



Indonesia Country Report

Ecologically Related Species in the Indonesian Southern
Bluefin Tuna Fishery

Prepared for the 14th meeting (June 2024) of the Ecologically Related Species Working Group (ERSWG) of the Commission for the Conservation of Southern Bluefin Tuna (CCSBT)

1. Introduction

Southern bluefin tuna (*Thunnus maccoyii*) considered as bycatch from Indonesia tuna longline vessel targeting bigeye tuna and yellowfin tuna in the Indian Ocean. Indonesia became the member of the Commission on Conservation of Southern Bluefin Tuna (CCSBT) in April, 2008. To date, with a membership allocation of annual catch limits of 1,336 tons for a period 2024-2026. Based on 2022 catch documentation scheme (CDS), as reported, SBT catch of Indonesian tuna longline fishery was 1,031 tons, derived from 170 authorized vessels. This report contains information on Ecologically Related Species (ERS) of Indonesia tuna longline fisheries collected by scientific observers on-board updated to 2010-2022.

2. Review of SBT fisheries

Tuna longliner was introduced to Indonesia by Japan in the 1930s (Ishida et al., 1994), but the first commercial fishing commenced in the early 1960s, almost three decades later (Proctor et al., 2003). Southern Bluefin Tuna (*Thunnus maccoyii*, SBT) has been historically caught as a by-catch from longline fisheries targeting yellowfin since the late-1970s (Farley et al., 2014) and bigeye since the early 1980s after deep-longlining was introduced (Sadiyah et al., 2011). Among the tuna fishing ports, SBT mainly landed in Benoa. Landing activities are regularly monitored by Research Institute for Tuna Fisheries (RITF) through scientific port sampling and scientific observer programs. The first program was initiated in mid-2002 but had a long history as a collaboration project, dated back to 1993 (Farley et al., 2014). On the other hand, the scientific observer program has been introduced since mid-2005 as an Indonesia-Australia collaboration (Project FIS/2002/074 of Australian Centre for International Agricultural Research). After 2010 the activities were conducted by RITF with support from the Indonesia's government Budget (GOI) budget.

Indonesia officially became a full member of the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) in 2008. Therefore, Indonesia reserved the right to have a total allowable catch (TAC) of around 1,336 tons for 2024-2026 period. To establish reliable catch data, the Directorate General of Capture Fisheries (DGCF) introduced a catch documentation scheme (CDS) in 2010 under the CCSBT framework. It has been fully implemented as a basis for official catch data since 2015. SBT catch for the last four years increased steadily, whereas the excess catches compensated through carrying over policy. The total catch in 2022 (1,031 tons) was lower than the previous year (1,123 tons).

The fishing ground extends from 70-125°E and 0-35°S. Mean observed hook rate ranged from 0.016-3.419 (SBT/1000 hooks) (Table 1). Higher CPUE were obtained below 25°S.

Fishing season starts from September to April, high catch usually occurred between October to February and low catch between June to August. The number of active Indonesian tuna longline vessels in CCSBT is shown in the Table 2.

3. Fisheries monitoring for each fleet.

Indonesian scientific observer program first established in 2005. It carries out task in accordance with the template/guideline adopted by IOTC and CCSBT. A total of nine scientific observers were deployed in 2022, involved in 10 trips, lasted for 493 days at sea (49 days/trip on average) with 389,697 hooks observed. The number of observed efforts (hooks or trips) was substantially higher than in previous years after Covid-19 outbreak restriction lifted (Table 3). During the trip, observers collected the data based on the template provided. Number of catches, discard/release (dead or live), species composition, gear type, catch and effort including biological data are among the data which mandatory collected. Catch and effort data was recorded daily in the fishing logbook and reported to the principal of base-port.

In order to increase data collection by observer on-board as required by RFMO such IOTC and CCSBT, since 2013 Directorate General of Capture Fisheries has established National Observer Program and since the establishment of the National Research and Innovation Agency (BRIN) in 2022, the DGCF has been the main and only operator of the National Observer Program (a combination of scientific and regional observer programs).

4. Seabirds

No interactions were reported in the area below 25°S during longline operation in 2022.

5. Other non-target species (sharks and rays)

Blue shark (*Prionace glauca*) and crocodile shark (*Pseudocarcharias kamoharai*) dominated the incidental catch for sharks during 2015-2022. While most blue sharks were retained, crocodile sharks were usually discarded dead. In the other hand, pelagic stingray (*Pteroplatytrygon violacea*) was the only ray species to be found. Total numbers, CPUE and mortality of sharks and rays incidentally caught by Indonesian longline fishery are shown in Table 5.

6. Marine mammal and marine reptile

Loggerhead turtle was the dominant species which incidentally caught during longline operation in 2022. Total numbers, CPUE and mortality of non-target species incidentally caught by Indonesian longline fishery are shown in Table 6.

7. Mitigation measures to minimize seabird and other by-catch species.

In accordance with Ministerial Regulation No. 12/2002, it is mandatory for each tuna longline vessel to implement mitigation measure to seabirds when they are fishing in south of 25°S. The option of night setting, seabirds scaling line and weight line has become a requirement. Some vessels are developing weighted swivels; it is believed that such devices are more effective for sinking hooks compared to using line weighting, which can cause line tangling. However, further research is needed to determine its efficiency and technical details. In relation to mitigation measure on marine turtle, it is a requirement for tuna longline vessel to carry on-board a necessary equipment to appropriate release of marine turtle caught incidentally, such as de-hooker, line-cutting and scope net.

8. Public Relations and Education Activities

Awareness building activity to protect ERS and bycatch such as marine turtle, seabirds and sharks, has been developed in form of printing material such as poster and leaflet. This material has been widely distributed to all stakeholders of tuna fisheries, particularly in Bali and Jakarta where SBT is commonly landed. Education on by-catch mitigation is actively proposed, i.e., observers training of trainers, basic safety training, legislation board members visitation, etc. Indonesia currently also exchanges by-catch data with IOTC and International NGO (Birdlife foundation).

9. Information on other ERS (non-bycatch) such as prey and predator species

Nothing

10. Others

Nothing

11. Implementation of the IPOA-Seabirds and IPOA-Sharks

In response to the mandate for the establishment of an international plan of action in terms of conservation and management of sharks and rays by the member of United Nations

through Fisheries and Agricultural Organization (FAO), as well as increasing global concern towards sharks and rays' sustainability, Indonesia issued the first National Plan of Action (NPOA) for sharks and rays for 2010-2014. The document outlines a strategy and action plan for the sustainability of the entire sharks and ray's species. The extension for the period 2016-2020 is currently running and being updated. In addition, as work is still in progress, whale sharks will be put as fully protected species in the upcoming action plan. In addition, seabirds' mitigation measure is regulated through Ministerial Decree 58/PERMEN-KP/2020 and 10/PERMEN-KP/2021 related to mitigation for ecologically related species, in which the tori line is obligatory for every vessel operated beyond 25°S. Indonesia already developed NPOA for Seabird back in 2016 and has been reviewed by Birdlife South Africa, with full compliance remarks and obtained the green status.

12. Reference

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13. Appendix

Table 1. Mean observed hook rates of SBT caught by Indonesian tuna longline fisheries based on scientific observer data 2010-2022.

Year	Observed hook rate (SBT/1000 hooks)	
	Area 1	Area 2
2010	0.016	N/A
2011	0.045	N/A
2012	0.223	0.032
2013	0.116	N/A
2014	0.087	N/A
2015	0.080	N/A
2016	0.042	N/A
2017	0.000	3.221
2018	0.573	3.419
2019	0.240	1.060
2020	0.100	0.090
2021	0.280	1.160
2022	0.000	2.650

Note: N/A means No observations

Table 2. Annual catch of SBT in the CCSBT convention area, 2010-2022.

Year	Number of active vessels	Total Catch (tons)
2010	186	580
2011	187	769
2012	145	817
2013	158	722
2014	191	1,187
2015	112	593
2016	107	601
2017	109	835
2018	139	1,087
2019	150	1,206
2020	155	1,298
2021	149	1,031
2022	170	1,123

Table 3. Coverage percentage from the Indonesian observer program, 2010-2022.

Year	Trips Observed	Observed effort (X1,000)	Total estimated effort (X1,000)	Coverage (%)
2010	8	220.302	N/A	N/A
2011	6	131.644	N/A	N/A
2012	7	282.147	N/A	N/A
2013	3	251.774	N/A	N/A
2014	6	216.641	N/A	N/A
2015	5	172.463	N/A	N/A
2016	3	175.868	N/A	N/A
2017	5	192.188	20,972.575	0.92
2018	6	262.856	29,241.984	0.90
2019	9	216.836	26,573.553	0.82

Year	Trips Observed	Observed effort (X1,000)	Total estimated effort (X1,000)	Coverage (%)
2020	2	86.845	28,554.500	0.30
2021	5	197,424	30,082.000	0.67
2022	10	389,697	30,082.000	1.29

Table 4. Estimation of total seabirds caught incidentally by Indonesian tuna longline fleets from 2016-2022.

Country / Fishing Entity	Calendar Year	Fishery		CCSBT Statistical Area	Species/ Species Group Code	English	Observed Captures					Mortality Rate	Estimate	
		Gear Code	Fleet Code				Captures (number)	Capture Rate	Fate (numbers)					Estimated total mortalities (number)
									Retained (dead)	Discarded (dead)	Released (live)			
ID	2016*	LL	IDD	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
ID	2017	LL	IDD	2	DCU	<i>Thalassarche cauta</i>	1	0.031	0	0	1	0.000		
ID	2017	LL	IDD	2	PDM	<i>Pterodroma macroptera</i>	18	0.559	2	16	0	0.559		
ID	2017	LL	IDD	2	PHU	<i>Phoebetria fusca</i>	1	0.031	0	1	0	0.031		
ID	2018	LL	IDD	1	PFC	<i>Puffinus carneipes</i>	6	0.037	0	6	0	0.094		
ID	2018	LL	IDD	2	PFC	<i>Puffinus carneipes</i>	1	0.050	0	1	0	0.050		
ID	2018	LL	IDD	2	PDM	<i>Pterodroma macroptera</i>	1	0.050	0	1	0	0.050		
ID	2019	LL	IDD	1	PTZ	<i>Procellaria spp</i>	5	0.058	0	5	0	0.058		
ID	2020	LL	IDD	2	PFC	<i>Puffinus carneipes</i>	2	0.095	0	2	0	0.095		
ID	2021*	LL	IDD	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
ID	2021*	LL	IDD	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
ID	2022*	LL	IDD	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
ID	2022*	LL	IDD	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

Note: *) No interactions

Table 5. Observed of total sharks and rays caught incidentally by Indonesian tuna longline fleets from 2016-2022.

Country / Fishing Entity	Calendar Year	Fishery		CCSBT Statistical Area	Species/ Species Group Code	English	Observed Captures					Mortality Rate	Estimate	
		Gear Code	Fleet Code				Captures (number)	Capture Rate	Fate (numbers)					Estimated total mortalities (number)
									Retained (dead)	Discarded (dead)	Released (live)			
ID	2016	LL	IDD	1	BSH	<i>Prionace glauca</i>	77	0.809	77	0	0	0.809		
ID	2016	LL	IDD	1	CCB	<i>Carcharhinus brevipinna</i>	2	0.021	2	0	0	0.021		
ID	2016	LL	IDD	1	PSK	<i>Pseudocarcharias kamoharai</i>	174	1.828	6	168	0	1.828		
ID	2016	LL	IDD	1	PLS	<i>Dasyatis violacea</i>	155	1.629	0	155	0	1.629		
ID	2016	LL	IDD	1	MAK	<i>Isurus spp</i>	3	0.032	3	0	0	0.032		
ID	2016	LL	IDD	1	OCS	<i>Carcharhinus longimanus</i>	5	0.053	5	0	0	0.053		
ID	2016	LL	IDD	1	SMA	<i>Isurus oxyrinchus</i>	1	0.011	1	0	0	0.011		
ID	2016	LL	IDD	1	TSK	<i>Scylliogaleus quecketti</i>	2	0.021	2	0	0	0.021		
ID	2017	LL	IDD	1	BSH	<i>Prionace glauca</i>	23	0.714	4	19	0	0.714		
ID	2017	LL	IDD	1	PLS	<i>Dasyatis violacea</i>	23	0.714	0	23	0	0.714		
ID	2017	LL	IDD	1	FAL	<i>Carcharhinus falciformis</i>	1	0.031	0	1	0	0.031		

Country / Fishing Entity	Calendar Year	Fishery		CCSBT Statistical Area	Species/Species Group Code	English	Observed Captures					Estimate	
		Gear Code	Fleet Code				Captures (number)	Capture Rate	Fate (numbers)			Mortality Rate	Estimated total mortalities (number)
									Retained (dead)	Discarded (dead)	Released (live)		
ID	2017	LL	IDD	1	ISB	<i>Isistius brasiliensis</i>	4	0.124	0	4	0	0.124	
ID	2017	LL	IDD	1	MAK	<i>Isurus spp</i>	2	0.062	0	2	0	0.062	
ID	2017	LL	IDD	1	OCS	<i>Carcharhinus longimanus</i>	1	0.031	1	0	0	0.031	
ID	2017	LL	IDD	1	PSK	<i>Pseudocarcharias kamoharai</i>	35	1.087	1	34	0	1.087	
ID	2017	LL	IDD	2	BSH	<i>Prionace glauca</i>	135	4.191	135	0	0	4.191	
ID	2017	LL	IDD	2	PSK	<i>Pseudocarcharias kamoharai</i>	24	0.375	0	24	0	0.745	
ID	2017	LL	IDD	2	PTH	<i>Alopias pelagicus</i>	2	0.031	2	0	0	0.062	
ID	2017	LL	IDD	2	SMA	<i>Isurus oxyrinchus</i>	35	0.547	7	27	1	1.056	
ID	2018	LL	IDD	1	BSH	<i>Prionace glauca</i>	187	1.143	90	93	4	2.861	
ID	2018	LL	IDD	1	BTH	<i>Alopias superciliosus</i>	3	0.018	1	2	0	0.047	
ID	2018	LL	IDD	1	DUS	<i>Carcharhinus obscurus</i>	2	0.012	2	0	0	0.031	
ID	2018	LL	IDD	1	FAL	<i>Carcharhinus falciformis</i>	9	0.055	9	0	0	0.141	
ID	2018	LL	IDD	1	ISB	<i>Isistius brasiliensis</i>	3	0.018	0	3	0	0.047	
ID	2018	LL	IDD	1	LMA	<i>Isurus paucus</i>	5	0.031	0	5	0	0.078	
ID	2018	LL	IDD	1	OCS	<i>Carcharhinus longimanus</i>	7	0.043	5	0	2	0.078	
ID	2018	LL	IDD	1	PLS	<i>Dasyatis violacea</i>	138	0.843	0	110	28	1.720	
ID	2018	LL	IDD	1	PSK	<i>Pseudocarcharias kamoharai</i>	143	0.874	2	141	0	2.236	
ID	2018	LL	IDD	1	PTH	<i>Alopias pelagicus</i>	2	0.012	0	1	1	0.016	
ID	2018	LL	IDD	1	SMA	<i>Isurus oxyrinchus</i>	5	0.031	1	4	0	0.078	
ID	2018	LL	IDD	1	TIG	<i>Galeocerdo cuvier</i>	3	0.018	2	1	0	0.047	
ID	2018	LL	IDD	2	BSH	<i>Prionace glauca</i>	19	0.955	14	5	0	0.116	
ID	2018	LL	IDD	2	PSK	<i>Pseudocarcharias kamoharai</i>	3	0.151	0	3	0	0.018	
ID	2019	LL	IDD	1	BSH	<i>Prionace glauca</i>	87	1.024	29	58	0	1.024	
ID	2019	LL	IDD	1	BTH	<i>Alopias superciliosus</i>	2	0.024	1	1	0	0.024	
ID	2019	LL	IDD	1	CCL	<i>Carcharhinus limbatus</i>	3	0.035	3	0	0	0.035	
ID	2019	LL	IDD	1	FAL	<i>Carcharhinus falciformis</i>	3	0.035	3	0	0	0.035	
ID	2019	LL	IDD	1	LMA	<i>Isurus paucus</i>	1	0.012	0	1	0	0.012	
ID	2019	LL	IDD	1	OCS	<i>Carcharhinus longimanus</i>	3	0.035	2	1	0	0.035	
ID	2019	LL	IDD	1	PLS	<i>Pteroplatytrygon violacea</i>	79	0.930	2	77	0	0.930	
ID	2019	LL	IDD	1	PSK	<i>Pseudocarcharias kamoharai</i>	60	0.706	4	56	0	0.706	
ID	2019	LL	IDD	1	PTH	<i>Alopias pelagicus</i>	2	0.024	1	1	0	0.024	
ID	2019	LL	IDD	1	SMA	<i>Isurus oxyrinchus</i>	2	0.024	2	0	0	0.024	
ID	2020	LL	IDD	1	BSH	<i>Prionace glauca</i>	119	1.805	26	93	0	1.805	
ID	2020	LL	IDD	1	BTH	<i>Alopias superciliosus</i>	12	0.182	1	11	0	0.182	
ID	2020	LL	IDD	1	CCL	<i>Carcharhinus limbatus</i>	2	0.030	0	2	0	0.030	
ID	2020	LL	IDD	1	OCS	<i>Carcharhinus longimanus</i>	2	0.030	0	2	0	0.030	

Country / Fishing Entity	Calendar Year	Fishery		CCSBT Statistical Area	Species/Species Group Code	English	Observed Captures					Estimate	
		Gear Code	Fleet Code				Captures (number)	Capture Rate	Fate (numbers)				Mortality Rate
									Retained (dead)	Discarded (dead)	Released (live)		
ID	2020	LL	IDD	1	PLS	<i>Pteroplatytrygon violacea</i>	50	0.759	1	27	22	0.425	
ID	2020	LL	IDD	1	PSK	<i>Pseudocarcharias kamoharai</i>	25	0.379	0	14	11	0.212	
ID	2020	LL	IDD	1	SMA	<i>Isurus oxyrinchus</i>	2	0.030	0	2	0	0.030	
ID	2020	LL	IDD	1	SPY	<i>Sphyrmidae</i>	1	0.015	0	1	0	0.015	
ID	2021	LL	IDD	1	PSK	<i>Pseudocarcharias kamoharai</i>	29	0.034	0	29	0	0.034	
ID	2021	LL	IDD	1	SMA	<i>Isurus oxyrinchus</i>	2	0.002	2	0	0	0.002	
ID	2021	LL	IDD	1	BSH	<i>Prionace glauca</i>	3	0.004	1	2	0	0.004	
ID	2021	LL	IDD	1	FAL	<i>Carcharhinus falciformis</i>	2	0.002	2	0	0	0.002	
ID	2021	LL	IDD	1	OCS	<i>Carcharhinus longimanus</i>	1	0.001	1	0	0	0.001	
ID	2021	LL	IDD	1	PLS	<i>Pteroplatytrygon violacea</i>	162	0.192	0	162	0	0.192	
ID	2022	LL	IDD	1	BSH	<i>Prionace glauca</i>	225	0.064	189	35	1	0.064	
ID	2022	LL	IDD	2	BSH	<i>Prionace glauca</i>	18	0.045	18	0	0	0.045	
ID	2022	LL	IDD	1	SMA	<i>Isurus oxyrinchus</i>	2	0.001	2	0	0	0.001	
ID	2022	LL	IDD	1	RMB	<i>Manta birostris</i>	1	0.001	0	1	0	0.001	

Table 6. Estimation of total sea turtles caught incidentally by Indonesian tuna longline fleets from 2016-2022.

Country / Fishing Entity	Calendar Year	Fishery		CCSBT Statistical Area	Species/Species Group Code	English	Observed Captures					Estimate	
		Gear Code	Fleet Code				Captures (number)	Capture Rate	Fate (numbers)				Mortality Rate
									Retained (dead)	Discarded (dead)	Released (live)		
ID	2016	LL	IDD	1	LKV	<i>Lepidochelys olivacea</i>	12	0.126	0	11	1	0.116	
ID	2017*	LL	IDD	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
ID	2018	LL	IDD	1	LKV	<i>Lepidochelys olivacea</i>	4	0.024	0	3	1	0.047	
ID	2019	LL	IDD	1	LKV	<i>Lepidochelys olivacea</i>	1	0.012	0	1	0	0.012	
ID	2020*	LL	IDD	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
ID	2021	LL	IDD	1	DKK	<i>Dermochelys coriacea</i>	1	0.001	0	1	0	0.001	
ID	2022	LL	IDD	1	TTL	<i>Caretta caretta</i>	18	0.005	0	10	8	0.005	

Note: *) No interactions