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**Action Plan for the Fishery Improvement Project of the
Ecuadorian Skipjack, Yellowfin, and Bigeye Tuna Purse Seine Fishery**

Prepared for

Negocios Industriales Real S.A. "N.I.R.S.A.", Ecuador

Eurofish S.A., Ecuador

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GLOSSARY

AIDCP	Agreement on the International Dolphin Conservation Programme
BET	Bigeye tuna (<i>Thunnus obesus</i>)
CoC	Chain of Custody Certification
Companies	NIRSA, Eurofish and Grupo Jadran
CPC	Member or Cooperating Non-Member of the Commission (IATTC)
CPUE	Catch per unit of effort
CR	MSC Certification Requirements
EEZ	Exclusive Economic Zone
EPO	Eastern Pacific Ocean
ETP	Endangered, threatened or protected species
FADs	Fish Aggregating Devices
FIP	Fishery Improvement Project
FMP	Fishery Management Plan
FR	Federal Rule
HCR	Harvest Control Rules
HMS	Highly Migratory Species
IATTC	Inter-American Tropical Tuna Commission
INP	National Fisheries Institute
IUU	Illegal, unreported, and unregulated fishing
LRP	Limit Reference Points
MAGAP	Ministry of Agriculture, Livestock, Aquaculture and Fisheries
MSC	Marine Stewardship Council
MSY	Maximum sustainable yield
NMFS	National Marine Fisheries Service
PAN	National Plan of Action
PAT	National Plan of Action for Sharks
PI	Performance Indicator
PRI	Point of Recruitment Impairment

RBF	Risk Based Framework
RFMO	Regional Fishery Management Organization
SG	Scoring guideposts
SKJ	Skipjack tuna (<i>Katsuwonus pelamis</i>)
SRP	Undersecretary of Fisheries
SBR	Spawning biomass ratio
SPR	Spawning potential ratio
TRP	Target Reference Points
UoA	Unit of Assessment
UoC	Unit of Certification
VMS	Vessel Monitoring System
YFT	Yellowfin Tuna (<i>Thunnus albacares</i>)

INTRODUCTION

In 2015 a MSC pre-assessment of the Ecuadorian skipjack, yellowfin, and bigeye tuna purse seine fishery was carried out for Negocios Industriales Real S.A. (MRAG Americas, 2015). Later, two other Ecuadorian companies were included in the pre-assessment, forming a consortium. The analysis was carried out in 2015 – 2016, including information from NIRSA, Eurofish and Grupo Jadran, as well as fishery data and information obtained from the previous pre-assessment. The new pre-assessment was carried out in February, 2016 (MRAG Americas, 2016). The scope of the MSC pre-assessment was as follows:

Species	Skipjack tuna (<i>Katsuwonus pelamis</i>), yellowfin tuna (<i>Thunnus albacares</i>), and bigeye tuna (<i>Thunnus obesus</i>)
Geographical Area	Eastern Pacific Ocean (EPO), Ecuador
Catch Method	Ecuadorian purse seine fleet fishing on unassociated and associated (fish-aggregating devices, FADs) schools; NIRSA's, Eurofish's and Grupo Jadran's fleets
Management Authority	International waters: Inter-American Tropical Tuna Commission (IATTC). Ecuador: Under-Secretary of Fisheries Resources (SRP).

The pre-assessment allowed for the identification of strengths in the fishery, according to the sustainability standards of the MSC, as well as of some important issues that require attention and improvement for the fishery to be able to aim to reach a certification. In order to get the fishery to achieve the MSC standards, the consortium of Ecuadorian tuna industries "NIRSA-Eurofish-Jadran" embarked on a Fishery Improvement Project (FIP). It must be pointed out that the pre-assessment was carried out in accordance to MSC Standard v1.3 and that a new standard, v2.0, was published in October 2014. All fisheries aiming to obtain their first certification must abide v2.0. Several changes were introduced from v1.3 to v2.0, and these can be found in the MSC's website¹. The FIP will address the changes that are necessary in order to reach the new MSC standards.

The first step of the FIP involved the analysis of the issues and possible alternatives for the fishery. This was consolidated in the "Gap Analysis and Scoping Document" (MRAG Americas, March 2016). This allowed for the identification and setting of priorities for the various performance indicators (PI) of the fishery within each of the MSC Principles, with the aim of developing tasks or action that would bring about an optimization of the fishery. The afore mentioned document provides information about each of the indicators that may cause the fishery to fail a full MSC assessment (high priority indicator) or for the fishery to obtain a pass with conditions (medium priority). The necessary actions to improve the fishery may require short, medium or long time frames in order to achieve their objectives. The "Scoping Document" has been designed to contribute during the FIP planning stage and it provides examples on the different activities or steps required in order to reach the MSC standards.

The document was handed out to the companies as well as to other stakeholders of the fishery in order to inform them of the project and get their feedback in a multi-sectorial planning workshop, which was carried

¹ <https://www.msc.org/documents/scheme-documents/fcrv2.0-changes-summary-table>.

out at the end of March 2016 in Guayaquil, Ecuador. Participants in the workshop included the Companies, different areas of the Ecuadorian government (mainly the Ministry of Agriculture, Husbandry and Fisheries through the Under-Secretary of Fisheries Resources and the National Institute for Fisheries; the Ministry of the Environment), non-governmental organizations, such as WWF, education institutions and the IATTC (via skype).

During the workshop, gaps in knowledge or information related to the fishery were discussed as well as the challenges the fishery faces, possible solutions and the activities, which should be included in the FIP. This document summarizes the main results of this multi-sectorial planning workshop. This document aims to provide general information about the projects or activities (both existing and new) proposed during the workshop. This information includes the priority level (high or medium) for each activity, the current state of the activity (existing or new) and a tentative timeframe to complete said activity. The priority level was allocated in relation to the highest level in the gap analysis and scoping document (see Appendix 1 for more details regarding the scores of the MSC's performance indicators).

It has been considered that the consortium of Companies will be the leader in the execution of the FIP Action Plan and that it will coordinate the development of projects, activities and tasks. It is acknowledged that several activities are already being carried out ("existing" activities in the tables) and are, therefore, not described in detail herein. This document will, mainly, serve as a guideline regarding the type of tasks required for the fishery to be able to reach the MSc standard. The Plan must be fine tuned further in order to include the timeframes and budgets associated to the activities, as well as the terms of reference for the institutions and stakeholders, which will be involved in it. The results obtained through the Action Plan must be subjected to regular internal and external reviews to ensure that the SC standards are being met.

It is also important to point out that in this document, the consulting company, MRAG Americas, is limited to reproducing the proposals of activities discussed by the stakeholders during the workshop, as it is not in the capacity of proposing actions or amendments to a fishery that is regulated by a regional organization. Due to the fact that the tuna fishery's management in the EPO is carried out jointly by the IATTC and member countries, the workshop participants decided to divide the activities into those which corresponded to the IATTC and those which were independent to that organization and would be the sole responsibility of the country, Ecuador. Due to this dual management, the level of control that Ecuador can exercise on the execution of the activities is also presented.

Appendix A provides a summary of all of the activities proposed during the workshop, divided according to the three Principles assessed by the MSc and according to the level of management: International (IATTC) or National (Ecuador). Therefore, the activities in this Plan of Action are presented within three sections (Principle 1, 2 or 3) and under two categories for each section (International and National) as it is detailed below. Some activities will contribute to the progress of several indicators within one or more principles, and they are described where the impact will be greater. For each activity, an explanation of the need to execute is also included as well as a table with the following information:

1. Activity number and name.
2. Management level – indicating if the activity and sub-activities or tasks are at international (IATTC) and/or national (Ecuador) level.
3. Responsible Organization(s) – Include all those that will be part of the team which will carry out the activity.
4. Control level – Indicates the level of control or influence that Ecuador can have on the planning and execution of the activity (low, medium, high). This is due to the fact that the international management of the fishery is under a RFMO, the IATTC.

5. MSC priority level- Based on the score obtained by the performance indicator during the pre-assessment and on the priority level set in the scoping document. If more than one indicator is impacted by the activity, this is based on the indicator with the lowest score. For example, if an indicator attained a failing score, the priority of the activity would be high and if it obtained a pass with conditions it would be medium.
6. Priority of the FIP. As most of the indicators attained a pass with conditions (yellow) in the pre-assessment, it is necessary to establish different priorities within the fisheries improvement project, as otherwise, most of the activities would have a medium priority level.
7. Status- If the activity is a new activity or an already existing one or if parts of the activity are new and other parts are already being carried out (existing/new).
8. Duration and Timeframe – Establishes the approximate duration of the activity and, when possible, the date of conclusion.
9. MSC Performance Indicator(s) – States which MSC indicators will be impacted (in a positive manner, to increase their score) by the activity. The full MSC Performance Indicator list (v.2.0) is provided in Appendix A.

1 STOCK STATUS AND HARVEST STRATEGY

A. Background

The pre-assessment of the fishery showed that for both, associated and unassociated sets, and the three tuna species, there are areas where non-compliance may arise under Principle 1. In particular, the status of the stocks is variable and highly uncertain, depending on the assumptions used in the assessment of each stock. While the skipjack stock appears to be within sustainable levels, yellowfin is slightly overfished, but biomass has fluctuated around target levels for several years. Up to 2013 bigeye was also slightly overfished, with a long period of biomass reduction reaching historical lows in 2014. After an increase in 2015, the stock is no longer considered overexploited, even though it hovers near limit values.

Growth overfishing is also an issue for yellowfin and especially bigeye tuna, as juveniles are frequently harvested when targeting skipjack with FADs. The state of the stocks of the three species needs to be observed with caution, as any increases in fishing effort would significantly reduce recruitment, but not necessarily increase yield. Thus, effort levels in general need to be reduced, to reduce fishing mortality and get back to target levels of biomass.

The current status of the Bigeye tuna stock is considered to be stable as, according to the 2015 assessment the level has increased to slightly above the biomass for MSY, thus the stock is no longer considered to be overexploited as it was up to 2014. There is, however, a great degree of uncertainty in the results. There is also enough evidence that juvenile bycatch has increased due to the use of FADs, which has resulted in growth overfishing. Therefore, the status of bigeye stock must be carefully observed, as any increase in fishing effort could bring about a reduction in stock abundance which could probably prevent the fishery from meeting the MSC standards.

This would only be possible if the unassociated sector pursued certification only for skipjack and yellowfin tunas, demonstrated that there is no bycatch of juvenile bigeye, demonstrated that rebuilding of the bigeye tuna stock is still underway. In spite of the fact that both sectors interact and cause mortality of the target

species, it is considered difficult to separate the effects (fishing mortality) that FADs and unassociated sets have on each species. However, both the companies as well as IATTC's scientific staff, consider that the impacts on tropical tuna stocks caused by the two different types of sets are different (IATTC, 2016)². It is believed that this issue could be tackled with good management practices and a sound traceability system to separate catches through the implementation of the project.

Another issue is that there is a lack of specific management plans (for each species) with explicit target and limit references points, harvest strategy and harvest control rules and tools. While it is likely that the range of data- and model-based indicators could be sufficient to score these fisheries, it is important that work continues so that more precautionary (i.e., biomass-based) limit reference points are defined and formally adopted for each species. Recently, IATTC's Resolution C-16-02 (2016b)³ defined operational harvest control rules and reference and limit points based on current scientific knowledge. This resolution acknowledges the need to assess more precautionary reference points and to incorporate them into the control rules.

A technical scheme has already been planned within the scope of IATTC in order to redefine reference points and adapt the new control strategies. The project "Simulation of Reference Points" will begin in 2016. This and other important projects for Principles 1 and 2 will be carried out with the financial and technical support of the European Union, ISSF, WWF and others (G. Morán and P. Guerrero, pers. comm).

B. Workshop approach

During the FIP workshop the above topics were discussed and activities were proposed to strengthen the areas that need more attention.

As the country is a member of IATTC, Ecuador participates in the fishery data collection program and, therefore, has a solid database, which follows the standards of that regional organization. IATTC uses robust methods to monitor stock abundance and catches of each species in the EPO. However, each species is at a different exploitation level and it is necessary to carry out closer observations of Bigeye and Yellowfin tuna, as the state of those stocks is at a more uncertain level than that of Skipjack and any change in the environment or fishing effort could result in a reduction or in the collapse of those stocks. It is, therefore, necessary to establish precautionary management strategies or recovery strategies, in the case of overfishing, for these species which are more vulnerable.

It is also necessary to have information pertaining all of the fleets which impact tuna stocks in order to reduce the level of uncertainty and provide information to the catch strategy. Effort and catches of different origins should be monitored, including those of the small scale (artisanal) fleets, industrial fleets using other gear (such as longline, hand-lines), the bycatch of juveniles and IUU (illegal, unreported and unregulated fishing). With this information, more robust stock assessments could be carried out and better harvest strategies could be designed.

² CIAT, 2016a (<https://www.iattc.org/Meetings/Meetings2016/SAC7/PDFfiles/SAC-07-03a-La-pesqueria-en-el-OPO-2015.pdf>)

³ CIAT, 2016b (<https://www.iattc.org/PDFFiles2/Resolutions/C-16-02-Reglas-de-control-de-extraccion.pdf>)

C. Proposed activities

The following activities are focused on Bigeye (BET) and Yellowfin Tuna (YFT) stocks in the EPO.

1.1 Uncertainty reduction in YFT and BET stock assessments

Bigeye and Yellowfin tuna stocks have fluctuated around MSY levels in recent years, with a clear trend towards reduction in the spawning biomass and an increase in fishing mortality. Both species are at the limit for overfishing. Apart from targeted catches, bycatch of juveniles (particularly with the use of FADs targeting skipjack) has also increased. Together with the great uncertainty regarding recruitment, growth, natural mortality and environmental conditions suggest that these populations should be managed in a precautionary manner. Any increase in fishing mortality (eg. due to overcapacity) of these species would bring about only a marginal increase in yield but a considerable reduction in the reproductive biomass.

It is important to be able to demonstrate, through assessments and/or simulations, that the state of the stocks of YFT and BET are above the point where recruitment could be impaired (PRI) or fluctuating at a level consistent with the MSY. In order to achieve this, it is recommended to take measures towards increasing abundance to, or above, the level required to compensate for the uncertainty and prevent YFT and BET stocks to fall into a state of overexploitation. Stakeholders' proposals for international (IATTC) and National (Ecuador) level activities are:

- National and International level:** To follow upon the work being carried out by IATTC (IATTC, 2016c)⁴ on alternative sensitivity analysis for stock assessment. It is recommended that the work to be developed by the scientific staff includes a sensitivity analysis under different scenarios in order to examine the uncertainties of the most relevant biological (such as recruitment, growth, mortality, etc.) and environmental/oceanographic (eg. temperature) parameters. It is desirable that only one assessment method is applied for each stock and that it takes into consideration the main uncertainties.

NAME	1.1 Reduction of uncertainty in YFT and BET assessment						
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	MSC Indicators
Follow up to IATTC work to include a sensitivity analysis in stock assessment: Industry and Government	Ecuador IATTC	Medium	Medium	High	New	2 years (IATTC's research plan timeframe is 2018)	PI 1.1.1 PI 1.2.4

⁴ CIAT, 2016b (<https://www.iattc.org/Meetings/Meetings2016/SAC7/PDFfiles/SAC-07-07a-Actividades-del-personalREV.pdf>)

1.2 Precautionary management of YFT and BET stocks

- **National and International level:**

1.2.1. The companies propose to take actions with the Ecuadorian Government towards the development of conservation measures for the reduction of fishing mortality of juvenile tunas in the EPO (new activity). For example, a 5% to 10% reduction in catch can be proposed as a target in order to improve the status of the stocks. Such a proposal must then be validated by IATTC. The objective is to ensure that the stocks are at a high productivity level with a low probability of recruitment overfishing. If this is not the case, evidence must be available that there exists a recovery strategy. It is important to ensure that stocks maintain a level that is equal or higher to the Bmsy. The Government and Industry have, already, carried out independent work towards the establishment of quotas and a reduction in BET catches (existing activity), but other recovery measures must be adopted if need be.

1.2.2. The Government of Ecuador must continue promoting with the IATTC the design of a comprehensive plan for capacity reduction in the EPO. It has been estimated that the adoption of a comprehensive plan will contribute to the conservation of the main tropical tuna species.

The Ecuadorian delegation promoted, within the IATTC, a reference framework for capacity reduction of the EPO fleet (documented in the report of the 17th meeting of the permanent work group, brought forth to the 90th annual IATTC meeting). Once the reference framework is approved, a Comprehensive Management Plan for the Fleet will be designed. It will include a capacity reduction component. The role that Ecuador has played in this initiative has been, and will continue to be, critical.

NAME	1.2 Precautionary management of YFT and BET stocks						
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	MSC Indicators
1.2.1. Proposal of conservation measures: Industry, Government	Ecuador IATTC	Medium	Medium	High	Existing	1 year	PI 1.1.1 PI 1.1.2 PI 1.1.3
1.2.2. Comprehensive plan for fishing capacity reduction in the EPO: Industry and Government	Ecuador IATTC	Medium	Medium	High	Existing	2 years	PI 1.2.1 PI 1.2.2 PI 1.2.3 PI 1.2.4

1.3 BET and YFT juvenile bycatch reduction

There is a problem with the bycatch of Bigeye and Yellowfin tuna juveniles with FADs. Currently, around 50% of the catch is made up of fish of less than 4 Kilograms in weight. The size structure of the stock could be affected both by environmental conditions as by the fishing effort which needs to be reduced. The depth at

which the purse seine gear is placed impacts the catch of BET and YFT juveniles, thus the strategy for this reduction consists of modifying fishing gear and its use.

It is necessary to develop mechanisms to discourage the catch of BET and YFT juveniles. The Ecuadorian industry is no longer paying vessel captains for undersize fish, which is progress. However, it is important that these mechanisms are formalized in order to discourage the catch of juveniles.

Five tasks were proposed for this activity:

- **National level:**

1.3.1. A national workshop to be promoted by the Companies in order to propose and assess measures for the reduction of juvenile tuna catch as well as, for example, how to standardize the depth at which the gear is set for the whole fleet.

1.3.2. Assess fishing gear efficiency (eg. gear depth set) and the depth for setting the gear through verification exercises.

1.3.3. Continue testing sorting grids and other technological alternatives.

1.3.4. Selection of the most efficient technology.

Based on the scientific evidence derived from the previous activities, it is important to promote the discussion and agreements on the implementation of new technologies that will be more efficient for the reduction of juvenile catches.

- **International level:**

1.3.5 Propose and monitor projects geared towards developing more efficient technologies in Ecuador and in the EPO in coordination with IATTC. The Industry and Government will carry out consultations with IATTC regarding the impacts of the technology used up to now in the reduction of juvenile catches.

NAME	1.3 BET and YFT juvenile bycatch reduction.						
	Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration
1.3.1. National workshop: Industry, ATUNEC, Chamber and Government	Ecuador	High	Medium	High	New	18 - 20-April-2016	PI 1.1.1 PI 1.1.3
1.3.2.Verification exercises: Industry and Gov. (SRP)	Ecuador	High	Medium	Medium	Existent	1 Year	PI 1.2.1 PI 1.2.2
1.3.3. Grid testing: Industry and Gov. (SRP)	Ecuador	High	Medium	Medium	Existent	1 Year	PI 1.2.3

1.3.4. Selection of most efficient technology: Industry and Gov. (SRP)	Ecuador	High	Medium	Medium	New	End of Year 1	
1.3.5. Proposal and monitoring of technological advances before IATTC	Ecuador IATTC	Medium	Medium	Medium	New	End of Year 1	

1.4 Plan to monitor and manage the small tuna fleet

The information gaps regarding the small fleet (Class IV and V vessels) are more important than those pointed out in activities 1.1 and 1.4, as this fleet is not obliged to have on-board observers or to record the same information that larger vessels must record. The effects of the smaller vessel fleet on target catches and bycatch must be considered for the target species as well as for primary, secondary and ETP species. Therefore, there must be an activity dedicated to gathering information regarding this fleet which will, in turn, supply information for all the activities related to Principle 1 (this section) and also for all the activities related to bycatch in Principle 2 of Section 2.

The IATTC is who must establish new regulations to strengthen the management of the small vessel fleet. Towards this aim, the consortium will propose that the design of the National Action Plan for Tunas includes monitoring of all fleets. The plan is described in Section 3.1 of this document.

The participating companies have already begun working towards improving catch monitoring in their small vessels and have considered incorporating on-board observers to their Class 4 and 5 fleet. NIRSA already has electronic observers on its Class 5 vessels.

NAME	1.4 Monitoring and management of the small tuna fleet.						
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	MSC Indicators
Monitoring plan for Class 4 and 5 vessels: Industry, Government, IATTC	Ecuador IATTC	Medium	Medium	Medium	Existing /New	5 Years	PI 1.1.1 PI 1.1.2 PI 1.2.1 PI 1.2.2 PI 1.2.3 PI 1.2.4

1.5 Analysis of impacts of seasonal-spatial closures

With the aim of reducing the global quota and fishing effort on tuna stocks in the EPO, IATTC has implemented, among other regulatory measures, a 62 day total fishing closure (between August and October or between November and January 2016). From 2011, a 30 day closure also came into force in the area known as

“Corralito” (pen or enclosure), which is located in the high seas, outside the 200 miles of the Galapagos Islands for the catch of yellowfin tuna, bigeye tuna and skipjack with purse seiners.

Interest groups in Ecuador argue that since the implementation of the Corralito, IATTC has not made the results of the scheme known, thus it is not known what has the impact of this regulatory measure been. Three main tasks were proposed in order to know the impact of the Corralito and alter the measure should it be considered necessary.

- **International level:**

The Government will request IATTC to provide the results of the analysis carried out by its scientific staff on the efficiency of the Corralito as a conservation measure.

NAME	1.5. Analysis of impacts of seasonal-spatial closures						
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	MSC Indicators
Request of results of the Corralito as a conservation measure: Government Consultation to IATTC	Ecuador IATTC	High	Medium	High	New		PI 1.1.1 PI 1.1.3 PI 1.2.1 PI 1.2.2 PI 1.2.3

1.6. Proposal of new conservation and management measures

The goal of the five previous activities (Activities 1.2 to 1.5) is that tuna stocks are maintained at a stable level above their biological limits or that their status improves. Towards this end, it is important to obtain feedback between the IATTC and the Ecuadorian Government. The Ecuadorian companies are willing to reduce catches, effort, establish quotas and closures as well as to implement new technologies.

Based on the analysis of new conservation measures (Activities 1.2, 1.4, 1.5), the Ecuadorian Government will have to propose new regulations at the national level, which will be put forth to the IATTC for their acceptance and possible expansion to the EPO region. The objective of this activity is to consolidate the actions from previous tasks, and promote that the new measures are, eventually, formalized at the EPO level.

The regulations generated through these activities will be included in the National Action Plan for the Management of the Tuna Fishery in Ecuador (Activity 3.1).

- **National level:**

1.6.1. Update the national tuna regulations: Once the scientific information⁵ is available and a consensus can be built with the industry, the Ecuadorian government will adopt regulations that aim at reducing fishing effort in order to maintain precautionary biomass and fishing mortality levels. (New Activity).

- **International level:**

1.6.2. Establish a communication channel between the government and IATTC for the exchange of information, to share feedback on the activities carried out by both parties and for the establishment or validation of new regulations. (New Activity). This task is repeated in other activities, particularly in Task 3.1.2. (Intervention strategy with IATTC), where all these requests must be consolidated.

NAME	1.6 Plan to assess and establish new measures.						
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	MSC Indicators
1.6.1. Update national tuna regulations: Industry and Government	Ecuador	Medium	Medium	Medium	New	Permanent	PI 1.1.1 PI 1.1.2 PI 1.1.3 PI 1.2.1
1.6.2. Establish a communication channel with IATTC: Industry, Government	Ecuador IATTC	Medium	Medium	High	Existent/ New	Permanent	PI 1.2.2 PI 1.2.3

The following two activities correspond solely to IATTC and the level of control that Ecuador has regarding planning or executing them is negligible, and thus, no details are provided.

1.7. Specific harvest control strategies

The IATTC manages skipjack, yellowfin, and bigeye tuna as a multi-species purse seine fishery with capacity allocations and closure periods that mainly protect the most vulnerable species (i.e., bigeye) from overfishing. There are no species-specific management plans, instead, IATTC has developed a series of management measures to control fishing capacity. This activity corresponds to the IATTC; as the government of Ecuador and the Ecuadorian industry can only take action with IATTC so that this activity takes place.

- **International level:**

⁵ Scientific information which includes sensitivity analysis, reduces uncertainties and provides a more realistic and reliable assessment of tuna stocks status.

Species-specific harvest strategies that maintain all three species at optimal biomass levels need to be developed and implemented. Each strategy must have specific objectives and describe how it is responsive to the state of the stock.

NAME	1.7 Specific harvest control strategies.						
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	MSC Indicators
Species specific strategy: IATTC	IATTC	Low	Medium	High	New	2 years	PI 1.2.1 PI 1.2.2

1.8. Harvest control rules and tools

Management of the three tuna species (skipjack, yellowfin, and bigeye) is carried out within IATTC through an overall EPO purse seine harvest strategy. Thus, the IATTC limits the total capacity of the purse-seine fleet as a measure to control effort, but this tool has had limited success to maintain optimal biomass and exploitation levels in all the target species. It is necessary for the IATTC to adopt formal and precautionary control rules and tools for each target species.

- **International level**

1.8.1 Formal adoption of species specific harvest control rules. The IATTC is in the process of developing and adopting formal and precautionary HCRs for tuna stocks that are consistent with specific and precautionary reference points.

Other related activities are described in Section 3 and they include: a) the implementation of a 5 year plan to allow the efficient management of each fishery (proposal from Ecuador); b) Assessment of the effectiveness of the harvest control rules and tools through audits. The integration of external audits in order to assess IATTC's operations was recently carried out (see Section 3, Activity 3.5).

- **National level**

1.8.2. Monitor IATTC's management strategy. The industry must lobby for the government to continue communications in order to follow up on the work that IATTC has already embarked upon. A tool to be used by Ecuador in order to propose structured actions to the IATTC will be an Action Plan for tunas, which is described in Section 3 of this document (Activity 3.1).

Ecuador will also monitor IATTC's review in order to corroborate the effectiveness of the harvest control rules and tools (as well as the general management strategy and processes established by IATTC, see Section 3, Activity 3.5).

NAME	1.8 Harvest control rules and tools.
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Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	MSC Indicators
1.8.1. Formal adoption of specific control rules: IATTC	IATTC	Low	Medium	High	Existing	2 years	PI 1.2.1 PI 1.2.2
1.8.2. Monitor IATTC's management strategy.	National IATTC	Medium	Medium	Medium	Existing		

2. IMPACTS ON NON-TARGET SPECIES AND THE ECOSYSTEM

A. Background

The pre-assessment and scoping documents detected that the most serious levels of non-compliance with MSC principles and criteria are observed in Principle 2 especially for sets on FADs. Even though the Ecuadorian fleet practices a “dolphin safe” policy, it has been estimated that more than 70% of sets are on fish aggregating devices (FADs), which increases the risk of catching juvenile tuna, particularly for bigeye and yellowfin tuna as well as other teleost species. This is not considered to be a risk for sets on unassociated schools. It is important to point out the high proportion of sets using FADs, which is considered to represent a significant risk, occurs in Class VI vessels. Smaller classes (II to V) apparently set using other drifting floating objects (locally called “palos”), which, eventually, become FADs. It is important to follow up on the small fleet, as it is subjected to very little scrutiny of its operations and management and its impacts add on to those of the larger fleet.

IATTC and the Ecuadorian government have taken measures to achieve a better bycatch management and to minimize discards, but there is still not enough data to corroborate that the measures taken are effective and that they are reaching the objectives they were established for, as is required by the MSC. Technical documents prepared by IATTC scientists on stock assessments speculate about the benefit of the conservation measures⁶, but they are not yet conclusive.

These regulatory measures include closures (seasonal closures, area-seasonal closures “corralito”) and propose constant changes to the fishing gear in order to make it more selective. The initiatives that tackle the issue of FADs are relatively new. In 2013, IATTC set out a plan to start collecting, with the help of the industry, more information on FADs. In 2015 the plan was amended⁷, extending deadlines for additional data to be handed in (from January 2017) and for IATTC’s scientific staff to present the results of the SAC analysis of

⁶ <https://www.iattc.org/Meetings/Meetings2015/June/PDFs/IATTC-89-04a-Atunes-ICcudos-y-otros-peces-pelagicos-en-el-OPO-2014.pdf>

⁷ <https://www.iattc.org/PDFFiles2/Resolutions/C-15-03-Enmienda-C-13-04-Plantados.pdf>

2018⁸ and, finally, for IATTC to analyse those results in 2019 as well as the management recommendations of the scientists. That same resolution establishes the *ad hoc* workgroup on FADs.

The Tuna Follow-up Program can be used to identify the methods used to catch tunas and, therefore, the possible impact on other species as well as on bycatch. The three companies have a clear follow-up system of all their catch, including bycatch.

However, while the IATTC does not have a specific plan for FAD management, with clear objectives and strategies set up (eg. maximum fleet or vessel size, limits, licenses, location, design and materials, mandatory withdrawal, sanctions, etc.) to prevent high bycatch mortality levels as well as effects on the ecosystem, it is not very likely that the fishery will reach the MSC standard.

Unassociated sets represent a lower risk for bycatch species as well as for juvenile tunas. With a robust traceability system, which can clearly distinguish the catch using FADs from that on unassociated schools, it could be possible to reach a more favourable assessment for the fishery not associated to floating objects.

On the other hand, it is important to continue working on the development of strategies for the reduction of bycatch of sharks, rays, manta rays, teleosts, juvenile tunas and billfishes using all types of fishing gear. The harmful effect on bycatch is cumulative therefore, even if unassociated sets cause minor bycatch mortality, any increase in bycatch mortality caused using FADs will become significant. To conclude, it is considered that the cumulative effects of bycatch caused by different fleets and with different gear are harmful for the ecosystem as a whole. It has been considered that some of these impacts could be mitigated with the development of FAD management strategies. It is important to combine and integrate different strategies to create a range of management options.

B. Scope of the workshop

Non-target species include species of commercial value which are retained by fishermen, species without commercial value, which are discarded and the group classified as endangered, threatened and protected (ETP) (which commonly includes several shark, marine birds, marine mammals and marine reptile species). Currently, the MSC classifies non-target species as primary, secondary and ETP.

The use of fish aggregating devices (FADs) brings about the bycatch of a large variety of species, including juvenile skipjack, yellowfin and bigeye tuna. Several species of teleosts also make up the bycatch, especially around floating objects, but also on sets associated to schools of dolphins as well as on unassociated sets. These include billfishes, mahi mahi (*Coryphaena spp.*), sierra golfina (*Acanthocybium solandri*), mackarel (*Elagatis bipinnulata*), Jack mackarel (*Seriola lalandi*), black skipjack and bonito, among others. Some of these species are retained to be sold.

A large number of sharks and rays are also part of the purse seine fleet's bycatch in Ecuador, especially on associated sets. The two most common species of sharks that are caught with purse seine gear are the silky shark (*Carcharhinus falciformis*), their stocks have been considerably reduced and the white tip oceanic shark (*C. longimanus*). Purse seiners, occasionally catch turtles, mainly in association with floating objects, but they

⁸ Scientific Advisory Committee, SAC.

can also get caught in association with dolphins or on unassociated sets. The most common interaction occurs with olive ridley (*Lepidochelys olivacea*), even though green turtles (*Chelonia mydas*) and occasionally loggerheads (*Caretta caretta*) and leatherbacks (*Eretmochelys imbricata*) can also be caught. Bycatch mortality of marine turtles due to purse seine gear is considered to be low.

Accidental catches of dolphins have diminished considerably since adhering to the APICD program in 1999 and the mandatory requirement to carry on-board observers on all large vessels since 2009. Interactions with dolphins are considered to be in negligible levels in relation to stock sizes (IATTC 2010).

The pre-assessment of the fishery was carried out following MSC certification criteria version 1.3. The more substantial changes in the new version v.2.0 are all within the performance indicators of Principle 2. Therefore, a rigorous review of the new guidelines must be carried out so that the fishery can comply with the new indicators. This section includes suggestions to improve the fishery's performance in relation to Principle 2 as well as to comply with the new MSC standard.

C. Proposed activities

2.1 Develop a revised list of primary, secondary and ETP species

It is necessary to carry out a revision of the non-target species of the fishery which make up the primary, secondary and ETP species categories according to the new MSC standard and to compare them with those which were previously classified as retained, bycatch and ETP.

- **National level:**

2.1.1. Internal records of primary, secondary and ETP species by participating company. The companies already monitor landings of the tuna purse seine fleet and work is already being carried out on the format for this internal record.

This will contribute to the creation of a revised bycatch species list (next activity). The companies will adopt this activity in a permanent nature.

2.1.2. To create a bycatch species list for the Ecuadorian tuna purse seine fishery that separates bycatch by set type, on unassociated schools and on FADs. The lists must identify PRIMARY (retained) (e.g. juvenile tunas, wahoo, sharks, black skipjack, mahi-mahi, billfishes, bonito); SECONDARY (sharks, rays, other fish that are not retained) and ENDANGERED, THREATENED OR PROTECTED (ETP) SPECIES (dolphins, marine turtles, whale sharks, other mammals, birds, reptiles). Primary and secondary species must also be classified as MAIN and MINOR, according to the MSC – RC v.2.0 definitions⁹.

2.1.3. The list must include the amounts or proportion by species in relation to the target species by set type (unassociated or FADs) and for the whole Ecuadorian fleet. It will be necessary to obtain catch information for primary and secondary species as well as the frequency of interactions with ETP species. The industry will provide the SRP with information from their internal records.

⁹ <https://www.msc.org/documentos/documentos-referencia/documentos-de-referencia-para-certificacion-de-pesquerias/requisitos-para-la-certificacion-pesquerias-v2.0/view>

NAME	2.1. Revised list of primary, secondary and ETP species.						
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	MSC Indicators
2.1.1. Internal bycatch record: Companies	National	High	Medium	High	Existing/ New	Permanent	Status PI 2.1.1 PI 2.2.1 PI 2.3.1 PI 2.5.1 Information PI 2.1.3 PI 2.2.3 PI 2.3.3 PI 2.5.3
2.1.2. Bycatch Species list: Industry and SRP	National	High	Medium	High	New	1 year	
2.1.3. Obtain data on bycatch and ETP species interactions: Industry and SRP	National	High	Medium	High	New	2 years	

The creation of the non-target/bycatch species list, the compliance with stock status indicators, the amount of information available, and the management of non-target species require other parallel tasks. These are described below.

2.2 Increase the information and assess stock status of non-target species

Given the new primary and secondary species categories, the allocation of species in PIs 2.1.1 and 2.2.1 will need to be reviewed. It is possible that the oceanic white tip and silky sharks may be considered main primary species, and more information on the Ecuadorian fleet's catches may be needed.

The performance of MSC indicators on stock status of non-target species (primary and secondary will depend on there existing enough information (from IATTC, SRP or MSC analysis) indicating that those stocks are above or below PRI.

If non-target stock status information is not available, it will be important to improve monitoring programs for all species at the national and regional level in the EPO. Monitoring must include the impact produced by the unit of assessment (UoA) on other species. The smaller vessel fleet, even though it is not part of the UoA, should be part of the monitoring programs, as it also produces bycatch.

Given the lack of information regarding stock status of non-target species, the pre-assessment noted that the risk based framework (RBF) would be needed to assess the Bycatch Species Outcome PI (2.2.1). Given the potential reassignment of species, it is possible that the RBF would be needed to assess some of the primary and secondary species within the performance indicators PI 2.1.1 and PI 2.2.1. A suitable starting point to determine if a RBF is necessary would be the revised list of primary and secondary species, sorted by main and minor species that will be produced in the previous activity.

To summarize, the tasks needed to analyze the stock status of non-target species are:

- **National and international level**

2.2.1. Review the allocation of species within the primary or secondary, main or minor categories. Depending on this, it will be known which species need stock assessment and a management strategy. The lists generated in the previous activity will serve as a basis for their identification. The companies will carry out consultations with the INP and IATTC in order to identify the species that require assessment.

2.2.2. Maintain, expand and strengthen monitoring programs, and especially information analysis, at the national and regional level in order to include or improve monitoring of primary, secondary and ETP species in all fleets and to determine the composition and volume of bycatch (IATTC and Ecuador).

2.2.3. Introduce on-board observers to monitor and manage the small vessel fleet, including monitoring of primary, secondary and ETP species (extension of activity 1.5) (Ecuador).

2.2.4. Document or determine stock status of primary and secondary species with respect to biological limits, derived from other assessments. If there are no previous assessments, a request must be made to the corresponding institutions (IATTC, SRP, INP, for example) for data analysis to be carried out on primary and secondary species (required by the standard).

It is particularly important to carry out assessments of silky and oceanic sharks, due to their vulnerability, status and importance within the ecosystem.

2.2.5. Request information on the conservation status of endangered, protected or threatened species as required by the standard. The information should be requested to the corresponding institutions (consultations with INP, SRP, IATTC, IUCN, CITES and other national and global conservation organizations).

2.2.6. Request IATTC to maintain annual reports on the state of compliance with the resolutions related to the protection of species considered to be ETP.

2.2.7. Apply the risk based framework (RBF) for a rapid assessment of primary and secondary species. The collaboration of IATTC and INP will be requested for the rapid analysis of the information available at the moment.

NAME	2.2. Stock assessment of non-target species.						
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	MSC Indicators
2.2.1. Review spp. allocation: Industry, SRP, IATTC	National IATTC	High	Medium	High	New		Status
2.2.2. Maintain, expand or strengthen bycatch monitoring programs: Industry, SRP, IATTC	National IATTC	Medium	Medium	Medium	New		PI 2.1.1 PI 2.2.1 PI 2.3.1 PI 2.5.1 Information

2.2.3. Introduce on-board observers on the small fleet: Industry, SRP	National	High	Medium	Medium	New		PI 2.1.3 PI 2.2.3 PI 2.3.2 PI 2.5.3
2.2.4. Determine stock status of primary and secondary spp.: Industry, SRP, IATTC	National IATTC	Medium	Medium	Medium	New		
2.2.5. Request information on conservation status of ETP spp.: Industry, SRP, IATTC	National IATTC	Medium	Medium	Low	New		
2.2.6. Request IATTC for annual reports on compliance with ETP resolutions.	National IATTC	Medium	Medium	Medium	New		
2.2.7. RBF Analysis of primary and secondary species: Industry, INP, IATTC	National IATTC	Medium	Medium	Medium	New		

2.3 Development of management strategies for non-target species

Considering the new categories of primary and secondary species, alternative measures or new strategies for the reduction of bycatch of these species may be required, particularly regarding the use of FADs with purse seine gear.

The improvement in MSC indicator scores related to bycatch management strategies will depend on the IATTC modifying, developing and implementing partial strategies for the management of primary, secondary and ETP species (review the Management strategy in indicators PI2.1.2, PI 2.2.2 and PI 2.3.2, in the MSC Fisheries Certification Requirements and Guidelines)¹⁰. This is due to the fact that the new MSC categories for accompanying fauna are stricter and, currently, the consideration of the cumulative impacts of all MSC certified fisheries which coincide in time and space (coinciding fisheries) is required (see changes in certification requirements)¹¹.

It is also very important to highlight that a management plan specific for FADs, controlling bycatch of juveniles, non-target and ETP species is still not available. Due to its importance at the stock and ecosystem levels this activity is described separately.

¹⁰ <https://www.msc.org/documentos/documentos-referencia/documentos-de-referencia-para-certificacion-de-pesquerias/requisitos-para-la-certificacion-pesquerias-v2.0/view>

¹¹ <https://www.msc.org/documents/fisheries-certification-requirements-updates-supplementary-documents/summary-of-changes-fcrv2.0>

It is expected that the following tasks will be necessary to achieve these objectives and that a close collaboration must be in place between national and international agencies in order to achieve them.

- **National and International Level**

2.3.1. Strengthen management of primary, secondary and ETP species.

2.3.1.1. Develop and implement of a partial strategy for the management of primary and secondary species, which takes into the account the cumulative effects of overlapping fisheries.

2.3.1.2. Formulate and propose management measures for primary, secondary and ETP species within the EPO.

The mandatory use of exclusion grids used by the Class 6 fleet in Ecuador is evidence of progress achieved toward completion of this task.

2.3.2. Promote a resolution to expand monitoring programs so that they include primary, secondary and ETP species (extension to activity 2.2.2.) (Ecuador and IATTC).

2.3.3. Promote a resolution to improve monitoring and management of the small vessel fleet with on-board observers (extension to activities 1.5 and 2.2.3.) (Ecuador and IATTC).

2.3.4. Verify that the fishery complies with MSC requirements regarding shark finning and observer coverage¹².

Evidence must be supplied to demonstrate that the fishery does not retain sharks, and if it does, evidence must be supplied to demonstrate that it complies with regulations and on-board observer requirements established by the MSC.

2.3.5. Develop a permanent outreach program with capacity building for vessel captains in order to reduce mortality of primary, secondary and ETP species. The Ecuadorian government could expand the program to the whole Ecuadorian fleet with support from the industry and regional and international organizations (IATTC EPESPO, Industry, ISSF, WWF).

Probecuador and the SRP have already carried out seminars and workshops with vessel captains and crew in order to increase their knowledge of IATTC and IDCP regulations. For example, The Fisheries School of the Eastern Pacific is preparing a training course on best management practices and release of tuna juveniles and bycatch for the purse seine tuna fishery.

NAME	2.3. Development of management strategies for non-target species.						
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	MSC Indicators

¹² See SA2.4 Harvest strategy (IC 1.2.1, scoring guidepost (e)) in Fisheries Assessment Requirements v2.0 (<https://www.msc.org/documentos/documentos-referencia/documentos-de-referencia-para-certificacion-de-pesquerias/requisitos-para-la-certificacion-pesquerias-v2.0/view>);

SA3.5.2 Management strategy for primary species (IC 2.1.2, scoring guidepost (d));

SA3.8 Management strategy for secondary species (IC 2.2.2, scoring guidepost (d))

2.3.1. Strengthen management of non-target species						
2.3.1.1. Partial management strategy for non-target species: IATTC	IATTC	Low	Medium	Medium	New	
2.3.1.2. Create and promote management measures for non-target species in the EPO: Companies and SRP	National	High	Medium	Medium	New	
2.3.2. Promote a resolution to expand monitoring programs: Industry and SRP, IATTC	National	Medium	Medium	Medium	Existing / New	
	IATTC					
2.3.3. Promote resolution to include observers in the smaller vessel fleet: Industry, SRP, IATTC	National IATTC	Medium	Medium	Medium	Existing / New	
2.3.4. Evidence of compliance with MSC shark protection requirements: Industry, SRP	National	High	High	High	New	
2.3.5. Captain education program: Probecuador, EPESPO, ISSF, Industry, IATTC, WWF	IATTC National	Medium	Medium	Medium	Existing / New	

PI 2.1.2

PI 2.2.2

PI 2.3.2

PI 2.5.2

2.4. Development of a management strategy for purse seine gear with emphasis on FADs.

The regulation on purse seine gear and particularly on sets with FADs is a priority due to the risk that purse seine gear represents to target, bycatch and ETP species as well as to the ecosystem in general. IATTC's Resolution C-15-03 sets out a route which will lead to the regulation of FADs in the EPO. It has been anticipated that the following tasks will be required in order to design and adopt these strategies. Close collaboration between national and international agencies will be required for their promotion.

- **National and International Level**

2.4.1. Strengthen the regional management strategy for FADs included in IATTC Resolution C15-03 (IATTC).

The regulation of FADs impacts on the environment is a priority in order to eliminate or mitigate their effects on bycatch, interactions with ETP species, pollution, ghost fishing, tuna and other species' migration patterns as well as other effects on the functions and structure of ecosystems.

IATTC Resolution C-15-03 sets out a road map which will lead to FAD regulation in order to reduce bycatch, FAD pollution and other effects to the ecosystem.

Some progress has also been achieved regarding the use of exclusion grids for juvenile tunas as well as for other bycatch species, and on seasonal-area closures in order to reduce shark bycatch.

2.4.2. Workshop with shipbuilders/vessel owners in order to design strategies for the management of purse seine gear (on associated and unassociated schools).

2.4.3. Develop a national strategy to manage the use of FADs (National). This strategy will be part of the National Plan to manage the tuna fishery in Ecuador (Activity 3.1).

NAME	2.4. Development of a management strategy for purse seine gear with emphasis on FADs.						
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	MSC Indicators
2.4.1. Strengthen the regional strategy for FAD management included un Resolution IATTC C15-03: IATTC	IATTC	Low	High	High	Existing / New	2 years	PI 2.1.2 PI 2.2.2 PI 2.3.2 PI 2.5.2
2.4.2. Workshop with vessel owners on purse seine gear management: Industry and SRP	National	High	High	High	New		
2.4.3. National strategy for FAD management (to include in activity 3.1): SRP, INP, Companies	National	High	High	High	New	2 years	

2.5. National program for the traceability of tuna catch

The MSC Fisheries Standard (CR v2.0) establishes that MSC labelled products come from, and can be traced back to, a sustainable fishery. Traceability is assessed through a parallel process, which is carried out through an analysis of the chain of custody. However in the requirements (CR v2.0), item 7.4.11 establishes that while

analysing fisheries, a revision of key traceability factors must be carried out documenting any risks (eg. that uncertified fishing gear is used; that the vessels include in the UoC fish in different geographic areas; that other vessels not included in the group exploit the same stock; that there is a risk of substitution between fish from the UoC and outside the unit).

The fishery must comply with the following traceability requirements (RC v2.0, item 7.4.11):

- a. Systems have been established to guarantee that the fish and fishery products of the UoC can be traced to the UoC.
- b. Systems have been established to guarantee that the fish and fishery products of the UoC can be distinguished from those not included in the UoC.

In this case, it is also important to clearly distinguish those products obtained from sets on unassociated and associated schools. A national traceability program for tuna catches is required to guarantee that these requirements are being complied with and to eventually be able to certify the chain of custody.

- **National level:** Design of a national traceability program to track catches from unassociated and associated sets.

NAME	2.5 National program for traceability of tuna catches.						
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	MSC Indicators
Design of a national traceability program for tuna catch: Companies	National	High	Medium	Medium	New	1 year	PI 1.2.3 PI 3.2.3

2.6. Ecosystem Information and analysis

FADs represent a greater risk to sharks and other bycatch species than sets on unassociated schools however, purse seine gear, in general, impacts the ecosystem in different ways which need to be assessed and regulated. The effects of FADs on migrating fish populations, large predators and on the trophic chain can be significant and irreversible. The global effect that the elimination of the main predators, such as sharks, could have on the structure and function of the ecosystem is still not understood.

Due to the great uncertainty that exists in relation to the effects of FADs at an ecosystemic level, the development of a management strategy for their use is deemed to be a priority, as has been stated in the previous activity. It is necessary to have more robust data available on the structure and functioning of the stocks that are more greatly affected by the purse seine tuna fishery as well as on the ecological effects of the loss of FADs in order for the strategy to be able to protect effectively the most vulnerable elements of the ecosystem. Among the elements to be considered, the following are highlighted:

- **National and International Level**

2.6.1. Analysis of the conservation status of the shark species with highest bycatch rates in the tuna purse seine fleet in the EPO. This requires improved monitoring of bycatch and stock assessments of the shark

species most affected by tuna fisheries in the EPO. Due to the fact that IATTC is responsible for assessing shark stocks in the EPO, the SRP must request IATTC to carry out stock assessments on the shark species most affected by purse seine gear such as the silky and oceanic sharks.

IATTC has a data base on shark catch by industrial purse seiners, but information for the small scale artisanal fishery as well as for the longline fishery, which contribute to fishing mortality, is still missing. On the other hand, Ecuador has a PAT (Action Plan for Sharks), which has collected important data for the artisanal and coastal fisheries which could be useful for the IATTC to fill the data gap for this area in Ecuador. It is recommended that the SRP promotes the PAT Ecuador with IATTC in order to exchange information and consolidate analyses.

2.6.2. Ecosystem analysis to assess the long term risks presented by purse seine gear (specially FADs) on the function and structure of the ecosystem. Some of the risks include the effects on trophic networks, elimination of large predators, species migration patterns, pollution, ghost fishing, etc.

National and international research on ecosystems is required. Ecuador can supply information to the IATTC regarding the impacts of the Ecuadorian fleet with support of the PAT as well as the mahi-mahi PAN (National Action Plan), as well as from other research that is already being carried out in the country. For example, the PAT Ecuador could contribute to the analysis of the impacts of the Ecuadorian fleet on higher predators.

At the IATTC level it is necessary to carry out ecosystem modelling with the input from different EPO fisheries. The objective is to carry out a risk analysis and to design programs that mitigate impacts from the most severe risks.

NAME	2.6 Ecosystem information and analysis.						
	Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration
2.6.1. Analysis of conservation status of sharks with highest bycatch rates in the tuna fleet: IATTC, INP	IATTC National	Low	Medium	Medium	Existing / New	2 years	Status: PI 2.1.1 PI 2.2.1 PI 2.3.1 PI 2.5.1 Information: PI 2.1.3 PI 2.2.3 PI 2.3.3 PI 2.5.3
2.6.2. Ecosystem assessments: IATTC, INP	IATTC National	Low	Medium	Medium	New	2 years	

3. FISHERY SPECIFIC MANAGEMENT SYSTEM

A. Background

The MSC pre-assessment of the fishery identified certain issues that merit attention within Principle 3. Even though several issues are considered to be relatively minor, there are certain aspects regarding governance and policies as well as others related to the fishery management system that require improvement in order

to pass certification. It is important to avoid promoting fishing practices that are adverse to sustainability, such as fisheries subsidies which could contribute to an increase in fishing effort and promote overcapacity in the EPO.

Additionally, the fishery specific management system for tuna needs reinforcement, especially at the national level. There are still no clear management objectives, regulation enforcement and compliance is deficient and a national plan of action has not been created for tuna, as they already exist for mahi-mahi and sharks. These issues are applicable to both (associated and unassociated) sectors of the fishery.

It is also important, at national level, to strengthen research, capacity building and monitoring control and surveillance activities in territorial waters. Management strategies for the target species, accompanying species, bycatch and ETP, habitat and ecosystem, must be developed or strengthened and included in an action plan explicitly for the fishery.

On the other hand, it is important to acknowledge that fisheries policy in Ecuador has been strengthened in the last eight years, with great advances achieved in the control and monitoring system and the prevention and reduction of IUU fishing, which has placed emphasis on the tuna chain. Two specific developments are Ministerial Agreement 228¹³, which formally adopts a catch traceability system and Agreement 174¹⁴, which adopts and adapts all of the IATTC's conservation measures into national legislation. This SRP measure allows for the application of sanctions at the national level.

B. Scope of the workshop and proposed activities

3.1 National strategy to manage the tuna fishery

3.1.1. Development of a national management strategy for the tuna fishery in Ecuador that includes every fleet and fishing gear. The strategy will be part of the National Action Plan for Tuna (Activity 3.2.1) and it will include the national strategy for the use of FADs generated from activity 2.4.3.

3.1.2. Update or development of regulatory instruments for all fleets and fishing gears.

This activity involves the development or amendment of the regulations that manages the use of FADs by the purse seine fleet (according to the strategy to be developed under Activity 2.4.3), as well as the development of regulatory instruments for other fleets and fishing gears which may not have well defined regulations. The existing instruments for industrial purse seiners at the national level are: Ag #174, which is a compendium of IATTC regulations to be applied to Ecuadorian flagged vessels and Agreement #133 on the use of fish exclusion grids¹⁵. All of the regulations and amendments will be part of the Regulatory Framework within the Action Plan for Tuna (next Activity 3.2.1).

Regarding FAD regulations, progress has already been made according to IATTC resolution C-15-03. For example, in Ecuador non-entangling bio-degradable materials are already being explored and a record of all FADs has already started as it is stated in the aforementioned resolution.

¹³ <http://www.viceministerioap.gob.ec/wp-content/uploads/2014/09/Acuerdo-Ministerial-228-Pesca-Ilegal.pdf>

¹⁴ <http://www.viceministerioap.gob.ec/wp-content/uploads/2013/11/ACUERDO-174-CIAT.pdf>

¹⁵ <http://www.derechoecuador.com/productos/producto/catalogo/registros-oficiales/2008/agosto/code/18977/registro-oficial-no-398---jueves-7-de-agosto-de-2008#No133>

Results obtained from workshops with shipbuilders/ vessel owners, research programs and other cooperation initiatives inside and outside Ecuador will contribute to the development of national regulations to manage FADs. Albeit that other gear and fishing methods represent risks to the ecosystem that can be as important as those caused by FADs, it is important that a complete management of the tuna fishery takes place inside the country.

The regulation amendments required by the activities described in this plan, particularly activities 1.7. 2.4 (and others that require a revision of the law) must be consolidated within this activity.

NAME	3.1. National strategy to manage the tuna fishery.						
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	MSC Indicators
3.1.1. National strategy to manage the tuna fishery in Ecuador (including a strategy for FADs, Act. 2.4.1.3): Industry, SRP	National	High	Medium	High	New	2 years	Status: PI 1.2.1 PI 2.1.2 PI 2.2.2 PI 2.3.2 PI 2.4.2 PI 2.5.2 PI 3.1.1 PI 3.1.3 PI 3.2.1 PI 3.2.2 PI 3.2.4 PI 3.2.5
3.1.2. Regulatory instruments for all tuna fleets and fishing gear (Including purse seines and FADs): Industry, SRP, MAGAP	National	High	Medium	High	New	2 years	PI 3.1.1 PI 3.2.1 PI 3.2.3

3.2 National Action Plan for Ecuador Tuna and management-specific objectives

Both at international level within the EPO as in Ecuador, management objectives for tropical tuna are multi-specific. There are no fishery objectives that are specific to skipjack, yellowfin or bigeye. For the suitable management of each stock, it is important for the objectives to be aligned to the biological and fishery characteristics of each species. Taking into consideration that yellowfin and bigeye stocks are not at optimum levels, specific management objectives must be redefined, at least at the national level. Development of these objectives must be part of a comprehensive management of the fishery. Therefore, stakeholders have proposed the development of an Action Plan for Ecuador Tuna, with species-specific objectives as the essential elements from which management, conservation, research and monitoring actions can be derived.

- **National and International level**

The Ecuadorian government and industry are interested in developing an Action Plan towards achieving the conservation and sustainable management of the tuna fishery in Ecuador, which will be similar to those already existing plans for mahi-mahi and sharks, PAN Dorado and PAT-Ec respectively. Stock assessments, management plans and regulations at the regional level are the IATTC’s responsibility; however, input from member countries can also carry weight. Ecuador can use the Action Plan as leverage to handle different important management issues with the IATTC.

3.2.1. Development of a National Action Plan for Ecuador.

The plan must include a complete and precautionary strategy to respond to the impacts caused by the fishery on target, bycatch and ETP species as well as on the ecosystem in general. It must also include **general and specific management objectives**, the regulatory framework, management strategies for associated and unassociated sets, management tools for each fleet, purse seine and longline – industrial and artisanal, a monitoring and research plan, control and surveillance, education and communication, decision making process and other national strategies for the sustainability of the resource. Several elements that must be included in the action plan are described within the activities proposed in this document, such as the management strategy for the tuna fishery, a regulatory framework, research plan, etc. At the national level the action plan will represent an important management tool.

Stakeholders have proposed to build a business alliance to promote a participative process for the design and adoption of the plan at the national level. Once it has been approved in Ecuador it can be presented to the IATTC as a contribution from a member country, and could be useful to other countries as a management model for their tuna resources.

3.2.2. Design an intervention strategy before the IATTC, in order to promote specific management objectives. All of the issues in this Action Plan that require discussion and agreement with the IATTC can be considered in this strategy. On the other hand, The Action Plan for Tuna could be used as a structured and effective intervention strategy for Ecuador before the IATTC.

NAME	3.2 Ecuador Tuna Action Plan and specific objectives.							
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	Funding	MSC Indicators
3.2.1. Action Plan for Ecuador Tuna: Companies, Industry, INP, MAGAP	National	High	Medium	High	New	1 year	Company consortium	PI 3.2.1 P1, P2, and P3 indicators that will benefit from the Action Plan
3.2.2. IATTC intervention	National	Low	Medium	High	New	2 years	Company consortium	PI 3.2.1

strategy: Industry and Government	CIAT							P1, P2 and P3 indicators where the intervention of Ecuador with IATTC is required
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3.3. Decision making processes

The decision-making process within IATTC is highly participative and each member country can contribute to the negotiation of the resolutions. In Ecuador, decisions related to fisheries management are made within the Undersecretary of Fisheries Resources (SRP) of the Vice-Ministry of Aquaculture and Fisheries. It is important that a transparent and efficient decision-making process is carried out at national and international level, giving due weight to scientific advice and carried out in an organized and efficient manner permitting the open presentation of the arguments that give rise to the resolutions. These processes must be depurated at every level.

- **International level**

3.3.1. Review of the decision making process within IATTC.

Ecuadorian stakeholder groups suggest that the IATTC develops a more participative and transparent system where scientific advice will carry greater weight. The system must explain which factors carry greater weight in the decision making process and why. More participation from Ecuadorian representatives in IATTC fora is required.

- **National level**

3.3.2. Establish a decision making procedure for internal decisions in Ecuador, where the Vice-ministry and SRP present evidence of a transparent, participative, fluid and efficient decision making. Continued participation of stakeholders is required. This task must be included in the Ecuadorian Action Plan for Tuna.

NAME	3.2 Decision making processes.							
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	Funding	MSC Indicators
3.3.1. Review decision making system: IATTC	IATTC	Low	Medium	Med.	New			PI 3.2.2
3.3.2. Internal decision making	National	High	Medium	Med.	New	6 months	Industry and MAGAP	

procedure: Vice-ministry, SRP								
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3.4. Update and strengthen the monitoring, control, and surveillance (MCS) system

There is no evidence of systematic non-compliance by the Ecuadorian fleet and, in particular, the UoC fleet has an excellent record of compliance with national and international regulations. However, information on compliance of the Ecuadorian fleet (or companies) with fisheries laws and regulations was not available in for the pre-assessment of the fishery. If it exists, it is important that evidence that the information is sufficient and that the MCS system is effective is submitted. On the other hand, the smaller vessel fleet requires less surveillance and control.

IATTC records compliance through a satellite vessel monitoring system (VMS), IUU vessel listing, port state controls, observers, logbooks and trans-shipment monitoring. Through these procedures, information on the level of international infringements is recorded by IATTC. The tasks required to strengthen the monitoring, control, and surveillance system are:

- **International Level**

3.4.1. Establish a satellite information exchange system between the Undersecretary of Fisheries resources and the IATTC in order to improve surveillance activities. It is important that Ecuador continues to contribute the information required in the IATTC VMS¹⁶ framework. Subsequently, in order to monitor the compliance of IATTC's member countries, IATTC could implement a similar system to that of the WCPFC Compliance Monitoring Scheme (CMM 2014-07)¹⁷.

- **National Level**

3.4.2. Strengthen the VMS infrastructure for the Ecuadorian tuna fleet, particularly the smaller vessel fleet. The satellite control procedure between MAGAP and DIRNEA needs to be monitored.

3.4.3. Design and implement a VMS system for the Ecuadorian smaller vessel fleet. A human or electronic observer program needs to be promoted for the Class V fleet.

3.4.4. Implement new sanctions and fines for noncompliance or violations. The new regulation framework of the Fishery Law has been approved and it substantially reinforces the sanction scheme and their monetary value.

3.4.5. Design a strategy for the reduction of illegal, unreported and unregulated fishing. The new regulations aim to deter illegal fishing.

NAME	3.4 Strengthen control, vigilance monitoring and surveillance (VMS) system.
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¹⁶ <https://www.iattc.org/PDFFiles2/Resolutions/C-14-02-Sistemas-de-seguimiento-de-buques-VMS.pdf>

¹⁷ <https://www.wcpfc.int/doc/cmm-2014-07/conservation-and-management-measure-compliance-monitoring-scheme>

Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	Funding	MSC Indicators
3.4.1. Establish satellite information exchange between SRP and IATTC: SRP and IATTC	National IATTC	Low	Medium	Med.	New	1 year		PI 3.2.3
3.4.2. Strengthen National VMS: MAGAP DIRNEA	National	High	Medium	Med.	New	6 months	MAGAP	
3.4.3. Strengthen VMS of the smaller vessel fleet: Companies, MAGAP, INP	National	High	Medium	High	Existing / New	2 months	Company consortium	
3.4.4. Implement the new sanctions: MAGAP	National	High	Medium	Low	Existing	Immediate		
3.4.5. Design strategy to reduce IUU fishing: MAGAP	National IATTC	Medium	Medium	High	Existing / New			

3.5. Development of a national research plan in Ecuador

Scientific research plans for fishery management in the EPO are developed by IATTC and are applied, when possible, by the fisheries research institutions with the collaboration of the industry, in each of the member countries. The INP and Ecuadorian industry participate with IATTC, ISSF, NOAA and other international institutions in various research projects related to tuna industrial and artisanal fisheries. INP also follows up on the artisanal tuna fishery in territorial waters and it has been fundamental in the development of the national programs for sharks and mahi-mahi. However, the INP does not have its own structured or permanent research plan to monitor coastal fisheries or one that contributes to the IATTC's scientific program.

- **National Level:** Develop a national research plan which complements IATTC’s research plan. It is necessary to identify information gaps and develop a national strategy to contribute in an effective and structured manner to IATTC’s scientific program. This program could be part of the National Tuna Action Plan, should receive feedback from the IATTC and should be updated periodically.

The MSC CR Version 2.0 does not include an indicator as such to assess whether a research plan is in place, however it is deemed necessary to comply with the specific objectives of the fishery.

NAME	3.5 Development of a National Research Plan						
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	MSC Indicators
Develop a National Research Plan: SRP, INP, Industry, IATTC	Ecuador IATTC	High	Medium	Medium	New	1 year	PI 3.2.4 (v. 1.3) PI 3.2.1

3.6 Review of the management system

IATTC conducts regular internal reviews to assess regularly the fundamental parts of the management system in relation to its objectives. However, an external performance review of IATTC’s global management system has not occurred to date. Additionally, the first external audit of IATTC’s and AIDPC’s global management system was carried out recently (Moss-Adams, 2016)¹⁸. The analysis focused on IATTC’s achievements and reached 24 conclusions with various recommendations. These were related to three main categories: governance, management and science.

Internal and external reviews must be part of the system and occur regularly. The objective is for them to be used as mechanisms for revision and feedback. During its last annual meeting (June, 2016), IATTC agreed to request the Director of the Commission to prepare an action plan based on the findings and recommendations of the external evaluation for it to be reviewed three months later. (P. Guerrero, pers. communication).

In Ecuador, public institutions have an internal review system called Governance by Results (GPR from the Spanish ‘*Gobierno por Resultados*’) which carries out performance and result achievement audits. It is important to strengthen this system within SRP, using existing tools and/or adopting recommendations for the data quality control and compliance with objectives. It is also necessary for the SRP to contract external audits to assess the operations of the national tuna fishery management system periodically. With the results of the internal and external audits the fishery improvement program can be monitored and other changes can be promoted to strengthen management.

- **International Level:**

¹⁸ <https://www.iattc.org/Meetings/Meetings2016/June/pdf-files/IATTC-AIDCP-Performance-Review-Final-ReportSPN.pdf>

3.6.1. Carry out an external review and continue periodic internal assessments (IATTC's technical committee). This task was recently completed (Moss-Adams, 2016), but it must be adopted in a permanent manner.

- **National Level:**

3.6.2. Create a Technical Committee in Ecuador in order to carry out periodic reviews of the management system.

3.6.3. Implement periodic internal and external reviews in Ecuador.

NAME	3.6 Review of the management system						
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	MSC Indicators
3.6.1. Internal and external review of the management system: IATTC	IATTC	Low	Low	Medium	Existing	Permanent	PI 3.2.5 (v. 1.3)
3.6.2. Create a Technical Committee: SRP, Industry, INP	Ecuador	High	Medium	Medium	New	Permanent	PI 3.2.4 (v. 2.0)
3.6.3 Implement internal and external reviews: SRP	Ecuador	High	Medium	Medium	Existing/ New	Permanent	

4. FIP ACTION PLAN MONITORING

4.1. Form a multi-sector committee to monitor FIP progress

It is recommended that a committee (technical and administrative) is established in Ecuador to steer the activities of this Fisheries Improvement Plan. The group must include representatives from the government, industry and NGOs to monitor the work plan and progress of the activities identified in this document (Activities 1 to 3 and corresponding tasks). As the FIP is an initiative deriving from the Consortium of Companies, it is foreseen that the Government and industry will select suitable representatives for each sector and the Companies will fund periodic follow up meetings.

The Committee will monitor all the activities and tasks included in this plan and, therefore, its creation and operation will have an impact on their development and success and, indirectly, on all of the MSC indicators. That is the reason why no direct links are shown for this activity in the matrix provided in Appendix A.

NAME	4.1 Form a multi-sector committee to monitor FIP progress							
Working Group	Management Level	Control Level Ecuador	MSC Priority	FIP Priority	Status	Duration	Funding	MSC Indicators
Creation of a multi-sector (technical and administrative) committee: Industry, Government (Vice-minister of Fisheries or delegate) NGOs (ISSF, WWF)	Ecuador	High	N/A	High	New	Immediate FIP Duration	Company consortium	All activities and indirectly, all the indicators

Appendix A: Outline of proposed tasks in the FIP Action Plan for the Ecuadorian purse seine tuna fishery.

ACTIVITY/ TASK	RESPONSIBLE ORGANIZATION(S) AND COLLABORATORS	STATUS	TIME FRAME	PRIORITY	PRIORITY	Links to MSC Performance Indicators																														
						P1. Stock status					P2. Environmental impacts										P3. Management system															
						1.1.1 Stock status	1.1.2 Reference points	1.1.3 Rebuilding	1.2.1 Performance of the harvest strategy.	1.2.2 Harvest control rules and tools	1.2.3 Information/ monitoring	1.2.4 Stock Assessment	2.1.1 Retained species: Status	2.1.2 Retained species: Management	2.1.3 Retained species: Information/ monitoring	2.2.1 Bycatch species: Status	2.2.2 Bycatch species: Management	2.2.3 Bycatch species: Information/ monitoring	2.3.1 ETP species: Status	2.3.2 ETP species: Management	2.3.3 ETP species: Information/ monitoring	2.4.1 Habitat: status	2.4.2 Habitat: management strategy	2.4.3 Habitat: Information/ monitoring	2.5.1 Ecosystem: status	2.5.2 Ecosystem: management strategy	2.5.3 Ecosystem: Information/ monitoring	3.1.1 Governance and policy: legal framework	3.1.2 Governance and policy: consultation, roles and responsibilities	3.1.3 Governance and policy: long term objectives	3.1.4 Governance and policy: incentive/ for sustainable fishing	3.2.1 Fishery specific management system: fishery-specific objectives	3.2.2 Fishery specific management system: decision-making processes	3.2.3 Fishery specific management system: compliance & enforcement	3.2.4 Fishery specific management system: research plan	3.2.5 Fishery specific management system: monitoring and evaluation
						1.1.1	1.1.2	1.1.3	1.2.1	1.2.2	1.2.3	1.2.4	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	2.2.3	2.3.1	2.3.2	2.3.3	2.4.1	2.4.2	2.4.3	2.5.1	2.5.2	2.5.3	3.1.1	3.1.2	3.1.3	3.1.4	3.2.1	3.2.2	3.2.3	3.2.4	3.2.5
1. STOCK STATUS AND HARVEST STRATEGY						<i>Note: H = high priority, M = Medium priority, L= Low priority according to MSC Pre-Assessment</i>																														
1.1. Uncertainty reduction in YFT and BET stock assessments	Industry, Government	N	2 years	H	M	M																														
1.2. Precautionary management of YFT and BET stocks																																				
1.2.1. Proposal of conservation measures for the reduction of juvenile tuna mortality.	Industry, Government	E	1 year	H	M	M	M	M	M	M	M																									
1.2.2. Comprehensive plan for fishing capacity reduction in the EPO.	Industry, Government	N	2 years	H	M	M	M	M	M	M	M																									
1.3. BET and YFT juvenile bycatch reduction																																				
1.3.1. National workshop to assess measures to reduce juvenile tuna bycatch.	Industry, ATUNEC, Chamber & Government	N	3 days-04/16	H	M	M		M	M	M	M																									
1.3.2. Verification exercises of fishing gear efficiency.	Industry, Government (SRP)	E	1 year	M	M	M		M	M	M	M																									
1.3.3. Tests on sorting grids and other technological alternatives.	Industry, Government (SRP)	E	1 year	M	M	M		M	M	M	M																									
1.3.4. Selection of the most efficient technology.	Industry, Government (SRP)	N	End of year 1	M	M	M		M	M	M	M																									
1.3.5. Proposal and monitoring of technological advances before IATTC	Industry, Government (SRP), IATTC	N	End of year 1	M	M	M		M	M	M	M																									
1.4. Plan to monitor and manage the small tuna fleet.	Industry, Government, IATTC	E/N	2 years	M	M	M	M		M	M	M	M																								
1.5. Analysis of impacts of seasonal-spatial closures ('Corralito').	Government to IATTC Director	N		H	M	M		M	M	M	M																									
1.6. Proposal of new conservation and management measures.																																				
1.6.1. Update national tuna regulations based on new scientific information.	Industry, Government	N	Permanent	M	M	M	M	M	M	M	M																									
1.6.2. Establish a communication channel with IATTC.	Industry, Government	E/N	Permanent	H	M	M	M	M	M	M	M																									
1.7. Specific harvest control strategies.	IATTC	N		H	M				M	M																										
1.8. Harvest control rules and tools.																																				
1.8.1. Formal adoption of specific control rules.	IATTC	E/N	2 years	H	M				M	M																										
1.8.2. Monitor IATTC's management strategy.	Industry, Government	N		M	M				M	M																										

ACTIVITY/ TASK	RESPONSIBLE ORGANIZATION(S) AND COLLABORATORS	STATUS	TIME FRAME	PRIORITY PMP	PRIORITY MSC	Links to MSC Performance Indicators																										
						P1. Stock status						P2. Environmental impacts								P3. Management system												
						1.1.1 Stock status	1.1.2 Reference points	1.1.3 Rebuilding	1.2.1 Performance of the harvest strategy	1.2.2 Harvest control rules and tools	1.2.3 Information/ monitoring	1.2.4 Stock Assessment	2.1.1 Retained species: Status	2.1.2 Retained species: Management	2.1.3 Retained species: Information/ monitoring	2.2.1 Bycatch species: Status	2.2.2 Bycatch species: Management	2.2.3 Bycatch species: Information/ monitoring	2.3.1 ETP species: Status	2.3.2 ETP species: Management	2.3.3 ETP species: Information/ monitoring	2.4.1 Habitat: status	2.4.2 Habitat: management strategy	2.4.3 Habitat: Information/ monitoring	2.5.1 Ecosystem: status	2.5.2 Ecosystem: management strategy	2.5.3 Ecosystem: Information/ monitoring	3.1.1 Governance and policy: legal framework	3.1.2 Governance and policy: consultation, roles and responsibilities	3.1.3 Governance and policy: long term objectives	3.1.4 Governance and policy: incentives for sustainable fishing	3.2.1 Fishery specific management system: fishery-specific objectives
2. IMPACTS ON NON-TARGET SPECIES AND THE ECOSYSTEM																																
2.1. Develop a revised list of primary, secondary and ETP species.																																
2.1.1. Internal records of primary, secondary and ETP species.	Companies	E/N	Permanent	H	M							M	M	M	M	M						M	M									
2.1.2. Develop a national bycatch species list.	Industry, SRP	N	1 year	H	M							M	M	M	M	M						M	M									
2.1.3. Obtain data on bycatch and ETP species interactions from the tuna fleet.	Industry, SRP	N	2 years	H	M							M	M	M	M	M						M	M									
2.2. Increase the information and assess stock status of non-target species.																																
2.2.1. Review the allocation of species within the primary or secondary, main or minor categories.	Industry, SRP, IATTC	N	1 year	H	M							M	M	M	M	M						M	M									
2.2.2. Maintain, expand and strengthen monitoring programs to determine the composition and volume of bycatch species.	Industry, SRP, IATTC	N		M	M							M	M	M	M	M						M	M									
2.2.3. Introduce on-board observers in the small vessel fleet.	Industry, SRP	N		M	M							M	M	M	M	M						M	M									
2.2.4. Document or determine stock status of primary and secondary species.	Industry, INP, IATTC	N		M	M							M	M	M	M	M						M	M									
2.2.5. Request information on the conservation status of ETP species.	Industry, INP, IATTC	N		M	M							M	M	M	M	M						M	M									
2.2.6. Request IATTC for annual reports on compliance with ETP resolutions.	Industry, SRP, IATTC	N		M	M							M	M	M	M	M						M	M									
2.2.7. Apply the risk based framework (RBF) for a rapid assessment of primary and secondary species.	Industry, INP, IATTC	N		M	M							M	M	M	M	M						M	M									
2.3. Development of management strategies for non-target species.																																
2.3.1. Strengthen management of non-target species.																																
2.3.1.1. Partial strategy to manage non-target species.	Industry y SRP	N		M	M								M			M							M									
2.3.1.2. Create and promote management measures for non-target species in the EPO	Industry, SRP, IATTC	N		M	M								M			M							M									
2.3.2. Promote a resolution to expand monitoring programs to include non-target species.	Industry, SRP, IATTC	E/N		M	M								M			M							M									
2.3.3. Promote a resolution to improve monitoring and management of the small vessel fleet with on-board observers.	Industry, SRP, IATTC	E/N		M	M								M			M							M									
2.3.4. Verify that the fishery complies with MSC requirements regarding shark finning and observer coverage.	Industry, SRP	N		H	M								M			M							M									
2.3.5. Develop a permanent outreach program with capacity building for vessel captains in order to reduce mortality of non-target species.	Probecuador, IATTC, EPESPO, ISSF, WWF, Industry	E/N		M	M								M			M							M									
2.4. Development of a management strategy for purse seine gear with emphasis on FADs.																																
2.4.1. Strengthen the regional management strategy for FADs included in IATTC Resolution C15-03.	IATTC	E/N	2 years	H	H								H			H								H								
2.4.2. Workshop with ship builders/vessel owners on purse seine gear management.	Industry, SRP	N		H	H								H			H								H								
2.4.3. National strategy for FAD management.	SRP, INP, Companies	N	2 years	H	H								H			H								H								
2.5. National program for the traceability of tuna catch.																																
2.6. Ecosystem information and analysis.																																
2.6.1. Analysis of conservation status of sharks with highest bycatch rates in the tuna fleet.	IATTC, INP	E/N	2 years	M	M								M	M	M	M	M	M				M	M									
2.6.2. Ecosystem assessments.	IATTC, INP	N	2 years	M	M								M	M	M	M	M	M				M	M									

ACTIVITY/ TASK	RESPONSIBLE ORGANIZATION(S) AND COLLABORATORS	STATUS	TIME FRAME	PRIORITY	PRIORITY MSC	Links to MSC Performance Indicators																																													
						P1. Stock status				P2. Environmental impacts						P3. Management system																																			
						1.1.1 Stock status	1.1.2 Reference points	1.1.3 Rebuilding	1.2.1 Performance of the harvest strategy	1.2.2 Harvest control rules and tools	1.2.3 Information/ monitoring	1.2.4 Stock Assessment	2.1.1 Retained species: Status	2.1.2 Retained species: Management monitoring	2.1.3 Retained species: Information/ monitoring	2.2.1 Bycatch species: Status	2.2.2 Bycatch species: Management monitoring	2.2.3 Bycatch species: Information/ monitoring	2.3.1 ETP species: Status	2.3.2 ETP species: Management monitoring	2.3.3 ETP species: Information/ monitoring	2.4.1 Habitat: status	2.4.2 Habitat: management strategy	2.4.3 Habitat: information/ monitoring	2.5.1 Ecosystem: status	2.5.2 Ecosystem: management strategy	2.5.3 Ecosystem: Information/ monitoring	3.1.1 Governance and policy: legal framework	3.1.2 Governance and policy: consultation, roles and responsibilities	3.1.3 Governance and policy: long term objectives	3.1.4 Governance and policy: incentives for sustainable fishing	3.2.1 Fishery specific management system: fishery-specific objectives	3.2.2 Fishery specific management system: decision-making processes	3.2.3 Fishery specific management system: compliance & enforcement	3.2.4 Fishery specific management system: research plan	3.2.5 Fishery specific management system: monitoring and evaluation															
3. FISHERY SPECIFIC MANAGEMENT SYSTEM																																																			
3.1. National strategy to manage the tuna fishery.																																																			
3.1.1. Develop National strategy to manage the tuna fishery in Ecuador.	Industry, SRP	N	2 years	H	M			M			M			M		M		M			M		M	M	M		M	M	M	M	M	M	M	M	M	M	M	M	M	M	M										
3.1.2. Regulatory instruments for all tuna fleets and fishing gears.			2 years	H	M																				M			M		M																					
3.2. National Action Plan for Ecuador Tuna																																																			
3.2.1. Develop National Action Plan for Ecuador Tuna.	Industry, INP, MAGAP	N	1 year	H	M																								M																						
3.2.2. Design an intervention strategy before the IATTC	Industry, Government	N	2 years	H	M																								M																						
3.3. Decision-making processes.																																																			
3.3.1. Review of the decision making process within IATTC.	IATTC	N			M	M																																			M										
3.3.2. Establish a decision-making procedure for internal decisions in Ecuador.	Vice-ministry, SRP	N	6 months		M	M																																				M									
3.4. Strengthen the monitoring, control, and surveillance (MCS) system.																																																			
3.4.1. Reinforce satellite information exchange between SRP and IATTC.	SRP, IATTC	N	1 year		M	M																																					M								
3.4.2. Strengthen National VMS.	MAGAP, DIRNEA	N	6 months		M	M																																						M							
3.4.3. Design and implement a VMS system for the Ecuadorian smaller vessel fleet.	Companies, MAGAP, INP	E/N	2 months		H	M																																						M							
3.4.4. Implement new sanctions and fines for noncompliance or violations.	MAGAP	E	Immediate		M	M																																							M						
3.4.5. Design strategy to reduce IUU fishing.	MAGAP	E/N			H	M																																							M						
3.5. Development of a national research plan in Ecuador.	SRP, INP, Industry, IATTC	N	1 year		M	M																																								M				M	
3.6. Review of the management system.																																																			
3.6.1. Internal and external review of the IATTC management system.	IATTC	E	Permanent		L	L																																											M		
3.6.2. Create a Technical Committee to carry out periodic reviews of the management system in Ecuador.	SRP, INP, Industry, IATTC	N	Permanent		M	M																																											M		
3.6.3. Implement periodic internal and external reviews of the management system in Ecuador.	SRP	E/N	Permanent		M	M																																												M	
4. FIP Action Plan Monitoring																																																			
4.1 Form a multi-sector committee to monitor FIP progress.	Industry, Government, NGOs	N	Immediate - For the duration of the FIP		H	M																																													

NOTES:
1. Add or delete issues according to the needs of your action plan.
2. Add or delete rows and numbers (1.1, 1.2, etc.) according to the needs of your action plan.
3. Select H (High) priority, M (Medium) or L (Low) coloring the corresponding cells under the Performance Indicators: H M L
4. Cross reference activities/tasks to as many corresponding Performance Indicators that are relevant in your action plan.
Key:
STATUS= Existing (E)/ New (N)
TIMEFRAME= Perm. (Permanent), Immediate
PRIORITY FIP= H, M, L
PRIORITY MSC= H, M, L