INTER-AMERICAN TROPICAL TUNA COMMISSION

SCIENTIFIC ADVISORY COMMITTEE

17TH MEETING

La Jolla, California (USA)
08-12 June 2026

DOCUMENT SAC-17-10

STAFF RECOMMENDATIONS (NON-TARGET SPECIES)

2. NON-TARGET SPECIES

2.1. Sharks

The indices for large silky sharks, based on data from the purse-seine fishery on floating objects, were updated through 2025 for the north and south EPO (**Figure 5**). Previous analyses (SAC-08-08a(i), Lennert-Cody et al., 2019) identified a correlation between indices for small and medium silky sharks in the north EPO and interannual variability in oceanographic conditions. Consequently, the indices for small and medium size categories and for all size categories combined were not updated because of concerns about potential biases. Because of recent increases in the live release of silky sharks (of all sizes), two sets of indices for large silky sharks were computed, one including live release data (i.e., dead and alive) and the other not (i.e., dead only). Together, the two sets of indices likely bracket the trend that would have resulted in both the north and south EPO if "finning"[1], shark handling, and data recording practices had continued unchanged since 1994. The real trend is considered to be closer to the index based on dead and live releases because, in recent years, sharks recorded as being released alive would probably have been previously recorded as dead, and thus the dead and live release is likely a more consistent indicator. The terminal point of these indices suggests a relatively stable abundance level for almost two decades, with the 2025 values slightly higher in north and slightly lower in south relative to the 2024 value, and thus no changes to active conservation and management measures are recommended (**Figure 5**). Despite the indices appearing stable, stock status is uncertain, and a conventional stock assessment has not been possible due to a paucity of data, especially for the various fleets of the EPO coastal nations, which are believed to have a substantial impact on the stock (SAC-05 INF-F, SAC-14 INF-L, SAC-17 INF-O, SAC-17 INF-P).

Insufficient data for conventional stock assessments is also a common problem for almost all shark species with which EPO fisheries interact. Therefore, in 2022 the staff used a quantitative ecological risk assessment method (EASI-Fish) to conduct the first comprehensive vulnerability assessment for 32 shark species caught in industrial and small-scale coastal fisheries in the EPO (SAC-13-11). The assessment showed silky shark to be classified as "most vulnerable", having the second highest vulnerability rank among the 32 shark species assessed. In 2023, a focused EASI-Fish assessment was undertaken on silky shark and three hammerhead shark species to explore the potential efficacy of hypothetical conservation and management measures (CMM) (SAC-14-12), such as EPO-wide closures, and prohibition of the use of wire leaders. The assessment showed that the majority of measures reduced the vulnerability of silky sharks but no single CMM, or up to four CMMs used in concert, resulted in silky shark being classified as "least vulnerable". As a result of handicapped stock assessment attempts and EASI-Fish outcomes, the staff recommends data collection for silky sharks as part of its broader shark research plan for addressing

[1] Cutting the fins off sharks and discarding the carcass.

the needs for stock assessments of key shark species in the EPO.

In response to paragraphs 15 and 16 of Resolution C-25-08, the staff has developed a comprehensive Shark Research Plan (SAC-17-09) to advance research supporting the conservation and management of the eight key shark species identified in paragraph 16. The plan is built around a set of SMART goals, is incorporated into the IATTC's 2026–2030 Strategic Science Plan and is structured around three main areas: data collection (including small scale coastal fisheries), assessment of impacts (and stocks), and mitigation of impacts. SAC-17-09 also sets out a timeline for assessments and the associated financial considerations.

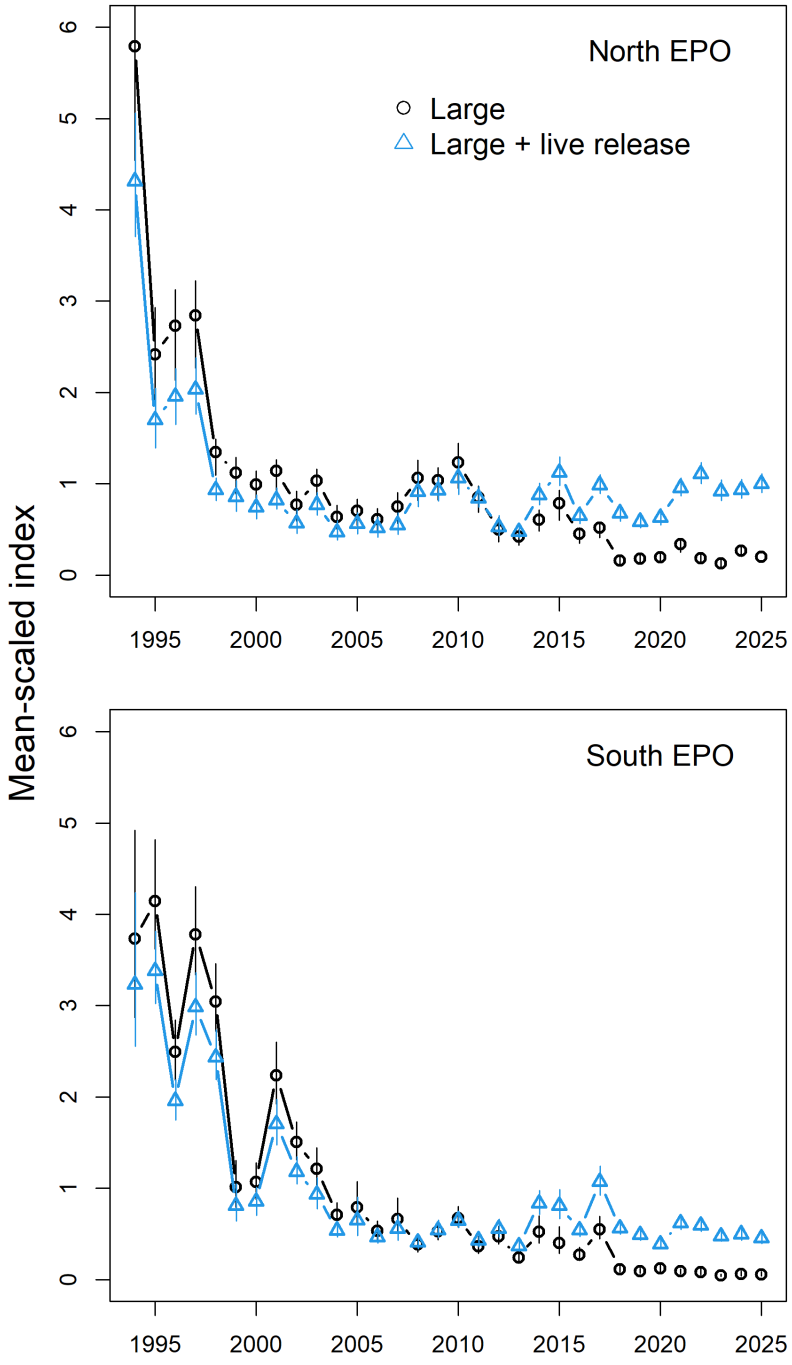


FIGURE 5. Mean-scaled standardized bycatch-per-set (BPS; in numbers of sharks per set) of large silky sharks recorded in sets on floating objects, with and without live release, in the north (top) and south (bottom) EPO.

Paragraph 7 of Resolution C-25-09, which extends Resolution C-23-08 for 2026–2028, requires CPCs to implement a three-month prohibition on the use of steel leaders (i.e., wire leaders) in certain longline fisheries. Further, paragraph 8 requires the IATTC staff to present, at the SAC meeting in 2027, and the subsequent meeting of the IATTC in 2027, an analysis of the available data pertaining

to steel leader use—including unloading, observer and from the shark fishery sampling program in Central America—and recommendations for improving the resolution, including adjustment of the prohibition period in paragraph 7. Resolution C-25-09 also directs the staff to consider the efficacy of current catch limits and if necessary, recommend revisions. Unfortunately, the improved species-level catch and composition data required for this analysis are not yet available, so it is currently not possible for the staff to reliably evaluate the efficacy of these limits.

Such persisting data limitations, among others, which apply to both target and non-target species, motivated the staff to review current Resolutions pertaining to data provision that underpin all of its research, in particular, the Resolution on data provision, C-03-05. To this end, the staff prepared Document SAC-12-09 (see Section 4) with the overarching goal of creating a revised Resolution C-03-05 to broaden the scope and improve the quality of data provided for science, conservation and management, for both target and non-target species. An outcome from this work was a staff recommendation to the SAC to hold a series of workshops, by gear type, on data provision (SAC-12-16 see Section B.3. "General Data Provisions"). This recommendation was endorsed by the SAC and the first and second data improvement workshops were organized in January 2023 and 2025, addressing the industrial longline and the small purse-seine (Class 1-5) fisheries, respectively. A series of background documents (WSDAT-01-01, WSDAT-02-01, WSDAT-02-02) and workshop reports (WSDAT-01-RPT, WSDAT-02-RPT) were produced. Recommendations from these workshops are included in Section 4 of this document.

Existing data collection programs have enabled the tracking of shark indicators, including silky shark, and EASI-Fish assessments. A formal stock assessment model for silky sharks would both improve our understanding of stock status and facilitate appropriate management responses. However, a conventional statistical stock assessment requires long time series of representative data, including, at a minimum, total catches and a reliable index of abundance, which has not been historically feasible and would require years of future work and secured resources to achieve. Given this, the staff believes that the most promising tool to assess silky sharks, and if applicable, other shark species such as hammerheads or other priority shark species for the IATTC (paragraph 16, C-25-08) is to establish a Close-Kin Mark-Recapture (CKMR) program in the EPO (SAC-12-14, SAC-14 INF-M, SAC-17-09). The advantage of CKMR is that it can produce management relevant results, particularly estimates of total adult shark abundance, based primarily on genetic data extracted from tissue samples, rather than the extensive fishery dependent data and assumptions required by conventional stock assessment methods.

The staff has taken a number of steps to lay the foundation for future CKMR assessments of shark species in the EPO. With funds provided by the Common Oceans ABNJ "Tuna 2" project and the European Union, the staff began a feasibility study and pilot program for tissue sample collection, a simulation study evaluating the potential for a CKMR silky shark assessment in the EPO, and a conceptual model for silky sharks (Talwar et al. 2025). Initial simulation results suggest that representative collection of 5,000 to 10,000 silky shark tissue samples across the EPO over a five year period may be sufficient to provide initial CKMR-based assessment results for silky sharks. Required next steps for this work include developing the genetic panel and tools required for CKMR, expanded simulation testing to design a sampling strategy and set expectations for likely CKMR outcomes, and, finally, collection of sufficient samples to run CKMR models for silky sharks in the EPO. All these steps are part of the shark assessment goals included in the shark research plan proposed by the staff (SAC-17-09).

Given the prior goal of collecting suitable fisheries data to conduct a conventional stock assessment model, the staff undertook a range of tasks to improve estimates of total catches of silky sharks, including removals by fleets other than the industrial tuna fleets. This research indicated that small scale coastal fisheries likely make a substantial contribution to the total fishing mortality of silky sharks in the EPO (SAC-11-13, SAC-14 INF-M, SAC-14 INF-L). While CKMR can be accomplished with tissue samples, the inclusion of other data, such as total catches, by fishery, can improve model performance and improve estimation of management-relevant quantities such as fishing mortality rates. As such, the

staff believes that continuation of efforts to estimate and monitor total catches of silky sharks across all relevant fleets in the EPO is desirable.

The staff has made significant progress towards sampling catches of shark fisheries in Central America (SAC-11-13, SAC-14 INF-L). Made possible through funds provided by the FAO-Common Oceans GEF ABNJ "Tuna 1" project, the European Union and the IATTC's capacity building fund, the sampling program in Central America was completed in December 2021. The results supported a subsequent proposal to establish a long-term sampling program in Central America (IATTC-98-02c), which was presented at the 98th Meeting (resumed) meeting of the Commission in 2021. Although Resolution C-25-08, and the previous versions of it, considered this part of the data collection important, the funds required to implement the proposed long-term sampling program were not available. Nevertheless, in 2023, the IATTC, through the FAO-GEF Common Oceans Program (ABNJ "Tuna 2" Project) (SAC-14 INF-M), began expanding the shark sampling work originally developed in Central America under the ABNJ "Tuna 1" Project. The ABNJ "Tuna 2" project aims to harmonize and standardized data collection systems for the EPO, in order to set the foundation to provide the necessary information for stock assessments, incorporating ecological, genetic, and conventional approaches. This second phase of the ABNJ project includes the countries of Ecuador, Mexico, and Peru. To date, a metadata review of available data sources in these countries has been completed (SAC-16 INF-V), along with the identification and characterization of the main shark landing sites (SAC-16 INF-W). Together, these efforts are facilitating the identification of sites for biological sampling and approximate estimates of total catches from coastal fleets across North, Central and South America for use in both indicators and CKMR assessments. Recent feasibility and sampling design reports further inform these efforts (SAC-17 INF-O, SAC-17 INF-P).

Successful completion of these efforts will enable CKMR-based assessment and improved management of silky sharks in the EPO. Until data are available from this work, the staff plans, as part of the proposed shark research plan (SAC-17-09), to continue its use of data-limited assessment methods, such as EASI-Fish, to explore the potential efficacy of CMMs to guide managers in the intervening period (*e.g.,* CMMs specified under Resolution C-25-09) (SAC-14-12). These efforts, which were focused mostly on silky shark, can also serve as the foundation to support progress on the conservation and management of the eight key priority species identified by Resolution C-25-08 (see proposed shark research plan; SAC-17-09).

RECOMMENDATIONS:

Considering the proposed shark research plan (SAC-17-09) and recent improvements in shark fishery data collection in Central America (SAC-14 INF-L, SAC-15-10), the ongoing opportunity to expand these data collection improvement efforts into other coastal states (SAC-14 INF-M, SAC-15-10, SAC-16 INF-V, SAC-16 INF-W, SAC-17 INF-O, SAC-17 INF-P), as well as the potential benefits of Close-Kin Mark-Recapture assessments, including silky shark:

1. Support the proposed shark research plan outlined in SAC-17-09 to advance shark conservation and management in the EPO.
2. Fund the shark assessment and sampling efforts from which to reliably estimate silky shark population status and total EPO catches across industrial and small-scale coastal fleets considered to be under the purview of the IATTC (see Tier 2 in table 5 of SAC-17-09 and unfunded project in SAC-17 INF-E).
3. Fund the development of a conceptual model for hammerhead sharks, similar to the one described in Talwar et al. (2025) for silky shark, which will serve as the foundation for a CKMR assessment for hammerhead sharks (see unfunded project F.2.b in SAC-17 INF-E).

Recommendations by the staff on data collection by observers on longline vessels and Class 1–5 purse-seine vessels are described in Section 7.

2.2. Rays

2.2.1. List of ray species under the IATTC purview

At its 15th meeting in 2024, the IATTC's Scientific Advisory Committee made a recommendation to the Commission that "*…the IATTC staff develop a draft list of ray and mobulid species under the purview of the IATTC for consideration by the EBWG and the SAC*". In response to that request, the IATTC staff prepared document SAC-16-08, which drew upon the IATTC data holdings of logbook and observer data and the incorporation of ancillary ecological and existing conservation measures to present options for the SAC and the EBWG to consider in developing a proposed interim list of ray species for potential adoption by the IATTC in 2025. The IATTC scientific staff presented for consideration for adoption by the IATTC, at a minimum, a list of 7 oceanodromous and epipelagic ray species caught in the major industrial and small-scale coastal pelagic fisheries in the EPO (List B in SAC-16-08). The SAC, at its 16th meeting in 2025, endorsed the staff recommendation based on the SAC-16-08 work and also recommended that the IATTC adopt that species list. However, the Commission did not take formal action on the list in 2025. Accordingly, the IATTC staff reiterates that List B in SAC-16-08 be considered for adoption.

RECOMMENDATIONS:

At a minimum, the 7 ray species in List B of SAC-16-08 be considered as the list of ray species to be under the purview of the IATTC.

2.3. Seabirds

In 2024, the EBWG tasked the IATTC staff to conduct the Seabird Action Plan (SAP) (see annex 1 of EBWG-2 recommendations) to assess the impacts of fishing activities on seabirds in the EPO by fisheries under the purview of the IATTC. IATTC staff led a collaboration with seabird conservation bodies, specifically the Agreement on the Conservation of Albatrosses and Petrels (ACAP) and BirdLife International, leading seabird experts and other RFMOs, both regionally and globally, with a goal of improving seabird conservation in the IATTC Convention Area and fisheries. Collaborators greatly contributed to the project by sharing an extensive amount of seabird knowledge, expertise and data not directly available to the IATTC scientific staff. This collaboration resulted in EB-03-02, which assessed albatross and petrel spatial overlap with longline fisheries and calculated seabird bycatch rates from limited observer data in various regions within the EPO. EB-04-02 further improved and expanded the overlap analysis. A key outcome of the assessment was the identification of the need for increased seabird bycatch interaction information from improved observer reporting and coverage (see Section 7 below). To date, analyses and data sources have focused on albatross and petrels because fishery impacts are known to be high (Dias et al. 2019). However, the impacts of longline on other seabird species groups, such as shearwaters, frigatebirds, terns, tropicbirds, and boobies are unknown (Anderson et al. 2011). Therefore, it would be helpful for Resolution C-11-02 to define the scope of seabird species it covers so that more accurate science-driven recommendations could be made accordingly.

As requested in the seabird action plan the staff also reviewed mitigation measures adopted across tuna RFMOs and the reported measures in use by IATTC CPCs (reported in EB-03-03). The review revealed recent updates to seabird conservation measures in other oceans where new analyses on the efficacy of some measures resulted in updated conservation advice and adoption of (IOTC and WCPFC) and/or continued review of (ICCAT) revised mitigation options in other tuna RFMOs.

While reviewing the CPC seabird mitigation reports between 2011-2023, the staff noted inconsistencies in reporting frequency and content. Standardized reporting for seabird mitigation techniques and their specifications will improve the staff's ability to assess the efficacy of mitigation options, compliance of mitigation requirements and assist CPCs with meeting reporting mandates under Resolution C-11-02. To address this issue and respond to a staff and EBWG recommendation, a standardized seabird mitigation reporting template (EB-04 INF-A) was developed for CPCs to report seabird interactions to the IATTC.

To assist CPCs, the EBWG, SAC, and proponents of the IATTC seabird action plan in the potential development of an updated Resolution proposal, document EB-03-03 reviewed the seabird mitigation measures adopted in the IATTC, across other tuna RFMOs, and those endorsed by ACAP—for evidence of their relative efficacy in pelagic tuna and tuna-like longline fisheries. The review identified several mitigation measures in Resolution C-11-02 that lack support for their efficacy based on the best available science currently available, including line shooters, management of offal discharge and the use of blue-dyed bait. The review also revealed that several of the measures, while very effective at reducing interaction rates under optimal conditions, had specifications in Resolution C-11-02 that require updating (i.e. weighted branchlines, tori lines, night setting), not only to meet ACAP standards but to ensure the full effects and intent of the measures are actualized.

Therefore, Resolution C-11-02 should be revised to be consistent with the current state of knowledge regarding seabird mitigation techniques (see EB-03-03) to require the simultaneous use of at least two of three mitigation methods—weighted branchlines, night setting, and bird-scaring lines, in a way that will meet the minimum standards and specifications recommended by the ACAP. Other mitigation methods including hook shielding devices and underwater bait setting devices, can each be used as standalone options, while side setting with bird curtains and weighted branchlines are cautiously recommended for areas in Northern hemisphere pending additional details on setting position specifications.

The review conducted in EB-03-03 also demonstrated that no single mitigation measure is 100% effective in eliminating seabird bycatch in longline fisheries. Therefore, on those occasions when seabirds are captured it is important that crews are aware of, and correctly implement best handling and release practices (BHRP) guidelines to improve post release survival rates. Therefore, the IATTC staff developed BHRP guidelines for seabirds captured in all IATTC fisheries (EB-03-06), which have been further refined following the 1st IATTC workshop for advancing BHRP guidelines for sharks, sea turtles and seabirds and an additional round of reviews by CPC nominated subject matter experts into an updated set of BHRP guidelines for seabirds in document EB-04-05. These BHRP guidelines, recommended by the staff to be included in an eventual update of Resolution C-11-02, are based on guidance from ACAP, NOAA Fisheries, New Zealand Fisheries, workshop participant feedback and were reviewed by CPCs, industry personnel, subject matter experts and ACAP staff in 2025 and 2026.

RECOMMENDATIONS:

1. Continue collaborating with leading seabird experts and organizations both regionally and globally (e.g., ACAP, BirdLife), including other tuna RFMOs (e.g., WCPFC), to better understand and mitigate the potential impacts of tuna and tuna-like fisheries on seabird conservation.

2. Revise Resolution C-11-02 to update it according to the current state of knowledge regarding seabird bycatch mitigation techniques, as described in EB-03-03, recommending that the Commission considers the wording suggested below:

While fishing in high-risk seabird bycatch areas (Annex I, C-11-02), all vessels must use at least one of the options below (A, B, C, or D) following the approved specifications for each measure outlined by ACAP and EB-03-03:

A. For large vessels (>20 m) use at least 2 of the following measures in combination, for medium and small vessels (<20 m), use at least 1 of these measures: i. Weighted branchlines; ii. Night setting; iii. Bird Scaring lines (Tori lines); or

B. Hook-shielding devices; or

C. An underwater bait setting device; or

D. Side setting with a bird curtain and weighted branch lines (can only be applied if fishing North of 23°N).

Outside the high-risk seabird bycatch areas, CPCs are strongly encouraged to employ one or more of the listed seabird mitigation options (A–D).

3. Adopt the standardized reporting format described in EB-04 INF-A for the requirements outlined in Resolution C-11-02, to better assist CPCs with meeting their obligations of implementing seabird mitigation requirements and to provide clarity for the scientific and compliance aspects of the technical specifications and efficacy of utilized mitigation measures.

4. Review Resolution C-11-02 scope of the covered species with a view at improving its clarity and the intended seabird conservation outcomes in the IATTC Convention Area.

5. Update Resolution C-11-02 with the inclusion of the BHRP guidelines outlined in EB-04-05 for all IATTC fisheries.

2.4. Sea turtles

A revised resolution on sea turtles (C-19-04) entered into force on 1 January 2021 requires EPO tuna and tuna-like fisheries to implement various measures designed to reduce the bycatch of sea turtles, in particular, by the use of circle hooks and finfish baits in shallow longline sets. However, the low encounter rates of sea turtles by fishing vessels make these 'rare event' data difficult to analyze using conventional approaches for assessing the status of sea turtle populations. Therefore, a collaborative research project (BYC-11-01) between the IATTC, the Inter-American Convention on the Protection and Conservation of Sea Turtles (IAC), and international sea turtle experts employed the EASI-Fish approach as an alternative means by which to assess vulnerability status and to simulate conservation and management measures (CMMs) that may mitigate fishery-imposed risks to the critically endangered East Pacific regional management unit of leatherback sea turtle. This project was extended in 2021–2022 to implement several model improvements (*e.g.,* a new species distribution model and updated fishing effort data for small-scale coastal fisheries) (BYC-11-02, Lopez et al 2024, Griffiths, Wallace et al. 2024). Proxies for fishing mortality ($\tilde{F}_{2019}$) and the breeding stock biomass per recruit (BSR_{2019}) exceeded precautionary biological reference points ($F_{80\%}$ and $BSR_{80\%}$), classifying the EP leatherback turtle stock as "most vulnerable" in the reference year (2019). Of the 70

conservation and management measures (CMM) scenarios, use of circle hooks[2], finfish bait, and to a lesser extent best handling and release practices were each predicted to decrease vulnerability when examined individually, by far the most effective scenarios involved using these three measures in concert, followed by using circle hooks with either finfish bait or best handling and release practices.

Following this assessment, the IATTC organized two workshops to discuss the minimum circle hook size that would reduce sea turtle mortality. The first workshop in 2022 also addressed the ecosystem-level concerns and potential trade-offs regarding the expanded use of circle hooks in longline fisheries and discussed the potential impacts of gear types on various taxa, including sea turtles. However, a final agreement on a minimum hook size was not reached preventing both a recommendation to the Commission and a revision pertaining to hook size in Resolution C-19-04 (WSHKS-01). In 2024, the EBWG recommended that the IATTC staff co-host a subsequent workshop with the goal of exploring topics of interest and knowledge gaps identified by the Working Group to mitigate bycatch of sea turtles and to complete the outstanding requirements of Resolution C-19-04. In April 2025, the second circle hook workshop (WSHKS-02) aimed to: i) Fulfill the mandate of paragraph 3(d)(i) of Res. C-19-04 (agreement upon the characteristics of a "large" circle hook), ii) Seek advice from workshop participants on the impacts of fishing operations on the form and structure (i.e., longevity and integrity) of circle hooks of various sizes and from different manufacturers, and iii) Adopt a third mitigation measure as described in Paragraph 3(d)(iii) of C-19-04 for small-scale coastal multi-species fleets as well as best handling and release practices (BHRP) for sea turtles. A background document was developed for the workshop participants that reviewed up-to-date information and research on circle hook effects, the validity and effectiveness of a series of mitigation measures, and BHRP for surface-set longline fisheries (HKS-02-01). Again, participants were unable to reach consensus on a single definition for large circle hook size.

However, significant progress has been made in recent years in several of the topics of interest to improve C-19-04 and its efficacy for sea turtle conservation. For example, the IATTC staff, in consultation with CPCs, subject matter experts and industry representatives, recently developed sea turtle BHRP guidelines for all IATTC fisheries (EB-03-05). In 2025, the EBWG recommended that sea turtle BHRPs were updated as soon as possible. Therefore the IATTC staff conducted a workshop for advancing the adoption of BHRP guidelines for sea turtles among other vulnerable species in December 2025 and January 2026. Following guidance provided by the workshop participants, as well as CPCs, industry representatives and subject matter experts, the sea turtle BHRP guidelines were updated for IATTC fisheries in document EB-04-04. Additionally, simulations of the efficacy of different CMMs on sea turtle vulnerability status (BYC-11-02, Griffiths and Wallace et al. 2024), were also conducted to facilitate an eventual revision of Resolution C-19-04. Therefore, the IATTC staff recommends:

RECOMMENDATIONS:

1. Revise Resolution C-19-04 to require longline vessels fishing for tuna and tuna-like species in the EPO to simultaneously use circle hooks, finfish baits and best handling and release practices, consistent with the simulated efficacy of CMMs assessed in BYC-11-02 and Griffiths and Wallace et al. 2024.

2. Consider updating Resolution C-19-04 with the inclusion of the BHRP guidelines outlined in EB-04- 04 for all IATTC fisheries.

2.5. Best handling and release practices (BHRP) of vulnerable[3] species

Concerns about the incidental capture (*i.e.*, bycatch) of vulnerable marine species, including marine mammals,

[2] Typically, 18/0, to a lesser degree 16/0 (BYC-11-02, Griffiths et al. 2024)

[3] Unless specified otherwise, including but not limited to citations to vulnerability assessments and any qualitative/quantitative scores (e.g. BYC-10 INF-B; SAC-13-11), the staff's definition of "vulnerable species" refers to the species that, in the *sensu latu*,

seabirds, sea turtles, and elasmobranchs, have resulted in increased efforts to develop more effective conservation and management measures for these species groups. These measures often prohibit retention and require use of best handling and release practices (BHRP) to reduce the impacts of fishing on these populations. However, developing safe and effective BHRP guidelines is often a complex and iterative process that involves understanding fishery characteristics, handling and discard methods, and post-release survival rates. The IATTC staff are currently developing safe and practical BHRP guidelines that are effective for vulnerable species captured by the various fishing gears across the convention area. A workplan with phases, components, and activities (including a list of research priorities), as well as a framework, and a timeline towards BHRP adoption for each vulnerable taxa have been developed by the staff (EB-02-03), and was received with interest by the EBWG.

The IATTC staff, in collaboration with CPCs, subject matter experts and industry personnel nominated by CPCs, have developed, in 2025, updated BHRP guidelines for sharks (SAC-16-10), sea turtles (EB-03-05) and seabirds (EB-03-06). Following requests from CPCs that more time be allocated for the thorough review of these BHRP guidelines, IATTC staff held the 1st Workshop for Advancing Best Handling and Release Practice Guidelines for Sharks in December 2025 and for Seabirds and Sea Turtles in January 2026. The feedback and comments to the BHRP guidelines received during the workshop were integrated into updated documents (Sharks SAC-17-08; Seabirds EB-04-05; Sea turtles EB-04-04) and circulated to CPC nominated SMEs for a final round of review prior to posting on the meeting websites.

In response to SAC-16 Recommendation and Resolution C-25-08 on the safe lifting of large sharks by the caudal peduncle, IATTC staff developed an unfunded project proposal (M.1.f; SAC-17-INF-K) for a controlled pilot study evaluating the use of Velcro straps and harnesses, and associated handling protocols, as bycatch release devices (BRDs) for large sharks (except whale sharks) caught in purse-seine fisheries. Pending dedicated funding and the Commission's clarification of the regulatory scope for such trials, staff have begun the work opportunistically — collaborating with researchers and industry partners to test prototype devices, document release outcomes, and refine designs and protocols based on at-sea feedback. Preliminary observations, device specifications, and a description of the experimental approach are presented in SAC-17-INF-K.

The efficacy of BHRPs is dependent upon fishers being aware of, trained in, and competent in the implementation of recommended BHRPs and informed of which practices must be avoided or employed. Further, fishers require training in the proper use of BHRP tools, hook removal and resuscitation techniques, as needed. For this reason, the staff recommends that upon adoption, BHRP traininginfographics, videos, outreach materials and curricula be developed and implemented, to facilitate education of the coordinators of training programs and fishers across the region. Therefore, regarding the implementation and training of BHRPs, the IATTC recommends that:

RECOMMENDATIONS:

Specifically on sharks (see the sea turtle and seabird sections for BHRPs recommendations for these groups):

1. Consider updating Resolution C-25-08 with the inclusion of the shark BHRP guidelines outlined in SAC-17-08 for all IATTC fisheries.
2. Consider allocating funding to support unfunded project M.1.f on the use of the shark Velcro and

and due to their low-productive life-history traits (i.e. K species in r/K selection theory), are more susceptible to the impacts of fisheries and other anthropogenic activities on these species or their habitat and ecosystem. This includes the marine mammals, seabirds, sea turtles and the elasmobranchs.

shark harness lifting devices (SAC-17-INF-K).

Regarding the implementation of BHRP:

2. The Commission ensures the necessary funding to support capacity building, the development of training materials and a range of education and outreach activities (unfunded project Q.3a in SAC-17 INF-E).

3. DATA FOR LARGE LONGLINERS

Recent challenges with the stock assessments of the primary tropical tuna species in the EPO demanded the use of sophisticated analyses that required fine-scale spatial and temporal resolution catch, effort and size data (SAC-11-06; SAC-11-07; IATTC-95-05) from the longline fleets operating far from the coasts and particularly in the high-seas, which in some cases, are not routinely available to the staff. Challenges are also encountered by the staff when producing assessments for tuna-like species, such as swordfish (SWO-01), due to a lack of data. CPUE and length composition data from Japan forms the basis for the index of abundance and the associated length frequency data used in the last benchmark assessment (SAC-15-02) and the current update assessment (SAC-17-03) of bigeye, and it is key to address hypotheses of spatial structure in the stock assessment of yellowfin tuna in the EPO (SAC-16-03). However, over the past two decades the magnitude and spatial extent of effort by the Japanese fleet has decreased markedly in the EPO (SAC-15-02), thereby deteriorating the quality of the index of abundance and the associated length frequency. Recent collaborative work with Japan, Korea, Chinese Taipei and China has improved the understanding of their logbook data for developing joint indices of abundance for yellowfin and bigeye tuna. Progress in constructing multi-fleet indices of abundance were made in the last benchmark assessment of yellowfin (SAC-16-03) where an index from Japanese and Korean data was used. Data for this work were only made available to the staff via multiple MoUs between the IATTC and each CPC, which are renewed annually, and are restricted to be used for yellowfin and bigeye indices. The data regularly submitted by the CPCs related to the Resolution C-03-05 on data provision are aggregated spatially (1° x 1° or 5° x 5°) and contain little or no gear configuration information, and no vessel identifiers, which are important factors for better understanding changes in catchability and species targeting (OTM-30), both of which are needed to provide abundance indices. Operational-level data (high resolution 'level 1' catch and effort data as defined in C-03-05) with corresponding size information are necessary to improve the indices of abundance routinely used in the stock assessments for bigeye and yellowfin tuna and will become increasingly important for other commercially important species such as swordfish, and other billfish. These data already exist for most, if not all, large longline fleets (and for some small-scale coastal longline fleets), are currently submitted to other t-RFMOs by IATTC CPCs (WCPFC13), and are similar to the data available to the staff for the purse-seine fishery. Therefore, these equivalent longline data should be expected to be made available to the IATTC on an annual basis for the purposes of improving the quality of data reporting and research to facilitate fulfillment of mandates by the Antigua Convention.

The staff has routine access to high-resolution data for most of the purse-seine fleet, but not for most longline fleets. The quality of stock assessments of tuna and tuna-like species undertaken by the staff would increase if the staff had routine access to high-quality existing data for all the longline fleet and more species.

Additionally, the Antigua Convention entered into force over a decade ago and expanded the mandate of the Commission to include non-target, dependent and associated species, and the effects of the fishery on the ecosystem. The data provision has lagged both in pace and types of data reported to the IATTC. This in turn has affected the staff's ability to adequately fulfill its obligations under the Convention and objectives under IATTC's Strategic Science Plan (2019–2023: IATTC-93-06a; updated for 2026–2030: IATTC-103-03a). Therefore, the staff—under the direction of a SAC- and Commission-endorsed staff recommendation (see SAC-12-16, General Data Provisions)—planned and facilitated the 1st workshop on

improvements in data collection and provision with a focus on the industrial longline fishery (WSDAT-01) taking into consideration elements from SAC-12-09 on data gaps pertaining to all gear types. Preliminary staff recommendations to improve data collection and provision for the industrial longline fishery were presented at the workshop (WSDAT-01-01) to stimulate discussions on recommendations to revise resolution C-03-05. Input from workshop participants (WSDAT-01-RPT) was used to revise the staff's recommendations in 2023 (SAC-14 INF-Q) and 2025 (SAC-16 INF-O).

The SAC, in general terms, endorsed the recommendations on tunas presented by the staff in SAC-14-14 (SAC-14-16, paragraph 1d) as well as a recommendation that the Commission review and update Resolution C-03-05 on "Data Provision", taking into consideration document SAC-14 INF-Q (SAC-14-16, paragraph 7.1). In 2025, the SAC also recommended in section 4.2 Longline data reporting under Data Collection and Provision (IATTC-103-02), "*That the Commission Consider amending Resolution C-03-05 to enable the IATTC scientific staff to access operational set by set level logbook data from the longline fleet, or at a minimum, data aggregated at a 1 by 1 degree spatial resolution by vessel, month, and hooks per basket (or hooks between floats) for the construction of abundance indices and other useful information for stock assessments of tropical and temperate tunas. This may be currently achieved through a memorandum of understanding between the CPCs and the IATTC to make the data available during the development of the stock assessment.*" Therefore, the importance of updating Resolution C-03-05 with submission of operational longline data is reiterated by the IATTC staff.

RECOMMENDATIONS:

Following the SAC-endorsed staff recommendation to review and update Resolution C-03-05:

1. Update the data provision resolution (C-03-05) to improve the reliability of scientific advice, based on indices of abundance derived from longline data, for management of stocks of tuna and tuna-like species and to better align data provision and submission requirements with the Antigua Convention's principle of the Ecosystem Approach to Fisheries Management (EAFM) and its mandate to include non-target, dependent and associated species, and the effects of the fishery on the ecosystem.

Consider the following recommendations summarized from SAC-14 INF-Q and SAC-16 INF-O (see documents for detailed recommendations):

2. The Commission establishes a resolution (e.g., either a new resolution or through amendments to Resolution C-03-05) to mandate the submission of set-by-set and vessel-specific, catch by species and effort longline data, both current and historical, and update annually thereafter, by March 31st every year, to the scientific staff for their use pursuant to the objective, rules, and relevant provisions of the Antigua Convention and measures adopted by the IATTC.
3. Until the coverage of the operational-level logbook data provided to the Commission is 100%, catch and effort data aggregated at a 1° x 1° spatial resolution by vessel, month, hooks-per-basket and species should be provided. Priority should be given to tuna and tuna-like species and species of special interest (see Tables 1a and 1b, SAC-16 INF-O).
4. The resolution in recommendation 2 includes compulsory reporting of size composition data that are representative of the catches by the fisheries at the finest possible spatial and temporal resolution in the originally measured type and unit.

On a case-by-case basis, where necessary according to domestic laws and regulations, a CPC may work with the Director to develop a Memorandum of Understanding or other equivalent instruments, subject to periodic renewal, in order to provide IATTC with continuous or near continuous access to these data for scientific use.

4. ECOSYSTEM CONSIDERATIONS

4.1. Operationalization of EAFM

International instruments such as the 1982 United Nations Convention on the Law of the Sea (UNCLOS), the 1995 FAO's Code of Conduct for Responsible Fisheries (CCRF), the 2001 Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem and IATTC's 2003 Antigua Convention prompted IATTC's production of an *Ecosystem Considerations* report, updated annually since 2003 (see e.g., EB-03-01). The purpose of this report is to broadly describe fisheries impacts on the EPO ecosystems and therefore to promote and strengthen awareness of this topic among its members and other relevant stakeholders. Due to the increasing length and complexity of this report over the past 20 years, IATTC's staff undertook an evaluation of the ways and means of better communicating the status of the ecosystems as well as advancing and supporting operationalization of the Ecosystem Approach to Fisheries Management (EAFM). In 2023–2024, the staff collaborated with experts working with other tuna-Regional Fisheries Management Organizations (t-RFMOs) to review and summarize ecosystem research conducted globally, and how this research is delivered to the respective Commissions. This review was used to inform an *EcoCard* workplan (EB-02-02), which—along with its progress report presented in 2025 (EB-03-04)—was supported by the Ecosystem and Bycatch Working Group and the SAC (see SAC-15 Recommendations; SAC-16-16). Since then, the staff advanced implementation of the *EcoCard* workplan in consultation with other t-RFMOs and global experts (as recommended by the SAC), focusing on the development of criteria for ecoregion delineation and the selection of candidate indicators (EB-04-03).

RECOMMENDATION:

Continue supporting the implementation of the Ecocard workplan, noting the criteria established for delineation of ecoregions and indicator selection in EB-04-03.

4.2. Updating morphometric relationships and collecting biological samples from prioritized species in EPO tuna fisheries to improve stock and ecological assessments

Length-weight (L-W) relationships are the foundation to a variety of research projects including stock assessments, ecological risk assessments (*e.g.,* EASI-Fish) and for converting catch reported in numbers to weights, and vice versa. These relationships can vary markedly in space and time and can greatly influence stock and risk assessment model outcomes. Despite this, L-W relationships for tunas are outdated (*e.g.,* yellowfin: 1986, bigeye: 1966 and skipjack: 1959) or inadequate for many priority species (see SAC-13-11, SAC-09-12, IATTC Special Report 25). Catch estimations are also affected by imprecise and/or outdated L-W relationships. Furthermore, species and size composition of the catch and fishing strategies differ significantly between longline (LL) and purse-seine (PS) fisheries (*e.g.,* see IATTC-102-01). Additionally, basic life history data for assessment models are absent or inadequate for most bycatch species. A proposed feasibility study (Project F.3.a) addresses these issues and a background paper (SAC-14 INF-J) summarizes the staff's internal discussions, provides background information, describes data deficiencies in morphometric relationships and biological sampling, and identifies potential sampling opportunities in 3 gradual phases. In SAC-14 INF-J, the staff built upon Project F.3.a and developed a hierarchical phased-based approach to update morphometric relationships and biological sampling for tunas, billfishes, and prioritized bycatch species, through the collaboration of staff, CPCs, industry and other relevant stakeholders. This project is complementary to other data improvement projects (SAC-12-09, WSDAT-01-01, WSDAT-01 Report, WSDAT-02-01, WSDAT-02 Report) and also aims to align with work conducted in the Western and Central Pacific Ocean through SPC's Oceanic Fisheries Programme on the collection of morphometric data to build a comprehensive database on various length and weight types and to establish collection of biological samples (*e.g.,* see SC18-ST-IP-04). Concerns over the outdated morphometric relationships for tunas were discussed at the 1st external review of data used in stock assessments of tropical tunas in the eastern Pacific Ocean (RVDTT-01), and this inadequacy contributes to considerable uncertainty in catch estimates and the tuna stock assessments. Accordingly, the external review panel recommended the implementation of Project F.3.a (RVDTT-01). In 2025, with the support from a voluntary financial contribution from the United States, the Enhanced Monitoring Program collected morphometric measurements for tropical tunas and prioritized bycatch species from purse-seine vessels unloading in Manta and Posorja, Ecuador and Mazatlan, México. In total 469 wells across 188 fishing trips were sampled, resulting in the collection of 1,219 measurements from 23 bycatch species. Ongoing sampling carried out by the Integrated Port Sampling Program are expected to continue collecting data, providing robust insights into temporal and spatial variability for bycatch species.

RECOMMENDATION:

In collaboration with CPCs and relevant stakeholders, expand the morphometric and biological sampling currently being executed under the IPSP for tropical tuna to also include prioritized species. Potential strategies for implementing and scaling up such fishery-dependent sampling programs are outlined in Project F.3.a (SAC-17 INF-E) and SAC-14 INF-J, including collection across multiple EPO fisheries (see Tables 1a and 1b in SAC-16 INF-O).

5. FISH-AGGREGATING DEVICES (FADs)

The recommendations in this section are based on documents FAD-08-02, FAD-09-02, FAD-10-01, FAD-10-02 and FAD-10-03; some of which were previously endorsed by the *Ad Hoc* Working Group on FADs, SAC-09, SAC-10, SAC-14 and IATTC-97-01, among others.

5.1. Provision of detailed historic buoy data

Under previous Resolutions C-17-02 and C-20-06 CPCs were required to provide "daily information" on their active FADs, which was interpreted to mean a single data point per FAD per day. However, the criteria for selecting a single point from a FAD's daily path was unclear and no acoustic biomass information was required by the Resolutions. The combination of low resolution and ambiguous selection criteria meant that these data were of limited scientific utility. Also, CPCs were allowed to report data in different formats, sometimes highly summarized (without any information on FAD identification or trajectory), which limited the scientific use of these data. In recent years, the IATTC staff, the FAD-WG and the SAC recommended the provision of raw buoy data as received by original users (*i.e.*, vessels, fishing companies), including both trajectories and acoustic biomass information. Therefore, starting in 2022, Resolution C-21-04 required CPCs to report these data following the format specified in Annex IV of C-21-04.

Despite Resolution C-21-04 reducing the number of active FAD limits in 2022 and 2023 relative to the 2018–2021 period, analysis of raw buoy data for 2022–2023 (e.g., FAD-09-01) has suggested an increase in the number of active FADs used by the fleet. However, the data available to the staff before and after 2022 are inconsistent in both reporting rate and quality, and thus, the exact reasons for this increase remain unclear, but may range from improved data to actual increases in FAD usage.

In addition, a recent study conducted by the IATTC staff (FAD-09-02) found that only 30% of deployed FADs were observed to be recovered/interacted with, meaning that up to 70% of deployed FADs observed over the study period (2019-2024) are potentially unrecovered. This analysis was expanded in 2026 to also include raw buoy data (FAD-10-02), confirming that a substantial fraction of buoys leave the active fishing ground on a regular basis, with some stranding in the EPO and beyond. Access to historic raw buoy data would enable the staff to provide more reliable estimates of the fate of FADs not observed as recovered by IATTC observers, as well as facilitate improved science-based management efforts, such as spatial management options, FAD recovery programs or incentive systems, among other potential options. Moreover, as noted by voluntary pilot studies using raw buoy data, including both trajectories and acoustic biomass information, at regional (*e.g.*, FAD-05-INF-E, FAD-06-03, FAD-07-03, SAC-13-07, FAD-08-02) and global scale (*e.g.*, IOTC-2020-WPTT20-14, SCRS/2019/075, SCRS/2024/044), scientific studies, including improved stock assessments of tropical tuna, require high-resolution, standardized long-time series data. Therefore, the staff recommends that CPCs provide historic raw buoy data in order to conduct the appropriate scientific analyses, and in particular, to continue improving staff's understanding of FAD fishery dynamics and the assessment of skipjack (SAC-15-04) and other tropical tuna species.

RECOMMENDATION:

CPCs provide to the IATTC staff the historic raw buoy data received by original users (*i.e.,* vessels, fishing companies), including both trajectories and acoustic biomass information.

5.2. Biodegradability: certifications and standards

Resolution C-23-04 establishes a gradual transition to fully biodegradable drifting FADs in the EPO by 2031, with progressive milestones in the share and components of bio-based materials used in FAD construction. Delivering on this transition requires that the materials labeled as "biodegradable" by manufacturers and used by the fleet actually degrade in the marine environment, do not introduce hazardous additives or generate microplastics, and can be reliably identified, tracked, and verified by the Commission. In response to recommendations from the 9th Meeting of the *Ad Hoc* Working Group on FADs (FADWG-9) and endorsement by the SAC at its 16th meeting in 2025, the staff has reviewed the landscape of marine biodegradability certification standards as they apply to the bio-based materials currently used in EPO bio-FAD construction, including bioplastics, rubber/latex coatings, and natural plant-based fibers (FAD-10-03).

The document highlights key concepts related to the biodegradability of materials used in FAD construction and compile types of test standards and certification labels applied to biodegradability of bioplastics materials in marine environments. Current test methods and certification schemes often rely on indirect indicators, lack clear pass/fail criteria, were developed for compost, soil, or freshwater and certain marine environments, rather than the tropical open-ocean conditions in which FADs drift, and rarely reflect the thickness, structural complexity, and multi-material composition of actual FAD components. In addition, screening for hazardous additives, toxic monomers, or degradation by-products is generally not part of marine biodegradability certifications. To ensure proper implementation of Resolution C-23-04, and given the scale at which these materials are deployed in the marine environment, the staff considers it necessary to (i) apply a precautionary approach to the adoption of new materials, (ii) align expectations on FAD lifespan with the environmental objectives of the Resolution, (iii) catalogue the materials used by the fleet against recognized marine biodegradability standards and certifications, and (iv) obtain this information prior to vessel departure so that it can be integrated into IATTC databases for research, monitoring, and compliance purposes. On this basis, the staff's recommendations are as follows:

RECOMMENDATIONS:

1. Apply a precautionary approach to the use of new bioplastic or coated materials in FADs, allowing their use only when there is clear evidence of environmental safety, including compliance with recognized marine biodegradability standards and certifications.
2. Provide guidance on environmental performance objectives for FAD materials, in particular target degradation times and the environmental medium (e.g., seawater or sediment) under which marine biodegradability standards should be assessed, and periodically review these standards as science and international regulations evolve.
3. Encourage studies and testing of bio-based materials for FADs, including development of marine biodegradability protocols that reflect the thickness, structural complexity, and multi-material composition of actual FAD components.
4. Strengthen reporting requirements by requiring vessels or companies, prior to each trip, to submit to the Secretariat or field office the commercial name, polymer composition (bio or fossil based), manufacturer, function, and any applicable biodegradability standards and certifications of materials used in bio-FAD construction, for integration into IATTC databases.

5.3. Regional data collection program on stranding FADs and reducing FAD loss

The best available estimates of FAD lifespans at sea in the EPO come from data collected by IATTC observers starting in 2019. These data reveal that only 22% of observed FADs were recorded to be recovered, meaning that up to 78% of deployed FADs tracked by IATTC observers are potentially unrecovered (FAD-09-02). This analysis was expanded in 2026 to also include raw buoy data (FAD-10-02), confirming that a substantial fraction of buoys leave the active fishing ground on a regular basis, with some stranding in the EPO and beyond. The potential effects of unrecovered FADs on the environment, stocks and ecosystems through impacts such as

ghost fishing, school dynamics, stranding or collisions with sensitive habitats, and general marine pollution are not well known, although there is a generalized awareness and concern regarding the consequences of their stranding and the resulting damage to ecosystems.

In this context, the IATTC recognized the importance and urgency of the issue and adopted measures "*to prevent loss or drifting*" of FADs (Resolution C-23-03, paragraph 3; Resolution C-25-07, paragraph 5) and establish a gradual transition to fully biodegradable FADs by 2031 (Resolution C-23-04), in addition to acknowledging the repeated recommendations of the *Ad Hoc* Working Group on FADs (FADWG) (e.g., FAD-07-05) that were also endorsed by the SAC (e.g., IATTC-101-03):

"3. *On stranding FADs*

3.1. Consider alternative mechanisms to continue monitoring buoys that are leaving the convention area or the fishing grounds and that are susceptible for deactivation, taking into account the implications with regard [to] the limits on active FADs per vessel.

3.2. To the extent possible, provide data to the Secretariat on the entire trajectory of FADs, even when transiting outside the convention area or the fishing grounds, monitored through new FAD marking systems, the FAD's buoy or other systems.

3.3. Consider putting in place a set of best practices for optimizing FAD retrieval.

3.4. Promote FAD recovery programs, both from the land and from the sea, and establish standards to ensure the effectiveness of these programs.

3.5. Create awareness of FAD strandings and encourage the expansion of the in-country data collection efforts on FAD strandings in the EPO to harmonize with SPC-WCPFC efforts in the WCPO.

3.6. Develop solutions to process/recycle FAD materials in ports."

To this end, CPCs were invited to participate in the development and implementation of an IATTC regional data collection program on FAD strandings (Memorandums Ref.: 0008410 and 0373-410) aimed at (i) facilitating a better understanding of the extent of environmental impacts of drifting or stranded FADs both in the EPO, and in the WCPO, when crossing over to that area and (ii) contributing to improved management advice on FADs. Development of this program will harmonize IATTC's efforts with those already established by the WCPFC's data collection program described in FAD-07 INF-A to foster Pacific-wide research as recommended by the SAC ("*Increase Pacific-wide collaboration on drifting FAD research*…" See document IATTC-101-03, recommendation 5.1). It will also facilitate collaboration on FAD stranding events as well as guidance of potential management options, particularly for events that span both regions.

Six CPCs and TUNACONS responded to the memorandums and expressed interest in participating in a voluntary regional data collection program to harmonize with SPC-WCPFC's efforts. In December 2024, an informal meeting was held virtually for CPCs that expressed interest in establishing a voluntary regional data collection program on FAD strandings. SPC staff presented experiences with implementing a data collection program on stranding FADs in the WCPO and suggestions for the next steps and elements needed to initiate regional programs were presented by IATTC staff, based on SPC's experiences. These potential steps included:

(1) creating awareness about FAD strandings and engaging with local communities,

(2) networking with NGOs and/or local organizations with existing marine pollution projects or other projects that might allow for inclusion of data collection on FAD strandings,

(3) training fisheries officers in coastal States on communication materials, the FAD form and database (harmonized with WCPFC's communication materials, FAD form and database and adapted for the EPO), and

(4) regularly communicating with fisheries officers to ensure training is conducted accordingly.

Elements to consider for initiating local data collection programs included funding for dissemination material, program launch and other support (e.g., personnel). The initial interest by these CPCs, as well as the success of the eventual data collection program on stranding FADs, could significantly benefit from the participation of other CPCs in the region and from increasing awareness by local communities.

Following the adoption of Resolution C-25-07 at the 103rd IATTC Meeting (September 2025), which references voluntary FAD sighting and recovery programs under paragraphs 5 and 6, a second informal virtual meeting was convened in 2026 to advance implementation. The meeting brought together CPCs engaged in, or considering participation in, voluntary regional FAD sighting and recovery programs, and focused on two objectives: (1) reviewing and clarifying the data fields in the FAD sighting form referenced in paragraph 6, and (2) aligning data entry procedures with the IATTC/SPC regional database to ensure consistency and comparability across reporting CPCs.

Drawing on IATTC staff's input and participant feedback from that meeting, SPC subsequently revised the FAD Sighting form to produce Version 4. The revisions were specifically designed to address gaps identified in the context of EPO reality and recovery operations and to better align the form with the operative requirements of C-25-07. Compared to the Version 3 form appearing as Appendix 3 of FAD-09-INF-A, Version 4 makes targeted improvements with direct regulatory relevance: it explicitly identifies the data collection context—distinguishing community programs, recovery programs, and surveys—reflecting the different program types under paragraph 5.

At present, paragraph 6 directs CPCs to submit data using "the FAD sighting form from Appendix 3 of FAD-09-INF-A", a working group information document presented by SPC at the 9th meeting of the Ad Hoc Permanent Working Group on FADs in May 2025, which will be superseded as the scientific program and regulatory framework develop. Anchoring the data collection instrument in a working document rather than in the Resolution itself creates a lack of clarity: the referenced document may be updated or renumbered in future meeting cycles, creating uncertainty for CPCs about which version of the form satisfies their reporting obligations. In addition, the form in Appendix 3 of FAD-09-INF-A does not match the form recommended by the staff for adoption in 2025 (SAC-16-11). Incorporating Version 4 (Appendix A) directly into C-25-07 as a numbered annex eliminates this ambiguity, provides a stable and updated reference, and ensures that the data collection obligation is current and self-contained within the Resolution and legible to CPCs and vessel operators without the need to consult meeting-room information documents.

RECOMMENDATIONS:

1. Amend paragraph 6 of Resolution C-25-07 to replace the reference to "the FAD sighting form from Appendix 3 of FAD-09-INF-A" with a direct reference to the updated FAD Sighting and Recovery Form Version 4 (Appendix A) developed and harmonized collaboratively by IATTC and SPC staff, incorporated as Annex 1, or a similar approach, to the Resolution itself.

2. CPCs are strongly encouraged to participate in, or establish, a voluntary regional data collection program on drifting FAD strandings and at-sea recoveries, using the FAD Sighting and Recovery Form Version 4 (Appendix A).

5.4. Reducing FAD loss

Building on observer-based estimates of FAD lifespans (FAD-09-02), the IATTC staff conducted a complementary, trajectory-based analysis of drifting FADs in the EPO (FAD-10-02), using satellite buoy data shared under Resolutions C-21-04, C-24-01 and C-25-01, complemented by collaborator-sourced FAD encounter records and the IATTC deactivation database. The analysis covered 134,877 unique buoys tracked from 2022 through 2025 (100,474 eligible after quality control), and provides the most comprehensive picture of EPO buoy dynamics assembled to date.

Key findings indicate that 84.2% of buoys were classified as wet at their final observation, suggesting that most buoys stop transmitting while still drifting at sea; dry terminal observations consistent with stranding or recovery concentrated along Central and South America, the Galápagos, parts of French Polynesia, and island coastlines west of the IATTC Convention Area in the WCPO. Approximately 23.4% of IATTC-deployed buoys with wet terminal observations either entered or likely drifted into/around the WCPFC Convention area, confirming substantial EPO–WCPO connectivity. A non-trivial share of deployed buoys (20–40%) appeared in only a single segment and were not seen again, while re-used buoys typically generated between 2 and 10 distinct segments, implying recovery–redeployment cycles. BioFAD and conventional FAD segments behaved similarly in duration and distance traveled within the area and period analyzed.

The analysis also identified a substantial reporting gap: only 27.5% of buoys had a deactivation record matched within exact/near quality bands at their terminal observation, with 35.3% absent from the database entirely and 37.2% carrying a record that could not be cleanly paired to the terminal row. Strengthening the timeliness and completeness of remote deactivation and reactivation reporting — including for buoys that leave the IATTC Convention Area but continue transmitting — together with Pacific-wide coordination on stranding and recovery, would help close the main remaining gaps and enable informed FAD management, including spatial management opportunities, recovery programs, and incentive systems.

RECOMMENDATION:

1. Improve remote deactivation and reactivation reporting, including the development of an updated reporting template — building on the existing form — or requiring automatic reporting by the buoy manufacturers.
2. Expand data reporting beyond the IATTC Convention Area for buoys deployed in the EPO, so that geofencing at 150° W (or any other operational boundary) does not obscure the analysis of active buoys after leaving the IATTC.
3. Continue Pacific-wide collaboration to reduce FAD loss and strengthen recovery programs, including coordination with WCPFC-SPC and other regional databases (e.g., French Polynesia, Clipperton, Galápagos).
4. Prioritize the exploration of spatial management options, recovery programs, and incentive systems that reduce the environmental impact of FADs.

6. OBSERVER COVERAGE

Purse-seine vessels of less than 364 t carrying capacity

No formal, fleet-wide onboard observer program exists for Class 1–5 purse-seine vessels, and as a result, trips by many small[4] purse-seine vessels are not sampled by observer programs (SAC-08-06a, SAC-12-09, SAC-14-11, EB-02-01, WSDAT-02-01, WSDAT-02-02). However, data collection has been improving, mostly due to a voluntary observer program established in 2018. Initially, observer coverage from this program was low due to its voluntary nature. Therefore, vessel logbooks and cannery unloading records are the principal sources of data on the activities of these for Class 1–5 purse-seine vessels. However, these non-observer data sources generally do not contain information on tuna discards, and the data are less complete and detailed than those collected by observers. In addition, bycatch information is only rarely recorded in logbooks, which hampers efforts to track indicators or conduct assessments for such species. Electronic monitoring (EM) for this fleet component was explored (Project D.2.a; SAC-10-12), and capabilities of EM systems in the pilot study

[4] Carrying capacity ≤ 363 t.

are detailed in Appendix 2 of SAC-11-11. In 2024, voluntary interim minimum standards for the use of EM systems in EPO fisheries were adopted through Resolution C-24-09. Therefore, a formal, non-voluntary, fleet-wide observer program is recommended to routinely obtain the data necessary for estimating the quantity and species composition of bycatches (retained and discarded) by these vessels and to understand the strategies and dynamics of their operations. In February 2025, the 2nd workshop on data improvement, focused on the small purse-seine fishery (see WSDAT-02), was held virtually. During the workshop, staff presented preliminary recommendations (see WSDAT-02-01), which drew upon an analysis that was conducted to assess observer coverage levels for total bycatch estimates for this fleet segment (see WSDAT-02-02). These preliminary recommendations were discussed with participants (see WSDAT-02-RPT) and the recommendation on observer coverage was revised to incorporate the feedback from workshop participants (see also SAC-16 INF-O).

Longline vessels greater than 20 m length overall (LOA)

Resolution C-19-08 requires that at least 5% of the fishing effort by longline vessels greater than 20 m length overall (LOA) be monitored by a scientific observer. However, analyses undertaken by IATTC staff with the operational-level data collected by observers onboard large longline vessels showed that, at such a low level of coverage, the data are not representative of the fishing activities of the entire fleet and cannot be used to produce sufficiently accurate estimates of total catch of target species such as bigeye tuna and yellowfin tuna (BYC-10 INF-D). Therefore, the staff concluded that 5% coverage is also too low for reliably estimating total catches of bycatch species caught by these vessels, particularly those species caught infrequently, such as sea turtles, seabirds and some sharks of conservation concern.

IATTC staff have long expressed concern that the current 5% observer coverage for longline fleets is insufficient. Studies since 1996 have recommended substantially higher coverage levels—ranging from 20% (Skillman et al. 1996) to as high as 80% (McCracken 2012)—to adequately monitor bycatch, particularly for rare species. Based on this evidence, staff have consistently recommended increasing coverage to at least 20% since 2017 (IATTC-92-04c; p. 4), but this proposal has not been adopted by Members. Both the staff and the SAC have recommended that this level of coverage be adopted for longline vessels over 20 m LOA (SAC-10 INF-H).

To close the data gaps identified above for Class 1–5 purse-seine vessels, raise the inadequate 5% coverage on longline vessels over 20 m LOA, and clarify the objectives of the observer program, the IATTC staff recommends:

RECOMMENDATIONS:

For purse-seine vessels of less than 364 t carrying capacity

1. Establish a non-voluntary, observer program[1]—comprised of onboard observers or electronic monitoring systems (EMS)—for small purse-seine vessels ≤363 t carrying capacity that mimics the Class 6 observer program (i.e., vessels with a carrying capacity >363 t), to the extent possible, including but not limited to catch, disposition (e.g., retained, discarded) and fate (e.g., released alive, released injured, dead) in numbers of individuals or weights, and length composition data on priority species[2] and other species that interact with this fishery[3]. Coverage levels would depend on the program's ultimate objectives[1].

For longline vessels greater than 20 m length overall (LOA)

2. Update paragraph 3 of Resolution C-19-08 to increase observer coverage[1]—comprised of onboard observers and/or electronic monitoring systems (EMS)—for longline vessels over 20 m length overall to at least 20% to improve data for stock assessments and ecological assessments, including but not limited to catch, disposition (e.g., retained, discarded) and fate (e.g., released alive, released injured,

dead) in numbers of individuals, and length composition data on priority species[2] and other species[3] that interact with the fishery.

Regarding clarity on observer programs' objectives

3. The objectives of the observer programs should be clarified by the Commission, with regard to metrics desired (e.g., total catch, presence-absence), priority species, tolerable estimated error rates, and the data to be collected on those species, since these will contribute to the definition of "representative" data and appropriate coverage levels.

[1] Noting the observer program, and corresponding coverage level, should be designed to collect representative data (and corresponding acceptable estimated error rates) on the priority species (see [2]). For example, the mix of vessel sizes and fishing strategies prioritized for the observer program may change depending on the list of priority species and the corresponding estimated error rates, as well as the relative impact of different vessels and fishing strategies on those species.

[2] Priority species include tunas, bonitos and billfishes (see Table 1a in SAC-16 INF-O), followed by species of interest (see Table 1b in SAC-16 INF-O) defined as those for which the Commission has adopted specific Resolutions (e.g., sharks: C-25-08, C-25-09, C-19-06, C-11-10; sea turtles: Resolutions C-19-04, C-04-07; mobulid rays: Resolution C-15-04; dorado Resolution C-23-09 and C-25-05; bycatch: Resolution C-04-05).

[3] Other non-target species caught incidentally as bycatch (e.g., Resolution C-04-05) – see Table 1c in SAC-16 INF-O.

7. LONGLINE FISHERY CHARACTERIZATION AND CLASSIFICATION IN THE IATTC

During the 2nd meeting of the Ecosystem and Bycatch Working Group (EBWG), a recommendation was adopted stating, "*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*." Consequently, the IATTC staff developed an approach to produce staff recommendations, in coordination with CPCs, for formally classifying and defining longline fisheries that operate in the Antigua Convention Area (see SAC-16-09).

Furthermore, the 3rd meeting of the EBWG adopted the recommendation, "*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*." Comments and technical input received from the SAC, EBWG and stakeholders have been reviewed and incorporated, resulting in the revised and more detailed longline fleet categories presented in SAC-17-07.

A new, updated and improved classification of the longline fleet is essential for strengthening IATTC documentation, guiding research and monitoring priorities, supporting management decisions, and improving clarity for CPCs, data providers, scientists, and policy makers, particularly with regard to implementation of, and compliance with the measures adopted by the IATTC. Therefore, SAC-17-07 focuses on establishing clear, standardized categories—particularly for smaller-scale longline vessels—and to support consistent use and definition of terms (e.g., "artisanal", "small-scale", "industrial", "large-scale") in relevant IATTC Resolutions.

Clear definitions will help CPCs determine which vessels are obligated, encouraged or exempt from compliance with specific measures as well as to guide research priorities (e.g., development of Best Handling and Release Practices (BHRPs) for vulnerable non-target species such as sharks, turtles, etc.). Standardized classifications will also enhance data-reporting consistency (e.g., under Resolution C-03-05) and improve estimates of total removals from these fleets. Because many IATTC Resolutions exempt, or refer to, "artisanal" or "small-scale" vessels without providing explicit definitions, reporting practices, for example, have varied among CPCs. A transparent, technically grounded classification system will help resolve these inconsistencies.

Consequently, the three broad categories in SAC-16-09 were further refined into five categories in SAC-17-07: "large-scale longline"; "advanced medium-scale longline"; "medium-scale longline", "small-scale commercial

longline" and "small-scale coastal longline". Because vessel characteristics vary widely among CPCs, the categories were instead defined using general operational attributes that describe how, where, when, and why longline vessels fish for tuna and tuna-like species under the Antigua Convention in the EPO. These attributes include, for example, the vessel's autonomy (i.e., time at sea), fishing areas, target species and technologies used, vessel size and design, and preservation and storage capabilities. The process and the parameters and variables used to define and classify these fleets can be found in SAC-17-07.

RECOMMENDATION:

1. Consider adopting five categories to formally define longline fisheries in the IATTC Convention Area (large-scale, advanced medium-scale, medium-scale, small-scale commercial, and small-scale coastal) based on the information and classifications described in SAC-17-07.

2. Consider, as appropriate, updating through amendment relevant IATTC Resolutions and data-reporting frameworks (e.g., catch and effort reporting), explicitly linking each category to applicable obligations, exemptions, and research priorities.

8. CLIMATE CHANGE

In 2023, the IATTC adopted Resolution C-23-10 on climate change. Since then, the IATTC staff proposed a Climate Change workplan (SAC-15-12) for consideration by the Commission that provided a general structure to promote climate-resilient tuna fisheries in the EPO, in the understanding that the details of the workplan and its implementation would be elaborated upon in consultation, as appropriate, with all relevant stakeholders, including the Commission. Since then the IATTC staff have organized two virtual climate change workshops.

The 1st climate change workshop was held over three days in February 2025, where participants were the three key elements of the proposed Climate Change workplan were discussed: main goal, scope, and framework. Based on feedback from the presentations and discussions at the workshop the staff developed SAC-16 INF-P, which detailed staff revised recommendations on the main goal, scope, and framework. Additionally, draft Terms of Reference (ToRs) (IATTC-102 INF-B) were created to guide the series of climate change workshops aimed to facilitate staff and stakeholder engagement during the implementation of the workplan.

The 2nd climate change workshop occurred over three days in April 2026, where participants learned about a variety of climate-related fisheries tools. The workshop consisted of a mini symposium of global experts presenting on strategic tools that have been developed, with the idea that some of these tools could be explored and ultimately adapted for the IATTC. After presentations, the staff facilitated discussions with workshop participants about which tools should be prioritized and developed for the IATTC. A summary of the workshop can be found in the workshop report (WSCC-02-RPT). Based on the feedback and discussion at the workshop, the staff developed SAC-17 INF-M to provide updated recommendations on which climate related fisheries tools the IATTC should prioritize over the next three-year cycle.

RECOMMENDATIONS:

The Commission focus on developing a Climate Vulnerability Assessment (CVA), a climate change scenario planning exercise, and a conservation and management measures (CMM) risk assessment, while concurrently advancing and integrating climate-related tools already underway — including species distribution models, collaborative physiological and laboratory studies (e.g. Achotines Laboratory), ecological/socioeconomic indicators, ecosystem models, fishery surveys, and stock assessments/management strategy evaluation — to assess climate impacts and vulnerabilities of the IATTC.

5. **References:**

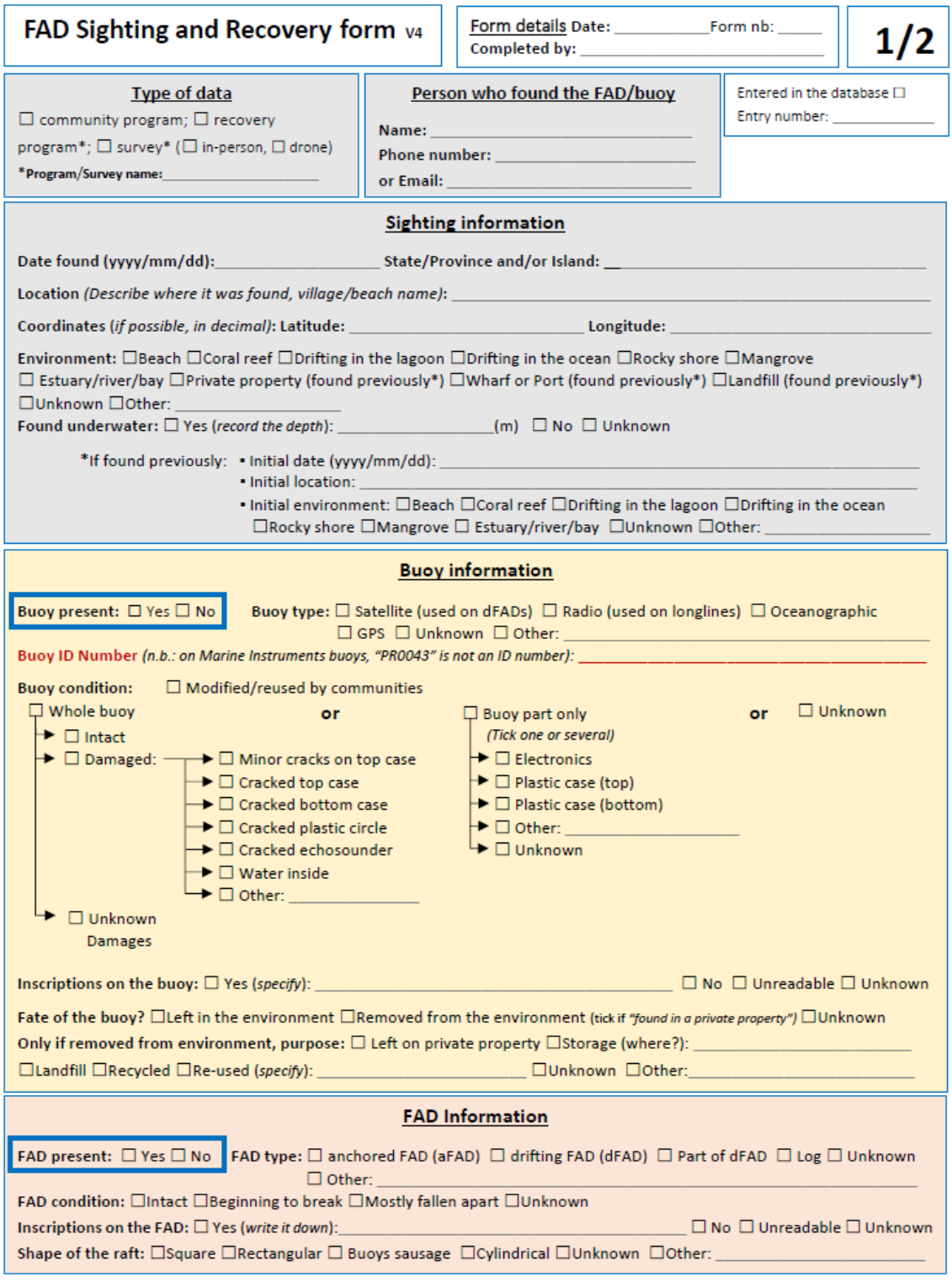
Anderson, O.R.J., Small, C.J., Croxall, J.P., Dunn, E.K., Sullivan, B.J., Yates, O., and Black, A. (2011). Global seabird bycatch in longline fisheries. Endangered Species Research, 14, 91–106.

Dias, M.P., Martin, R., Pearmain, E.J., Burfield, I.J., Small, C., Phillips, R.A., Yates, O., Lascelles, B., Borboroglu, P.G., and Croxall, J.P. (2019). Threats to seabirds: A global assessment. Biological Conservation, 237, 525–537.

McCracken M (2012) A Simulation Study of the Potential Effects of Different Observer Coverage Levels in the Hawaii Shallow-set Longline Fishery. Internal Report IR-12-040. NOAA, Honolulu, USA

Skillman RA, Wetherall JA, DiNardo GT (1996) Recommendations for Scoping the Sea Turtle Observer Program for the Hawaii-Based Longline Fishery. Southwest Fisheries Science Center Administrative Report H-96-02. NOAA, Honolulu, USA

Appendix A. Revised dedicated data collection form (version 4) established by SPC-WCPFC, in collaboration with IATTC staff, and adapted to EPO fisheries and Resolution C-25-07 to harmonize data collection across the Pacific, to the extent possible. This form corresponds to Recommendations 1 and 2, section 5.3 Regional data collection program on stranding FADs and reducing FAD loss.



FAD Sighting and Recovery form V4

Form details Date: _____ Form nb: _____
Completed by: _____

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Type of data
☐ community program; ☐ recovery program*; ☐ survey* (☐ in-person, ☐ drone)
*Program/Survey name: _____

Person who found the FAD/buoy
Name: _____
Phone number: _____
or Email: _____

Entered in the database ☐
Entry number: _____

Sighting information

Date found (yyyy/mm/dd): _____ State/Province and/or Island: _____

Location *(Describe where it was found, village/beach name)*: _____

Coordinates (*if possible, in decimal*): Latitude: _____ Longitude: _____

Environment: ☐Beach ☐Coral reef ☐Drifting in the lagoon ☐Drifting in the ocean ☐Rocky shore ☐Mangrove ☐ Estuary/river/bay ☐Private property (found previously*) ☐Wharf or Port (found previously*) ☐Landfill (found previously*) ☐Unknown ☐Other: _____

Found underwater: ☐ Yes (*record the depth*): _____(m) ☐ No ☐ Unknown

*If found previously:
- Initial date (yyyy/mm/dd): _____
- Initial location: _____
- Initial environment: ☐Beach ☐Coral reef ☐Drifting in the lagoon ☐Drifting in the ocean ☐Rocky shore ☐Mangrove ☐ Estuary/river/bay ☐Unknown ☐Other: _____

Buoy information

Buoy present: ☐ Yes ☐ No

Buoy type: ☐ Satellite (used on dFADs) ☐ Radio (used on longlines) ☐ Oceanographic ☐ GPS ☐ Unknown ☐ Other: _____

Buoy ID Number *(n.b.: on Marine Instruments buoys, "PR0043" is not an ID number)*: _____

Buoy condition: ☐ Modified/reused by communities

☐ Whole buoy
- ☐ Intact
- ☐ Damaged:
  - ☐ Minor cracks on top case
  - ☐ Cracked top case
  - ☐ Cracked bottom case
  - ☐ Cracked plastic circle
  - ☐ Cracked echosounder
  - ☐ Water inside
  - ☐ Other: _____
- ☐ Unknown Damages

or

☐ Buoy part only *(Tick one or several)*
- ☐ Electronics
- ☐ Plastic case (top)
- ☐ Plastic case (bottom)
- ☐ Other: _____
- ☐ Unknown

or ☐ Unknown

Inscriptions on the buoy: ☐ Yes (*specify*): _____ ☐ No ☐ Unreadable ☐ Unknown

Fate of the buoy? ☐Left in the environment ☐Removed from the environment (tick if *"found in a private property"*) ☐Unknown

Only if removed from environment, purpose: ☐ Left on private property ☐Storage (where?): _____

☐Landfill ☐Recycled ☐Re-used (*specify*): _____ ☐Unknown ☐Other: _____

FAD Information

FAD present: ☐ Yes ☐ No

FAD type: ☐ anchored FAD (aFAD) ☐ drifting FAD (dFAD) ☐ Part of dFAD ☐ Log ☐ Unknown ☐ Other: _____

FAD condition: ☐Intact ☐Beginning to break ☐Mostly fallen apart ☐Unknown

Inscriptions on the FAD: ☐ Yes (*write it down*): _____ ☐ No ☐ Unreadable ☐ Unknown

Shape of the raft: ☐Square ☐Rectangular ☐ Buoys sausage ☐Cylindrical ☐Unknown ☐Other: _____

FAD Sighting and Recovery form v4

Form details Date: _____Form nb: _____
Completed by: _____

2/2

Raft materials *(Tick one or several)*

Raft materials structure and flotation: ☐Bamboo ☐Log ☐Wood ☐PVC ☐Floats ☐Plastic drum ☐ Fiberglass drum ☐Metal drum ☐Steel ☐Polystyrene ☐Unknown ☐Other: _____

Raft materials covering: ☐None ☐Ropes (☐ Synthetic; ☐ Natural; ☐ Unknown) ☐Nets ☐Plastic sheeting ☐ Shade cloth ☐Canvas (☐ Synthetic; ☐ Natural; ☐ Unknown) ☐Unknown ☐Other: _____

If net present in the raft, mesh size: ☐ Small (<7cm) ☐ Large(>7cm) ☐ Small & Large ☐Unknown

Estimated size of the raft (m) *(Length x Width)*: _____x_____ or ☐Unknown

Underwater component/tail *(Tick one or several)*

Submerged tail presence *(i.e., part of the FAD normally under water)*: ☐Yes ☐No ☐Unknown

Submerged tail materials: ☐Unknown ☐Net ☐Rope (☐ Synthetic; ☐ Natural; ☐ Unknown) ☐Plastic sheeting ☐ Bamboo ☐ Fishing lines ☐Canvas (☐ Synthetic; ☐ Natural; ☐ Unknown)☐Other: _____

Design of the tail: ☐ Open panel, mesh size: ☐Small (<7cm) ☐Large(>7cm) ☐Other: _____
☐ Net rolled up in bundle, mesh size: ☐Small (<7cm) ☐Large(>7cm) ☐Other: _____
☐ Cube structure ☐ Other: _____
☐Unknown

Estimated length of submerged tail (m): _____ or ☐Unknown

Fate of the FAD

Fate of the FAD? ☐Left in the environment ☐Sunk ☐Raft only removed, ☐Tail only removed ☐Entirely removed from the environment (*tick if "found in a private property"*) ☐Unknown ☐Other: _____

Only if removed from environment, purpose: ☐Burned ☐ Left on private property ☐Landfill ☐ Recycled ☐Re-used (*specify*): _____ ☐Other: _____ ☐Unknown

Impact on / interaction with marine life *(Tick one or several)*

Environmental damages caused by the FAD:

Entangled animals: ☐ Yes ☐ No ☐Unknown	Entangled on corals: ☐ Yes ☐ No ☐Unknown Entangled on mangrove: ☐ Yes ☐ No ☐Unknown
Entangled animals? ☐ Turtle ☐Shark ☐Fish ☐Marine mammal ☐Unknown ☐Other: _____ **Status:** ☐Dead ☐Alive ☐ Unknown **Species** (*if known*): _____ **Number of individuals**: _____	**If FAD is entangled on coral reef or mangrove, please state the approximate size of the area impacted (m^2):**_____ _____ _____
Fish caught around the FAD: ☐No ☐Yes ☐Unknown	**Fish or other animals aggregated around the FAD :**
If yes, **Species** (*if known*): _____ If yes, **Weight of the catch (in kg)** (*if known*): _____ **Number of individuals**: _____	☐No ☐Yes ☐Unknown If yes, **Species** (*if known*): _____ **Number of individuals**: _____

Comments: _____
_____

Number of pictures: _____