THE INTER-AMERICAN TROPICAL TUNA COMMISSION

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DOCUMENT IATTC-103-03c

UNFUNDED PROJECTS

This document lists projects proposed by the IATTC scientific staff which are not yet funded. The staff's proposed IATTC Strategic Science Plan for 2026-2030 and its current and planned research activities are listed in Document IATTC-103-03a.

CONTENTS

a. INTRODUCTION

This document presents brief summaries of 9 research projects that the staff considers important, but lacks the resources, human, technical, or financial, to undertake. The summaries include, for each project, background information, a work plan, and a status report, as well as details of its relevance and purpose, external collaborators, duration, deliverables, and an indicative budget.

Research projects that are funded and/or under way are included in IATTC-100-02; it also contains the staff's work plans, which include many of the projects listed in this document.

The staff's research activities are structured into the seven main areas of research, called *Themes*, of the proposed Strategic Science Plan (SSP; IATTC-103-03a). The seven *Themes,* the strategic pillars of the SSP, are the following:

1. Data collection for scientific support of management
2. Life history studies for scientific support of management
3. Sustainable fisheries
4. Ecological impacts of fishing: assessment and mitigation
5. Interactions among the environment, ecosystem, and fisheries
6. Knowledge transfer and capacity building
7. Scientific excellence

Each *Theme* is divided into strategic *Goals*, and the principal tasks that will be carried out to achieve a particular goal within the SSP's five-year window are called *Targets* (IATTC-103-03a). The specific activities that the staff will carry out in order to fulfil those tasks are called *Projects*, which are in some cases grouped into *Work Plans* aimed at achieving a broad objective not limited to a particular *Theme* or *Goal*.

The general *Themes*, and the more specific *Goals*, reflect what the staff considers to be its primary

responsibilities, and form an integral part of the five-year SSP. The more focused *Targets*, and the concrete *Projects*, are generally of shorter duration, and operate on a biennial cycle. Whether any *Projects* are undertaken under a particular *Goal* or *Target* in any given period will depend on the staff's research priorities, the human, logistic, and financial resources available, and any specific instructions from the Commission.

b. UNFUNDED PROJECTS, BY THEME

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PROJECT C.4.d: Continuation of the regional shark data collection program for small-scale fisheries in Central America	
THEME: 1. Data collection **GOAL**: C. Improve quality and expand coverage of data-collection programs **TARGET**: C.4. Artisanal longline fleet **EXECUTION**: Ecosystem and Bycatch Program and Stock Assessment Program	
Objetives	• Support the implementation of a regional shark sampling program in the EPO by providing data for various types of assessments conducted by the IATTC (e.g., data-limited, close-kin-mark-recapture, and conventional assessments). – Resume minimum shark data collection efforts in Central America following the conclusion of the Common Oceans ABNJ Tuna I project in 2021. – Assess the feasibility of collecting shark morphometric data and biological samples from small scale coastal fisheries in Central America. – Complement additional resources to carry out the activities of the shark research plan and the Common Oceans Tuna II ABNJ project in Mexico, Ecuador and Peru (i.e., Task 3 – Develop feasibility studies and proposed sampling designs for shark data collection in the EPO).
Background	• In 2014, the FAO-GEF ABNJ program launched a project to improve shark fishery data collection in the eastern Pacific Ocean (EPO), focusing initially on Central America. Phase 1 (2014–2018), led by the IATTC and OSPESCA, compiled available data, issued recommendations, and held workshops on data collection and assessment methods. • Phase 2 (2018–2021) built on these results, testing pilot sampling designs in Central America. The IATTC subsequently proposed long-term sampling strategies (IATTC-98-02c). However, similar efforts are needed in other key coastal states such as Ecuador, Mexico, and Peru, where shark fisheries are well developed. • Additional resources are needed to continue this work, for two main reasons: (1) to maintain continuity with previous efforts in Central America, particularly as funding for long-term programs remains unavailable for this region; and (2) to complement existing ABNJ Tuna II resources and implement the recommendations from feasibility studies and broader regional shark data collection programs. This includes applying stock assessment methods like close-kin mark-recapture (CKMR) and developing modern biological sampling strategies suited to coastal shark fisheries.
Relevance for management	• The planned activities and outcomes of the project will support the development and implementation of a regional shark data collection program in the EPO (as requested by Res. C-24-05), providing essential data for various types of stock assessments conducted by the IATTC.
Duration	• 1 year (2026)
Work plan and status	• Continue sampling efforts for major landings sites. • Feasibility, development and implementation of morphometrics and biological sampling programs for the prioritized shark species
External collaborators	National fisheries authorities in Central America, small scale coastal fisheries sector, OSPESCA, and other relevant stakeholders.
Deliverables	• A database with relevant biological information (size composition, sex, and tissue samples) for the main shark species landed in Central America. • Updated catch and effort databases and sampling designs for the small-scale coastal fisheries of Central America. Updated order of magnitude estimated for prioritized shark species. • SAC and EBWG documents and presentations.
Deliverables	US$ 424,800 (4 technicians per country, as well as a data editor)

1. DATA COLLECTION FOR SCIENTIFIC SUPPORT OF MANAGEMENT

2. LIFE-HISTORY STUDIES FOR SCIENTIFIC SUPPORT OF MANAGEMENT

PROJECT E4.b: Continuation of the Regional tuna tagging program (RTTP) to advance management objectives.

THEME: Life-history studies for scientific support of management
GOAL: E. Collect mark-recapture data on the principal tuna species
TARGET: E4. Conduct tagging studies to advance knowledge of movements, exploitation rates, behavior, growth, natural mortality, stock structure, and to derive estimates of absolute abundance.
EXECUTION: Biology, Stock Assessment, and Ecosystem and Bycatch Programs

Objectives	• Conduct a directed 90 – 120d tagging cruise (charter) throughout the range of the operational tuna fishery in the eastern Pacific Ocean. • Evaluate alternative approaches to achieve tag release goals (access to industry FADs, different baiting areas, sea cages, etc…) • Oxy-Tetracycline (OTC) marking to expand age validation experiments on tropical tunas. • Evaluate efficacy of opportunistic tagging projects with industry partners to further advance scientific objectives. • Evolve the spatio-temporal tagging model (SAC-14-INF-E) to improve estimates of absolute abundance, noting the model is dependent on current mark-recapture data. • Continue to use current, reliable mark-recapture data to derive estimates of natural mortality for inclusion in stock assessments. • Challenges to aging SKJ tuna using hard parts has prompted IATTC to use tagging data to derive estimates of age and growth (SAC-14-INF-J), and therefore the need to continue collecting mark-recapture data throughout fisheries' spatial extent. • Continue, and possibly expand, tag recovery programs, including the network of tag recovery specialists. • Develop, and extend, integrated growth models for YFT, SKJ, and BET using both hard-part and continued aggregation of tagging data across space and time.
Background	• Tagging data provides insight into stock structure, mixing rates, exploitation, and fishery interactions. • A novel spatio-temporal tagging model (SAC-16-INF-D) was developed and provides estimates of absolute abundance, however, high quality, recent tagging data is required. • Using well described methodologies, natural mortality can be derived from tagging data. • Spatial variability in growth may exist; collecting mark-recapture data across the range of tunas, to use concurrently with hard part ageing methods, will provide insight into this variability and will support the implementation of spatially explicit stock assessments.
Relevance for management	• Improved understanding of stock structure, mixing rates, exploitation, and fishery interaction, which will improve assessments and support robust management recommendations. • Spatio-temporal tagging models can provide estimates of absolute abundance for BET, YFT, and SKJ. • Tagging data is used to estimate natural mortality for inclusion in stock assessment models. • Spatial variability in growth may exist; collecting mark-recapture data to concurrently use with hard part methodologies will provide insight into this variability and improve stock assessments. • As a capacity building strategy, collaborate with CPCs to obtain data and samples to evolve hypotheses of stock structure and develop and validate ageing protocols for use in stock and ecological assessments.

Duration	• 2026–2029 (3-years in total) • Tagging charter(s) to occur in 2027 • Data acquisition through 2029
Work plan and status	• 2025 - 2026 – Cruise plan(s), experimental design, collaborator planning • 2027 – Tagging cruise • 2027 – 2029 - Tag recoveries, analyses • 2028 – 2029 – Paper preparation and incorporation of key parameters derived from tagging data and independent abundance estimates from spatio-temporal tagging models into stock assessments
External collaborators	• CPCs, Fishing industry, SPC-WCPFC, other potential stakeholders
Deliverables	• Annual updates to the SAC • Continued evolution of the comprehensive tagging database for mark-recapture data for tunas, sharks, and billfish. • Improved stock assessments for principal tuna species. • Improved life history information for tuna captured in purse-seine and longline fisheries. • Extend the validated increment deposition rates for YFT and BET and explore alternative ageing methodologies based on the results which will accelerate the investigations of spatial variability in age at length.
Budget (US$)	US$ 1,808,000

PROJECT F2.b: Developing conceptual models for hammerhead sharks in support of assessment and mitigation of ecological impacts.	
THEME: Life-history studies for scientific support of management **GOAL:** F. Obtain key life history information for assessment and mitigation of ecological impacts on prioritized species **TARGET:** F.2. Conduct life-history studies of shark species **EXECUTION**: Ecosystem and Bycatch Program	
Objectives	• Develop a comprehensive set of conceptual models for three hammerhead shark species (*Sphyrna lewini, S. zygaena* and *S. mokarran)* to support close kin mark-recapture (CKMR),vulnerability and stock assessments, and ecological studies. • Generate a database of best available biological data to be used for relevant projects (e.g., CKMR, population-stock structure, ERA, reproduction, trophic ecology, length-weight relationships, habitat use, climate impacts). • Obtain information on the stock structure of hammerheads to improve sampling designs in various EPO fisheries.
Background	• Fisheries bycatch is of concern for sharks, whose populations are often sensitive to fishing impacts due to their low biological productivity. • A recent ecological risk assessment conducted by the staff using EASI-Fish (SAC-14-12) listed hammerheads as "most vulnerable", which are also considered data-poor. • Conceptual models of ecology and population structure have been a useful foundation for assessing stocks of target species (e.g., Xu et al., 2023), and, more recently, bycatch species in the EPO (e.g., Silky Shark; EB-02-05.c.2, Talwar et al. 2025). • No conceptual models exist for hammerhead sharks in the EPO, but have been the focus of similar research elsewhere (e.g., Chin et al., 2017). A holistic understanding of species biology and population structure is needed to inform future research and sampling programs, such as for CKMR assessments, including landings surveys of sharks commonly caught by small-scale coastal artisanal fleets in the EPO. • In recognition of the importance of hammerhead sharks for the IATTC (i.e., key shark species in Res. C-23-07) and the clear need for renewed science and management attention for this family, the SAC recommended conceptual models be developed for hammerheads. • The Inter-American Tropical Tuna Commission (IATTC) staff aim to build upon collaborations with Scripps Institution of Oceanography (SIO) to develop a regional synthesis of available datasets and literature sources to inform potential future management actions for three species (*Sphyrna lewini, S. zygaena* and *S. mokarran)*.
Relevance for management	• Evidence of structure in EPO shark stocks (e.g., silky shark, shortfin mako, blue shark) has been shown from tagging studies, biological and morphometric analyses, while complementary genetic work, and future CKMR assessments, and ecological studies will be executed accounting for identified stock structure. • Conducting stock-structure analyses for key shark species (i.e., hammerheads, C-23-07) would improve fisheries management and conservation based on scientific advice and help to prioritize future research needs/projects, develop efficient sampling designs for CKMR and various EPO fisheries.

	• Compilation and analysis of morphometric measurements and biological data will provide information to refine key life history and strategy information and develop improved assessment and ecological models for key shark species (i.e., hammerheads), supporting scientific-based decision making.
Duration	• 24 months
Work plan and status	• Assemble, integrate, and analyze datasets covering hammerhead shark population genetics, horizontal movements, life history information, large-scale (offshore) fishery data, and small-scale (nearshore) fishery data, ultimately representing the single most comprehensive science product for hammerhead sharks regionally. • In collaboration with external partners, develop conceptual models based on Talwar et al. 2025, as recommended by the SAC. These can be used to guide future conservation and management efforts, such as establishment of spatial management boundaries, informing stock assessment, supporting CKMR efforts, and the evaluation of other relevant measures.
External collaborators	• Scripps Institution of Oceanography, The Nature Conservancy
Deliverables	• Annual updates to the EBWG and the SAC, including documents and presentations. • Comprehensive conceptual models of three hammerhead species (*Sphyrna lewini, S. zygaena* and *S. mokarran*) to improve CKMR, stock assessments and ecological models. • Associated comprehensive database of biological data for the species, including, where possible, various length and weight types and conversions, L-W relationships, growth curves and maturity ogives, etc.
Budget (US$)	• US$100,000

PROJECT F3.a: Evaluate the feasibility of developing a sampling program to improve morphometric relationships and collect biological samples for the principal tuna and other priority species.	
THEME: Life-history studies for scientific support of management **GOAL:** F. Obtain key life history information for assessment and mitigation of ecological impacts on prioritized species **TARGET:** F.3. Conduct life-history studies of prioritized species **EXECUTION**: Biology, Stock Assessment, Ecosystem and Bycatch, and Data Programs	
Objectives	• Obtain morphometric relationships and biological samples for tropical tunas and opportunistically on other prioritized species (see Tables 1a and 1b in SAC-16 INF-O) through a hierarchical, phased-based approach to sample various EPO fisheries. • Identify the most efficient point in the fishing process by which at-sea sampling can be executed by observers and/or other collaborators. • Develop a comprehensive database of multiple length and weight measurements and conversions to improve stock assessments and ecological studies. • Develop a database and archive of biological samples to be analyzed for dedicated projects (e.g., CKMR, population-stock structure, age-growth, reproduction, trophic ecology) for inclusion in, and improvement of, stock assessments and ecological studies. • Continue utilizing the enhanced monitoring program infrastructure (as detailed in SAC-16-05) to collect morphometric measurements and, as feasible, biological samples which are otherwise challenging to obtain at sea.
Background	• Length-weight (L-W) and processed to whole weight relationships are critical components to stock and ecological assessments and catch estimations • Relationships are outdated by several decades for tunas, no longer represent the spatial extent of fisheries or the dominant fishing method (e.g., FAD sets), and may also be biased due to processing (e.g., sampling frozen vs. fresh tunas) • Relationships are non-existent or inadequate for bycatch (e.g., SAC-13-11, SAC-09-12, IATTC Special Report 25) • Relationships may vary by species, fishery (e.g., PS vs. LL), region or year; dynamic ocean conditions may also influence growth and foraging success • Different types of measurements may be required depending on the analysis (e.g., $W=a*L^b$; length type: total length in cm; weight type: whole weight in kg but available L-W relationship may use fork length and processed weight) • Biological sampling is needed to characterize growth, reproduction, longevity, natural mortality, feeding dynamics in stock assessments and ecological models • Routine biological sampling provides means for monitoring fishing and climate impacts, but sampling for tunas and bycatch has been limited to dedicated projects
Relevance for management	• Evidence of structure in EPO tuna stocks has been shown from extensive tagging studies, meristic and morphometric analyses, and genetic work, and future assessments will be executed accounting for putative stock structure. • Conducting stock-structure analyses for bycatch species would also be beneficial for improved fisheries management based on scientific advice. • Changes in catch estimations can initiate a response in management

	rendering improvements to conversion factors an essential component for providing better catch estimations. • Collection of morphometric measurements and biological samples (e.g., tissues, otoliths, stomachs), will provide information to refine key life history information and to develop improved models for tunas and prioritized bycatch species, thereby advancing scientific advice for decision making.
Duration	• Phase dependent: 2024–2030 (6-years in total, see work plan)
Work plan and status	• Proposed, phased work plan described in Table 2, SAC-14 INF-J • Phase 1 – feasibility study (planning): January–May 2026 • Phase 1 – feasibility study (implementation): June 2026–May 2027 • Phase 2 – pilot study (implementation): June 2027–May 2028 • Phase 3 – EPO-wide, statistically robust sampling: January 2028–May 2031
External collaborators	• CPCs, Fishing industry, SPC-WCPFC, other potential stakeholders (see Tables 1 and 2 in SAC-14 INF-J)
Deliverables	• Annual updates to the SAC • Comprehensive database of various length and weight types and conversions for tunas, billfishes and prioritized bycatch species for EPO fisheries, allowing scientists to develop project-specific L-W relationships, improve catch estimations, model outcomes and management advice • Comprehensive database of biological samples analyzed for dedicated projects to improve stock assessments and ecological models.
Budget (US$)	• Phase 1: feasibility US$140,000

3. SUSTAINABLE FISHERIES

PROJECT H.5.c: Close-Kin Mark-Recapture Assessment of Silky Sharks in the EPO

THEME: Sustainable Fisheries
GOAL: H. Improve and implement stock assessments, based on the best available science
TARGET: Undertake the research necessary to develop and conduct data-limited assessments for prioritized species
EXECUTION: Ecosystem and Bycatch Program, Stock Assessment Program, External Partners

Objectives	• Develop kinship panel(s) for silky sharks in the EPO for use in CKMR. • Conduct CKMR assessment of silky sharks in the EPO. • Create framework for wider use of CKMR assessments at IATTC, with special emphasis on sharks and other vulnerable taxa.
Background	• Management of EPO silky sharks has been impeded by lack of quantitative stock assessments of relevant populations. • Prior efforts by IATTC to conduct assessments were unsuccessful due to systemic issues with the amount and quality of conventional stock assessment data such as catches and abundance indices (SAC-05 INF-F) • Close-Kin Mark-Recapture (CKMR) is an emerging genetic-based methodology that can produce similar outputs to a conventional stock assessment but with fewer data and assumptions. • CKMR has the distinct advantage that it does not require extensive timeseries of catch or abundance indices, depending primarily instead on representative tissue sampling of proportion of the population. CKMR can, in theory, produce results with as little as one year of data. • However, CKMR can benefit from inclusion of additional data such as estimates of catch volume previously developed by the IATTC staff (SAC-14 INF-L). • CKMR has been successfully applied to elasmobranch populations in other parts of the world, and preliminary work conducted by the IATTC staff suggests that CKMR is likely to be the most viable and cost-effective strategy for assessing silky sharks in the EPO.
Relevance for management	• Successful implementation of CKMR will provide quantitative estimates of silky shark population size and trends, potentially along with other management relevant indices such as fishing mortality rates. • The CKMR process will also provide insights on stock structure of silky sharks in the EPO, helping determine whether there is one or multiple stocks in the region (Talwar et al. 2025). • This process will serve as a template for CKMR assessment for other applicable EPO species, with special emphasis on sharks (e.g., hammerhead sharks).
Duration	• 2025-2031 (6 years total). • Simulation testing, initial data collection, and genomic tool development over 2025-2028. • Continued data collection and model fitting 2028-2031.
Work plan and status	• Finalize feasibility studies and simulation testing to inform sampling design and set expectations for required sample sizes and likely outcomes. • Initial sample collection (N = 250). • DNA quality testing, kinship panel development, and stock structure evaluation. • Conditional on success of prior steps, conduct full sample collection for CKMR (likely N = 5,000-10,000) representatively collected from EPO industrial and small-scale coastal fleets). • Conduct first CKMR assessment of silky sharks in the EPO.

	• Distill lessons learned into framework for broader CKMR assessments of other relevant species (e.g. hammerhead sharks) in the EPO.
External collaborators	• Dr. John Swenson • Dr. Mahmood Shivji • Dr. Mark Bravington
Deliverables	• Annual updates to the SAC, the EBWG and the IATTC. • A report and publication presenting simulation testing results evaluating the potential and challenges of CKMR for silky shark assessments in the EPO. • A database of silky shark tissue samples and genetic panel from the EPO. • Completion, presentation, and publication of first CKMR based stock assessment of silky sharks in the EPO. • A template for expanded CKMR use in the EPO.
Budget (US$)	US$ 750,000

4. ECOLOGICAL IMPACTS OF FISHERIES: ASSESSMENT AND MITIGATION

Project M.1.e: Organization of a Second Workshop on tuna Sorting Grids	
THEME: Ecological impacts of fisheries: assessment and mitigation **GOAL:** M. Mitigate the ecological impacts of tuna fisheries **TARGET:** M.1. In collaboration with the industry, conduct scientific experiments to identify gear technology that will reduce bycatches and mortality of prioritized species **EXECUTION**: Bycatch and IDCP Program	
Objectives	To reduce target and non-target species bycatches in the tuna purse-seine fishery.
Background	• Conservation measures for tropical tunas have been established (e.g., Resolution C-24-01). Several projects and approaches aim at reducing the impact on non-target species and undersized tunas, such as the use of sorting grids for juvenile tuna, although their optimal design and effectiveness remain unknown. • The *First Sorting Grid Workshop* concluded that experiments should be conducted across vessels using different grid designs, placements and mesh sizes, ensuring full submersion and employing effective data collection methods beyond onboard visual observations. • A recent study by the IATTC staff using current and historical sorting grid data showed divergent results on grid usage and evasion rates, by species and sizes, (SAC-16-INF-M), suggesting enhanced data collection methods would be needed to properly quantify underwater evasion and grid efficiency. • Previous studies quantified the evasion of undersized species through the grid, but this has mostly been done visually from the deck. Therefore, better data collection methods and experimental designs are needed to understand grid performance and efficiency. Additionally, post-grid evasion tuna survival has not been investigated yet.
Relevance for management	• Releasing small, undesired individuals of target and non-target species helps reduce fishing impacts and supports fishery sustainability. • Promoting collaboration and co-designing an eventual dedicated sorting grid experiment, if feasible, could be done in a second workshop. The workshop should assess the feasibility of the experiment, evaluate grid prototypes, establish performance criteria (e.g., fish evasion and post-evasion survival), and develop standardized protocols and sampling experimental designs, which would improve sorting grid efficiency assessment analyses as for considering it a valuable tool for tuna conservation.
Duration	8 months (2026)

Work-plan and status	• Organize a second sorting grid workshop with the participation of relevant stakeholders, and based on the previous efforts and reports available for the EPO, to: ~ Establish the criteria for quantifying fish evasion and post-evasion tuna survival, and to develop, as appropriate, standardized protocols, methods and sampling designs for a potential dedicated experiment, ~ Determine the feasibility of conducting such experiment, ~ ensure the participation of the purse-seine vessels required for the trials, including the use of standardized protocols and sampling designs (e.g., the grid fully submerged in all sets), ~ evaluate the use of electronic tools (e.g., cameras, sensors, tagging) to monitor the grid utilization and species evasion and survival from the grid in fishing operations.	
External collaborators	TUNACONS, PROBECUADOR, global experts, experienced fishers, gear manufacturers	
Deliverables	• Annual updates to the EBWG and the SAC, including workshop reports and presentations. • An expert-based proposal for the experimental design of a dedicated sorting grid study, should it be feasible.	
Budget	**Item**	**Cost (US$)**
	Workshop cost (participation of global experts, experienced skippers and fleet managers, gear manufacturers. Logistic costs)	50,000

Project M.1.f: Testing Bycatch Reduction Devices – shark Velcro
THEME: Ecological impacts of fisheries: assessment and mitigation

GOAL: M. Mitigate the ecological impacts of tuna fisheries **TARGET:** M.1. In collaboration with the industry, conduct scientific experiments to identify gear technology that will reduce bycatches and mortality of prioritized species **EXECUTION**: Ecosystems and Bycatch Program in collaboration with CPC scientists and industry personnel	
Objectives	To test the safety and efficacy of devices (e.g., shark velcro, shark harness) to lift sharks from the tail
Background	• When large sharks are captured in purse seine fisheries they are often very active on deck and dangerous to handle. Best practices for reducing mortality to shark bycatch in this fishing gear requires that sharks are released back to the sea as soon as possible, with minimal harm. Due to the hazard of handling large active sharks on deck, most are left on deck until they become calmer and more subdued. Unfortunately, this equates to suffocation and higher mortality rates. • Recently, a new shark release device ('shark velcro', 'shark harness') was preliminarily tested in the Indian Ocean for its safety and practicality in moving large sharks out of brails and back to the sea. The velcro fits around the caudal peduncle of large sharks and can be clipped to a winch and hoisted overboard and can be complemented with a harness for additional support. Use of the device has the potential to reduce the time in air and potentially improve survival rates pending the evaluation of the physiological impacts that the method may have on the soft connective and hardened vertebral tissues of the animals, and ultimately, post release mortality. • The device is also considered to improve the safety of the crew involved in the handling of the large sharks. • Considering the above, the 16th meeting of the Scientific Advisory Committee recommended: *"a) With the aim of strengthening efficient and safe mechanisms for the handling and release of sharks, it is recommended that the scientific staff, in collaboration with researchers associated with CPCs, continue to evaluate through a controlled pilot study the use of specific tools such as Velcro and harnesses and associated protocols for lifting large sharks from the caudal peduncle (except for whale sharks). (b) It is suggested that this pilot study be designed with a rigorous experimental approach, in line with the objective of determining the effectiveness and safety of these tools, the survival of individuals, and the safety of the crew and it is considered essential to include the fishing industry and specialists with experience in the handling and tagging of large sharks (c) It is recommended that the scientific staff submit the results of the pilot study to the Working Group on Ecosystem and Bycatch (WGECB) and the SAC for consideration as a possible good practice for the management and release of incidentally caught sharks, in order to contribute to their survival."*
Relevance for management	• Improving the safety of the crew when releasing large sharks from purse seine vessels. • Reducing mortality to incidental large sharks in purse seine fisheries
Duration	24 months (2026-2027)
Work-plan and status	• Establish an expert group (including veterinarians, IATTC scientists, CPC scientists, vessel operators, observer program personnel) to finalize study design. • Purchase telemetry devices and other relevant equipment.

	• Train observers in tagging techniques, data requirements, necropsy and sampling/imaging techniques. • Create a minimum number of sampling kits (n=8) for testing these devices on multiple vessels. • Conduct pilot study: ˜ Test the short term and long-term physiological impacts of lifting Silky sharks from the caudal peduncle on two size classes of silky sharks (150-180 cm FL and > 180 cm FL) using necropsy, X-ray and CT scanning in partnership with wildlife veterinarians. ˜ Assess post release survivorship using both survival pop-off archival tags (SPAT) and miniPATs. ˜ Test swimming efficiency using the triaxial accelerometer capabilities of miniPATs of released sharks against datasets already in hand for medium sized silky sharks.	
External collaborators	CPC scientists, experienced fishers, wildlife veterinarians	
Deliverables	• Annual updates to the EBWG, the SAC, and the Commission, as needed, including documents and presentations. • A data-based assessment of the short-term and long-term impacts of the device on shark physiology and survival	
Budget	**Item**	**Cost (US$)**
	Telemetry	150,000
	Physiological investigations	20,000
	Workshop and training (IATTC scientists and wildlife veterinarians)	14,000
	Total Project Costs	$184,686

5. INTERACTIONS AMONG THE ENVIRONMENT, THE ECOSYSTEM, AND FISHERIES

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6. KNOWLEDGE TRANSFER AND CAPACITY BUILDING

PROJECT Q3.a: Best Handling and Release Practice Guideline Outreach, Education and Training	
THEME: Knowledge Transfer and Capacity Building **GOAL: Q**. Provide training opportunities for scientists and technicians of CPCs **TARGET:** Develop infographics, and associated outreach and education materials for approved best handling and release practice guidelines for each taxa and conduct 'train the trainers' workshops. **EXECUTION**: Ecosystem and Bycatch Program, CPCs, External Partners	
Objectives	• Develop infographics depicting approved and banned handling practices for each taxa (sea turtles, seabirds, marine mammals, sharks and rays) and IATTC fishery (purse seine, longline, gillnet). • Develop BHRP guideline materials for posting and dissemination (e.g. posters, placards, manuals and handbooks) • Develop training curricula for each taxa and fishery. • Conduct 'train the trainers' workshops across the region.

Background	For best handling and release practices (BHRP) to serve as an effective tool for mitigating mortality of vulnerable species, they must be fully integrated into standard fishing operations. This requires not only that fishers are aware of the preferred practices, but that they are also trained in their correct application. Equally important is educating fishers on practices that are prohibited or should be avoided due to their potential to cause harm. Several IATTC Resolutions—including C-04-05 Rev 2, C-04-07 [C], and C-19-04—emphasize the importance of education and training in BHRPs. Resolution C-04-05 Rev 2 (paragraphs 8.b. and 8.c.) directs the IATTC staff to: "*educate fishermen through information dissemination activities, including distributing informational materials and organizing seminars on, inter alia, reducing bycatches of sea turtles and safe handling of incidentally caught sea turtles to improve their survivability*." Similarly, Resolution C-04-07 includes provisions that focus on industry education regarding proper handling techniques, collectively underscore the importance of widespread, ongoing training and outreach as essential components for the successful implementation of BHRPs in IATTC-managed fisheries. To address these requirements, the IATTC staff proposes to generate standardized, official, outreach, education, and training materials. This will include the creation of infographics to accompany adopted practices and the formulation of BHRP guideline 'posters' that can be posted visibly on all vessels in areas where crew are able to review them and short videos that can be distributed to fishers directly, for all vulnerable taxa in all fisheries (where appropriate). IATTC staff can support CPCs with fisher or CPC training by creating training materials and by supporting, coordinating, (co)organizing and participating in training workshops, as required. These workshops are also an excellent opportunity to learn from fishers on potential techniques and strategies for either mitigating interactions or devising new BHRPs. This activity will require dedicated funding for infographics, content creation and training workshops.
Relevance for management	• Improved outreach, education, and communication across stakeholders • Reduced mortality to incidental vulnerable species
Duration	5 years. The timeline for development of these materials is proposed to begin immediately after the adoption of official BHRP guidelines. The timeframe for content creation is estimated to be one year from BHRP guideline adoption to posting and circulation. Training of the fishing crew will need to be continuous, with updated training material created as needed. Post adoption of official BHRP the expectation is that it will take 3 years to develop and disseminate materials.
Work plan and status	• 2025 – BHRP guidelines for sharks, seabirds and sea turtles developed for consideration of integration into Resolutions and adoption by the Commission • 2026-2028 – Development of BHRP for rays and marine mammals; If BHRPs for sharks, seabirds and or sea turtles are approved in 2025 at the 103rd Commission meeting, identification of illustrators and development of infographics will begin, followed by contracting of graphic designers for the generation of videos, placards, posters, etc. for posting and the development of training curricula. Once content is prepared (est. time for preparation is one year from adoption of BHRP), training workshops can commence across the region. • 2027 – 2028 Once BHRP for rays and marine mammals are approved and adopted by the Commission the process for infographic and training content will begin as outlined above. • 2029 Assessment of efficacy of BHRP and training programs.
External collaborators	• CPCs, Fishing industry, NGOs, other potential stakeholders

Deliverables	• Infographics for approved and banned practices by species by fishery • Outreach materials for posting on vessels • Training curricula for each taxa by fishery • 'Train the trainers' workshops conducted across the region to build capacity and enhance education and knowledge exchange opportunities.
Budget (US$)	US$ 176,000

7. SCIENTIFIC EXCELLENCE