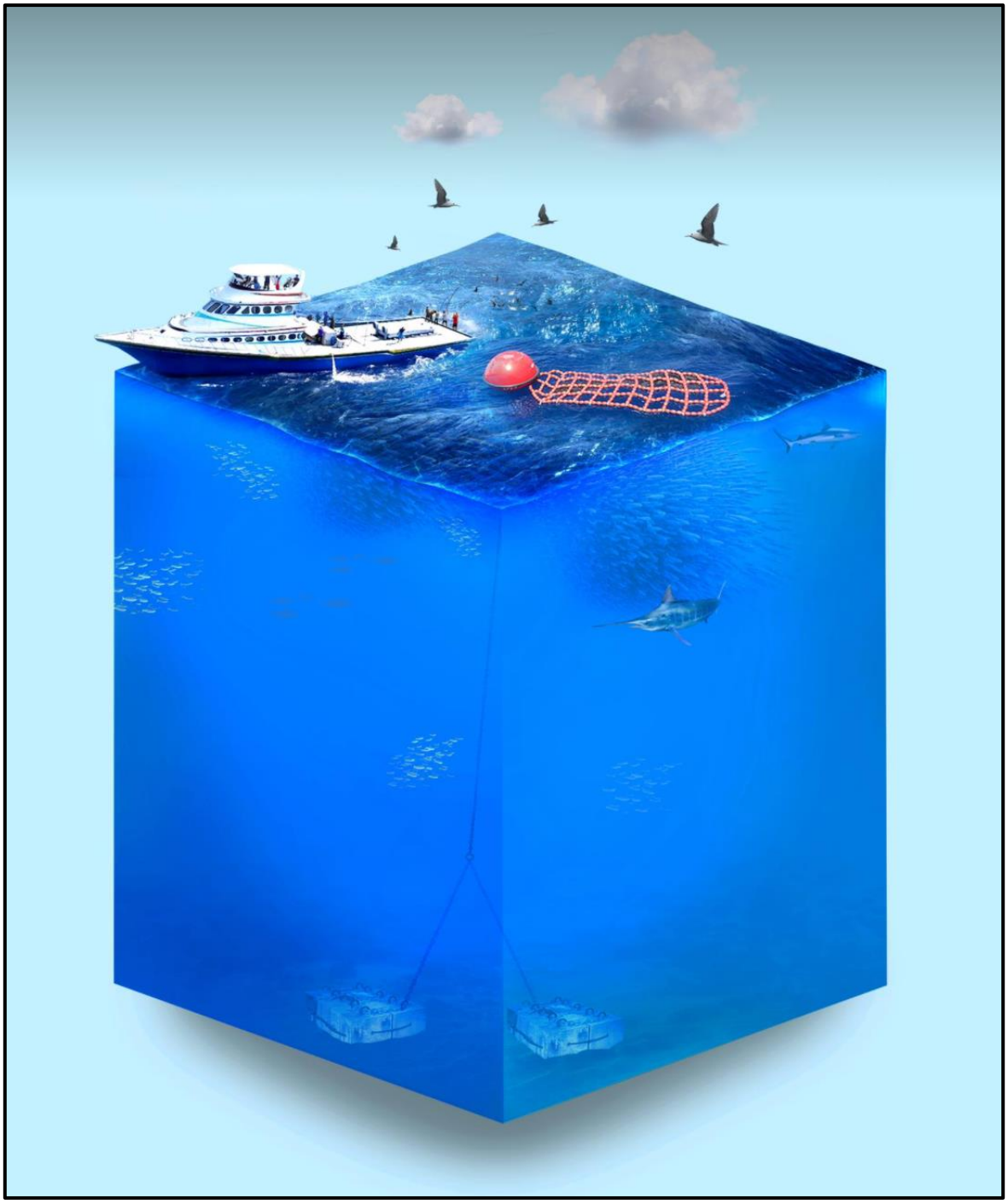

The tuna pole and line FAD (fish aggregating device) fishery of the Maldives: towards science-based management through fishers and scientific knowledge

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Abstract

Maldivians have sustainably been exploiting tuna using hook and line in the Indian Ocean for over a millennium, with 20% of the total Indian Ocean tuna catches currently landed in the Maldives. After four decades using on average 55 anchored fish aggregating devices (AFADs) spread over the entire archipelago, this thesis aims to improve our knowledge on the fishery ecology of tuna within the Maldivian AFAD array in order to better understand the drivers of the sustainability of the fishery for the coming years. The ecology of tuna around these AFADs was studied by collecting local ecological knowledge from 54 pole and line fishers and by acoustically tagging 65 skipjack and 57 yellowfin tuna within an instrumented 21-AFAD array. Most fishers consider that slight currents, suitable sea temperature, prey and attractants enhance the aggregations while strong currents, high sea temperatures and stormy conditions make tuna leave AFADs. They also consider that tuna tend to stay associated with AFADs 3 to 6 days, which is comparable to results from acoustic tagging (from 2 to 5.5 days on average). Acoustic tagging showed that tuna do not have a specific preference in the direction of movement, and very few fish moved from one FAD to another. Therefore, the 55 AFADs in the Maldives do not act like a network but appear to be relatively independent. The Maldives FAD network can be considered as a case study to examine the pros and cons of sparse FAD networks as supports for fisheries, while minimizing potential negative impacts. More research on the ecological, social and economic aspects of the pole and line fishery must be conducted to support the Maldives in their science-based management.

Keywords: Anchored Fish Aggregating Device, Tropical tunas, Pole and Line, Maldives, Local Ecological Knowledge, Residence Time.

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