

# **Longline-turtle interactions in Australia's pelagic longline fishery:**

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## **Nesting beaches on the east coasts of Australia**

Four of the six species of sea turtles seen in Australian waters – loggerheads (*Caretta caretta*), flatbacks (*Natator depressus*), greens (*Chelonia mydas*) and hawksbills (*Eretmochelys imbricata*) – nest regularly on various beaches along the central coast of Queensland and an adjacent islands. The leatherback (*Dermochelys coriacea*) nests sporadically on this coastline. Major nesting sites for all species are shown in Figure 1.

Mon Repos beach is the one of the most important rookeries along the Queensland east coast supporting the largest concentration of nesting turtles on this coast. It is one of the most important sites for nesting loggerheads in the South Pacific Ocean region making it crucial for loggerhead survival in the South Pacific. Other large rookeries occur on various southern islands of the Great Barrier Reef (Anon 1995).

## **Eastern Tuna and Billfish Fishery (ETBF)**

Waters off the east coast of Australia provide profitable fishing for tuna and billfish. Commercial operations are primarily longlining, but occasionally fishers use poling, rod-and-reel, handlining and trolling gear (Ward and Robins 2001).

Domestic longliners started fishing sporadically in the mid-50s off New South Wales with many operational changes in the fishery over the next 30 years. Japanese longliners were also working these waters over those years. The foreign vessels, however, have been excluded from the Australian Fishing Zone since November 1997.

There was rapid growth in the domestic fishery in the early-90s with an expansion into tropical waters near Cairns, where there are good catches of bigeye and yellowfin. In 1996, several longliners developed a fishery, mainly for swordfish, in the offshore waters off southern Queensland. The reported total number of hooks set in this area (between 20 and 30 ° S) has risen dramatically with over 5 million hooks in 2000, out of a whole fishery total of around 10 million hooks.

## **Turtle-longline interaction**

The 2000 fishing grounds of the ETBF are shown in Figure 1. The potential for negative interactions between sea turtles and longline gear is obvious given the close proximity of the nesting beaches and associated migrating turtles with the fishing grounds in southern Queensland waters and further offshore. A tagging program, run by the Queensland Department of Environment and Heritage (QDEH) since 1968, has shown that turtles migrate to rookeries from home feeding sites that are widely scattered and many will be moving through the fishing ground en route to breed. Also sea turtles, during both their juvenile and adult stages of life, will be living in the same waters that are fished by the commercial fishing operators. Given the high level of fishing effort in the eastern and northern waters of Australia it is reasonable to hypothesise that there are negative interactions between the fishing operations and endangered sea turtles.

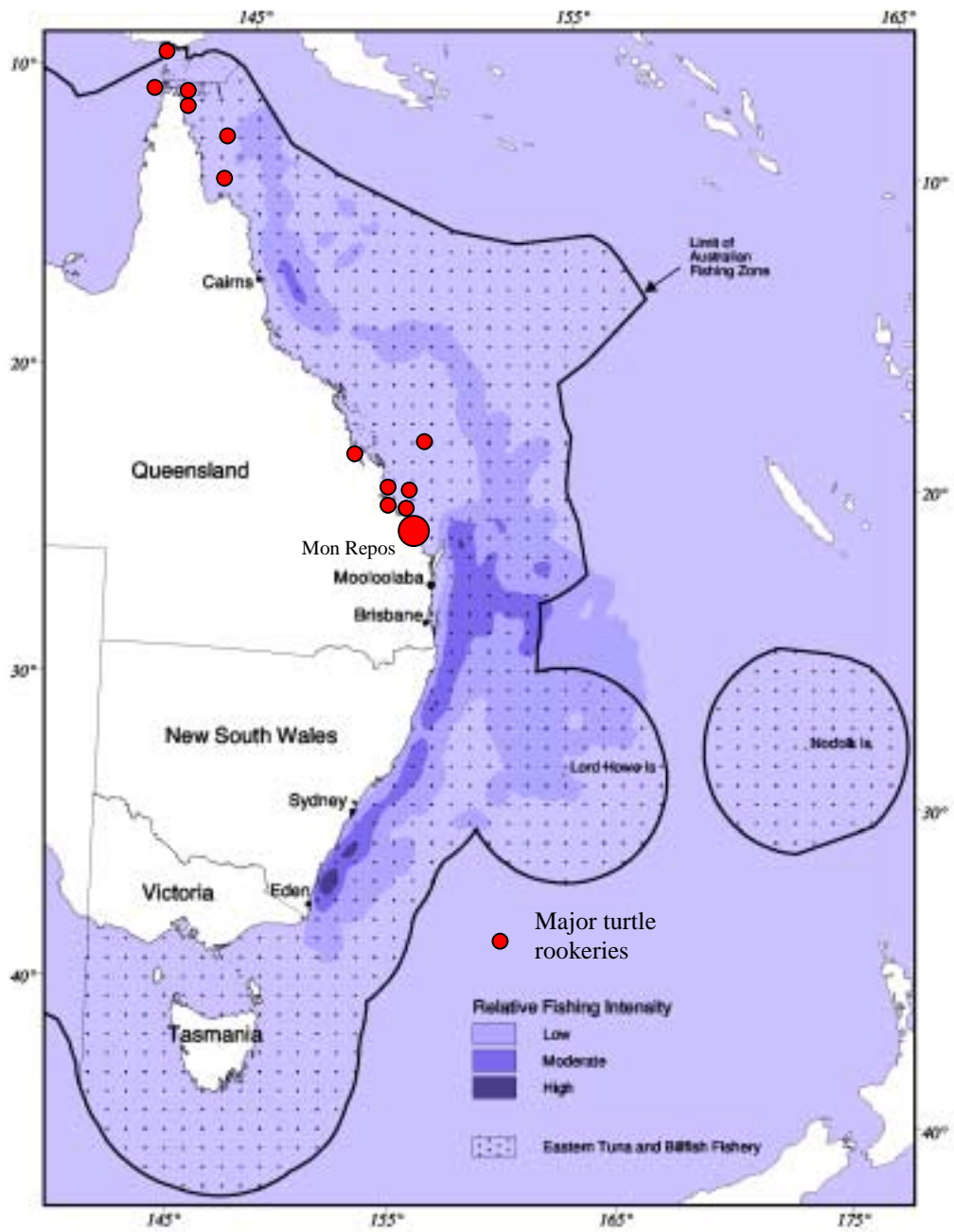


Figure 1. The longline fishing grounds of the Eastern Tuna and Billfish Fishery and major turtle nesting beaches off eastern Australia.

## **Available information on the turtle-longline interaction issue**

Data currently exists from three sources: observer reports, unverified domestic logbooks completed by fishing masters and anecdotal reports from fishers and scientists.

Australian observers worked on Japanese longliners fishing in Australian waters from 1993 to 1997. They reported the capture of 9 turtles, 2 of which were dead, after observing over 8.5 million hooks. However, not all cruises were in areas where catches of sea turtles would be expected. Also, the gear and setting techniques used by Japanese longliners were different from the current Australian domestic fleet operations, in addition to differences in the areas of operation. Nevertheless, these data demonstrate that sea turtle mortalities have occurred in Australian waters in association with longlining operations (Anon 2001).

Between 1997 to 1999 the domestic longline fishery has reported 136 turtle captures in unverified logbooks, with 90% reported as alive. During this period approximately 30 million hooks were set. As with the observer data, not all fished areas would be expected to result in turtle captures (Anon 2001).

There has been anecdotal evidence from fishers that turtles are occasionally caught on longline gear. In addition, sea turtle rescuers have reported finding injured turtles with what appears to be damage from fishing line and hooks, although it has not been shown that this was as a result of longlining operations (Limpus, QDEH: Pers. com. 2000).

Although the data are sparse, they do confirm that sea turtles interact with commercial longline fishing operations in Australian waters. However, we do not know the magnitude of the mortality resulting from these interactions.

## **Description of a project on the issue for Australia**

The issue of sea turtle mortality resulting from commercial fishing operations in Australian longline fisheries has been recognised in recent years. Currently, the Bureau of Rural Sciences has been commissioned by the Department of Agriculture, Fisheries, and Forestry – Australia to investigate this problem. This short-term exploratory project which started in July 2001 will conclude in December 2001.

The objectives of this project are to:

- 1 Identify the extent of longline turtle bycatch in Australia.
2. Outline legal frameworks and policy responses implemented in foreign fisheries on the longline-turtle bycatch issue.
3. Review the research being conducted on sea turtle-longline interactions.
4. Assess the possible usefulness of the management and mitigation responses adopted overseas to the Australian situation.
5. Establish a set of monitoring and mitigation measures that may be implemented in the Commonwealth tuna longline fisheries where turtle bycatch is an issue.

The methods employed will include a compilation and review of scientific, policy and legal information relating to the issue through literature, the world wide web and personal contact with relevant organisations and researchers. In order to better understand the issue in Australian longline fisheries we will visit ports to interview fishing masters and crew. Longline fishers will also be consulted on possible options that may be viable with their own operations and result in the minimisation of sea turtle mortality.

Anon (1995) Sea turtle encounters, Mon Repos Conservation Park. Department of Environment and Heritage, Brisbane.

Anon (2001) Australian Fishery Management Authority logbook and observer data. Extracted in 2000. Canberra.

Ward P. and Robins C. (2001) Tuna and Billfish Fisheries of the North-Eastern Australian Fishing Zone. Working paper presented at the fourteenth meeting of the Standing Committee on Tuna and Billfish (9-16 August, 2001, Nouméa). Secretariat of the Pacific Community, Nouméa, New Caledonia.

