



## **WORK PLAN UPDATE**

# **FISHERY IMPROVEMENT PROJECT (FIP) OF THE PERUVIAN LONGLINE MAHI MAHI FISHERY (*Coryphaena hippurus*)**

**Document prepared for WWF-Peru  
by ECOS Research Center**

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October, 2021

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**Table 1. Summary of the Work Plan**

<b>Version and date of the Work Plan</b>	Versión 5 October, 2021
<b>Start date</b>	<b>End date</b>
<b>November 2013</b>	December 2023
<b>Leader of the FIP (organization responsible for the Action Plan)</b>	<b>Improvements recommended by (meeting / group supporting development)</b>
WWF	Meeting with stakeholders
<b>FIP Coordinator (organization / person responsible for reporting in FisheryProgress)</b>	<b>Work plan developed by (consultant or person)</b>
WWF	Ecos Research Center

## Acronyms

<b>GDSIS</b>	General Directorate of Supervision, Inspection and Sanction
<b>FIP</b>	Fishery Improvement Project
<b>EPO</b>	Eastern Pacific Ocean
<b>UoA</b>	Unit of Assessment
<b>FMR</b>	Fishery Management Regulation
<b>PMA</b>	Perú Mahi Alliance
<b>COREMAHI</b>	Mahi Mahi Producers and Processors Regional Committee
<b>ETP</b>	Threatened or endangered protected species
<b>IATTC</b>	Inter-American Tropical Tuna Commission
<b>SAC</b>	Scientific Advisory Committee
<b>MSC</b>	Marine Stewardship Council

## Evaluation unit

Table 2. Evaluation unit (UoA)

UoA	Description
Target Species (common and scientific name)	Perico o Mahi mahi ( <i>Coryphaena hippurus</i> )
Stock	Eastern Pacific Ocean
Geographic area	Exclusive economic zone of Peru
Fishing gear	Longline
Fishing fleet, group of vessels, or individual fishing operators that operate on the stock	Peruvian artisanal fishing fleet

## FIP Actions

### FIP Actions for Principle 1

*Table 3. Action plan of performance indicators for action 1.1.2. Definition of stock units.*

Action number and name	1.1.2. Definition of stock units
Action goal	Understand the population distribution and population structure of mahi mahi in the EPO
Description of the action	<p>The definition of the stock unit (independent biological units) is an aspect to consider in the definition of the Unit of Assessment (UoA), which is the spatial framework on which the evaluation of the MSC standard is applied. Ultimately, this will determine whether it is necessary to move towards bilateral or multilateral efforts to harmonize research, monitoring and management strategies for a fishery, in the event of a shared stock between different countries.</p> <ul style="list-style-type: none"> <li>● <b>Genetic studies</b></li> </ul> <p>In the case of the mahi mahi fishery, several genetic studies have been carried out to clarify its structure in the EPO (Gozzer et al., 2015; Tellez and Caballero, 2014; Tripp-Valdez et al., 2014). In general, these studies have observed high intrinsic genetic variability, with no evidence of genetically different populations. However, the authors also suggest that the quality of these studies could be improved in terms of spatial and temporal coverage of the samples used and also of the genetic methods used. Following this research line, a regional genomic study is currently being developed to identify the populations of dorado in the EPO, a task that is being promoted and coordinated by COREMAHI<sup>1</sup>. This study is led by Dr. Sofía Ortega of the Interdisciplinary Center of Marine Sciences of the National Polytechnic Institute and Dr. Píndaro Díaz of the Institute of Marine Sciences and Limnology of the National Autonomous University of Mexico (UNAM). This study will apply the RADseq technique, which uses restriction enzymes and molecular identifiers for the extraction and sequencing of the genome of mahi mahi individuals. The individuals will be collected in three countries (Costa Rica, Ecuador and Peru) with the support of INCOPECA, IPIAP and IMARPE. The analysis will be carried out in the laboratories of the UNAM and IMARPE, while the sequencing will be carried out at the University of Georgia.</p> <ul style="list-style-type: none"> <li>● <b>Tagging and recapture</b></li> </ul>

<sup>1</sup> <http://www.coremahi.org/investigacion/>

	<p>Tagging techniques have proven to be very useful in understanding the migratory patterns of tuna species and could also be a useful tool to understand the migratory patterns of the Mahi Mahi in the EPO. In this sense, COREMAHI has included in its 2021-2026 scientific plan a "study of the marking of <i>C. hippurus</i> to improve knowledge of the structure of its stock in the EPO", the objectives of this study are:</p> <ul style="list-style-type: none"> <li>a) Estimate the movements of mahi mahi between the north and south of the equatorial line to improve the knowledge of the life cycle of <i>C. hippurus</i> and its stock structure in the EPO.</li> <li>b) Obtain information on the rates of movement and dispersal of <i>C. hippurus</i> and the temperature of the water in the EPO, through the marking of individuals of <i>C. hippurus</i>, to estimate: (i) the rates of tag loss; (ii) mortality rates for dorado; (iii) information on the size of the population; and (iv) behavioral attributes.</li> </ul>
Expected compliance date	December, 2022
Priority	Medium
Estimated cost (\$ US)	195,000
Responsible parties	IMARPE, SFP, CIAT, COREMAHI
MSC IDs associated with the action	1.2.3 Information and monitoring

Action	Task / milestone	Responsible		Date	
		Lead	Support	Start	End
1.1.2. Definition of stock unit (s)	M3: Design and implementation of tagging research projects	IMARPE	COREMAHI, SFP, CIAT	Jul, 2021	Dec, 2022
	M4: Design and implementation of a genetic research project	IMARPE	COREMAHI, SFP, CIAT	Jul, 2021	Dec, 2021

**Table 4. Action plan of performance indicators for action 1.1.3. Development of monitoring procedures.**

Share number and name	1.1.3 Development of monitoring procedures
Action goal	Improve monitoring and data collection.
Description of the action	<p>This action proposes carrying out tasks with two approaches, the first aimed at collecting data dependent on fishing and the second at collecting data independent from fishing.</p> <ul style="list-style-type: none"> <li>● <b>Fishery-dependent data</b></li> </ul> <p>For the collection of catch and effort data, PRODUCE is working on the implementation of electronic logs at the fleet level, for which it has recently developed an application called SITRAPESCA, which has two modules of interest. The first aimed at extraction that allows defining setting times and fishing areas, as well as the volumes extracted by each setting. The second module of interest is the download module that allows the shipowner to register and consult the downloads of each of its fishing operations, including the shipments of the resource to different destinations such as processing plants, markets, fishing terminals or others. This database will be managed by PRODUCE and will allow the generation of more information regarding the catches and the effort applied.</p> <p>Regarding the biological monitoring that allows generating information on the size structure of the catches, sexual maturity and other biological aspects. It is important to mention that IMARPE maintains a monitoring program in port for more than 10 years, where it collects such information. However, it is recognized that the monitoring is not directly directed to the mahi mahi fishery and is therefore considered “opportunity monitoring”. Recently, and with the aim of improving this situation, work has been carried out on a collaborative research pilot plan that has been promoted by WWF and that includes the participation of some companies linked to the PMA. Through this initiative, fishermen collect and preserve samples that are later sent to IMARPE for analysis of size structure, stomach content and maturity.</p> <ul style="list-style-type: none"> <li>● <b>Independent data from the fishery</b></li> </ul> <p>As part of the initiatives proposed in the PMA Plan, the need has been defined "to prepare the design for a fishing survey and identify sources of financing for its implementation." This is proposed to be carried out in conjunction with WWF and IMARPE. Prospecting for the gathering of information independent of the fishery</p>

	should be aimed at gathering key information to feed the stock assessment models, such as population size structure, recruitment, growth, maturity and other biological or oceanographic parameters that decrease the uncertainty of the estimates.
Expected compliance date	December, 2022
Priority	High
Estimated cost (\$US)	\$1,769,638
Responsible parties	IMARPE, PRODUCE, PMA, WWF
MSC IDs associated with the action	1.2.3. Information and monitoring for management strategy 2.5.3 Ecosystem Information

Action	Task / milestone	Responsible		Date	
		Lead	Support	Start	End
1.1.3. Follow-up procedure development	M8: Implementation of log books for the collection of catch and effort data.	PRODUCE	IMARPE, WWF	Jul, 2021	Jul, 2022
	M11: Implementation of a biological monitoring program.	IMARPE	PMA, WWF	Jul, 2021	Jul, 2022
	M12: Independent monitoring design for biological data collection.	IMARPE	PMA, WWF	Jul, 2021	Dec, 2021
	M13: Implementation of independent biological monitoring of the fishery.	IMARPE	PMA, WWF	Dec, 2021	Dec, 2022



**Table 5. Action plan of performance indicators for action 1.1.4. Stock assessment methods**

Share number and name	1.1.4A. NEW- September 2021: Stock assessment methods
Action goal	Know the status of the stock of the target population of the Peruvian mahi mahi fleet.
Description of the action	<p>This action initially considered 4 tasks aimed at concluding the implementation of a stock assessment method based on size structures. At the third meeting of the IATTC, data needs and appropriate stock assessment methods were identified for the mahi mahi fishery considered a data-limited fishery. With information from Ecuador and Peru, the IATTC scientific staff carried out an exploratory assessment of the <i>C. hippurus</i> stock in the “core” region (Peru-Ecuador) using the Stock Synthesis method (Aires-da-Silva <i>et al.</i> 2016)<sup>2</sup>, an exploratory management strategy evaluation (MSE) for the Southern EPO (Valero <i>et al.</i>, 2016)<sup>3</sup>, and an evaluation of possible reference points, control and harvest rules for <i>C. hippurus</i> in the EPO (Valero <i>et al.</i>, 2019)<sup>4</sup>.</p> <p>Although these studies have been a contribution to the knowledge of the state of the mahi mahi stock in the EPO, the scientific staff of the IATTC has recommended future research to improve the analysis of the assessments. This recommendation was made during the 10th Meeting of the Scientific Advisory Committee (Scientific Advisory Committee - SAC) in May 2019, in which it was recommended "that the IATTC staff continue to work with the Members or Cooperating Non-Members of the IATTC (CPC) in the investigation on the state of the mahi mahi stock".</p> <p>Due to the previous recommendation, at the 12th meeting of the SAC in May 2021, a scientific plan was presented that includes projects identified by actors producing and processing mahi mahi (COREMAHI) and by the fisheries research institutes of Ecuador (IPIAP) and Peru (IMARPE). From this, two new tasks emerge for the Peruvian mahi mahi action plan, which are incorporated as part of this action since they are aimed at improving the knowledge of the stock status of the target population of the Peruvian fleet. These evaluations must contain an estimate of the status of the stock based on Biological Reference Points and it is expected that they will be configured as a permanent and systematic input of the future Catch Control Rule.</p>

<sup>2</sup> [https://www.iattc.org/Meetings/Meetings2016/SAC-07/PDFs/Docs/English/SAC-07-06a\(i\)-Dorado-assessment.pdf](https://www.iattc.org/Meetings/Meetings2016/SAC-07/PDFs/Docs/English/SAC-07-06a(i)-Dorado-assessment.pdf)

<sup>3</sup> [https://www.iattc.org/Meetings/Meetings2016/SAC-07/PDFs/Docs/English/SAC-07-06a\(ii\)Management-strategy-evaluation-MSE-for-dorado.pdf](https://www.iattc.org/Meetings/Meetings2016/SAC-07/PDFs/Docs/English/SAC-07-06a(ii)Management-strategy-evaluation-MSE-for-dorado.pdf)

<sup>4</sup> <https://www.iattc.org/Meetings/Meetings2019/SAC-10/Docs/English/SAC-10->

[11\\_Potential%20reference%20points%20and%20harvest%20control%20rules%20for%20dorado%20in%20the%20EPO.pdf](https://www.iattc.org/Meetings/Meetings2019/SAC-10/Docs/English/SAC-10-11-Potential%20reference%20points%20and%20harvest%20control%20rules%20for%20dorado%20in%20the%20EPO.pdf)

Expected compliance date	July, 2023
Priority	High
Estimated cost (\$US)	100,000
Responsible parties	IMARPE, IATTC, IPIAP, COREMAHI
MSC IDs associated with the action	1.1.1. Stock status 1.2.4. Assessment of Stock status

Action	Task / milestone	Responsible		Date	
		Lead	Support	Beginning	End
1.1.4A. NEW- September 2021: Stock assessment methods	M74: Stock assessment at the national level and adjustment of the model based on a binational project	IMARPE		July 2021	July 2023
	M75: Stock assessment at the regional level (Peru - Ecuador)	IMARPE	IATTC, IPIAP, COREMAHI	July 2021	July 2022

**Table 6. Action plan of performance indicators for action 1.2.1 Development and implementation of conservation measures.**

Share number and name	1.2.1 Development and implementation of conservation measures
Action goal	Develop a harvest strategy
Description of the action	<p>The harvest strategy must be based on a series of conservation and management measures that work together with the objective of not damaging the recruitment and keeping the population around a point consistent with MSY. In this sense, the Peruvian regulation has taken an important step in the development of a Fisheries Management Regulation (ROP, for its Spanish acronym), specific for the Mahi Mahi fishery (Ministerial Resolution No. 141-2021-PRODUCE).</p> <p>The ROP includes a series of conservation measures previously established such as the legal minimum size and the closure, but also incorporates the possibility of restricting fishing for conservation reasons by declaring a Maximum Total Catch Limit (MTCL), based on the recommendations provided by IMARPE. The ROP was officially adopted on July 27, 2021 through <a href="#">Decreto Supremo N° 017-2021-PRODUCE</a> and now needs to be implemented.</p>
Expected compliance date	December, 2021

Priority	High
Estimated cost (\$US)	0
Responsible parties	PRODUCE
MSC IDs associated with the action	1.2.1. Harvest strategy 1.2.2. Harvest control rules and tools

Action	Task / milestone	Responsible		Date	
		Lead	Support	Beginning	End
1.2.1 Development and implementation of conservation measures	M20: Agreement on measures to be implemented as part of the general harvest strategy for the conservation of the mahi mahi	PRODUCE		COMPLETED with adoption of the ROP	
	M22: Implementation of management measures (e.g. closures, hook size, etc.)	PRODUCE		Jul, 2021	Dec, 2021

**Table 7. Action plan of performance indicators for action 1.2.2 Development and implementation of catch control rules.**

Action number and name	1.2.2 Development and implementation of harvest control rules
Action goal	Implement harvest control rules
Description of the action	<p>The HCR implementation is essential to achieve the MSC standard. HCRs should be based on changes in exploitation rates depending on the status of the stock compared to biological reference points. Stock assessment procedures are needed to estimate stock status, limit and establish fishing mortality rates and biomass levels to define HCRs. Although, within the framework of the IATTC, an exploratory evaluation of the management strategy (MSE) for the Southern EPO was carried out (Valero et al., 2016), it focused on testing specific harvest strategies such as temporary closures and minimum extraction size. However, to design and test the HCR (M23) it is advisable to develop a Management Strategy Evaluation, simulating the behavior of the population against these eventual rules.</p> <p>Currently, the mahi mahi Fishery Management Regulation (ROP for its Spanish acronym) provides a legal tool for the application of HCR, since in its Article 6 it indicates that “The Ministry of Production, based on available scientific information provided by IMARPE, establishes the Maximum Total Capture Limit (MTCL)</p>

	<p>for each fishing season of the mahi mahi fishery”. However, HCRs have not yet been designed, tested, or implemented.</p> <p>For the HCR based on an LMTC that the ROP stipulates to be implemented, a Directorial Resolution of the General Directorate of Policies and Regulatory Analysis in Fisheries and Aquaculture must be developed. In this resolution, the indicators are approved that help to quantify the goal of the general objectives established in the ROP. Therefore, it is expected to contain Biological Reference Points (BRP) and to consider MSY as the minimum operational objective to maintain in the mahi mahi population. In addition, if there is a history of overexploitation, the HCR should consider a population recovery strategy in a period of time less than one generation of mahi mahi.</p>
Expected compliance date	December, 2023
Priority	High
Estimated cost (\$US)	70,000
Responsible parties	PRODUCE, IMARPE
MSC IDs associated with the action	1.1.2. Stock Rebuilding 1.2.1. Harvest strategy 1.2.2. Harvest control rules and tools

Action	Task / milestone	Responsible		Date	
		Lead	Support	Beginning	End
1.2.2 Development and implementation of capture control rules	Hito 23: Design and test of harvest control rules	PRODUCE	IMARPE	Jul, 2021	Dec, 2022
	Hito 24: HCR implementation (nationally and internationally)	PRODUCE	IMARPE	Jul, 2021	Dec, 2023

## FIP Actions for Principle 2

**Table 8. Action plan of performance indicators for action 2.1.8. Development and implementation of bycatch monitoring procedures and interaction with ETP species.**

Share number and name	2.1.8. Pilot program for remote monitoring of bycatch and interaction with ETP species and gear loss to support management- NEW ACTION (Replaces remaining tasks of actions 2.1.1 and 2.2.1)
Action goal	Monitor bycatch and interaction of the fishery with ETP species
Description of the action	<p>In order to comply with the MSC standard in the components that evaluate the capture or damage to non-target species, information is required that allows estimating their mortalities. To do this, it was initially proposed to monitor the interactions of the fishery with primary, secondary and ETP species through an observer program (action 2.1.1, milestone 27). This program would include: a) Characterization and quantification of bycatch of birds, turtles and sharks, b) understanding the causes of these interactions, and c) evaluation and monitoring of the effectiveness of mitigation measures to avoid such interactions.</p> <p>However, the on-board observer program has not been able to be implemented, despite the fact that initiatives have been carried out in this line of work. The poor habitability of the vessels and the long duration of the fishing trips (approximately 20 days) have prevented this action from being carried out. For that reason, stakeholders decided to delete action 2.1.1., Milestone 27 and replace it with a new action.</p> <p>Alternatively, a remote monitoring pilot project using cameras and artificial intelligence has been designed to capture bycatch information and interaction with ETP species. The project has been recently funded by the National Program for Innovation in Fisheries and Aquaculture (PNIPA 2020 - 2021) and with funds from the companies that make up the Peru Mahi Alliance. This will be implemented in approximately 10 vessels.</p> <p>In parallel, WWF has implemented an electronic fishing app whose use has been promoted within the framework of the PMA, this app called TrazApp has been widely used. In 2019 the application was used by more than 200 users registering around 3,000 fishing trips and more than 28 thousand tons of landings. This app includes reporting of interactions with ETP species, especially turtles, where the number of interactions and the condition in which they were released can be declared. This tool would complement</p>

the remote monitoring information, but it must be taken into account that it relies on fishers reporting the information.

With the information from the remote monitoring by cameras and fishermen's inputs into TrazApp, it will also be necessary to a) characterize and quantify the bycatch, to determine the existence of main secondary species b) understand the causes of these interactions and c) evaluate and monitor the effectiveness of the measures not to impede the recovery of the main secondary species.

Although the pelagic gear used to capture mahi mahi in Peru does not come into contact with the seabed, it is necessary to implement a mechanism to record the loss of fishing gear, which could eventually drift to coastal areas and impact the habitat or more widely to the ecosystem. All this considering the size of the fleet, which for 2015 was estimated at 2,346 vessels (Castillo et al., 2018).

To do this, it was initially proposed to use the catch logbook (defined in M8), to collect information on the loss of fishing gear (Action 2.2.1 milestones 42 and 43), where the geographical coordinates and the specifications of the gear should be recorded (number of hooks, types of hooks, longline length, etc.). However, the designed traceability app, SITRAPESCA, does not consider the capture of this information.

As a solution, it has been proposed that the remote monitoring program (M76) would be able to record geo-referenced information on the loss of gear. On the other hand, through the TrazApp application (unofficial data) the fishing captain has the potential to report this field. Therefore, action 2.2.1 and its tasks have been eliminated, replacing it with a modification of these, in the sense that it is captured through the remote monitoring program and alternatively with TrazApp.

Given the versatility of the TrazApp application, task M78 can be of great relevance, particularly when considering the impact it has with collecting data on ETP species, handling and release of species (turtles and birds) and gathering information regarding the volume and type of bait used in fishing operations. It is important to note that this task aims to reduce the impact of the loss of fishing gear, so that, if the magnitude of said impact is considered to be high, other tasks should be incorporated to manage the loss of fishing gear.

Expected compliance date	December, 2023
Priority	High
Estimated cost (\$US)	380,000

Responsible parties	PRODUCE, IMARPE
MSC IDs associated with the action	2.1.3. Primary species information 2.2.1. Secondary Species Outcome Resultado de especies 2.2.2. Secondary Species Management 2.2.3. Secondary species information 2.3.3. ETP species information 2.4.3. Habitats information

Action	Task / milestone	Responsible		Date	
		Lead	Support	Beginning	End
2.1.8. Development and implementation of a pilot program for remote monitoring of bycatch and interaction with ETP species and art loss- NEW	M76: Pilot implementation of remote monitoring program	WWF-IMARPE	OSPAS	Jul 21	Dic 22
	M77: Scaling up of the remote monitoring program	WWF-IMARPE	OSPAS	Dic 21	Dic 23
	M78: TrazApp report of the declarations of loss of gear and interaction with bycatch.	WWF		Jul 21	Dic 21
	M79: Generate strategies to minimize the impact on main secondary species if needed.	WWF	PRODUCE	Jul 22	Dic 23

**Table 9. Action plan of performance indicators for action 2.1.4. Develop a management strategy to ensure that the fishery does not have an unacceptable impact on ETP species.**

Share number and name	2.1.4. Develop a management strategy to ensure that the fishery does not have an unacceptable impact on ETP species
Action goal	Reduce the impact on ETP species

Description of the action	<p>As a result of the implementation of bycatch monitoring procedures and interaction with ETP species (Action 2.1.8), a management strategy should be developed aimed at reducing the impact on ETP species, supported by information.</p> <p>It is important to recognize that the current ROP considers the implementation of measures aimed at reducing the impact on ETP species. Specifically, the ROP considers in its Article 10:</p> <ul style="list-style-type: none"> <li>● <i>Numeral 10.6. If the bycatch of turtles or other species protected by current provisions is observed due to extractive activities, every reasonable effort is made to rescue it alive and return it to the marine environment as soon as possible. Likewise, if a turtle is brought on board, every effort is made to contribute to its recovery before it is returned to the sea. For such purposes, the owners of the vessels must ensure that the necessary instruments for the release of incidentally captured turtles are carried on board the vessel, and must have: line cutter, unhooker and chinguillo (net), and ensure that at least one member of the crew is trained in sea turtle handling and release practices.</i></li> <li>● <i>10.7 Longline fishing boats use hooks that prevent the capture of sea turtles.</i></li> </ul> <p>However, the measures must be accompanied by a monitoring program to determine their effectiveness, which would be achieved with the fulfillment of action 2.1.8.</p>
Expected compliance date	December, 2023
Priority	High
Estimated cost (\$US)	45,000
Responsible parties	IMARPE, PRODUCE
MSC IDs associated with the action	2.3.1. ETP Species Outcome 2.3.2. ETP Species Management 2.5.2. Ecosystem Management

Action	Task / milestone	Responsible		Date	
		Lead	Support	Beginning	End



2.1.4 Develop a management strategy to ensure that the fishery does not have an unacceptable impact on ETP species.	M35: Analysis of the results obtained through the implementation of milestones 76 and 77 – Remote Monitoring Program.	IMARPE		Dec, 2022	Jul, 2023
	M36: Use results obtained by monitoring the interaction of ETP species and the fishery to develop management strategies that minimize fishing-related mortality.	IMARPE		Jul, 2023	Dec, 2023
	M37: Implementation of management measures aimed at minimizing fishing-related mortality.	PRODUCE		Jul, 2021	Dec, 2021

### for Principle 3

**Table 10. Action plan of performance indicators for action: NEW Sep 18: Analysis of existing conflict resolution mechanisms.**

Action number and name	3.1.1 REVISED Sept 2021: Analysis of existing conflict resolution mechanisms
Action goal	Review of existing mechanisms to resolve conflicts to determine if they comply with MSC regulations.
Description of the action	<p>In the previous review of the action plan, it was established that, since it is possible that there are sufficient conflict resolution processes for the requirements of the standard, it was necessary to carry out a review of the conflict resolution mechanisms and respect for rights. Although both elements are considered in the legal framework, doubts persist as to whether the conflict resolution mechanisms are applied in a transparent and appropriate manner to the context of the UoA and, on the other hand, whether there are mechanisms to recognize rights established by the use of people in order to be able to respect them (M72).</p> <p>However, in the meeting with the interested parties it was clarified that there are tools for conflict resolution and that these fall on the Presidency of the Council of Ministers which is established by Supreme Decree 022-2017 PCM appropriate to DS 042 2018 PCM.</p> <p>Given that in the current audit, in the meeting with the interested parties, the auditors were told that there are tools for both Conflict Resolution and Consultation and Participation Procedures. These documents were reviewed considering that they comply with the requirements of the standard (see 2021 audit), the tasks that imply the formation of a permanent working group are not necessary and were eliminated in the present review of the action plan (Actions 3.1.1, 3.2. 2).</p> <p>However, it is recommended that a finished analysis (M72) be made available to users, where the necessary procedures are systematized to comply with what is required for both indicators 3.1.1. Legal or customary framework and 3.1.2 Consultations, roles and responsibilities.</p> <p>If, after this analysis, doubts remain regarding these indicators, the necessary corrective actions must be generated.</p>
Expected compliance date	July 2023
Priority	Low
Estimated cost (\$US)	15,000
Responsible parties	WWF

MSC IDs associated with the action	3.1.1. Legal or customary framework 3.1.2 Consultations, roles and responsibilities
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Action	Task / milestone	Responsible		Date	
		Lead	Support	Beginning	End
3.1.1. Analysis of existing conflict resolution mechanisms	Milestone 72: Review existing conflict resolution mechanisms	WWF	PMA	Dec, 2022	Jul, 2023

**Table 11. Action plan of performance indicators for action 3.2.1 Specific objectives of the fishery.**

Action number and name	3.2.1 Specific objectives of the fishery
Action goal	Develop a specific management system for the fishery
Description of the action	<p>This action is well advanced since the fishery management regulation (ROP, for its Spanish acronym) has been published and is currently under consultation.</p> <p>Although this instrument establishes objectives for the fishery, it does not expressly indicate the population status to be obtained for mahi mahi, however, in the Transitory Complementary Provisions the Monitoring and Evaluation of the ROP has been established, which is executed through a Directorial Resolution of the General Directorate of Policies and Regulatory Analysis in Fisheries and Aquaculture of the Vice-Ministerial Office of Fisheries and Aquaculture. In this resolution, the indicators that allow quantifying the goal of the general objectives established in the ROP are approved. Therefore, it is expected to contain Biological Reference Points (BRP) and indicators for this purpose. In this way, the desired population objective for the fishery and the corresponding decision-making procedures are clarified.</p>
Expected compliance date	Dec, 2021
Priority	High
Estimated cost (\$US)	
Responsible parties	PRODUCE
MSC IDs associated with the action	3.2.1 Fishery specific objectives 3.2.2 Decision making processes

Action	Task / milestone	Responsible		Date	
		Lead	Support	Beggining	End
3.2.1 Specific objectives of the fishery	Milestone 50: Design explicit short-term and long-term goals consistent with MSC Principles 1 and 2	PRODUCE		Jul, 2021	Dec, 2021
	Milestone 51: Implementation of short and long-term objectives consistent with MSC Principles 1 and 2	PRODUCE		Sep, 2021	Dec, 2021

**Table 12. Action plan of performance indicators for action 3.2.3. Compliance and enforcement.**

Action number and name	3.2.3. Compliance and enforcement
Action goal	Develop a specific management system for the fishery
Description of the action	<p>Initially, in the Peruvian mahi mahi FIP it was considered that the Monitoring, Control and Surveillance (MCS) mechanisms exist within the fishery management framework. However, existing mechanisms must be enforced to ensure that the objectives of the management system are achieved. Several activities have been identified as possible activities that could improve the current MCS system.</p> <ul style="list-style-type: none"> <li>• Milestone 55: Analysis of the inefficiencies of the Monitoring, Control and Surveillance system (MCS)</li> </ul> <p>The mechanisms that could lead to sustainable practices such as the control of fishing effort, legal minimum size and fishing season, must be applied properly, for this the MCS system must be able to enforce the defined measures and strategies.</p> <p>Regarding this task, it was mentioned in the meeting with the interested parties that a monthly analysis is carried out by the GDSIS of PRODUCE to identify critical points of non-compliance with the regulations, such as ports and plants with a high incidence of infractions, in order to then make decisions to redirect inspection efforts. It was also indicated that the inspection coverage of mahi mahi landings is between 50-60% of the total landings. According to this, this task could be considered completed considering the systematic effort that allows identifying inefficiencies of the MCS system. However, during the audit no</p>

formal documents were in view that evidence this work, such as protocols or reports on the implementation of the inspection mechanisms.

- Milestone 56: Analysis of the fishing inspection capacity with proposals on how to increase it

Based on the above information regarding the inefficiency analysis process of the MCS system, deficiencies in inspection coverage and lack of personnel are identified. However, these documents were not available during the audit.

- Milestone 57: Increase the capacity of fishery inspectors

In the meeting with the interested parties, the representative of the GDSIS of PRODUCE, mentioned that each year the personnel assigned to the inspection has increased, and that in fact, thanks to this, the inspection coverage has increased. However, this was not demonstrated during the audit regarding the increase made in terms of the number of inspectors nor about the increase in coverage that has occurred in recent years.

- Milestone 61: Incorporate CCTV at selected landing points

In the audit carried out in 2018, the pilot implementation of a CCTV system by the GDSIS in the ports of Paita and Talara was declared as a supplementary element of the MCS system, whose objective is:

- 1) Alert that vessels are developing activities at times when inspection personnel are not present,
- 2) Support to the security of the inspectors and
- 3) Deterrent tool for acts of bribery.

At the meeting held as part of this audit, PRODUCE's GDSIS staff stated that the CCTV system has been expanded to the ports of Chimbote, Callao and Ilo. In addition, he stated that there is an intention to continue expanding the coverage of this initiative to other ports. The main utility of this system is that it has made it possible to identify the arrival of boats, at any time and day, which makes it possible to assign inspection personnel to the landing point outside of working hours or on holidays. In addition, at the meeting indicated that this has provided more security to the inspectors in the development of their work.

Based on the background provided, this task is completed.

	<ul style="list-style-type: none"> <li>• Milestone 62: Design workshops to sensitize fishermen, ship owners, buyers and fishing companies about the importance of fishing regulations.</li> </ul> <p>During the meeting with the interested parties, it was indicated that the GDSIS of PRODUCE has within its functions to "Formulate and implement training programs, technical assistance and other actions, at other levels of government and related agents within the framework of its competences" (Art 86. DS N°2 2017 - PRODUCE), which is implemented in practice by conducting workshops to fishermen, and other agents and even more extensively to the community in general, about the management measures applied to marine resources.</p> <ul style="list-style-type: none"> <li>• Milestone 63: Develop awareness workshops</li> </ul> <p>As defined in milestone 62, it is concluded that this task is performed periodically. And that it is expected that this will be developed in the future since it is part of the legal functions of GDSIS. However, reports that provide evidence of the performance of these activities were not available during the audit.</p> <p>Both Milestones 62 and 63 remain active given the importance of permanent socialization that must be achieved an adequate for conflict resolutions, consultation procedures and participation in the fishery. It is advisable to generate reports of these activities as verifiers before a possible complete evaluation. In the immediate term, these workshops should focus on the implementation of the ROP, especially the Catch Control Rule.</p>
Expected compliance date	Dec, 2023
Priority	High
Estimated cost (\$US)	716,500
Responsible parties	PRODUCE
MSC IDs associated with the action	3.2.3 Compliance & Enforcement

Action	Task / milestone	Responsible		Date	
		Lead	Support	Beginning	End
3.2.3. Compliance and enforcement	Milestone 55: Analysis of MCS system inefficiencies	PRODUCE		Jul, 2021	Jul, 2022

	Milestone 56: Analysis of the fishing inspection capacity with proposals on how to increase it	PRODUCE		Jul, 2021	Jul, 2022
	Milestone 57: Increase the capacity of fisheries inspectors	PRODUCE		Jul, 2021	Dec, 2022
	Milestone 61: Incorporate CCTV at selected disembarkation points	PRODUCE		Jul, 2021	Jul, 2021
	Milestone 62: Design workshops to sensitize fishermen, shipowners, buyers and fishing companies about fishing regulations.	PRODUCE	WWF	Jul, 2021	Dec, 2023
	Milestone 63: Conduct workshops	PRODUCE	WWF	Jul, 2021	Dec, 2023

**Table 12. Action plan of performance indicators for action 3.2.4 Evaluation of management performance**

<b>Action number and name</b>	<b>3.2.4 Management performance evaluation</b>
<b>Action goal</b>	Develop a specific management system for the fishery
<b>Description of the action</b>	<p>Under the regulation of the organization and functions of PRODUCE (DS 009-PRODUCE-2017), the General Directorate of Policies and Regulatory Analysis in Fisheries and Aquaculture, specifically the Directorate of Monitoring and Evaluation has the functions of evaluating the implementation of regulations in fishing (including mahi mahi). It is expected that once the fishery management regulation (ROP, for its Spanish acronym) is promulgated, the monitoring and evaluation of the regulations will be carried out since it establishes that by means of a Directorial Resolution of the General Directorate of Policies and Regulatory Analysis in Fisheries and Aquaculture the indicators will be established that allow quantifying the goal of the general objectives established, as well as the plan for monitoring compliance with the provisions contained in the Operating Regulations, which will form part of the permanent evaluation.</p> <p>On the other hand, the tasks leading to an external evaluation have yet to be implemented.</p>
<b>Expected compliance date</b>	Dec, 2023
<b>Priority</b>	High
<b>Estimated cost (\$US)</b>	
<b>Responsible parties</b>	PRODUCE
<b>MSC IDs associated with the action</b>	3.2.4 Management Performance Evaluation

Action	Task / milestone	Responsible		Date	
		Lead	Support	Beginning	End
3.2.4 Management performance evaluation	Milestone 67: Design and implement an internal audit system to monitor and evaluate the performance of the specific fishery management system.	PRODUCE		Jul, 2021	Jul, 2022
	Milestone 68: Design an external review cycle to monitor and evaluate the performance of the fishery-specific management system.	PRODUCE		Jul, 2021	Dec, 2022
	Milestone 69: Implement a two-year external review cycle to monitor and evaluate the performance of the fishery-specific management system.	PRODUCE		Dec, 2021	Dec, 2023