



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



*Implemented through*  
**Department of Fisheries & Aquatic Resources Development**  
District Fisheries Offices in Chilaw and Negombo

researched & written by  
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Crew based observer program under SEASL funds deployed 10 trips during the period of July and November and collected catch and scientific data from four (07) vessels. Three sets per fishing trip was the targeted observed set number for data collection. (Table 1). The previous report uploaded was updated with the data collected during the reporting period

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

Skipper name	Departure Date	Arrival Date	Total trip	Total no of sets	Ob
S. Malka	2025.06.20	2025.07.30	40	10	3
	18.09.2025	09.11.2025	52	15	3
L.Thusara	06.07.2025	15.08.2025	31	12	4
	13.09.2025	01.11.2025	49	11	3
W.P.Jagath	19.06.2025	03.08.2025	46	12	3
W.M.S.P. Fernando	27.06.2025	26.08.2025	62	12	4
	04.09.2025	14.11.2025			
W.N.C.Fernando	10.05.2025	08.07.2025	59	18	4
	31.07.2025	16.09.2025	48	12	6
	07.10.2025				
WNST Fernando	09.05.2025	22.07.2025	73	14	3
	14.08.2025	05.10.2025	52	14	3
	17.10.2025				
W.A.S.T. Pushpakumara	24.06.2025	05.09.2025	73	14	3
	28.09.2025				
S.Pushpakumara	29.06.2025	15.08.2025	48	10	2
	06.09.2025	20.10.2025	44	11	3
			<b>677</b>	<b>161</b>	<b>44</b>

The total number of sets observed was 44 and the target was 39 (three sets per fishing trip). Eight (07) vessels spent a total of 677 days in the sea and set the longline for 161 times (Table 1). According to collected data, 27% 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, weather 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 1,838. The total effort over the 45 sets observed was 81,191 hooks (Table 2).

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

Skipper name	Deployment	Trip data			Gear data			Set data			Effort		Set		catch data	
		T	A	%	T	A	%	T	A	%	Hooks	Effort	Total	Ob.	T[1]	A[2]
S. Malka	D2	63	63	100%	12	12	100%	41	41	100%	1300	3,900	10	3	27	36
	D3	63	63	100%	12	12	100%	41	41	100%	1500	4,500	15	3	17	24
L.Thusara	D2	63	63	100%	12	12	100%	41	41	100%	1500	6,000	12	4	70	
	D3	63	63	100%	12	12	100%	41	41	100%	2000	6,000	11	3	41	
W.P.Jagath	D3	63	63	100%	12	12	100%	41	41	100%	1900	5,700	12	3	44	69
W.M.S.P. Fernando	D3	63	63	100%	12	12	100%	41	41	100%	2200	8,800	12	4	34	48
W.N.C.Fernando	D2	63	63	100%	12	12	100%	41	41	100%	1,800	7,200	18	4	94	120
	D3	63	63	100%	12	12	100%	41	41	100%	2,000	12,000	12	6	60	83
WNST Fernando	D2	63	63	100%	12	12	100%	41	41	100%	1,575	4,725	14	3	15	35
	D3	63	63	100%	12	12	100%	41	41	100%	2,142	6,426	14	3	90	35
W.A.S.T. Pushpakumara	D1	63	63	100%	12	12	100%	41	41	100%	2000	4,000	10	2	24	23
S.Pushpakumara	D4	63	63	100%	12	12	100%	41	41	100%	1980	5,940	10	3	31	59
	D5	63	63	100%	12	12	100%	41	41	100%	2000	6,000	11	3	109	225
											<b>23,897</b>	<b>81,191</b>	<b>161</b>	<b>44</b>	<b>656</b>	<b>757</b>

### 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 97% and length for 94% 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 69% of the observed catch. Overall, scientific data were recorded from 96% of the observed catch (Target(T) = 724), during the latest deployment of crew-based observers (Table 3).

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

Scientific data	T	A	%
Local Name	724	724	100%
English name	724	724	100%
Scientific name	724	724	100%
IOTC code	724	724	100%
Fate	724	724	100%
Weight (kg)	724	704	97%
length (cm)	724	684	94%
Date/ Time	724	724	100%
Location (Lat./ long.	724	497	69%
	<b>6,516</b>	<b>6,229</b>	<b>96%</b>

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

A count of 28 species were observed in the catch recorded by the crew-based observers. According to the collected data, 57.6% (by number) of the fish caught were yellowfin tuna, swordfish (6.9%) and bigeye tuna (4.3%) as target species. Results recorded, 21 other capture species (Table 4) out of which four were protected species (*i.e.*, thresher shark, common bottlenose dolphin, oceanic whitetip shark, Olive ridley turtle). Skipjack tuna (5.8%), were the main other capture species recorded.

From the target species, a total of 498 yellowfin tuna were recorded and the catch per unit effort (per 1,000 hooks) for yellowfin tuna was 5.14 by number of fish whereas the catch per unit effort (per 1,000 hooks) was 166.84kg 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)**

Species name	n	%	CPUE	Weight (kg)	%	CPUE
<b>Target Species</b>	<b>498</b>	<b>68.8%</b>	<b>6.13</b>	<b>15,961</b>	<b>86.6%</b>	<b>196.59</b>
Yellowfin Tuna	417	57.6%	5.14	13,546	73.5%	166.84
Swordfish	50	6.9%	0.62	1,063	5.8%	13.09
Bigeye tuna	31	4.3%	0.38	1,352	7.3%	16.65
<b>Other Capture Species</b>	<b>222</b>	<b>30.7%</b>	<b>2.73</b>	<b>2,330</b>	<b>12.6%</b>	<b>28.70</b>
Lancet Fish	47	6.5%	0.58	177	1.0%	2.18
Skipjack tuna	42	5.8%	0.52	104	0.6%	1.28
Escolar	40	5.5%	0.49	151	0.8%	1.86
Albacore	12	1.7%	0.15	258	1.4%	3.18
Silky Shark	12	1.7%	0.15	326	1.8%	4.02
Common Dolphin	9	1.2%	0.11	19	0.1%	0.23
Indo-Pacific sailfish	9	1.2%	0.11	165	0.9%	2.03
Black Marlin	8	1.1%	0.1	354	1.9%	4.36
Blue shark	8	1.1%	0.1	283	1.5%	3.49
Shortbill spearfish	8	1.1%	0.1	105	0.6%	1.29
Crocodile shark	6	0.8%	0.07	21	0.1%	0.26
Pelagic stingray	6	0.8%	0.07	10	0.1%	0.12
Atlantic Pomfret	4	0.6%	0.05	9	0.0%	0.11
Ocean Sunfish	2	0.3%	0.02	60	0.3%	0.74
Spinetail devil ray	2	0.3%	0.02	155	0.8%	1.91
Wahoo	2	0.3%	0.02	31	0.2%	0.38
Barracuda	1	0.1%	0.01	5	0.0%	0.06
Bigscale Pomfret	1	0.1%	0.01	3	0.0%	0.04
Great Barracuda	1	0.1%	0.01	2	0.0%	0.02
Longfin Mako Shark	1	0.1%	0.01	90	0.5%	1.11
Spanish Mackerel	1	0.1%	0.01	2	0.0%	0.02
<b>Protected Species</b>	<b>4</b>	<b>0.6%</b>	<b>0.05</b>	<b>150</b>	<b>0.8%</b>	<b>1.85</b>
Thresher shark	1	0.1%	0.01		0.0%	0.00
Oceanic whitetip shark	1	0.1%	0.01		0.0%	0.00
Olive ridley	1	0.1%	0.01	150	0.8%	1.85
Common Bottlenose Dolphin	1	0.1%	0.01		0.0%	0.00
	<b>724</b>			<b>18,441</b>		<b>227.13</b>

### 3.4 Outcome

From the total observed catch 90% of catch was retained (648 out of 724 individuals), 2% was discarded alive (15 individuals), 7% (51 individuals) was discarded dead and 1% (10 individuals) was depredated (Table 5). Most of the other capture species were retained. Lancet fish, pelagic stingray, ocean sunfish, Atlantic pomfret 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)**

Row Labels	Total	R	%	DD	%	DL	%	DP	%
<b>Target Species</b>	<b>498</b>	<b>488</b>	<b>98%</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>	<b>10</b>	<b>2%</b>
Yellowfin Tuna	417	408	98%		0%		0%	9	2%
Swordfish	50	49	98%		0%		0%	1	2%
Bigeye tuna	31	31	100%		0%		0%		0%
<b>Other Capture Species</b>	<b>222</b>	<b>160</b>	<b>72%</b>	<b>51</b>	<b>23%</b>	<b>11</b>	<b>5%</b>	<b>0</b>	<b>0%</b>
Lancet Fish	47	1	2%	46	98%		0%		0%
Skipjack tuna	42	42	100%		0%		0%		0%
Escolar	40	40	100%		0%		0%		0%
Albacore	12	12	100%		0%		0%		0%
Silky Shark	12	12	100%		0%		0%		0%
Common Dolphin	9	9	100%		0%		0%		0%
Indo-Pacific sailfish	9	9	100%		0%		0%		0%
Black Marlin	8	8	100%		0%		0%		0%
Blue shark	8	8	100%		0%		0%		0%
Shortbill spearfish	8	8	100%		0%		0%		0%
Crocodile shark	6	2	33%		0%	4	67%		0%
Pelagic stingray	6		0%		0%	6	100%		0%
Atlantic Pomfret	4		0%	4	100%		0%		0%
Ocean Sunfish	2		0%	1	50%	1	50%		0%
Spinetail devil ray	2	2	100%		0%		0%		0%
Wahoo	2	2	100%		0%		0%		0%
Barracuda	1	1	100%		0%		0%		0%
Bigscale Pomfret	1	1	100%		0%		0%		0%
Great Barracuda	1	1	100%		0%		0%		0%
Longfin Mako Shark	1	1	100%		0%		0%		0%
Spanish Mackerel	1	1	100%		0%		0%		0%
<b>Protected Species</b>	<b>4</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>	<b>4</b>	<b>100%</b>	<b>0</b>	<b>0%</b>
Thresher shark	1		0%		0%	1	100%		0%
Common Bottlenose Dolphin	1		0%		0%	1	100%		0%
Olive ridely	1		0%		0%	1	100%		0%
Oceanic whitetip shark	1		0%		0%	1	100%		0%
	<b>724</b>	<b>648</b>	<b>90%</b>	<b>51</b>	<b>7%</b>	<b>15</b>	<b>2%</b>	<b>10</b>	<b>1%</b>

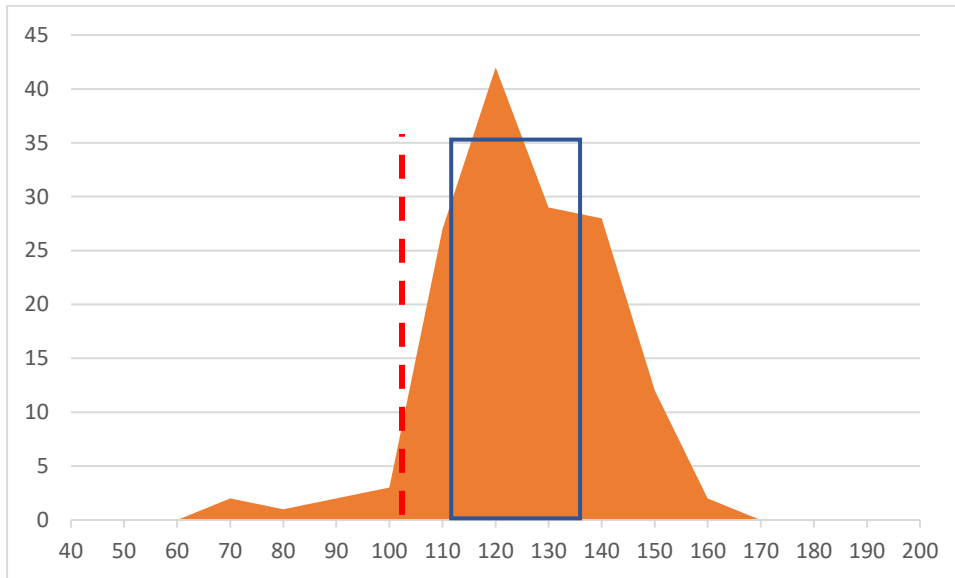
### 3.5 Target Species Analysis

Length data (LJFL) were extracted from images of yellowfin tuna by pelagikos for 406 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 35 cm and maximum length was 163.5 cm. The average size of yellowfin tuna caught was 119cm.

According to data available on Fishbase<sup>1</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*).

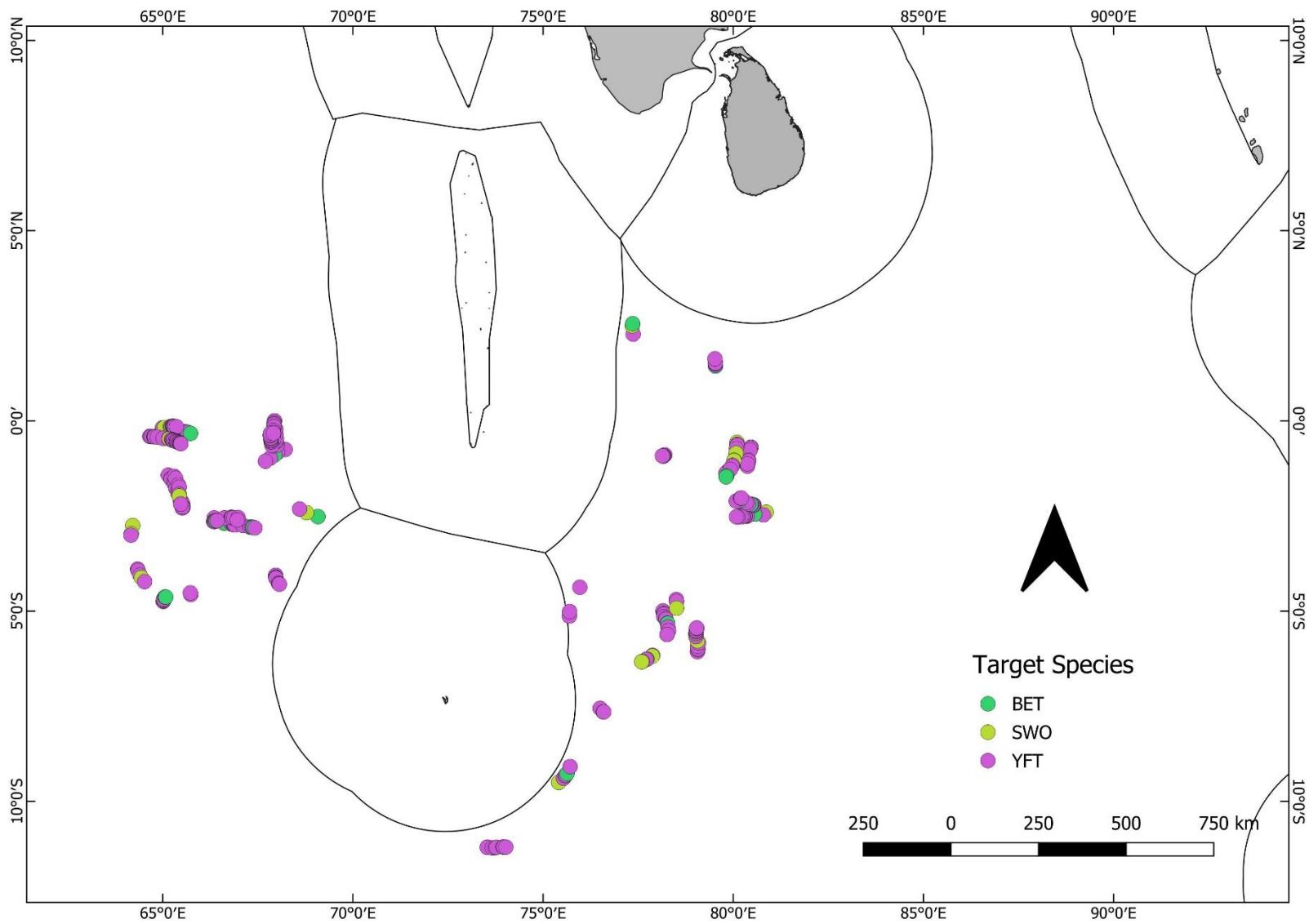
<sup>1</sup> [www.fishbase.de](http://www.fishbase.de)

According to the data analysis, 92% 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 64% of fish are in the length optimum range.

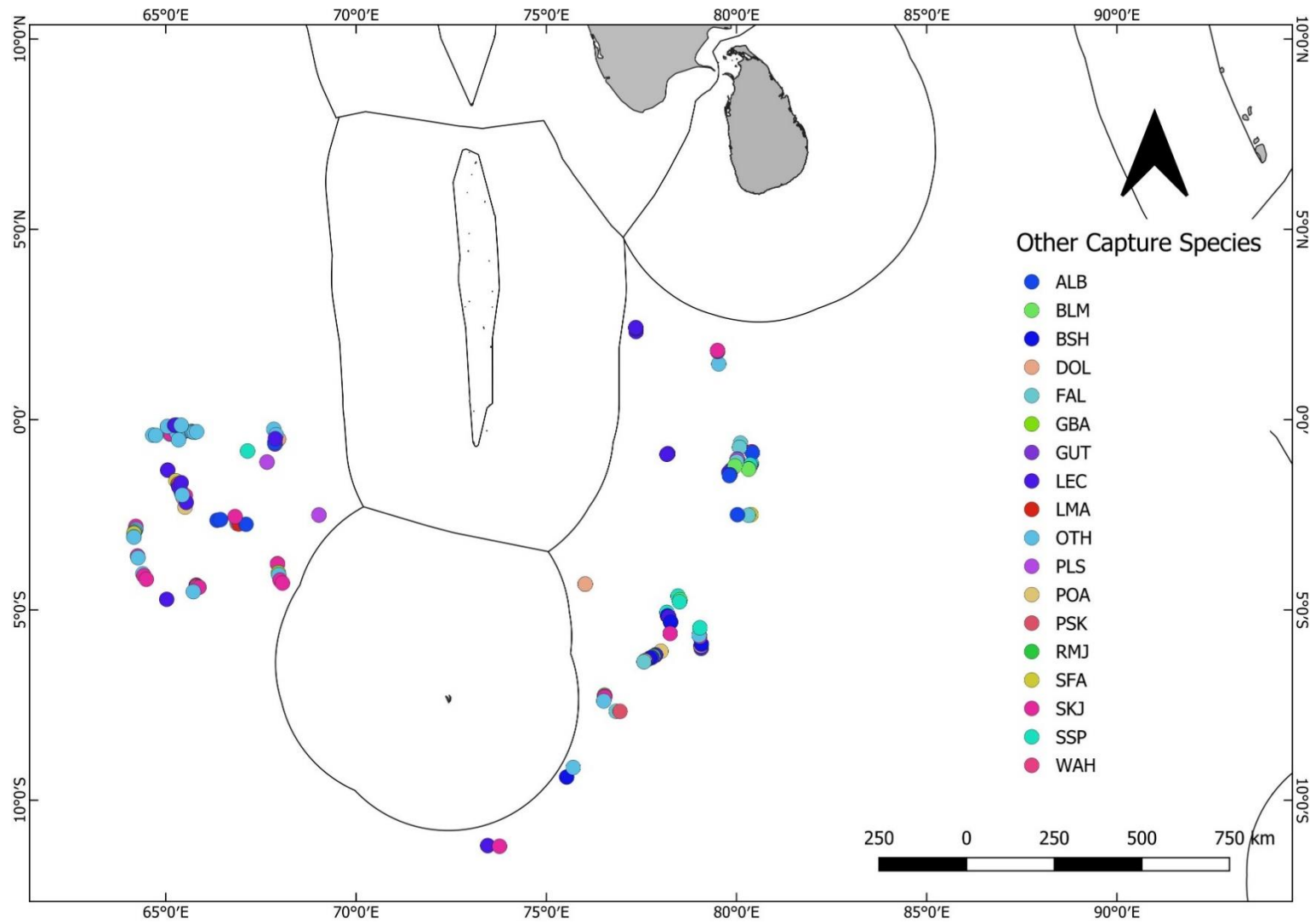


**Figure 5 - Length frequency for YFT under the crew-based observer program**

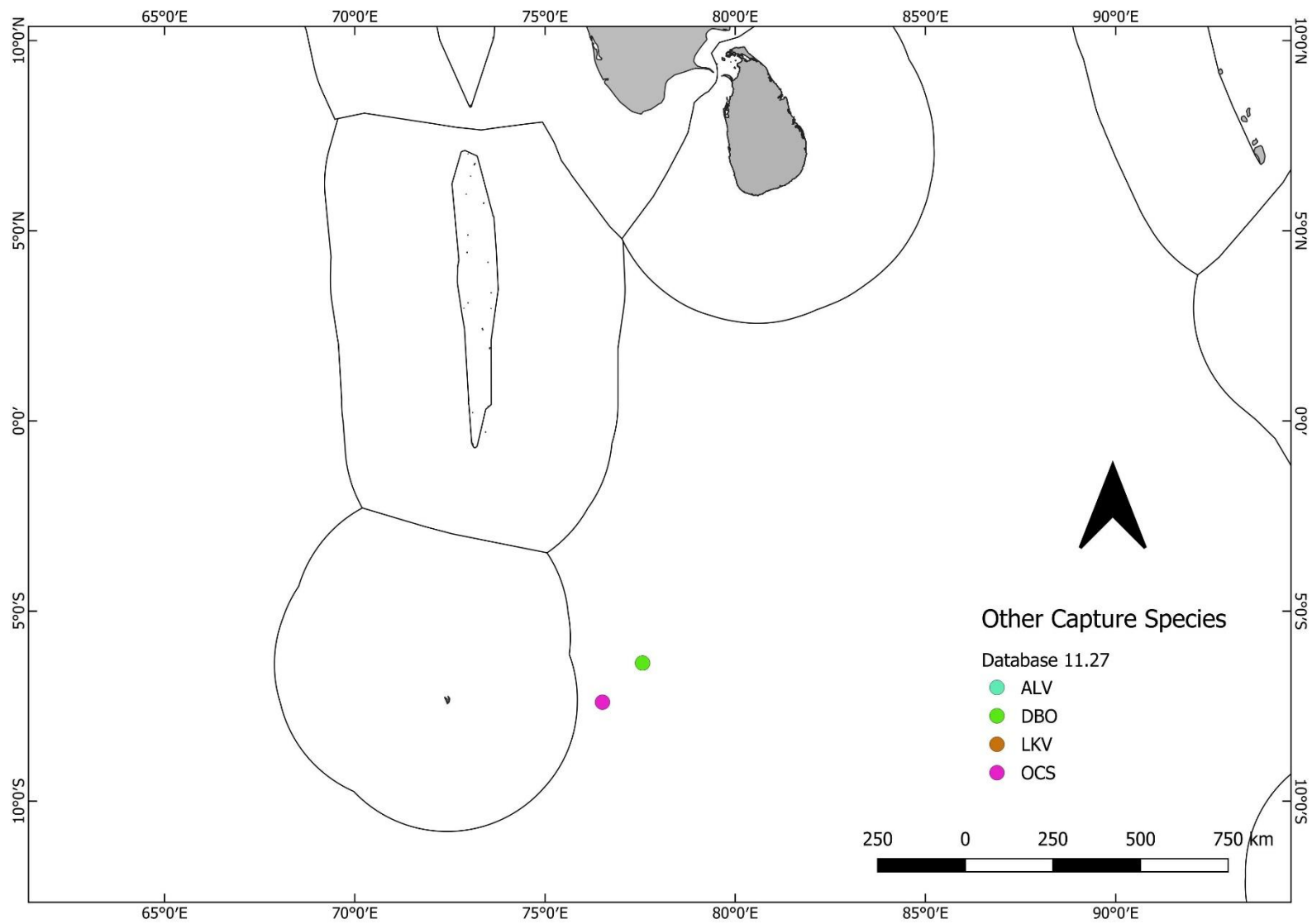
*Thunnus albacares* Maturity:  $L_m$  [103.3](#), range 78 - 158 cm. Max length: 239 cm FL male/unsexed; common length: 150 cm FL male/unsexed



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



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



**Figure 3: Locations of the Protected 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. 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.

