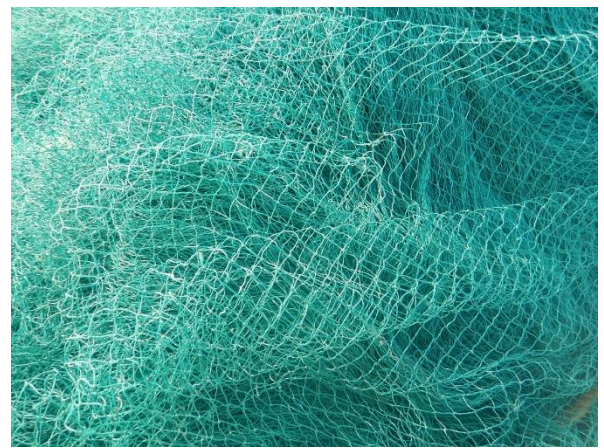




Compliance Survey Report 2024

Palk Bay & Gulf of Mannar Fisheries

Preliminary Data Analysis



Researched and written by

pelagikos private limited

in collaboration with the District Fisheries Offices of the Department of Fisheries and Aquatic Resources in Jaffna, Kilinochchi, Mannar and Puttalam districts

on behalf of the

Sri Lanka Blue Swimming Crab Fisheries Improvement Project



Sri Lanka
Blue Swimming Crab
Fishery Improvement Project

pelagikos
enlightened interference

23rd August, 2024

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Executive Summary

The following observations were derived based on a field survey and the collection and analysis of length and weight data between December 2023 and June 2024 by pelagikos pvt ltd, to better understand the current status of the kelee shad (*Hilsa kelee*) stock off the coast of Mannar Island and the impact of fishing on the stock.

Palk Bay Fishery

Data Collection | Analysis & Results | Compliance Report to be completed

Gulf of Mannar Fishery

Data Collection | Analysis & Results | Compliance Report to be completed

Recommendations

Five recommendations are proposed to improve the current status and reduce the impact of *growth overfishing* on the kelee shad stock off the coast of Mannar District in 2025.

Palk Bay Fishery

Recommendations to be added once the analysis is complete

Gulf of Mannar Fishery

Recommendations to be added once the analysis is complete

pelagikos pvt ltd
19th August, 2024

Introduction

A voluntary *Code of Conduct for Blue Swimming Crab Fishing* was introduced by the Sri Lanka Blue Swimming Crab (SLBSC) fisheries improvement project (FIP) in 2017. The code was developed to ensure the sustainable use of resources by applying good management measures to maintain the status of the blue swimming crab (BSC) stocks at healthy levels and to minimize the impact on the marine environment, protected species and the wider marine biodiversity found in the Palk Bay and the Gulf of Mannar. The code was formulated in consultation with the Department of Fisheries and Aquatic Resources (DFAR), Seafood Exporters' Association of Sri Lanka (SEASL) and fishing communities in the districts bordering the Palk Bay and Gulf of Mannar BSC fisheries. The *Code of Conduct for Blue Swimming Crab Fishing* comprised Ten mutually agreed Rules for sustainable BSC fishing (Annex A).

Officers from the DFAR in the four districts supported by pelagikos pvt ltd conducted annual field surveys at all BSC landing centres in their districts, to assess the level of compliance with the voluntary *Code of Conduct for Blue Swimming Crab Fishing* in 2017, 2018 and 2019. The COVID pandemic prevented DFAR officers from conducting the annual compliance survey with the Code of Conduct in 2020 and 2021. The collapse of the Sri Lankan economy and the civil unrest that follow, prevented DFAR officers conducting an annual compliance survey in 2021.

The Minister of Fisheries and Aquatic Resources signed the Blue Swimming Crab Fishery Management Regulations into law on 22nd April, 2022. The nine regulations set out therein are intended to maintain the status of BSC stocks at a sustainable level, while delivering the maximum sustainable yield for BSC fishermen and minimizing the impact of BSC fishing on marine habitats, protected species and other non-target species.

This report describes the results of the first annual survey of compliance with the Blue Swimming Crab Fishery Management Regulations, 2022. The field survey was conducted by DFAR in the four districts bordering the Palk Bay and the Gulf of Mannar fisheries at the end of 2023 and the beginning of 2024, with support from pelagikos pvt ltd.

Palk Bay

Data Collection

The field survey to assess the level of compliance with the blue swimming crab fishing regulation (2022) in the Palk Bay fishery was conducted over a period of 14 days by Fisheries Inspectors (FIs) from the Department of Fisheries and Aquatic Resources' (DFAR) District Fisheries Offices (DFO) in Jaffna (7 days), Kilinochchi (2 days) and Mannar (6 days) districts and pelagikos staff, between 28th November 2023 and 14th February 2024. The field survey was conducted in 11 Fisheries Inspector Divisions (FID) in the Palk Bay Fishery. Five FIDs in Jaffna District (*i.e.* Delft, Karainagar, Kayts, Velanai East and Velanai west), two FIDs in Kilinochchi District (*i.e.*, Nachchikuda and Poonagary) and four FIDs in Mannar District (*i.e.*, Erukkalampiddy, Mannar Town, Pesalai, Vidaththaltivu). FIs and pelagikos staff collected data on blue swimming crab fishing and the purchasing from 32 landing centres in the Palk Bay fishery (Jaffna = 11 | Kilinochchi = 9 | Mannar = 12), using the Data Collection Format in Annex B.

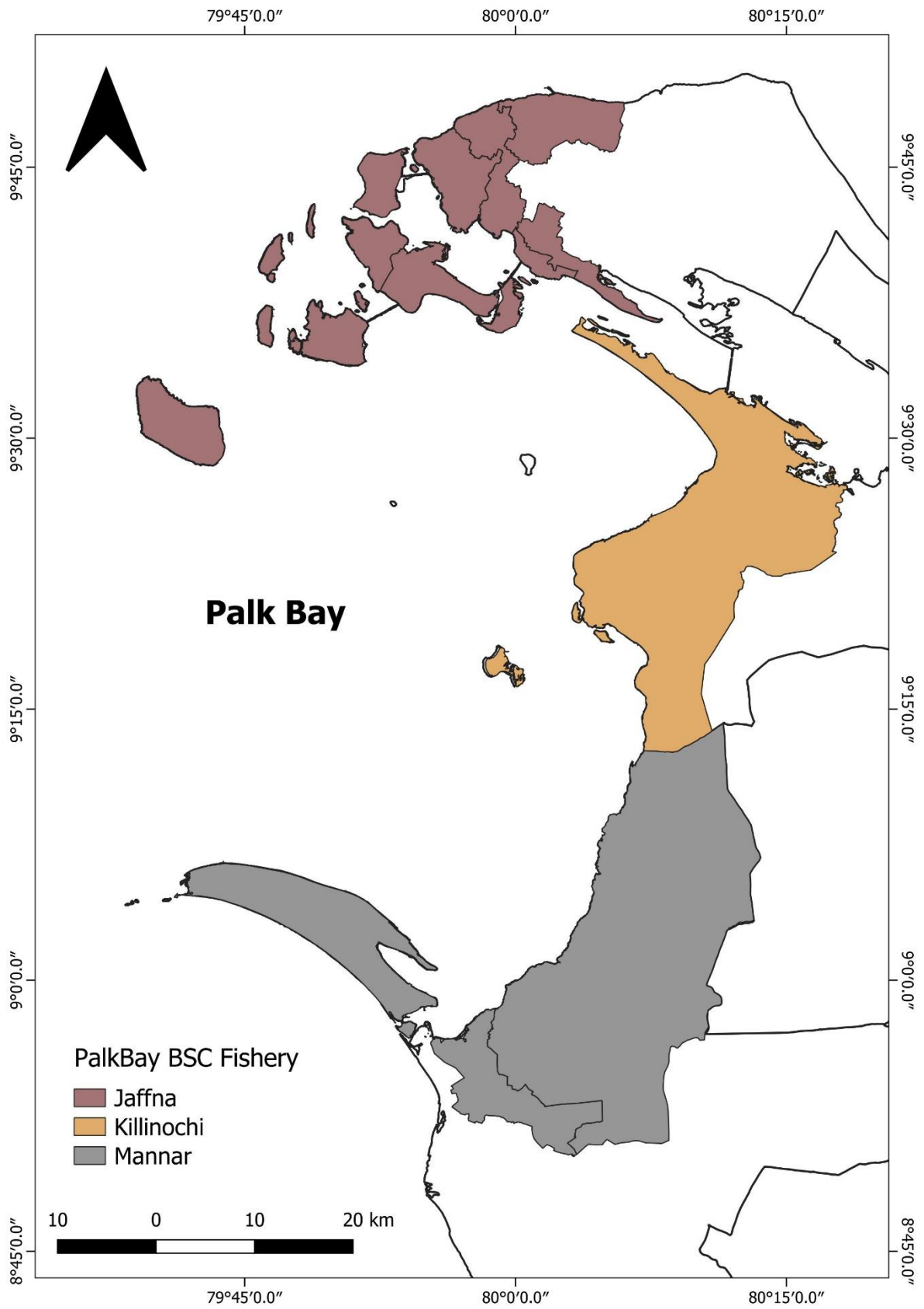
Preliminary Analysis

a) BSC Fishermen & Boats

More than 3,400 fishermen were engaged in BSC fishing at the time of the field survey (Table 1). 48% of BSC fishermen were based in Jaffna District, 32% in Mannar District and 19% in Kilinochchi District. Fibre-reinforced plastic boats (OFRP) were the commonest type of fishing boats used by fishermen to harvest BSC. OFRP boats were used by fishermen at 31 out of 32 landing centres in all three districts in the Palk Bay fishery (Table 1). Motorised traditional boats (MTRB) were used by fishermen at roughly (14) half of the BSC landing centres (32) in the Palk Bay fishery. Non-motorised traditional fishing boats (NMTRB) were used at less than a third of landing centres (9) in the Palk Bay fishery (32), mainly in Mannar District.

Table 1 BSC fishermen and boats active in the Palk Bay fishery in 2023/24

Palk Bay - Fishermen			Palk Bay - Boats			
n =	%		NMTRB	MTRB	OFRP	
Jaffna District	1,640	48%	Jaffna District	3	3	11
<i>Delft</i>	350		<i>Delft</i>			1
<i>Karainagar</i>	15		<i>Karainagar</i>	1		1
<i>Kayts</i>	600		<i>Kayts</i>	1	1	3
<i>Velanai East</i>	490		<i>Velanai East</i>	1	1	3
<i>Velanai west</i>	185		<i>Velanai west</i>		1	3
Kilinochchi District	660	19%	Kilinochchi District		1	9
<i>Nachchikuda</i>	420		<i>Nachchikuda</i>		1	7
<i>Poonagary</i>	240		<i>Poonagary</i>			2
Mannar District	1,102	32%	Mannar District	6	10	11
<i>Erukkalampiddy</i>	128		<i>Erukkalampiddy</i>		2	2
<i>Mannar Town</i>	100		<i>Mannar Town</i>	1	1	1
<i>Pesalai</i>	614		<i>Pesalai</i>	2	3	5
<i>Vidaththaltivu</i>	260		<i>Vidaththaltivu</i>	3	4	3
Grand Total	3,402		Grand Total	9	14	31



Map of the Palk Bay BSC Fishery

b) Fishing Gear

Only bottom-set crab nets were used to harvest BSC in the Palk Bay fishery (Table XX). The mesh sized used by BSC fishermen ranged from 3½" to 5". 3½" mesh bottom-set nets were used at 5 of the 32 landing centres in the Palk Bay fishery. The majority of fishermen set 4½" (29 landing centres) and 5" mesh nets. The twine used in bottom-set crab nets ranged from 2ply to 6 ply. The majority of fishermen used either 4ply or 6ply nets.

Table 2 Fishing gear by type, mesh size and ply

Palk Bay - Gear	Bottom-Set	Top-Set	3½"	4 ½"	5"	2ply	4ply	5ply	6py
Jaffna District	11	0	2	10	5	0	2	3	6
<i>Delft</i>	1			1	1				1
<i>Karainagar</i>	1		1	1				1	
<i>Kayts</i>	3			3	3				3
<i>Velanai East</i>	3		1	2			2	2	1
<i>Velanai west</i>	3			3	1				1
Kilinochchi District	9	0	2	7			7	2	1
<i>Nachchikuda</i>	7			7			5	2	1
<i>Poonagary</i>	2		2				2		
Mannar Disitric	12	0	1	12	4	1	9		7
<i>Erukkalampiddy</i>	2			2					
<i>Mannar Town</i>	1			1			1		
<i>Pesalai</i>	5			5	2	1	4		3
<i>Vidaththaltivu</i>	4		1	4	2		4		4
Grand Total	32	0	5	29	9	1	18	5	14

Nylong nets were used at 29 or the 32 landing centres in the Palk Bay fishery. Bottom-set nets made from polyfilament plastic twine were used at seven landing centres (Table XX), all in Mannar District. Monofilament (MF) nets were used in 9 out of the 32 landing centres survey, eight of which were in Jaffna District.

Table XX Fishing gear by material

Palk Bay - Gear	Nylon	Plastic	No - MF	Yes - MF
Jaffna District	11		3	8
<i>Delft</i>	1		1	
<i>Karainagar</i>	1		1	
<i>Kayts</i>	3			3
<i>Velanai East</i>	3			3
<i>Velanai west</i>	3		1	2
Kilinochchi District	9		8	1
<i>Nachchikuda</i>	7		7	
<i>Poonagary</i>	2		1	1
Mannar Disitric	6	7	12	
<i>Erukkalampiddy</i>			2	
<i>Mannar Town</i>			1	
<i>Pesalai</i>	5	3	5	
<i>Vidaththaltivu</i>	1	4	4	
Grand Total	26	7	23	9

c) BSC Supply Chains

80 collection centres (CC) run by sub agents or agents buy BSC in the Palk Bay fishery. The largest number of collection centres operate in Mannar District (36), followed by Kilinochchi (24) and Jaffna (20) districts. At least ten agents and exporters buy BSC from collection centres in the Palk Bay fishery.

Table XX Collection Centres, Agents and Exporters buying and selling crabs in the Palk Bay fishery

Palk Bay - Supply Chain	CC	Agents/Exporters
Jaffna District	20	4
Delft	2	
Karainagar	1	
Kayts	3	
Velanai East	9	
Velanai west	5	
Kilinochchi District	24	3
Nachchikuda	20	
Poonagary	4	
Mannar DisitRICT	36	10
Erukkalampiddy	4	
Mannar Town	5	
Pesalai	17	
Vidaththaltivu	10	
Grand Total	80	10

d) Purchasing and processing under-sized crabs

This analysis is pending, the section has yet to be completed.

e) Purchasing BSC from other fishing gears

This analysis is pending, the section has yet to be completed.

Compliance Survey Report

This section of the report is pending, subsequent to the completion of the analysis.

a) Vessel Type

b) Gear Type

c) Undersize crabs

Discussion

Recommendations

Data Collection

The field survey to assess the level of compliance with the blue swimming crab fishing regulation (2022) in the Gulf of Mannar fishery has so far been conducted over a period of 11 days by Fisheries Inspectors (FIs) from the Department of Fisheries and Aquatic Resources' (DFAR) District Fisheries Offices (DFO) in Mannar (4 days) and Puttalam (7 days) districts and pelagikos staff, between 11th November 2023 and 21st March 2024. The field survey was conducted in eight Fisheries Inspector Divisions (FID) in the Gulf of Mannar Fishery. Five FIDs in Puttalam District (*i.e.* Kalpitiya Island, Kalpitiya land, Kandakuliya, Puttalam, Wanathawilluwa) and three FIDs in Mannar District (*i.e.*, Chilawathurai, Mannar Town, Nanattan). FIs and pelagikos staff collected data on blue swimming crab fishing and the purchasing from 21 landing centres in the Palk Bay fishery (Puttalam = 16 | Mannar = 5), using the Data Collection Format in Annex B.

Preliminary Analysis

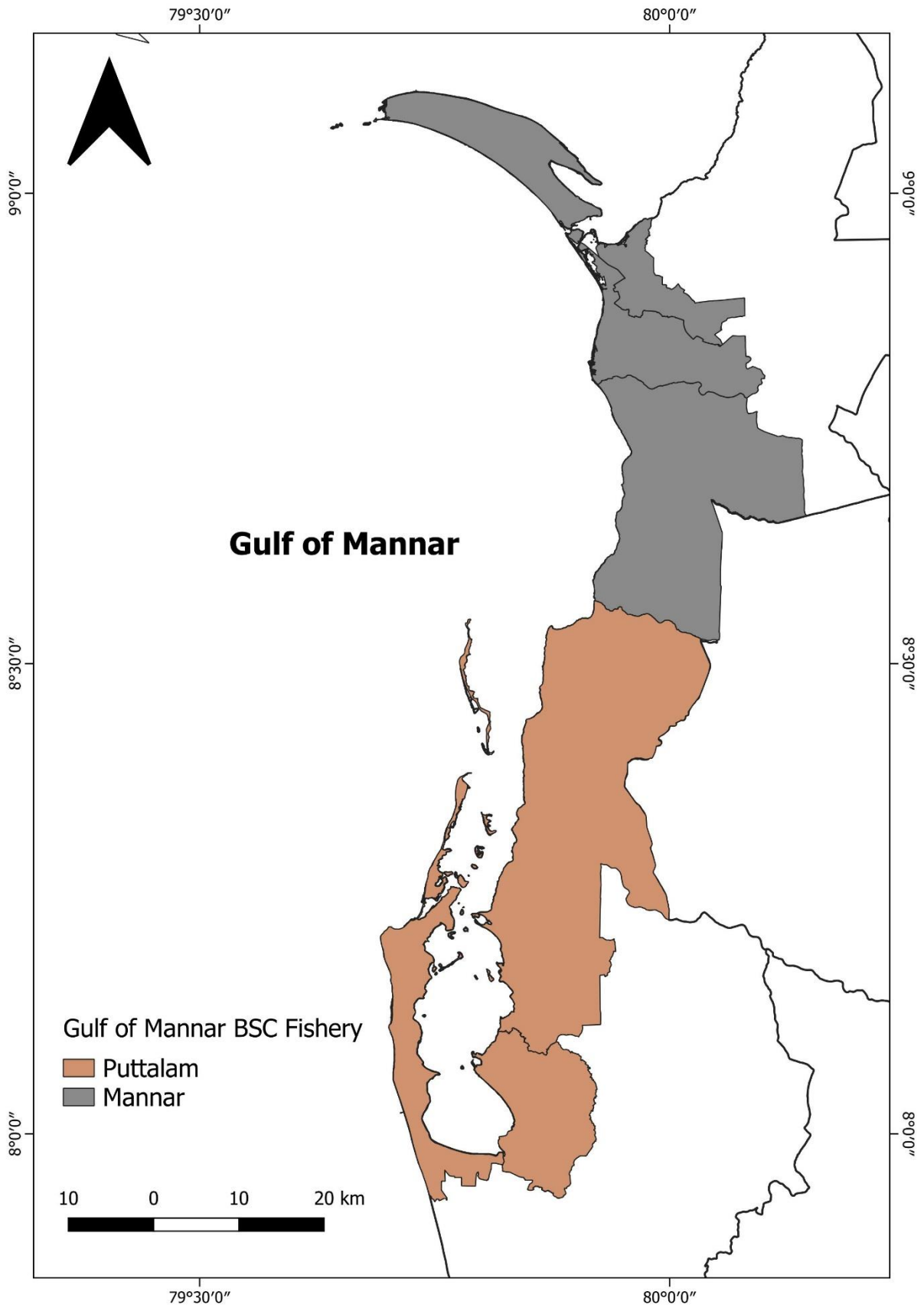
a) BSC Fishermen & Boats

More than 1,000 fishermen were engaged in BSC fishing in the Gulf of Mannar, at the time of the field survey (Table 2). 56% of BSC fishermen were based in Puttalam District and the balance 44% operated from Mannar District.

Fibre-reinforced plastic boats (OFRP) were the commonest type of fishing boats used by fishermen to harvest BSC. OFRP boats were used by fishermen in 20 out of the 21 landing centres in the Gulf of Mannar fishery (Table 2). Only fishermen at Wannimundel landing centre within the Puttalam estuary, did not use OFRP boats to harvest BSC. Non-motorised traditional fishing boats (NMTRB) were used at two thirds of the landing centres (14) in the Gulf of Mannar fishery (21), mainly in the Puttalam estuary in Puttalam District. Motorised traditional boats (MTRB) were used by fishermen at a third of the landing centres surveyed.

Table 2 BSC fishermen and boats active in the Gulf of Mannar fishery in 2023/24

Gulf of Mannar	n =	%	Gulf of Mannar	NMTRB	MTRB	OFRP
Mannar District	460	44%	Mannar District	1	1	5
<i>Chilawathurai</i>	95		<i>Chilawathurai</i>			2
<i>Mannar Town</i>	200		<i>Mannar Town</i>			2
<i>Nanattan</i>	165		<i>Nanattan</i>	1	1	1
Puttalam District	586	56%	Puttalam District	13	6	15
<i>Kalpitiya Island</i>	356		<i>Kalpitiya Island</i>	3		4
<i>Kalpitiya land</i>	115		<i>Kalpitiya land</i>	5	5	6
<i>Kandakuliya</i>	25		<i>Kandakuliya</i>	1	1	1
<i>Puttalam</i>	10		<i>Puttalam</i>	1		1
<i>Wanathawilluwa</i>	80		<i>Wanathawilluwa</i>	3		3
Grand Total	1,046		Grand Total	14	7	20



Map of the Gulf of Mannar Fishery

b) Fishing Gear

Only bottom-set crab nets were used to harvest BSC in the Mannar District in the Gulf of Mannar fishery (Table XX). Top-set nets were used to harvest BSC at eight landing centres in Puttalam District. The mesh by BSC fishermen ranged from 3½" to 5". 3½" mesh nets were used at 5 of the 21 landing centres in the Gulf of Mannar fishery. The majority of fishermen set 4½" (20 landing centres) and 5" mesh nets (15 landing centres). The twine used in crab nets ranged from 2ply to 6 ply. The majority of fishermen used either 6ply nets to harvest BSC.

Table 2 Fishing gear by type, mesh size and ply

Gulf of Mannar - Gear Type	Bottom-Set	Top-Set	3½"	4 ½"	5"	2ply	4ply	5ply	6py
Mannar Disitrect	5	0		5	3		2		3
<i>Chilawathurai</i>	2			2					2
<i>Mannar Town</i>	2			2	2		1		1
<i>Nanattan</i>	1			1	1		1		
Puttalam District	14	8	5	15	12	1	7		14
<i>Kalpitiya Island</i>	4	1		4	4		1		4
<i>Kalpitiya land</i>	6	6	5	6	4	1	4		6
<i>Kandakuliya</i>		1		1			1		
<i>Puttalam</i>	1			1	1		1		1
<i>Wanathawilluwa</i>	3			3	3				3
Grand Total	19	8	5	20	15	1	9		17

The type of net material used in Mannar District, in the Gulf of Mannar fishery was not recorded during the field survey. Nylon nets wer used in 16 or the 19 landing centres survyed in Puttalam District. Polyfilament plastic nets were used in eight landing centres (Table XX). Monfilament (MF) nets were not used on any of the landing centres in the Gulf of Mannar fishery.

Table XX Fishing gear by material

Gulf of Mannar - Gear Type	Nylon	Plastic	MF - No	MF - Yes
Mannar Disitrect			5	
<i>Chilawathurai</i>			2	
<i>Mannar Town</i>			2	
<i>Nanattan</i>			1	
Puttalam District	16	8	16	
<i>Kalpitiya Island</i>	4	4	4	
<i>Kalpitiya land</i>	7	1	7	
<i>Kandakuliya</i>	1		1	
<i>Puttalam</i>	1		1	
<i>Wanathawilluwa</i>	3	3	3	
Grand Total	16	8	21	

c) BSC Supply Chains

49 collection centres (CC) run by sub agents or agents buy BSC in the Gulf of Mannar fishery. The largest number of collection centres operate in Puttalam District (34). At least 12 agents and exporters buy BSC from collection centres in the Palk Bay fishery.

Table XX Collection Centres, Agents and Exporters buying and selling crabs in the Palk Bay fishery

Gulf of Mannar - Supply Chain	CC	Agents/Exporters
Mannar Disitric	15	7
<i>Chilawathurai</i>	4	
<i>Mannar Town</i>	5	
<i>Nanattan</i>	6	
Puttalam District	34	5
<i>Kalpitiya Island</i>	8	
<i>Kalpitiya land</i>	21	
<i>Kandakuliya</i>	1	
<i>Puttalam</i>	1	
<i>Wanathawilluwa</i>	3	
Grand Total	49	12

d) Purchasing and processing under-sized crabs

This analysis is pending, the section has yet to be completed.

e) Purchasing BSC from other fishing gears

This analysis is pending, the section has yet to be completed.

Compliance Survey Results

This section of the report is pending, subsequent to the completion of the analysis.

a) Vessel Type

b) Gear Type

c) Undersize crabs

Discussion

Recommendations

References

Annex A Code of Conduct for Blue Swimming Crab Fishing 2017

This *Code of Conduct for Blue Swimming Crab Fishing in Sri Lanka* has been developed to ensure the sustainable use of resources by applying good management measures to maintain the status of the blue swimming crab stocks at healthy limits and to minimize the impact on the marine environment and the associated species. This code focuses on best fishing practices. It's both a philosophy for fishing and a practical way of ensuring that there will be crabs for future generations to catch. As part of that goal, this guide tells you the practices that should follow to achieve the best out of the fishing. The code has been developed by the Department of Fisheries and Aquatic Resources, in collaboration of Sea Food Exporters' Association of Sri Lanka and blue swimming crab fishing communities in the districts of Jaffna (Kayts, Delf and Velani DSD), Kilinochchi (Poonaryn DSD), Mannar (Mantahi West, Nananthan, Musalai and Mannar Town) and Puttalam (Kalpitya and Wannaththawiluwa DSD).

- Rule 1. Blue swimming crab fishermen will operate in compliance with the Fisheries and Aquatic Resources Act No. 2 of 1996 (*amendments and regulations*)
- Rule 2. Blue swimming crabs shall only be harvested using 4ply or 6 ply bottom-set crab nets with a minimum mesh size of 4½" (114.3 mm)
- Rule 3. The maximum height of a bottom-set crab net shall be 15 eyes and the maximum length of shall be 1,500 eyes per piece
- Rule 4. An individual fisherman can use / set a maximum number of 35 net pieces/panels in a single day
- Rule 5. The *set time (soakage time)* of a bottom-set crab net net for catching of blue swimming crabs shall be not more than 12 hours 6.00 pm to 6.00 am.
- Rule 6. An individual fisherman will not deliberately place or set his bottom-crab nets on coral reefs, rocky reefs or sea grass beds.
- Rule 7. Blue swimming crab fishing will be limited to six night per week, commencing Sunday evening and ending on Saturday morning.
- Rule 8. Any person who intends to supply blue swimming crabs for export shall not use any other gears such as traps, trawls, fixed nets, other than the bottom-set crab net prescribed above.
- Rule 9. Blue swimming crab fishermen will dispose of all used, damaged, discarded crab nets on land, in an environmentally safe manner to avoid 'ghost fishing'
- Rule 10. Any person who engages in fishing for blue swimming crab in compliance with this code and or purchases, sells or processes blue swimming crab harvested using bottom-set crab nets shall assist the DFAR in the collection of catch, effort data and production data as and when requested by staff and officers of the respective District Fisheries Extension Offices and or the Fishery Management Division in Colombo.



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The Gazette of the Democratic Socialist Republic of Sri Lanka
EXTRAORDINARY

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No. 2277/04 - MONDAY, APRIL 25, 2022

(Published by Authority)

PART I : SECTION (I) — GENERAL
Government Notifications

L.D.B. 1/2012 (V).

FISHERIES AND AQUATIC RESOURCES ACT, No. 2 OF 1996

REGULATIONS made by the Minister of Fisheries under Section 61 of the Fisheries and Aquatic Resources Act, No. 2 of 1996.

DOUGLAS DEVANANDA,
Minister of Fisheries.

Colombo.
22nd April, 2022.

Regulations

1. These regulations may be cited as the Blue Swimming Crab Fishery Management Regulations, 2022.
2. A person shall not engage in Blue Swimming Crab Fishing in Sri Lanka Waters, using bottom set gill nets or traps except under a valid operation licence issued by the Director - General according to the Fishing Operations Regulations of 1996 published in the *Gazette Extraordinary* No. 948/25 of November 07, 1996.
3. A person shall not use any net other than Nylon polifilament net for Blue swimming crab fishing operations.
4. A person shall not use bottomset gillnets of mesh size less than four point five (4.5) inches or ply more than six (6) for Blue Swimming Crab fishing operations.



1A- PG 5821 — 2508 (04/2022)

This Gazette Extraordinary can be downloaded from www.documents.gov.lk

5. A person shall not process or export live or dead Blue Swimming Crabs weighing less than 100 grams of unit wet weight.
6. The Director - General shall determine the number of licences issued annually and operation specifications of crab fishing according to the recommendations of the National Aquatic Resources Research and Development Agency, on requirement or in every three years period.
7. The Minister shall declare closed seasons and open seasons for crab fishing in areas specified by a Notice made by him under section 34 of the Fisheries and Aquatic Resources Act, No. 2 of 1996 on the recommendation of the National Aquatic Resources Research and Development Agency, according to the requirement or in every three years period.
8. A person shall not use any other type of vessel for Blue Swimming Crab fishing operations except Outboard engine Fiberglass Reinforced Plastic Boat (OFRP), or Mechanized or Non mechanized Traditional Boats (MTRB or NTRB).
9. A person shall not dredge or damage the sea bottom in conducting fishing operations for Blue Swimming Crabs.
10. A license for Blue Swimming Crab fishing operations shall provide production data and any other data relating to the Fishing operations as required by the Director-General.
11. In these regulations -

"Director - General" means the Director - General of the Department of Fisheries and Aquatic Resources;

"Processing" means boiling, removal of carcase, removal of guts and gills, cutting, or removal of meat of live or dead crabs for the purpose of selling or exporting.

EOG 04 - 0163

Annex B Compliance Survey Field Data Collection Format

Date		Collected by			
District		FID Division		Landing Centre	

Compliance Survey - Fishing

No.	Vessel Type	Net Type	Mesh Size	Ply	Material	Thangus?
BSC Fishermen	FRP MTRB TRB?	Bottom-set Top-set?	> 4½"?	< 6 ply?	Nylon Plastic	YES / NO

Compliance Survey - Agents & Exporters

Name of the Wadi Owner	Exporter Company	Purchasing < 100g Crabs?	Purchasing Price?	Processing < 100g?	Stakenets @ LC	Stakenet Purchasing?	Trawling @ LC	Trawl net Purchasing?
	Manufacturer	YES NO	LKR	YES NO	YES NO	YES NO	YES NO	YES NO