

Fishery Potential of Mallipattinam Coast, South East Coast of India

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Abstract

Fishes have a variety of size, colors, attractive and behaviors in the aquatic ecosystem. Consumption is therefore increasing rapidly in many countries, but the importance of fish in daily diet is not yet fully realized. It is still a supplemental diet to a large section, mainly considered low weight of rich and delicious food items. It contains high nutrients like calcium, cobalt, iron, iodine, phosphorus and vitamins. These are all the nutrients needed to meet the demand of the body with the control cholesterol levels in the blood and to produce immune power. The data on landing of fishes are helpful for food security and fisherman welfare. In the present study the fisheries data were considered on landing of Mallipattinam coast for one year. During the study period, there four different major groups of fishes recorded; pelagic fishes, demersal fishes, crustaceans and Mollusks viz., 40.9%, 19.9%, 13.3%, 8.3%, 9.2% respectively. Anthropogenic disturbances and climate changes are adversely affecting the fish populations and diversity.

Keywords: Crustaceans; Data; Demersal; Fishes; Fisheries; Molluscs; Pelagic

Introduction

Fish is a food source, economic commodity and biological necessity to both the developed and developing world. It is a good source of protein, calcium, vitamins and essential fatty acids, as well as other elements crucial to good nutrition. Ocean was considered as common and fishery resources are vital source of food and make valuable economic contributions to the local communities [1]. They provide a livelihood and income for millions of the world's poorest people and also contribute by means of export, trade, tourism and recreation. The marine fisheries of India restricted to the inshore waters of continental shelf. The major fishery involves pelagic and demersal fishes, crustaceans and mollusks. The fishery statistics data collection in the country is complicated, landing platforms and harbors are scattered along the entire coast line. Within the coastal waters the distribution of fishery resource shows variation with distance from the shore. A few works have been done the fishery resources potential of Indian waters [2-4]. The fishery resources station in Mallipattinam landing centre of south east coast of India. In the present study, an attempt was made the fishery resources of Mallipattinam area (Table 1).

Materials and Methods

Mallipattinam (10°16'35" N; 79°19'12" E) is one of the small fish landing centres situated in Thanjavur district. The fishery data were collected watching the landing of fishes and the interviewing fisherman personally. The fishes landed were identified with help of standard books as [5,6] and also the manual for identification of fishes from California coastal waters [7] and the fishery data were collected for all the months of the except for April 16 to May 30.

Results and Discussion

The fishes landed in Mallipattinam landing centres for one year, the categorised in four major groups' contributed viz., pelagic fishes, demersal fishes, crustaceans, and Mollusks viz., 40.9%, 19.9%, 13.3%, 8.3%, 9.2% respectively. The total number of fishing days was calculated by 264 days and the effort expanded concerned 204.909 boat trips and average of 89 trips per day. The landing of pelagic, Demersal, crustaceans, Molluscs and miscellaneous was for one year from September 2008 to August 2009. Pelagic trawlers and gill nets were used to collect the pelagic fishes. The major proportion of pelagic fishes, three major groups exploited include Clupoids, Scamberoids

and Carangids by [8]. The oil *Sardinella longiceps* is a major fishery in south east coast and also reported in Karwar coastal region [9]. It was abundant more during the month of July to October. The maximum landed in fishes in the month of June and overall annual catch of 2, 17,808 kgs [10]. Oil sardine is largely available fishes in Indian coast are previously reported by [11]. Anchovies (*Thryssa* spp) were also more abundant in the month of December 8542 kg, half beaks and full beaks (Hemiramphids and Belonids) were landed less 2142 kg. The *Silago sihama* was available (8451 kg) in good quantity in almost all the months, Aug, Oct and September. Ribbon fishes (*Trichiurus lepturus* and *Lepturacanthus savala*) were found throughout year and peak of month March, *Trichiurus lepturus* was heavily exploited in the fishing ground [12].

Carangids contributed a good percentage the pelagic fishes. Among the scads (*Decaptes russelli*) and Horse mackerel (*Megalaspis cordyla*) available throughout the year with their peaks in the month of March and April. Indian mackerel (*Rastrelliger kanagartha*) major part of the in the pelagic fishes [8] peaks in March and April, Seer fishes (*Scomberomonus* spp), were landed in good counts during December to March maximum in 2783 kg. Tunas (*Euthynnus affinis* and *Thunnus* spp) are ranked by first place after Indian mackerel Indian Ocean [13], among the Scamberoids landings throughout the year. Peak season recorded was from June to September. Barracuda (*Sphyræna* spp) showed highest landings in the month of June to October; Mulletts were recorded more in month of September to February, and maximum landed in the month of February 5421kg. Among the eighteen types of pelagic fishes landed, *Sardinella longiceps*, *Carangids* and *Rastrelliger kanagartha* were found in common while the groups and pomfrets were rare. The pelagic fishes overall maximum landed in the month of January (100,373.5 kg) and then minimum landed in the month of April (45,240 kg).

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Pelagic fishes	September	October	November	December	January	February	March	April	June	July	August	Total
Oil sardine	12452	12230	12451	12875	15425	13452	12784	6854	12473	13425	17258	141679
Other sardine	14521	15421	13254	13223	16241	14523	13254	5652	13254	16542	15423	151308
<i>Stolephirus</i>	8798	8457	10452	11875	14523	11742	13452	4521	14252	13245	12451	123768
<i>Thryssa</i> sp	7542	6542	6325	8542	7845	6854	6541	2652	5468	6752	7214	72277
Halfbeak and full beak	6751	6325	7115	7532	7965	7451	7245	2142	7541	7985	8451	76503
Scared whiting	3425	3754	3652	4521	4382	4457	4861	2975	4751	4535	5462	46775
Ribbon fish	5314	5745	5231	4235	4521	5471	6542	1978	6214	5241	3385	53877
Scads	2985	2653	2875	2754	2653	2735	2353	1863	2583	2422	2663	28539
Horse mackerel	1675	1554	1879	1962.5	2241	2531	1987	1245	3452	2874	2341.5	23742
Other carangids	1594	1987	2235	1752	2178	2361	2452	1532	2153	2023	2742	23009
Indian mackerel	7652	7754	7847	7531	7986	7133	7055	2745	7981	7423	7552	78659
Seer fish	1654	2477	2351	1584	1823.5	1548	2783	1521	1453	2651.5	1762	21608
Tunnids	7545	7845	7546	7254	7354	7124	7354	4521	7235	7451	7245	78474
Barracudas	2145	2455	2352	1658	1455	2278	2102	2455	2241	2385	2356.5	23882.5
Mulletts	3452	3771	3365	5015	3781	5421	3254	2584	5265	4553	2652	43113
Total	87,505	88,970	88,930	92,313.5	100,373.5	95,081	94,019	45,240	96,316	99,507.5	98,958	98,7213.5

Table 1: The landing of pelagic fishes (Kg) at Mallipattinam landing centre for the period of one year September 2007-August 2008.

Demersal fishes	September	October	November	December	January	February	March	April	June	July	August	Total
Sharks	5421	7452	6545	5784	6521	6682	6854	2541	4552	4271	6352	62975
Skates	4783	4521	3557	4521	5214	4751	3865	1521	3254	3641	3452	43080
Rays	13452	16582	14521	13452	12451	15782	13452	6356	9785	9784	10452	136069
Eels	1652	1752	1654	1965	2785	1765	1981	1052	2451	1784	1658	20499
Catfishes	1785	2140	1963	1779	1452	1854	1845	1201	1745.5	1552	1485	18801.5
Croakers	7452	9452	7745	6584	7931	8245	6584	2651	7547	6587	5984	76762
Perches	1325.5	1548	1652	2145	1742.5	1785	1544	1452	1452	2452	1685	18783
Silver bellies	2789	1864	2015	1742	1654	1725	1985	1235	1548	1661	2145	20363
Pomfrets	2214	1996.5	2014	2145	1453	1972	1945	1452	1658	1845	1784	20478.5
Halibut	2352	1784	1845	1874.5	2085	1845	2356	1754	1992.5	1812	1874	21574
Flatfishes	1963	1992.5	1784	1975	2542	1658	1785	1784	1873	2055	1985	21396.5
Total	45,188.5	51,084	45,295	43,966.5	45,830.5	48,064	44,196	22,999	37,858	37,444	38,856	46,0781.5

Table 2: The landing of Demersal fishes (Kg) at Mallipattinam landing centre for the period of one year September 2008-August 2009.

Sharks (*Scoliodon* spp and *Sphyrna* spp) were found them throughout the year. Maximum 7452 kg October to February, peak in January, Skates (*Rhynchobatus* spp) were recorded in less amount compared to sharks, and skates were more during the period August to December, maximum in September, 4783 kg [14,15]. Rays (*Rhinoptera* spp, *Gymnura* spp and *Narcine* etc.,) were found dominant among the Elasmobranchs. These were available throughout the year maximum landed in Oct 16582 kg. Eels (*Longer cinereous* and *Anguilla* spp) and were mainly dried. Found in months and like fishing January in high (2785 kg). Catfishes (*Arius* spp) levels quantity is mainly from the hook and line fishing, highest levels, 2140 kg in month of October. Croakers (*Johinus* spp) maximum in month of October 9452 kg perches (*Epinephelus* spp and *lutjanus* spp) were caught maximum in July (2452 kg). Silver bellies (*Leiognathus* spp and *Gazza* spp) and were abundant among the demersal fisheries, maximum in the month of September 2789 kg landed. Pomfrets (*Pampus* spp, *Parastrumateus* sp and *Solea* sp etc.,) maximum landed September 2214 kg [16]. The demersal fishes overall maximum landed in the month of October (51,084 kg) and then minimum landed in the month of April (22,999 kg) (Table 2).

The crabs are caught either by conventional crab pots, or by tangle nets. In the seashore a very large number of different species of crabs are found, but most of them are small in size and therefore rarely used for human consumption. Most dominant crab species in Mallipattinam coastal *Portunus pelagicus* and *P. sanguinolentus* were landed on throughout the year the previously reported by [17]. These two crabs are found in large quantities along the Tamil Nadu coast and the fishery is round the year [17,18]. Perhaps the only shore crabs still caught in great numbers are the mangrove crab *Scylla serrata* and *S. tranqubarica* which occurs in the coastal and throughout the muddy bottom of intertidal and subtidal zones of this coastal environment, mud crab landing were local markets [19], reported that after Tsunami December 2004. The crab *P. gladiator*, *Charybdis* species landed Minimum quantity [17]. Mostly *Charybdis feriata* landed in maximum and also other species of *Charybdis lucifera*, *C. variegata*, *C. natator*, *C. truncata*, *C. granulata* and *Podophthalmus vigil*, also landed in seasonally very low percentage of this coastal environment. Crabs probably contributed to the increasing availability of crabs with the size range of 9-15 cm [17,20,21]. The commercial significant species

including *Penaeus indicus*, *P. japonicus*, *P. monodon*, *P. semisulcatus*, *P. chinensis*, *P. merquiensis* and *Metapenaeus dobsonii* and *M. ensis* were recorded in Mallipattinam. The shrimps were caught by beam trawling boats which tow a number of bottom dredges along the surface of the mud. Among shrimps *Penaeus indicus* and *Metapenaeus dobsonii* was contained maximum is in agreement with the observation made by [22] in Cuddalore waters. Some shrimps are caught in the deep bay marshes where they constitute some 13.3% of the total catch [23,24]. The crustacean's maximum landed in overall in the month of June (38,464 kg) and then minimum quantity of landed in the month of April (15,624 kg) (Table 3).

The Cephalopods form an important seafood variety as they are valued in the inter market. According to [25], Cephalopods resources had no potential value and organized fishery in India. Cephalopods have a significant contribution to the total annual fish landings of coastal with some local potential for expansion [26]. Of which, squids are of major importance in Mallipattinam [27]. Mainly *Loligo edulis* and *L. forosana*, which are caught by pair and stern trawlers with its peak during summer. Similarly, cuttlefish has the production of about 1,957 kg worth. The landings are mainly composed of *Sepia pharaonis*, *S. recurvirostra*, *S. lycidas* and *S. aculeata* etc., which are caught by pair and stern trawlers on the continental shelf, while Octopus are of minor importance among cephalopods and also potential of marine resource reported in south west coast of India [28]. The molluscs maximum landed in overall in the month of June (20,657 kg) and then minimum quantity of landed in the month of April (9,652 kg) (Table 4).

The fisheries sector occupies a very important place in the socio-economic development of the country. Mallipattinam is one of the main fishing centres in Tamil Nadu, contributing its mite to the fishery economy. The trawlers in Mallipattinam concentrate more on pelagic fishes, demersal fishes, than on the crustaceans, cephalopods, molluscs, the pelagic fishes mainly caught by the gill nets. In Mallipattinam the crowded fishing efforts has led to lesser catch per boat trip. In these

areas, catamarans are very small level operated. Mainly catch of fishes using in Mechanized boats and FRB boats. During the study period, total landing of fishes in Mallipattinam (September 2008 to August 2009) were 98, 7, 215kg (40.9%) for pelagic fishes, 46,0782.5 kg (19.9 %) for demersal fishes, 3,21,747 kg (13%) for crustaceans, 20,1283 kg (17%) for Molluscs, and 2,21,882 kg (9.9%) for miscellaneous. Mechanized trawlers contributed 53% to the catch, with FRB boat 34% and other large and small boats 12% in this period. The estimated marine fish landings of Tamil Nadu were 4, 12, 066 t during 2007. The catch increased by 14.7% from 2006. Among the pelagic, sardines dominated the landings (1, 13,931 t) followed by carangids (24,698 t), [10]. So the contributions of Mallipattinam total landing Pelagic, Demersal fishes, Crustaceans and Molluscs in the month of June (2, 17,808 kg) maximum landed and then minimum in April (10, 8,036 kg) landed (Table 5).

The present study, fishing activity and hence most of the wild resources are under heavy exploitation now [17,29]. Preliminary assessment of fisheries resources of the Andaman coast in early January 2005 indicated that fisheries resources in some areas declined by half after the tsunami. The ancient tradition of fishing by using the traditional devices like Pari, Katcha, Ootha, Sorati, Catamaran and Karaivalai have become sustainable way of harvesting inland and marine life without damaging the environment of coral mangrove, wetland and sea-grass bed habitats. These traditional fishing practices are more important in the issue of environmental pollution control and biodiversity conservation. These eco-friendly techniques are to be documented, preserved, protected and promoted for future use. The coast of Mallipattinam supports a major fishery along southeast coast of India. The fisheries do much help to meet the continuously increasing demand for food. Estimates indicate that the world catch of fish today could supply about 70% of the animal protein requirements of the present populations. The increased demand for fishes in different markets and the depletion of resources along the coast necessitated an

Crustaceans	September	October	November	December	January	February	March	April	June	July	August	Total
Penaeid shrimp	6854	5421	6453	5983	5632	5895	6231	4875	7652	6785	5524	67305
Non penaeid	9968	10883	10987	10472	10553	12452	11754	5453	14521	10452	11235	118730
Lobster	3784	6452	6584	6785	3784	3985	3721	1568	4785	4254	2984	48686
Crabs	4785	5631	4772	4325	4754	5213	5785	2475	7854	6557	6854	59005
Stomatopods	2452	2658	2784	2658	2654	2452	2532	1253	3652	2475	2451	28021
Total	27,843	31,045	31,580	30,223	27,377	29,997	30,023	15,624	38,464	30,523	29,048	32,1747

Table 3: The landing of Crustaceans (Kg) at Mallipattinam landing centre for the period of one year September 2008-August 2009.

Molluscs	September	October	November	December	January	February	March	April	June	July	August	Total
Bivalves	7854	7381	7845	7622	7245	7554	7452	3215	8754	7652	6542	79116
Gastropods	6754	6425	6584	6975	7213	7451	7542	3654	5324	5478	4495	67895
Cephalopods	4521	4788	5476	5784	4215	4322	4751	2783	6579	5632	5421	54272
Total	19,129	18,594	19,905	20,381	18,673	19,327	19,745	9,652	20,657	18,762	16,458	20,1283

Table 4: The landing of Molluscs (Kg) at Mallipattinam landing centre for the period of one year September 2008-August 2009.

Landed fishes	September	October	November	December	January	February	March	April	June	July	August	Total
Pelagic fishes	87505	88970	88930	92314	100374	95081	94019	45240	96316	99508	98958	987215
Demersal fishes	45188.5	51084	45295	43967	45831	48064	44196	22999	37858	37444	38856	460782.5
Crustaceans	27843	31045	31580	30223	27377	29997	30023	15624	38464	30523	29048	321747
Molluscs	19129	18594	19905	20381	18673	19327	19745	9652	20657	18762	16458	201283
Miscellaneous	23451	19754	18642	21453	22845	17854	21453	14521	24513	19854	17542	221882
Total	2,031,16.5	2,09,447	2,04,352	2,08,338	2,15,100	2,10,323	2,09,436	1,08,036	2,17,808	2,06,091	2,00,862	21,92,910

Table 5: Total fishery landings (Kg) at Mallipattinam landing centres for the period of one year September 2008-August 2009.

urgent need for promoting conservation and management. Peoples are discussed about the challenges and opportunities of marine capture fisheries in India. There is still information needed for successful management. However the fishery management is much more than research. Fishes do not even cry in dying hours, but people are crying daily due to droughts.

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