

## **Brazilian Plan for Reduction of Incidental Sea Turtle Capture in Fisheries**

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Mortality due to escalating incidental captures in coastal and oceanic fisheries constitute one of the most challenging issues in sea turtle recovery and protection. By 1990, fishery related bycatch of these species was already widely considered the greatest anthropogenic cause of their mortality.

For twenty one years, the TAMAR/IBAMA Project has been consistently and continuously working towards protection of the main nesting areas for these reptiles in Brazil. Creative strategies centered around community involvement and public awareness have been key to consolidating the concrete and widely recognized achievements of this effort. The Project has gone beyond direct protective action to include: monitoring and research along approximately 1000 km of beach in the principal sea turtle nesting and feeding areas; involvement (through direct employment) of over 450 fishermen and coastal community residents; training of approximately 120 senior level students each year; publication of various scientific articles and presentations at congresses; coordinating environmental education programs in areas surrounding the 20 conservation and research bases; and creating economic non-consumptive alternatives for the communities in which it works.

Sea turtle feeding grounds became a priority for directed and consistent action by the TAMAR-IBAMA Project in the early 1990's. Incidental capture in coastal fisheries, some of which are artisanal, was proven to be high in these areas. Research and strategies already employed by the Project were strengthened at such sites, notably:

- (i) at the Fernando de Noronha Station and the Atol das Rocas Biological Reserve, where mark and recapture studies of juveniles were conducted using diving methods;
- (ii) at the Pirambu - SE station, where incidental capture in shrimp fisheries during nesting season was monitored and addressed;
- (iii) along the coast of Paraná, Santa Catarina and São Paulo, as preliminary mortality evaluations were carried out;
- (iv) in Ubatuba, north coast of São Paulo, where the first Foraging Ground Research Station was established in 1991, followed by the second in 1992 in Almofala, west coast of Ceará.

These efforts generally amplified the organization's agenda by stimulating projects directed towards the bycatch problem in coastal areas or near oceanic islands where TAMAR was already engaged.

In recent years, national and international concern has focused increasingly on evaluating the interaction between sea turtle conservation and fisheries in a more systematic and integrated fashion. Contact with the longline fishery in particular results in considerable (and not clearly assessed) sea turtle mortality on one hand, and losses to fisheries, due to lowered productivity of target species and affected equipment, on the other.

In October of 2000, the Second Session of the IUCN World Conservation Congress (Aman, Jordan) established Resolution 2.65. In this act, which specifically concerns incidental capture of sea turtles in longline fisheries, the IUCN requests of the FAO a technical consultation to assess this phenomenon. Also included is an invitation to work in the same regard, extended to states, fishing organizations, and other potentially interested parties.

In the South Atlantic, fishing efforts for tuna and co-occurring species by Brazilian and foreign fleets are escalating. This elicits concern for sea turtles occurring along the Brazilian coast. The fishery mainly uses the long-line and drift-net methods thought to be of foremost risk to marine turtles. Recent preliminary results from pertinent studies in the Exclusive Economic Zone of this coast highlight the urgency of increasing efforts to assess problems and seek solutions (REVIZEE-MMA Program, Barata *et al.* 1998). The National Plan for Reducing Incidental Sea Bird Capture in long-line fisheries, currently being carried out in Brazil (IBAMA - CEMAVE - Center for Avian Conservation Research), would serve as an example in this regard.

In order to integrate information and results of already existing efforts, the TAMAR-IBAMA Project began, towards the end of 2001, to develop a group of strategies.

These constitute an "*Action Plan for the Reduction of Incidental Sea Turtle Capture in Fisheries*".

This Plan is being developed in conjunction with TAMAR's Regional Leadership and Research Stations, as well as prominent and potential institutional partners. These include IBAMA's Specialized Centers for Fishery Resources, the Ministry of the Environment, the Universities, NGOs and Museums dedicated to marine research, the Ministry of Agriculture, and the national fishery sector.

To achieve these objectives the following measures must be upheld:

- (i) creation of a specific coordination responsible for the sea turtle and fisheries interactions;
- (ii) prioritization of strategies already established by TAMAR to reduce incidental capture;
- (iii) work preferentially with partnerships in current similar programs;
- (iv) pursue financial support for specific high priority projects while not compromising continuation of already established work;

- (v) seek gradual involvement of key social parties through voluntary participation; and
- (vi) propose adequate policies and enforcement.

To achieve concrete and long-lasting results, it is necessary to adhere to a complex and wide-ranging group of strategies, which do not interfere with currently established protection measures. These include assessing existing infrastructure and seeking any necessary institutional reinforcement.

The approaches listed below will be discussed with all parties involved, and are defined in a preliminary fashion as follows:

1. Evaluate fishery activities, which pose risks to sea turtles through incidental capture.
2. Promote research to qualify and quantify fishery related sea turtle mortality.
3. Evaluate and quantify possible socio-economic losses correlated with incidental capture of sea turtles, and suggest alternatives.
4. Assess, evaluate and improve existing mitigation measures and develop new ones for current and future fisheries.
5. Effectively apply known mitigation measures for these fisheries.
6. Identify and promote protection of sea turtle foraging grounds, resting areas and migratory corridors in Brazil.
7. Develop and implement educational programs for those involved in fisheries regarding fishery practices, which are compatible with sea turtle conservation.
8. Expand and improve on-board observer programs to record interactions between sea turtles and fisheries.
9. Expand public involvement in sea turtle conservation.
10. Contribute technical criteria and guidelines for certification processes.
11. Encourage cooperation between corporations, non government organizations, the government, and international and national research institutions to develop and implement this Plan.
12. Support international collaboration and exchange of data regarding sea turtle mortality and population status.
13. Disseminate this Plan as well as sea turtle conservation needs in both Brazilian and international fora.

This Action Plan will be implemented in a cyclical annual framework. It will be monitored, evaluated, and reformulated throughout the process of implementation, based upon analysis of results and detected problems (adaptive planning), as well as in depth discussions with institutional partners.

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