Fisheries Improvement Action Plan

Table 1: Action Plan overview

Fishery name: Indian Ocean tropical tuna purse seine fishery, mainly landing into the Seychelles targeting yellowfin, bigeye and skipjack tuna		**Start date:** 01 June 2017
Fishery location: Western Indian Ocean	**Fishing method:** Purse seine (free school & with FAD & other associated catches)	**End date (anticipated):** 31 December 2021 (5 years)
Project leaders: The Sustainable Indian Ocean Tuna Initiative (SIOTI)		**Improvements recommended by:** Poseidon

Overview of the Action Plan:

This document provides a Detailed Action Plan for the Indian Ocean Purse Seine Tuna Fisheries Improvement Project (FIP) for the majority of European Union (EU), Seychelles and Mauritius-flagged purse seine vessels fishing for pelagic tunas in the Western Indian Ocean using both free school and object associated sets. The target species are the following three pelagic tuna species: (i) skipjack tuna (*Katsuwonus pelamis*), (ii) yellowfin tuna (*Thunnus albacares*) and (iii) bigeye tuna (*Thunnus obesus*).

These fisheries are managed by the Indian Ocean Tuna Commission (IOTC). At the time of the pre-assessment (Poseidon 2016) yellowfin tuna was overfished and subject to overfishing. Furthermore there was not robust harvest strategy or harvest control rules (HCRs) for any of these three stocks (skipjack had some HCRs) which is a primary focus on the FIP. Furthermore there were information gaps on fisheries removals from stock, notably from some coastal fisheries.

Information is also lacking in terms of the nature and amount of primary (e.g. managed), secondary (e.g. unmanaged) and endangered, threatened and protected (ETP) bycatch taken by the fishery, The FIP will also address the management of non-target bycatch such as silky shark, blue marlin, rainbow runner and dolphinfish. Also in P2, as second main task will be to better manage Fish Aggregating Devices (FADs) and their impact on both coastal habitats when lost as well as the wider marine ecosystem.

Under P3 there is a need to address the legislative gaps that exist at national level to ensure the IOTC Contracting Party and Cooperating Non-Contracting Party (CPCs) comply with IOTC Conservation and Management Measures (CMMs). There is also a need to strengthen compliance in implementing these CMMs and ensure a more robust reporting and sanctions approach to non-compliance.

Colour code in tables below: Principle 1 Principle 2 Principle 3

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Table 2: Action Plan details

Standard requirement	Actions	Activities	Action lead	Action partners	Stake-holders	Timescale / milestones
1. 1.1.1 Stock status It is highly likely that the stock is above the PRI and is at or fluctuating around a level consistent with MSY. ***IPG 7***	**Action #1:** Monitor the enactment of routine YFT stock assessments by IOTC and if deferred or delayed advocate that they continue as per the current schedule	Annual review of YFT stock assessment and status in line with the recovery plan	IOTC	PMT	ISF	**Y1**: Review **Y2**: Review **Y3**: Review **Y4**: Review **Y5**: Review
2. 1.1.2 Stock Re-building It is highly likely that the stock is above the PRI and is at or fluctuating around a level consistent with MSY. ***IPG 1***	**Action #2** (a) A rebuilding timeframe is specified for the YFT stock that is the shorter of 20 years or 2 times its generation time. (b) There is evidence that the rebuilding strategies are rebuilding stocks, or it is likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.	Y1: Conduct re-building scenarios. Independent scientific assistance to support the IOTC Scientific Committee (SC) in developing YFT re-building scenarios Y3: Conduct re-building scenarios. Independent scientific assistance to support the IOTC Scientific Committee (SC) in developing YFT re-building scenarios	IOTC (with independent scientific assistance)	PMT FIP industry partners FIP country partners ISSF	Other coastal / Flag states	**Y1**: Simulations conducted to evaluate likely rebuilding timeframe given current and future projected level of catches under 16-01 showing likely rebuilding times under different scenarios **Y2**: Robust, comprehensive YFT rebuilding strategy developed. **Y3**: (i) IOTC has adopted the above rebuilding strategy. (ii) Fishing mortality F is <FMSY. **Y4**: Stock rebuilding strategy implemented. **Y5**: Stock assessment or other incontrovertible evidence shows that stocks are able to rebuild the stock within the specified timeframe.

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Standard requirement	Actions	Activities	Action lead	Action partners	Stake-holders	Timescale / milestones
3. 1.2.1 Harvest strategy There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate. ***IPG 2***	**Action 3a**: Design of an explicit harvest control strategy for YFT, BET and SKJ; **Action 3b**. Formal evaluation procedure for harvest strategies put in place.	**Year 1** Engage with EU/Seychelles and Mauritius scientists and delegations Schedule regular meetings with relevant government stakeholders IOTC Briefing Document on Harvest Strategies (2017). 2d: Position paper for a harvest control strategy and HCRs. Promote best practice for harvest strategy and stock rebuilding. Possible partnership with ABNJ. Proposal to IOTC of a work plan and timetable for the implementation of 15-10 for each stock. Progress harvest strategy development. **Year 2**: Progress in harvest strategies reviewed. **Year 3:** Progress in harvest strategies reviewed. **Year 4**: Progress in harvest strategies reviewed and progress evaluated.	IOTC (with independent scientific assistance)	PMT FIP industry partners FIP country partners ISSF	Other coastal / Flag states	**Y1**: Strategic options for controlling SKJ, YFT and BET tuna harvest developed. **Y2**: HC options considered and discussed inter-sessionally and formally though IOTC meeting processes. IOTC record reflect discussions and progress. Formal harvest control options include evaluation framework and timetable. **Y3**: Harvest strategy for SKJ discussed and agreed within IOTC & formally adopted. **Y4**: harvest strategies for YFT & BET discussed and agreed within IOTC and formally adopted. **Y5**: Harvest control strategies evaluated to assess evidence that they are achieving their objectives.

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Standard requirement	Actions	Activities	Action lead	Action partners	Stake-holders	Timescale / milestones
4. 1.2.2 Harvest control rules and tools There are well defined and effective harvest control rules (HCRs) in place. By Year 5 harvest control rules for all three target species fisheries are in place and evidence suggests that they are effective in reducing exploitation levels where necessary. ***IPG 3***	**Action 4a**: Design and implementation of well-defined and explicit harvest control rules for YFT, BET and SKJ according to the harvest control strategies developed in IPG 2 to ensure that the exploitation rates are reduced as limit reference points are approached and that the stock fluctuates around a target level consistent with (or above) MSY. **Action 4b**: HCRs are determined to be robust to main uncertainties. **Action 4c**: HCR tools are determined to be effective in achieving the exploitation levels under the HCRs.	**Year 1:** Building regional consensus on the need for robust HCRs Ensure a holistic implementation HCR development Provide an independent paper on the scope and needs of HCRs **Y2:** On-going engagement with coastal states and IOTC over HCR development **Y3:** Independent evaluation of HCR robustness and effectiveness **Y4:** On-going engagement with coastal states and IOTC over HCR development	IOTC	PMT		**Y2**: Options for harvest control rules (HCRs) and tools for managing SKJ, YFT and BET tuna harvest developed . The main uncertainties for different HCR options are identified. **Y3**: HCR options considered and discussed inter-sessionally and formally though IOTC meeting processes. IOTC record reflect discussions and progress. The main uncertainties are considered and discussed inter-sessionally and formally though IOTC meeting processes. IOTC record reflect discussions and progress. **Y4**: HCRs for all three species discussed and agreed within IOTC and formally adopted as part of the harvest strategy implementation approach (see IPG 2). **Y5**: Formal evidence is provided to demonstrate the HCR tools are appropriate and effective in reducing exploitation levels where necessary.

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Standard requirement	Actions	Activities	Action lead	Action partners	Stake-holders	Timescale / milestones
5. 1.2.3 Information & Monitoring Relevant information is collected to support the harvest strategy. ***IPG 8***	**Action 5**: Improved information on all other fisheries removals from stock, notably from the coastal fisheries of Indonesia, Sri Lanka, Yemen and Madagascar, the Pakistan gillnet fishery and non-reporting industrial fisheries from India.	**Year 1: Engage with IOTC SC and stock WGs to evaluate key data gaps**. Short-term technical assistance in Yr. 1 with IOTC SC to review and assess data quality of SKJ, YFT & YFT removals in the IO. Will develop methodology (for IOTC) to improve estimates and reduce uncertainties. **Year 4: Review of updated information systems on fisheries removals**. Review of the actions taken to date, progress in work plan implementation, and an evaluation of remaining gaps in data collection and analysis	IOTC	FIP Country partners	IOTC	**Y1**: Need for a work plan to improve information publicly available and / or estimate of uncertainty on all fisheries removals from Indian Ocean stocks formally presented by the relevant IOTC Working Parties; and IOTC has agreed to develop a plan of specific activities over a one-year period to improve the information available on all fisheries removals. **Y2**: IOTC developed work plan specific activities over a one-year period to improve the information available on all fisheries removals. **Y3**: Work plan adopted by IOTC. **Y4**: IOTC Scientific Committee confirms work plan is under implementation and that data are being made available.

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Standard requirement	Actions	Activities	Action lead	Action partners	Stake-holders	Timescale / milestones
6. 2.1.3 Primary species information and 2.2.3 Secondary species information Information on the nature and amount of primary & secondary species taken is adequate to determine the risk posed by the UoA & the effectiveness of the strategy to manage primary & secondary species. ***IPG 9 & 10***	**Action 6a:** Full analysis of non-target catch levels and their impact on primary (e.g. managed) & secondary (e.g. unmanaged) species catches. **Action 6b:** Conduct gaps analysis of bycatch reporting system to ensure it is adequate for management purposes.	**Year 1:** Support for data gathering programmes: observer training, observer / EMS support Start process of developing observation system for all trips (observer or electronic Observer data consolidation and quality control **Year 2:** Bycatch review and final recommendations **Years 3-5:** Annual bycatch monitoring and analysis.	FIP Industry partners	WWF	FIP Industry partners	**Y1**: Bycatch database fully operational, including timely vessel / observer reporting, data input and quality control (in conjunction with IPG 10). **Y2**: Annual bycatch reporting, with fishing mortality information being fully utilised for primary species stock assessment and management purposes (in conjunction with IPG 10). **Y2**: Gaps analysis completed and recommendations made for upgrading data collection, if necessary (in conjunction with IPG 10). **Annual (Yr. 2 – 5**): Annual bycatch reporting, with fishing mortality information being fully utilised for primary species stock assessment and management purposes

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Standard requirement	Actions	Activities	Action lead	Action partners	Stake-holders	Timescale / milestones
7. 2.2.1 Secondary species: Outcome status Main secondary species are highly likely to be above biologically based limit OR If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding. ***IPG 4***	**Action 7:** Ensure that main secondary species (see below) are highly likely to be above biologically-based limits. Key main species (<60): Silky shark Other main species (60-79) blue marlin (BUM), rainbow runner (RRU) & dolphinfish (DOL).	**Year 1** Development of a silky shark (FAL) management plan: Vessel-based 'Code of Practice (CoP) for the reduction in FAL mortality in the UoC. Non-target species management plans. Vessel-based Code of Practice (CoP) for reduction in non-target catches in the UoC.	FIP industry partners	WWF		**Silky shark:** **Y1**: Development of a specific management plan for silky shark, including addressing data deficiencies and a strategy to ensure that these fisheries don't hinder the recovery of this species, if required. **Y2**: Adoption of specific management measures to address the bycatch of silky shark by all fisheries in the UoA, inc. a vessel-based CoP. **Other main secondary species:** **Y1**: Development of a generic management plan for main secondary species, including addressing data deficiencies and a strategy to ensure that these fisheries don't hinder the recovery of these species, if required. **Y3**: Adoption of specific management measures to address the bycatch of main secondary species by all fisheries in the UoA, inc. a vessel-based CoP.

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Standard requirement	Actions	Activities	Action lead	Action partners	Stake-holders	Timescale / milestones
8. 2.2.2 Secondary species: Management strategy Management strategy in place, evaluated and implemented. Review of alternative measures. ***IPG 5***	**Action 8a**: Assess and test the effectiveness of the management measures in IPG 5. **Action 8b**: Put in place a system that demonstrates that management measures in IPG 5 are being implemented successfully. **Action 8c**: Ensure that shark finning does not take place in the UoA. **Action 8d**: Ensure that alternative measures to minimise unwanted catch are put in place, especially for associated fishing.	**Year 1:** Shark finning risk assessment and management strategy. Conduct a desk-based risk analysis that shark finning is taking place within the UoA. Based on this, prepare a management strategy for preventing shark finning, if required. **Year 4:** Review effectiveness of management strategy & CoP. A short consultancy to review the effectiveness of (i) the CoPs for 4b (silky shark) and 4d (non-target bycatch) and (ii) the management plan for preventing shark finning (5a).	FIP Industry partners	WWF	FIP Industry partners	**Year 1:** Conduct risk assessment to assess likelihood of shark finning within the UoA. Assess effectiveness of NPOAs for shark within the UoA. Development of a fleet-level generic bycatch reduction strategy to minimise bycatch levels, especially for associated sets (see IPG 4). **Year 2:** Put in place any management measures, if required, to ensure that shark finning does not take place. Implement fleet level generic bycatch strategy. **Year 4:** Review of management measures and outcome indicators. Review of management measures and their implementation processes to assess implementation successes and barriers. Put in place alternative measures as required.

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Standard requirement	Actions	Activities	Action lead	Action partners	Stake-holders	Timescale / milestones
9. 2.3.3 ETP species information Information is adequate for the assessment of impacts and their management. ***IPG 11***	**Action 9a:** Quantify the level of post-release mortality and the consequence for the status of ETP species. **Action 9b:** Ensure that information is adequate to measure trends and support a strategy to manage impacts on ETP species.	**Year 1:** Study on the impact of purse seine gear on ETP species and likely consequence for Indian Ocean populations. Improved vessel-level reporting of ETP interactions. Preparation of a Code of Conduct for the better reporting of ETP interactions. To be included in observer system development under Action 6. . **Year 2:** Review of ETP information-based management.	FIP Industry partners	WWF	FIP Industry partners	**Y2**: Scientific report on the mortality of ETP species after their release from fishing gear, and an analysis of the likely impact of such mortality on Indian Ocean populations. **Y4**: Fleet operators and where necessary IOTC, puts into place management measures, as necessary, to reduce the mortality of ETP species.
10. 2.4.1, 2.4.2, 2.4.3 Habitat outcome, management and information The UoA is highly unlikely to reduce structure and function of habitats to a point where there would be serious or irreversible harm. Management strategy in place. Information is adequate for the assessment of impacts and their management. ***IPGs 12, 13 & 14***	**Action 10a.** Ensure accountability and tracking of all drifting FADs to assist their responsible management and decommissioning. **Action 10b.** FIP participants develop a strategy to ensure FADs are under control at all times. **Action 10c:** Study of FAD management (inc. decommissioning and recovery of lost FADs) in the Indian Ocean and the effectiveness of recent management measures to reduce habitat damage.	**Year 1:** Review of FAD design, deployment and tracking Development of a FAD registration, monitoring and reporting system. **Year 2:** Establish an open access FAD portal **Year 4:** Independent evaluation of FAD usage, likely impacts and FAD-related Abandoned, Lost and Discarded Fishing Gear (ALDFG) outcomes (esp. on VMEs), with recommendations for improving the FAD CoP's effectiveness. .	FIP Industry partners		FIP Industry partners	**Y1**: Design of a FAD registration, monitoring and reporting system designed. **Y2**: FAD monitoring program agreed by all FIP participants and a registration system is in place (inc. FAD portal). **Y3:** All FADs operated by FIP participants are tracked, losses are registered and best practical efforts made for their location and recovery. **Y4**: A review of the FAD reporting system indicates that the loss of FADs is minimised and they are highly unlikely to impact on VMEs. FAD management study results published

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Standard requirement	Actions	Activities	Action lead	Action partners	Stake-holders	Timescale / milestones
11. 2.5.1, 2.5.2 & 2.5.3 Ecosystem: Outcome status, management & information The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm, there are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function; and there is adequate knowledge of the impacts of the UoA on the ecosystem. ***IPG 6, 15 & 16***	**Action 11a:** Risk assessment of the use of FADs and their possible impact on target species stock structure and the key elements underlying ecosystem structure and function. **Action 11b:** Development of an ecosystem-based strategic approach to tuna fisheries management in the Indian Ocean. **Action 11c:** Ecosystem-based strategic approach to tuna fisheries management is independently evaluated. **Action 11d:** Ecosystem-based strategic approach to tuna fisheries management in the Indian Ocean is being successfully implemented. **Action 11e:** Information gaps analysis on the main impacts the UoA on key ecosystem elements evaluated and addressed, where necessary.	**Year 1:** Working Paper on EAFM to IOTC's WP on Ecosystems and Bycatch (WPEB). Preparation of an Intersessional Working Paper on the core elements of EAFM needs and requirements resulting from the ecosystem impacts of purse seine fishing for tuna in the Indian Ocean. **Year 2:** EAFM Information Gaps Analysis **Year 4:** Independent evaluation of IOTC's EAFM approach. Scientific evaluation to determine the level of objective evidence that an ecosystem-based management strategy is being implemented successfully.	IOTC	FIP Industry partners	IOTC	Y1: IOTC develops a strategy which addresses the main impacts of the Indian Ocean purse seine fisheries on the ecosystem. **Y2**: Credible and peer reviewed risk assessment published. **Y3**: Management measures to address any identified risks, if any, are agreed and undergoing implementation. IOTC puts into place management measures, as necessary, to implement an ecosystem approach to fisheries management. Additional data and information gathering initiatives, if necessary, formally agreed and in place. **Y4**: An independent evaluation provides objective evidence that the ecosystem-based management strategy is working. An internal evaluation provides objective evidence that the ecosystem-based management strategy is being implemented successfully.

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Standard requirement	Actions	Activities	Action lead	Action partners	Stake-holders	Timescale / milestones
12. 3.1.1 Legal and customary framework The management system exists within an appropriate and effective legal and/or customary framework. ***IPG 17***	**Action 12:** Review to determine the extent and effectiveness of national legislation of IOTC CPCs in delivering management outcomes consistent with MSC Principles 1 & 2.	**Year 1**: Strategy for addressing tuna fisheries management needs in the Indian Ocean. Development of a positional paper to outline the strengths and weaknesses of the current tuna management regime in the Indian Ocean, outlining a strategic framework for addressing the weaknesses found. **Years 2-4:** Follow-up and facilitation of the Indian Ocean tuna fisheries management strategy. The Project Management Team will engage with stakeholders to encourage and facilitate the implementation of the Indian Ocean tuna fisheries management strategy.	FIP Facilitators	FIP Country Partners	FIP External Partners	**Y2**: An independent review identifies major legislative gaps in national efforts to comply with IOTC CMMs. **Y4**: Evidence presented that any major legislative gaps are being effectivity addressed.

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Standard requirement	Actions	Activities	Action lead	Action partners	Stake-holders	Timescale / milestones
13. 3.2.3 Compliance & enforcement Monitoring, control and surveillance mechanisms ensure the management measures in the fishery and enforced and complied with. ***IPG 18***	**Action 13a**: IOTC considers proposals to strengthen compliance by commencing development of possible sanctions for instance where members repeatedly fall short in complying with IOTC management measures **Action 13b**: IOTC has recommended a process to (i) develop sanctions and (ii) provide more in depth and critical reporting of non-compliance. **Action 13c**: IOTC adopts sanctions for non-compliance and makes public an in depth summary of all non-compliance.	**Year 1:** Strategy for increasing fisheries-related compliance in the Indian Ocean. Development of a positional paper that analyses compliance history and trends in the purse seine fishery in the Indian Ocean. **Year 3**: Follow-up and facilitation of the Indian Ocean fisheries compliance strategy. The Project Management Team will engage with stakeholders to encourage and facilitate the implementation of the Indian Ocean fisheries compliance strategy.	IOTC	FIP Country Partners	FIP External Partners	**Y1**: Formal proposals for a strengthen compliance regime presented and strategy agreed. **Y2**: Sanctions developed and non-compliance reporting systems enhanced. **Y3**: Sanctions in place. **Y4**: Public reporting of non-compliance levels and sanctions imposed as a result, if any.

Table 3: Evaluation against Action Plan milestones

Standard requirement	Actions	Timescale / milestones	Progress / outcome	Revised milestone
1. 1.1.1 Stock status It is highly likely that the stock is above the PRI and is at or fluctuating around a level consistent with MSY. ***IPG 7***	**Action #1:** Monitor the enactment of routine YFT stock assessments by IOTC and if deferred or delayed advocate that they continue as per the current schedule	**Y1**: Review **Y2**: Review **Y3**: Review **Y4**: Review **Y5**: Review		
2. 1.1.2 Stock Re-building It is highly likely that the stock is above the PRI and is at or fluctuating around a level consistent with MSY. ***IPG 1***	**Action #2** (a) A rebuilding timeframe is specified for the YFT stock that is the shorter of 20 years or 2 times its generation time. (b) There is evidence that the rebuilding strategies are rebuilding stocks, or it is likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.	**Y1**: Simulations conducted to evaluate likely rebuilding timeframe given current and future projected level of catches under 16-01 showing likely rebuilding times under different scenarios **Y2**: Robust, comprehensive YFT rebuilding strategy developed. **Y3**: (i) IOTC has adopted the above rebuilding strategy. (ii) Fishing mortality F is <FMSY. **Y4**: Stock rebuilding strategy implemented. **Y5**: Stock assessment or other incontrovertible evidence shows that stocks are able to rebuild the stock within the specified timeframe.		

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Standard requirement	Actions	Timescale / milestones	Progress / outcome	Revised milestone
3. 1.2.1 Harvest strategy There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate. ***IPG 2***	**Action 3a**: Design of an explicit harvest control strategy for YFT, BET and SKJ; **Action 3b**. Formal evaluation procedure for harvest strategies put in place.	**Y1**: Strategic options for controlling SKJ, YFT and BET tuna harvest developed. **Y2**: HC options considered and discussed inter-sessionally and formally though IOTC meeting processes. IOTC record reflect discussions and progress. Formal harvest control options include evaluation framework and timetable. **Y3**: Harvest strategy for SKJ discussed and agreed within IOTC & formally adopted. **Y4**: harvest strategies for YFT & BET discussed and agreed within IOTC and formally adopted. **Y5**: Harvest control strategies evaluated to assess evidence that they are achieving their objectives.		

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Standard requirement	Actions	Timescale / milestones	Progress / outcome	Revised milestone
4. 1.2.2 Harvest control rules and tools There are well defined and effective harvest control rules (HCRs) in place. By Year 5 harvest control rules for all three target species fisheries are in place and evidence suggests that they are effective in reducing exploitation levels where necessary. ***IPG 3***	**Action 4a**: Design and implementation of well-defined and explicit harvest control rules for YFT, BET and SKJ according to the harvest control strategies developed in IPG 2 to ensure that the exploitation rates are reduced as limit reference points are approached and that the stock fluctuates around a target level consistent with (or above) MSY. **Action 4b**: HCRs are determined to be robust to main uncertainties. **Action 4c**: HCR tools are determined to be effective in achieving the exploitation levels under the HCRs.	**Y2**: Options for harvest control rules (HCRs) and tools for managing SKJ, YFT and BET tuna harvest developed . The main uncertainties for different HCR options are identified. **Y3**: HCR options considered and discussed inter-sessionally and formally though IOTC meeting processes. IOTC record reflect discussions and progress. The main uncertainties are considered and discussed inter-sessionally and formally though IOTC meeting processes. IOTC record reflect discussions and progress. **Y4**: HCRs for all three species discussed and agreed within IOTC and formally adopted as part of the harvest strategy implementation approach (see IPG 2). **Y5**: Formal evidence is provided to demonstrate the HCR tools are appropriate and effective in reducing exploitation levels where necessary.		

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Standard requirement	Actions	Timescale / milestones	Progress / outcome	Revised milestone
5. 1.2.3 Information & Monitoring Relevant information is collected to support the harvest strategy. ***IPG 8***	**Action 5**: Improved information on all other fisheries removals from stock, notably from the coastal fisheries of Indonesia, Sri Lanka, Yemen and Madagascar, the Pakistan gillnet fishery and non-reporting industrial fisheries from India.	**Y1**: Need for a work plan to improve information publicly available and / or estimate of uncertainty on all fisheries removals from Indian Ocean stocks formally presented by the relevant IOTC Working Parties; and IOTC has agreed to develop a plan of specific activities over a one-year period to improve the information available on all fisheries removals. **Y2**: IOTC developed work plan specific activities over a one-year period to improve the information available on all fisheries removals. **Y3**: Work plan adopted by IOTC. **Y4**: IOTC Scientific Committee confirms work plan is under implementation and that data are being made available.		

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Standard requirement	Actions	Timescale / milestones	Progress / outcome	Revised milestone
6. **2.1.3 Primary species information and 2.2.3 Secondary species information** Information on the nature and amount of primary & secondary species taken is adequate to determine the risk posed by the UoA & the effectiveness of the strategy to manage primary & secondary species. ***IPG 9 & 10***	**Action 6a:** Full analysis of non-target catch levels and their impact on primary (e.g. managed) & secondary (e.g. unmanaged) species catches. **Action 6b:** Conduct gaps analysis of bycatch reporting system to ensure it is adequate for management purposes.	**Y1**: Bycatch database fully operational, including timely vessel / observer reporting, data input and quality control (in conjunction with IPG 10). **Y2**: Annual bycatch reporting, with fishing mortality information being fully utilised for primary species stock assessment and management purposes (in conjunction with IPG 10). **Y2**: Gaps analysis completed and recommendations made for upgrading data collection, if necessary (in conjunction with IPG 10). **Annual (Yr. 2 – 5**): Annual bycatch reporting, with fishing mortality information being fully utilised for primary species stock assessment and management purposes		

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Standard requirement	Actions	Timescale / milestones	Progress / outcome	Revised milestone
7. 2.2.1 Secondary species: Outcome status Main secondary species are highly likely to be above biologically based limit OR If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding. ***IPG 4***	Action 7: Ensure that main secondary species (see below) are highly likely to be above biologically-based limits. Key main species (<60): Silky shark Other main species (60-79) blue marlin (BUM), rainbow runner (RRU) & dolphinfish (DOL).	**Silky shark:** **Y1**: Development of a specific management plan for silky shark, including addressing data deficiencies and a strategy to ensure that these fisheries don't hinder the recovery of this species, if required. **Y2**: Adoption of specific management measures to address the bycatch of silky shark by all fisheries in the UoA, inc. a vessel-based CoP. **Other main secondary species:** **Y1**: Development of a generic management plan for main secondary species, including addressing data deficiencies and a strategy to ensure that these fisheries don't hinder the recovery of these species, if required. **Y3**: Adoption of specific management measures to address the bycatch of main secondary species by all fisheries in the UoA, inc. a vessel-based CoP.		

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8. 2.2.2 Secondary species: Management strategy Management strategy in place, evaluated and implemented. Review of alternative measures. ***IPG 5***	**Action 8a**: Assess and test the effectiveness of the management measures in IPG 5. **Action 8b**: Put in place a system that demonstrates that management measures in IPG 5 are being implemented successfully. **Action 8c**: Ensure that shark finning does not take place in the UoA. **Action 8d**: Ensure that alternative measures to minimise unwanted catch are put in place, especially for associated fishing.	**Year 1:** Conduct risk assessment to assess likelihood of shark finning within the UoA. Assess effectiveness of NPOAs for shark within the UoA. Development of a fleet-level generic bycatch reduction strategy to minimise bycatch levels, especially for associated sets (see IPG 4). **Year 2:** Put in place any management measures, if required, to ensure that shark finning does not take place. Implement fleet level generic bycatch strategy. **Year 4:** Review of management measures and outcome indicators. Review of management measures and their implementation processes to assess implementation successes and barriers. Put in place alternative measures as required.		
9. 2.3.3 ETP species information Information is adequate for the assessment of impacts and their management. ***IPG 11***	**Action 9a:** Quantify the level of post-release mortality and the consequence for the status of ETP species. **Action 9b:** Ensure that information is adequate to measure trends and support a strategy to manage impacts on ETP species.	**Y2**: Scientific report on the mortality of ETP species after their release from fishing gear, and an analysis of the likely impact of such mortality on Indian Ocean populations. **Y4**: Fleet operators and where necessary IOTC, puts into place management measures, as necessary, to reduce the mortality of ETP species.		

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Standard requirement	Actions	Timescale / milestones	Progress / outcome	Revised milestone
10. 2.4.1, 2.4.2, 2.4.3 Habitat outcome, management and information The UoA is highly unlikely to reduce structure and function of habitats to a point where there would be serious or irreversible harm. Management strategy in place. Information is adequate for the assessment of impacts and their management. ***IPGs 12, 13 & 14***	**Action 10a.** Ensure accountability and tracking of all drifting FADs to assist their responsible management and decommissioning. **Action 10b.** FIP participants develop a strategy to ensure FADs are under control at all times. **Action 10c:** Study of FAD management (inc. decommissioning and recovery of lost FADs) in the Indian Ocean and the effectiveness of recent management measures to reduce habitat damage.	**Y1**: Design of a FAD registration, monitoring and reporting system designed. **Y2**: FAD monitoring program agreed by all FIP participants and a registration system is in place (inc. FAD portal). **Y3:** All FADs operated by FIP participants are tracked, losses are registered and best practical efforts made for their location and recovery. **Y4**: A review of the FAD reporting system indicates that the loss of FADs is minimised and they are highly unlikely to impact on VMEs. FAD management study results published		

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Standard requirement	Actions	Timescale / milestones	Progress / outcome	Revised milestone
11. 2.5.1, 2.5.2 & 2.5.3 Ecosystem: Outcome status, management & information The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm, there are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function; and there is adequate knowledge of the impacts of the UoA on the ecosystem. ***IPG 6, 15 & 16***	**Action 11a:** Risk assessment of the use of FADs and their possible impact on target species stock structure and the key elements underlying ecosystem structure and function. **Action 11b:** Development of an ecosystem-based strategic approach to tuna fisheries management in the Indian Ocean. **Action 11c:** Ecosystem-based strategic approach to tuna fisheries management is independently evaluated. **Action 11d:** Ecosystem-based strategic approach to tuna fisheries management in the Indian Ocean is being successfully implemented. **Action 11e:** Information gaps analysis on the main impacts the UoA on key ecosystem elements evaluated and addressed, where necessary.	Y1: IOTC develops a strategy which addresses the main impacts of the Indian Ocean purse seine fisheries on the ecosystem. **Y2**: Credible and peer reviewed risk assessment published. **Y3**: Management measures to address any identified risks, if any, are agreed and undergoing implementation. IOTC puts into place management measures, as necessary, to implement an ecosystem approach to fisheries management. Additional data and information gathering initiatives, if necessary, formally agreed and in place. **Y4**: An independent evaluation provides objective evidence that the ecosystem-based management strategy is working. An internal evaluation provides objective evidence that the ecosystem-based management strategy is being implemented successfully.		

Fisheries Improvement Action Plan

Standard requirement	Actions	Timescale / milestones	Progress / outcome	Revised milestone
12. 3.1.1 Legal and customary framework The management system exists within an appropriate and effective legal and/or customary framework. ***IPG 17***	**Action 12:** Review to determine the extent and effectiveness of national legislation of IOTC CPCs in delivering management outcomes consistent with MSC Principles 1 & 2.	**Y2**: An independent review identifies major legislative gaps in national efforts to comply with IOTC CMMs. **Y4**: Evidence presented that any major legislative gaps are being effectivity addressed.		

Appendix A: Pre-assessment scores

From: Huntington, T. (2017). Detailed Action for the Indian Ocean Purse Seine Tuna Fisheries Improvement Project. Poseidon Aquatic Resource Management Ltd, Windrush, Warborne Lane, Portmore, Lymington, Hampshire SO41 5RJ, UK. Issued 31 March 2017.

Performance Indicator (PI)	UoC A Free-school			UoC Associated			IPG priority	
	YFT	BET	SKJ	YFT	BET	SKJ	Critical	Non-critical
1.1.1 Stock status	60	100	100	60	100	100	✓	
1.1.2 Stock rebuilding	<60	80	80	<60	80	80		
1.2.1 Harvest strategy	<60	<60	<60	<60	<60	<60	✓	
1.2.2 HCRs	<60	<60	80	<60	<60	80	✓	
1.2.3 Information and monitoring	60-79	60-79	60-79	60-79	60-79	60-79		✓
1.2.4 Assessment of stock status	80	85	80	80	85	80		
2.1.1 1° species outcome	100	100	100	100	100	100		
2.1.2 1° species management	80	80	80	80	80	80		
2.1.3 1° species information	60	60	60	60	60	60		✓
2.2.1 2° species outcome	<60	<60	<60	<60	<60	<60	✓	
2.2.2 2° species management	<60	<60	<60	<60	<60	<60	✓	
2.2.3 2° species information	60	60	60	60	60	60		✓
2.3.1 ETP species outcome	90	90	90	80	80	80		
2.3.2 ETP species management	90	90	90	90	90	90		
2.3.3 ETP species information	70	70	70	70	70	70		✓
2.4.1 Habitat outcome	90	90	90	60	60	60		✓
2.4.2 Habitat management	80	80	80	70	70	70		✓
2.4.3 Habitat information	100	100	100	70	70	70		✓
2.5.1 Ecosystem outcome	80	80	80	60	60	60		✓
2.5.2 Ecosystem management	<60	<60	<60	<60	<60	<60	✓	
2.5.3 Ecosystem information	60	60	60	60	60	60		✓
3.1.1 Legal & customary framework	60-79	60-79	60-79	60-79	60-79	60-79		✓
3.1.2 Consultation, roles & responsibilities	>80	>80	>80	>80	>80	>80		
3.1.3 Long-term objectives	>80	>80	>80	>80	>80	>80		
3.2.1 Fishery-specific objective	>80	>80	>80	>80	>80	>80		
3.2.2 Decision-making processes	>80	>80	>80	>80	>80	>80		
3.2.3 Compliance & enforcement	60-79	60-79	60-79	60-79	60-79	60-79		✓
3.2.4 Management performance	>80	>80	>80	>80	>80	>80		