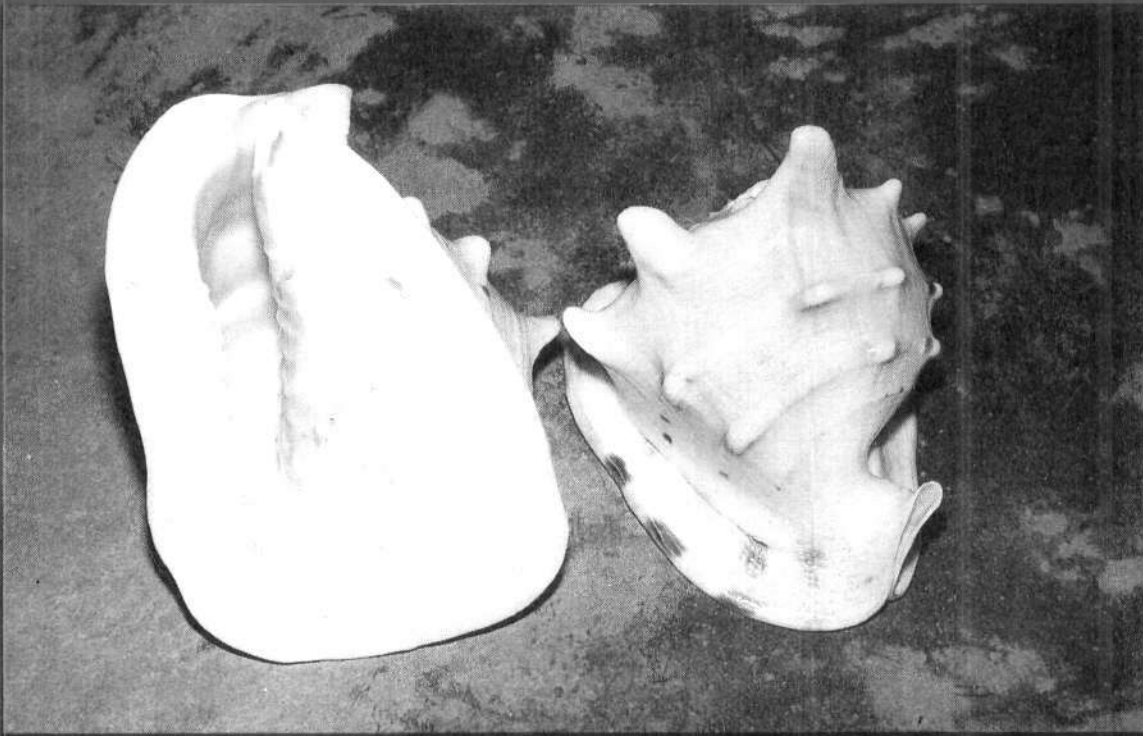




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904 STATUS OF MARINE FISHERIES IN KERALA WITH REFERENCE TO BAN OF MONSOON TRAWLING

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Kerala has been the forerunner in the adoption of technological innovations in fishing operations. The latter part of the sixties and the early seventies witnessed spectacular spread in the mechanised trawling. Purse seineing was introduced in the latter part of the seventies though did not pick up as in the neighbouring state of Karnataka for some reason or other. However, in the hindsight even this did not make such a conspicuous impact as has been made by the popular motorization of the indigenous craft in the early eighties and the consequent changes brought about in the structure of Kerala fisheries. The ring seine which was introduced in 1986 by its popularity became the main stay of the artisanal fisheries of Kerala in a very short time.

Adoption of these technologies has no doubt, resulted in tangible growth in the marine fish production. But amidst the euphoria there lurks a cold truth of intersectoral competition for the same reason with its economic and social dimension constraining the Governmental agencies to sieve out a solution. Apparently conflicting views were expressed by the artisanal fishers and the trawl operators while the former expressed their apprehension that trawling during monsoon was detrimental to the commercially important pelagic fish stocks which have their nursery in the inshore areas during monsoon, the latter claims that it was not so from the early seventies. A good monsoon trawl fishery for prawns existed in Kerala especially with Quilon and Cochin as the bases of operation. While the artisanal fishers wanted trawling to be banned throughout the monsoon season, according to trawler operators, such measures would tend to the erosion of benefits especially through export of prawns. However, seized of the problem, Kerala Government decided to ban monsoon trawling in the territorial waters of Kerala and has been implementing the ban from 1988

onwards. In view of the divergent views expressed by different sectors, it is felt that it would be a welcome preposition to assess the present status of marine fish production in Kerala vis-a-vis the production before ban was introduced. Attempt made here is only to present the status of production without venturing to highlight any specific issues nor answering any specific questions nor drawing inference on a set of hypotheses.

Apparently there has been unprecedented growth in the marine fish production in Kerala during the last decade which incidentally coincides with the period during which ban on trawling during monsoon has been in vogue. Comparison of the average landings during 1981-'87 and 1988-'97 indicate an increase of 69 % in overall landings in the state and surprisingly two points which deserve consideration are

1. The increase (69 %) has been uniform in pre-monsoon, monsoon and post monsoon periods,
2. The relative intensity of landings during the three seasons remain the same during preban and ban period (26 % during pre-monsoon, 24 % during monsoon and 50 % during post monsoon)

This may apparently indicate that the influence of that factor which contributed to the increase has been uniformly felt in all the seasons. However, a detailed analysis is called for, before drawing a conclusion.

The Table 1 gives the percentage realization of landings of important groups in the three seasons and the relative increase/decrease in the ban period. Indian mackerel which was abysmally low in 1982 and 1983 made a splendid recovery by 1989 and on an average during the ban period registered a growth of 43 % over that during pre-ban period. The level of pro-

duction attained by mackerel during 1989 and subsequent years, though remarkable was not unprecedented. But the landings of carangids which rose by 368 % has been unprecedented and spectacular and may be the one single prominent feature of the ringseine revolution in Kerala fisheries. Though lesser sardines showed an increase of 165 % the production reached a substantial level only in 1995. It may be worth observing that there are resources primarily exploited by traditional (motorised) sector. There has been a matching increase in the landings of prime resources exploited by trawlers as well. It is worth mentioning that during ban period the landings of penaeid prawns has shown a conspicuous increase of 82 %. Besides the prawns, perches and cephalopods made remarkable growth by 143 and 365 % which might be the result of accentuated thrusts on these owing to new market potentials available.

The increase observed in the overall trawl landings is mainly in the post monsoon period when before ban, 34 % of annual landings was realised while during the ban period, it rose to 44 % with a matching reduction from 33 to 21 % during monsoon period. Table 2 gives the percentage contribution of landings of important gear in the three seasons and relative abundance decrease during the ban -period. Trawl landings registered an increase of 160%. This was mostly owing to the selective fishing of cephalopods because of its export potential. Remarkable growth of 601% was noticed in the ringseine landings. It may be stressed that the ringseines were launched in Kerala only just two years prior to the introduction of ban on trawling and they were just beginning to get established in these two years of pre-ban period. Mechanised hooks and line earned 339% increase eventhough their operation during monsoon was comparatively less. 295% increase was observed in the landings of other OB units whose mainstay were minitrawlers, disco vala and hooks and line. Drift/gillnet units registered an increase of about 84 %. Non-mechanised sector showed a decline of about 72 %. Mechanised drift/gillnets (79 %), purseseines (32 %). OB boatseine and non-

mechanised (72%) (62 %) declined during the ban period.

Table 3 depicts the seasonwise total landings during 1981- '97 Table 4 a-q give the seasonwise and species wise landings during the respective years from 1981 to '97. Table-5ai represent the seasonwise landings in different years by different gear during the pre -ban and ban periods. Table 6 a-l show the seasonwise landings in different years of different groups of fishes during the pre- ban and ban periods.

TABLE 1. Kerala, season-wise, species composition (%)

Name of fish	Preban period			Ban period			Increase/Decrease *
	Pre-mon.	Mon.	Post-mon.	Pre-mon.	Mon.	Post-mon.	
Shark	31	13	56	37	18	45	-38
Cat fishes	17	23	60	10	29	61	-76
Oil sardine	31	9	60	32	15	53	-28
Other sardines	37	9	54	17	3	80	165
White baits	15	31	54	22	34	44	39
Perches	16	61	23	24	43	33	143
Croakers	24	32	44	23	31	46	-68
Ribbon fishes	3	60	37	11	15	74	-8
Carangids	22	21	57	14	16	70	368
Mackerel	40	12	48	15	30	55	430
Seer fishes	15	6	79	22	6	72	11
Tuna	31	19	50	32	15	53	119
Penaeid prawns	31	40	29	37	33	30	82
Cephalopods	21	14	65	27	18	55	365
Annual	26	24	50	26	24	50	69

* Average annual landings.

TABLE 2. Kerala season-wise gear composition (%)

Name of gear	Preban period			Ban period			Increase/Decrease *
	Pre-mon.	Mon.	Post-mon.	Pre-mon.	Mon.	Post-mon.	
Mec. trawlnet	33	33	34	35	21	44	160
Mec. drift/gillnet	22	21	57	22	30	48	-79
Purse seine	40	4	56	28	1	71	-32
Mec. hooks&line	28	4	68	40	5	55	339
Ob. ringseine	7	36	57	15	30	55	601

Ob. drift/gill net	24	13	63	30	19	51	84
Ob. boatseine	22	29	49	10	46	44	-62
Ob. others	21	7	72	32	13	55	295
Non-mechanised	29	20	51	32	17	51	-72
Annual	26	24	50	26	24	50	

*Average annual landings.

TABLE 3. Kerala, season-wise landings during 1981-1997 (tonnes)

Year	Premon.	Mon.	Postmon.	Total
Pre-ban period				
1981	54,900	52,642	1,75,729	2,83,271
1982	92,381	68,709	1,82,738	3,43,828
1983	1,00,238	71,197	1,99,233	3,70,668
1984	1,12,356	96,108	1,68,166	3,76,630
1985	97,369	88,902	1,50,807	3,37,078
1986	81,571	1,03,263	1,85,445	3,70,279
1987	87,218	97,492	1,18,391	3,03,101
Average	89,433	82,616	1,68,644	3,40,694
Ban period				
1988	93,262	1,17,157	2,82,844	4,93,263
1989	1,30,195	1,36,074	3,71,567	6,37,836
1990	1,96,312	1,36,948	3,40,487	6,73,747
1991	1,81,248	1,29,986	2,49,294	5,60,528
1992	1,42,084	1,27,356	2,87,439	5,56,879
1993	1,71,467	1,57,416	2,46,544	5,75,427
1994	1,47,624	1,74,700	2,42,276	5,64,600
1995	96,489	1,53,814	2,76,353	5,26,656
1996	1,38,496	1,60,395	2,98,238	5,97,129
1997	2,13,597	1,01,309	2,43,694	5,58,600
Average	1,51,077	1,39,516	2,83,874	5,74,467

TABLE 4a. Kerala, season-wise, species-wise landings during 1981 (tonnes).

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	1,535	801	2,864	5,200
Cat fishes	3,357	2,161	3,747	9,265
Oil sardine	16,945	13,461	1,25,311	1,55,717
Other sardines	2,730	322	4,046	7,098
White baits	1,255	910	2,128	4,293

Perches	1,395	4,574	2,991	8,960
Croakers	975	913	1,103	2,991
Robbon fishes	24	4,107	2,903	7,034
Carangids	1,616	496	3,441	5,553
Mackerel	7,865	1,053	6,129	15,047
Seer fishes	431	74	3,129	3,634
Tuna	3,050	556	2,309	5,915
Penaeid prawns	4,316	14,078	3,280	21,674
Cephalopods	163	386	2,182	2,731
Others	9,243	8,750	10,166	28,159
Total	54,900	52,642	1,75,729	2,83,271

TABLE 4b. Kerala, season-wise, species-wise landings during 1982 (tonnes)

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	1,178	485	2,709	4,372
Cat fishes	1,644	2,911	5,064	9,619
Oil sardine	42,681	15,310	95,689	1,53,680
Other sardines	2,425	71	5,662	8,158
White baits	7,645	2,208	3,717	13,570
Perches	1,724	7,624	1,343	10,691
Croakers	1,082	1,630	1,142	3,854
Ribbon fishes	38	7,615	3,392	11,045
Carangids	5,833	1,035	7,077	13,945
Mackerel	6,480	739	3,358	10,577
Seer fishes	1,342	144	4,248	5,734
Tuna	3,328	1,129	2,340	6,797
Penaeid prawns	4,787	12,781	14,109	31,677
Cephalopods	522	714	1,976	3,212
Others	11,672	14,313	30,912	56,897
Total	92,381	68,709	1,82,738	3,43,828

TABLE 4c. Kerala, season-wise species-wise landings during 1983 (tonnes).

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	1,652	1,171	4,875	7,698
Cat fishes	1,649	2,569	11,672	15,890
Oil sardine	52,636	3,026	86,733	1,42,395
Other sardines	2,424	365	2,112	4,901
White baits	5,996	18,860	31,298	56,154
Perches	2,065	5,509	2,917	10,491
Croakers	1,076	3,100	2,409	6,585

Ribbon fishes	45	200	865	1,110
Carangids	6,738	1,893	6,179	14,810
Mackerel	4,625	2,368	6,317	13,310
Seer fishes	639	314	5,675	6,628
Tuna	1,626	1,734	2,643	6,003
Penaeid prawns	7,023	13,833	4,860	25,716
Cephalopods	323	302	1,135	1,760
Others	11,721	15,953	29,543	57,217
Total	1,00,238	71,197	1,99,233	3,70,668

TABLE 4d. Kerala, season-wise, species-wise landings during 1984 (tonnes)

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	3,187	678	2,079	5,944
Cat fishes	2,632	3,046	4,917	10,595
Oil sardine	59,987	12,309	62,609	1,34,905
Other sardines	1,722	1,326	4,448	7,496
White baits	2,399	16,883	21,153	40,435
Perches	3,956	17,867	4,988	26,811
Croakers	2,217	3,706	3,331	9,254
Ribbon fishes	184	5,903	383	6,470
Carangids	5,481	2,042	5,872	13,395
Mackerel	3,878	1,533	6,214	11,625
Seer fishes	816	644	4,546	6,006
Tuna	2,486	1,062	2,503	6,051
Penaeid prawns	7,689	14,572	12,974	35,235
Cephalopods	637	891	4,000	5,528
Others	15,085	13,646	28,149	56,880
Total	1,12,356	96,108	1,68,166	3,76,630

TABLE 4e. Kerala, season-wise - species-wise landings during 1985 (tonnes)

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	1,194	360	3,511	5,065
Cat fishes	882	1,233	3,087	5,202
Oil sardine	37,106	9,415	40,854	87,375
Other sardines	1,471	161	1,908	3,540
White baits	3,490	11,342	21,506	36,338
Perches	5,061	18,870	6,859	30,790
Croakers	3,394	2,745	2,295	8,434

Ribbon fishes	97	13,348	11,720	25,165
Carangids	3,717	1,959	7,350	13,026
Mackerel	5,332	2,306	10,518	18,156
Seer fishes	1,269	414	7,145	8,828
Tuna	3,535	1,602	4,596	9,733
Penaeid prawns	9,881	9,968	7,443	27,292
Cephalopods	3,012	1,475	3,717	8,204
Others	17,928	13,704	18,298	49,930
Total	97,369	88,902	1,50,807	3,37,078

TABLE 4f. Kerala, season-wise - species-wise landings during 1986 (tonnes)

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	1,021	473	3,085	4,579
Cat fishes	320	903	7,277	8,500
Oil sardine	16,291	59	8,973	25,323
Other sardines	2,751	1,821	4,516	9,088
White baits	4,866	7,964	14,265	27,095
Perches	4,392	29,589	12,777	46,758
Croakers	1,678	1,676	9,648	13,002
Ribbon fishes	635	3,941	7,298	11,874
Carangids	3,048	19,546	49,464	72,058
Mackerel	9,196	1,221	11,815	22,232
Seer fishes	483	307	3,762	4,552
Tuna	570	511	8,395	9,476
Penaeid prawns	11,500	17,575	8,175	37,250
Cephalopods	1,464	1,714	12,271	15,449
Others	23,356	15,963	23,724	63,043
Total	81,571	1,03,263	185,445	3,70,279

TABLE 4g. Kerala, season-wise species-wise landings during 1987 (in tonnes)

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	1,487	553	1,171	3,211
Cat fishes	162	2,070	2,359	4,591
Oil sardine	1,712	17,762	25,486	44,960
Other sardines	4,860	554	3,915	9,329
White baits	3,356	2,787	10,605	16,748
Perches	8,032	15,930	6,484	30,446
Croakers	2,233	3,049	2,851	8,133

Ribbon fishes	1,021	11,844	2,390	15,255
Carangids	7,631	5,191	9,702	22,524
Mackerel	2,896	2,795	3,880	9,571
Seer fishes	1,212	649	3,309	5,170
Tuna	2,237	4,029	4,234	10,500
Penaeid prawns	24,887	14,576	13,132	52,595
Cephalopods	2,971	736	3,539	7,246
Others	22,521	14,967	25,334	62,822
Total	87,218	97,492	1,18,391	3,03,101

TABLE 4h. Kerala, season-wise, species-wise landings during 1988 (tonnes)

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	1,538	1,667	1,912	5,117
Cat fishes	362	3,609	6,017	9,988
Oil Sardine	2,223	7,948	66,636	76,807
Other sardines	1,195	2,067	9,671	12,933
White baits	5,155	15,065	25,853	46,073
Perches	8,602	16,067	7,163	31,832
Croakers	1,922	1,829	5,196	8,947
Ribbon fishes	2,810	928	5,189	8,927
Carangids	7,229	9,847	31,657	48,733
Mackerel	4,108	13,257	27,260	44,625
Seer fishes	1,694	615	8,063	10,372
Tuna	3,294	3,123	7,127	13,544
Penaeid prawns	19,539	20,346	29,309	69,194
Cephalopods	4,779	2,358	8,049	15,186
Others	28,818	18,431	43,742	90,991
Total	93,268	1,17,157	2,82,844	4,93,269

TABLE 4i. Kerala, season-wise, species-wise landings during 1989 (tonnes).

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	732	337	670	1,739
Cat fishes	500	760	2,688	3,948
Oil sardine	27,523	34,619	1,13,005	1,75,147
Other Sardines	3,000	591	9,460	13,051
White baits	5,520	21,608	17,662	44,790
Perches	11,705	10,690	26,973	49,368
Croakers	1,942	4,984	4,167	11,093

Ribbon fishes	383	339	6,460	7,182
Carangids	6,438	12,094	29,886	48,418
Mackerel	10,370	11,807	63,138	85,315
Seer fishes	1,151	364	6,501	8,016
Tuna	4,214	3,313	14,192	21,719
Penaeid prawns	24,631	16,652	13,076	54,359
Cephalopods	4,854	2,495	16,328	23,677
Others	27,232	15,421	47,361	90,014
Total	1,30,195	1,36,074	3,71,567	637,836

TABLE 4j. Kerala, season-wise - species-wise landings during 1990 (tonnes)

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	962	288	1,715	2,965
Cat fishes	290	254	2,317	2,861
Oil sardine	56,652	31,639	90,729	1,79,020
Other sardines	1,833	278	11,956	14,067
White baits	9,100	6,743	11,440	27,283
Perches	18,018	39,115	11,404	68,537
Croakers	2,647	4,200	4,057	10,904
Ribbon fishes	246	92	9,411	9,749
Carangids	13,379	11,551	45,292	70,222
Mackerel	11,117	11,233	59,994	82,344
Seer fishes	1,193	411	3,633	5,237
Tuna	9,863	3,305	20,645	33,813
Penaeid prawns	26,130	8,458	10,015	44,603
Cephalopods	7,406	3,869	14,185	25,460
Others	37,476	15,512	43,694	96,682
Total	1,96,312	1,36,948	3,40,487	6,73,747

TABLE 4k. Kerala, season-wise - species wise landings during 1991 (tonnes)

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	603	683	641	1,927
Cat fishes	296	849	588	1,733
Oil sardine	74,626	12,625	17,984	1,05,235
Other sardines	14,007	562	8,316	22,885
White baits	5,440	9,952	30,175	45,567
Perches	5,864	13,150	21,247	40,261

Croakers	2,506	2,562	3,717	8,785
Ribbon fishes	193	580	1,409	2,182
Carangids	8,528	19,820	51,839	80,187
Mackerel	11,383	22,237	16,053	49,673
Seer fishes	981	163	3,842	4,986
Tuna	5,600	1,634	4,631	11,865
Penaeid prawns	15,861	21,913	24,878	62,652
Cephalopods	5,256	2,330	11,835	19,421
Others	30,104	20,926	52,139	1,03,169
Total	1,81,248	1,29,986	2,49,294	5,60,528

TABLE 4l. Kerala, season-wise - species-wise landings during 1992 (tonnes)

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	705	489	1,020	2,214
Cat fishes	394	60	458	912
Oil sardine	26,676	6,300	18,068	51,044
Other sardines	1,821	48	14,689	16,558
White baits	7,936	20,848	19,127	47,911
Perches	8,308	23,088	20,608	52,004
Croakers	2,328	2,820	11,017	16,165
Ribbon fishes	101	1,320	4,825	6,246
Carangids	11,899	20,489	52,212	84,600
Mackerel	12,663	10,600	13,831	37,094
Seer fishes	1,356	271	6,926	8,553
Tuna	3,572	1,556	11,245	16,373
Penaeid prawns	19,375	14,411	13,051	46,837
Cephalopods	10,137	3,919	16,887	30,943
Others	34,813	21,137	83,475	1,39,425
Total	1,42,084	1,27,356	2,87,439	5,56,879

TABLE 4 m. Kerala, season-wise - species-wise landings during 1993 (tonnes).

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	1,218	427	1,669	3,314
Cat fishes	25	197	414	636
Oil sardine	13,205	5,590	28,455	47,250
Other sardines	3,375	333	19,116	22,824
White baits	23,647	12,729	13,082	49,458

Perches	18,020	43,271	14,202	75,493
Croakers	4,649	3,748	6,000	14,397
Ribbon fishes	1,868	706	5,132	7,706
Carangids	19,979	15,118	36,633	71,730
Mackerel	7,959	24,254	29,680	61,893
Seer fishes	1,979	414	4,538	6,931
Tuna	6,930	1,724	4,440	13,094
Penaeid Prawns	13,228	21,275	15,669	50,172
Cephalopods	9,444	4,152	14,400	27,996
Others	45,941	23,478	53,114	1,22,533
Total	1,71,467	1,57,416	2,46,544	5,75,427

TABLE 4 n. Kerala, season-wise - species-wise landings during 1994 (tonnes).

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	1,926	373	1,527	3,826
Cat fishes	81	186	215	482
Oil sardine	302	525	754	1,581
Other sardines	822	219	15,436	16,477
White baits	9,191	15,089	7,354	31,634
Perches	15,913	27,586	16,308	59,807
Croakers	3,090	8,102	6,127	17,319
Ribbon fishes	1,867	1,008	12,239	15,114
Carangids	17,313	21,144	21,475	59,932
Mackerel	9,984	44,977	56,086	1,11,047
Seer fishes	1,521	259	3,455	5,235
Tuna	4,083	1,253	9,086	14,422
Penaeid Prawns	30,697	24,439	16,410	71,546
Cephalopods	12,576	6,942	18,471	37,989
Others	38,258	22,598	57,333	1,18,189
Total	1,47,624	1,74,700	2,42,276	5,64,600

TABLE 4 o. Kerala, season-wise - species-wise landings during 1995 (tonnes).

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	1,150	310	916	2,376
Cat fishes	84	94	181	359
Oil sardine	129	60	14,715	14,904
Other sardines	1,245	259	44,503	46,007

White baits	5,905	16,334	14,453	36,692
Perches	11,532	20,491	14,274	46,297
Croakers	3,490	2,637	2,862	8,989
Ribbon fishes	431	716	3,293	4,440
Carangids	13,303	36,292	52,513	1,02,108
Mackerel	7,388	21,648	51,208	80,244
Seer fishes	542	468	4,932	5,942
Tuna	2,980	2,377	6,258	11,615
Penaeid prawns	13,921	21,698	6,220	41,839
Cephalopods	6,577	11,723	24,018	42,318
Others	27,812	18,707	36,007	82,526
Total	96,489	1,53,814	2,76,353	5,26,656

TABLE 4 p. Kerala, season-wise - species-wise landings during 1996 (tonnes)

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	1,486	391	2,521	4,398
Cat fishes	94	96	118	308
Oil sardine	1,782	4,661	19,943	26,386
Other sardines	1,782	1,588	3,608	6,978
White baits	6,900	6,971	16,446	30,317
Perches	12,893	27,884	31,507	72,284
Croakers	3,269	4,604	9,752	17,625
Ribbon fishes	703	4,078	17,548	22,329
Carangids	23,829	8,706	32,575	65,110
Mackerel	19,809	48,887	66,422	1,35,118
Seer fishes	2,133	348	2,552	5,033
Tuna	9,040	2,674	6,285	17,999
Penaeid prawns	14,910	19,118	15,669	49,697
Cephalopods	6,895	8,054	18,321	33,270
Others	32,971	22,335	54,971	1,10,277
Total	1,38,496	1,60,395	2,98,238	5,97,129

TABLE 4q. Kerala, season-wise - species-wise landings during 1997 (tonnes)

Name of fish	Premon.	Mon.	Postmon.	Total
Shark	1,504	652	1,672	3,828
Cat fishes	13	16	180	209
Oil sardine	45,209	8,698	38,854	92,761
Other sardines	2,329	205	13,855	16,389

White baits	6,850	7,514	12,694	27,058
Perches	20,601	9,688	13,908	44,197
Croakers	3,640	2,868	4,528	11,036
Ribbon fishes	2,573	5,577	10,646	18,796
Carangids	20,363	6,432	21,148	47,943
Mackerel	19,107	18,735	35,877	73,719
Seer fishes	1,272	836	1,869	3,977
Tuna	4,992	4,148	6,545	15,685
Penaeid prawns	22,729	14,559	18,652	55,940
Cephalopods	12,744	5,307	18,638	36,689
Others	49,671	16,074	44,628	1,10,373
Total	2,13,597	1,01,309	2,43,694	5,58,600

TABLE 5a. Kerala, season-wise, trawl landings during 1982-1997 (tonnes).

Year	Premon.	Mon.	Postmon.	Total
1982	13,311	21,939	29,243	64,493
1983	20,491	19,476	1,99,909	59,876
1984	25,854	36,995	28,013	90,862
1985	33,091	36,936	28,398	98,425
1986	34,044	47,119	36,857	1,18,020
1987	59,475	36,847	47,696	1,44,018
Average	31,044	33,219	31,686	95,949
1988	70,707	47,759	83,967	2,02,433
1989	67,541	23,627	1,09,459	2,00,627
1990	81,893	59,046	84,300	2,25,239
1991	60,931	41,262	1,12,077	2,14,270
1992	75,887	44,345	1,31,087	2,51,319
1993	1,09,201	73,272	1,16,674	2,99,147
1994	1,19,654	69,394	1,26,502	3,15,550
1995	73,325	56,715	76,793	2,06,833
1996	77,211	57,412	1,26,976	2,61,599
1997	1,22,980	38,777	1,05,804	2,67,561
Average	85,933	51,161	1,07,364	2,44,458

TABLE 5b. Kerala, season-wise, mec. drift/gillnet landings during 1982-1997 (tonnes).

Year	Premon.	Mon.	Postmon.	Total
1982	5,837	5,126	7,102	18,065

1983	2,370	5,725	13,519	21,614
1984	3,705	1,960	8,073	13,738
1985	3,448	1,719	10,814	15,981
1986	1,769	1,134	5,985	8,888
1987	364	2,323	2,186	5,373

Average	2,999	2,998	7,946	13,943
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1988	1,511	1,737	5,208	8,456
1989	696	1,278	3,345	5,319
1990	1,552	1,154	1,097	3,803
1991	844	552	418	1,814
1992	297	688	840	1,825
1993	354	832	373	1,559
1994	307	372	312	991
1995	90	546	817	1,453
1996	266	565	722	1,553
1997	281	966	588	1,835

Average	620	869	1,372	2,861
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TABLE 5c. Kerala, season-wise, purse seine landings during 1982-1997 (tonnes)

Year	Premon.	Mon.	Postmon.	Total
1982	4,841	0	6,335	11,176
1983	3,546	1,783	9,415	14,744
1984	6,440	0	1,380	7,820
1985	3,802	0	6,428	10,230
1986	768	0	3,749	4,517
1987	208	0	696	904

Average	3,268	297	4,667	8,232
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1988	17	0	1,154	1,171
1989	2,444	0	6,342	8,786
1990	1,939	0	2,487	4,426
1991	2,044	252	1,828	4,124
1992	2,223	0	4,050	6,273
1993	1,384	38	5,417	6,839
1994	1,656	0	4,247	5,903
1995	356	0	4,632	4,988
1996	2,520	0	7,703	10,223
1997	1,157	0	1,696	2,853

Average	1,574	29	3,956	5,559
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TABLE 5d. Kerala, season-wise, mec.hooks & line landings during 1982-1997 (tonnes)

Year	Premon.	Mon.	Postmon.	Total
1982	27	0	266	293
1983	24	0	235	259
1984	186	0	65	251
1985	11	0	99	110
1986	123	3	336	462
1987	287	92	599	978

Average	110	16	266	392
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1988	319	79	332	730
1989	307	46	460	813
1990	4,418	289	3,648	8,355
1991	4	12	422	438
1992	307	139	339	785
1993	27	62	528	617
1994	294	4	457	755
1995	457	15	536	1,008
1996	289	22	1,119	1,430
1997	550	139	1,631	2,320

Average	697	81	947	1,725
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TABLE 5e. Kerala, season-wise, OB boatseine landings during 1982-1997 (tonnes).

year	Premon.	Mon.	Postmon.	Total
1982	13,712	13,132	38,690	65,534
1983	29,608	12,139	34,267	76,014
1984	17,500	25,234	60,266	1,03,000
1985	26,987	25,091	4,551	56,629
1986	9,910	39,540	63,650	1,13,100
1987	4,665	20,850	22,894	48,409

Average	17,064	22,664	37,386	77,114
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1988	3,454	32,791	54,858	91,103
1989	7,218	16,799	24,051	48,068
1990	10,674	12,630	19,251	42,555
1991	3,545	16,099	4,956	24,600
1992	860	12,444	5,574	18,878
1993	1,703	10,899	473	13,075

1994	32	8,669	5,044	13,745
1995	74	9,208	4,669	13,951
1996	133	9,177	314	9,624
1997	404	7,655	11,223	19,282
Average	2,810	13,637	13,041	29,488

TABLE 5f. Kerala, season-wise, OB ring seine landings during 1986-1997 (tonnes).

Year	Premon.	Mon.	Postmon.	Total
1986	0	1,104	22,894	23,998
1987	4,056	18,379	7,955	30,390
Average	2,028	9,742	15,424	27,194
1988	1,161	17,470	69,443	88,074
1989	26,316	71,663	1,72,841	2,70,820
1990	51,470	44,050	1,68,198	2,63,718
1991	81,533	60,548	78,672	2,20,753
1992	31,771	62,061	99,690	1,93,522
1993	26,911	58,490	71,161	1,56,562
1994	4,766	82,439	69,036	1,56,241
1995	3,989	69,800	1,41,552	2,15,341
1996	13,033	73,559	98,713	1,85,305
1997	45,761	33,800	77,729	1,57,290
Average	28,671	57,388	1,04,704	1,90,763

TABLE 5g. Kerala, season-wise OB drift/gillnet landings during 1982-1997 (tonnes)

Year	Premon.	Mon.	Postmon.	Total
1982	448	1,943	2,087	4,478
1983	815	905	15,417	17,137
1984	6,499	4,066	27,218	37,783
1985	5,699	2,988	12,958	21,645
1986	13,367	1,774	15,728	30,869
1987	4,601	5,868	11,193	21,662
Average	5,238	2,924	14,100	22,262
1988	2,732	3,498	28,377	34,607
1989	7,295	5,595	19,757	32,647
1990	11,087	14,344	25,864	51,295

1991	17,599	10,722	28,074	56,395
1992	14,114	3,936	17,431	35,481
1993	9,010	2,514	16,114	27,638
1994	8,017	3,259	27,719	38,995
1995	10,548	8,742	14,159	33,449
1996	21,050	13,606	17,724	52,380
1997	23,674	10,400	13,266	47,340
Average	12,513	7,662	20,848	41,023

TABLE 5h. Kerala, season-wise, OB others landings during 1982-1997 (tonnes).

Years	Premon.	Mon.	Postmon.	Total
1982	1,598	623	299	2,520
1983	2,908	290	2,209	5,407
1984	8,037	3,062	3,561	14,660
1985	3,247	676	46,763	50,686
1986	1,128	1,067	9,766	11,961
1987	2,850	1,370	6,967	11,187
Average	3,295	1,181	11,594	16,070
1988	5,400	5,520	22,827	33,747
1989	5,659	7,894	16,936	30,489
1990	1,159	7	8,632	9,798
1991	17,108	2,026	14,237	33,371
1992	6,110	4,276	8,248	18,634
1993	9,202	828	18,595	28,625
1994	8,186	1,370	12,382	21,938
1995	4,376	2,500	10,879	17,755
1996	16,759	4,361	16,063	37,183
1997	12,820	6,032	21,208	40,060
Average	8,678	3,481	15,001	27,160

TABLE 5i. Kerala, season-wise, non-mechanised landings during 1982-1997 (tonnes)

Year	Premon.	Mon.	Postmon.	Total
1982	52,607	25,946	98,716	1,77,269
1983	40,476	30,879	1,04,262	1,75,617
1984	44,135	24,791	39,590	1,08,516
1985	21,084	21,492	40,796	83,372

1986	20,462	11,522	26,480	58,464
1987	10,212	11,763	18,205	40,180
Average	31,496	21,065	54,675	1,07,236
1988	7,961	8,303	16,678	32,942
1989	9,316	8,067	17,385	34,768
1990	14,073	7,308	22,421	43,802
1991	11,820	2,922	25,325	40,067
1992	12,807	4,454	10,961	28,222
1993	15,419	9,252	11,888	36,559
1994	5,828	2,569	11,561	19,958
1995	5,394	4,010	10,737	20,141
1996	7,235	1,693	13,143	22,071
1997	5,970	3,540	10,549	20,059
Average	9,582	5,212	15,065	29,859

TABLE 6a. Kerala, season-wise, shark landings during 1981-1997 (tonnes)

Year	Premon.	Mon.	Postmon.	Total
1981	1,535	801	2,864	5,200
1982	1,178	485	2,709	4,372
1983	1,652	1,171	4,875	7,698
1984	3,187	678	2,079	5,944
1985	1,194	360	3,511	5,065
1986	1,021	473	3,085	4,579
1987	1,487	553	1,171	3,211
Average	1,608	646	2,899	5,153
1988	1,538	1,667	1,912	5,117
1989	732	337	670	1,739
1990	962	288	1,715	2,965
1991	603	683	641	1,927
1992	705	489	1,020	2,214
1993	1,218	427	1,669	3,314
1994	1,926	373	1,527	3,826
1995	1,150	310	916	2,376
1996	1,486	391	2,521	4,398
1997	1,504	652	1,672	3,828
Average	1,182	562	1,426	3,170

TABLE 6b. Kerala, season-wise, catfish landings during 1981-1997 (tonnes)

Year	Premon.	Mon.	Postmon.	Total
1981	3,357	2,161	3,747	9,265
1982	1,644	2,911	5,064	9,619
1983	1,649	2,569	11,672	15,890
1984	2,632	3,046	4,917	10,595
1985	882	1,233	3,087	5,202
1986	320	903	7,277	8,500
1987	162	2,070	2,359	4,591
Average	1,521	2,127	5,446	9,095
1988	362	3,609	6,017	9,988
1989	500	760	2,688	3,948
1990	290	254	2,317	2,861
1991	296	849	588	1,733
1992	394	60	458	912
1993	25	197	414	636
1994	81	186	215	482
1995	84	94	181	359
1996	94	96	118	308
1997	13	16	180	209
Average	214	612	1,318	2,144

TABLE 6c. Kerala, season-wise, STOLEPHORUS landings during 1981-1997 (tonnes).

Year	Premon.	Mon.	Postmon.	Total
1981	1,255	910	2,128	4,293
1982	7,645	2,208	3,717	13,570
1983	5,996	18,860	31,298	56,154
1984	2,399	16,883	21,153	40,435
1985	3,490	11,342	21,506	36,338
1986	4,866	7,964	14,265	27,095
1987	3,356	2,787	10,605	16,748
Average	4,144	8,708	14,953	27,805
1988	5,155	15,065	25,853	46,073
1989	5,520	21,608	17,662	44,790
1990	9,100	6,743	11,440	27,283

1991	5,440	9,952	30,175	45,567
1992	7,936	20,848	19,127	47,911
1993	23,647	12,729	13,082	49,458
1994	9,191	15,089	7,354	31,634
1995	5,905	16,334	14,453	36,692
1996	6,900	6,971	16,446	30,317
1997	6,850	7,514	12,694	27,058
Average	8,564	13,285	16,829	38,678

TABLE 6. Kerala, season-wise, perches landings during 1981-1997 (tonnes)

Year	Premon.	Mon.	Postmon.	Total
1981	1,395	4,574	2,991	8,960
1982	1,724	7,624	1,343	10,691
1983	2,065	5,509	2,917	10,491
1984	3,956	17,867	4,988	26,811
1985	5,061	18,870	6,629	30,560
1986	4,392	29,589	12,777	46,758
1987	8,032	15,930	6,484	30,446
Average	3,804	14,280	5,447	23,531
1988	8,602	16,087	7,163	31,852
1989	11,705	10,690	26,973	49,368
1990	18,018	39,115	11,404	68,537
1991	5,864	13,150	21,247	40,261
1992	8,308	23,088	20,608	52,004
1993	18,020	43,271	14,202	75,493
1994	15,913	27,586	16,308	59,807
1995	11,532	20,491	14,274	46,297
1996	12,893	27,884	31,507	72,284
1997	20,601	9,688	13,908	44,197
Average	13,146	23,105	17,759	54,010

TABLE 6e. Kerala, season-wise, oil sardine landings during 1981-1997 (tonnes).

Year	Premon.	Mon.	Postmon.	Total
1981	16,945	13,461	1,25,311	1,55,717
1982	42,681	15,310	95,689	1,53,680
1983	52,636	3,026	86,733	1,42,395

1984	59,987	12,309	62,609	1,34,905
1985	37,106	9,415	40,859	87,380
1986	16,291	59	8,973	25,323
1987	1,712	17,762	25,486	44,960
Average	32,480	10,192	63,665	1,06,337
1988	2,223	7,948	66,636	76,807
1989	27,523	34,619	1,13,005	1,75,147
1990	56,652	31,639	90,729	1,79,020
1991	74,626	12,625	17,984	1,05,235
1992	26,876	6,300	18,068	51,044
1993	13,205	5,590	28,455	47,250
1994	302	525	754	1,581
1995	129	60	14,715	14,904
1996	1,782	4,661	19,943	26,386
1997	45,209	8,698	38,854	92,761
Average	24,833	11,267	40,914	77,014

TABLE 6f. Kerala, season-wise, other sardines landings during 1981-1997 (tonnes)

Year	Premon.	Mon.	Postmon.	Total
1981	2,730	322	4,046	7,098
1982	2,425	71	5,662	8,158
1983	2,424	365	2,112	4,901
1984	1,722	1,326	4,448	7,496
1985	1,471	161	1,908	3,540
1986	2,751	1,821	4,516	9,088
1987	4,860	554	3,915	9,329
Average	2,626	660	3,801	7,087
1988	1,195	2,067	9,671	12,933
1989	3,000	59	9,460	12,519
1990	1,833	278	11,956	14,067
1991	14,007	562	8,316	22,885
1992	1,821	48	14,689	16,558
1993	3,375	333	19,116	22,824
1994	822	219	15,436	16,477
1995	1,245	259	44,503	46,007
1996	1,782	1,588	3,608	6,978
1997	2,329	205	13,855	16,389
Average	3,141	562	15,061	18,764

Table 6 g. Kerala, season wise, croakers landings during 1981-1997 (tonnes)

Year	Premom.	Mon.	Postmon.	Total
1981	975	913	1,103	2,991
1982	1,082	1,630	1,142	3,854
1983	1,076	3,100	2,409	6,585
1984	2,217	3,706	3,331	9,254
1985	3,394	2,745	2,295	8,434
1986	1,678	1,676	9,648	13,002
1987	2,233	3,049	2,851	8,133
Average	1,808	2,403	3,254	7,465

1988	1,922	1,829	5,196	8,947
1989	1,942	4,984	4,167	11,093
1990	2,647	4,200	4,057	10,904
1991	2,506	2,562	3,717	8,785
1992	2,328	2,820	11,017	16,165
1993	4,649	3,748	6,000	14,397
1994	3,090	8,102	6,127	17,319
1995	3,490	2,637	2,862	8,989
1996	3,269	4,604	9,752	17,625
1997	3,640	2,868	4,528	11,036
Average	2,948	3,835	5,742	12,525

Table 6h. Kerala season-wise ribbon fish landings during 1981-1997 (tonnes)

Year	Premom.	Mon.	Postmon.	Total
1981	24	4,107	2,903	7,034
1982	38	7,615	3,392	11,045
1983	45	200	865	1,110
1984	184	5,903	383	6,470
1985	97	13,348	11,720	25,165
1986	635	3,941	7,298	11,874
1987	1,021	11,844	2,390	15,255
Average	292	6,708	4,136	11,136

1988	2,810	928	5,189	8,927
1989	383	339	6,460	7,182
1990	246	92	9,411	9,749
1991	193	580	1,409	2,182

1992	101	1,320	4,825	6,246
1993	1,868	706	5,132	7,706
1994	1,867	1,008	12,239	15,114
1995	431	716	3,293	4,440
1996	703	4,078	17,548	22,329
1997	2,573	5,577	10,646	18,796
Average	1,118	1,534	7,615	10,267

Table 6i. Kerala, season-wise, mackerel landings during 1981-1997 (tonnes)

Year	Premom.	Mon.	Postmon.	Total
1981	7,865	1,053	6,129	15,047
1982	6,480	739	3,358	10,577
1983	4,625	2,368	6,317	13,310
1984	3,878	1,533	6,214	11,625
1985	5,332	2,306	10,518	18,156
1986	9,196	1,221	11,815	22,232
1987	2,896	2,795	3,880	9,571
Average	5,753	1,716	6,890	14,359

1988	4,108	13,257	27,260	44,625
1989	10,370	11,807	63,138	85,315
1990	11,117	11,233	59,994	82,344
1991	11,383	22,237	16,053	49,673
1992	12,663	10,600	13,831	37,094
1993	7,959	24,254	29,680	61,893
1994	9,984	44,977	56,086	1,11,047
1995	7,388	21,648	51,208	80,244
1996	19,809	48,887	66,422	1,35,118
1997	19,107	18,735	35,877	73,719
Average	11,389	22,763	41,955	76,107

Table 6j. Kerala, season-wise, carangid landings during 1981-1997 (tonnes)

Year	Premom.	Mon.	Postmon.	Total
1981	1,616	496	3,441	5,553
1982	5,833	1,035	7,077	13,945
1983	6,738	1,893	6,179	14,810
1984	5,481	2,042	5,872	13,395

1985	3,717	1,959	7,350	13,026
1986	3,048	19,546	49,464	72,058
1987	7,631	5,191	9,702	22,524
Average	4,866	4,595	12,726	22,187
1988	7,229	9,847	31,657	48,733
1989	6,438	12,094	29,886	48,418
1990	13,379	11,551	4,05,291	4,30,221
1991	8,528	19,820	51,839	80,187
1992	11,899	20,489	52,212	84,600
1993	19,979	15,118	36,633	71,730
1994	17,313	21,144	21,475	59,932
1995	13,303	36,292	52,513	1,02,108
1996	23,829	8,706	32,575	65,110
1997	20,363	6,432	21,148	47,943
Average	14,226	16,149	73,523	1,03,898

TABLE 6k. Kerala, season-wise, prawn landings during 1981-1997 (tonnes)

Year	Premon.	Mon.	Postmon.	Total
1981	4,316	14,078	3,280	21,674
1982	4,787	12,781	14,109	31,677
1983	7,023	13,833	4,860	25,716
1984	7,689	14,572	12,974	35,235
1985	9,881	9,968	7,443	27,292
1986	11,500	17,575	8,175	37,250
1987	24,887	14,576	13,132	52,595
Average	10,012	13,912	9,139	33,063
1988	19,539	20,346	29,309	69,194
1989	24,631	16,652	13,076	54,359
1990	26,130	8,458	10,015	44,603
1991	15,861	21,913	24,878	62,652
1992	19,375	14,411	13,051	46,837
1993	13,228	21,275	15,669	50,172

1994	30,697	24,439	16,410	71,546
1995	13,921	21,698	6,220	41,839
1996	14,910	19,118	15,669	49,697
1997	22,729	14,559	18,652	55,940
Average	20,102	18,287	16,295	54,684

TABLE 6L. Kerala, season-wise, cephalopod landings during 1981-1997 (tonnes)

Year	Premon.	Mon.	Postmon.	Total
1981	163	386	2,182	2,731
1982	522	714	1,976	3,212
1983	323	302	1,135	1,760
1984	637	891	4,000	5,528
1985	3,012	1,475	3,717	8,204
1986	1,464	1,714	12,271	15,449
1987	2,971	736	3,539	7,246
Average	1,299	888	4,117	6,304
1988	4,779	2,358	8,049	15,186
1989	4,854	2,495	16,328	23,677
1990	7,406	3,869	14,185	25,480
1991	5,256	2,330	11,835	19,421
1992	10,137	3,919	16,887	30,943
1993	9,444	4,152	14,400	27,996
1994	12,576	6,942	18,471	37,989
1995	6,577	11,723	24,018	42,318
1996	6,895	8,054	18,321	33,270
1997	12,744	5,307	18,638	36,689
Average	8,067	5,115	16,113	29,295

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