The Cook Islands Ministry of Marine Resources

Action Plan for Sea Turtle Mitigation

Objective:

To reduce the impacts of fishing for highly migratory fish species by fishing vessels operating in the Cook Islands offshore tuna fishery.

Scope:

This plan has been developed to support the Regional Action Plan for Sea Turtle Mitigation implemented by FFA member countries on 1 July, 2008. The plan will be reviewed annually and will also be amended in accordance with any changes made to the regional plan.

While real constraints such as funding, manpower, poor knowledge of the resource and interactions exist, this plan sets out a program of actions that aim to improve knowledge of fishing practices and interactions over time and also establishes current ~~"b~~best practice" mitigation methods for implementation.

This plan is targeted primarily at vessels operating within fishery waters and on high seas areas of the WCPFC region. Those flag vessels operating in the EEZ of other Pacific Island States will be subject to terms and conditions applied by the relevant licensing State.

Focal Point

The Fisheries Officer designated as the focal point for plan implementation is **Pamela Maru**.

Sea Turtle Species

Four species of turtle are known to exist in the fishery waters of the Cook Islands the most common of which is the green turtle (*Chelonia mydas*) which nests in the more sparsely populated outer islands. The less common hawksbill turtle (*Eretmochlelys imbricata*) is also known to nest in some areas and there have been rare reports of loggerhead turtle (*Caretta caretta*) sightings. Satellite tracking technology has also tracked leatherbacks (*Dermochelys coriacea*) transiting the EEZ from French Polynesia through to Fiji.

Longline Fishing

Offshore longline fishing has occurred since before the declaration of the EEZ in 1977 beginning first with the Japanese fleet and later through to 2000 the Korean and Taiwanese fleets. Industrial longline fishing by Cook Islands vessels has occurred since 1994 with two 150 tonne

vessels operating expanding in 2002 to 45 vessels and in recent years leveling off to around 20 vessels annually.

The Cook Islands is somewhat unique amongst Pacific island countries in that there are two distinct longline fisheries, one based in Rarotonga targeting swordfish and tunas for primarily domestic consumption, and the other operating primarily from American Samoa targeting albacore for canning purposes. Longline gear configurations are somewhat different for each fishery and this likely has an impact on sea turtle interaction and potential mortality.

Beverly (2007) found the Rarotonga-based fishery utilizes gear configurations and practices similar to other longline fisheries targeting swordfish: sets are primarily shallow, i.e. utilizing less than 10 hooks between floats and targeting the upper 100-150 meters of the water column. Common baits used are squid and sardine in conjunction with chemical light sticks. Because of their small size (about 14 meters in length), vessels usually fish relatively close to Rarotonga, within about 60 miles. Fishing is conducted year-round, although it was reported that target swordfish catches are better in the winter months.

The American Samoa-based vessels are larger vessels and undertake longer trips into the northern portion of the Cook Islands' Exclusive Economic Zone (EEZ). In comparison to the Rarotonga-based vessels, this fleet utilizes deep-set longline gear that targets albacore at 300-350 meters. Several vessel operators indicated that the fishing season in the northern portion of the EEZ lasts from July/August to January.

Sea turtle Interaction

Logsheets submitted to MMR by the industry do not indicate the presence of turtles as bycatch in either fishery. In addition to the one loggerhead documented in July, 2007, there have been a few anecdotal reports by captains of turtle captures in the Rarotonga-based fishery. It is very difficult to validate this information and not possible to determine past or current levels of turtle interaction with vessels operating in the Cook Islands EEZ.

A review of turtle bycatch in the Western and Central Pacific Ocean was undertaken by the South Pacific Commission on behalf of the Secretariat for the Regional Environment Programme in 2001 ((OFP 2001). The review concluded that deep day sets in the Western South Pacific (10° S—35° S) typical of those in the American Samoa albacore longline fishery had the lowest rate of interaction, while shallow sets in the Western Tropical Pacific (10° N—10° S) accounted for the highest interaction rates.

Results from similar projects undertaken in other Pacific island countries showed the rate of observed turtle interactions with shallow-set fisheries to be greater than those observed in deep-set fisheries. An example of a high observed turtle interaction rate in a shallow-set longline fishery is that in Palau, a fishery dominated by Taiwanese longliners using some live bait and five to seven or eight hooks per basket. Palau, which commenced its observer program in 2007, reported that observers there recorded 18 interactions with sea turtles (16 olive ridleys, 2 greens) on just 12 trips from April to December, 2007.

Of those 18 turtles, 4 were deemed by observers to be in A1 condition (~~a~~live and healthy'), and 8 were recovered in A2 condition (~~a~~live—injured, distressed). All 12 were tagged with flipper tags and released. The total of 18 interactions in sets containing a total of 67,788 hooks equates to a nominal catch per unit of effort (CPUE) rate of 0.26 turtles per 1,000 hooks. In comparison, during 2004-2006 the domestic deep-set albacore fishery based in Fiji recorded a total of eight turtle interactions in a total of 63 observed longline trips covering 2,202,554 hooks in 817 sets. This equates to an average of one interaction per 275,319 hooks or on average one turtle for

every 102 sets. Another way of expressing the interaction rate is 0.0036 turtles per thousand hooks.

It should be kept in mind that these interaction figures may not be representative of either fishery as a whole, but the difference in the order of magnitude between shallow and deep set fisheries is nonetheless significant. Also significant is comparison of the shallow set fishery with the deep set fishery in the Marshall Islands that targets bigeye. In that fishery it was found that while turtle interaction rates for observed sets during 2005-2007 were less than Palau (0.014 turtles per thousand hooks), mortality was 73 percent. The higher mortality rate in the deep set fishery is likely due to turtles being unable to reach the surface to breathe after being hooked.

It is not known what one might expect in turtle interaction rates for either the Cook Islands' Rarotonga-based or American Samoa-based fisheries. Much will depend on the level of observer coverage, oceanographic factors, sea turtle density in the areas where fishing takes place, and other factors. In general, however, on the basis of the SPC 2001 review and experience elsewhere, one might expect greater rates of interaction in the Rarotonga-based fishery than the American Samoa-based fishery.

This does not mean the absolute number of turtle interactions in the shallow-set Rarotonga-based fleet may be greater, however. The number of vessels active in Rarotonga is relatively small, 7, versus more than 20 in American Samoa. The effort by the Rarotonga vessels, 1,000-1,200 hooks per set, is also far less than the 2,400-3,000 hooks per set believed to be utilized by the American Samoa-based fleet.

Sea Turtle Mitigation Program

A turtle mitigation program initiated through the NOAA *Sea Turtle Conservation, Management, Mitigation and Outreach* project has been in place since May 2008. Major outputs of the project were:

- The production of relevant sea turtle bycatch awareness and training materials aimed at MMR staff, onboard fishery observers, and the tuna industry in the Cook Islands. An outline of the Observer Guide is appended as **Attachment 1.**
- A workshop aimed at advancing skills of MMR staff in the future training of observers.
- Industry outreach activities, including informal meetings, discussions, and presentations to vessel operators in Rarotonga and American Samoa.
- The provision of necessary supplies and examples of turtle bycatch mitigation equipment to the Ministry of Marine Resources.

The mitigation program is coordinated by Fisheries Officer Pam Maru who maintains information exchanges with NOAA and is also actively involved in regional turtle mitigation efforts through the FFA regional Action Plan for Sea Turtle Mitigation implemented July 1, 2008. Following the template established by the NOAA *Sea Turtle Conservation, Management, Mitigation and Outreach* project, the Cook Islands program will include:

- Workshops to advance the skills of trainers as well as observers;
- Industry outreach activities involving vessel operators in Rarotonga and American Samoa with an annual mitigation workshop to update operators on the progress of the

program as well as any new techniques. New operators that enter the longline fishery, will also be required to undertake training as the need arises.

- The provision of mitigation information, data forms and equipment to vessel operators;
- Ongoing communication and cooperation with regional organizations and NOAA with respect to information updates, the development the gathering, processing and distribution of data; training of trainers and supply of equipment and expertise as required; and
- Tagging and release of turtles.

Mitigation Program Strategies

The following details the three regionally adopted strategies and the consequent national actions to support those strategies:

1. Undertake **collection and monitoring of fishery data** to improve understanding of the nature, scope and scale of sea turtle/ tuna fishery interactions in order to develop appropriate responses.

Action:

Regional Action Item	National Action Response	Implementation Status	Responsibility	Funding Source
1.1	Provide data and advice to assist FFA and SPC develop specialized competency-based training modules and observer debriefing procedures.	Data to be provided as part of regular reporting process	Focal Point	National
1.2	Participate in Regional sea turtle mitigation-related training of national observers.	Pam trained by Mike McCoy (US assistance MOU) Observer guide produced by McCoy (Guide outline Attachment 1). Initial training of observers, vessel operators and crew conducted in May 2008. Annual refreshers	Focal Point	FFA for Regional Training NOAA (observer guide, training and tools) National

		planned.		
1.2.1	Conduct national mitigation training courses for Observers.	Conducted in June 2008. Future refresher training as required.	Focal Point	National
1.3	Produce a guide to hook and other longline gear types for observers (waterproof card style) to assist in improving observer data.	SPC material distributed to Observers and vessel operators May/June 2008.	Focal Point	Regional
1.4	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.	mitigation tools, education awareness materials provided to vessels and observers, and other fisheries officers. Plan is to provide to Outer islands officers as they pass through HQ.	Focal Point	NOAA National
1.5	Participate in the expanded FFA observer program to ensure that the national observer program meets required observer coverage obligations.	Difficult to retain local observers. Observer Development strategy being developed. In meantime hired SI observer thru SPC	Focal Point	SPC Regional Observer Program National
1.7	Conduct national studies to extract information on turtle-fishery interactions from historical and recent observer reports, forms, diaries and improved debriefing processes .	Very little historical Observer data exists. Initial studies have been conducted.	Focal Point	National
1.8	Improve longline vessel logsheet recording interactions with turtles and other species of concern (sea birds, sharks),	Program of informing vessel operators crucial. Observer summaries already provided to operators to	Focal Point	Regional (for logsheet) National (awareness)

		improve reporting.		
1.9	Participate in the Data Collection Committee (DCC) efforts to revise logsheets to improve Species of Special Interest (SSI) reporting.	Pam to participate as required	Focal Point	Regional (travel) National (data transfers)
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.	Begun in 2007. On-going Annual report to WCPFC	Focal Point	National

2. Conduct **research and investigations** to obtain information that cannot be acquired ugh monitoring, and test possible mitigation measures.

Action

Regional Action Item	**National Action Response**	**Implementation Status**	**Responsibility**	**Funding Source**
2.1	Document technical details (particularly hook type and size, bait type, line specifications etc.) of current longline fishing operations.	Documented in Steve Beverly's 2007 report of Southern zone LL. Visit PagoPago to inspect fleet and assess logsheets on an annual basis	Focal Point	National
2.2	Coordinated hook-exchange program in	Planned for September 2008	Focal Point	SPC (Beverly)

	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. Legislate hook type	with Steve Beverly & Yonat Swimmer (NOAA) New legislation an option following research results.		NOAA (Swimmer) National (gear, accommodation)
2.3	Participate in the regional project: quantitative at-sea circle hook trials to assess affect of use of circle hooks on catch rates of target species.	National trial planned for 2008/2009. Need to cater for all species linter-actions	Focal Point	National
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.).	June 2008 adopted appropriate NOAA, NZ and Aust mitigation technology. Results will be reported to WCPFC	Focal Point	National
2.5-2.7	Participate in the regional DNA training and sampling project.	Plans to conduct this in outer islands nesting areas	Focal Point with Inshore Fisheries	Regional (Regional W/S) National (Outer Islands)
2.8-2.9	Participate in the FFA/SPC SPREP turtle tagging program	Tagging of turtles has occurred since 2006.(SPREP tags)	Focal Point with Inshore Fisheries	National
2.11	Examine coastal fishery statistics and research reports for information on turtle fishery interactions in artisanal and subsistence fisheries and	2006 Report produced by Inshore fisheries Division. Reports from outer islands	Focal Point with Inshore Fisheries	National

	report annually to the WCPFC.	fisheries officers. Annual Reports		

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.

Action

Regional Action Item	**National Action Response**	**Implementation Status**	**Responsibility**	**Funding Source**
3.1	Incorporate requirements for sea turtle by-catch mitigation (e.g. carriage and use of release equipment) in foreign and domestic license arrangements.	To be made a condition of license but already operational thru cooperation with industry	Focal Point	National
3.2	Participate in the Regional 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 programs to fishers.	Pam trained through NOAA SSI program. Local training conducted (May/June 2008) and to continue annually and when new fishers enter fishery.	Focal Point	National
3.4	Demonstrate circle hooks via hook exchange programs in countries with predominantly domestic fleets (linked to Research activities –see 2.2 above).	Hook exchange program planned for September 2008. Depending on results plan to	Focal Point SPC NOAA	SPC NOAA National

		introduce legislative requirement for circle hooks for shallow setting LL		
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).	Awareness program fully participated in by captains and crew. All vessels based in Pago are required to undertake the NOAA course in Species of Special Interest (part of CI/USA MOU)	Focal Point	NOAA National
3.6	Utilize observer programs as a conduit for information on uptake and problems with existing and new turtle by-catch mitigation measures and techniques.	On-going	Focal Point	National
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.	A healthy relationship of inter-action exists between industry and MMR. Any turtle catch is to be reported. Tagging part of awareness program	Focal Point	National

International Cooperation

SPC, FFA, SPREP and WCPFC

The Ministry will continue to work closely with the regional agencies involved with turtle mitigation as part of its wider work on species of special interest. SPC has already provided

turtle identification cards and de-hooking guides which have been distributed to vessel operators. A relationship has also been developed with SPREP with regards to tagging. In general the plan is to maintain close communications and cooperation with the regional bodies to ensure the best possible mitigation methods are practiced and that accurate and timely information is available to all stakeholders.

United States:

The Cook Islands shares a border with the United States (American Samoa to the northwest of Rarotonga) and currently has 20 longline vessels based in PagoPago. In March 2008 the two countries signed a Memorandum of Understanding for cooperation in fisheries management matters and this has led to the provision of assistance with respect to turtle mitigation. In May 2008 Mike McCoy was contracted by NOAA to visit Rarotonga in order to establish a turtle mitigation program based on the NOAA Species of Interest program. An Observer Syllabus (**Attachment 1**) was developed and training of MMR personnel in turtle mitigation took place. This was followed by a training program involving vessel operators and crew firstly in Rarotonga and then PagoPago. The NOAA project also allowed for the distribution of awareness material and mitigation tools for each longline vessel. NOAA will continue to provide assistance to the Cook Islands in this area the next phase of which involves circle hook trials in September 2008.

The Offshore Division will conduct annual visits to PagoPago in order to inspect licensed vessels including with respect to turtle mitigation.

Attachment 1

SEA TURTLE – TUNA FISHERY INTERACTION IN COOK ISLANDS

A GUIDE FOR FISHERY OBSERVERS