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An update on the recent development of IOTC BTH PRM Project

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ABSTRACT

This note provides recent updates on IOTC bigeye thresher shark (*Alopias superciliosus*, BTH) post-release mortality study project (IOTC BTH PRM Project). The objective of the study is to evaluate the efficiency of the IOTC Conservation and Management Measure on non-retention of thresher sharks of the genus *Alopias* (Resolution 12/09). The summary of collective efforts since the 13th, 14th, 15th, 16th, 17th, and 18th IOTC WPEB are presented.

Introduction

The primary objective of this study is to assess the post-release mortality of bigeye thresher sharks caught and released (in accordance with IOTC CMMs¹) by the major commercial longline fleets fishing in the IOTC Area of Competence. For details of project development and experimental design please see IOTC-2018-WPEB14-27 and IOTC-2019-WPEB15-16.

The project started in 2017 has represented collaborative efforts of IOTC Secretariat and several research institutions working with following fishing fleets (in alphabetic order): China, France, Japan, Portugal, South Africa, Taiwan. On 16 September 2020 Taiwan has withdrawn from the project (please contact IOTC Secretariat for further details). For this reason, report for WPEB (IOTC-2020-WPEB16-INF1) was also withdrawn from the list of documents presented at WPEB 16 in 2020.

Current IOTC BTH PRM Project collaborators (in alphabetic order): Pascal Bach^(1, 2), Sylvain Bonhommeau⁽³⁾, Rui Coelho⁽⁴⁾, Paul DeBruyn⁽⁵⁾, Hilario Murua⁽⁶⁾, Stewart Norman⁽⁷⁾, Evgeny V. Romanov⁽⁸⁾ (Project co-ordinator), Philippe S. Sabarros^(1, 2), Yasuko Semba⁽⁹⁾, Charlene da Silva⁽¹⁰⁾, Jiangfeng Zhu⁽¹²⁾

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Past collaborators: Wen-Pei Tsai, National Kaohsiung University of Science and Technology, Taiwan.

Experimental design

The complete experimental design document was presented during the 14th WPEB and is available as an appendix in working paper IOTC-2018-WPEB14-27.

Training material

No progress since WPEB16.

Training

Training of scientific observers, scientists and students in Reunion Island has been performed routinely along 2021-2023.

¹ Indian Ocean Tuna Commission Conservation and Management Measure: Resolution 12/09 *On the conservation of thresher sharks (Family Alopiidae) caught in association with fisheries in the IOTC Area of Competence.* <http://www.iotc.org/cmm/resolution-1209-conservation-thresher-sharks-family-alopiidae-caught-association-fisheries-iotc>

COVID-19 Effect

The COVID-19 pandemic has heavily affected the project. Starting from 2020 placing observers onboard fishing vessels was suspended for variable periods in China, Japan, France, Portugal and South Africa. However, in 2020 Japan arranged the tagging through direct contract with the industry: a person initially trained as observer was recruited by the industry and voluntarily collaborated with NRIFS to carry out deployment within the IOTC BTH PRM Project.

In 2021-2023 no progress was reported by all partners, except France and South Africa: both were able to re-start observers' activity in 2020 and continue till now.

MiniPAT battery issues

In February 2020, the tags manufacturer, Wildlife Computers, released a notification: "Increased variability in total transmissions from MiniPATs shipped from mid-2018 through 2019" that concerns reliability of miniPATs fabricated between 2017 and 2019. The notification announced a recall for certain series of non-deployed tags shipped from mid-2018 to late 2019. While IOTC BTH PRM tags were received in April 2018 and were not covered by the recall directly, observed weak performance of certain miniPAT and further analysis of miniPAT transmissions together with Wildlife Computers engineers indicated the presence of battery problems. Consequently, six miniPATs were exchanged for new ones. Since then, numerous issues with tagware and batteries were also noticed and announced in the e-mail of Wildlife Computers in on 1 February 2023 recalling all tag batches for tagware upgrade and / or eventual replacement if tag batteries doesn't meet manufacturer requirement. Batteries degradation was visible in IOTC BTH PRM tags in the past (poor transmission performance) (6.2 days transmission period in average see the "Third progress report..." IOTC-2020-WPEB16-INF1) and during recent deployment. In particular two bigeye thresher sharks tagged by South African observers in August 2022 were popped up as expected on 9 and 10 February 2023 (both sarks survived) but poor transmission performance (five satellite uplinks for miniPAT 17P1274 and one and half of a day transmission for miniPAT 17P1276 doesn't allowed to get obtain sufficient data on shark behaviour except indication of survival). That situation and tag recall by Wildlife Computers led to the decision (together with IOTC Secretariat) to organise coordinate tag replacement form all tagging operational localities: China, Japan, France (Reunion Island), Portugal and South Africa. That operation takes have started in April 2023 and take a particular time due to shipping delays, customs problems, lithium batteries shipping regulation, and new tags fabrication. To data 26 tags were upgraded or replaced and other 5 tags will be shipped by 27 October 2023.

Right now, four tags are ready for tagging by French observers and other 22 tags are ready to be distributed between other partners.

Tagging efforts to date

Following to tag recall procedure, no tags were deployed since last WPEB in 2022-2023. Summary of tagging results since the start of the project are presented in the Table 1. A total of 25 tags were deployed (10 miniPATs and 15 sPATs). Two miniPATs non-reported data. In 2022 one bigeye thresher shark was tagged by France and other two by South Africa. The first one was tagged in June 2022 within EEZ of Reunion Island (survived for 41 days of tracking). Two others were tagged off Durban (South Africa) in August 2022. Both sharks survived but data recovered are very limited.

Table 1. Summary of PSATs deployment by partner

Fleet	Partner	Number of tags distributed		Year of distribution	Sharks tagged													
		sPAT	mini-PAT		2018		2019		2020		2021		2022		2023		Total	
					sPAT	mini-PAT	sPAT	mini-PAT	sPAT	mini-PAT	sPAT	mini-PAT	sPAT	mini-PAT	sPAT	mini-PAT	sPAT	mini-PAT
Japan	NRIFSF	4	0	2019		N/A*		N/A	1	N/A			N/A		N/A	1		
Taiwan	KNU	8	5	2019			4	4	1	1	WD**	WD	WD	WD	WD	5	5	
France	IRD	8	4	2018				1					1				2	
Portugal	IPMA	6	4	2018	1	2	4	3								5	5	
South Africa	DAFF	4	2	2018									2				2	
China	ShOU	4	5	2019										WD	WD	0	0	
Total		34	20		1	2	8	8	2	1	0	0	3	0	0	11	14	

* N/A – Not applicable

** WD - Withdrawn

Preliminary results

A preliminary estimation of post-release survival rate for bigeye thresher shark caught and released by pelagic longline fleet in the Indian Ocean is 50.0% (10 out of 20 individuals considered in the analysis). However, this estimate should not be used in the evaluation of conservation measures efficiency since operations are still ongoing and several participating fleets are poorly covered or not represented at all. Compliance of each tagging operation to experimental design and protocols are also not evaluated yet.

Perspectives

In view of the delay in the project implementation, in particular COVID-19-related slowdown, it is expected that tagging operations will be relaunched in 2023 and extended till the end 2025.

A total of 31 tags available for tagging. Additional funds are needed to cover ARGOS transmission since credit available is not enough to cover 31 tags.

References

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