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Economic performance of marine fishing operations and valuation of fish landings in the Union Territory of Puducherry, south-eastern India

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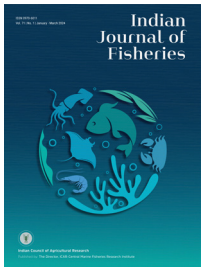

Abstract

The techno-economic evaluation of different fishing methods in Puducherry was carried out for assessing the economic efficiency of marine fishing operations and valuation of fish landings. The average operating cost of multi-day (4 day) trawl, single day trawl, motorised gillnetters and non-motorised gillnetters were found to be ₹4,45,442, ₹33,323, ₹5,623 and ₹2,094 respectively and the net operating income per trip was worked out as ₹2,09,738, ₹15,302, ₹3,172 and ₹866, respectively. The operational efficiency of the motorised craft-gillnet combination was the highest with a lower operating ratio of 0.64, compared to other craft-gear combinations. The capital productivity was 0.69 for single day trawl and 0.68 for multi-day trawls in Puducherry. The labour productivity was highest at 348 kg per trip for multi-day trawls, followed by 47 kg for single day trawls. The share of Gross Value Added (GVA) was higher for single day non-motorised gillnetters operating in Puducherry (89.27%), followed by single day motorised gillnetters (84.96%), single day trawls (73.05%) and multi-day trawls (68.91%). Landing Centre (LC) valuation was worked out as ₹980 crores, and the Retail Centre (RC) valuation as ₹1350 crores. The average fishers' share in consumer rupee was found to be 68.43%. Rays had the highest marketing efficiency at 79.32%, followed by Octopus with a moderate efficiency of 73.68%, while Anchovies recorded the lowest at 63.48%. The evaluation of economic performance revealed that the labour share, escalating fuel prices and the volatile market prices of fish landings in recent years are negatively impacting the profitability. In fishing activities, the increased expenses per trip, the lower landings, and the resulting decrease in gross earnings per trip have emerged as significant limitations on the economic returns from various fishing techniques.

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Introduction

India stands as a major player in the global fisheries sector, accounting for approximately 8% of the global output (FAO, 2024). The country ranks second in aquaculture production, leads in shrimp production and export, and is the second-largest producer in capture fisheries, firmly establishing itself as the second-largest fish producer globally (PIB, 2026). In 2025, the estimated marine fish landings in India stood at 3.57 million t (CMFRI, 2025). While aquaculture has witnessed vibrant growth in recent years, the marine capture fisheries sector remains a crucial pillar of the country's economic and social structure, supporting millions of livelihoods (CMFRI, 2025). The sector's core objectives encompass, increasing the efficiency of fish production, enhancing the welfare of fishers, boosting trade and exports, creating employment and guaranteeing food security. Because of its taste, appeal, and proven health advantages, fish and fish products are becoming increasingly popular as a preferable substitute for other animal proteins (de Boer *et al.*, 2020). With changing consumption patterns, emerging market forces and technological developments, the fisheries sector has assumed added importance in India and has transformed from subsistence fishing

to the status of the multi-crore industry over the last seven decades (Pathak *et al*, 2022; DoF, 2025).

The transformation of the Indian fisheries sector was not confined to primary production alone. The secondary and tertiary sectors also witnessed significant growth, with development of infrastructure for transport, storage, processing and post-harvest handling at landing centres and market yards (Shyam *et al*., 2015). Many fishery business enterprises like ice plants, processing/grading centres and fish meal plants have come up along the coast. However, this growth has been accompanied by serious challenges. The overcapitalisation of the fleet and escalating fishing effort have exerted pressure on near-shore fishery resources, resulting in a stagnation or decline in catch per unit effort (CPUE) across many of India's coastal regions (Sathianandan *et al*., 2011; GoI, 2017). In an open access fishery, this tendency to overexpand effort beyond the optimal level leads to a situation where rising operational costs are no longer matched by proportionate increases in revenue, thereby eroding the economic viability of fishing operations (Hannesson, 1993; Aswathy *et al.,* 2014; Gordon, 2019). In this context, understanding the economic efficiency of different fishing operations and the value realised along the marketing chain have become increasingly important for informed fisheries management.

The economic significance of marine fish production is further reflected in the substantial value of landings at the national level. The total valuation of marine fish landings in the year 2025 at the landing centre (point of first sales) was estimated at ₹69,254 crores and at retail centre (RC) was ₹97,702 crores (CMFRI, 2026). Markets and trade have been the major driving forces behind the realisation of the huge value of fish landings, with the valuation of fish increasing considerably on account of higher price realisation, movement of fish from non-consumption areas to consumption areas, increased export earnings and augmented consumption. However, the producer's share in the consumer's rupee varies considerably depending on the commercial value of the species, season, landing source and proximity to consumption centres, indicating that the actual economic benefits accruing to fishers are not uniform across regions and vessel categories. Given the volatile nature of marine fish prices and the wide variation in producer's share across species and markets, an assessment of the marketing efficiency and valuation of fish landings at the landing centre and retail centre levels assumes critical importance for understanding the actual economic benefits reaching the fishers.

Systematic assessment of economic performance across different fishing operations have been undertaken in various maritime states of India. Reviews of different fishing units indicate that, on average, most operations remain profitable because their production surpasses the break-even point (Sathiadhas, 1989; Narayanakumar *et al.,* 2009). These studies established the utility of key economic indicators such as operating ratio, input output ratio, labour productivity and capital productivity for comparing the economic performance of different craft-gear combinations. In spite of the increase in fleet size and the decrease in the catch rates, the fishing sector is able to sustain mostly due to the increase in the price of almost, all the species of fishes. However, owing to the open-access nature of marine capture fisheries and the intense competitions for resources associated with it, many of the less efficient fishing units are being gradually phased out of operation due to the losses. Such techno-economic evaluations using this framework have been carried out for major maritime states including Tamil Nadu (Geetha *et al*., 2014; Johnson *et al*., 2022), Kerala (Aswathy and Narayanakumar, 2020), Odisha (Raju *et al*., 2022b) and West Bengal (Dash *et al.,* 2021; Roul *et al*., 2023). The study of the economic efficiency of the fishing methods (or) crafts is the basis for resource allocation by the individual fishermen as well as any financing organisation (or) individuals. However, a comprehensive assessment covering multiple craft-gear combinations along with landing centre and retail centre valuation of fish landings is lacking for the Union Territory of Puducherry in the south-eastern India. Given the unique socio-economic profile of Puducherry marine fisheries sector, reliable economic benchmarks for evaluating fishing unit performance are critically needed for informed resource allocation and investment decision for fishers and related institutions. The present study was therefore undertaken with the objective of bridging this gap by providing a comprehensive techno-economic evaluation of major craft gear combinations operating out of Puducherry, along with an assessment of fish valuations at the landing and retail centres, so as to offer actionable insights for policy formulation and sustainable fisheries management in the region.

Materials and methods

Study area

The study was carried out during the year 2024-25 in the Union Territory of Puducherry located along the south-eastern coast of India.

The Union Territory of Puducherry comprises four districts *viz*., Puducherry, Karaikal, Mahe and Yanam. The total number of marine fishing villages and landing centres in Puducherry are 39 and 22 respectively (CMFRI-DoF, 2020). The Puducherry District alone has 16 fishing villages and 18 landing centres while Yanam District has 12 fishing villages but no landing centre. A total of 2,319 fishing crafts exist in the fishery in Puducherry of which 1,362 are motorised crafts, 656 are non-motorised and 301 are mechanised. Almost 74% of the mechanised crafts are trawlers and the remaining 26% are ring seiners. Among the motorised fishing crafts, 72% operate with out-board engines and 28% operate with in-board engines. Around 75% of the mechanised crafts are operated in Puducherry District and the remaining 25% in Karaikal District. Puducherry's marine fish landings increased by 4% in 2024, reaching 0.53 lakh t, driven primarily by a 62% increase from multi-day trawl net catch (CMFRI, 2025).

Puducherry's marine fish landings increased by 4% in 2024, reaching 0.53 lakh t compared to 2023, driven primarily by a 62% increase from multi-day trawl net catch. Indian mackerel emerged as the most landed species in Puducherry in 2024 followed by cephalopods. Multiday trawl nets contributed the largest share (40%), followed by motorised gillnets (25%). Puducherry Fisheries Harbour accounted for 42% of the total catch, making it the leading contributor (CMFRI, 2025).

Data collection

The "two-stage stratified random sampling" method was used for economical and comprehensive data collection across the

selected landing centres and fishing harbour in Puducherry. In the two-stage stratified random sampling, stratification is carried out over space and time. Over space, the UT is divided into suitable, non-overlapping fishing zones. These fishing zones consist of different fish landing centres and the quantity of fish landed and the craft/gear combinations of fishing boats at each of the places varies. The landing centres in a zone are again grouped into different strata based on the basis of fishing intensity, type of fishing crafts and fishing method employed as well as the number of fishing crafts operated.

The data on investment, operational costs incurred for fishing and earnings of various craft-gear combinations *i.e.*, the revenue generated based on the species-wise fish landings per unit was collected from 20 mechanised, 20 motorised and 10 non-motorised fishing units in four fishing days of every month during the period from July 2024 to March, 2025 from Puducherry fishing harbor, and two landing centres *viz*., Periaveerampattinam and Nallavadu in Puducherry. Weekly sampling was adopted to reduce the variability, while providing sufficient temporal resolution at a manageable cost. This sampling frequency offers a balance between data accuracy and resource requirements, as more frequent sampling would be both labour-intensive and economically demanding.

Data on quantity and value of different species caught by the units; labour share costs and wages including food, stores and other provisions; fuel (energy) expenses; expenses on craft and gear repair and maintenance and other operational expenditures; cost of various inputs; auction charges, berthing charges and taxes; capital costs involving investment on fishing crafts and gears; details of craft and gear as well as crew details were collected from the randomly selected units through a pre-tested schedule. The data on landing centre price was also recorded in four fishing days of every month. Tabular presentation and percentage analysis were used to evaluate the economic indicators.

The economic performance of fishing methods was assessed by working out the operating cost, gross revenue and net cash flow per trip through tabular analysis. The operational efficiency and labour productivity were also worked out using operating ratio and catch per crew per trip, respectively to assess the economic performance (Sathiadhas, 1989). Cost-return ratios were used to measure the overall input and output efficiency in terms of value. Operating ratio relates variable costs to gross income. The revenue or the gross income of a unit is the sum total of value by multiplying the quantities of different species/groups with their respective price.

Input-output ratio = Input costs / Gross revenue ..... (1)

Operating ratio = Operating costs / Gross revenue ..... (2)

The primary data were collected on operating costs per trip, which included the costs of fuel, crew wages, food expenses, auction charges, repair and maintenance and other day-to-day expenses for carrying out the fishing operations. The operating cost per trip was thus calculated as follows.

Operating cost/trip = (Fuel + Crew wage + Food + Auction + Repair and maintenance + Other charges)..... (3)

The gross revenue per trip was calculated from the species composition of catch and price per species. The gross revenue per trip was estimated as follows.

$$\text{GR per trip} = \sum_{i=1}^{n} q_i p_i \quad \ldots\ldots (4)$$

where, q_i is the quantity of catch in kg of the i^{th} variety; p_i is the price per kg of fish of the i^{th} variety; n = No. of fish species caught per trip.

Labour productivity = Catch (kg) / No. of crew ..... (5)

Net cash flow (NCF) = Gross revenue - Operational cost ..... (6)

The Gross Value Added (GVA) shows the return of the fishing vessel operations to the economy and is useful for making future fisheries sector investment and expenditure decisions.

GVA = Crew wages + Net operating income

GVA to revenue = GVA / Gross revenue from landings ..... (7)

The GVA to revenue figure is expressed as percentage and provides for the share of revenue that contributes to the economy through the production factors (Carvalho *et al*., 2020).

Performance of marketing channels

The performance of marketing channels of different marine fish species was assessed using the Fishers' Share in Consumer's Rupee (FSCR) that measures the proportion of the final retail price realised by the producer at the point of first sale (Sathiadhas *et al.,* 2012). In fish marketing chains characterised by multiple intermediaries, perishability and spatial price dispersion, the ratio of landing centre price to retail centre price serves as a robust measure of performance of the marketing channel, with a higher ratio indicating lower marketing margins retained by intermediaries and greater benefit accruing to the fisher. This method has been consistently adopted in fisheries marketing studies in India (Sathiadhas *et al*., 2011; Shyam *et al*., 2024; Shyam *et al.,* 2025) and is particularly appropriate in the present context where the primary interest is in assessing the relative performance of the marketing chain across species.

$$\text{Fisher's share in consumer rupee (\%)} = \frac{\text{Landing centre price}}{\text{Retail centre price}} \times 100 \quad \ldots\ldots (8)$$

Results and discussion

The technical details of the crafts surveyed are given in Table 1. The motorised crafts, mostly operating a variety of small-meshed gillnets and large-meshed gillnets perform single day fishing (SDF) operations and are of an average of 29-32 feet overall length (OAL) with engine power of 10 HP. The average crew size was found to be 4. The single day fishing normally operates along the Puducherry waters between 12-14 m depth. The boats are usually making two hauls every day with an active hauling duration of 1.5 to 2 h (Table 2). The traditional/ non-motorised crafts (SDF), predominantly operating gillnets have an average OAL of 20 feet. The catch in the small-meshed gillnet comprised chiefly of penaeid shrimps, Indian mackerel, threadfin breams, horse mackerel, sciaenids, wolf herring and ribbon fishes. The average crew size was found to be 2. The

Table 1. Technical details of crafts surveyed in Puducherry

Sl. No.	Technical details	Category of vessels surveyed		
		Mechanised trawlers	Motorised (Gillnetter)	Non-motorised (Gillnetter)
1.	Overall length (ft)	48 (SDF) 72 (MDF)	29-32	20
2.	Engine HP	120 (SDF) 240 (MDF)	10	-
3.	Crew size (Nos.)	5 (SDF) 8 (MDF)	4	2
4.	Depth of fishing (m)	22-24	12-14	3-4
5.	Distance to fishing ground (km)	20	5-10	5
6.	No. of hauls per trip per day	2	2	1
7.	Duration of haul (h)	3	1.5-2	45 min- 2 h
8.	Duration of fishing (h day^{-1})	12	3-4	2-3 h
9.	Average fuel consumption (litre per trip)	90 (SDF) 1750 (MDF)	15	-
10.	Gears operated (type)	Trawl nets	Gillnets, Hook and Lines	Gillnets, Hook and Lines
11.	Accessories taken on board	Wireless sets, Echo-sounder, GPS, Otterboards	Mobile, GPS, Lights	Mobile, Lights
12.	Type of fishing (SDF/MDF)	SDF (single day) MDF (4 days duration)	SDF	SDF
13.	No. of trips/ month	24 days (SDF)	20-25	26

(SDF: Single day fishing; MDF: Multi day fishing)

non-motorised boats normally operate between 3-4 m depth. The boats are usually making one haul every day with an active duration of 45 min to 2 h (Table 1).

The mean overall length of the trawlers was found to be 48 ft (single day trawler) and 72 ft (multi-ay trawler), and the engine horse power was found to be 120 HP and 240 HP respectively. The depth of fishing was about 22-24 m, after travelling to the distance of about 20 km to reach the fishing grounds. The single day trawlers were on an average making 24 trips per month.

The economic and financial indicators were worked out to assess the economic performance of marine fishing methods, and the results are presented in Table 2.

An analysis of the cost structure across the four craft-gear combinations reveals clear and economically meaningful patterns. The total operating cost ranged widely from ₹2,094 for non-motorised gillnetters to ₹4,45,442 for multi-day mechanised trawlers, reflecting the vast differences in operational scale, fuel dependence and crew size across vessel categories. Labour costs, comprising crew wages and crew bata, dominated the cost structure across all categories. This progressive increase in labour share from mechanised to non-motorised vessels underscores the labour-intensive nature of marine fisheries and the correspondingly low dependence on purchased inputs. Fuel, the second major cost component, accounted for 33.98 and 23.37% of operating costs in multi-day and single day trawlers respectively, but only 12% in motorised gillnetters and was entirely absent in non-motorised operations. This stark difference in fuel dependence has important implications for the economic vulnerability of mechanised vessels to fuel price escalations. Auction charges remained relatively stable across all categories at approximately 8-9% of operating costs, indicating a uniform marketing cost burden irrespective of vessel type. Taken together, these patterns suggest that while mechanised trawlers face higher absolute costs and greater exposure to fuel price volatility, non-motorised and motorised gillnetters face greater vulnerability to rising labour costs, both representing distinct but equally significant risks to the economic sustainability of fishing operations in Puducherry.

The net operating income per trip was worked out as ₹2,09,738, ₹15,302, ₹3,172 and ₹866 respectively for the multi-day (4 day) trawl, single day trawl, motorised gillnetters and non-motorised gillnetters. It is seen from Table 2 that the capital productivity of the motorised craft-gillnet combination was efficient with a lower operating ratio of 0.64, compared to other craft-gear combinations. The contrast between the higher operating ratios and the much lower input-output ratios across vessel categories is explained by the differential composition of operating costs, particularly the varying share of labour costs. The operating ratio incorporates both labour costs and non-labour variable input costs, while the input-output ratio captures only non-labour input costs such as fuel, auction charges and other operational expenses. The difference between the two ratios therefore directly reflects the labour cost share in gross revenue for each vessel category. In non-motorised gillnetters, where crew wages accounted for 84.83% of total operating costs and fuel expenditure was nil, this difference was the largest (0.64), reflecting a highly labour-intensive and input-lean cost structure. In contrast, multi-day mechanised trawlers, where fuel alone accounted for 33.98% of operating costs, showed a smaller difference (0.37), indicating a more balanced cost structure between labour and non-labour inputs. This progressive widening of the gap from mechanised to non-motorised vessel categories as the cost structure shifts from fuel-dominant to labour-dominant is consistent with findings from similar studies in Andhra Pradesh (Raju *et al*., 2022a), Odisha (Raju *et al*., 2022b) and West Bengal (Roul *et al*., 2023). The labour productivity was highest as 348 kg per trip for multi-day trawls, followed by 47.20 kg for single day

Table 2. Economic performance of different category of fishing crafts in Puducherry - Average operating cost and returns per trip -2024 (₹)

Category	Components	Category of vessels surveyed			
		Mechanised (Multi day trawlers)	Mechanised (Single day trawlers)	Motorised (Gillnetter)	Non-motorised (Gillnetter)
Labour	Crew wages (₹)	225738.10 (50.68%)	19219.50 (57.67%)	4000.00 (71.14%)	1776.00 (84.83%)
	Crew bata (₹)	16000.00 (3.59%)	1000.00 (3.00%)	300.00 (5.34%)	100.00 (4.78%)
A	Sub-total labour costs	241738.10	20219.50	4300.00	1876.00
Inputs	Fuel cost (₹)	151393.00 (33.98%)	7786.00 (23.37%)	675.00 (12.00%)	-
	Auction charges (₹)	39310.80 (8.83%)	2917.50 (8.76%)	527.70 (9.39%)	177.60 (8.48%)
	Other charges (₹)	13000.00 (2.92%)	2400.00 (7.20%)	120.00 (2.13%)	40.00 (1.91%)
B	Sub-total input costs (₹)	203703.80	13103.50	1322.70	217.60
C	Total operating cost (A+B)	445441.90	33323.00	5622.70	2093.60
Output	Catch (kg)	2784	236	50.50	21
	Gross revenue (₹)	655180.00	48625.00	8795.00	2960.00
	Crew size (No.)	8	5	3	2
Indicators	Net operating income (₹)	209738.10	15302.00	3172.30	866.40
	Operating ratio	0.68	0.69	0.64	0.71
	Labour productivity	348.00	47.20	16.83	10.50
	Input-output ratio	0.31	0.27	0.18	0.07
	GVA (₹)	451476.20	35521.50	7472.30	2642.40
	GVA as a % of Gross revenue	68.91	73.05	84.96	89.27

Figures in parenthesis indicates the percentage to total operating cost

trawls. The same for the motorised and non-motorised gillnetters were calculated as 16.83 kg and 10.50 kg respectively. The share of GVA was higher for single day non-motorised gillnetters operating in Puducherry (89.27%), followed by single day motorised gillnetters (84.96%), single day trawls (73.05%) and multi-day trawls (68.91%).

The marine fisheries of Puducherry exhibited seasonal variations to a great extent and the quantity-wise and valuation-wise landings of major species are given in Table 3.

Among the resources landed, Indian mackerel emerged as the most dominant species both in terms of volume and LC valuation, reflecting its importance as the principal pelagic resource in Puducherry waters, followed by squids, cuttlefish and penaeid shrimps as the other major contributors to total LC valuation. Species such as lobsters, silver pomfret and seer fishes commanded the highest prices at landing, while pelagic species such as oil sardines, lesser sardines and flying fishes recorded the lowest price realisation.

The Landing Centre (LC) valuation of marine fish landings in Puducherry for 2024 was estimated at ₹980 crores and the Retail Centre (RC) valuation at ₹1,350 crores. This substantial value addition underscores the economic significance of post-harvest fish marketing in Puducherry and highlights the multiple layers of intermediation operating between the producer and the consumer. The average Fishers' Share in Consumer's Rupee (FSCR) was found to be 68.43%, indicating that on an average, fishers realised about 68 paise for every rupee paid by the consumer at the retail level. Among the species, Rays recorded the highest FSCR at 79.32%, followed by Octopus at 73.68%, indicating relatively efficient price transmission for these species with lower intermediary margins. Anchovies recorded the lowest FSCR at 63.48%, reflecting higher marketing margins likely attributable to greater handling and processing requirements. The wide variation in FSCR across species indicates that the benefits of fish marketing are not uniformly distributed, with low-FSCR species, predominantly small pelagics, suffering high intermediary margins due to their perishability and longer marketing chains.

The techno-economic evaluation of marine fishing operations in the Union Territory of Puducherry revealed significant differences in the cost structure, capital productivity, labour productivity and gross value added across the four craft-gear combinations studied. The average operating cost per trip reflected wide variation in operational scale across vessel categories. Labour costs dominated the cost structure across all categories, while fuel emerged as the second most significant cost component in mechanised operations. Among the craft-gear combinations, motorised gillnetters recorded the highest operational efficiency, while multi-day trawlers achieved the highest labour productivity and the highest absolute net operating income. The GVA as a percentage of gross revenue was highest for non-motorised gillnetters, followed by motorised gillnetters, single day trawlers and multi-day trawlers.

The total LC valuation of marine fish landings in Puducherry for 2024 was estimated at ₹980 crores and the RC valuation at ₹1,350 crores. The average FSCR of 68 % indicates that fishers retain about 68 paise for every rupee paid by the consumer, with considerable variation across species reflecting differences in perishability, intermediary margins and market structure.

The study clearly establishes that high fuel costs and the dominant share of labour charges are the primary factors eroding the profitability of mechanised fishing operations in Puducherry, while rising operational costs pose a common economic threat across all vessel categories.

The findings underscore the need for targeted policy interventions at multiple levels. For the mechanised sector, where fuel accounts for a substantial share of operating costs, promotion of fuel-

Table 3. Landing Centre (LC) and Retail Centre (RC) valuation in Puducherry

Resource	2024 Landings (t)	LC price (₹ kg^{-1})	LC valuation (₹ lakhs)	RC price (₹ kg^{-1})	RC valuation (₹ lakhs)
Sharks	5	183.42	9.17	291.67	14.58
Skates/ Guitarfish	6	171.50	10.29	250.69	15.04
Rays	409	197.83	809.14	258.35	1056.67
Eels	6	171.50	10.29	266.33	15.98
Catfishes	235	209.50	492.33	298.00	700.30
Wolf herring	133	129.00	171.57	232.00	308.56
Oil sardine	851	72.67	618.39	105.00	893.55
Lesser sardines	6137	83.07	5098.15	110.00	6750.70
Other shads	469	134.93	632.84	235.72	1105.54
Coilia	8	103.00	8.24	173.33	13.87
Setipinna	6	94.34	5.66	231.33	13.88
Stolephorus	1372	137.23	1882.75	196.83	2700.55
Thryssa	127	113.57	144.23	170.83	216.96
Other clupeids	762	148.33	1130.30	225.80	1720.56
Lizard fishes	1102	149.43	1646.74	210.83	2323.38
Half beaks and full beaks	30	162.55	48.76	248.20	74.46
Flying fishes	2131	91.00	1939.18	148.38	3161.96
Rock cods	631	204.04	1287.52	283.33	1787.83
Snappers	855	187.50	1603.13	258.97	2214.20
Pig-face breams	132	179.50	236.94	243.40	321.29
Threadfin breams	2695	162.71	4385.12	235.83	6355.71
Other perches	1455	172.27	2506.51	267.89	3897.77
Goatfishes	295	170.68	503.50	251.67	742.42
Threadfins	15	162.78	24.42	251.20	37.68
Croakers	653	161.17	1052.42	242.17	1581.35
Ribbon fishes	877	169.58	1487.19	234.68	2058.13
Horse mackerel	66	153.59	101.37	226.17	149.27
Scads	1872	181.25	3393.07	256.76	4806.49
Leather-jackets	29	171.93	49.86	246.40	71.46
Other carangids	4783	203.78	9746.63	298.58	14281.06
Silverbellies	1478	106.54	1574.69	178.00	2630.84
Big-jawed jumper	48	152.29	73.10	219.17	105.20
Black pomfret	202	378.95	765.48	483.00	975.66
Silver pomfret	333	393.38	1309.94	513.22	1709.03
Chinese pomfret	57	350.01	199.51	431.40	245.90
Indian mackerel	11772	132.45	15592.51	179.33	21111.12
Other mackerels	1	142.00	1.42	178.00	1.78
S. commersoni	1001	373.99	3743.65	482.97	4834.56
S. guttatus	249	368.72	918.12	464.24	1155.97
Acanthocybium solandri	39	260.86	101.74	403.68	157.44
E. affinis	28	132.85	37.20	214.67	60.11
Auxis spp.	8	144.00	11.52	205.35	16.43
K. pelamis	17	144.04	24.49	192.67	32.75
Other tunnies	105	155.16	162.92	167.60	175.98
Bill fishes	37	162.15	60.00	236.81	87.62
Barracudas	1280	172.47	2207.59	247.01	3161.79
Mullets	51	183.81	93.74	258.38	131.77
Halibut	85	122.22	103.89	156.00	132.60
Soles	221	130.79	289.05	213.00	470.73
Penaeid ahrimps	1694	304.67	5161.05	386.33	6544.49
Non-penaeid shrimps	3	184.00	5.52	329.33	9.88
Lobsters	91	783.00	712.53	837.30	761.94
Crabs	2188	247.50	5415.30	324.51	7100.34
Gastropods	101	116.71	117.88	75.67	76.42
Squids	4163	199.83	8319.06	268.56	11180.08
Cuttlefish	3488	211.50	7377.12	274.35	9569.31
Octopus	749	216.25	1619.71	231.27	1732.18
Miscellaneous	1041	90.79	945.12	141.19	1469.75
		Total	97979.53		135032.85

efficient fishing technologies and rationalisation of fishing effort are critical for improving economic viability. For small-scale motorised and non-motorised fishers, where labour costs dominate and net returns per trip are low, institutional credit support at concessional interest rates is essential for ensuring financial sustainability. On the marketing front, development of cold chain infrastructure at landing centres, promotion of fisher cooperatives and direct marketing linkages, and harnessing e-commerce platforms for real-time price discovery are recommended to reduce intermediary margins and improve the fishers' share, particularly for small pelagic species having low FSCR. These interventions, implemented under schemes such as the Pradhan Mantri Matsya Sampada Yojana (PMMSY), can collectively strengthen the economic resilience of the fishing community in Puducherry.

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