

## **Hook, Line and Bycatch: Setting the agenda for mitigation of bycatch in longline fisheries**

**Nicolas J. Pilcher<sup>1</sup> and Roderic B. Mast<sup>2</sup>**

*1 - Co-Chair, IUCN/SSC Marine Turtle Specialist Group, Marine Research Foundation, 136 Lorong Pokok Seraya 2, Taman Khidmat, 88450 Kota Kinabalu, Sabah, Malaysia*

*Email: [pilcher@tm.net.my](mailto:pilcher@tm.net.my)*

*2 - Co-Chair, IUCN/SSC Marine Turtle Specialist Group, Conservation International, Center for Applied Biodiversity Science, 1919 M Street NW, Washington, DC 20036 USA*

*Email: [r.mast@conservation.org](mailto:r.mast@conservation.org)*

During the IUCN World Conservation Congress in 2004, we identified the need for a forum where bycatch issues could be considered at an ecological, multi-species level rather than on a case-by-case basis. We recognised that several bycatch reduction measures are already in place, but noted that there was insufficient communication and collaboration among the various species groups impacted by longline fisheries, and that opportunities might exist for cross-group information sharing and collaboration. The workshop was intended as a forum to:

- Exchange knowledge on bycatch problems and mitigation techniques among four key species groups (sea turtles, seabirds, cetaceans, sharks);
- Identify conflicts/mutual benefits of mitigation gears and fishing strategies;
- Share knowledge on the spatial-temporal overlap of distributions of these species;
- Identify needs, priorities and opportunities for collaborative mitigation research; and,
- Define a priority global agenda to create a significant and measurable reduction in longline bycatch.

The workshop held at Kota Kinabalu, Sabah, Malaysia from 26 to 30 September 2005 brought together marine resource specialists composed of managers, policy makers, scientists, NGOs, IGOs, industry representatives and fishers, from 14 countries and sharing a wealth of global experience, who worked to identify, develop, and recommend applicable and integrated solutions to reduce interactions of birds, mammals, turtles and sharks with pelagic longline fisheries.

The technical report includes commonalities, synergies and conflicts between species groups and

mitigation measures for target (and non-target) species, through the use of a comparative matrix, and identifies criteria for evaluating trade-offs in the application of bycatch mitigation methods. It highlights the potential for the use of risk-based methods for assessing i) bycatch reduction priorities and ii) the multi-species effects of bycatch reduction methods and strategies, and suggests means of monitoring and evaluating mitigation efforts with respect to performance indicators and adaptive management approaches, including timing considerations. The outcomes highlight research priorities including filling data gaps, and promising new mitigation methods and strategies aimed at raising awareness of multi-species data needs, to encourage governments and industry to collect standardised multi-species data in all observer programs. The Technical Report is envisioned to form the basis of a 'roadmap' or plan of action with regard to multi-species bycatch mitigation.

A second key outcome was a preliminary mathematical model based on existing mitigation measures and intended to assist fisheries managers in decision making. The model is a process through which decision-makers can determine the top priorities for mitigation, both in terms of the bycatch species and the mitigation options, and combinations thereof at a multi-species level. The model requires an up front determination of the species being impacted by a given fishery, which are then assigned 'conservation values' or some form of risk assessment weighting based on existing criteria. A list of all potential bycatch mitigation measures is then assembled, and a matrix drawn up of the potential positive or negative impact of any given measure on each species or species group. The model then assigns weights to species value, factors these against mitigation measures, and prioritises the top mitigation measures.