Received: 5 September, 2012
IOTC-2012-WPEB08-39


# Significance of seabirds to the Maldivian tuna fishery

A Riyaz Jauharee & M Shiham Adam

Marine Research Centre, Ministry of Fisheries and Agriculture, Maldives

## Abstract

Maldivian tuna fishermen have relied on seabirds to locate tuna schools for several hundred years. Even before binoculars were brought to Maldives fishermen observed the behaviour of seabirds associated with tuna schools to locate the fish. The study looks at the attitude of tuna fishermen towards seabirds associated with tuna schools and the amount of seabirds killed/caught during tuna fishing operations in the Maldives. The study was carried out by interviewing 102 fishermen throughout Maldives. The fishermen realise the usefulness of seabirds for their fishing operations and they are concerned with the decline in numbers of some seabirds species in Maldives. Less than 1% of fishermen said seabirds do get tangled on the fishing line or bite the hook during tuna fishing operation while using both pole-and-line and handlines. The main threats to seabirds population in Maldives are from expanding human population; destruction of seabirds resting and roosting sites for construction of resorts or picnic island;, disturbance caused by sand mining from sandbanks; and catching seabirds and collecting their eggs from roosting and nesting sites on the sand banks and islands to keep them as pets. The government of Maldives has made legislation to protect 70 species of birds including seabirds in Maldives, but the real challenge is lack of enforcement and in particular ensuring that people do not keep these birds as pets. Awareness programmes are being conducted by the Environment and Education Ministry to make people more responsible towards protecting seabirds.

## Introduction

The Maldivian tuna fishery is the most important fishery in Maldives. It provides employment to a large portion of the population and is the main source of protein for Maldivians. Maldivians have been catching skipjack and yellowfin tuna for centuries by pole-and-line using live bait. These oceanic fish are caught from the open ocean several miles from the atoll shoreline. For centuries the method of detecting free swimming tuna in the open ocean has been the same: by observing disturbances caused near the surface of the water

by tuna; by using troll lines; or by following seabirds (Shafeeq, 1991 and 1993; Adam, 1994). As in the past, even today, most free swimming tuna schools are sighted by observing the movement of seabirds often using binoculars.

In the past, when there was no proper navigation equipment on tuna fishing vessels, Maldivian tuna fishermen followed birds to get back to land too but today with all the modern navigation equipment they are less dependent on seabirds to find land though seabirds remain very important in leading the fishermen to the tuna. This study looks at relationship that exists between Maldivian tuna fishery and the seabirds associated with the tuna schools. It is perceived that the Maldivian tuna fishermen, even today, depend very much on the seabirds to locate free swimming tuna schools in the ocean.

## Method

A questionnaire was designed to gather information from tuna fishermen throughout the country. Two hundred and fifty questionnaires were distributed to fishermen from various parts of the country when they came to sell their catch and obtain supplies at the Malé harbour. Completed forms were collected from the fishermen sometimes on the same day or on the following day. Marine Research Centre received 102 completed forms from the fishermen. Information from these 102 respondents was analysed in this study.

## Results

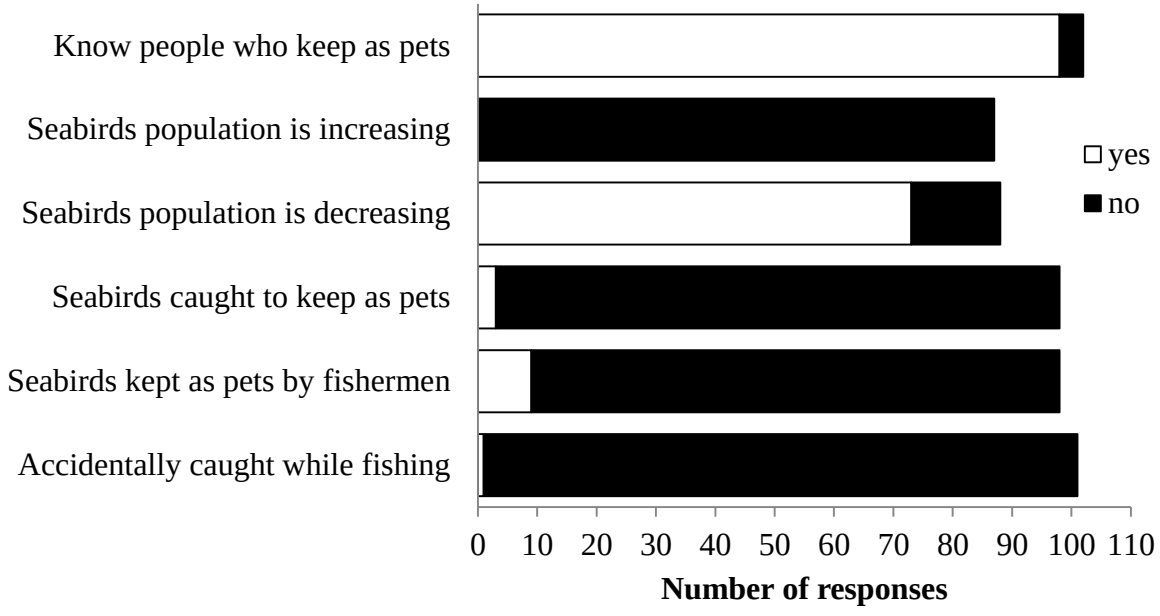


**Figure 1: Fishermen responses on accidental catching of seabirds during tuna fishing and deliberate catching of seabirds for keeping as pets.**

Of the 102 responses received only one person acknowledged seabirds getting entangled in the fishing line during pole and line operation. None of the fishermen thought that seabird populations are increasing, while 73 fishermen (figure 1) said the number of seabirds associated with tuna schools is in fact decreasing. Most fishermen are aware of locals who keep seabirds as pets at home although few admitted keeping them as pets themselves.

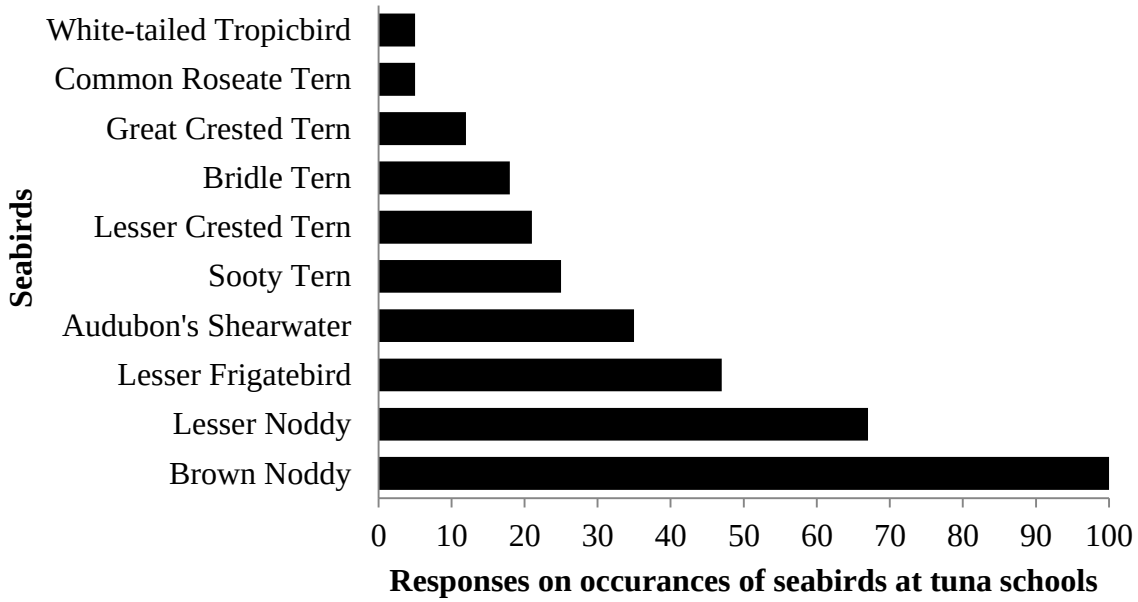


**Figure 2: Fishermen responses on sighting of seabirds at tuna schools.**

According to the Maldivian tuna fishermen the most frequently sighted seabird around tuna schools is the Brown Noddy with Lesser Noddy occurring slightly less frequently (Figure 2). Frigate birds occur less with a lesser number of Audubon's Shearwater and Sooty Tern. White-tailed Tropicbird is rarely sited at the tuna schools. Most fishermen acknowledged that more than 80% of the tuna schools are located with the help of seabirds (Figure 3), which thus they play a vital role in sighting the tuna.

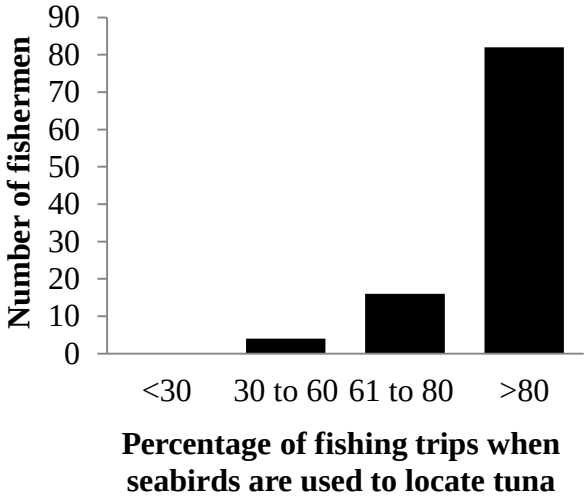


**Figure 3: More than 80% of tuna schools are located with the help of seabirds.**

## Discussion

Even today Maldivian tuna fishermen (using both pole and line and handlines) rely heavily on seabirds to locate free swimming tuna schools or those associated with drifting objects (>80% of the tuna schools are sighted by following seabirds: figure 1). Thus seabirds have a significant impact on the success of tuna fishery in the Maldives and the fishermen are well aware of this..

Brown Noddy is the most common seabird associated with tuna schools throughout Maldives, while Lesser Noddy with Brown Noddy is reportedly seen more in the south of Maldives. Many fishermen identified Frigatebirds as the most useful seabird in locating tuna schools. Unlike the Noddies, which fly low, the Frigatebirds fly high over the ocean, making it easier to spot them with the help of binoculars. The Frigatebirds are more common in the south of Maldives where large free swimming schools of tuna are seen more frequently. In the south Frigatebirds roost on Gnaviyani Foahmulah (during clear nights and when the weather is calm) and Gaaf Alif Hithaadhoo while in the north they are seen on Baa Olhugiri (Anderson, 1996).

White-tailed Tropicbird, Great Crested Tern Audubon's Shearwater, BridledTern, Lesser Crested Tern and Sooty Tern are other seabirds found associated with the tuna schools. In addition to these, a number of other non-resident seabirds are also found occasionally at the tuna schools in Maldives. They include some species of Gulls, Skua, Booby and Storm-petrel (Anderson, 1996). Because of their importance to the tuna fishery, many fishermen are concerned with the decreasing numbers of seabirds in the Maldives. Seabirds are only rarely caught or killed during tuna fishing operations. However, seabird populations are impacted in a number of other ways, despite their legal protection.

Numbers of seabirds are caught to be kept as pets. They are taken throughout Maldives while resting or breeding on their roosting islands or sandbanks. Most fishermen are aware of other locals who keep seabirds as pets at home and who collect eggs too, although most deny doing so themselves. Noddies roost on a number of sandbanks throughout Maldives, and are easily caught using nets at night while they are resting. Frigate birds are caught by knocking them off the trees where they are resting at night or by tangling them on fishing line while they fly low over the tall trees on their resting islands.

The increase in the Maldivian population and of tourist arrivals and the consequent development activities taking place throughout the country are causing threats to Maldives seabird's population. Mechanisation of vessels and the use of small boats fitted with outboard engines have increased the ability for people to travel easily between islands and to explore previously undisturbed sandbanks and islets which has increased the threats to seabirds populations in Maldives too. The infrastructure development activities taking place on the islands have increased the demand for sand mining which is often mined from pristine sandbanks used by seabirds for nesting. Tourism has also had its impact on seabird population in Maldives. A number of islands developed as tourist resorts and picnic islands were seabirds nesting sites in the past.

The government has recognised the threats to seabirds and its significant role in the tuna fishery thus identified and protected 70 species of birds which are threatened in Maldives. It is now illegal to catch, take eggs and keep seabirds as pets. While many people do heed this protection, many others do not, and enforcement is weak. Nevertheless, the protection of seabird population in Maldives would hopefully have some positive impact. The government has also increased its efforts to make people more aware of the importance of seabirds through broadcast media and formal education. It is hoped that these activities would change people's attitude towards seabirds and ultimately change their behaviour.

## Acknowledgement

We are most grateful to all the fishermen who contributed to the study by providing information on seabirds' population in Maldives. We also thank Dr Charles Anderson for the valuable comments provided during the drafting of the paper.

## References

1. Hafiz, A (1983). *ZuvaanMasveriyaa* (Young Fishermen: in Divehi). Rasian, 3: 124-139.
2. Adam, M. S (1985).Kandumathidhooniaimasverikan( Seabirdsand the tunafishery). Rasain 14 : 64-69
3. Anderson, R.C (1996). Seabirds and the Maldivian Tuna Fishery.Rasain 15:134-147
4. Shafeeg, A (l99l). Dhivehi masveringeainumathiekuverin.( Maldivian Fishermen'sfriendsabovethe tuna schools). Rasain 11: 74-8l.