

## **Brief Notes on the Measures Taken for Bycatch Species Conservation for Taiwanese Longline Fishery**

*Shui-Kai Chang and Yu-Yi Huang*

*Fisheries Agency, Council of Agriculture, Taipei*

### **Introduction**

The issue of bycatch of ecological related species in fishing operations has received increasing global attentions and has been of great concerns by States and conservation groups. As one of the major deep sea fishing fleets in the world, the authority of Taiwanese longline fleet recognize the responsibility of seeking international cooperation in scientific researches on the bycatch species (mainly seabirds, sea turtles and sharks) and implementing measures to protect the resources effectively without jeopardizing the interests of fishing industry. In this regard, many measures have been taken during recent years, with the hope to achieve a harmony between sustainable fisheries resources and environment. The following sections present a brief introduction to those measures for Taiwanese longline fleet.

### **Observer Program**

One of the major concerns on conserving the bycatch species is the lack of sufficient and detailed bycatch data from the fishery which has hindered the research on the stock status of the resources. Usually these data were not reported on the regular fishermen logbooks, or reported as a combined category without separation of species.

To collect this information, a pilot observer program was launched in 2001 with one observer for one short trip. The number of observers has increased thereafter with longer observation. In 2005, there were totally 16 observers dispatched to the three Oceans, with 6 of them in the Indian Ocean for 9 trips. Some of the trips were continued to early this year. They collected detail information on the bycatch species during the operations, as well as biological samples from dead individuals.

A preliminary report on the observation will be provided separately.

### **Administrative Regulation**

To protect the bycatch resources from fishing operation, a management regulation has been publicized in February 2005. It requires fishing vessels that are operating on the high seas carrying necessary devices on board, such as scoop net and line cutters, during the voyage or operation periods, for appropriate release of incidentally caught sea turtles and seabirds. The bycatch individuals shall be released in alive or discarded to sea in dead. Bycatch information is required to be recorded on the logbooks. A new format of logbook has been designed and provided to fishermen for that purpose. But currently detail species information on sea turtles and seabirds was not required due to the difficulty in species identification for fishermen.

To reduce seabird incidental catch, a special regulation was introduced in 2004. Vessels fishing in waters south of 30°S are required to deploy a tori line during line setting. Since the incidental catch of seabirds and consequent loss of baits have caused concerns to the fishermen fishing in waters of high latitude in the south hemisphere, they have also taken voluntary measures at the same time to mitigate the situation, such as setting line before dawn, installing second set of tori line, using

semi-thawed baits, etc.

According to Wildlife Animal Conservation Law enacted in 1989, the following five sea turtles are designated as endangered animal species: green turtle, loggerhead turtle, olive ridley turtle, leatherback turtle and hawksbill turtle. People are prohibited to hunt, catch and kill them.

For sharks, to be in compliance with the Resolutions adopted by IOTC, ICCAT and IATTC, vessels are requested to transship and offload fin and carcasses together. Up to the first point of landing, the ratio of fin-to-body weight of sharks shall be under 5%. Besides, live non-targeted fishes that are caught incidentally should also be released.

## **NPOA**

To be in line with "the International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries" of FAO, the "National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (NPOA-Seabirds)" was drafted in 2004 and adopted in May 2006. The NPOA will come into effect in October of 2006 and requires fishermen and industries adopting appropriate measures in accordance with the NPOA.

The NPOA on sharks was started drafting in 2002. After deliberation with scholars and experts, the draft was finalized in April 2006. In the NPOA, the finning situation is prohibited, and the ratio of fin-to-body weight is also set to comply with relevant regulations of international RFMOs. This NPOA will be used as guidance for the developing of conservation measures on sharks in the future.

## **Education**

Several types of poster, sheets and booklets for guidance of mitigation measures of reducing seabird by-catch, thorough utilization of shark catch, and species identification for seabirds, sharks and sea turtles have been disseminated to the fishermen. For example, "Catching Fish, not Birds – Coexistence of Seabirds and Fisheries" was published in cartoon, poster and handbook to fishermen, fishing companies, and fisheries organizations, to raise awareness on the conservation of seabirds. "How to Release the Incidental Catch of Sea Turtle" was widely disseminated to fishermen to avoid incidental catch and to release appropriately the catch.

In addition, the information on conservation of bycatch species are conveyed to fishermen through many other means such as broadcasting by specialized fisheries radio program, introduction by observers during observing trips and while in ports, and training curriculums that fishermen have to attend regularly.

Wild Bird Federation Taiwan (WBFT) was commissioned to conduct an education program for Taiwanese fishermen in the Port Louis, Mauritius in 2005. The program was the first trial to conduct the seabird conservation education to fishermen onboard of their vessels, to introduce new mitigation measures under developing, to practice and explain how to reduce seabird mortality when caught incidentally, and to brief international agreements.

A technical workshop on reducing seabird incidental catch by longline fishery and the Sixth Session of CCSBT Ecological Related Species Working Group were held in 2004 and 2006, respectively. Industries were invited to both meetings to grasp the international concerns and the conservation measures on seabird incidental catch.

## Research

The operational level information on bycatch species has been collected by observer program. These data will be used for analyses on bycatch rate by time-area strata, by gear configuration (such as with/without deployment of tori lines to seabirds, types of branch line material to sharks, etc.), and by bait types, when more data are available. Observers have also collected weight data of shark fins and body since 2004 for the review of the ratio of shark fin-to-body weight.

A modified tori line which is easy to assemble and apply by fishermen on board has been developed for experiment. All components of the modified tori line are obtained from spare parts of longline gears and boat hardware. The cost of the whole set is about two third cheaper than the original design which will be an attractive point to skippers.

A short-term pilot circle hook experiment was conducted in 2004 by observer on a longline vessel in the Pacific Ocean. Two follow-up trips with a researcher onboard were conducted for one month each year in 2005 and 2006. No sea turtle was hooked during the trips, but preliminary results showed no significant differences in baiting time and bigeye hooking rate between circle and traditional J hooks, and the survival rate of the catch was greater with circle hooks set. No sea turtle bycatch might be because the fishing ground was in the boundary area between eastern and western Pacific Ocean where not many sea turtle observation was reported.

To further review the ratio of shark fin-to-body weight, a research project was conducted in 2005 in domestic fishing ports. Two common processing forms were noted during unloading: (1) fins, head and guts were removed; and (2) additional belly meat was removed. The fins unloaded include pectoral fins, the first dorsal fin and caudal fin. The estimated ratios of the fins are as high as 13.3% to the processed weight of the first form, and 20.0% to the processed weight of the second form.

Preliminary results from the observer data and the research project suggest the necessity to review the 5% shark fin ratio and to define clearly the "shark fin weight" and the "body weight". For example, it will need to define whether the shark fin is in dry weight or wet weight; for what species; including which fins; whether the body weight in processed weight or whole weight, and in what type of processed form.