 t caught Quarterly reporting only Exempt from payback & carry-over

ICCAT CICTA CICAA

Recommendation 24-01:
Small-scale fisheries, including those operating in overseas territories and outermost regions of a CPC, shall be given special consideration to their specificities and needs.

ICCAT CICTA CICAA

Additional considerations and lessons learned

1. Fleet is the key variable

- Fleet segmentation is ICCAT's primary mechanism to distinguish fisheries
- Fleet remains a CPC-defined concept, making comparisons across CPCs difficult
- Task 1 reports catch by fleet and gear, but fleet categories across CPCs are not comparable

2. Multiple dimensions are needed

No single variable is sufficient. Identification requires combining:
- Fleet segment • Vessel size • Gear type
- Species composition • Volume of catches • Fishing area

3. Leverage existing data systems

ICCAT already collects relevant information through:
- Task 1 Nominal Catch
- Task 2 Catch & Effort
- ST01 Fleet Composition

Priority: harmonize definitions, not create new reporting requirements

4. Avoid increasing the reporting burden

ICCAT already requires from CPCs:
- 35 statistical reporting requirements
- 100+ compliance reporting requirements

Any additional reporting should reuse existing data collections

Key question: Would harmonizing a small number of common descriptors (vessel size, gear, fishing area, fleet category) be more effective than defining "artisanal" universally?

ICCAT CICTA CICAA

Conclusions

ICCAT dimensions for identifying these fisheries

Dimension	Available
Fleet segment	✅
Vessel size	✅
Gear type	✅
Catch data	✅
Effort data	✅
Harmonized definitions	❌

Final takeaway

ICCAT's statistical systems are more advanced than its regulatory framework regarding small-scale and artisanal or nationally defined fleet segments.

The main challenge is harmonizing definitions, within and across CPCs — and more broadly across tuna RFMOs — rather than creating new data collection mechanisms.

Harmonizing definitions across tuna RFMOs: a shared challenge, not just an ICCAT one.

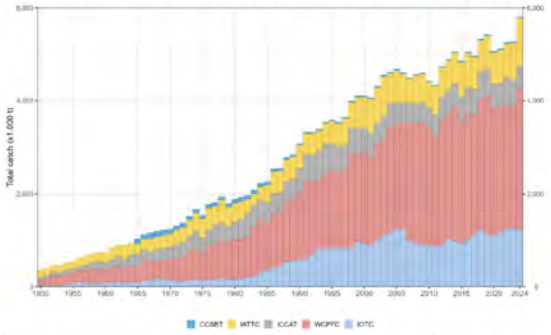
Workshop on the Importance of Tropical Tuna Fisheries of Large and Small Scales

The case of the Indian Ocean Tuna Commission

ISSF Small and Large-Scale Fisheries Workshop, June 30 – July 2 2026

IOTC-Secretariat@fao.org

~1/4TH of Global Tuna Catch From the Indian Ocean



Annual global catch (metric tonnes) of oceanic and neritic tuna as available from tuna Regional Fisheries Management Organisations (source: Global Tuna Atlas)

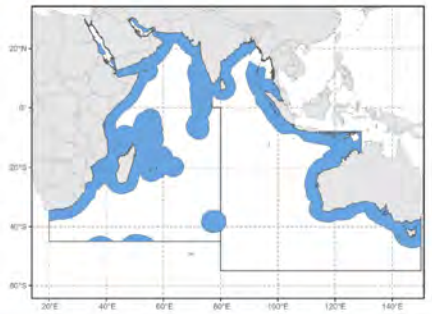
https://zenodo.org/records/20364152
https://www.fao.org/fishery/collection/firms-tuna-atlas/en

IOTC Area of Competence



https://www.fao.org/fishery/geonetwork/srv/eng/catalog.search#/metadata/fao-rfb-map-iotc

~20 million km² Coastal Waters



National Jurisdiction Areas (NJAs) of IOTC Contracting Parties within the IOTC Area of Competence

https://www.fao.org/fishery/geonetwork/srv/eng/catalog.search#/metadata/wja_level1

IOTC Record of Authorized Vessels

Core Vessel Resolutions 19/04 (soon 26/04) and 10/08

- Reporting of vessels authorized to operate in the IOTC Area of Competence:
  - Length overall ≥24 m
  - Length overall <24 m operating in waters outside the EEZ of the flag State
- Reporting of RAV-recorded vessels that were active in previous year
- Information includes vessel identifiers, gear(s) and attributes, including target species, type of vessel, length overall, gross tonnage, and total fish hold volume

https://rav.iotc.org/

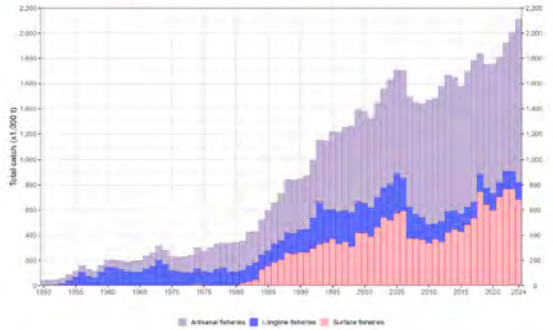
IOTC Fishery Categories

Core-Data Resolutions 15/02 (soon 26/06)

- **Longline Fisheries**: Fisheries undertaken by vessels in the IOTC Record of Authorized Vessels that use longline gear
- **Surface Fisheries**: Fisheries undertaken by vessels in the IOTC Record of Authorized Vessels other than longline fisheries; in particular those using purse seine, pole-and-line, gillnets, handlines and trolling gear
- **Coastal Fisheries**: Fisheries targeting IOTC species other than longline or surface

https://data.iotc.org/reference/latest/domain/fisheries/#Fishery_Types
https://data.iotc.org/reference/latest/domain/fisheries/#Fishery_Categories

IOTC Nominal Catch by Fishery Category



Annual time series of catch (metric tonnes; t) of tuna and tuna-like species by fishery category, 1950-2024

https://iotc.review.fao.org/shiny/app_direct/data_browser/

IOTC Fishery Types

Conservation and Management Measures

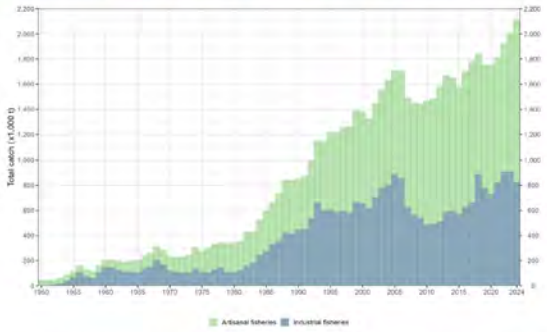
- Coastal fisheries = Artisanal fisheries (Resolution 15/02)
- Longline and surface fisheries = Industrial fisheries
- 'Artisanal' removed from Resolution 25/06

Fishery definition (IOTC-2022-WPDCS18-13)

- Combination of Vessel Length Class and Area of Operation defines small scale, medium-scale, or large-scale
- E.g., commercial vessel <15 m operating on high-seas: medium-scale

https://data.iotc.org/fisheries/wizard/en/

IOTC Nominal Catch by Fishery Type

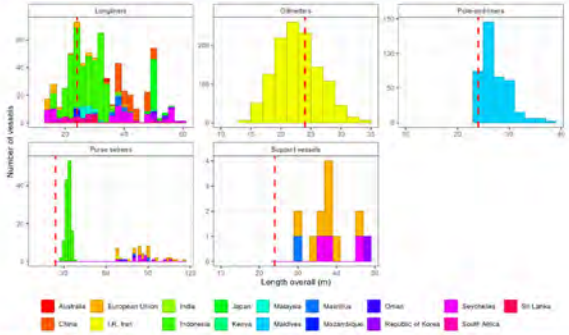


Annual time series of catch (metric tonnes; t) of tuna and tuna-like species by fishery type, 1950-2024

https://iotc.review.fao.org/shiny/app_direct/data_browser/

ISSF Small and Large-Scale Fisheries Workshop

Industrial Fishing and Support Vessels



Size Composition of Authorized Fishing Vessels. Number of vessels by length overall class (metres; m) as reported in the IOTC Record of Authorised Vessels for 2022. Vertical red dashed line = 24 m

https://rav.iotc.org/

ISSF Small and Large-Scale Fisheries Workshop

Coastal/Artisanal/Small Fishing Vessels

- Status of small-scale fleets generally assessed through boat frame surveys conducted every 5-10 years
- Complexity of monitoring due large number of vessels, to multigear and multispecies dimensions, high variability in activity, numerous landing sites
- Beach seines, Danish seines, liftnets, gillnets, small purse seines, ringnets, set and drifting longlines, rod-and-reels, handlines, trolling lines, and traps
- Tuna and tuna-like species mostly targeted in line fisheries
- Links between size, distance to the coast, motorisation, and preservation methods

ISSF Small and Large-Scale Fisheries Workshop

A Large Spectrum of Designs and Technology



"G18", Grande Comore, Ikoni, 2026-03



"GAP", Grande Comore, Bangua, 2026-03



Longliner, Sri Lanka, Ngombo, 2024-12



Pirogues, Kenya, Mombasa, 2026-05



Handliners, Indonesia, Aceh, (source: IPNLF)





Pirogue, Madagascar, Mahajanga, 2024-05

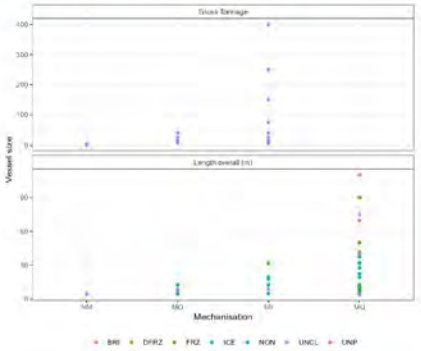


Pirogues, Mozambique,, 2025-04

ISSF Small and Large-Scale Fisheries Workshop

Voluntary Form on Fishing Craft Statistics

- Number of active vessels by architecture, mechanisation type, vessel measurement type, fish preservation method, fish storage method
- Improved reporting over last years
- May include duplicated records and vessels not fishing for tuna

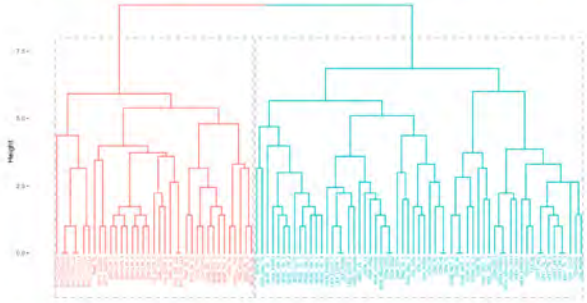


https://data.iotc.org/reference/latest/forms/Form-2FC.html

Information from FAO Small-Scale Matrix

- Scoring system to describe fishery components: vessel size, motorisation, gear, mechanisation, refrigeration, employment, operations, and use of the catch (Funge-Smith 2019)
- Global approach applied to small-scale fisheries (Basurto et al. 2025, Aguion et al. 2025)
- Application to 12 IOTC CPs: Bangladesh, Comoros, EU (Mayotte, Reunion), Indonesia, Kenya, Maldives, Pakistan, Seychelles, Sri Lanka, South Africa, Tanzania, and Thailand
- 98 fishing units identified with scores ranging from 5 to 37

Classification of Fisheries of Similar Features



Fishing units identified and grouped by hierarchical clustering analysis following the application of the FAO matrix to fisheries of 12 IOTC Contracting Parties

https://www.iotc.org/documents/WPDCS/18/16
https://www.iotc.org/documents/WPDCS/19/23

Conclusions (1/2)

- Lack of IOTC definitions for artisanal/small-scale/subsistence fisheries
- Coastal and artisanal considered equivalent in Resolution 15/02 but "artisanal" removed from Resolution 26/06
- Trying to move away from *artisanal/industrial* to *small/medium/large scale* with revised definition of IOTC fisheries for data reporting
  - Purpose / Area of operation / Vessel length range / Gear / Gear configuration / fishing mode / target species
  - Fisheries wizard: https://data.iotc.org/fisheries/wizard/en/
- Very similar approach to the definition of small-scale fisheries recently proposed by Haas and Shahid (2026)

https://www.iotc.org/documents/WPDCS/18/13

CONCLUSIONS (2/2)

- Flexible framework where the concept of artisanal may differ according to study objectives
- Ongoing questions at the Technical Committee on Allocation Criteria
- Major interest to further analyse the FAO matrix data
- Standardise code lists (purpose, storage, etc.) at CWP

Data availability

- Catches available by fisheries, so by fishery types and categories
- Reporting of non-IOTC species retained catches is voluntary

REFERENCES

- Aguión, A., Basurto, X., Funge-Smith, S., Gorelli, G., Iversen, E., Mancha-Cisneros, M. del M., Gutierrez, N.L., 2025. Five archetypes of small-scale fisheries reveal a continuum of production strategies to guide governance and policymaking. Nat Food 1–12. https://doi.org/10.1038/s43016-025-01237-5
- Basurto, X., Gutierrez, N.L., Franz, N., Mancha-Cisneros, M. del M., Gorelli, G., Aguión, A., Funge-Smith, S., Harper, S., Mills, D.J., Nico, G., Tilley, A., Vannuccini, S., Virdin, J., Westlund, L., Allison, E.H., Anderson, C.M., Baio, A., Cinner, J., Fabinyi, M., Hicks, C.C., Kolding, J., Melnychuk, M.C., Ovando, D., Parma, A.M., Robinson, J.P.W., H. Thilsted, S., 2025. Illuminating the multidimensional contributions of small-scale fisheries. Nature 1–10. https://doi.org/10.1038/s41586-024-08448-z
- Haas, B., Shahid, U., 2026. Is small really small? Re-characterising tuna fisheries in the Indian Ocean. Journal of Environmental Management 400, 128717. https://doi.org/10.1016/j.jenvman.2026.128717
- Funge-Smith, S., 2019. Towards a statistical definition of small-scale fisheries. Presented at the Coordinating Working Party on Fishery Statistics. Twenty-Seventh Meeting of the Fisheries Subject Group, FAO, Rome, Italy, 15 - 18 May 2019, p. 7.
- Rousseau, Y., Watson, R.A., Blanchard, J.L., Fulton, E.A., 2019. Defining global artisanal fisheries. Marine Policy 108, 103634. https://doi.org/10.1016/j.marpol.2019.103634

ISSF Small and Large-Scale Fisheries Workshop

WCPFC: synopsis of size-based provisions



ISSF Workshop
30 June – 2 July 2026

Tiffany Vidal
tiffanyv@spc.int
Pacific Community (SPC) – on behalf of the **WCPFC**

Vessel category reporting

Annual reporting of the number of active vessels by gear type and size category (required)

Gear	Category 1	Category 2	Category 3	Category 4
Longline	0 - 50 GRT	51 - 200 GRT	201- 500 GRT	500+ GRT
Pole and line	0 - 50 GRT	51 - 150 GRT	150+ GRT	-
Purse seine	0 - 500 GRT	501 - 1000 GRT	1001 - 1500 GRT	1500+ GRT

Fleet code: *can* be used to distinguish fleet components based on size (optional). Has historically been defined by SPC to support assessments (e.g., different selectivities)

Gear codes: *could* be used to distinguish industrial gears (e.g., pole-and-line) from the more artisanal/SS counterparts

Reporting and Management

Catch reporting for all key species (including non-tunas) is not based on vessel size class, but by gear type, but we are starting to receive some artisanal data. Focused on tunas, but small amounts of other species.

The register of vessels includes size-based and gear characteristics but doesn't categorize vessels based on those characteristics (applies to vessels fishing beyond national jurisdiction). Specifies conditions for providing an IMO/LR which are based on size/weight.

The terms industrial, commercial, large-scale, medium-scale, small-scale, and artisanal are absent from reporting requirements and management measures; however, Article 10 2 (c) of the Convention does provide for the use of vessel sizes for management.

CMMs

Tropical Tuna Measure [CMM 2025-02 (49)]: Operational level catch and effort data in … **except for artisanal small-scale vessels** shall be provided to the Commission…

VMS[2014-02 (6b)]: It shall apply to all vessels **in excess of 24 metres in length** with an activation date of 1 January 2008, and it shall apply to all vessels **24 metres in length or less** with an activation date of 1 January 2009 (outside national jurisdiction).

Markings [2004-03]: height of marking letters for vessel identification **varies by vessel size**

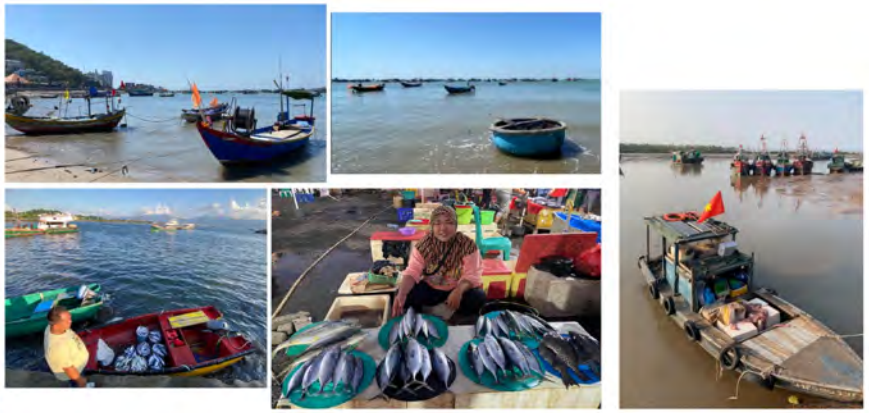
Purse Seine Vessel Limits [2025-02 (43)]: … shall keep the number of purse seine vessels flying their flag **larger than 24m** with freezing capacity operating between 20°N and 20°S … to the applicable level under CMM 2013-01

Vague references & challenges

- Although infrequent, small-scale and artisanal are used occasionally without definition
- Monitoring catch and effort across size classes – challenges for data and interpretation (e.g., a day of fishing for SS purse seine vs. industrial)
- Ability to collect data for SS in general… Gear types used may not fall into tradition single-gear categories; implications for data collection, assessments, and compliance.

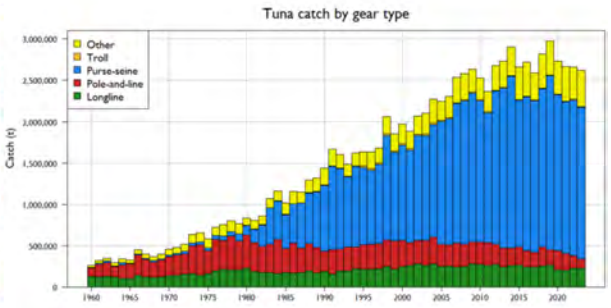


Small-scale fishing



Tuna catch by gear





Contribution to key tuna catches

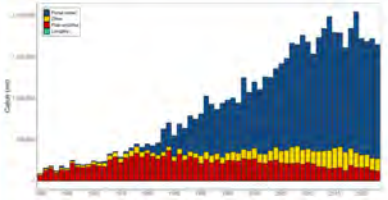


Figure 7.1: WCPFC-CA skipjack catch (mt) by gear



~10% Skipjack catches from small-scale gears

~31% Yellowfin catches from small-scale gears



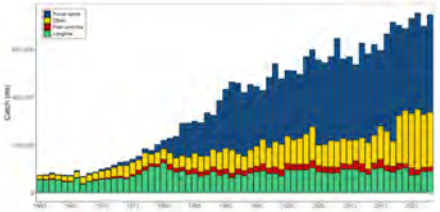


Figure 7.5: WCPFC-CA yellowfin catch (mt) by gear

The problem (SS)

Substantial challenges and uncertainties exist in estimating total fishing effort

Effort is used to scale reported catches using CPUE

Without accurate effort estimates – it's hard to know how reasonable the resulting tuna catches are...

These issues add uncertainty to the stock assessments and management measure effectiveness







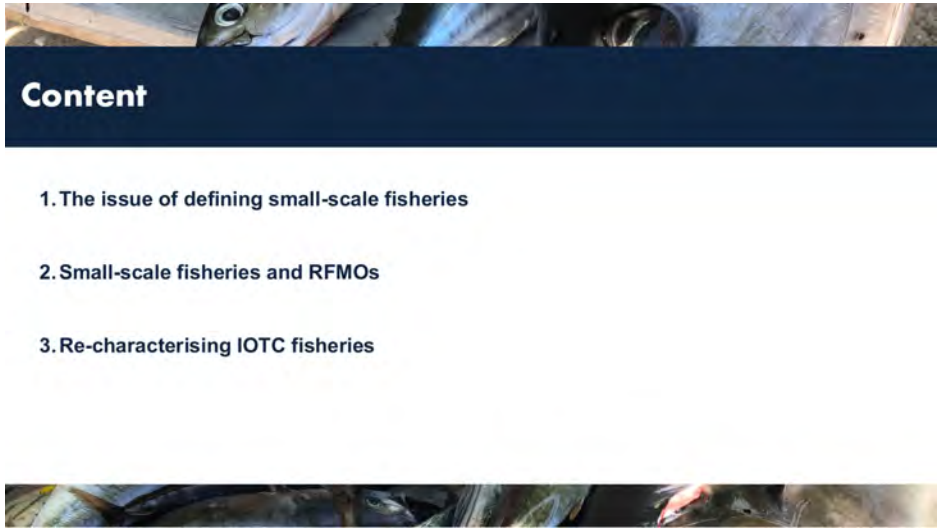
The work we are doing

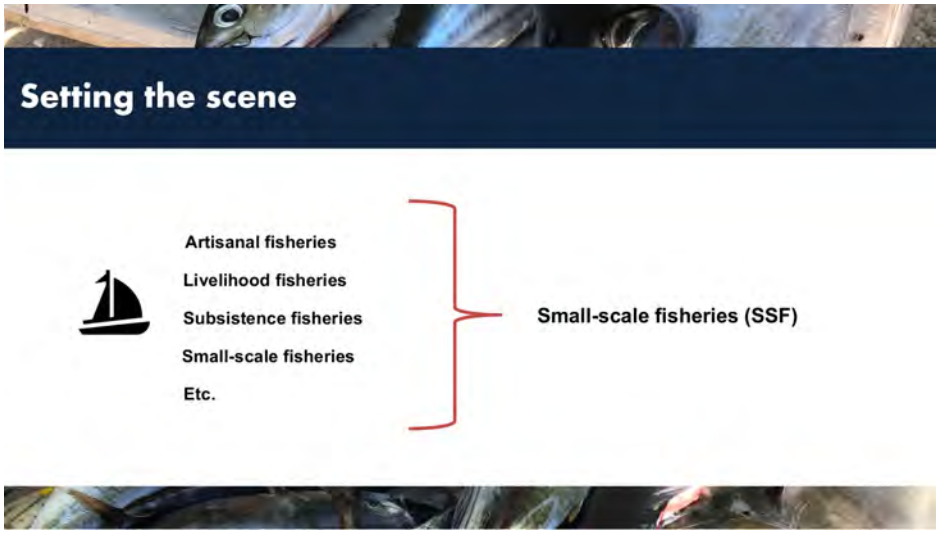
- Western Pacific – East Asia (WPEA) Project
- Improving artisanal estimates into the WCPFC data (Tuna Data Workshop)
- Developing FRAME surveys*
  - Aimed at PI countries, but would like to develop an approach that is flexible and adaptable to different regions
- Collaborating with CFAP through IKSAVEA/TAILS merge*
- Exploring low-cost/innovative solutions to capture effort – e.g., GPS/VMS devices, port activity monitoring, etc.*

* = in the planning/development stages




Is small really small? Re-characterizing tuna fisheries in the Indian Ocean
ISSF Workshop
July 2026
Dr Bianca Haas & Umair Shahid
ANCORS
AUSTRALIAN NATIONAL CENTRE FOR OCEAN RESOURCES & SECURITY
UNIVERSITY OF WOLLONGONG AUSTRALIA
LAE

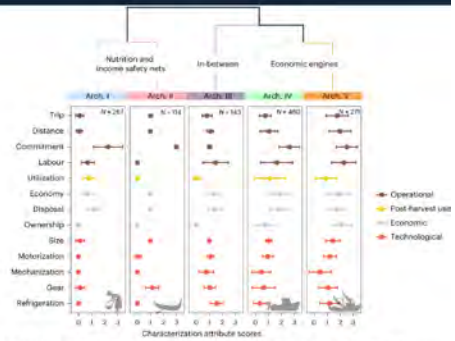

Content
1. The issue of defining small-scale fisheries
2. Small-scale fisheries and RFMOs
3. Re-characterising IOTC fisheries


Setting the scene
Artisanal fisheries
Livelihood fisheries
Subsistence fisheries
Small-scale fisheries
Etc.
Small-scale fisheries (SSF)


1. The issue of defining SSF
© Quentin Hanich

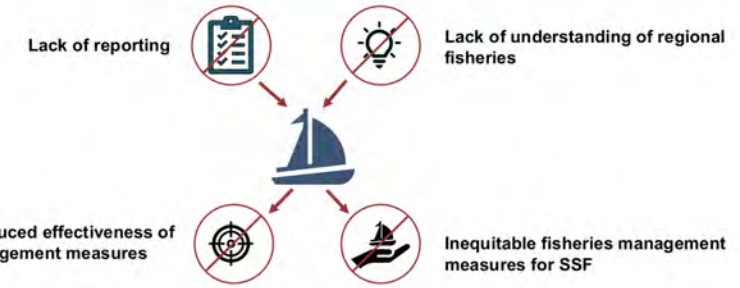
No universal definition

- Vast variability of SSF
- No definition provided by the FAO Small-Scale Fisheries Guideline
- Regional and national differences
- Most research focuses on SSF in a particular country



Source: Aguión et al. 2025. Five archetypes of small-scale fisheries reveal a continuum of production strategies to guide governance and policymaking. *Nature Food*

Unintended consequences



2. Small-scale fisheries and RFMOs



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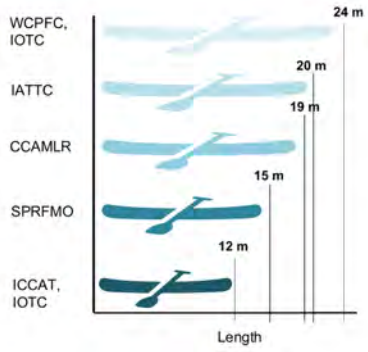
RFMO and SSF definitions

- No, RFMO has an official SSF definition
- SSF definitions are often included in conservation and management measures
- Differ among RFMOs and sometimes even within measures
- SSF are often exempt from conservation and management measures



Working definition - IOTC



Only within the EEZ of coastal state

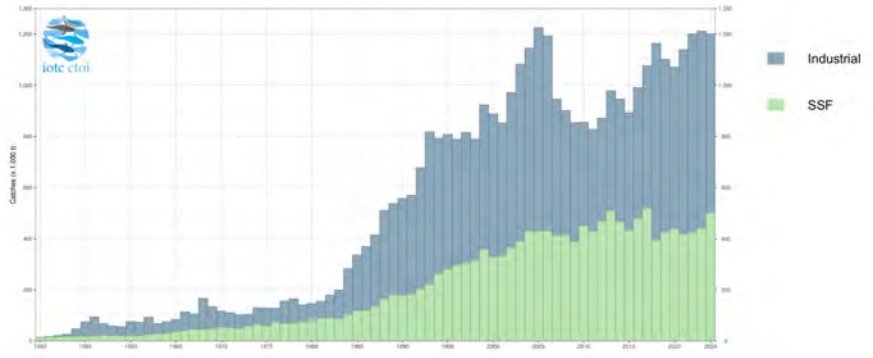
< 24 m total length

SSF

IOTC tuna catch by fleet type – all species



IOTC tuna catch by fleet type – tropical tuna



IOTC tuna catch by fleet type – neritic tuna



Summary of SSF characteristics as per IOTC members

Length	Tons	Location of fishing	Reason for fishing	Vessel	Further characteristics
< 10 m	< 10 GT	Up to 12 NM – territorial sea	Livelihood	Canoe	Owner is involved
< 12 m	< 15 GT	Up to 15 NM	Subsistence	Un-decked vessel	Not commercially oriented
< 24 m	< 40 GT			Non-motorised	

3. Re-characterising IOTC Fisheries



© Francisco Blaha

Proposed classification

SSF	< 12 m <10 GT	Territorial sea & Contiguous Zone + EEZ	• Short fishing trip • Small crew • Selective or passive gear
Semi industrial	12-20 m 10-40 GT	EEZ	• No greater than 30 days • Motorised fishing boats • Medium-large crew size
Industrial	≥ 20 m ≥ 40 GT	EEZ + High seas	• Long fishing trips • Boats are technically advanced

But...

- Lack of political will to have a definition for SSF which includes a length less than 24 m
- Lack of capacity
- Might result in a disproportionate burden on developing states



Need for a long-term, member-driven capacity-building programme

Draft Recommendations: Large & Small-Scale Fisheries

ISSF Workshop on the Importance of Tropical Tuna Fisheries of Large and Small Scales

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A high-level skim across a deeply complex landscape

The devil is always in the details.

This report is a high-level skim relying on the FAO/FIRMS Global Tuna Atlas.

A global synthesis inevitably misses the rich regional nuances of dedicated t-RFMO working groups.

An invitation: Please correct any misrepresentations and help fill the data gaps as we proceed.

PART 01

Defining Fisheries & Data

Aligning criteria, resolving Global Tuna Atlas inconsistencies, and addressing data categorization.

Defining the Fleets: The Blurry Middle Ground





Clear Artisanal
Non-motorized, short trip, local consumption.

The Ambiguous Center
Mid-sized vessels, mechanized gear, long trips, export markets.

Clear Industrial
Distant-water, >24m LOA, high capacity.



Modern definitions must move beyond vessel length. Organizations like FAO use a 13-criteria matrix (motorization, storage, gear), while IATTC evaluates fleet capabilities across five dimensions: How, What, Where, When, and Why they fish.

Defining the continuum requires a multidimensional approach

- No single universal metric separates small- from large-scale fisheries.
- Gillet (2011) initially identified 15 true small-scale tuna fisheries (SSTF).
- The FAO Matrix Approach: A 13-criteria scoring system (0-3).
- Measures factors like vessel size, gear, trip duration, motorization, and market integration to locate fleets on a sliding scale.

Criteria	Score 0	Score 1	Score 2	Score 3
Vessel size		✓	✓	✓
Motorization			✓	
Gear type	✓	✓		
Trip duration	0 - 5	10 - 40	Medium	High
Distance from shore	None	Low	Medium	High
Market integration	None	Low	Medium	High

Small-Scale → Large-Scale

IATTC categorizes fleets across five foundational dimensions

IATTC's recent longline characterization framework captures operational realities asking five core questions to categorize vessels along the continuum.

- **How** Technology and operational capability (propulsion, gear).
- **What** Target species composition (specialized vs. mixed).
- **Where** Fishing area (nearshore coastal vs. high seas).
- **When** Trip duration and vessel autonomy.
- **Why** Economic role and market orientation (local vs. industrial export).

Apply FAO Criteria Matrix

t-RFMOs should apply the criteria from the FAO matrix to all significant fisheries within their t-RFMO to examine commonalities and differences between RFMOs tuna fisheries.

Expertise on Emerging Fleets

workshop participants may wish to advise on **Other fisheries** that are either clearly industrial or are emerging SSTF.

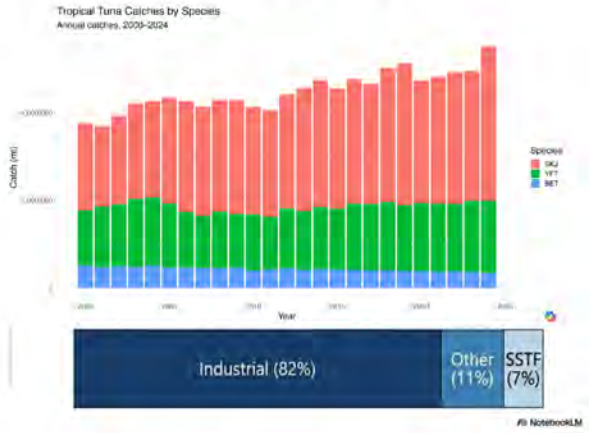
Global data consolidation reveals immediate harmonization hurdles

- Consolidated data relies on the FAO FIRMS Global Tuna Atlas.
- Harmonization hurdles identified:
  - Duplicate codes across regions (e.g., gear not known vs. gear nei).
  - Different codes applied to similar fisheries across t-RFMOs (e.g., set vs. drifting longlines).
  - Broad codes grouping fundamentally different fisheries together.

gear_type	gear_descr	IATTC	ICCAT	IOTC	WCPFC
1.1	Purse seines	X	X	X	X
1.2	Surrounding nets without purse lines			X	
10.1	Harpoons			X	
10.9	Gaze nei	X		X	X
2.1	Beach seines			X	
2.2	Boat seines			X	
3.9	Trawls (nei)			X	
5.9	Lift nets (nei)			X	
6.1	Cast nets			X	
6.9	Falling gear (nei)			X	
7.2	Drift gillnets			X	X
7.9	Gillnets and entangling nets (nei)	X		X	
8.4	Stow nets			X	
8.9	Traps (nei)			X	
9.1	Handlines and hand-operated pole-and-lines	X	X	X	X
9.2	Mechanized lines and pole-and-lines			X	
9.31	Set longlines				X
9.32	Drifting longlines	X	X	X	
9.5	Trolling lines	X		X	X
9.9	Hooks and lines (nei)			X	X
99.9	Gear not known	X	X		

Global catches hit a record 5.5 million tons in 2024

- **Record Scale:** Highest catch on record at 5.5 million tons in 2024.
- **Species Breakdown:** Skipjack (64%), Yellowfin (30%), Bigeye (6% and decreasing).
- **Fishery Types:** Industrial fisheries dominate (82%). Other unclassified fisheries (11%) slightly exceed recognized SSTF (7%).
- **Scale Context:** Indonesian handline/pole-and-line represents the largest SSTF globally (avg. 130,000 tons/year).



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THE GROWERS: MAJOR FISHERIES GOING UP & EMERGING (LAST 10-15 YEARS)

	REGION/FLEET	GEAR	SCALE	TRAJECTORY
	EXPANDING INDUSTRIAL HEAVYWEIGHTS			
1	Kiribati, Seychelles, Ecuador		Industrial	
2	Fed. States of Micronesia, Panama		Industrial	
	RAPIDLY EMERGING FLEETS			
3	Oman		Emerging / Other	Significant fishery has rapidly developed.
4	Brazil	?	Emerging / Other	Significant increases in recent years.
5	Indonesia, Sri Lanka		Emerging / Other	Significant hook and line fisheries emerging.

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THE DECLINERS: MAJOR FISHERIES GOING DOWN

REGION/FLEET	GEAR	SCALE	TRAJECTORY
DROPS IN DISTANT-WATER & TRADITIONAL INDUSTRIAL FLEETS			
Japan		Industrial	
USA, France		Industrial	
SPECIFIC REGIONAL & SMALL-SCALE DECLINES			
Philippines		SSTF / Other	Has dramatically declined.
Sri Lanka, Pakistan		SSTF / Other	Declined significantly / Decreasing.
Ghana		SSTF / Other	
Solomon Islands		Industrial	Much smaller than prior to 2010.

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Global Tuna Atlas Improvements

Address Atlas Inconsistencies

FAO and t-RFMOs should address inconsistencies in current fishery definitions in the FAO-FIRMS Global Tuna Atlas, e.g., duplicate codes, using different codes for the same fisheries, attempt to classify 'gear not known' fisheries, and where possible avoiding combining different fisheries within the same code.

Coordinate Color Palettes

FAO and t-RFMOs should seek agreement on common color palettes, with a priority for the species and gear categories included in the FAO-FIRMS Global Tuna Atlas.



Western Pacific (WCPFC) Data

Neritic Tunas Catch Estimates:
WCPFC considers requiring catch estimates of neritic tunas.

Alternative to Three-Vessel Rule:
WCPFC considers alternative approaches to the three-vessel rule (e.g., combining data across flags as done by IATTC), to address data confidentiality concerns without impacting data availability.



PART 02

Governance & Compliance

Harmonizing regulatory frameworks, updating authorized registries, and utilizing criteria to focus tracking.

Vessel registry criteria lack cross-RFMO harmonization

RFMO	Small Vessel (<20-24m) EEZ Only	Small Vessel High Seas	Large Vessel (≥20-24m) EEZ Only	Large Vessel High Seas
IATTC	✓	✓	✓	✓
ICCAT	✗	✗	✓	✓
IOTC	✗	✓	✓	✓
WCPFC	✗	✓	✗	✓

- Significant variation in inclusion criteria makes global vessel tracking highly fragmented.
- **Recommendation:** Harmonize criteria across RFMOs or increase the range of vessels required to be registered to capture smaller fleets.

Monitoring and verification systems reveal major blind spots

Vessel Monitoring Systems (VMS)

Generally required for large vessels (>24m) or high seas operations. Smaller EEZ fleets are frequently exempt.

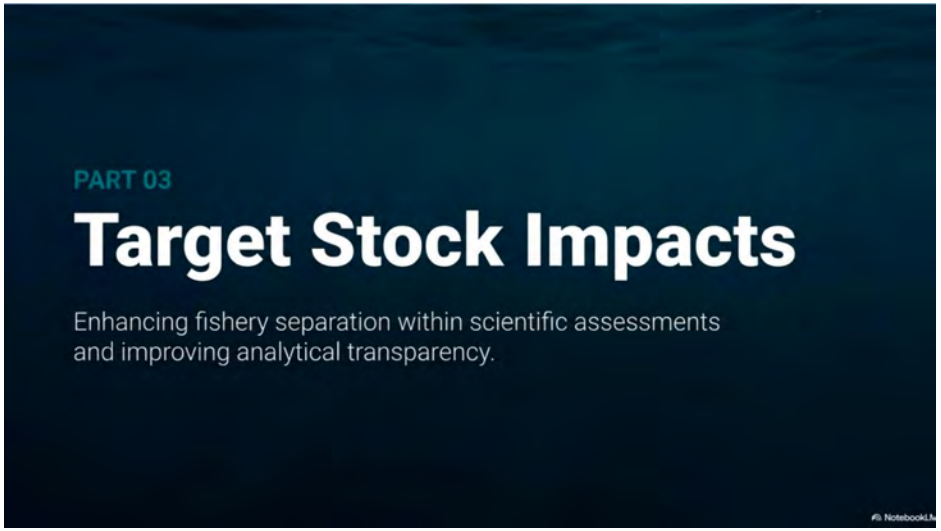
Observer Coverage

Near 100% for large industrial purse seine fleets. Highly variable and low (often ~5-10%) for longline and other gears.

Electronic Monitoring (EM)

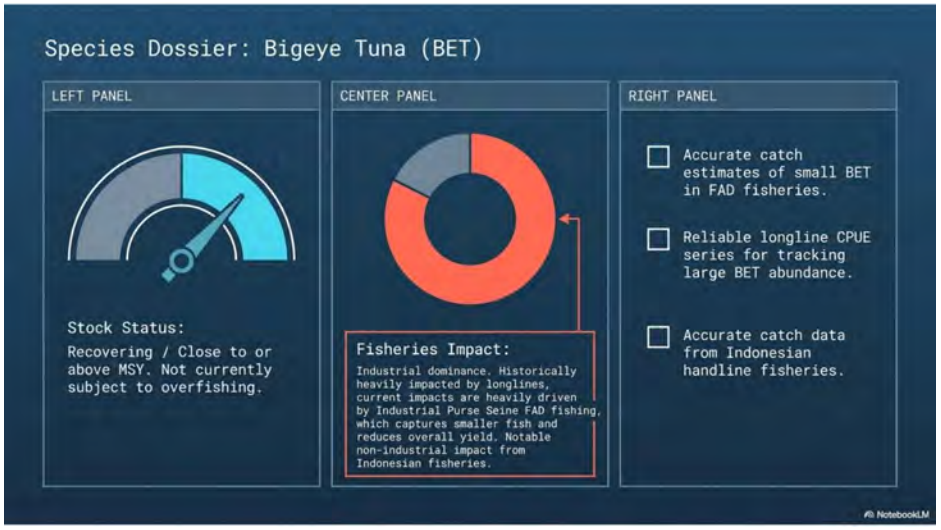
Standards are in development, but not yet universally applicable for coverage compliance across all fleets.

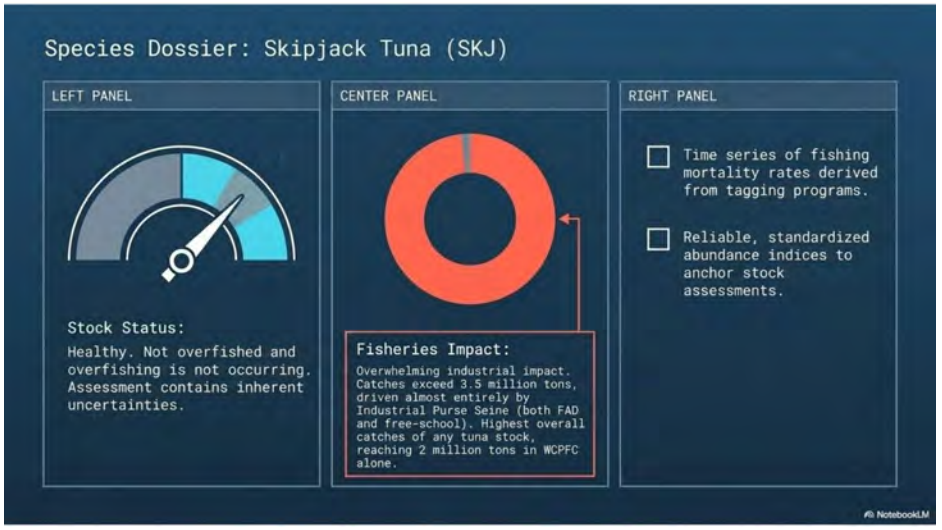
Recommendation: t-RFMOs should consider using the results from applying the FAO criteria to assess priorities for increased data collection or verification and monitoring.

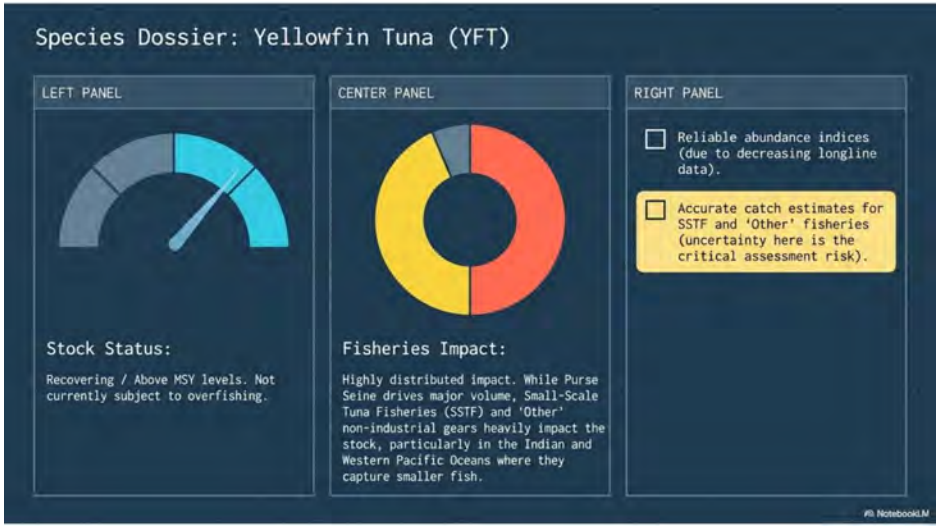


Diagnostic Overview: Tropical Tuna Stocks

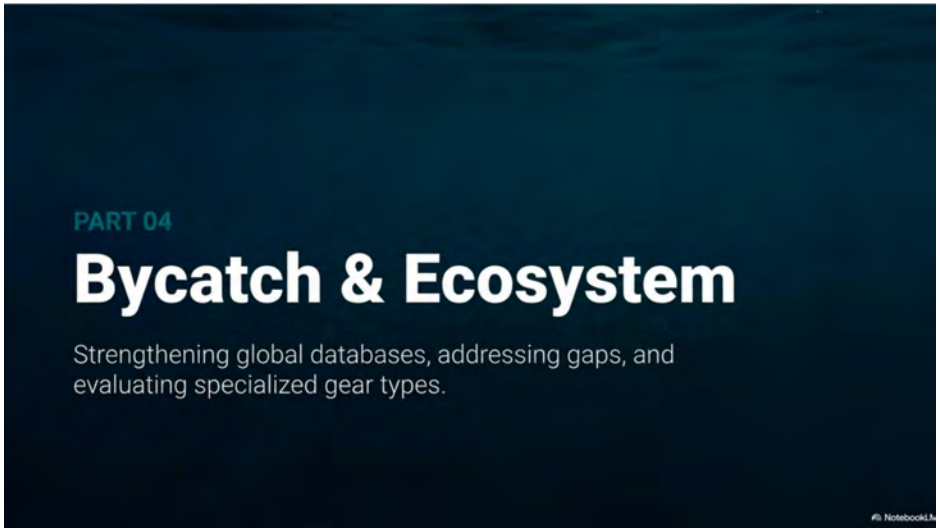
	Bigeye (BET)	Skipjack (SKJ)	Yellowfin (YFT)
Status	Recovering/Healthy	Healthy (Uncertain)	Recovering/Above MSY
Primary Impact	Purse Seine FADs	Purse Seine (Overwhelmingly)	Purse Seine (FAD & Free)
Secondary Impact	Longline & Indonesian Handline	Handline/Pole-and-line	SSTF/Other (Indo-Pacific)
Critical Data Gap	Catch data for FAD juveniles & large BET abundance.	Reliable fishing mortality tagging rates.	Accurate catch estimates for SSTF/Other fleets.






Species Dossier: Yellowfin Tuna (YFT)
LEFT PANEL
CENTER PANEL
RIGHT PANEL
Reliable abundance indices (due to decreasing longline data).
Accurate catch estimates for SSTF and 'Other' fisheries (uncertainty here is the critical assessment risk).
Stock Status:
Recovering / Above MSY levels. Not currently subject to overfishing.
Fisheries Impact:
Highly distributed impact. While Purse Seine drives major volume, Small-Scale Tuna Fisheries (SSTF) and 'Other' non-industrial gears heavily impact the stock, particularly in the Indian and Western Pacific Oceans where they capture smaller fish.


Separate Out Major Fisheries
where possible stock assessments should separate out all major fisheries and conduct impact analyses to facilitate an improved understanding of the impacts of different fisheries.
Public Assessment Files
t-RFMOs should make stock assessment input files publicly available once stock assessment results have been endorsed by the relevant scientific body.


PART 04
Bycatch & Ecosystem
Strengthening global databases, addressing gaps, and evaluating specialized gear types.


Small-Scale (Gillet 2011)
Discards are minimal; most catch retained for economic value.
Primary concern: Incidental sensitive species interactions (turtles/mammals), particularly via gillnets.
Purse Seine (Hall & Roman 2013)
Highly selective overall (90-95% of discards are target species).
FAD sets produce higher non-target catch (silky sharks, mobulid rays) than free schools.
Longline (Clarke et al. 2014)
Highest diversity of bycatch (sharks, turtles, seabirds).
Impacts driven more by operational practices (depth, bait, soak times) than simply vessel size.

Bycatch recommendations

Fund BMIS Repository

BMIS continue to be funded and maintained.

Update Historical Reviews

FAO update the global reviews of bycatch in tuna fisheries conducted over a decade ago.

Annual Scaled Reporting:

t-RFMOs produce annual reports (with associated excel files) of observed, and scaled estimates of bycatch (both fish and non-fish) for purse seine and longline fisheries from observer data. Where possible (recognizing data confidentiality) those data should be disaggregated spatially, seasonally, and by fleet.

Other Gears Estimation:

t-RFMOs take steps to get estimates of bycatch for other gears, with an emphasis on gillnet fisheries that predominantly catch tropical tunas.

Final thoughts about gears

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A global synthesis of priority data gaps

Purse Seine

Require precise FAD-associated catch data (small BET), advanced shark mitigation, and address FAD lost and standings.

Longline

Urgent need for scaled verification (human or EM) to track catches of sharks for which retention is prohibited and ensure accurate CPUE standardizations.

Other & Gillnet Gears

need basic inclusion in vessel registries, baseline observer coverage, and pelagic gillnet bycatch quantification.

Information Systems

The Bycatch Management Information System (BMIS) is a critical global repository linking scientific literature and RFMO measures. It must be continuously funded.

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The Disconnect: Mandate vs. Reality



The Mandate (UNFSA 1995)

Legal Obligation (Article 24)

'States shall take into account... the need to avoid adverse impacts on, and ensure access to fisheries by, subsistence, small-scale and artisanal fishers...'

The Reality (t-RFMOs Today)

Current Management Practice

Despite explicit international mandates, t-RFMO participants generally focus on the development aspirations through Industrial fisheries rather than the protection of Small-Scale Tuna Fisheries (SSTF).

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FINAL RECOMMENDATION
t-RFMOs should articulate how SSTFs are protected when establishing management measures
Fulfilling the 1995 UN Fish Stock Agreement ensures we secure coastal livelihoods, protect food security, and avoid transferring a disproportionate burden of conservation action onto developing states and artisanal fishers. Management must account for the continuum of fishing operations, not just the industrial sector.
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