MarinTrust Improver Programme: 6-month update template

In this document the applicant should outline progress made towards the actions listed in the Fishery Action Plan (FAP) as part of the Fishery Improvement Project (FIP). This should be aligned with the MarinTrust Assessment criteria where possible. The progress actions should be updated in the following tables, and the relevant evidence linked to. It is important that evidence documents are publicly available. This will be checked by MarinTrust and then verified by the peer reviewers during the annual peer review process based on evidence submitted by the applicant.

For the 6-month report, it is not required to provide an update on all actions. The FIP is required to provide updates on actions where demonstrable progress has been made since the last reporting (the last 6 months).

FIP name	Small Pelagics Sustainability - Ecuador

Template guidelines

To help ensure the review process can be carried out effectively and efficiently:

- Include specific citations to the evidence that substantiates it. This should include the exact page numbers and paragraph references where the evidence can be found.
- Where possible, include a hyperlink to any evidence referenced.
- Ensure that the supporting evidence documents are easily accessible and well-organised. They should be available in a format that allows for easy navigation, such as a table of contents, bookmarks, or an index.
- Use clear and concise language when referring to evidence to make it easy for readers to grasp why a particular piece of evidence supports a specific progress claim.

Note: MarinTrust will host all evidence documents on the MarinTrust FIP profiles. If there are any confidential and or draft documents that the applicant does not want made public, this should be made clear in the report.

IP 6-month update

Use the below tables to provide an update on actions in the Fishery Action Plan with links to relevant evidence documents. Additional lines may be added where necessary.

Example table

MT clause	Action in plan	Action update / progress made	Evidence	Status of action	Additional comments
M1.1	Provide the original action as outlined in the action plan.	Provide an update on this action since the last report.	Provide a link to any evidence and/or summarise relevant points for actions or updates.	What is the current status of this action (i.e. complete, pending, ongoing)	Provide any additional information here.
M1.2					
Add rows to each table as necessary					

M – Management Framework and Surveillance, Control and Enforcement

MT clause	Action in plan	Action update / progress made	Evidence	Status of action	Additional comments
N/A					

A – Category A: Data Collection, Stock Assessment, Harvest Strategy and Stock Status
A4. Stock Status

MT clause	Action in plan	Action update / progress made	Evidence	Status of action	Additional comments
A1	1. Strengthen the sources that input to the catch estimation	**1.1 Strengthen the Responsible Fishing participatory monitoring program** In 2023, fishermen from the responsible fishing program managed to fill out 3842 registration forms for fishing activity, including interaction with the ecosystem and sightings. This represents a significant increase of 48 percent compared to the achievement in 2022. A total of 72 thousand tons were registered, with details of catch composition, location of casts, sizes, and in several cases, even reproductive states were documented. The interaction and release of 7266 individuals were documented, with 67% being sea lions. Particularly noteworthy was the release of 1	1.1.1 Training report for fleet crew members of the non-associated small pelagic fishery https://drive.google.com/file/d/1T0-29yQVFLZSsjm8jWFn81XFFlzJv1o-/view?usp=sharing	Ongoing.	Taking advantage of the closed season, the FIP implemented a training period for the fleet, an activity proposed by the CNP with the aim of promoting a collective policy of responsible sourcing in the coalition of companies. A total of 115 crew members from 45 fishing vessels not associated with the CNP were trained during this period.

		whale shark, 1 Pacific eagle ray, 1 leatherback turtle, 13 olive ridley turtles, and 26 green turtles, species that are particularly vulnerable and whose conservation is fundamental. In February 2024, the CNP held the MARINE LIFE awards to recognize the work and performance of captains and crew members in the participatory monitoring program for Responsible Fishing. From January to March 2024, a total of 390 records have been collected, due to the closed season between January and February Additionally, as part of the ongoing development of educational materials for crew members aimed at increasing their knowledge in species identification and improving their data collection techniques, two manuals are currently being updated: - Guide to the Identification of Bony Fish in the Small Pelagic Fishery of Ecuador			

		- Sampling Manual on Board in the Pelagic Fishery. These guides are in the final stages of review for subsequent delivery and dissemination. **1.2 Promote the implementation of electronic logbook in the fleet** The SPS-FIP continues using the electronic logbook, and also reporting to the Responsible Fishing Program of CNP. **1.3 Execute acoustic cruises to determine biomass, distribution, and population structure** With the aim of contributing to the estimation of total landings in the fishery and thus reducing uncertainty in these processes, a new acoustic survey cruise was conducted to estimate biomass, abundances, and understand the distribution of these resources. The main results obtained included a total biomass of 694 636 tons, *Auxis* spp was the most representative species at 272 669 tons, which will be part of the available fraction for this new fishing season. The structure of the	1.3.1 Hydroacoustic Survey Cruise and Confirmatory Fishing with Commercial Fishing Vessels IPIAP 2024-01-01PPP https://drive.google.com/file/d/1LWTGaJCdT7GjoztQoqkIrz5uWpjJP2T4/view?usp=sharing 1.3.2 Plan Hydroacoustic Survey Cruise and Confirmatory Fishing with Commercial Fishing Vessels IPIAP 2024-01-01PPP https://drive.google.com/file/d/1bxkHQdibXRuiPE6L67TUGHQ2k_fdNjRZ/view?usp=sharing		The research cruise took place during the reproductive closed season, which was agreed upon in dialogues with fishery stakeholders. The execution of the cruise allowed for evidence that the proposed cessation date for extractive activities coincided with the period of

		captured individuals consisted of mature individuals actively engaged in reproductive activity, as corroborated by the abundances of eggs and larvae of this species. The results of this study will be significant for the upcoming fishing season. Additionally, it is worth highlighting that the main achievement was the collaboration of stakeholders and their commitment to carrying out this type of activity. **1.4 Estimate landings based on data from the Responsible Fishing Program, Observers and IPIAP monitoring** As a preliminary step to incorporate new data into the landing estimation process, an analysis has been conducted on the statistical weight of each of the information sources that are part of the elevated processes. Within the analysis, it was highlighted that there are three main sources:	1.4.1 Statistical report of pelagic catch data sources . G. Ponce, 2024 https://drive.google.com/file/d/1Fq2n-g-m5Q0zo1NCIuXP-e91Tpvr-8-P/view?usp=sharing		highest reproductive activity.

		1) Data collected from the monitoring of the Fishery by the IPIAP, 2) Observers Program of the SRP, 3) Landing statistics from factories processing small pelagics. Among the main findings, it was found that the contribution of factories accounts for 50% of the total data records. For the calculation of the landings for the 2023 fleet, the three traditional sources were used. In order to include the PPR data, a feedback workshop will be conducted to set the sampling unit: using casts or final trips of each vessel, and finally, to verify the implemented code for the landing estimation by modifying the statistical weights for each of the data sources.			
A2-A4	2. Review stock assessment models	**2.1 Implement new evaluation scenarios (review of life parameters and input data)** Under FIP implementation process, IPIAP together with Dr. Cristian Canales developed the workshop for the review/implementation of stock assessment for Frigate tuna	2.1.1 **Workshop Report**: Review/Implementation Stock Assessment of Frigate Tuna (Auxis spp) 2023. Canales y Jurado 2024 https://drive.google.com/file/d/1B8Py40G0w0XUR_HESKeW7PbHEWlnFfbw/view?usp=sharing	Ongoing	During these months, the population status of the main small pelagic species will be updated. The report will be available for the

		(*Auxis spp*) 2023, with the purpose of implementing the changes suggested in the peer review carried out by Dr. Luis Cubillos (2023 – Annex 2.1.2) and to review the life history parameters of this species. Frigate tuna biological data collected between 1997 and 2023 were used, and alternative hypotheses were also explored regarding changes in selectivity and biological parameters. Among the changes made were the revision of the foundations of the life history parameters, in order to limit the values of asymptotic length, k and longevity. Likewise, logistic regression models (via GLM) were used to know the changes in maturity by size and other relevant factors in the reproductive process of this species such as the seasonality of reproductive activity. With all this, a new stock evaluation model was devised with different assumptions about growth parameters and natural mortality, as well as considering the new estimate of the average size at maturity. Table 2, page 12.	2.1.2 Peer Review Report. Cubillos y Cuevas 2023 https://drive.google.com/file/d/1s08cZe63OOAqJzpLKsQJ6suDtuqlYV5I/view?usp=sharing		annual evaluation by MarinTrust

		Among the results, it was observed that the model has a slight tendency to overestimate the presence of larger individuals in the cruises, which could suggest that during the acoustic surveys and due to issues of lower availability of large fish, the selectivity pattern could be of the dome type, which is why the use of this type of selectivity is suggested for future evaluations. The population diagnosis indicates that the resource is in good condition and slightly above the reference biomass, and that the risks of overfishing and overexploitation are moderate and correspond to 32% and 37% respectively. These results are very different from those reported by Canales and Jurado (2023) and are due, among others, to the estimation of the growth rate k and the notable effect that the new estimate of sexual maturity size had, being slightly lower (Lm=24 cm) than the one previously used (Lm=25.5).			

		2.2. Peer review of new assessment Also, as part of the sub activities proposed, Dr. Luis Cubillos is working in the review of the new frigate tuna stock assessment. The TDRs were reviewed and accepted by the consultant; at the moment, we are waiting for the review report	2.2.1 Terms of Reference (TDR) for peer review Workshop Results of the review/implementation Stock Assessment of Frigate Tuna (Auxis spp) 2023 https://drive.google.com/file/d/1Te6Mg8JfmPjiM6TpfgMkn_3pwjGnHCV2/view?usp=sharing		
A3	3. Strengthen the transparency of raw materials flow in the supply chain	**3.1 Implement a responsible purchasing policy for whole fisheries that includes a mechanism for verifying compliance with responsible sourcing.** The creation of the first vessel registry to promote responsible fishing and transparency in the supply chains was achieved https://portal.pescaresponsable.ec/ . The Responsible Fishing platform is a tool that will contribute to transparency in the supply of fishing, encourages the continuous improvement of fishing practices, aligned with regulatory compliance, making it possible to measure and improve the performance of supplier vessels in accordance with certification standards and sustainable practices. The registry will support the implementation of	**3.1.1 Draft User Manual:** Responsible Fishing Supplier Strengthening Program https://drive.google.com/file/d/1-g0LsoxsvT4ULOHnILX7KvTXY87TnLdu/view	Ongoing	

		Responsible Fishing Purchasing Policies, adopted by processors and clients committed to sustainability, offering a comprehensive look at the commitment of the supply chain, not only in the small pelagic fishery but also in titi shrimp, both fisheries in which the CNP implements fishing improvement projects. The Responsible Fishing Platform has a compliance rating per vessel and at the same time allows audits or analysis of the supply by processing company. In this way, a processing company can show the market its progress in compliance with the subscribed raw material purchasing policy aligned with the sustainability objectives of the coalitions for fishing improvements. The platform is in test period. In January 2024, the Small Pelagics Sustainability Coalition renewed its work plan for the next 2 years, including in its action plan for fisheries improvements the implementation a responsible			

		purchasing policy for whole fisheries that in*cludes* a mechanism for verifying compliance with responsible sourcing, the action plan is part of the Improver Programme of MarinTrust.			
	4. Design a recovery plan for frigate tuna annexed to the fishery managemen t plan	**4.1Strengthen closed seasons design aligned with maximum reproductive and recruitment periods.** Through the initiatives proposed by the SPS-FIP, the monthly monitoring program of fish eggs and larvae on board vessels associated with the SPS-FIP from Nirsa, Polar, and Herco companies was implemented at nine stations along the Ecuadorian coast. This program started in October 2021, and to date, an average of 366,481 eggs/10m2 and 161,965 larvae/10m2 have been recorded. From this project, it has been possible to establish the times and areas of abundance of spawning and larval rearing of *Cetengraulis mysticetus* (Pacific anchoveta), Auxis sp. (frigate tuna), *Scomber japonicus* (chub mackerel), *Etrumeus acuminatus* (Red-eye	**4.1.1 Project:** Collection of fish eggs and larvae on board vessels associated with the SPS-FIP. G Ayora 2021 https://drive.google.com/file/d/1ccVTV2XdLHGuWHD-ML_4mAqGIShrJh1j/view?usp=sharing	Ongoing	

		round herring), and *Opisthonema* spp. (Pacific thread herring). The purpose of the project is to contribute to the termination of reproductive and recruitment closed seasons by generating the following information: i) Spatial mapping of egg and larval abundance by phases and developmental stages in the study area, ii) Analysis of occurrence frequencies (Q), which provides information about preferred or avoided spawning areas, through the comparison of the uniform distribution of stages (egg and larva) with the observed distribution, and iii) Larval abundance index, which provides an approximation of the annual population biomass of adults. The results obtained are used by the IPIAP as input to determine reproductive closed seasons for the fishery.			

		4.2 Design a strategy to recover stock The latest assessment of Frigate tuna stock shows that the resource is in good condition, so a stock recovery plan is not necessary. The resource continues to be managed by the fishery management plan. **4.3 Implement adaptive management strategies** Among the improvements proposed to increase understanding of fishery dynamics and enhance the management of small pelagic populations, implementing adaptive management strategies for the fishery is suggested. Efforts have been made to engage external consultants to collaborate on implementing a proposal for adaptive management, thus complementing the objectives outlined in the Action and Management Plan governing Ecuador's Small Pelagic Fishery. Key guidelines include:	4.3.1 Terms of Reference: Design of the Adaptive Management Plan for Ecuador's Small Pelagic Fishery https://drive.google.com/file/d/1VhwPjtoFI-26v5W-j5WVt7wLPAjv-lb_/view?usp=sharing		

		a) Generating methodologies and necessary tools to effectively implement adaptive management in the Small Pelagic Fishery (PPP), b) Designing/developing a monitoring and research system with indicators linked to climate change adaptation for the implementation of adaptive management **4.4 Monitoring eggs and larvae to determine periods and zones of reproductive activity.** As part of the results obtained from the Fish Egg and Larvae Collection Project, it has been possible to spatially and temporally monitor the abundances of eggs and larvae of this resource. During the analysis of the information collected from 2022 to 2024, the spawning season of species such as chub mackerel, frigate tuna, Pacific thread herring, and red-eye round herring has been determined, with these species showing intense reproductive activity between November and February-March, and between June and August for	4.4.1 Season and areas of reproductive activity of small pelagic species based on the abundance and distribution of fish eggs and larvae, during 2022-2024. https://drive.google.com/file/d/1C0osH1F4IZdSM--Edl7K17qRG92GDwFL/view?usp=sharing		

		Pacific anchoveta. While modifications in the intensity of small pelagic species egg abundance were observed, it is generally noted that the peak reproduction season occurs during the "wet season", showing synchronization and concordance with gonadal maturation processes and high ovarian activity (IGS) of adults. Among the main results, it has been found that the main areas of egg abundance were located in the Gulf of Guayaquil zone (mainly at the Santa Clara and Engabao stations) and in the Santa Elena zone (Puntilla de Santa Elena and Bajo Cope). The areas of larval abundance were located at stations off Engabao, Puntilla de Santa Elena, Salango, and Puerto Cayo. **4.5 Correlate presence and abundance of eggs and larvae with oceanographic conditions** Additional exploratory analysis was conducted with data collected during the period from September 2022 to September 2023, using the established system for collecting	4.5.1 Abundance and distribution of fish eggs and larvae and their relationship with oceanographic variables https://drive.google.com/file/d/17Q9H_86CXU6iKvVUC31F4SsQYeIcZaNN/view?usp=sharing		

		eggs and larvae data along the Ecuadorian coast. Through the application of Canonical Component Analysis, possible relationships between physical variables such as sea surface salinity (SSS), sea surface temperature (SST), and Chlorophyll-a concentration with the presence and/or abundance of fish eggs and larvae were identified. This analysis suggests that spawning of *Scomber japonicus, Etrumeus acuminatus, Opisthonema spp., and Cetengraulis mysticetus* occurred during periods of lower salinity and temperature, and with significant Chlorophyll-a concentrations. This implies that these environmental conditions were optimal for spawning adults. The spawning of Auxis spp. and the older larvae of these same species were related to SST and Mixed Layer Depth (MLD), indicating a positive relationship with SST and MLD, allowing us to associate the latter as an important			

		factor in the spawning of these organisms. The environmental conditions recorded during the study period show a significant relationship between SSS and Chlorophyll-a with effective spawning (fish eggs) and between SST and MLD with pre-recruits. This indicates that the physicochemical parameters, combined with food availability, created favorable conditions for spawning, concentration, and retention of eggs and larvae of small pelagic species in this area during the study period. **4.6 Correlate presence and abundance of eggs and larvae with the gonodasomatic index** The constant monitoring of fish eggs and larvae has allowed us to understand their relationship with periods of peak reproductive activity through the generation of indices such as the Gonadosomatic Index (GSI). During the last dialogue meeting in December 2023 to establish the 2024 closed season, the highest abundances of fish eggs	4.6.1 **Presentation:** Biological Indicators Monitoring https://drive.google.com/file/d/1PoUBHk5EFoaKFUTKwwBoGSlZ2PZt3Ez5/view?usp=sharing 4.6.2 Spawning conditions 2023 https://drive.google.com/file/d/1HQNlsFmtc3ta_MsZhAMcvQTeQR5V1eT0/view?usp=sharing		

		and larvae for the main small pelagic species were correlated with periods indicating maximum reproductive activity based on maximum GSI values. The results showed that months with higher GSI values were associated with greater abundance of eggs and larvae, even surpassing the average of previous years, while minimum GSI values indicated spawning processes occurred, subsequently reflected in larval abundances. The results revealed changes in reproductive patterns for all species, especially for Auxis spp, prompting suggestions for changes in closed season periods to protect the effective spawning of this species primarily. **4.7 Training the crew to identify reproductive activity.** Currently the CNP has a training program designed for non-associated crew members. For the first time, the training of crew members not associated with the CNP was achieved. A total of 113	4.7.1 Training report for fleet crew members of the non-associated small pelagic fishery (anexo 1.1.1) https://drive.google.com/file/d/1T0-29yQVFLZSsjm8jWFn81XFFlzJv1o-/view?usp=sharing		

		crew members from 47 ships not associated to CNP were trained in the fishing towns of Posorja, Salango and La Libertad. The average score of the diagnostic test was 3.53 points while at the end of the training it was 6.07. The increase in global learning was 72%, with an increase in their final grade of 2.35 points on average (+/-1.83 ds). The training was composed of the following topics: • Responsible fishing and good fishing practices on board • The Ecuadorian marine ecosystem and identification of small pelagic fishes. • Main regulatory framework for the small pelagic fishery • Importance of monitoring a fishery • Importance of top predators and identification of marine fauna • Techniques for handling and releasing marine fauna This included the delivery of supporting educational material such as identification guides for target species and vulnerable marine fauna. As part of the results of the training, high interest and			

		demand for training on the part of the fishermen was evident, since they expressed their gratitude and interest in repeating new workshops. Also, 165 crew members from 32 ships associated to the Smal Pelagic Sustainability FIP were trained. The average score of the diagnostic test was 3 points while at the end of the training it was 6.77. The increase in global learning was 126%. SPS-FIP fishermen are part of a continuous training process in various topics since 2021. The 2024 training addressed for the first-time training in basic principles of oceanography and its relationship with fishing, as well as the reproductive biology of fish and its relationship with closure periods, as foundations for adaptive management.			

B – Category B Stock Status

MT clause	Action in plan	Action update / progress made	Evidence	Status of action	Additional comments

C – Category C Stock Status

MT clause	Action in plan	Action update / progress made	Evidence	Status of action	Additional comments

D – Impacts On Species Categorised as Vulnerable by D1-D3

MT clause	Action in plan	Action update / progress made	Evidence	Status of action	Additional comments

F – Impacts on ETP Species, Impacts on Habitats and Ecosystem Impacts

MT clause	Action in plan	Action update / progress made	Evidence	Status of action	Additional comments

Additional Information

The following section is for any information provided by the fishery in support of this 6-month update which does not relate directly to any of the information above, but which is relevant to the ongoing monitoring of fishery management status.
