# Using fishermen to collect scientific information on turtle-fishery interactions.

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## Description of the project

The use of commercial fishers to collect data is often overlooked as an alternative to deploying independent observers. A project that utilises fishers to monitor the catch of sea turtles in one of Australia's largest prawn trawl fisheries has been running since 1998 and concludes in December 2001. 'Monitoring the catch of sea turtles in the Northern Prawn Fishery (NPF)' is a joint project between government scientists, fisheries managers and the fishing industry. This project has been used to monitor the catch of sea turtles and evaluate the efficiency of management measures introduced to address the issue. It provides a baseline on which to evaluate the effectiveness of Turtle Exclusion Devices (TEDs), which became compulsory in this fishery in April 2000. The project is funded by the Australian Fisheries Research and Development Corporation (FRDC) and the Bureau of Rural Sciences.

## The Northern Prawn Fishery

The NPF runs from the top of Cape York in Queensland (142°E) around the northern Australian coastline to Cape Londonderry in Western Australia (127°E) (Figure 1). The main prawn species caught are tiger and banana prawns with lesser numbers of endeavour and king prawns. In 2000, there were 121 vessels fishing over a total of 16 433 fishing days.
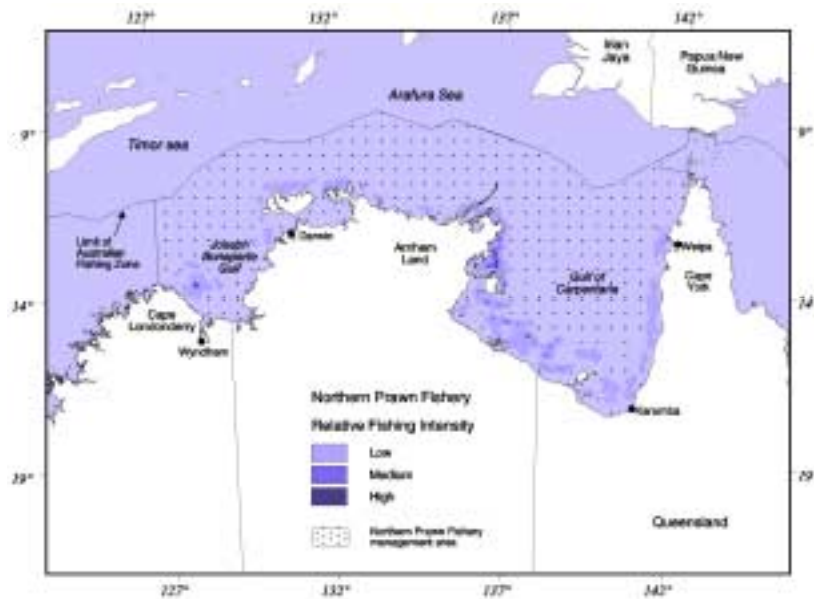


Figure 1          Map of the Northern Prawn Fishery showing fishing grounds

Six species of sea turtles are found in these waters (flatbacks, *Natator depressus;* Olive Ridleys, *Lepidochelys olivacea*; loggerheads, *Caretta caretta;* greens, *Chelonia mydas;* hawksbills, *Eretmochelys imbricata* and leatherbacks, *Dermochelys coriacea*). During the NPF fishing season sea turtles are occasionally caught, and sometimes killed, during commercial fishing operations. In an earlier study in 1990 it was estimated that around

5500 turtles were caught annually and of these, around 40% were either returned to the water dead or comatose.

## Methods used

For the current project volunteers, to be trained as turtle taggers, were called for from the fishing fleet. These volunteers were assessed for their suitability for the project through interviews and included fishing masters, crew members and cooks. All were accepted due to their enthusiasm and their genuine interest in sea turtle conservation. Annual training workshops were conducted to teach the necessary scientific skills and increase the tagger's understanding and appreciation for sea turtles and awareness of the global nature of bycatch problems. The workshops also provided a forum for the taggers to discuss possible improvements to the project procedures and use their experiences to help clarify the results.

During the fishing season, taggers recorded data and tagged all sea turtles that were caught by their trawler. They measured, identified, assessed the health and collected other useful information on the sea turtle, for example past and present injuries on the captured turtle. Data on the position of the vessel, trawl time and gear details were also recorded. They photographed all turtles for identification verification with disposable cameras. Data sheets were faxed or sent to the researchers at the end of each season. The taggers were given incentives and entered prize draws for being part of the program – shirts, caps, cups and cash. Other fishers from the fleet that returned information on tagged turtles also received cash prizes.

## Tagging turtles

Although we did not use the tag data ourselves, except for multiple captures of an individual turtle, which we found was rare, we found that tagging was useful to maintain interest. Our interpretation was that fishers perceived their data had greater importance if they tagged turtles, rather than just recorded measurements. At each workshop we invited the organisation running the tagging program to provide recapture information to the fishers from turtles tagged during this project and general information on their whole project.

## Species identification

We found there was a wide variation in the quality of species identification by the taggers. Most of the taggers, after training, consistently identified the species correctly. Others regularly confused one species for another, most often the loggerhead (*Caretta caretta*) and hawksbill (*Eretmochelys imbricata*) turtles. However, an occasional tagger frequently incorrectly identified sea turtles while working in the field, irrespective of being able to correctly identify practice-shells. The verification of data, such as species, has been shown here to be vital when fishers are collecting biological data. For this project we virtually eliminated the problem of incorrect identifications by using the disposable cameras.

## Coverage rates

The proportion of the whole fleet's effort that was covered by the taggers did not vary greatly. In 1998 and 1999, prior to TEDs, the taggers were recording turtle captures over 2514 days. This is 8% of the effort for the whole fleet. In 2000, which is after TEDs were

implemented, 920 days were recorded, or 5% of the whole fleet. It would have been preferable to have a higher coverage rate, but quality of data was considered more important than quantity.

**Success of the project**

We believe the success of this project was due to a number of reasons. These included a good relationship with the fishing industry, an understanding of the issues by the participating fishers, an appreciation that the results would not ultimately negatively impact on their fishing operations and, most importantly, having fishers who were genuinely concerned about sea turtles. The team approach was adopted and participants have been involved throughout all stages of the project, from planning to the final report. The methodology has evolved throughout the project in response to fisher suggestions and advice and to changes in the fishery. There has been positive cooperation between the voluntary industry members and the scientific researchers.