

DRAFT

CATCHES OF NERITIC TUNAS IN MALDIVES AND ANALYSIS OF THE NEW LOGBOOK DATA

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Abstract

The Maldives reported to have caught 2422 t of kawakawa and 1696 t of frigate tuna in 2011. These represented about 2.5 (kawakawa) and 1.7% (frigate tuna) of the major tuna species caught. Main gear for kawakawa and frigate tuna was pole and line taking 75 and 80% of the catch respectively. It is believed that neritic tuna catch values are underestimated for the country due to underreporting. Better catch estimates as well as catch and effort data could be obtained from the tuna fishery logbooks that were introduced in 2010. Despite the mandatory nature, about 5% of the trips were reported in 2011. Some of the issues with the logbook data and measures being taken to improve its collection are summarized.

1. Introduction

The Ministry of Fisheries and Agriculture introduced logbooks in 2010 to all the fisheries as part of its efforts to improve the fishery data collection system of the country. This was a major development for the Maldivian fisheries, which has not had such detailed record keeping in the past. However, cooperation from the fishermen in returning was poor and the Ministry received back only a small fraction of the logbooks in 2010 and 2011. The results and experience of this first two years allow additional measures to encourage fishermen to return their logbooks.

This paper addresses some of the issues with the logbook data that was returned during 2010 and 2011 in relation to neritic tuna. It also presents the national catch statistics of neritic tunas for 2011.

2. Materials

Ministry of Fisheries and Agriculture publishes annual statistics of the Maldivian fishery. Catch data from the publication of 2011 is presented in this paper. The logbook data available in two separate excel databases for 2010 and 2011 were also investigated.

3. Discussion

3.1. Catch estimates

Kawakawa (*Euthynnus affinis*) and frigate tuna (*Auxis thazard*) have always been less important than skipjack and yellowfin in the Maldives. This has led to a low priority on the species by fishermen as well as government agencies in all aspects of the fishery including collection of biological and fishery data. For example, a significant portion of neritic tunas in the Maldives are expected to be caught by small sized vessels and are poorly reported. Adding to it, unlike skipjack and yellowfin tuna, a minor proportion (e.g. 1.37 and 3.38% in 2010) of neritic catches is sold to the major tuna purchasing companies whose records could otherwise be used to improve catch estimates for the species. It is thought that majority of the catch is sold at local retail markets, small-scale processors and used for consumption.

The underreporting and lack of supporting data has probably resulted in underestimation of neritic tunas to a certain degree, which needs to be assessed for accurate catch estimation. Anderson et.al (1998a) and Anderson et.al (1998b) discusses underestimation of kawakawa and frigate tuna catches and concludes that kawakawa catch was possibly underestimated by as much as 20% at the time. Frigate tuna was also reported to be underestimated as well.

It was thought that logbooks from fishermen would be able to demonstrate the lack of data and underreporting of neritic tunas.

3.2. Kawakawa catch of 2011

In 2011, 2422t of kawakawa were reported to have been caught from the Maldivian waters. This was a 14% decline from 2010 and contributed about 2.5% to the four major tuna species caught in the country (skipjack, yellowfin, frigate and kawakawa). Figure 1 shows the catch of kawakawa from 2006 to 2011. Maldives has had a relatively consistent catch of kawakawa in the period with the exception of 2006 and 2008.

In terms of catch by gear, almost 75% of kawakawa landed were caught by pole and line, followed by handline and troll line with 16 and 8% respectively (Figure 2). Significance of pole and line for the tuna fishery has remained so after the collapse of the troll fishery due to mechanization of the *masdhoni* fleet.

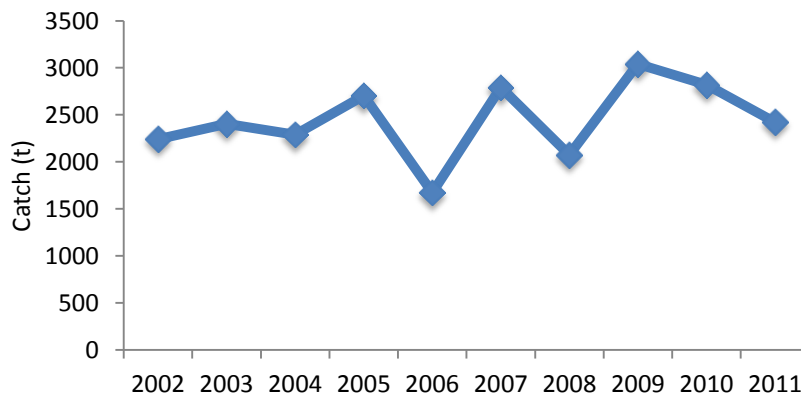


Figure 1. Kawakawa catches during the period 2002-2011

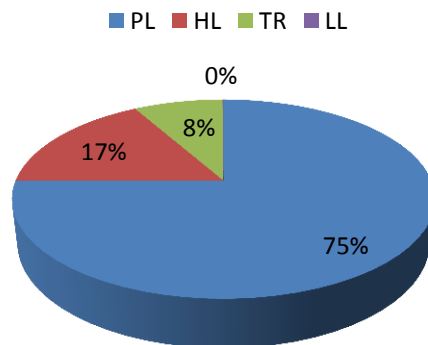


Figure 2. Kawakawa catch by gear in 2011. PL(pole and line), HL(handline), TR(troll line) and LL(long line)

3.3. Frigate tuna catch of 2011

Maldivian tuna fishery caught 1696 t of frigate tuna in 2011. This was a 41% decline from 2010 and 67% from 2009. Part of this decrease in catch could be attributed to the diversion of effort to catching high valued large yellowfin tuna of which a 63% increase in landing was seen from 2010 to 2011 (skipjack catches remained fairly the same for the period). Figure 3 presents the catch of frigate tuna from 2006 to 2011.

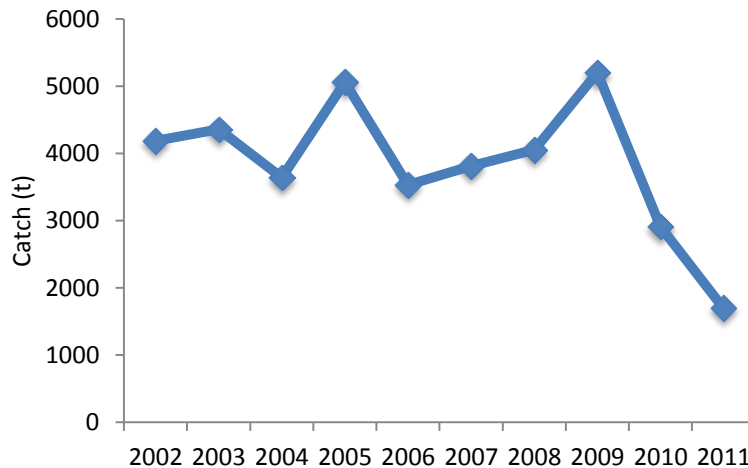


Figure 3. Frigate tuna catches during the period 2006 - 2011.

Due to various reasons, contribution of frigate tuna in the Maldivian tuna fishery has been declining over the years. It remained at 20% in 1973, decreasing to less than 5% during the decade, 1987-1996 (Anderson et al., year). In 2011, frigate tuna comprised just 1.7% of all major tuna species caught. Further decrease in contribution is possible if more fishermen turn towards large yellowfin tuna fishery and the smaller older fishing vessels are removed from fishery.

3.4. Issues with the logbook data

A good logbook programme ensures fishery managers obtain the required catch and effort data for research and assessment of the fishery. A major part of a good logbook reporting system involves return of logsheets with reliable and accurate information. This was expected when logbooks were introduced and made compulsory during 2010. However, the mandatory status of returning the logsheets were largely disregarded and

the Ministry received logbooks for only about 5% of the trips from 102 vessels in 2011. To overcome this, the Fisheries Management Agency has issued reminder notices to vessel owners. Further actions such as temporary withholding of fishing license have also been proposed.

While returning the logsheets is an integral part of a logbook scheme, it is equally important that the data reported be valid for it to be used effectively. For the two years' since initiation of the logbook scheme, it was evident that there are issues with the new logbook reporting scheme. These include:

- Misreporting: for example neritic species were reported to have been caught even beyond 150 miles from shore where fishermen are rarely expected to venture. Further, about 29t of kawakawa have been reported to have been caught by handline from dolphin associated schools.
- Inconsistency of reporting: While the logbook gives clear guidelines to follow, with a 30x30 nm gridded map, some catches were reported with the names of entire atolls as the area of catch. In many cases baiting grounds were reported ambiguously (atoll name without a name or description of the baiting ground).
- Recording of 'other' species: Tuna fishing vessels now carry multiple gears (PL, HL, nets) and carry out multiple day fishing. Different groups of fish (tuna, reef fishes, billfishes etc.) are caught in these trips using gears other than pole and line. Provisions have not been made in the logbook to account for use of gears other than pole and line by the tuna fishing vessels which has resulted in misreporting. For example, 13 t of group 1 species (sharks and billfishes), 1 t of group 2 species (medium sized reef fish) and 1.4 t of group 3 species (small pelagics) were reported as being caught using pole and line.
- Data for 2010 and 2011 are in two separate data bases with different structures. Comparison between the two and their use in an analysis is hence complicated.

4. Conclusion

The introduction of fishery logbooks was a major achievement in the Maldives where fishermen are not used to keeping detailed records of their fishing activities. However, refinement and improvement of the logbook structure and design, reporting rates and management of the data need to be complete before a changeover from the current catch information collection system. It would further enable more accurate estimation of catch rates for neritic tunas and tunas in general. It is noteworthy that measures are being taken to improve the logbook scheme. These include, (1) revision of the logbook design and introduction of the new logbooks in early 2013: (2) development of a software that would enable entry of logbook data: (3) development of awareness programmes for the fishermen.

5. References

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