



# 'Crew-based' (Local) Observer Programme in Sri Lankan longline vessels as an alternative on board data collection method



*Implemented through*  
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District Fisheries Offices in Chilaw and Negombo

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Crew based observer program under SEASL funds deployed 09 observers from May 2025 and collected catch and scientific data from four (04) vessels. Three sets per fishing trip was the targeted observed set number for data collection. (Table 1)

**Table 1 - Details of the vessels deployed between May – July 2025**

Skipper name	Departure Date	Arrival Date	Total trip <sup>1</sup>	Total no of sets	Ob. sets
S. Malka	2025.06.22	2025.07.30	40		03
L.Thusara	2025.06.03				
W.P.Jagath	2025.06.19	2025.08.03	46		03
W.M.S.P. Fernando	2025.06.27				
W.N.C.Fernando	2025.05.10	2025.07.22	59	18	04
H.W.N.M.Kumara	2025.07.10				
WNST Fernando	2025.05.10	2025.07.22	73	14	03
W.A.S.T. Pushpakumara	2025.06.27				
S.Pushpakumara					
			<b>218</b>	<b>32</b>	<b>13</b>

The total number of sets observed was 13 and the target was 27 (three sets per fishing trip). Four (04) vessels spent a total of 218 days in the sea and set the longline for 32 times (Table 1). According to collected data, 40% of the total operation sets were observed for data collection using the crew-based observer protocol. Digital data collected by each observer was processed by pelagikos. Spatial and temporal data were extracted from each image together with details of the species and the weight and length of each fish or other captured species. Data such as, outcome (fate) for each fish or other captured species (*i.e.* whether the species is retained or discarded dead or alive), number and species caught, whether they were dehooked or not were gathered from crew-based observer. During the process of wrapping up the data collection all the crew-based observers were asked if they have any further remarks and feedbacks were recorded.

### 3.1 Trip, Gear and Setting position data

Trip data (observer information, vessel information, trip information, vessel attributes), gear data (gear specification, line configuration) set data (setting operation, bait details, hook details, mitigation measures, hauling operation) and catch data (catch details, depredation, non-target species) were successfully recorded using the crew-based observer program according to the IOTC data forms. (Table 2). The main fishing gear type used in the multi-day vessels in Negombo and Chilaw is longline. The average number of hooks per set was 1,704. The total effort over the 13 sets observed was 23,025 hooks (Table 2).

<sup>1</sup> Total number of days of the whole fishing trips

**Table 2 – IOTC data point compliance of Local observer, vessel, trip, gear, set and catch data**

Vessel No.		Trip data			Gear data			Set data			Effort		set		catch data	
		T	A		T	A		T	A		Hooks	Effort	Total	Ob.	T <sup>2</sup>	A <sup>3</sup>
S. Malka	D2	63	63	100%	12	12	100%	41	41	100%	1800	5400		3		36
L.Thusara	D2	63	63	100%	12	12	100%	41	41	100%						
W.P.Jagath	D3	63	63	100%	12	12	100%	41	41	100%	1900	5700		3		69
W.M.S.P. Fernando	D3	63	63	100%	12	12	100%	41	41	100%						
W.N.C.Fernando	D2	63	63	100%	12	12	100%	41	41	100%	1,300	6,500	18	4	94	120
H.W.N.M.Kumara	D2	63	63	100%	12	12	100%	41	41	100%						
WNST Fernando	D1	63	63	100%	12	12	100%	41	41	100%	1,575	4,725	14	3	15	35
W.A.S.T. Pushpakumara	D1	63	63	100%	12	12	100%	41	41	100%						
S.Pushpakumara	D4	63	63	100%	12	12	100%	41	41	100%						
													32	13	109	225

<sup>2</sup> Total number of fishes in the logsheet in the observed sets

<sup>3</sup> Number of images taken

### 3.2 Catch and Scientific Data

The catch data comprised of a total of 260 fish and other capture species. pelagikos was able to extract the local name, English name, Scientific name, IOTC code and outcome (fate) for 100% of the observed catch. Weight was recorded for 92% and length for 96% of the observed catch. Date and time data were extracted for 100% of the digital data (images and the videos). Location (latitude and longitude) data was successfully extracted from 58% of the observed catch. Overall, scientific data were recorded from 94% of the observed catch (Target(T) = 260), during the latest deployment of crew-based observers (Table 3).

**Table 3 – Summary of observed scientific data for catch**

<b>Scientific data</b>	<b>T</b>	<b>A</b>	
<b>Local Name</b>	260	260	100%
<b>English name</b>	260	260	100%
<b>Scientific name</b>	260	260	100%
<b>IOTC code</b>	260	260	100%
<b>Fate</b>	260	260	100%
<b>Weight (kg)</b>	260	250	96%
<b>length (cm)</b>	260	247	95%
<b>Date/ Time</b>	260	260	100%
<b>Location (Lat./ long.</b>	260	151	58%
	<b>2,340</b>	<b>2,208</b>	<b>94%</b>

### 3.3 Catch and Catch per Unit Effort (CPUE per 1,000 hooks)

A count of 18 species were observed in the catch recorded by the crew-based observers. According to the collected data, 48.8% (by number) of the fish caught were yellowfin tuna, swordfish (7.7%) and bigeye tuna (5.4%) as target species. Results recorded, 17 other capture species (Table 4) out of which one was protected species (*i.e.*, thresher shark). Skipjack tuna (11.9%), were the main other capture species recorded.

From the target species, a total of 127 yellowfin tuna were recorded and the catch per unit effort (per 1,000 hooks) for yellowfin tuna was 5.52 by number of fish whereas the catch per unit effort (per 1,000 hooks) was 166.08 kg by weight

Crew-based observers recorded that the replacement of frozen/raw baits (squids, milk fish, flying fish) with artificial baits (squid lure) as a factor that reduces shark bycatch including protected shark species. Almost all the crew-based observers reported the tuna harvest largely being eaten by some protected marine mammal species and request for any possible approaches to minimize this harvest lost.

**Table 4 – Catch and catch per unit effort (by number (n) and by weight (kg) per 1,000 hooks)**

Fish sp.	n	%	CPUE	Weight(kg)	%	CPUE
Yellowfin Tuna	127	48.8%	5.52	3824	69.2%	166.08
Swordfish	20	7.7%	0.87	323	5.8%	14.03
Bigeye tuna	14	5.4%	0.61	569	10.3%	24.71
Skipjack tuna	31	11.9%	1.35	71	1.3%	3.08
Lancet Fish	22	8.5%	0.96	59	1.07%	2.56
Escolar	12	4.6%	0.52	67	1.21%	2.91
Indo-Pacific sailfish	7	2.7%	0.30	134	2.42%	5.82
Shortbill spearfish	6	2.3%	0.26	72	1.30%	3.13
Blue shark	5	1.9%	0.22	183	3.31%	7.95
Black Marlin	3	1.2%	0.13	153	2.77%	6.64
Pelagic stingray	3	1.2%	0.13	6	0.11%	0.26
Crocodile shark	3	1.2%	0.13	14	0.25%	0.61
Barracuda	2	0.8%	0.09	7	0.13%	0.30
Silky Shark	1	0.4%	0.04	12	0.22%	0.52
Albacore	1	0.4%	0.04	26	0.47%	1.13
Common Dolphin	1	0.4%	0.04	3	0.05%	0.13
Big scale Pomfret	1	0.4%	0.04	3	0.05%	0.13
Thresher shark	1	0.4%	0.04		0.0%	0
<b>Grand Total</b>	<b>260</b>			<b>5,526</b>		

### 3.4 Outcome

From the total observed catch 89.3% of catch was retained (233 out of 260 individuals), 1.9% was discarded alive (5 individuals) and 8.5% (22 individuals) was discarded dead (Table 5). Most of the other capture species were retained. Lancet fish, pelagic stingray and crocodile shark were among the main discarded other capture species. None of the protected species were retained. All the protected species which were accidentally caught were discarded alive

**Table 5 – Outcome (fate) of captured species (retained, discarded alive or discarded dead)**

Fish sp.	Total	Retained		Discarded Live		Discarded Dead		Depredation	
		n	%	n	%	n	%	n	%
Yellowfin Tuna	127	127	54.5%						
Swordfish	20	20	8.6%						
Bigeye tuna	14	14	6.0%						
Skipjack tuna	31	31	13.3%						
Lancet Fish	22		0.0%			22	9.4%		
Escolar	12	12	5.2%						
Indo-Pacific sailfish	7	7	3.0%						
Shortbill spearfish	6	6	2.6%						
Blue shark	5	5	2.1%						
Black Marlin	3	3	1.3%						
Pelagic stingray	3		0.0%	3	1.3%				
Crocodile shark	3	2	0.9%	1	0.4%				
Barracuda	2	2	0.9%						
Silky Shark	1	1	0.4%						
Albacore	1	1	0.4%						
Common Dolphinfish	1	1	0.4%						
Bigscale Pomfret	1	1	0.4%						
Thresher shark	1		0.0%	1	0.4%				
<b>Total</b>	<b>260</b>	<b>233</b>	<b>89.32%</b>	<b>5</b>	<b>1.92%</b>	<b>22</b>	<b>8.5%</b>		

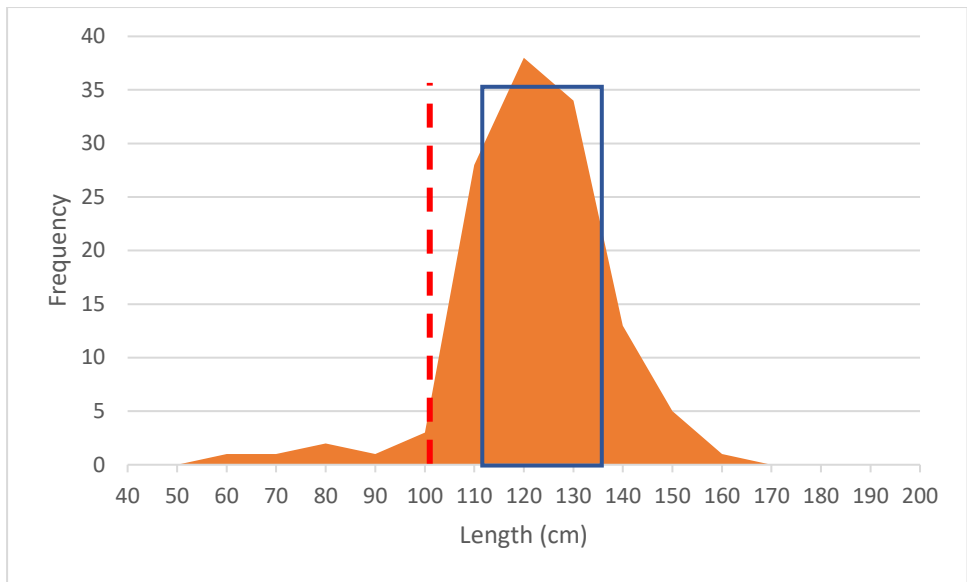
### 3.5 Target Species Analysis

Length data (LJFL) were extracted from images of yellowfin tuna by pelagikos for 127 individual fish. Length frequency for yellowfin tuna observed during the current phase of the crew-based observer program is shown in Figures 5. The minimum length (FL) observed were 58 cm and maximum length was 154.1 cm. The average size of yellowfin tuna caught was 116.8cm.

According to data available on Fishbase<sup>4</sup> the maximum observed FL for yellowfin tuna is 239 cm (male/unsexed); the common length is 150 cm. The average FL on 50% maturity ( $L_{m50}$ ) for yellowfin tuna is 103.3 cm with a range of 78 – 158 cm (*ibid*).

According to the data analysis, 88.9% of yellowfin tuna caught by Sri Lanka's short longline yellowfin tuna vessels during the current phase were above the  $L_{m50}$  (from number of fish with FL >104cm). Length optimum of the data collected is between 112cm – 137cm and 55% of fish are in the length optimum range.

<sup>4</sup> [www.fishbase.de](http://www.fishbase.de)



**Figure 5 - Length frequency for YFT under the crew-based observer program**

*Thunnus albacares* Maturity:  $L_m$  [103.3](#), range 78 - 158 cm. Max length: 239 cm FL male/unsexed; common length: 150 cm FL male/unsexed

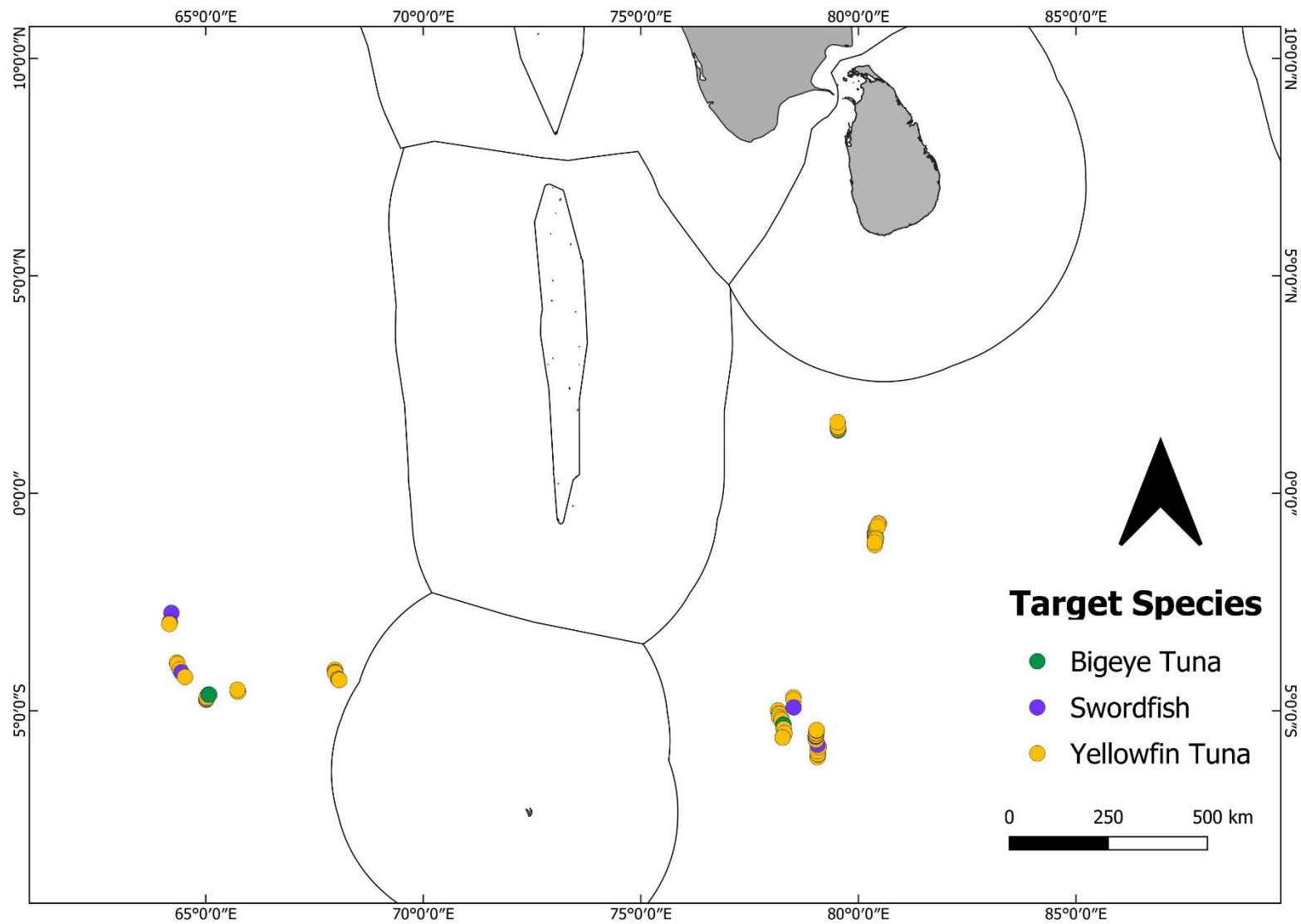


Figure 1: Locations of the target species caught by longline vessels

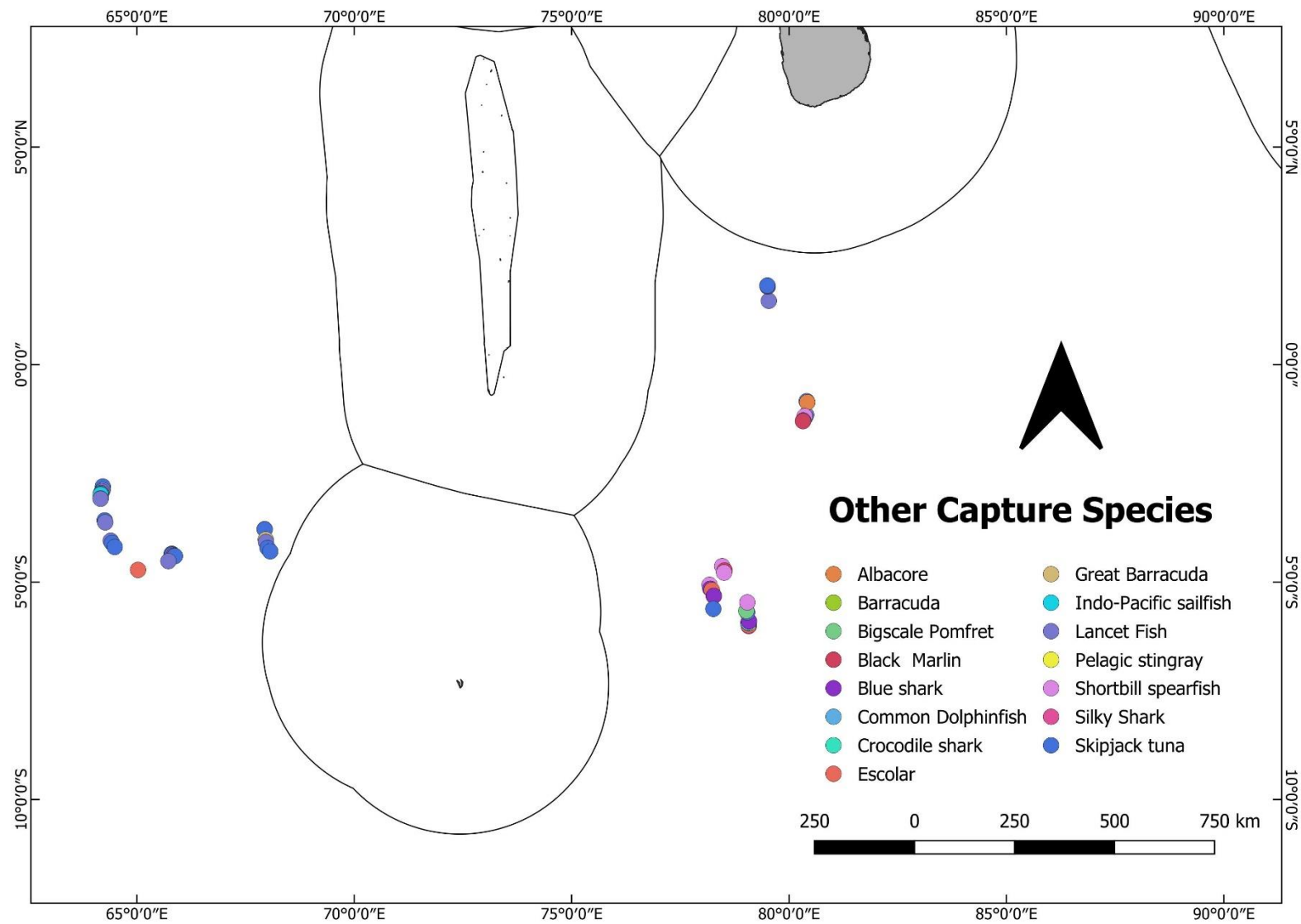


Figure 2: Locations of the other capture species caught by longline vessels

### 3.6 Safe handle and live release of protected species

All the crew-based observers were sophisticated with set of de hooker and line cutter to safe handle and live release protected species. Skipper along with crew were trained during the departure to handle de hooker properly.

The videos collected were will be published in the Department of Fisheries and aquatic resources website. During the study period images and videos were collected on live releasing one (01) thresher shark. Number of protected species caught has strong reduction due to usage of artificial baits since 2021 in longline fishery. Other than crew-based observer program operation division of the DFAR distributing de hookers and line cutters through a revolving fund.

