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UNFUNDED PROJECTS

This document lists projects proposed by the IATTC scientific staff which are not yet funded. The staff's work plans for 2026-2030 and its current and planned research activities are listed in Document IATTC-100-02, and its broader and longer-term goals are set out in Document IATTC-103-03a, *IATTC Strategic Science Plan: 2026-2030*.

CONTENTS

A. INTRODUCTION

This document presents brief summaries of 7 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 and IATTC-103-03a; 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). In addition to better accommodating a strategic planning approach, this new structure is intended to foster stronger collaboration among the different programs (recommendation 17 of the 2016 IATTC Performance Review), with researchers from different programs contributing to activities under a common *Theme*. 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

INDEX

1. DATA COLLECTION FOR SCIENTIFIC SUPPORT OF MANAGEMENT

2. LIFE-HISTORY STUDIES FOR SCIENTIFIC SUPPORT OF MANAGEMENT

PROJECT E4.b: Establish a yellowfin tuna module under the umbrella of the regional tuna tagging program (RTTP) to address key uncertainties in stock assessment.	
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 45-60 day tagging cruise along the coast of Mexico targeting yellowfin tuna for tagging with conventional and archival tags (pop-off and implantable) • Conduct, in conjunction with the SKJ module, 30 days of directed YFT tagging in the "core YFT area" to elucidate region specific movements and regional mixing, focusing on larger dolphin associated yellowfin tuna. • Oxy-Tetracycline (OTC) marking to expand age validation experiments on yellowfin tuna. • Deploy 150 pop-off archival tags to elucidate movement strategies of large (>120cm) YFT. • Supplement pop-off tags with 150 archival tags. • Evaluate efficacy of opportunistic tagging projects with industry partners to further advance scientific objectives. • Evaluate the spatio-temporal tagging model (SAC-16-INF-D) and its utility in estimating yellowfin tuna absolute abundance, noting the model is dependent on current mark-recapture (archival and conventional) data. • Continue to use current, reliable, mark-recapture data to derive estimates of natural mortality for inclusion in stock assessments. • Using mark-recapture data to extend the estimated age-at-length for yellowfin tuna. • 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, natural mortality, and fishery interaction, which will likely improve assessments and support robust management recommendations. • Spatio-temporal tagging models may provide estimates of absolute abundance for YFT. • 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	• 2028–2030 (3-years in total) • Tagging charter(s) to occur in 2028 • Data acquisition through 2030
Work plan and status	• 2028 – Cruise plan(s), experimental design, collaborator planning • 2028 – Tagging cruise • 2028 – 2030 - Tag recoveries, analyses • 2029 – 2030 – 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 yellowfin tuna. • Improved life history information for tuna captured in purse-seine and longline fisheries. • Extend the validated increment deposition rates for YFT explore alternative ageing methodologies based on the results which will accelerate the investigations of spatial variability in age at length.
Budget (US$)	US$ 1,500,000

PROJECT E.5.a: Age and growth of yellowfin and bigeye tuna and the development of an artificial intelligence tool to facilitate production aging.
THEME: Life-history studies for scientific support of management **GOAL:** E. Obtain key life history information for stock assessment evaluate spatial variability in growth **TARGET:** F.2. Conduct life-history studies on yellowfin and bigeye tunas **EXECUTION**: Biology, Stock Assessment, and Ecosystem and Bycatch Programs

Objectives	• Through the integrated port sampling program (IPSP) collect otoliths from yellowfin and bigeye tunas from broad spatial strata • Develop a robust image analyses system to process digital micrographs of sectioned and whole otoliths • Evaluate the efficacy of artificial intelligence tools to analyze digital micrographs to derive age estimates • Extend the length range for which validation of increment deposition rates (relies on OTC marking/recapture). • Derive spatially stratified, sex specific, integrated-growth curves for inclusion in stock assessments
Background	• Age and growth are foundational inputs in stock assessment models. The current EPO yellowfin and bigeye assessments rely on growth curves that may not adequately capture spatial or sex-specific variability across the broad range of the EPO fishery or may have changed after years of exploitation. • Uncertainty in growth parameters spreads directly into estimates of natural mortality, recruitment, and stock status reference points, making improved age-at-length data a direct route to reducing assessment uncertainty. • Spatial heterogeneity in oceanographic conditions across the EPO suggests a plausible driver of regional variability in growth. The current growth curves for YFT and BET are not sufficiently resolved at a spatial scale to test for this variability. • Traditional otolith increment reading is labor intensive, requires highly trained readers, and is subject to inter-reader variability which constrains the number of samples that can be processed each year. • The IPSP was designed in a way that collecting otoliths within the existing framework would not impact the program, thus providing a broad spatial footprint through port sampling operations in Ecuador, Mexico, and elsewhere in the EPO. • Sectioned otolith preparation and reading protocols for tropical tunas are well established, but scaling production aging to match the spatial and temporal resolution needed for stock assessment would require a substantial increase in reader capacity under conventional methods. • Machine learning/AI approaches applied to otolith images have demonstrated in other species that convolutional neural networks can achieve age-reading precision comparable to trained human, while substantially reducing per-sample processing time. • These tools remain untested for tropical tunas, whose otolith increment structure and length-at-age relationships differ substantially from the temperate/demersal species used in existing AI-aging studies.

	• It is possible an AI-assisted workflow may provide aging efficiency to match IPSP sample volumes without a proportional increase in specialist reader staff and would improve consistency by reducing subjective inter-reader variation.
Relevance for management	• Reliable, spatially and sex-resolved growth curves directly improve the precision of biological reference that underpin harvest strategies and conservation measures for yellowfin and bigeye tuna • More efficient aging would let stock assessments incorporate more current and representative biological data into assessments on routine cycles. • Higher throughput supports the move toward management strategy evaluation (MSE) and harvest control rules, which require regularly updated life-history inputs to remain viable. • An AI-assisted aging pipeline, once validated, provides a scalable, cost-effective capacity to sustain production aging over time.
Duration	• 48 - 60 months
Work plan and status	• Develop sampling protocols and leverage the IPSP to systematically collect otoliths from yellowfin and bigeye across defined spatial strata. • Build a curated reference image library from existing otolith collections to serve as initial training/testing data. • Standardize otolith sectioning, imaging, and micrograph capture protocols. • Develop a digital image-processing workflow that produces consistent, analysis-ready images from otoliths. • Extend OTC-based validation of increment periodicity into larger/older size classes to anchor the AI output against known-age standards. • Apply validated age estimates to fit spatially stratified, sex-specific integrated growth curves for YFT and BET. • Deliver updated growth curves and supporting documentation to the Stock Assessment Program for incorporation into future YFT/BET assessments.
External collaborators	• CPC's
Deliverables	• Annual updates to SAC, including documents and presentations. • A validated, spatially and sex-stratified integrated growth model for EPO yellowfin and bigeye tuna, incorporating an extended OTC-validated size/age range for increment deposition. • A trained and benchmarked AI image-analysis tool for otolith age estimation.

	• A curated, archived reference library of otolith micrographs and paired age/length/sex/location data.
Budget (US$)	• US$500,000

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), risk 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 biological characteristics. • 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, 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-25-08) and the need for renewed science and management attention for this family, the SAC recommended conceptual models be developed for hammerheads. • The IATTC staff aim to build upon collaborations with Scripps Institution of Oceanography to develop a regional synthesis of available datasets and literature sources to inform potential future research and 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-25-08) would improve fisheries management and conservation based on scientific advice and help to prioritize future research needs, 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 research, conservation and management efforts.
External collaborators	• Scripps Institution of Oceanography
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: Feasibility of a phased, pilot-to-EPO-wide biological sampling program for the principal tunas and other priority species, initiating the eastern Pacific Specimen Bank.	
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 on other prioritized species (e.g., see Tables 1a and 1b in SAC-16 INF-O) through a hierarchical, phased-based approach to sample

	various EPO fisheries and initiate the development of an EPO Specimen Bank. • 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 integrated port sampling program infrastructure (as detailed in SAC-17-04) 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: 2027–2032 (6-years in total)
Work plan and status	• Proposed, phased work plan described in Table 2, SAC-14 INF-J • Phase 1 – feasibility study (planning): January–May 2027 • Phase 1 – feasibility study (implementation): June 2027–May 2028 • Phase 2 – pilot study (implementation): June 2028–May 2029 • Phase 3 – EPO-wide, statistically robust sampling: January 2029–May 2032
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 • Initiation of a development of an EPO Specimen Bank, complimentary to that developed by SPC's Pacific Specimen Bank, a biological archive of pelagic predators (tunas and associated priority ecosystem species) • 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.b: Integrated shark assessment and sampling program: small-scale fisheries data collection and close-kin mark-recapture stock assessment	
THEME: Data collection for scientific support of management (DAT) GOAL: FISH 5. Conduct a close-kin mark-recapture (CKMR) stock assessment for silky shark by 2030-2031. Also deliver DAT 3. Complete the design and implement a standardized data collection program for shark species associated with fisheries managed by the Commission), as the two are operationally inseparable. TARGET: FISH 5, T2–T4. Implement the CKMR program, conduct the stock assessment, and explore applicability to other prioritized shark species; DAT 3, T1. Small-scale fisheries. EXECUTION: Ecosystem and Bycatch Program, Stock Assessment Program, and Biology Program	
Objectives	• Deliver a standardized data collection program for small-scale coastal fisheries (Resolution C-25-08, paragraph 15) and a close-kin mark-recapture (CKMR) stock assessment of silky shark (*Carcharhinus falciformis*) (paragraph 16). • Collect representative tissue samples (target ≈5,000 per year) from EPO silky shark catches and process them through the CKMR pipeline, principally kinship assignment. • Sustain the field sampling networks and protocols established under the Common Oceans ABNJ-Tuna 1 and 2 projects, which conclude in 2027 with no continuation funding identified, and collect opportunistic biological and genetic data on the other priority species to enable future CKMR assessments, beginning with scalloped hammerhead (*Sphyrna lewini*).
Background	• Conventional assessment of EPO sharks is constrained by the absence of reliable abundance indices and complete catch histories; the staff's silky shark assessment (SAC-05 INF-F) and a Pacific-wide assessment (Clarke et al. 2018) were both judged unreliable for management advice. CKMR estimates absolute adult abundance from the rate at which close relatives occur in samples, without requiring catch-per-unit-effort data, and pilot work indicates it is feasible for silky shark in the EPO. • Order-of-magnitude estimates (SAC-14 INF-L) indicate that catches of *C. falciformis* and *S. lewini* by Central American artisanal fleets may be substantial even when compared to those of the offshore longline and purse-seine fisheries, and so cannot be disregarded in assessments. • ABNJ-Tuna 1 and 2 delivered landing-site mapping, validated sampling designs, protocols and national partnerships across nine countries, and identified 11 sites in Ecuador, Mexico and Peru where CKMR-compatible tissue collection is viable (SAC-17 INF-P). Similarly, locations of interest have also been identified in Central America. Because the sampling program supplies the samples the assessment depends on, the two are costed here as a single integrated program.
Relevance for management	• Direct response to paragraphs 15 (i.e., data collection) and 16 (i.e., shark assessments in the Shark Research Plan) of Resolution C-25-08.

	• Provides the first defensible estimate of absolute abundance for silky shark in the EPO, enabling management advice for a species with no reliable assessment. • Maintains small-scale monitoring capacity that would otherwise lapse with ABNJ-Tuna 2, and builds the sampling foundation for CKMR of other priority species, ecological risk assessments and life-history research.
Duration	• 3 years, commencing by conclusion of the ABNJ-Tuna 2 project (i.e., 2027–2028 start); silky shark CKMR stock assessment targeted for 2030–2031.
Work plan and status	• Three budget tiers differ in small-scale coverage. All assume completion of the funded pilot CKMR phases now under way, and zero continuation of ABNJ-Tuna funding. • Tier 1 — large-scale sampling only. Tissue collected only from the existing IATTC observer program; no coastal sampling. If meaningful stock structure exists around the coast, an assessment built only on large-scale samples may fail; artisanal catch estimates are not updated and no small-scale infrastructure is developed. Not recommended. Largely uncertain and risky. • Tier 2 — targeted small-scale sampling (recommended). Adds ≈20 sampling technicians, four local coordinators and five support staff across the nine ABNJ-Tuna countries, stationed at CKMR-viable sites (SAC-17 INF-P). Technicians collect silky shark tissue, opportunistic hammerhead samples and biological data on other priority species, remaining at core sites rather than circulating to estimate catch network-wide. Coastal samples materially reduce the Tier 1 stock-structure risk and maintain the core ABNJ field network, but artisanal catch estimates remain reliant on prior ABNJ figures. • Tier 3 — comprehensive small-scale sampling. Two years at Tier 2 level plus one expanded year with ≈33 technicians and four coordinators, extended to the primary landing sites in SAC-16 INF-W and selected secondary sites, with dedicated catch sampling producing updated total-catch and size-composition estimates for that year only. The value of one year of catch data is uncertain and the marginal benefit over Tier 2 modest.
External collaborators	• National fisheries authorities and research institutions in the nine ABNJ-Tuna coastal states; OSPESCA; the small-scale fisheries sector; the tuna industry and IATTC and National Program observer programs; academic partners and other global experts for genetic analysis; CPPS, ISC and WCPFC-SPC on Pacific-wide stocks, as needed.
Deliverables	• A CKMR stock assessment for silky shark in the EPO (2030–2031), with estimates of absolute adult abundance and associated population parameters. • A tissue archive and kinship assignment dataset for silky shark, plus opportunistic biological and genetic samples for other priority species. • An operational standardized data collection program for sharks in EPO small-scale fisheries, with sampling designs, forms and protocols transferable to other species.
Budget (US$)	• Tier 1 — large-scale sampling only: US$ 600,000 (not recommended).

	• Tier 2 — large-scale plus targeted small-scale sampling: US$ 2,400,000 (**recommended**). • Tier 3 — large-scale plus comprehensive small-scale sampling: US$ 2,900,000. • Costs cover tissue collection, kinship assignment, observer support and support of a temporary researcher/consultant; Tiers 2–3 add sampling network and staff (≈65%), DSA (≈31%) and travel (≈4%). Excludes current full-time IATTC staff costs.

4. ECOLOGICAL IMPACTS OF FISHERIES: ASSESSMENT AND MITIGATION

Project M.1.f: Testing Shark Bycatch Release Devices: 'Velcros and Harnesses'	
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 shark bycatch release 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, new shark bycatch release devices ('shark Velcro', and a 'shark harness') were preliminarily tested in the Indian Ocean for their 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 or crane to hoist the shark up and out of the catch overboard and can be complemented with a harness for additional support. Use of the device has the potential to reduce the time out of water and potentially improve survival rates pending the evaluation of the physiological impacts that the method may have on the unsupported viscera, 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. In light of the above, the Scientific Advisory Committee, at its 16th meeting, recommended that the IATTC staff conduct a controlled experiment on the feasibility and utility of these tools. At its 2025 annual meeting, the Commission, through Resolution C-25-08, tasked the IATTC staff with executing this work in collaboration with CPC scientists and industry personnel.
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 (2026-2028)

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. • Conduct pilot study: – Test the short term and long-term 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 and imagery in partnership with wildlife veterinarians. – Assess post release survivorship using both survival pop-off archival tags (SPAT) and miniPATs.	
External collaborators	CPC scientists, experienced industry personnel, 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 devices on shark physiology, anatomy and survival	
Budget	**Item**	**Cost (US$)**
	Telemetry (tags, satellite transmission fees, supplies)	150,000
	Physiological and anatomical investigations	20,000
	Workshop and training	15,000
	Total Project Costs	$185,000

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:** Q.3. Facilitate training workshops **EXECUTION**: Ecosystem and Bycatch Program, CPCs, External Partners	
Objectives	• Develop infographics depicting adopted handling and releasing practices for each taxa (sea turtles, seabirds, marine mammals, sharks and rays) and IATTC fishery (purse seine, longline, small-scale mixed). • Develop BHRP guideline outreach 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, C-04-07, and C-19-04—emphasize the importance of education and training in BHRPs. Resolution C-04-05 (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 and efforts. 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 • Improved capacity of CPC and industry personnel on BHRPs adopted by the IATTC • Reduced mortality to incidental vulnerable species
Duration	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 1-3 years to develop and disseminate materials and conduct specific training.
Work plan and status	• 2025-2027 – BHRP guidelines for sharks, seabirds and sea turtles developed for consideration of integration into Resolutions and adoption by the Commission • 2027-2028 – Development of BHRP for rays and marine mammals; If BHRPs for sharks, seabirds and or sea turtles are approved in 2026-2027 at the 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. • 2028 – 2029 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. • Ongoing assessment of efficacy of BHRP and training programs.
External collaborators	• CPCs, Fishing industry, NGOs, other potential relevant stakeholders

Deliverables	• Infographics for adopted 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$)	US$ 175,000

7. SCIENTIFIC EXCELLENCE