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**Pacific Islands Forum Fisheries Agency (FFA) Action Plan for  
Sea Turtle By-Catch Mitigation**

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# Pacific Islands Forum Fisheries Agency (FFA) Action Plan for Sea Turtle By-Catch Mitigation

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## Abstract

Sea turtle populations have been reduced as a result of a range of human-induced activities, with fishing being one of the causes. The Western and Central Pacific Fisheries Commission (WCPFC) agreed on Resolution 2005-04 to mitigate the impact of fishing for highly migratory fish species on sea turtles. Pacific Islands Forum Fisheries Agency (FFA) Members are committed to the conservation of sea turtles due to their cultural and social significance and their recognition of sea turtles as a species of high conservation value. FFA Pacific Island Members in the absence of specific research on the use and application of sea turtle mitigation gear, including circle hooks, in waters of their respective Exclusive Economic Zones, have in WCPFC fora, supported a flexible approach to sea turtle by-catch mitigation. In March 2008, FFA members participated in a workshop which developed an Action Plan for Sea Turtle By-Catch Mitigation. This paper provides information on the FFA Action Plan for Sea Turtle By-Catch Mitigation including strategies and activities relating to sea turtle by-catch mitigation for which FFA Members will be endeavouring to implement during the life of the Action Plan.

## Introduction

Sea turtles are of traditional and cultural importance throughout the Pacific Islands. Sea turtle populations have been reduced as a result of human-induced activities with fishing being one of the causes. Sea turtles are caught in small-scale coastal fisheries, but industrial tuna fisheries, especially longlining, take turtles incidentally while targeting other species.

Industrial tuna fishing is not the main cause of turtle mortality, with some estimates that industrial tuna fishing is responsible for about 10% of mortality of adult turtles, but this is not known with any certainty. However the principles of responsible marine resource use, the precautionary principle, and an ecosystem approach to fisheries management require that fisheries managers and fishers attempt to reduce fishery-induced by-catch of endangered and sensitive species, including sea turtles. In 2005 the Food and Agriculture Organization of the United Nations (FAO) produced Guidelines to Reduce Sea Turtle Mortality in Fishing Operations (the Guidelines), and these were subsequently endorsed by the FAO Committee on Fisheries (COFI).

In 2005 the Western and Central Pacific Fisheries Commission (WCPFC) agreed on Resolution 2005-04 which encourages Commission Members, Cooperating Non-Members and Participating Territories (CCMs) to: implement the FAO Guidelines; report information on turtle interactions to the Commission; and enhance implementation of turtle mitigation measures that are already in place. The resolution also encourages CCMs to implement specific turtle by-catch measures in regard to purse-seine and longline fishing operations. As concerns purse-seine fishing, these include: avoiding encirclement of sea turtles during purse-seine sets, and efforts to safely release those that are captured; cease net hauling if turtles are entangled in the net, until the turtle can be disentangled and released; and monitoring or redesigning of FADs to minimise entanglement of turtles in FAD appendages. As regards longline fishing, they include: research trials of appropriate-size circle hooks (which have been shown to catch fewer turtles); and a requirement by longline vessels flagged in CCMs to carry and where necessary use de-hookers, line-cutters, scoop nets and other equipment that will assist in

the prompt release of incidentally caught sea turtles. The resolution also encourages CCMs to undertake research and trials of circle hooks in recreational and artisanal fisheries.

Like other Commission resolutions, Resolution 2005-04 is not binding on CCMs. Some CCMs have been actively promoting the need to introduce a binding Conservation and Management Measure (CMM) to mitigate the impact of fishing for highly migratory fish species on Sea Turtles. FFA Members are committed to the conservation of sea turtles due to their cultural and social significance and their recognition of sea turtles as a species of high conservation value. A number of international agreements have been made and national measures taken to conserve turtle nesting beaches and all FFA Pacific Island Members (PIM) have legislation regulating the taking of sea turtles in small-scale coastal fisheries. At least three have or are preparing national sea turtle management or recovery plans. Some members in some fishing licencing conditions have reference to the need to release incidentally captured turtles.

FFA PIM in the absence of specific research on the use and application of sea turtle by-catch mitigation gear, such as circle hooks, in waters of their respective Exclusive Economic Zones, have in WCPFC fora, supported a flexible approach to sea turtle by-catch mitigation. FFA members are also aware of the possibility of future regulatory action from the USA and other developed international markets, which may prevent the export of fisheries product to such markets, unless exporting countries have in place sea turtle by-catch mitigation measures that are considered satisfactory by the importing country.

### **FFA Workshop on Sea Turtle Mitigation**

In view of the above considerations, FFA convened a Workshop on Sea Turtle Mitigation, which was held in Nadi from 11-12 March 2008. The objective of the workshop was to:

- consider monitoring and research activities needed to allow FFA PIM to assess the scale and scope of sea turtle/ fishing gear interactions in their fisheries, and determine the extent to which sea turtle by-catch is a problem;
- determine possible sea turtle by-catch mitigation measures that could be adopted by FFA PIM, including, but not limited to the use of circle hooks;
- discuss possible funding and implementation mechanisms for the activities proposed; and
- identify issues related to sea turtle by-catch mitigation of relevance to the WCPFC.

The workshop was attended by representatives of 11 FFA PIM (Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Samoa, Solomon Islands, Tokelau, Tuvalu, Vanuatu, as well as representatives of Australia, several regional organisations (FFA, SPC, SPREP, USP-IMR) one NGO (WWF) and resource people with sea turtle by-catch mitigation expertise. Presentations and background information related to sea turtle by-catch mitigation were presented during the course of the workshop. It is intended to place workshop presentations, a list of reference materials provided to workshop participants and a list of workshop participants on the FFA website ([www.ffa.int](http://www.ffa.int)) in the future.

The workshop resulted in the development of a draft Action Plan for Sea Turtle By-Catch Mitigation (the Action Plan) which proposes three strategies (data collection and monitoring, research and investigations, and mitigation measures) and a range of specific activities within each category that need to be carried out.

The draft Action Plan was circulated to all workshop participants and other FFA members who were unable to participate in the workshop via e-mail on 3 April 2008 and comments were requested by the following week. No comments were received opposing the format or content of the draft Action Plan including that relating to the FFA Secretariat suggested prioritisation of activities or cost estimates. The FFA has commenced discussions with regional organisations regarding implementation of prioritised components of the finalised Action Plan (following) over the next 12 months.

**Pacific Island Forum Fisheries Agency**  
**Action Plan for Sea Turtle By-Catch Mitigation**

**Objective**

To reduce the impacts of fishing for highly migratory fish species by FFA members and in FFA member country waters on sea turtles.

**Scope**

The Plan covers a range of collaborative activities to be carried out by Pacific Island Forum Fishery Agency members, relevant Pacific Island regional organisations, research agencies, and other concerned parties.

In developing the plan, a number of generalised issues and constraints have been taken into account, as follows:

- The limited capacity of FFA fishery and other agencies to absorb the additional workload of dealing with sea turtle/ tuna fishery interaction issues, and the limited resources available to support this;
- Currently, data and information on turtle/ tuna fishery interactions is very uncertain. The extent of the problem in the WCPO and world wide is not well known or understood;
- There will always be a trade-off in FFA PIMs between the desire to protect sea turtles and the need for fishery revenue, employment and food production;
- No detailed risk assessment has been carried out. The costs and benefits of turtle by-catch mitigation action versus no action (such as compliance with domestic import requirements of another country) have not been determined;
- Dealing with sea turtle/ tuna fishery interaction issues may have little impact if other anthropogenic threats to sea turtles are not also addressed;
- Funding for sea turtle-related activities will be limited. If funding is available, it might have more impact if spent on other turtle conservation measures (such as protecting nesting beaches) rather than on turtle-fishery interaction issues.

The Plan has been formulated with these constraints and issues in mind.

The time frame of the Plan is three years in the first instance: from 1 July 2008 to 30 June 2011.

**Strategies**

The objective of the Plan will be achieved through three strategies, which are listed below along with major issues pertaining to them:

1. Undertake **collection and monitoring of fishery data** to improve our understanding of the nature, scope and scale of sea turtle/ tuna fishery interactions in order to develop appropriate responses.
  - There is a need for improved observer coverage throughout fishery area - some countries have large well-established observer programmes, others not yet;
  - Collection of sea turtle-related data may not always have a sufficiently high profile, and needs to be raised;
  - There should be more analysis and utilisation of existing data, and a plan to use future data that may be gathered by observers;
  - The quality and nature of observer data are sometimes insufficient, particularly in regard to species identification and size information;
  - Fishing vessel logsheet data on sea turtle interactions is poor or non-existent;
  - Artisanal/subsistence interactions are likely to be significant.

2. Conduct **research and investigations** to obtain information that cannot be acquired through monitoring, and test possible mitigation measures.
  - The rarity of sea turtle interactions can be an impediment to research and fishing gear trials;
  - Circle hook trials in FFA PIM should focus on the effects on target species and catch value rather than on their effectiveness on sea turtle interaction (which is already known);
  - The cost of carrying out gear/ mitigation trials at sea can be high, and may be coupled with difficulty in achieving statistical reliability;
  - Circle hook trials can be carried out through ‘hook-swap’ programmes (substituting standard hooks with circle hooks on commercial fishing vessels) as well as through dedicated research cruises;
  - Fleets and techniques evolve – today’s solution may be obsolete tomorrow
  - Poor capacity of observers / fishers to carry out tagging;
  - Domestic fleets should be prioritised for ‘hook swap’ programmes;
  - Hook styles should be well monitored and documented. Samples should be taken of gear styles already in use;
  - Full account should be taken of other recent research on sea turtles, and the knowledge of fishermen, crew and observers;
  - There is a need for better observer coverage and better fishing logbook recording of turtle-fishery interactions;
  - Uncertainty over sea turtle stock structure makes it difficult to properly assess the impact of turtle-fishery interactions on turtle populations.
3. Introduce **mitigation measures** to encourage/ require that fishers take steps to reduce (a) turtle/ fishery interactions and (b) mortality rates resulting from such interactions.
  - Turtle by-catch mitigation measures should not transfer the problem to other sensitive species (such as sharks);
  - Mitigation measures need to be acceptable to fishers (reduction in turtle interactions without negatively affecting catches and profitability)
  - Distribution of turtle by-catch mitigation equipment (line cutters, de-hookers, etc.) can have positive impact and generate goodwill in and towards the fishing industry;
  - All mitigation activities need to be backed up by fisher training and education;
  - Mitigation programmes need to be ongoing due to fleet and personnel turnover – one-off activities will not have a sustained impact;
  - Domestic vessels are probably easier to target than foreign fleets, and enforcement of turtle by-catch mitigation regulations will be easier.

A number of activities under each of these three strategies are outlined below. It is recognised that the three strategies are inter-linked, and that some activities straddle more than one strategy.

### **Activities**

Activities proposed to be carried out under the three strategies outlined above are as shown in the tables overleaf.

### **Funding**

Initial support for priority elements of the Plan will be provided by FFA using dedicated funds provided by AusAID and other donors for this purpose. Where appropriate, specific activities may be submitted for funding by the WCPFC Special Requirements Fund or other assistance provided by the WCPFC and / or developed Commission members or developed Co-operating Non-members. Other donor funding and in-kind support and expertise will also be sought during the process of implementing the Plan.

### **Coordination and implementation**

Implementation of the Plan will be by national governments, FFA, regional organisations and other concerned parties (including NGOs) as appropriate. Coordination of Plan implementation and overall monitoring will be undertaken by FFA.

**Table 1: Data Collection and Monitoring Activities**

Activity		Implementing party	Cost estimate (USD)	Priority *(H, M, L)
1.1	Prioritise observer data on turtle-fishery interactions through development of specialised competency-based training modules and observer debriefing procedures.	FFA/ SPC with support from SPREP and FFA Members	0 (absorbed into ongoing activities).	H
1.2	Use available turtle-related funding to carry out sea turtle by-catch mitigation-related training of observers. Specific observer workshops could be piggy-backed onto general observer training and workshops.	FFA with support from SPC and SPREP	\$50,000+/workshop (excludes salaries of trainers)	H
1.3	Produce a guide to hook and other longline gear types for observers (waterproof card style) to assist in improving observer data.	FFA initiation with support/ carriage by SPC	\$25,000	H
1.4	Use available sea turtle-related funding to purchase and provide necessary equipment (de-hookers, line cutters etc. as well as cameras, safety gear and other items) for observers in association with sea turtle-mitigation training activities.	FFA supported by SPC through training activities.	\$50,000 initial exercise	H
1.5	Expand FFA observer programme to assist FFA member longline fleet in meeting required observer coverage obligations.	FFA to initiate with support from FFA Members	Unknown	M
1.6	Update 2001 SPREP/ SPC analysis of observer data on turtles and provide timely/ annual analysis of data. Analysis to be presented to WCPFC Scientific Committee.	FFA initiation for SPC OFP to undertake in collaboration with SPREP	\$25,000+ (includes developing appropriate statistical techniques and undertaking analyses)	H
1.7	National studies to extract information on turtle-fishery interactions from historical and recent observer reports, forms, diaries and improved debriefing processes (Could be carried out by fisheries officers or national consultants).	FFA Members with FFA/ SPC support as requested	0 - \$15,000+ (if consultants used)	H
1.8	Improve longline vessel logsheet recording interactions with turtles and other species of concern (sea birds, sharks), especially in area north of 20°N and west of 150°E and improved descriptions of fishing gears used. (Linked to Data Collection and Monitoring Activities – see 1.2)	FFA Members (bilateral arrangements) with FFA/ SPC support as requested	? – requires additional observer capacity	M
1.9	Data Collection Committee (DCC) to consider revising logsheets to improve Species of Special Interest (SSI) reporting.	DCC (includes SPC, FFA and FFA Members)	0 (absorbed into ongoing activities).	M
1.10	Obtain and use informal information and data from fishing vessel skippers and crew (including descriptions of fishing gears used) to better understand incidences of sea turtle interactions. Information should be collected by fisheries officers, port samplers, observers and others, and collated and reported annually to the WCPFC.	FFA Members with FFA/ SPC support as requested	0 (absorbed into ongoing activities).	M

\* **H = High, M = Medium, L = Low.**

**Table 2: Research Activities and Investigations**

Activity		Implementing party	Cost estimate (USD)	Priority * (H, M, L)
2.1	Document technical details (particularly hook type and size, bait type, line specifications etc.) of current Pacific Island longline fishing operations.	FFA initiation with support/ carriage by SPC and support by FFA Members	\$50,000 (?)	H
2.2	Coordinated hook-exchange programmes in longline fishing operations (circle hooks to replace other hook types) and associated collection of catch information to trial circle hooks. Activity could be associated with bait trials and/ or distribution of demonstration hooks to further encourage voluntary adoption.	FFA initiation supported by SPC and consultants as required with carriage by FFA Members	\$70,000 initial exercise	H
2.3	Dedicated quantitative at-sea circle hook trials to assess effect of circle hooks on catch rates of target species.	FFA Members wishing to undertake such trials to specifically request initial consideration of such research and seek support from FFA/ SPC / and WCPFC. Such exercises will require substantive dedicated funding from WCPFC and / or developed Commission members or Co-operating Non-members.	Unknown but very expensive (in excess of \$200K for even basic quantitative study)	M
2.4	Encourage development and trial of innovative sea turtle mitigation equipment and technology through pilot testing and awareness activities. (SPC Fisheries Newsletter, SPC/ FFA websites, publicity for Smart Gear competition, etc.).	SPC with support from FFA	Initial \$30,000 for pilot testing of innovative sea turtle mitigation equipment and technology. (Awareness raising absorbed into ongoing activities).	M
2.5	Include DNA sampling and turtle tagging in observer training and equipment supply activities under 1.1 & 1.2	FFA initiation with support by SPC/ SPREP and USP-IMR.	Unknown but low (covered by other parts of Action Plan).	M
2.6	Establish a programme of sea turtle DNA sampling by fishery observers, to assist in Pacific Island sea turtle population identification.	FFA initiation/ with support/ carriage by SPC/ SPREP/ USP-IMR and FFA Members	Unknown	M
2.7	Coordinate analysis of DNA samples taken by observers, to assist in Pacific Island sea turtle population identification.	SPREP/ USP-IMR/ partner research agencies	Unknown	M
2.8	Expand existing SPREP flipper tagging, and if possible satellite tagging of turtles, through the observer programmes.	FFA initiation with support/ carriage by SPREP/ SPC/ USP-IMR and FFA Members	Unknown	M

Activity		Implementing party	Cost estimate (USD)	Priority * (H, M, L)
2.9	Coordinate tag recapture data and satellite tag tracking data (if applicable), enter data into TREDS database, with regular reporting back to FFA PIMs, regional agencies, WCPFC and fishing industry.	SPREP supported by SPC and USP-IMR, with input and support by FFA Members and FFA as requested	Unknown but low (absorbed into ongoing activities).	M
2.10	Source and analyse any commercial fisheries logsheet data describing sea turtle interactions (linked to Data Collection and Monitoring Activities– see 1.6 above).	FFA initiation with carriage by SPREP and SPC	Unknown	M
2.11	Examine coastal fishery statistics and research reports for information on turtle-fishery interactions in artisanal and subsistence fisheries. Information could be reviewed by fisheries officers or national consultants and should be reported annually to the WCPFC.	FFA Members supported by SPREP /SPC with support by FFA as requested.	0 - \$15,000+ (if consultants used)	M

\* **H = High, M = Medium, L = Low.**



**Table 3: Mitigation Measures and Activities**

Activity		Implementing party	Cost estimate (USD)	Priority *(H,M, L)
3.1	Incorporate requirements for sea turtle by-catch mitigation (e.g. carriage and use of release equipment) in foreign and domestic licence arrangements.	FFA Members supported by FFA.	Unknown but probably low	H
3.2	Delivery of initial training of trainers (TOT) course for fisheries/ maritime training institutions is required for delivery of sea turtle by-catch mitigation awareness and training programmes to fishers, especially in longline fisheries. After TOT course delivery the development of ongoing funding mechanisms (government funds, grants, fisher levies, etc.) will be needed to support national fisheries/ maritime training institutions to deliver sea turtle by-catch mitigation awareness and training programmes to fishers.	FFA initiation with carriage by SPC and SPREP.  After delivery of TOT course, carriage by FFA Members.	\$50,000 for initial TOT course (including syllabus development and materials) for 12-14 participants.	H
3.3	Back up national delivery of turtle by-catch mitigation awareness and training programmes to fishers (see 3.2 above) with release equipment supply and ongoing (long-term) support (linked to Data Collection and Monitoring Activities – See 1.4). Again, this long-term support will require development of ongoing funding mechanisms (government funds, grants, fisher levies, etc.).	FFA initiation with SPC/ SPREP carriage/ support.	Unknown but initial \$50,000 investment in release equipment considered reasonable.	H
3.4	Demonstrate circle hooks via hook exchange programmes in countries with predominantly domestic fleets (linked to Research activities – see 2.2 above).	FFA initiation supported by SPC and consultants as required with carriage by FFA Members	\$70,000 initial exercise	H
3.5	Licensing and access agreements to require conduct of protected species workshops / sea turtle by-catch mitigation awareness and training programmes, with mandatory participation by fishermen (linked to 3.2 above).	FFA Members supported by FFA and SPC	Unknown but low	H
3.6	Utilise observer programmes as a conduit for information on uptake and problems with existing and new turtle by-catch mitigation measures and techniques.	FFA Members supported by FFA and SPC	Unknown but low	M
3.7	Create ownership and encourage voluntary participation in turtle by-catch mitigation activities by involving fishers in research activities, especially tangible and easily communicated activities such as tagging, and ensuring that research results are fed back to them.	SPC/ SPREP/ USP-IMR/ with FFA support with carriage by FFA Members	Unknown but low	M

\* **H = High, M = Medium, L = Low.**

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