A SURVEY OF THE STATISTICS OF MARINE FISH CATCH IN INDIA FROM 1950 TO 1962

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INTRODUCTION

Estimation of marine fish production is made on an all-India basis by the Central Marine Fisheries Research Institute ever since its inception, and till now brief summary reports alone showing the total landings and their composition are published regularly in the annual reports of the Institute, but details like the regional and seasonal production of the commercially important fishes and their fluctuations etc. have not so far been published. In view of the increasing attention given now for the commercial exploitation of the marine resources to augment our food supply, requests for detailed information and data on specific fisheries, both from private and public organisations are on the increase, so much so it is found necessary to publish detailed figures so that they will be readily available to all interested parties especially to the industry, administrator and research worker.

In the advanced countries of the world, statistics of fish landings are collected on a systematic basis and published regularly in great detail and the catch statistics are often shown according to areas, seasons and gear of capture together with other important details like species composition etc. The method of collection of statistics naturally varies a great deal from country to country and in countries where fishing industry is well organised, the catch statistics are obtained by complete enumeration from the logs kept by the skippers of the fishing vessels. In other countries, the catch statistics are generally made by some sort of sampling methods.

The earliest reference to estimates of marine fish catch in India is seen in the "Report on the Marketing of Fish in India" (1946); but these data "are not based on any scientifically planned surveys but mostly on trade enquiries and similar other evidence" (Central Statistical Organisation, 1961). The first attempt to build up a planned survey for the estimation of fish catch on an all-India basis was made by the Central Marine Fisheries Research Institute, Mandapam Camp. Bal and Banerji (1952) gave an account of the efforts made by the Institute in developing such a survey and since then the method of survey has undergone a great deal of change. In 1959, full scale sampling scheme was introduced to estimate the marine fish catch in India and the essential features of the sampling scheme along with the method of estimation have been published in Sample Surveys of Current Interest in India (1961). The Central Statistical Organisation in the chapter on "Income from Fishery" in National Income Statistics (1961) gives a review of the position of various available fisheries statistics in India. Banerji

and Satyanarayana (1958) gave a brief account of the status of the marine fisheries from 1950 to 1956 *vis-a-vis* the position in 1946 as reported in the Marketing Report.

The purpose of the present paper is to publish in one place the complete statistics of marine fish catch in India from 1950 to 1962 in as much detail as possible along with an analysis of the trend and composition of the catch.

Total All-India Catch and its Relation to the Total Catch in the States

The total annual catch of marine fish in India and its components comprising of the landings in the different maritime States for the years 1950 to 1962 are given in Appendix I. It also shows the average annual catch in respect of these figures along with the associated percentages.

It is seen that the total catch in India varied from 5,28,348 tonnes to 8,79,681 tonnes during the 13 year period from 1950 to 1962 and the annual average catch during the period worked out to be 6,57,700 tonnes. The Statewise break-up of this quantity along with the percentages are given below:—

States	Average annual catch (tonnes)	Percentage
West Bengal & Orissa	8,157	1·24
Andhra	50,357	7·65
Madras	98,795	15·00
Kerala	2,00,662	30·47
Mysore	53,548	8·13
Maharashtra	1,56,575	23·77
Gujarat	85,262	12·95
Other States*	1,261	0·19
Trawlers	3,968	0·60

*Average based on available figures from 1956. Since the other averages are based on 13 years' data from 1950, the total of these averages will not add up to the all-India average catch of 6,57,700 tonnes.

From the above figures, it is clear that the 4 maritime States on the east coast of India produce only 23.89% which is about one-fourth of the total catch in India, even though the length of east coast almost equals that of the west coast. Among the maritime States the quantity of fish catch landed in Kerala is almost one-third of the total all-India catch and Maharashtra accounts for about one-fourth of the total all-India catch. Madras and Gujarat are the other States which make significant contributions to the total all-India catch.

It has already been pointed out that there is a good deal of variation in the annual catch of marine fish in India and the following account explains the fluctuations in the all-India catch in relation to the variations in catch in the different States.

In 1950, the total catch of marine fish in India was 5,80,022 tonnes and this was short by 77,678 tonnes of the average annual catch. The landings in West Bengal and Orissa and Andhra were exceptionally good and together registered 39,852 tonnes more than the average annual landings of these States. In Kerala also a small excess of 1,385 tonnes over the average was landed. But these gains were not only wiped off but a shortfall in the all-India landings resulted because of below average landings in Madras, Mysore, Maharashtra and Gujarat. While the shortfall from Madras and Mysore States was only 19,628 tonnes, that from Maharashtra and Gujarat amounted to 98,617 tonnes during the year.

In 1951, the total landings in India were 5,33,916 tonnes which was 1,23,784 tonnes less than the average annual catch. As in the previous year, the main shortfall amounting to 1,09,589 tonnes came from Maharashtra and Gujarat. Kerala landings were also 9,630 tonnes lower than the average catch. West Bengal and Orissa and Madras also contributed 24.149 tonnes towards the deficit. More than average landings in Andhra and Mysore wiped off only 19,817 tonnes of the above deficit.

The total catch in India further declined to 5,28,348 tonnes during 1952. This was 1,29,352 tonnes below the annual average catch. The main contributing States towards this huge deficit were Maharashtra and Gujarat as before, but Kerala and West Bengal and Orissa also added to the deficit. The short-fall from Maharashtra and Gujarat during the year was 75,006 tonnes and that from Kerala and West Bengal and Orissa was 71,317 tonnes and 2,028 tonnes respectively. As against these Andhra landings during the year were 1,025 tonnes higher than average, Madras landings by 915 tonnes and Mysore landings by 19,599 tonnes.

In 1953, the total catch in India was 5,81,463 tonnes as compared to the total annual average catch of 6,57,700 tonnes. In contrast to other years, the bulk of the shortfall amounting to 88.663 tonnes was from Kerala. All the States of east coast yielded lower than average catch and their contribution to the total shortfall was 30,577 tonnes. A nominal deficit of 348 tonnes from Gujarat was also noticed. But unlike the previous years, the total landings in Maharashtra exceeded the annual average by 40,505 tonnes and those in Mysore by only 5,654 tonnes but these could not compensate for the shortfalls accruing from other States.

In 1954, the total catch from West Bengal and Orissa exceeded the annual average by a small margin of 1,349 tonnes. In both Maharashtra and Gujarat, the total catch exceeded the annual averages by 56,589 and 5,669 tonnes respectively. But these gains were offset by deficits in all other States so that the all-India landings suffering a total deficit of 69,442 tonnes stood at 5,88,258 tonnes during the year.

In 1955, the total landings exceeded the annual averages in the States of Maharashtra, Gujarat and Andhra and they together showed an excess of 70,301 tonnes over the annual average. But the landings in Kerala alone were lower by 95,205 tonnes below the average and those in Mysore by 22,864 tonnes and those in Madras by 8,013 tonnes and those in West Bengal and Orissa by 2,189 tonnes. The net result was that the total landings in India amounting to 5,95,725 tonnes during 1955 were 61 975 tonnes below the annual average.

In 1956, the total catch in India amounting to 7,18,779 tonnes exceeded for the first time the annual average by 61,079 tonnes. During the year, the total landings of all States excepting those of Kerala and Mysore exceeded the respective annual averages. The noteworthy features of the year were the very poor landings in Kerala and Mysore which caused a shortfall of 81,718 tonnes and the exceptionally high catches in Maharashtra and Gujarat which exceeded the respective annual averages by 87,946 tonnes and 29,756 tonnes respectively.

In 1957, the total landings in India reached the figure of 8,75,516 tonnes. This exceeded the annual average by 2,17,816 tonnes. This was possible because in addition to the continuation of better than average landings in Maharashtra and Gujarat, exceptionally good landings were effected in Kerala and Mysore also.

In 1958, the total landings in India declined to 7,55,994 tonnes but this was still 98,294 tonnes more than the annual average. As in 1957, high landings were maintained in Kerala and Mysore, and in addition, improved landings were obtained in Madras. But the landings in Maharashtra and Gujarat fell below the respective State averages.

In 1959, the total landings in India reached the low level of 5,84,587 tonnes which is 73,113 tonnes lower than the annual average. This happened because in addition to continued low landings in Maharashtra and Gujarat, the landings in Kerala and Mysore substantially declined below their respective annual average catches. The landings in Andhra, West Bengal and Orissa were also below the average level.

In 1960, the total landings in India reached the highest figure of 8,79,681 tonnes. Excepting in West Bengal and Orissa and Maharashtra, the landings in all other States during the year were higher than the annual averages in the respective States. Kerala and Mysore witnessed the highest landings during the year.

In 1961 and 1962, the figures of total landings in India declined to 6,83,569 tonnes and 6,44,244 tonnes respectively. This decline was mainly due to fall in the landings in Mysore and Maharashtra. The landings in other States remained more or less at the same level as in the previous year.

The Composition of the Total Catch and its Annual Variation

Appendix II presents the composition of the total average catch in India from 1950 to 1962. The last 2 columns of the Appendix give the average annual catch of each variety of fish and the percentage contribution to the total catch. In the case of some of the minor varieties of fish, records were not maintained separately for them during the earlier years. However, their average landings have been obtained on the basis of the number of years for which figures are available. For this reason

the average annual catch obtained by averaging the total catches of individual years and given in the penultimate column of the Appendix will not agree with the sum of the average annual catches of the different varieties of fish. The average annual catch of the most important varieties of fish and their percentages to the average annual total catch in India are given below:—

	Average annual catch (tonnes)	Percentage
Prawns etc.	96,191	14.44
Oil Sardine	80,064	12.02
Bombay duck	68,794	10.33
Mackerel	67,849	10.18

These four varieties of fish form on an average 46.97% of the total Indian catch. The corresponding figures for other relatively important groups of fishes are:

	Average annual catch (tonnes)	Percentage
Other sardines	37,815	5.68
Sciaenids	36,320	5.45
Ribbon fish	29,498	4.43
Elasmobranchs	26,143	3.92
Anchoviella	25,866	3.88
Other clupeids	20,970	3.15
Cat fishes	20,592	3.09
Carangids	20,627	3.09
Pomfrets	15,367	2.31
Leiognathus	13,800	2.07

These 10 groups together with the 4 groups mentioned earlier form 84.04% of the total annual average catch in India. The fluctuation in the annual catches in these varieties of fish will naturally affect the total landings in India. The following analysis furnishes a brief account of the variation in total landings in India from year to year with reference to changes in the composition of the catch.

In 1950, the total landings in India amounted to 5,80,022 tonnes and this was 77,678 tonnes short of the average annual landings. Among the important varieties of fish, the landings of mackerel, other sardines and other clupeids were more than their respective average landings. The landings of other sardines were 37,396 tonnes more than the annual average and the corresponding figures for mackerel and other clupeids were 21,314 tonnes and 2,222 tonnes respectively. But these gains were more than offset by the deficit landings of other groups of fishes. The most important shortfalls were as follows: Bombay duck 54,633 tonnes, oil sardine 45,644 tonnes, prawns 21,314 tonnes, carangids 14,505 tonnes, ribbon fish 11,390 tonnes and pomfrets 10,464 tonnes.

In 1951, the total landings in India declined to 5,33,916 tonnes which was 1,23,784 tonnes below the average annual catch. The position with regard to most of the fisheries was similar to that of 1950 excepting that *Anchoviella* and *Leiognathus* fisheries instead of causing shortfall showed better than average catches while the reverse happened to the fishery of other clupeids. As in the previous year, the principal gains came from the following fisheries:—Mackerel 37,051 tonnes, *Anchoviella* 27,407 tonnes, other sardines 14,588 tonnes. As against these gains, the following were the notable shortfalls: oil sardine 62,824 tonnes, Bombay duck 61,532 tonnes, prawns 19,394 tonnes, ribbon fish 12,552 tonnes, carangids 10,808 tonnes and pomfrets 6,147 tonnes.

The total landings in 1952 further declined to 5,28,348 tonnes showing a decline of 1,29,352 tonnes below the annual average. Better than average landings of elasmobranchs, mackerel, *Anchoviella,* other sardines and ribbon fish produced a net surplus of 47,057 tonnes. But the surplus was made into a net deficit by below average landings of oil sardine Bombay duck, prawns, carangids and pomfrets in particular. The shortfall caused by the landings of each of these are as follows: oil sardine 66,168 tonnes, Bombay duck 44,147 tonnes, prawns 19,190 tonnes, carangids 10,945 tonnes and pomfrets 9,444 tonnes.

In 1953, the total catch in India increased to 5,81,463 tonnes, but was still 76,237 tonnes below the annual average. The only fish whose landings were significantly above the average level during the year was ribbon fish which accounted for an excess of 26,800 tonnes above the average. As in other years oil sardine, Bombay duck, carangids mainly caused the shortfall. But the most interesting feature of the year was that instead of fetching notable surplus landings as in previous years other sardines and elasmobranchs landings caused a major shortfall this year. The landings of other varieties of fish were either slightly above or below and this made no significant contribution in changing the total catch of India.

The total landings in 1954 and 1955 were 5,88,258 tonnes and 5,95,725 tonnes respectively as compared to the average annual landings of 6,57,700 tonnes. The most salient features of the fishery during the two years were as follows: oil sardine landings continued to be subdued but in contradistinction to other years, the prawn landings were significantly higher and mackerel landings fell short of the average level. The landings of other sardines caused a significant shortfall in 1954 but a slight excess in 1955. Similarly while Bombay duck catch was far below average in 1954, it was significantly higher than the average in 1955. The sciaenids landings in 1954, were noticeably above the average level.

The total catch in India remained above the annual average during the years 1956 to 1958. In 1956, notable shortfalls were: oil sardine 72,652 tonnes and mackerel 51,418 tonnes. But these shortfalls were overshadowed by the following: prawns 63,361 tonnes, Bombay duck 60,086 tonnes, carangids 36,001 tonnes, sciaenids 21,117 tonnes and other clupeids 13,388 tonnes. In 1957, below average landings of carangids and *Anchoviella* produced a shortfall of 21,141 tonnes. But these shortfalls were more than compensated by gains in catch arising on account of better than average catches of oil sardine, other clupeids Bombay duck, ribbon fish and mackerel. This year witnessed the highest landings of 1,91,469 tonnes of oil sardine during the 13 year period under study. In 1958, the prawn landings were slightly below the average and caused a shortfall of 9,492 tonnes. A significant shortfall of 10,755 tonnes also arose due to decline in the landings of sciaenids. But these minor shortfalls were wiped out by all round good fisheries of oil sardine, ribbon fish and mackerel.

The sequence of high level of landings from 1956 to 1958 was broken in 1959 by a rather steep decline in the total landings which was only 5,84,587 tonnes. In 1959, substantial decline was noticed in the landings of prawns, oil sardine, Bombay duck, sciaenids, carangids and some decline in mackerel landings. But unlike in other years, no increase in the landings of other fish was noticed during the year. This created the steep fall in the total landings in the year.

In 1960, there was a wonderful recovery and the total landings in India reached the record total of 8,79,681 tonnes. This recovery was possible specially because of high landings of both oil sardine and mackerel. The oil sardine catch almost reached the record figure of 1957 and the mackerel catch of 1,33,655 tonnes was the highest during the 13-year period. Other significant contributions towards the improvement in the total landings in 1960 came from higher landings of Bombay duck, carangids, elasmobranchs, *Anchoviella*, *Lactarius* and pomfrets. Prawn landings together with the landings of other sardines, sciaenids and ribbon fish made some slight indentations in the above gains.

The total landings in India during both 1961 and 1962 fell substantially but while in 1961, the total landings were slightly above the annual average, it was slightly below the average during 1962. In 1961, the mackerel landings slumped down and in addition reduced landings were noticed in the case of prawn, cat fishes, *Anchoviella*, other clupeids, sciaenids and ribbon fish. But as against these shortfalls, oil sardine landings continued to be good. Good catches of elasmobranchs, Bombay duck, carangids were also landed. These good landings made up the loss accruing from the shortfalls mentioned above and resulted in the total landings being slightly above the annual average. In 1962, the position was more or less the same as in 1961, except that the landings of oil sardine and Bombay duck though good were lower than previous year and this caused the total landings to fall slightly below the annual average.

Trend of Total Catch in India

The year to year variations in the total catch in India has been explained above in terms of fluctuations in the catch in the States and also of the different varieties of fish. While such annual variations are inherent characteristics of marine fisheries in any country, certain trends in annual production may be found. To assess if any trend exists in the production in India, the 13 year

period from 1950 to 1962 was divided into 3 more or less equal periods as follows:—(i) the first period of 4 years from 1950 to 1953; (ii) the second period of 4 years from 1954 to 1957 and (iii) the last period of 5 years from 1958 to 1962. The average annual catch in India during the first four year period was 5,55,937 tonnes, it became 6,94,570 tonnes during the second four year period and it was 7,09,615 tonnes during the last five year period. Thus smoothing out variation between individual years by averaging as above, it is evident that the marine fish production in India shows a rising trend of production over the 13 year period from 1950 to 1962.

Fisheries in the States

All relevant details regarding the total landings and their compositions in each State for each year from 1950 to 1962 will be available in Appendices III(a) to III(m). However, a brief note portraying the fishery picture is given below for each State.

WEST BENGAL AND ORISSA

The annual catch in the States of West Bengal and Orissa fluctuated between 3,962 tonnes to 15,882 tonnes during the 13 year period from 1950 to 1962. The average annual catch in these States during this period was found to be 8,157 tonnes. During the first 4-year period from 1950 to 1953, the average catch per year was 8,446 tonnes, it increased to 9,906 tonnes during the 2nd 4-year period from 1954 to 1957 but it declined to 6,526 tonnes during the last 5-year period from 1958 to 1962.

The composition of the annual landings of marine fish in West Bengal and Orissa for the different years may be seen from the Appendices. The average annual catch of the different varieties of fish were worked out on the basis of these figures and the following varieties of fish contributed on an average more than 4% towards the total average catch in the two States. The average quantity and the associated percentages to the total catch of these fishes are given below:—

	Average catch (tonnes)	Percentage of total catch
Other sardines	2,831	34.71
Prawns	1,044	12.80
Other clupeids	811	9.94
Anchoviella & Thrissocles	522	6.40
Harpodon & Saurida	420	5.15
Ribbon fish	383	4.70

In 1950, the total catch in the 2 States was 15,687 tonnes. This was 7,530 tonnes more than the 13-year average catch in the States. In fact, this was the second highest catch in these States during the 13-year period under review. This was mainly due to phenomenally high catch of other sardines during the year, the catch amounting to 10,924 tonnes which itself is 8,093 tonnes more than the average catch of other sardines. Besides, the catches of *Anchoviella* and *Thrissocles* and other clupeids were also higher than average during the year.

The total catch in these States came down to 5,084 tonnes, 6,129 tonnes and 6,883 tonnes during 1951, 1952 and 1953 respectively, and this was mainly because of lower than average catches of all the important varieties of fish except other sardines. In 1951 and 1952 the catch of other sardines was more or less on average level but in 1953 it was 4,597 tonnes.

In 1954, the total catch again went above the average annual catch. Even though the catches of all the important varieties of fish excepting other sardines were less than the average catches during the year, the more than double the average catch of other sardines could take the total catch above the average figure.

The annual catch in 1955 again declined to 5,968 tonnes, a figure much below the average for the two States. The catches of all the important varieties of fish were lower than average during the year. In 1956, the catch was highest and reached the figure of 15,882 tonnes. The catches of other sardines and *Anchoviella* and *Thrissocles* were much below the corresponding average figures but these deficits were more than compensated substantially by more than average catches of other clupeids, Bombay duck, ribbon fish and prawns. The landings of polynemids and sciaenids during the year were also very good.

In 1957, the total catch fell down to 8,266 tonnes, just above the level of the 13-year average figure. The year was characterised by higher than average catches of *Anchoviella* and *Thrissocles*, Bombay duck, ribbon fish and prawns but by less than average catches of other sardines and other clupeids.

The years 1958, 1959 and 1960 witnessed lower than the 13-year average annual catch. In 1958, the catch figures of *Anchoviella*, ribbon fish and prawns were slightly higher than the average figures but those of other varieties were much below the average. The figures of catch for all varieties of fish in 1959 were far below the average figures and this reduced the total catch during the year to the lowest figure of 3,962 tonnes. The catches of all varieties of fish were below the average figures in 1960 also.

The total catch in 1961 went above the average but it was slightly below the average in 1962. Though the landings of other sardines, other clupeids, Bombay duck and ribbon fish were somewhat less than average figures, comparativey higher than average catches of prawns, *Anchoviella*, *Thrissocles*, *Leiognathus* and *Lactarius* raised the total catch in 1961 above the average annual catch. Though the catches of *Anchoviella*, ribbon fish and prawns in particular were higher than average, the lower than average catches of other varieties of fish brought down the total catch in 1962 slightly below the average annual catch.

ANDHRA

The annual catch in Andhra varied from 28,846 tonnes to 82,679 tonnes during the 13-year period under review and the average annual catch in the State during the period was 50,357 tonnes. This constitutes 7.7% of the total all-India catch. The average catch during the first 4-year period 1950-53 was 58,977 tonnes, it declined to 47.294 tonnes during 2nd 4-year period 1954-57 and it further declined to 45,913 tonnes during the last 5-year period 1958-62. This shows a declining trend in the total catch of the State.

The composition of the annual landings in the State for the different years may be seen from the Appendices III(a) to III(m). The average annual catch of different varieties of fish and the percentages to the average total catch were worked out on the basis of the figures given in these Appendices and the following list gives the names of the important varieties of fish and their percentages to the average annual State catch:—

	Average catch (tonnes)	Percentage
Other sardines	6,626	13.16
Anchoviella	5,650	11.22
Prawns	4,076	8.10
Sciaenids	3,902	7.75
Elasmobranchs	3,833	7.61
Other clupeids	3,204	6.36
Seer fish	2,600	5.16
Cat fish	2,374	4.71
Ribbon fish	2,180	4.33
Leiognathus	2,820	5.60

In 1950, the total catch in the State was 82,679 tonnes. This was the highest catch during the 13-year period under review. During the year, as in the neighbouring States of West Bengal and Orissa, the catch of other sardines was 10,633 tonnes more than the average annual catch. Of the other important varieties of fish listed above, the catches of cat fish, *Anchoviella*, other clupeids, sciaenids, ribbon fish, seer fish and prawns were more than the annual averages of these varieties and together accounted for an excess of 12,740 tonnes above the total average catch. Only in case of elasmobranchs and *Leiognathus*, slightly lower than average catches were obtained.

In 1951, the total catch declined to 59,169 tonnes which is slightly more than the average annual catch. During the year, the catches of *Anchoviella*, other clupeids, sciaenids and ribbon fish were lower than average and caused a net deficit of 4,443 tonnes below the average catch but the higher than average catches of other varieties not only wiped off this deficit but produced a net surplus of 8,812 tonnes in the total catch during the year over the average annual catch.

The total catch in the State declined still further in 1952 to 51,382 tonnes but this was still above the 13-year average. During the year, lower than average catches were obtained in case of *Anchoviella*, sciaenids, ribbon fish and *Leiognathus* only.

In 1953 and 1954, the total catches in the State went below the average catch and were 42,678 tonnes and 32,123 tonnes respectively. The lower than average catches of almost all varieties of fish excepting other clupeids, sciaenids and prawns in 1953 and only other clupeids in 1954 accounted for the low landings during the two years.

In 1955, the total landings in the State went up to 64,114 tonnes, which is 13,757 tonnes more than the annual average catch in the State. During the year the catch of other sardines alone was 4,828 tonnes more than the average catch. The more than higher average catches of *Anchoviella*, sciaenids, ribbon fish and *Leiognathus* also accounted for another 5,505 tonnes. The better catches of carangids and perches also helped to take up the total catch during the year.

In 1956, the total catch declined to 52,476 tonnes although this was still above the average annual catch of the State. The catches of other sardines, *Anchoviella*, other clupeids, sciaenids. ribbon fish *Leiognathus* and prawns were slightly higher than the corresponding average catches but the advantage accruing from these were nullified by the lower than average catches of other varieties, so that the total catch in the State remained just above the annual average catch.

In 1957, somewhat higher than average catches were obtained in the case of *Anchoviella* and *Leiognathus*. Excepting for this, below average catches in almost all varieties of fish during the years 1957 to 1959 reduced the total State catches during these years below the level of the average catch.

In 1960, the total catch again went slightly above the average annual catch and remained more or less stable during the subsequent two years *viz.*, 1961 and 1962. The total catch in the State during the 3 years were 56,720 tonnes, 54,506 tonnes and 60,027 tonnes respectively. During 1960 and 1961, the loss on account of lower than average catches of cat fishes, other sardines, other clupeids, seer fish and prawns was offset by increased catches in other varieties of fish. In 1962, above average catches in respect of elasmobranchs, cat fishes, other sardines, *Anchoviella*, sciaenids, ribbon fish and *Leiognathus* compensated for this deficit accruing from the below average landings of other varieties which resulted in a total catch higher than the average catch.

MADRAS

The annual catch in Madras fluctuated from 77,171 tonnes to 1,23,501 tonnes during the 13-year period from 1950 to 1962. The average annual catch of marine fish in the State during the period was calculated as 98,795 tonnes. This accounts for 15.00% of the all-India catch. That the annual catch in Madras was showing a rising trend during the 13-year period will be evidenced from the fact that the average catch in the State during 1950-53 was 82,128 tonnes, it became 94,880 tonnes during 1954-57 and finally it increased to 1,12,859 tonnes during 1958-62.

As in the case of other States, the average catch and their percentages to the average total catch during the 13-year period were calculated from the figures given in Appendices III(a) to III(m) and the relevant figures of the important varieties of fish in the State are listed below:—

	Average catch (tonnes)	Percentage
Ribbon fish	12,059	12·21
Anchoviella	11,365	11·51
Other sardines	9,961	10·08
Elasmobranchs	8,252	8·35
Carangids	7,623	7·72
Sciaenids	5,898	5·97
Perches	5,269	5·33
Lactarius	4,811	4·87
Leiognathus	4,265	4·32
Cat fishes	4,004	4·05
Prawns	3,112	3·15

The total catch of marine fish in Madras in 1950 was 85,913 tonnes, this being lower by 12,882 tonnes below the average annual catch of the 13-year period under review. The catch of other sardines during the year was 9,695 tonnes more than the average catch of other sardines. Similarly 15,361 tonnes more than the average catch of perches were landed during the year. But these gains were offset by lower than average catches of other important varieties of fish particularly *Anchoviella*, ribbon fish, carangids, *Leiognathus* and prawns These five varieties accounted for a loss of 22,864 tonnes.

In 1951, the total catch in the State declined to 77,719 tonnes. During the year, *Anchoviella* catch improved to such an extent that it resulted in an excess catch of 15,577 tonnes over the average whitebait catch. Similarly, slightly above average catch was obtained in the case of elasmobranchs and other sardines. But these excesses were lost due to below average catches of almost all the other varieties of fish.

In 1952, the total catch of 99,710 tonnes was above the average State catch. The landings of elasmobranchs, cat fishes, other sardines, *Anchoviella*, and ribbon fish were higher than the respective average catches but the other important varieties yielded below average catches resulting in a slightly higher than average total catch.

In 1953, the total catch slumped down to the lowest total of 77,171 tonnes. Excepting for cat fishes whose landings were above the average and for ribbon fish whose landings had a marginal edge over the average, the catches of all other varieties showed substantial decline. This resulted in a steep fall in the total catch during the year.

The total catch figures improved during the years 1954 and 1955 and became 93,919 tonnes and 90,782 tonnes respectively but these were still below the annual average catch. In 1954, the catches of cat fishes, *Anchoviella* and sciaenids and in 1955, the catches of other sardines and prawns were higher than the average catches of these varieties but below average catches of other varieties of fish in the respective years were responsible for the shortfall in the total catch which was below the annual average level during the two years.

In 1956, the total landings were 1,15,136 tonnes and this was higher by 16,341 tonnes over the average annual catch. During this year, below average catches of elasmobranchs, *Anchoviella*, perches and ribbon fish caused a shortfall of 10,310 tonnes below the average catch. But above average catches of all other important varieties of fish not only compensated the shortfall but caused the total catch during the year to go above the annual average.

In 1957, the total landings again slumped down below the annual average to 79,684 tonnes. This drop was caused by the decline in catch in all the varieties of fish which registered lower than average catch.

During the next 5 years, the total catch remained always above the annual average and the actual landings were 1,18,056 tonnes for 1958, 1,03,497 tonnes for 1959, 1,07,810 tonnes for 1960, 1,23,501 tonnes for 1961 and 1,11,435 tonnes for 1962. The improvement in the total catch in 1958 was mainly on account of excellent catches of cat fishes, *Anchoviella*, ribbon fish, carangids and *Leiognathus*. In 1959, though good catches for ribbon fish, carangids and *Leiognathus* were maintained, those of cat fishes and *Anchoviella* fell below their respective averages and this caused a slight fall in the total catch during the year as compared to that of 1958. In 1960, above average catches were obtained in respect of elasmobranchs, *Anchoviella*, carangids and *Leiognathus*. The total catch in 1961 was the highest during the 13-year period. This happened mainly because of a phenomenally high landings of carangids during the year. Above average catches of elasmobranchs, perches, sciaenids, *Leiognathus* and prawns also made notable contributions towards this. In 1962, the catch of elasmobranchs was the highest and in addition good catches were obtained in the case of sciaenids, ribbon fish, *Leiognathus* and prawns and this helped to keep the total catch above the annual average figure.

KERALA

The annual catch in Kerala varied from 1,05,457 tonnes to 3,44,605 tonnes and such a wide variation in range is not seen in any other State. The average annual catch during the 13-year period under review is 2,00,662 tonnes. This is about 30% of the total catch of India. The trend in catch figures during the 13-year period may be understood when it is noticed that the average annual catch during 1950-53 was only 1,58,606 tonnes, it rose to 1,71,158 tonnes during the next 4-year period 1954-57 and finally it reached the figure of 2,57,910 tonnes during the last 5-year period 1958-62. The average annual catch of different varieties of fish and their percentages to the average annual catch were worked out from the data for

Kerala presented in Appendices III(a) to III(m). The names of important varieties of fish and the associated percentages are given below:—

	Average annual catch (tonnes)	Percentage
Oil sardine	71,640	35.70
Mackerel	28,036	13.97
Other sardines	14,278	7.11
Prawns	12,501	6.23
Anchoviella	9,078	4.53
Soles	8,190	4.08
Carangids	7,572	3.77
Ribbon fish	7,384	3.68
Elasmobranchs	7,001	3.49
Cat fishes	6,112	3.05
Leiognathus	5,232	2.61

From the above, it will be seen that oil sardine and mackerel form nearly 50% of the total landings of the State. Any fluctuation in the catches of these fishes will therefore cause fluctuation in the total catch in the State. This will be clear from the following discussion of the year to year fishery in the State from 1950 to 1962:—

In 1950, the total catch in the State was 2,02,047 tonnes. This is just above the annual average catch. Looking into the composition of the catch, it is found that oil sardine catch was 58,834 tonnes below the average catch but the mackerel catch was 42,853 tonnes above the average catch. The catches of these two species brought down the total catch by 15,981 tonnes below the average but increased catches of other sardines and soles brought the total catch just above the annual average. Incidentally, the highest catch of soles was obtained during this year.

In 1951, the total catch in the State was 1,91,032 tonnes. This is only slightly below the annual average catch of the State. This year, the oil sardine catch was again 56,480 tonnes below the average whereas the mackerel landings were only 31,278 tonnes above the average catch. Thus the two together caused a deficit of 25,202 tonnes. A further deficit to the extent of 16,959 tonnes was caused by the below average catches of cat fishes, carangids, soles and prawns. But good landings of other varieties of fish especially those of *An-*

choviella made up a good portion of the deficit, leaving only a minor deficit of about 9,000 tonnes in the total catch.

In 1952, the total catch in the State slumped down to 1,29,345 tonnes, a clear 71,317 tonnes below the average annual catch. The oil sardine fishery was a complete failure, the total landings came to 6,619 tonnes only. This is 65,021 tonnes below the average catch. The mackerel catch also happened to be poor during the year with a 3,288 tonnes deficit below the average. The landings of mackerel and oil sardine alone accounted for 68,309 tonnes of the total deficit of 71,317 tonnes. Among the other fisheries, some showed better than average returns, others below average catches and thus the total catch during the year was 71,317 tonnes below the average annual catch. The most notable features regarding the other fisheries were the exceptionally good catches of elasmobranchs, *Anchoviella* and ribbon fish but rather poor catches of carangids and prawns.

The total catch in 1953 further declined to 1,11,999 tonnes, which is 88,663 tonnes below the annual average catch. During the year though there was a slight recovery of oil sardine fishery, the catch was still 29,628 tonnes below the average. The mackerel fishery was very poor and accounted for a deficit of 14,161 tonnes. The poor landings of elasmobranchs, cat fishes, other sardines, *Anchoviella*, carangids, *Leiognathus*, soles and prawns caused a further shortfall of 39,801 tonnes and the good landings of ribbon fish could not make up the above huge deficit, thereby leaving the total catch much below the average.

The total catch in 1954 was 1,17,034 tonnes—a position not in any way better than that of 1953. Both oil sardine and mackerel fisheries were poor. In fact the mackerel fishery was almost a failure. The two fisheries together caused a shortfall of 62,908 tonnes. The landings of elasmobranchs, other sardines, ribbon fish, carangids, soles and prawns produced a further deficit of 27,564 tonnes. Good landings of cat fishes, *Anchoviella* and *Leiognathus* could wipe off only 6,953 tonnes from the above deficit.

The year 1955 witnessed the lowest catch of 1,05,457 tonnes during the 13-year period under review. This is 95,205 tonnes below the average annual catch. The oil sardine fishery continued to be poor while the mackerel fishery was a disastrous failure. The two together accounted for a shortfall of 73,943 tonnes out of the total shortfall of 95,205 tonnes. Excepting for ribbon fish landings, the landings of all other varieties were lower than average and contributed to the balance of the shortfall.

In 1956, the total catch improved to 1,52,213 tonnes, but still this was 48,449 tonnes lower than the average annual catch. The oil sardine catch was the poorest during the year contributing only 5,065 tonnes as compared to the average figure 71,640 tonnes thus causing a deficit of 66,575 tonnes. The mackerel fishery continued to be poor and accounted for a deficit of 19,050 tonnes. A part of the above deficit was made up by good landings of cat fishes, carangids, *Leiognathus* and prawns. Special mention must be made of the highest landings of 36,598 tonnes of carangids during the year as compared to the average figure of 7,572 tonnes. The prawn fishery also made a recovery during the year.

In 1957, the total catch reached the figure of 3,09,926 tonnes which was 1,09,264 tonnes higher than the average State catch. During the year, the mackerel landings were only 1,849

tonnes lower than the average catch. But the oil sardine fishery made a spectacular recovery yielding 1,75,854 tonnes which alone accounted for a gain of 1,04,211 tonnes. The landings of other sardines were also good and accounted for a surplus of 12,097 tonnes. Ribbon fish and prawn fisheries continued to be good and caused a net gain of 15,206 tonnes. There were some small shortfalls from other fisheries.

In 1958, the total catch stood at 2,94,655 tonnes, which is 93,993 tonnes higher than the annual average. The oil sardine fishery continued to be good, though not as good as in 1957. The mackerel fishery made a grand recovery and a catch of 55,476 tonnes was landed in the State. The two fisheries accounted for a gain of 74,771 tonnes. Sole fishery also made a good recovery for the first time since 1950. Good landings of cat fishes, other sardines, ribbon fish, carangids, *Leiognathus* and prawns were continued during the year. Downward trends were noticed only in the landings of elasmobranchs and *Anchoviella* but they were not big enough to affect the gain from other fisheries.

In 1959, the total catch again fell below the average level and was 1,91,375 tonnes. During the year, both oil sardine and mackerel landings were moderate and just fell below the respective averages. The two together caused a shortfall of 12,951 tonnes. Reduced landings of elasmobranchs, cat fishes, ribbon fish and carangids accounted for another shortfall of 7,029 tonnes. A part of these shortfall was wiped off by the above average catches of other sardines, *Anchoviella*, *Leiognathus*, soles and prawns. An important feature was that the sole fishery which made a recovery in 1958 continued to yield good landings during this year.

In 1960, the total catch reached an all-time record figure of 3,44,605 tonnes which was 1,43,943 tonnes higher than the average annual catch. This was mainly due to a bumper catch of oil sardine and also because of higher than average catch of mackerel. The oil sardine landings during the year was the highest during the period under review and reached 1,85,929 tonnes as compared to the annual average of 71,640 tonnes. The mackerel catch was 35,485 tonnes as compared to the annual average of 28,036. The two together accounted for 1,21,738 tonnes out of the total excess of 1,43,943 tonnes over the average annual catch. Substantially higher than average catches of cat fishes, *Anchoviella*, carangids, *Leiognathus* and soles contributed towards the balance of the excess. While sole fishery continued to be good, there was a slump in the landings of ribbon fish during the year.

In 1961, the total catch of 2,67,493 tonnes was still 66,831 tonnes higher than the average annual catch but much lower than the catch of 1961. Oil sardine landings were very good, but were below those of 1960. Oil sardine accounted for 94,445 tonnes of excess over the average. But mackerel landings being below average obliterated 7,992 tonnes of the excess. Excepting for prawns whose landings were 8,040 tonnes over the average figures and elasmobranchs whose landings were about 1,402 tonnes in excess of the average, all other fisheries showed substantial decrease in landings. But these deficits could not wipe off the advantage of higher landings of oil sardine and prawns.

In 1962, the total catch went slightly below the annual average and stood at 1,91,421 tonnes. Though oil sardine catch was still above the average, the mackerel catch was below the average. The combined effect of the two was an excess of 4,465 tonnes for the annual

average. Prawn landings reached the new height of 29,240 tonnes and the landings of soles also reached the high figure of 16,189 tonnes. The two together contributed an excess of 24,738 tonnes for the annual average. But these gains were lost by the poor landings of all other varieties of fish, ultimately resulting in a total catch which was 9,241 tonnes below the annual average.

MYSORE

While the variation in annual catch in Mysore was from 17,247 tonnes to 1,00,557 tonnes, the average catch worked out to be 53,548 tonnes. On an average, this forms about 8.13% of the all-India catch. The trend in catch in Mysore may be seen from the following figures. The average annual catch during the four year period 1950-53 was 60,926 tonnes. The same slumped down to 39,411 tonnes in 1954-57 but rose to 58,956 tonnes during 1958-62.

The average annual catch of the important varieties of fish together with the percentages to the total catch are given below:—

	Average annual catch (tonnes)	Percentage
Mackerel	31,534	58.89
Oil sardine	5,212	9.74
Sciaenids	3,516	6.57
Cat fishes	2,644	4.94
Other sardines	2,082	3.89
Elasmobranchs	1,650	3.08

The above six varieties form more than 87% of the total catch, the balance consisted of a multitude of other varieties. Since mackerel forms nearly 60% of the total catch in the State and oil sardine another 10% of the same, any fluctuations in these two fisheries, particularly mackerel fishery, will cause fluctuations in the total catch of the State. This will be clearly seen from the year to year discussion of the fisheries of the State given below:—

The total catch in the State during 1950 was 46,802 tonnes and this was 6,746 tonnes below the annual average. Though oil sardine and other sardines yielded good catches and resulted in an excess of 13,083 tonnes, the poor landings of mackerel alone caused a deficit of 20,801 tonnes. The other 3 important varieties of fish listed above yielded below average catches.

The years, 1951 to 1953 witnessed catches higher than the annual average catch namely 64,553 tonnes, 73,147 tonnes and 59,202 tonnes respectively. The high catch in 1951 was due to above average catches of other sardines, mackerel, elasmobranchs, cat fishes and sciaenids, even though the landings of oil sardine were much below the overall catch.

In 1952, good mackerel catch and extraordinarily good landings of sciaenids accounted for the high total catch. Though the mackerel catch was higher in 1953 as compared to the previous two years, the total catch this year was lower mainly because lower than average catches were obtained in the case of elasmobranchs, cat fishes, other sardines and sciaenids.

The figures of total catch for the next 3 years 1954, 1955 and 1956 were 30,591 tonnes, 30,684 tonnes and 20,279 tonnes respectively and were 22,957 tonnes, 22,864 tonnes and 33,269 tonnes below the annual average. Mackerel alone caused a deficit of 15,705 tonnes, 19,359 tonnes and 28,357 tonnes for the three years. Oil sardine, other sardines and sciaenids by their poor landings in 1954 accounted for the rest of the shortfall. In 1955 and 1956 contributions to the shortfall also came from the landings of oil sardine and sciaenids.

The total catch figures in 1957 and 1958 were again above the annual average and stood at 76,090 tonnes and 80,242 tonnes respectively. In 1957, the mackerel catch alone exceeded the average by 24,220 tonnes and some minor positive and negative deviations in the landings of other fishes from their averages produced a net excess of 22,542 tonnes in the total catch of 1957. In 1958, the mackerel landings exceeded the average by 33,831 tonnes and elasmobranchs by 1,033 tonnes but shortfall in the catches of other varieties ultimately produced an excess of 26,694 tonnes in the total catch.

The total catch in 1959 was 52,825 tonnes. This was just below the annual average catch. Slight deficit was caused by lower than average catches of oil sardine, other sardines, sciaenids and mackerel but higher than average catches of elasmobranchs and specially cat fishes almost wiped off the deficit to bring the total catch marginally below the annual average.

As in the neighbouring State of Kerala the catch in 1960 was the highest and stood at 1,00,557 tonnes. This was due mainly to the high catch of mackerel which accounted for 50,348 tonnes of the excess over the annual average. Some positive and negative deviations in the landings of other fishes ultimately produced a net excess of 47,009 tonnes in the total catch.

The year 1961 saw the lowest total catch during the 13-year period. The total catch was only 17,247 tonnes. The average annual catch of mackerel alone being 31,534 tonnes, such a situation can arise only when other fisheries also fail along with the mackerel fishery. *In* fact there were shortfalls in the landings of all varieties of fish, the main shortfall being in mackerel and sciaenids.

The total catch in 1962 stood at 43,904 tonnes. There was some recovery over the figure of 1961 but was 9,644 tonnes below the annual average. The deficit resulting from mackerel landings during the year amounted to 20,088 tonnes. In addition, some minor deficits accrued

from lower than average landings of cat fishes and other sardines. Excess catch in oil sardine and sciaenids could retrieve only some of the shortfall.

MAHARASHTRA

The total catch fluctuated from 88,511 tonnes to 2,44,523 tonnes in the State during the 13-year period, the average annual catch working out to be 1,56,575 tonnes. This forms about a fourth of the total catch in India. The average annual catch during the first 4-year period 1950—53 was 1,24,543 tonnes, became 2,23,011 tonnes during the second period 1954—57 and it was 1,29,052 tonnes during the third period. The averages during the first and last periods are more or less of the same order and are comparable but the figure during the second period is almost double that of the other two periods. The reasons for such high catch will be seen in the year to year analysis of the composition of the landings.

The average annual landings of the important varieties of fish in Maharashtra along with their percentage to the total catch are given below:

	Average annual catch (tonnes)	Percentage
Acetes sp.	40,392	25.80
Bombay duck	32,718	20.90
Penaeid prawns	14,818	9.46
Sciaenids	13,570	8.67
Other clupeids	8,940	5.71
Mackerel	5,418	3.46
Eels	5,422	3.46
Ribbon fish	5,390	3.44
Pomfrets	5,017	3.20
Bregmaceros	3,798	2.43
Cat fishes	3,558	2.27

The above listed varieties of fish accounted for 88.80% of the total catch. Hence failure and success of some of the above fish will naturally account for the low or high total catch. The fluctuations in the total catch for the different years are discussed below with reference to the fluctuation in the composition of the annual catch.

In 1950, the total catch in the State was 96,397 tonnes, this was 60,178 tonnes below the annual average. Bombay duck and prawns together accounted for a shortfall of 34,659 tonnes. Though clupeid fishery, mainly consisting of *Coilia dussumieri* landed an excess of 4,075 tonnes over the average, reduced landings of all other fish caused the net deficit of 60,178 tonnes in the annual catch.

The total catch in 1951 amounting to 88,511 tonnes fell short of the annual average by 68,064 tonnes. An examination of the composition of the total catch shows that Bombay duck and prawns landings fell short of the average by 39,299 tonnes and lower than the average catches of other varieties of fish accounted for the balance of the deficit.

In 1952, the total catch rose to 1,16,182 tonnes but still it was lower by 40,393 tonnes with respect of the average annual catch. Prawns and Bombay duck landings together fell short of the average by 24,096 tonnes. There were good landings of mackerel and other clupeids during the year which fetched an excess of 9,160 tonnes over the average but below the average catches of other varieties instead of bridging the gap caused further shortfall in the total catch.

From 1953 to 1957, the total catch in the State remained above the average. During the 5 years, the prawn landings were higher than the annual average. The catch of Bombay duck was lower than average during the year 1953 and 1954 but was far above average during the other 3 years. The year 1953 was characterized by uncommonly high landings of ribbon fish, mackerel and *Bregmaceros*. In 1954, extraordinary high catches of sciaenids were landed in addition to good catches of ribbon fish, pomfrets and *Bregmaceros*. In 1955, the prawn landings, were very high and good landings of sciaenids were obtained. In 1956 and 1957, high landings of *Coilia dussumieri*, cat fishes and prawns were the special features.

From 1958 to 1962, the total catch remained below the average annual catch. Both Bombay duck and prawns landings during these years were much below the annual average and accounted for a large amount of the shortfall in the total catches of these years.

GUJARAT

The range of variation in the total catch of marine fish in Gujarat was from 43,739 tonnes to 1,30,990 tonnes during the 13-year period from 1950 to 1962 and the average annual catch of marine fish based on the 13 years figures was found to be 85,262 tonnes. On an average, this accounts for about 13% of the total all-India catch of marine fish. The average annual catch during the period 1950-53 was only 56,532 tonnes, it increased to 1,06,659 tonnes during the next 4-year period 1954—57 but it declined slightly to 91,128 tonnes during the last 5-year period 1958—62. It is thus clear that the annual catch in the State definitely increased when compared to the 1950-53 period.

The average annual landings of important varieties of fish and their percentages to the average total catch in the State were worked out from the data given

in Appendices III(a) to III(m). The following gives the figures for some of the important varieties of fish in the State:

	Average annual catch (tonnes)	Percentage
Bombay duck	34,884	40.91
Acetes	11,779	13.82
Penaeid prawns	7,198	8.44
Pomfrets	3,892	4.57
Sciaenids	4,782	5.61
Other clupeids	3,544	4.16

The above six varieties of fishes form 77.51% of the total catch in the State and the balance of the catch is constituted by a number of other varieties. The following gives a brief discussion on the annual fluctuation in the total catch in the State with special reference to the variation in the composition of the fish.

The total catch was 46,825 tonnes in 1950, 43,739 tonnes in 1951 and 50,651 tonnes in 1952. These figures are very much lower than the average annual catch of 85,262 tonnes. During these 3 years, the annual catch of *Harpodon* varied from only 1,868 tonnes to 6,367 tonnes as compared to the average annual figure of 34,884 tonnes. Similarly the prawn landings during the 3 years were 2 to 3 thousands tonnes below the average annual landings. Pomfrets and sciaenids were landed much below the average level. The landings of other clupeids alone were higher than the average level though it was below the mean level in 1951.

In 1953, the total catch in the State reached the figure of 84,914 tonnes which just fell short of the average annual catch. During the year, the Bombay duck catch was still 13,800 tonnes below the average figure, but this shortfall was nearly balanced by increased landings of prawns, sciaenids and other clupeids. The pomfret landings were slightly below the average level.

In 1954 and 1955, the total catch figures were just above the average annual catch. In 1954, the Bombay duck catch accounted for a shortfall of 15,968 tonnes but this was compensated by an excess of 18,608 tonnes above the average of prawn catch. Pomfret and other clupeids landings were slightly below average but heavy landings of sciaenids accounted for a sizeable excess in the total catch which stood at 90,931 tonnes. In 1955, the landings of both Bombay duck and prawns were above the average level though within reasonable limits. Excepting for the catch of other clupeids whose landings were just below the average catch, the catches of other varieties remained above average level. The result was that the catch of 1955 amounting to 89,697 tonnes was higher than the average annual catch.

The total catch in 1956 rose to 1,15,018 tonnes and it further increased to 1,30,990 tonnes in 1957. These were very much higher than the average annual catch. The main reason for

such high catches was the heavy landings of prawns and Bombay duck. The prawns landings were almost double the average annual landings. Similarly the Bombay duck catches were more than 50% the average level. The catches of other clupeids and sciaenids were also high.

In 1958 and 1959, the total catch in the State fell below the average annual catch. In 1958, it was 75,134 tonnes and in 1959, it was 63,375 tonnes. In both years, the Bombay duck landings fell below the average level and while the prawn landings were slightly above the average in 1958, it was very much below in 1957. A decline was also seen in the landings of sciaenids and other clupeids. The pomfrets catch was higher than average in 1958 but below average in 1959.

The total catch in the State was maintained above the average level during the years 1960 to 1962. The total catch was 1,27,982 tonnes in 1960, 91,395 tonnes in 1961 and 97,753 tonnes in 1962. The high catch during these years was mainly due to very heavy landings of Bombay duck and relatively high landings of pomfrets.

NOTES ON VARIOUS FISHERIES

This section contains a general note on each fishery giving the average annual landings, variations in the annual landings, contribution of each State towards the fishery and the trend of the fishery over the 13-year period from 1950 to 1962.

(i) *Elasmobranchs :*

The average annual catch of elasmobranchs in India is 26,143 tonnes. The State-war break-up of the all-India catch is shown in the following Table. Column 2 of the Table shows the percentage contribution of each State to the all-India elasmobranch catch and the last column of the Table presents the percentage of the elasmobranchs catch to the total catch in each State, thereby showing the status of the elasmobranch fishery in the State.

States	Elasmo-branchs catch (tonnes)	Per cent of total elasmo-branch catch	Per cent of State total catch
West Bengal & Orissa	186	0·71	2·28
Andhra	3,832	14·66	7·61
Madras	8,252	31·56	8·35
Kerala	7,001	26·78	3·49
Mysore	1,650	6·31	3·08
Maharashtra	2,343	8·96	1·50
Gujarat	2,441	9·34	2·86
Other States	4	0·02	..
Trawlers	434	1·66	10·94
INDIA	26,143	100·00	3·92

For India as a whole, the elasmobranchs form only 3.92% of the total catch of marine fish and thus do not form a fishery of great national importance. But in Madras and Andhra where they constitute 8.35% and 7.61% of the respective total catches in the States, they form fisheries of some local importance. Similarly, elasmobranchs constitute an important component of the total trawler catch by forming 10.94% of the same. In other States, elasmobranchs form less than 5% of the State total catches. But though elasmobranchs form only 3.49% of the total catch in Kerala, the State contributes 26.78% of the elasmobranch catch. The highest catch of elasmobranchs comes from Madras which accounts for 31.56% of the all-India elasmobranch catch. Though the fishery was seen to be of sufficient local importance, the Andhra State contributes only 14.66% of the total elasmobranch catch. The share of other States may be seen from the above Table.

From Appendix II, it is seen that the annual catch of elasmobranchs varied from 15,912 tonnes in 1953 to 40,761 tonnes in 1962. From Appendices III(a) to III(m), similar fluctuations are noticed in the State catches also. As explained before, for a study of the trend of the fishery, the 13-year period from 1950 to 1962 was divided into 3 periods *viz.*, (i) 1950—1953, (ii) 1954—57 and (iii) 1958—62 The following Table gives the annual average catch for the 3 periods for the different States and also for India.

States	Average annual catch (tonnes) for the period		
	1950—53	1954—57	1958—62
West Bengal & Orissa	119	247	190
Andhra	4,023	1,761	5,337
Madras	9,526	6,325	8,775
Kerala	10,098	4,883	6,217
Mysore	960	2,098	1,842
Maharashtra	382	3,205	3,221
Gujarat	72	1,565	5,037
Other States	..	..	14
Trawlers	30	268	890
INDIA	25,211	20,352	31,523

From the above Table, it is evident that the average elasmobranch catch fell slightly during 1954—57 but improved substantially during the period 1958—62. Looking at the State figures, it can be said that rising trend of catch is noticed in Maharashtra and Gujarat and also in trawler landings. No specific trend is seen in the catches of other States.

(ii) *Eels:*

The average annual catch of eels based on catch figures of 1955 to 1962 in India is 7,959 tonnes and the State-war break-up of this quantity is as follows: The percentage of eels production in each State and also the percentage of the same to the total catch in each State are also given below:—

States	Average eels catch (tonnes)	Per cent of total eels catch	Per cent of total State catch
West Bengal & Orissa	2	0·02	0·02
Andhra	245	3·08	0·30
Madras	125	1·57	0·08
Kerala	10	0·13	neg.
Mysore	9	0·11	0·01
Maharashtra	5,422	68·12	2·13
Gujarat	1,748	21·96	1·26
Other States	1	0·01	..
Trawlers	397	4·99	6·10
INDIA	7,959	100·00	1·19

From the above Table, it is seen that eels form only 1.19% of the total annual catch in India and thus form a minor fishery from the standpoint of the whole country. The fishery of eels does not exceed even 5% of the total catch of fish in any of the States and as such it is not a very important fishery at present in any of the States. It is of some importance only in the States of Maharashtra and Gujarat where the yield forms 2.13% and 1.26% of the respective State catches. The yield from trawlers alone constitutes 6.10% of the total catch obtained from the trawlers. If the need is felt for increasing the output of eels, it can probably be done by trawling some of the grounds off Maharashtra and Gujarat which are the more favourite habitats of eels. In fact, it can be seen from the second column of the Table above that more than 90% of the eels catch come from the two States of Maharashtra and Gujarat.

A reference to Appendix II shows that eels catch was not separately recorded till 1955 but was lumped with miscellaneous catch. Separate records for eels catch are being maintained from 1955. During the 8 year period from 1955 to 1962, the yield of eels varied from 3,293 tonnes in 1956 to 12,351 tonnes in 1955. The average annual catch for India during the 1954-57 period was 7,347 tonnes and that during the last 5-year period was 8,326 tonnes, showing thereby a slightly improving trend. The following Table gives the average annual catch of eels in the different States for the 3 periods into which the 13-year period

of study has been divided. These figures show a rising trend in Maharashtra and a declining trend in Gujarat in eels production.

States	Average annual catch (tonnes) for the period		
	1950-53	1954-57	1958-62
West Bengal & Orissa	No data	6	..
Andhra	„	50	362
Madras	„	52	168
Kerala	„	12	9
Mysore	„	12	8
Maharashtra	„	4,558	5,941
Gujarat	„	2,256	1,444
Other States	„	..	..
Trawlers	„	401	394
INDIA	„	7,347	8,326

(iii) *Cat fishes :*

The average annual catch of cat fishes in India is 20,592 tonnes. The contribution of each State towards this catch may be seen from the following Table. Columns 2 and 3 give the percentage figures explained before.

States	Catch (tonnes) of cat fishes	Per cent of total catch of cat fishes	Per cent of total State catch
West Bengal & Orissa	91	0·44	1·11
Andhra	2,374	11·53	4·72
Madras	4,004	19·44	4·05
Kerala	6,112	29·68	3·05
Mysore	2,644	12·84	4·94
Maharashtra	3,558	17·28	2·27
Gujarat	1,610	7·82	1·89
Other States	—	—	—
Trawlers	199	0·97	5·02
INDIA	20,592	100·00	3·09

The above Table shows that cat fishes are landed in varying quantities in all the maritime States of India. The highest quantity is landed in Kerala and this accounts for nearly 30% of the all-India catch of cat fishes. The least quantity is landed in the States of West Bengal and Orissa. The last column of the Table shows that the percentage of cat fishes in the total catch in the different States varied from 1.11% to 4.94%. In the case of trawlers, the cat fishes formed just a little over 5.02% of the total catch.

Looking at the annual landing figures in Appendix II, it is seen that the annual landings varied from 10,928 tonnes to 29,872 tonnes during the 13-year period from 1950 to 1962. The highest catch was landed in 1958 and the lowest in 1961. From the following Table, it will be seen that the average annual landing of cat fishes in India during 1950-53 was 17,798 tonnes, it increased to 22,765 tonnes during 1954-57 and declined slightly to 21,088 tonnes during the last 5-year period of 1958-62.

States	Average annual catch (tonnes) for the period		
	1950-53	1954-57	1958-62
West Bengal & Orissa	49	81	132
Andhra	4,571	1.197	1,557
Madras	4,622	4,630	3,010
Kerala	4,000	7,970	6,314
Mysore	2,882	2,668	2,434
Maharashtra	1,421	4,941	4,162
Gujarat	217	1,156	3,087
Other States	..	..	1
Trawlers	36	122	391
INDIA	17,798	22,765	21,088

Looking at the yield of cat fishes in the various States, it is seen that in the States of Madras, Kerala and Maharashtra the trend was similar to the one that was found with regard to the all-India catches. The yield of cat fishes showed continual diminishing trend in Mysore and increasing trend in the States of West Bengal and Orissa and Gujarat. The trawler catches also showed increasing trends in respect of cat fishes.

(iv) Chirocentrus:

The average annual catch of silver-bar in India and also in the different maritime States are given below in the following Table. The second column of the Table shows the percentage contribution of each State towards the *Chirocentrus* catch and column 3 as usual shows the per cent of *Chirocentrus* in the total catch in each State.

States	Catch of *Chirocentrus* (tonnes)	Per cent of total *Chirocentrus* catch	Per cent of total State catch
West Bengal & Orissa	170	3·25	2·08
Andhra	1,006	19·21	2·00
Madras	2,499	47·73	2·53
Kerala	497	9·49	0.25
Mysore	98	1·87	0·18
Maharashtra	717	13·69	0·46
Gujarat	241	4·60	0·28
Other States	..	..	..
Trawlers	8	0·16	0·20
INDIA	5,236	100·00	0·79

The average annual catch of *Chirocentrus* in India during the 13-year period from 1950 to 1962 was found to be 5,236 tonnes. Out of this nearly 48% of the catch came from Madras State and about another 33% from Andhra and Maharashtra. The balance was from the other States.

As a fishery, *Chirocentrus* had no important status in any of the States. In the east coast States, *Chirocentrus* formed 2.3% of the total catch in each State and in the west coast States, the catch of the fish was less than 1% of the total State catches. For India as a whole, *Chirocentrus* formed only 0.79% of the total catch of marine fish.

The annual production of *Chirocentrus* varied from 1,269 tonnes to 8,898 tonnes during the 13-year period. During the period 1950-53, the average annual production of *Chirocentrus* was 3,406 tonnes, it became 5,625 tonnes during the second period 1954-57 and then it increased to 6,389 tonnes during the last period 1958-62. Thus a definite increasing trend in production is noticed in

respect of the all-India catch of *Chirocentrus*. The figures of average annual catch for the 3 periods for each State are given in the Table given below:—

States	Average annual catch (tonnes) for the period		
	1950-53	1954-57	1958-62
West Bengal & Orissa	62	241	199
Andhra	625	1,171	1,178
Madras	1,642	2,400	3,263
Kerala	946	253	332
Mysore	31	82	163
Maharashtra	76	1,040	970
Gujarat	24	432	264
Other States	...	...	1
Trawlers	...	6	19
INDIA	3,406	5,625	6,389

In Andhra and Madras which jointly account for more than two-third of the *Chirocentrus* catch of India, the catches showed increasing trend during the 13-year period. The same trend was noticed in Mysore. No definite trends were noticed in other States.

(v) (a) *Oil-sardine :*

The average annual catch of oil sardine in India during the 13-year period under consideration was 80,064 tonnes. The quantitative and percentage contribution of each State towards this together with the percentage of oil sardine catch in the total catch in each State are shown in the following Table:—

States	Average catch (tonnes) of oil sardine	Per cent of total oil sardine catch	Per cent of total State catch
West Bengal & Orissa	..	..	..
Andhra	83	0·10	0·17
Madras	772	0·96	0·78
Kerala	71,640	89·48	35·70
Mysore	5,212	6·51	9·74
Maharashtra	2,309	2·88	1·47
Gujarat	26	0·03	0·03
Other States	..	..	..
Trawlers	22	0·03	0·56
INDIA	80,064	100·00	12·02

From the above Table it will be seen that the oil sardine constitutes on an average a little more than 12% of the total all-India catch and as has been pointed out earlier it ranks second only to prawns in importance as a fishery in India. Of the total oil sardine catch in India, 89.48%, on an average, is landed in Kerala. Mysore and Maharashtra are the other two States where 6.51% and 2.88% respectively of the total oil sardine catch are landed. The share of other States in the oil sardine catch is negligible. Not only Kerala contributes 89.48% of the total oil sardine catch, but the fish constitutes 35.70% of the total catch landed in the State giving an indication of the importance of the oil sardine fishery in the State. The oil sardine fishery is also fairly important in Mysore where the fish forms 9.74% of the total State catch on an average. The importance of oil sardine fishery in other States of India is not significant.

From Table 2, it will be seen that the annual catch of oil sardine during 1950-62 varied from 13,896 tonnes to 1,89,016 tonnes showing wide variations where the maximum catch was about 14 times the minimum catch. Nair and Chidambaram (1951) have reviewed the fluctuating nature of this fishery from earlier years for which records are available. The following Table furnishes the average annual catch for the 3 periods for each State and also for India:—

States	Average annual catch (tonnes) for the period		
	1950-53	1954-57	1958-62
West Bengal & Orissa	..	..	..
Andhra	..	..	216
Madras	666	1,806	29
Kerala	19,149	57,645	1,24,829
Mysore	7,748	3,670	4,417
Maharashtra	1,784	2,615	2,484
Gujarat	..	85	..
Other States	..	..	..
Trawlers	..	..	58
INDIA	29,347	65,821	1,32,033

The catch showed rising trend both for India and Kerala during the period. An interesting feature noticed is that the catch in Mysore and Maharashtra did not follow the same trend as in Kerala.

(v) (b) *Other sardines :*

In this group have been included all the other species of *Sardinella* excepting *Sardinella longiceps.*

The average annual catch of this group of fish was 37,815 tonnes and formed 5.68% of the total all-India catch. Thus this group forms an important fishery at the all-India level. The Table below presents the quantitative and percentage share of the total catch of other sardines by each State and also shows the percentage this group forms in the total catch in each State.

States	Average catch (tonnes) of other sardines	Per cent of other sardine catch	Per cent of total State catch
West Bengal & Orissa	2,831	7·49	34·70
Andhra	6,626	17·52	13·16
Madras	9,961	26·34	10·08
Kerala	14,278	37·75	7·12
Mysore	2,082	5·50	3·89
Maharashtra	1,987	5·25	1·27
Gujarat	25	0·07	0·03
Other States	3	0·01	0·24
Trawlers	22	0·06	0·56
INDIA	37,815	100·00	5·68

Of the total catch of other sardines, the most notable contributions came from Kerala, Madras and Andhra contributing 37.75%, 26.34% and 17.52% respectively. Though only 7.49% of other sardines catch came from the States of West Bengal and Orissa, other sardines constituted a very important fishery in these States constituting as much as 34.70% of the total catch. In fact, other sardines form a very important fishery in all the maritime States of the east coast and they also constitute an important fishery in the west coast State of Kerala.

The annual landings of other sardines varied from 19,573 tonnes to 75,211 tonnes during the 13-year period from 1950 to 1962 with an average of 37,815 tonnes per year. The average annual catch of other sardines during the first 4-year period of 1950—53 was 48,930 tonnes, it declined to 35,859 tonnes during the second period 1954—57 and it further declined to 30,488 tonnes during the last 5-year period 1958—62. This shows that there is a declining trend in the

all-India catch of other sardines. Similar figures of catches for the States may be seen from the Table given below:—

States	Average annual catch (tonnes) for the period		
	1950—53	1954—57	1958—62
West Bengal & Orissa	5,325	2,606	1,014
Andhra	9,655	5,704	4,942
Madras	13,162	10,112	7,279
Kerala	15,218	14,721	13,170
Mysore	4,252	1,274	993
Maharashtra	1,274	1,410	3,020
Gujarat	44	26	10
Other States	..	6	17
Trawlers	..	..	43
INDIA	48,930	35,859	30,488

Catches in all the States where other sardines form important fisheries show a downward trend. The decline is very significant in West Bengal and Orissa and Andhra.

(v) (c) Hilsa:

This group of fishes does not form a very important fishery for the country as a whole and hence the catch figures of this group were not recorded separately till 1954. Based on the available figures from 1954 to 1962, the average annual catch of *Hilsa* in India came to 5,105 tonnes. The quantitative and percentage contribution of each State towards the catch together with the percentage the *Hilsa* catch forms to the total catch in each State are shown in the Table given below:—

States	Average catch of *Hilsa* (tonnes)	Per cent of total *Hilsa* catch	Per cent of total State catch
West Bengal & Orissa	125	2·45	1·53
Andhra	1,629	31·91	3·23
Madras	272	5·33	0·28
Kerala	62	1·21	0·03
Mysore	55	1·08	0·10
Maharashtra	375	7·34	0·24
Gujarat	2,582	50·58	3·03
Other States	2	0·04	0·16
Trawlers	3	0·06	0·08
INDIA	5,105	100·00	0·77

From the last column, it is seen that this group does not form a fishery of sufficient importance in any of the States. Of the total catch, Gujarat accounts for 50.58% and Andhra for 31.91%.

The average annual catch of *Hilsa* in India during 1954—57 was 2,100 tonnes and it rose to 7,510 tonnes during the period 1958—62. Similar trends were seen in the two States of Gujarat and Andhra which together account for nearly 82% of the *Hilsa* catch. Of the total *Hilsa* catch, *Hilsa ilisha* forms on an average about 25%.

(v) (d) Anchoviella *and* Thrissocles:

Separate figures for the landings of *Thrissocles* are being maintained from 1957. Prior to this, joint landings only for both *Anchoviella* and *Thrissocles* are available. Based on the average of 13 years from 1950 to 1962, the average all-India catch of this group of fish was 32,156 tonnes. Based on six years data from 1957, the average catch of this group of fish was 29,769 tonnes and out of this 5,822 tonnes *i.e.*, 19.56% were *Thrissocles*. The average annual catch of *Anchoviella* and *Thrissocles* for each State and the percentage contribution of each State towards the total catch of this group of fishes together with the percentage this group forms in respect of the total catch in each State are shown in the following Table:—

States	Average catch (tonnes)	Per cent of total catch of *Anchoviella* and *Thrissocles*	Per cent of total State catch
West Bengal & Orissa	522	1·62	6·40
Andhra	5,650	17·57	11·22
Madras	13,127	40·82	13·29
Kerala	11,252	34·99	5·61
Mysore	645	2·01	1·20
Maharashtra	786	2·44	0·50
Gujarat	165	0·51	0·19
Other States	5	0·02	..
Trawlers	4	0·01	0·10
INDIA	32,156	100·00	4·83

Though for the country as a whole, *Anchoviella* and *Thrissocles* form just about 4.83% of the total marine fish catch, they form fisheries of significant importance in all the maritime States of the east coast and also in Kerala on the west coast. The catch of anchovies and whitebaits from these States constitutes 95.0% of the total catch of this group of fishes.

The trend of catch in the States as well as in India may be seen from the data given in the following Table:—

States	Average annual catch (tonnes) during the period		
	1950-53	1954-57	1958-62
West Bengal & Orissa	673	438	469
Andhra	4,689	6,298	5,901
Madras	16,154	9,017	13,993
Kerala	15,501	8,535	10,027
Mysore	406	406	1,027
Maharashtra	986	556	808
Gujarat	326	156	43
Other States	..	2	11
Trawlers	..	12	1
INDIA	38,735	25,420	32,280

From the above Table it is clear that no particular trend is visible in the catch either for India or for any of the States. The minimum catch of 17,209 tonnes was landed in 1957 and the maximum of 43,407 tonnes was landed in 1960, showing quite a range of variation where the maximum was nearly 2½ times the minimum.

(v) (e) *Other clupeids:*

The annual catch varied from 12,054 tonnes to 34,358 tonnes during the 13-year period from 1950 to 1962 with an annual average of 20,970 tonnes. The quantitative and percentage share of each State towards this may be seen from the following Table. The last column of the Table shows the percentage the other clupeids formed to the total State catch.

States	Average catch (tonnes)	Per cent of total other clupeids catch	Percent of total State catch
West Bengal & Orissa	811	3·87	9·94
Andhra	3,204	15·28	6·37
Madras	2,215	10·56	2·24
Kerala	1,832	8·74	0·91
Mysore	278	1·33	0·52
Maharashtra	8,940	42·63	5·71
Gujarat	3,544	16·90	4·16
Other States	67	0·32	..
Trawlers	79	0·37	1·99
INDIA	20,970	100·00	3·15

Of the total catch of other clupeids, 42.63% came from Maharashtra, 16.90% came from Gujarat, 15.28% from Andhra and 10.56% from Madras. These 4 States together landed more than 85% of the catch. For India as a whole, the other clupeids formed only 3.15% of the total catch. States where the catch of clupeids formed more than 5% of the total State catch are West Bengal and Orissa (9.94%), Andhra (6.37%) and Maharashtra (5.71%). It is significant to note that though Gujarat contributed 16.90% of the catch of other clupeids, they formed only 4.16% of the total State catch but in West Bengal and Orissa which contributed only 3.87% of the clupeids catch, the same formed an important fishery by forming 9.94% of the total State catch.

The trend in the catch of the other clupeids for India and also for the individual States may be seen from the figures given below:—

States	Average annual catch (tonnes) during the period		
	1950-53	1954-57	1958-62
West Bengal & Orissa	928	925	626
Andhra	3,547	4,925	1,554
Madras	940	2,379	3,103
Kerala	163	1,918	3,100
Mysore	190	318	317
Maharashtra	9,460	12,031	6,051
Gujarat	4,003	5,131	1,908
Other States	..	..	170
Trawlers	..	38	175
INDIA	19,231	27,665	17,004

No specific trend is seen in the all-India catch of other clupeids. The trends of catch in Andhra, Mysore, Maharashtra and Gujarat were parallel to the trend of all-India catch of other clupeids. The catches in Madras and Kerala showed an increasing trend while those in West Bengal and Orissa a declining pattern.

(vi) Harpodon *and* Saurida:

The average annual catch of this group of fishes in India based on the catch figures of 1950 to 1962 was found to be 68,794 tonnes and it forms 10.33% of the total catch of India. The contribution of *Harpodon nehereus* to this group is nearly 99%. The State-wise break-up of the all-India catch with associated percentages are given in the following Table:—

States	Average catch of *Harpodon* etc.	Per cent of total *Harpodon* catch	Per cent of total State catch
West Bengal & Orissa	420	0·61	5·15
Andhra	470	0·68	0·94
Madras	241	0·35	0·24
Kerala	45	0·07	0·02
Mysore	6	0·01	0·01
Maharashtra	32,718	47·56	20·90
Gujarat	34,884	50·71	40·91
Other States	...	..	..
Trawlers	10	0·01	0·25
INDIA	68,794	100·00	10·33

It will be seen from the above Table that more than 98% of the catch of *Harpodon nehereus* comes from Maharashtra and Gujarat and it forms 20.90% and 40.91% of the respective State catches. A small fishery of *Harpodon* exists in West Bengal and Orissa and the catch forms more than 5% of the total catch in the States.

The average annual catch of *Harpodon* during the 3 periods of 1950—53, 1954—57 and 1958—62 is given below for Maharashtra and Gujarat and for India:—

States	Average annual catch (tonnes) during the period		
	1950-53	1954-57	1958-62
Maharashtra	14,202	54,096	30,427
Gujarat	8,223	41,324	51,060
INDIA	22,833	97,190	82,845

The data given above show that the catch of Bombay duck in Gujarat shows a rising trend and in Maharashtra a declining trend. This shift in trend in the two neighbouring States is very interesting and deserves intensive investigation particularly in respect of migration of the fish. Due to the conflicting trend in catch in the two States, the all-India catch of *Harpodon* does not show any trend.

(vii) Hemirhamphus *and* Belone:

Prior to 1956, the catch of this group of fishes was not separately recorded but clubbed with miscellaneous catch. Based on the 7 years figures from 1956 to 1962, the average annual all-India catch of these fishes is only 370 tonnes and forms only 0.05% of the total marine fish catch. This group does not form a fishery of any importance in any of the States but is obtained in small quantities in almost all the States. The State-wise break-up of the all-India catch is given below:—

States	Average annual catch of *Hemirhamphus* etc.
West Bengal & Orissa	4
Andhra	52
Madras	110
Kerala	41
Mysore	40
Maharashtra	106
Gujarat	10
Other States	7
Trawlers	..
INDIA	370

It may be seen that the highest catch of *Hemirhamphus* and *Belone* comes from Madras and Maharashtra.

(viii) *Flying fish*:

Flying fish is mainly landed in Madras and Andhra States, though occasionally it is caught in Maharashtra and Gujarat also. In Madras, there is a regular seasonal fishery of flying fish between April—July and the fishing is carried out by a specially evolved indigenous dip net. A detailed account of

the fishery along the Coromandel coast has been given by Hornell (1923) and Arora and Banerji (1957). The fish is caught by hooks and lines in Andhra and are landed throughout the year. The following Table gives the quantitative and percentage contribution of each State towards the catch of flying fish. The last column of the Table shows the per cent of flying fish in the total State catch.

States	Average Flying fish catch (tonnes)	Per cent of total flying fish catch	Per cent of total State catch
Andhra	185	8.39	0.37
Madras	2,000	90.78	2.02
Maharashtra	16	0.73	0.01
Gujarat	2	0.10	nil
INDIA	2,203	100.00	0.33

The above Table shows that out of an average all-India annual catch of 2,203 tonnes, Madras accounts for 2,000 tonnes of flying fish *i.e.*, 90.78% of the total catch of flying fish. The share of Andhra State in the flying fish catch is 8.39%.

There has been a progressive decline in the flying fish catch in Andhra during the 13-year period, but the catch in Madras shows a rising trend. Since the major portion of the catch comes from Madras, the all-India catch also shows a rising trend. The supporting data for the above statements may be seen from the following Table:—

States	Average annual catch of flying fish during		
	1950-53	1954-57	1958-62
Andhra	551	28	18
Madras	957	2,106	2,749
INDIA	1,508	2,180	2,777

(ix) *Perches:*

Prabhu (1954) has given an account of the perch fisheries. The annual catch of perches during the 1950-62 period varied from 3,017 tonnes in 1951 to 25,732 tonnes in 1950, the average annual catch being 9,914 tonnes. The perches form 1.49% of the total all-India catch. From the figures given below it will be seen that only in Madras State, the perch fishery is of some significance and the perch catch accounts for 5.33% of the total fish catch in the State. The perch catch in Madras alone accounts for 53.15% of the all-India perch

catch. The contribution of other States towards this may be seen from the following Table.

States	Average annual catch of perch (tonnes)	Per cent of total perch catch	Per cent of total State catch
West Bengal & Orissa	104	1·05	1·27
Andhra	990	9·99	1·97
Madras	5,269	53·15	5·33
Kerala	1,836	18·52	0·92
Mysore	142	1·43	0·27
Maharashtra	1,022	10·31	0·65
Gujarat	256	2·58	0·30
Other States	17	0·17	1·35
Trawlers	278	2·80	7·01
INDIA	9,914	100·00	1·49

The following Table gives the average annual catch of perches for the three periods 1950-53, 1954-57 and 1958-62 for each maritime State and also for India:—

States	Average annual catch (tonnes) during		
	1950-53	1954-57	1958-62
West Bengal & Orissa	105	91	113
Andhra	1,117	986	890
Madras	7,211	3,248	5,333
Kerala	1,531	1,421	2,413
Mysore	76	150	189
Maharashtra	1,150	404	1,415
Gujarat	404	180	197
Other States	..	12	34
Trawlers	23	238	513
INDIA	11,617	6,730	11,097

It may be seen from the above Table that no definite trend is visible for perch landings either for India as a whole or for the different maritime States. The average amount of landings of perches in India showed a significant decline during

the 1954-57 period but again in 1958-62 the catches reached the same level as that of 1950-53.

(x) *Red mullets :*

The annual catch varied from 1,088 tonnes to 10,578 tonnes during the period under review and the average for the period was 2,427 tonnes. This group forming only 0.36 per cent of the total landings in India supports only a minor fishery. The average quantity and the percentage landed in each State together with the percentage the red mullets form to the total landings in each State are given in the following Table :—

States	Average annual catch (tonnes) of red mullets	Per cent of total red mullets catch	Per cent of total State catch
West Bengal & Orissa	5	0·21	0·06
Andhra	789	32·51	1·57
Madras	804	33·13	0·81
Kerala	442	18·21	0·22
Mysore	..	..	..
Maharashtra	301	12·40	0·19
Gujarat	83	3·42	0·10
Other States	1	0·04	0·08
Trawlers	2	0·08	0·06
INDIA	2,427	100·00	0·36

It is clear from the above figures that as a fishery red mullets are not important either for India as a whole or for any of the individual States. Probably in Andhra, red mullets which form about 1.57% of the total landings in the State may be of some local importance.

The average annual landings of red mullets in India for 1950-53, 1954-57 and 1958-62 were 1,308 tonnes, 4,074 tonnes and 2,004 tonnes respectively showing thereby no indication of any time-trend. In the different States also no trends are noticed.

(xi) *Polynemids :*

The average catch of polynemids during the 13-year period under review was 5,816 tonnes but the range of variation in the annual catch during the period was from 800 tonnes to 14,846 tonnes. This group constitutes on an average only 0.87 per cent of the total landings in India. The quantitative and

the percentage share of each State in the total polynemids landings together with the percentage the polynemids form in the total catch of the State are shown in the Table below:—

States	Average annual catch of polynemids (tonnes)	Per cent of total polynemids catch	Per cent of total State catch
West Bengal & Orissa	180	3·09	2·21
Andhra	196	3·37	0·39
Madras	457	7·86	0·46
Kerala	23	0·40	0·01
Mysore	18	0·31	0·03
Maharashtra	2,791	47·99	1·78
Gujarat	1,989	34·20	2·33
Other States	—	..	..
Trawlers	162	2·79	4·08
INDIA	5,816	100·00	0·87

The above figures reveal that polynemids are mainly landed in Maharashtra and Gujarat and in these States the polynemids landings form only 1.65 and 2.15 per cent of the respective total landings. In West Bengal and Orissa while the average landings of polynemids per year amount to only 180 tonnes, they formed about 2.04% of the total State catch. The following figures are presented to demonstrate the trends in catch of polynemids:—

States	Average annual catch (tonnes) during		
	1950-53	1954-57	1958-62
West Bengal & Orissa	235	190	92
Andhra	86	186	253
Madras	142	427	642
Kerala	..	31	31
Mysore	16	16	19
Maharashtra	143	5,696	2,026
Gujarat	49	2,733	2,547
Trawlers	51	193	192
INDIA	722	9,472	5,802

No trend in the catch is visible for India as a whole or for the two States of Maharashtra and Gujarat where the major part of the landings take place.

(xii) *Sciaenids*

The average annual landings of sciaenids in India during the 13-year period were about 36,320 tonnes and formed 5.45% of the total landings in India. The annual landings varied from 20,442 tonnes to 73,211 tonnes during this period. The quantitative and percentage contribution of each State towards the annual average catch for India are given in the following Table. The last column of the Table shows the percentage the sciaenids form to the total catch in each State:—

States	Average annual catch of sciaenids (tonnes)	Per cent of total sciaenids catch	Per cent of total State catch
West Bengal & Orissa	289	0·79	3·55
Andhra	3,902	10·74	7·75
Madras	5,898	16·24	5·97
Kerala	3,676	10·12	1·83
Mysore	3,516	9·68	6·57
Maharashtra	13,570	37·36	8·67
Gujarat	4,782	13·17	5·61
Other States	...	...	...
Trawlers	687	1·89	17·30
INDIA	36,320	100·00	5·45

The above Table shows that sciaenids are landed in all the States in varying quantities, the largest amount being landed in Maharashtra. Excepting Kerala, the landings of sciaenids constitute a sizeable portion of the total catch in the other States. It is significant to note that sciaenids form on an average 17.30% of the total landings obtained from trawlers.

The following Table shows for each State and for India, the average catch of sciaenids obtained during the 3 periods mentioned earlier:—

States	Average annual catch (tonnes) during		
	1950-53	1954-57	1958-62
West Bengal & Orissa	131	357	362
Andhra	3,725	4,650	3,447
Madras	4,460	7,252	5,965
Kerala	3,740	4,341	3,095
Mysore	6,019	1,879	2,822
Maharashtra	11,834	23,395	7,097
Gujarat	3,722	8,578	2,594
Trawlers	107	524	1,280
INDIA	33,738	50,976	26,662

The average annual catch in India in the second period of 1954-57 was higher than that in the first period of 1950-53 but it went down again during the third period of 1958-62. Excepting for Mysore and West Bengal and Orissa, the trend in catches in the other States was parallel to the one found in case of India. The trawler catches however, showed increasing trend in the landings of sciaenids.

(xiii) *Ribbon fish*

This group consists of fishes of the genus *Trichiurus* and the annual landings showed variation from 16,946 tonnes to 56,298 tonnes and the average annual landings for the period under review was found to be 29,498 tonnes. This was about 4.43% of the total landings in India. The quantitative as well as the percentage share of the different States towards this were as follows:—

States	Average annual catch of ribbon fish	Per cent of total ribbon fish catch	Per cent of total State catch
West Bengal & Orissa	383	1·30	4·70
Andhra	2,180	7·39	4·33
Madras	12,059	40·88	12·21
Kerala	7,384	25·03	3·68
Mysore	236	0·80	0·44
Maharashtra	5,390	18·27	3·44
Gujarat	1,856	6·30	2·18
Trawlers	10	0·03	0·25
INDIA	29,498	100·00	4·43

Of the total landings of ribbon fish, Madras accounts for 40.88%, Kerala and Maharashtra following with 25.03% and 18.27% respectively. Ribbon fish accounts for 12.21% of the total catch in Madras State thus forming a very important fishery in the State. In all other States excepting Mysore, ribbon fish forms a sizable fraction of the total fish catch.

The average catch of ribbon fish in India during the period 1950-53 was 31,755 tonnes. It slightly declined to 31,284 tonnes in 1954-57 and further went down to 26,263 tonnes during 1958-62. The declining trend in catch is very clearly evident. The following Table gives the corresponding average catch for the different States:—

States	Average annual catch (tonnes) during		
	1950-53	1954-57	1958-62
West Bengal & Orissa	49	667	424
Andhra	1,506	2,237	2,674
Madras	9,466	10,149	15,662
Kerala	10,146	8,864	3,990
Mysore	359	158	200
Maharashtra	7,557	6,728	2,585
Gujarat	2,672	2,476	706
Trawlers	..	5	22
INDIA	31,755	31,284	26,263

A scrutiny of the Table reveals the interesting fact that while in general the landings of ribbon fish show an increasing trend in the maritime States of the east coast, those of the west coast show a declining trend. A detailed scientific study seems to be necessary for finding out the reasons for such trends in the fishery.

(*xiv*) *Carangids*

In this group have been included the genera of (i) *Caranx*, (ii) *Chorinemus*, (iii) *Trachynotus*, (iv) *Coryphaena*, (v) *Elacate* and other Carangids.

Till 1956, catch records were kept jointly for the group and from 1957, records were kept separately for the major genera. Taking the group as a whole, the average annual catch of this group for the 13-year period from 1950 to 1962 was 18,397 tonnes. The penultimate column of Table 2 shows the averages of the different genera based on the number of years for which figures are available for each genus. The quantitative and percentage share of each State towards the average annual landings of carangids in India along

with the percentage of carangids in the total catch of fish in each State are shown in the Table given below:—

States	Average annual catch of carangids	Per cent of total carangids catch	Per cent of total State catch
West Bengal & Orissa	53	0·29	0·65
Andhra	1,686	9·17	3·35
Madras	7,748	42·12	7·85
Kerala	7,635	41·50	3·80
Mysore	576	3·13	1·07
Maharashtra	514	2·79	0·33
Gujarat	173	0·94	0·20
Trawlers	8	0·04	0·20
Other States	4	0·02	..
INDIA	18,397	100·00	2·76

More than 83% of the carangids landings are made in Madras and Kerala and another 9% of the catch are landed in Andhra. In Madras, carangids form an important fishery forming 7.85% of the total catch in the State. In Kerala and Andhra also, the carangids constitute a fair part of the total catch.

During the four-year period 1950-53, the average annual landings of carangids in India was 8,201 tonnes. It increased to 26,352 tonnes during the next four-year period from 1954-57 but it declined to 19,446 tonnes in the last 5-year period. The average annual landing figures during the 3 periods for the 3 States where more than 90% of the carangids are landed are given below:—

States	Average annual catch (tonnes) during		
	1950-53	1954-57	1958-62
Andhra	1,482	2,585	1,062
Madras	2,714	8,497	10,851
Kerala	3,370	15,700	6,033
INDIA	8,201	26,352	19,446

(xv) Leiognathus, Gazza *and* Lactarius

The average annual catch of these fishes combined together worked out to be 21,871 tonnes. From 1957 onwards the catch records of the 3 groups were kept separately. Prior to 1957, though the landings of *Lactarius* were noted separately except in 1953, those of *Leiognathus* and *Gazza* were given jointly. From the data of six years from 1957, the relative proportion of the 3 groups were found out and applying the same proportion to the combined annual average, we get the following annual average figures:—

	tonnes
Leiognathus	12,565
Gazza	340
Lactarius	8,966

The total of these will not agree with the figures given in Appendix II, as those figures were based on average of the number of years for which separate figures were available.

The following Table gives the State-wise break-up of the above average annual catches and these were worked out on the same principle stated earlier:

States	Average annual catch (tonnes) of				
	Leiognathus	*Gazza*	*Lactarius*	Total	Per cent of total State catch
West Bengal & Orissa	169	7	2	178	2·18
Andhra	2,035	225	560	2,820	5·60
Madras	3,942	95	5,039	9,076	9·19
Kerala	5,105	13	2,844	7,962	3·97
Mysore	963	..	388	1,351	2·52
Maharashtra	288	..	89	377	0·24
Gujarat	47	..	..	47	0·06
Trawlers	4	..	..	4	0·10
Other States	12	..	44	56	4·44
INDIA	12,565	340	8,966	21,871	3·33

From the above figures it is clear, that this combined group is not only commercially important in the individual States of Madras, Andhra and Kerala but also for the whole of India. While the major portion of the *Leiognathus* catch came from the States of Andhra, Madras and Kerala, the major share of *Lactarius* catch came from Madras and Kerala. The catch of *Gazza* was insignificant and was obtained in small quantities in all the east coast States and Kerala.

For the 4-year period 1950-53, the combined average annual catch of the 3 groups came to 14,743 tonnes, the same rose to 21,690 tonnes during 1954-57 and to 27,718 tonnes during the period 1958-62, showing thereby a rising trend in the catch of this combined group. The following Table gives the corresponding averages for the States:—

States	Average annual catch (tonnes) during		
	1950-53	1954-57	1958-62
West Bengal & Orissa	18	121	351
Andhra	2,205	3,472	2,790
Madras	3,989	8,372	13,710
Kerala	6,602	8,435	8,671
Mysore	1,182	1,070	1,711
Maharashtra	610	164	361
Gujarat	137	15	1
Other States	..	3	7
Trawlers	..	38	116
INDIA	14,743	21,690	27,718

In the two States of Madras and Kerala which made the largest contribution to the combined catch of these groups, the same rising trend in catch, as seen for the country as a whole, was noticed.

(xvi) *Pomfrets*

The annual catch of pomfrets varied from 4,903 tonnes to 25,678 tonnes during the 13-year period under review and the average annual catch for the period worked out to be 15,367 tonnes and formed on an average 2.31% of the total all-India catch. The following Table presents the quantitative as well as percentage break-up of this average annual catch among the different States.

The figures in the last column represent the percentages the pomfrets form in the total landings in the States:—

States	Average annual catch of pomfrets	Per cent of total pomfret catch	Per cent of total State catch
West Bengal & Orissa	157	1·02	1·92
Andhra	1,525	9·92	3·03
Madras	1,773	11·54	1·79
Kerala	2,728	17·75	1·36
Mysore	241	1·57	0·45
Maharashtra	5,017	32·65	3·20
Gujarat	3,892	25·33	4·57
Other States	..	..	..
Trawlers	34	0·22	0·85
INDIA	15,367	100·00	2·31

From the above, it will be seen that a sizable contribution to the total pomfrets landings came from the States of Maharashtra, Gujarat and Kerala. The contributions of Madras and Andhra are also significant. The pomfret fishery is important in the States of Gujarat, Maharashtra and Andhra where the landings of pomfrets form more than 3 per cent of the total fish landings in the States.

During the first four-year period of 1950-53, the average annual landings of pomfrets was 10,144 tonnes. It rose to 15,301 tonnes during the next period of 1954-57 and it further rose to 19,598 tonnes during the period of 1958-62. This definitely points towards an increasing trend in the pomfret landings in India. The average annual catch of pomfrets during the three periods for each State is shown in the following Table:—

States	Average annual catch (tonnes) during		
	1950-53	1954-57	1958-62
West Bengal & Orissa	67	156	229
Andhra	1,178	1,123	2,124
Madras	1,466	1,610	2,149
Kerala	3,112	2,346	2,726
Mysore	356	239	149
Maharashtra	2,786	5,949	6,058
Gujarat	1,179	3,853	6,095
Trawlers	..	25	68
INDIA	10,144	15,301	19,598

Excepting in Kerala and Mysore, the pomfret landings in all the other States exhibit trend parallel to that found in the case of India as a whole.

(xviii) Mackerel

Rastrelliger kanagurta is the only commercial species under this group. While the average annual catch of mackerel during the 13-year period under review was 67,849 tonnes accounting for 10.18% of the total catch of all fish in India, the annual variation in catch ranged from 16,431 tonnes to 1,33,655 tonnes. The quantitative and percentage contribution of the different States towards the average annual catch of mackerel may be seen from the first two columns of the following Table, the last column showing the percentage formed by mackerel in the total catch of the States:—

States	Average annual catch of mackerel	Per cent of total mackerel catch	Per cent of total State catch
West Bengal & Orissa	29	0·04	0·35
Andhra	926	1·36	1·84
Madras	1,884	2·78	1·91
Kerala	28,036	41·32	13·97
Mysore	31,534	46·48	58·89
Maharashtra	5,418	7·99	3·46
Gujarat	16	0·03	0·02
Other States	4	..	0·32
Trawlers	2	..	0·05
INDIA	67,849	100·00	10·18

From the above Table, it is clear that the major portion of the mackerel landings comes from only two States *viz.*, Mysore and Kerala. In Mysore, mackerel constitutes nearly 60% of the total catch and in Kerala it forms nearly 14% of the total catch. Thus the mackerel fishery is of very great importance to the two States of Mysore and Kerala. The annual fluctuations in the mackerel catch have not so far been properly explained. During the first 4-year period 1950-53, the average catch of mackerel in India was 85,706 tonnes, it slumped down to 39,124 tonnes during the next four-year period 1954-57 but it rose to 76,544

tonnes during the last 5-year period 1958-62. The corresponding positions in the different States may be seen from the figures given below:—

States	Average annual catch (tonnes) during		
	1950-53	1954-57	1958-62
West Bengal & Orissa	17	27	40
Andhra	948	720	1,073
Madras	2,222	1,087	2,251
Kerala	42,206	12,003	29,527
Mysore	31,926	21,734	39,060
Maharashtra	8,387	3,497	4,579
Gujarat	--	53	--
Other States	..	2	10
Trawlers	..	1	4
INDIA	85,706	39,124	76,544

(xix) *Seer fish.*—The variation in the annual catch of seer fish in India ranged from 4,505 tonnes to 12,265 tonnes and the average annual catch for the 13-year period worked out to be 7,986 tonnes, forming about 1.20% of the average annual catch of all fish in India. The quantitative and percentage contribution of the various States towards this annual average are given in the first two columns of the following Table while the figures in the last column represent percentages of seer fish in the total catch in the States:—

States	Average annual catch (tonnes) of seer fish	Per cent of total seer fish catch	Per cent of total State catch
West Bengal & Orissa	190	2·38	2·33
Andhra	2,600	32·56	5·16
Madras	2,482	31·08	2·51
Kerala	1,284	16·08	0·64
Mysore	675	8·45	1·26
Maharashtra	486	6·08	0·31
Gujarat	256	3·21	0·30
Other States	7	0.09	0·56
Trawlers	6	0·08	0·15
INDIA	7,986	100·00	1.20

From the above Table, it is clear that seer fish is obtained in varying proportions from all the States. In Andhra, seer fish forms an important fishery and contributes more than 5% towards the total State landings.

The following Table gives the average annual catch during the three periods referred to earlier for the various States and also for India.

States	Average annual catch (tonnes) during		
	1950-53	1954-57	1958-62
West Bengal & Orissa	186	248	148
Andhra	4,326	1,500	2,100
Madras	826	2,976	3,412
Kerala	474	1,379	1,857
Mysore	245	1,091	686
Maharashtra	124	819	509
Gujarat	22	350	367
Other States	..	6	13
Trawlers	..	2	13
INDIA	6,204	8,372	9,104

In Madras and Kerala, a rising trend is seen in the catch of seer fish and a similar trend is seen for India also. In other States, no trend in catch is visible.

(xx) *Tunnies.*—While the variation in the annual landings of tunnies in India ranged from 848 tonnes to 7,805 tonnes during the period 1950 to 1962, the average catch worked out to be 3,192 tonnes and this formed 0.48% of the total average annual catch of India. The following Table gives the average annual catch in the different States along with the percentage contribution of each State. The percentage of the catch of tunnies to the total catch in each State is also given.

States	Average annual catch (tonnes) of tunnies	Per cent of total tunnies catch	Per cent of total State catch
West Bengal & Orissa	21	0·66	0.26
Andhra	131	4·10	0·26
Madras	932	29·20	0·94
Kerala	1,724	54·01	0·86
Mysore	105	3·29	0·20
Maharashtra	155	4·86	0·10
Gujarat	8	0·25	0·01
Other States	110	3·44	8·72
Trawlers	6	0·19	0·15
INDIA	3,192	100·00	0·48

From the above, it is clear that tunnies do not form an important fishery in any of the States, the percentage of tuna landings in all the States being less than 1%, only in "other States", tuna landings form 8.72% of the catch. To be specific among these other States, tunas are mainly landed in Laccadives where they virtually form the entire catch. Apart from Laccadives, the main contributions towards tuna landings come from Madras and Kerala States.

The following Table furnishes average annual catch of tunnies for the 3 periods mentioned earlier.

States	Average annual catch (tonnes) during		
	1950-53	1954-57	1958-62
West Bengal & Orissa	16	31	16
Andhra	36	49	272
Madras	808	1,364	686
Kerala	922	1,390	2,634
Mysore	29	123	150
Maharashtra	13	125	293
Gujarat	2	9	13
Other States	..	..	286
Trawlers	..	2	14
INDIA	1,826	3,094	4,364

From the above figures, one can say that tuna catches in India show increasing trend during the 13-year period under review. Excepting for West Bengal, and Orissa and Madras, the same increasing trend is noticed in the tuna catches of all the other States.

(xxi) Sphyraena.—The average annual catch of this Indian barracuda during the 13-year period under review was computed at 1,382 tonnes, forming only

0.21% of the total all-India catch. The contribution of various States towards this national average is shown below along with the associated percentages.

States	Average annual catch (tonnes) of *Sphyraena*	Per cent of total *Sphyraena* catch	Per cent of total State catch
West Bengal & Orissa	8	0·58	0·10
Andhra	13	0·94	0·02
Madras	707	51·16	0·72
Kerala	611	44·21	0·30
Mysore	27	1·95	0·05
Maharashtra	12	0·87	0·01
Gujarat	1	0·07	—
Other States	3	0·22	0·24
Trawlers	..	..	..
INDIA	1,382	100·00	0·21

From the above Table, it will be seen that the major contribution to the total catch of Indian barracuda came from Madras and Kerala.

The following Table shows the trend in landings over the 13-year period of study in the States of Madras and Kerala and in India as a whole. It is clear that the same kind of trend was seen both for the two States and also for the country as a whole.

	Average annual catch (tonnes) during		
	1950-53	1954-57	1958-62
Madras	248	989	707
Kerala	222	1,005	485
INDIA	491	2,082	1,260

(xxii) Mugil.—The average catch of *Mugil* was found to be only 504 tonnes, the range of variation in the annual catch from 41 tonnes to 1,051 tonnes.

The *Mugil* catch forms only about 0.08% of the total all-India catch. The State-wise break-up of the average annual *Mugil* catch is as follows:—

States	Average catch (tonnes) of *Mugil*	Per cent of total *Mugil* catch	Per cent of total State catch
West Bengal & Orissa	20	3·97	0·25
Andhra	11	2·18	0·02
Madras	55	10·91	0·05
Kerala	60	11·90	0·03
Mysore	12	2·38	0·02
Maharashtra	40	7·94	0·02
Gujarat	293	58·14	0·34
Other States	13	2·58	1·03
Trawlers	..	..	..
INDIA	504	100·00	0·08

The above table shows that Gujarat landed the highest quantity of mullets while all other States landed a small quantity to make up the total. The mullets do not form a fishery of any significance in any of the States.

During the first 4-year period 1950-53, the average annual catch of mullets in India was only 85 tonnes, it increased to 389 tonnes during the second 4-year period 1954-57 and rose to 729 tonnes during the 3rd period of 1958-62. This rising trend was mainly due to similar improvement in the landings of mullets in Gujarat.

(xxiii) Bregmaceros (*Indian Cod*).—The average annual catch of *Bregmaceros* in India was computed at 4,697 tonnes and this formed 0.70% of the total all-India catch. The variation in annual catch ranged from 1,138 tonnes to 14,566 tonnes during the 13-year period from 1950 through 1962. Maharashtra and Gujarat are the only two States where this fish is landed and the State-wise break-up of the all-India average annual catch together with the associated percentages are given below:—

	Average annual catch (tonnes)	Per cent of total *Bregmaceros* catch	Per cent of total State catch
Maharashtra	3,798	80·86	2·43
Gujarat	899	19·14	1·05
INDIA	4,697	100·00	0·70

The trend in the yield may be seen from the following figures:—

	Average annual catch (tonnes) during		
	1950-53	1954-57	1958-62*
Maharashtra	4,574	2,899	3,897
Gujarat	1,627	949	276
INDIA	6,201	3,848	4,173

(xxiv) *Soles.*—Seshappa and Bhimachar (1955) have given an account of the sole fisheries of Malabar. The sole landings showed wide fluctuations, the variations in annual landings ranging from 1,684 tonnes to 30,194 tonnes during the 13-year period. The average annual landing of sole was estimated at 9,708 tonnes, being 1.46% of the total landings. The quantitative and percentage contribution of different States towards this together with the percentage the soles form in the total State catches are given in the following Table:—

States	Average annual landings (tonnes)	Per cent of total Sole catch	Per cent of total State catch
West Bengal & Orissa	30	0·31	0·36
Andhra	82	0·85	0·16
Madras	372	3·83	0·38
Kerala	8,190	84·36	4·08
Mysore	711	7·32	1·33
Maharashtra	252	2·60	0·16
Gujarat	65	0·67	0·08
Other States	..	..	..
Trawlers	6	0·06	0·14
INDIA	9,708	100·00	1·46

It is clear from the above figures that soles form an important fishery in Kerala and constitute 4.08% of the total landings in the State. It is also seen that 84.36% of the soles landings come from the Kerala State.

The figures of average annual catch of soles in India and also in the different constituent States for the 3 periods mentioned earlier are given in the following Table:—

States	Average annual catch (tonnes) during		
	1950-53	1954-57	1958-62
West Bengal & Orissa	..	1	77
Andhra	38	60	136
Madras	66	350	634
Kerala	8,941	3,901	11,019
Mysore	1,267	353	554
Maharashtra	427	273	95
Gujarat	117	76	15
Other States	..	..	2
Trawlers	..	8	8
INDIA	10,855	5,022	12,540

(xxv) *Prawns.*—An account of the prawn fisheries in India and the species constituting the prawn landings has been given by Panikkar and Menon (1956). The annual landings of prawns etc. in India varied from 64,806 tonnes to 1,59,552 tonnes during the 13-year period under study and the average annual landings during the period worked out to be 96,191 tonnes and this constituted 14.44 per cent of the average total landings in India. Prior to 1956, landings of penaeid prawns, non-penaeid prawns mainly consisting of *Acetes* spp. and other crustaceans like crabs etc. were all combined together and recorded as one item under the group prawns. Taking the separate figures available from 1956 for the 3 sub-groups and applying the same relative proportion to the average annual landings, the following figures result:—

	Tonnes	Percentage
Penaeid prawns	45,566	47·37
Non-penaeid prawns	49,144	51·09
Other crustaceans	1,481	1·54
INDIA	96,191	100·00

It is thus seen that landings of other crustaceans like crabs etc. form only a little less than 2% of the total landings of this group and the balance of the landings is almost equally divided among Penaeid and non-penaeid prawns.

The State-wise break-up of average all-India prawn landings with the associated percentages are given in the following Table:—

States	Average annual landings (tonnes) of crustaceans	Per cent of total crustacenans catch	Per cent of total State catch
West Bengal & Orissa	1,044	1·08	12·80
Andhra	4,076	4·24	8·10
Madras	3,112	3·23	3·15
Kerala	12,501	13·00	6·23
Mysore	1,062	1·10	1·98
Maharashtra	55,210	57·40	35·26
Gujarat	18,978	19·73	22·26
Other States	..	..	..
Trawlers	208	0·22	5·23
INDIA	96,191	100·00	14·44

From the above Table, it is seen that 90.14% of the total prawn and other crustacean landings come from the 3 States of Maharashtra, Gujarat and Kerala. The contribution of other States may also be seen from the above Table.

From the percentages the prawns etc. form to the total landings in the State, it is seen that prawn fishery is of great importance not only to the States of Maharashtra, Gujarat and Kerala as expected but also to the States of West Bengal, Orissa and Andhra. In the latter three States, the quantity landed in relation to the all-India landings is not very high but it is of importance compared to the total landings in the States.

In Maharashtra and Gujarat, the shrimp landings include the landings of non-penaeid *Acetes* spp. The break-up of the landings of these two States into the penaeid and non-penaeid components is shown in the following Table:—

	Penaeid	Non-Penaeid	Total
Maharashtra	14,818	40,392	55,210
Gujarat	7,199	11,779	18,978

Thus a large part of the total shrimps landings in Maharashtra and Gujarat consists of non-penaeid *Acetes* spp. If these are not taken into consideration, the penaeid prawn catches in these two States are very much lower than those in Kerala. In fact if figures of the catch of marine prawns coming from the back-waters and paddy fields of Kerala were available and added to the estimates of marine prawn catch, Kerala would have been the first State in India regarding the production of penaeid prawns.

Figures of average annual catch during the 3 periods are given in the Table below for each State as well as for India as a whole:—

States	Average annual catch during the period		
	1950-53	1954-57	1958-62
West Bengal & Orissa	110	1,650	1,306
Andhra	5,678	3,340	3,382
Madras	1,856	4,396	3,090
Kerala	6,120	11,484	18,420
Mysore	1,172	811	1,174
Maharashtra	47,494	84,712	37,781
Gujarat	17,410	32,860	9,126
Other States	..	1	2
Trawlers	..	50	499
INDIA	79,840	1,39,304	74,780

A perusal of the above figures reveals the following: (1) Kerala shows a continually rising trend of prawn production. (2) The average annual production figures during 1954-57 period in Maharashtra and Gujarat were unusually high.

SUMMARY

The figures of marine fish landings and their composition have been presented for the country as a whole and also for each of the maritime States of India from

1950 through 1962 along with detailed discussions on the various aspects of production. The variations in the annual fish landings in India have been examined with reference to those in the different States. A detailed study of the catch statistics has shown that changes in the composition of fish landings affect the total catches. An account of the fish landings and their composition for each of the States together with discussions on the variations in the fish landings during the period of study has also been given. In the final section, the different fisheries have been discussed in detail.

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APPENDIX I

Annual Catch of Marine Fish for the years 1950-1962

(*Figures in Tonnes*)

Year	W. Bengal & Orissa	Andhra	Madras	Kerala	Mysore	Maharash-tra	Gujarat	Goa	South Andamans	Lacca-dives	Trawler Catch	Total
1950	15,687	82,679	85,913	2,02,047	46,802	96,397	46,825	..	..	..	3,672	5,80,022
1951	5,084	59,169	77,719	1,91,032	64,553	88,511	43,739	..	..	..	4,109	5,33,916
1952	6,129	51,382	99,710	1,29,345	73,147	1,16,182	50,651	..	..	..	1,802	5,28,348
1953	6,883	42,678	77,171	1,11,999	59,202	1,97,082	84,914	..	..	..	1,534	5,81,463
1954	9,506	32,123	93,919	1,17,034	30,591	2,13,166	90,931	..	..	..	988	5,88,258
1955	5,968	64,114	90,782	1,05,457	30,684	2,08,686	89,697	..	..	..	337	5,95,725
1956	15,882	52,476	1,15,136	1,52,213	20,279	2,44,523	1,15,018	..	77	..	3,175	7,18,779
1957	8,266	40,462	79,684	3,09,926	76,090	2,25,670	1,30,990	..	96	..	4,332	8,75,516
1958	6,267	28,846	1,18,056	2,94,655	80,242	1,47,752	75,134	220	92	..	4,730	7,55,994
1959	3,962	29,464	1,03,497	1,91,375	52,825	1,34,817	63,375	394	123	..	4,755	5,84,587
1960	5,532	56,720	1,07,810	3,44,605	1,00,557	1,27,172	1,27,982	1,439	129	509	7,226	8,79,681
1961	8,924	54,506	1,23,501	2,67,493	17,248	1,11,839	91,396	452	131	872	7,207	6,83,569
1962	7,948	60,027	1,11,435	1,91,421	43,904	1,23,708	97,751	..	155	178	7,717	6,44,244
Average	8,157	50,357	98,795	2,00,662	53,548	1,56,577	85,262	626	115	520	3,968	6,57,700
Percentage	1·24	7·65	15·00	30·47	8·13	23·77	12·95	0·09	0·02	0·08	0·60	100·00

APPENDIX

Composition of Marine Fish

S. No.	Name of fish	1950	1951	1952	1953	1954	1955	1956
1	Elasmobranchs	17,362	29,519	38,050	15,912	16,020	20,451	21,857
2	Eels	..	..	..	..	..	12,351	3,293
3	Cat fishes	11,779	17,347	18,746	23,318	21,697	18,678	23,307*
4	*Chirocentrus*	7,937	1,269	2,159	2,257	5,379	4,384	6,922
5(*a*)	Oil sardine	34,420	17,240	13,896	51,831	33,954	30,447	7,412
(*b*)	Other sardines	75,211	52,403	47,128	20,978	19,573	41,690	36,453
(*c*)	*Hilsa ilisha*	..	..	..	..	2,045	2,321	1,885
(*d*)	Other *Hilsa*							
(*e*)	*Anchoviella*	24,620	59,563	41,659	29,097	31,811	25,662	26,998
(*f*)	*Thrissocles*							
g)	Other clupeids	23,192	13,314	21,399	19,020	26,174	19,466	34,358
(*a*)	*Harpodon nehereus*	14,161	7,262	24,647	45,261	36,051	1,04,117	1,27,713
(*b*)	*Saurida*							
	Saurus							1,167
	Scopelus							
7	*Hemirhamphus* & *Belone*	...	...	...	..	..	..	627
8	Flying fish	2,009	2,151	1,374	499	1,966	3,258	2,512
9	Perches	25,732	3,017	13,261	4,458	4,789	7,075	8,271
10	Red mullets	1,463	1,525	1,088	1,154	1,535	1,128	10,578
11	Polynemids	..	800	1,075	1,011	2,284	11,761	8,998
12	Sciaenids	29,822	33,214	37,378	34,538	73,211	43,282	57,437
13	Ribbon fish	18,108	16,946	35,667	56,298	29,556	32,671	24,481
14(*a*)	*Caranx*	6,122*	9,819*	9,682*	7,181*	16,409*	18,360*	56,628*
(*b*)	*Chorinemus*	..	..	..	..	..	..	..
(*c*)	*Trachynotus*	..	..	..	..	..	..	..

II

Landings in India from 1950 to 1962 (*Figures in Tonnes*)

1957	1958	1959	1960	1961	1962	Average	Percentage
23,081	24,286	23,446	35,568	33,554	40,761	26,143	3·92
6,397	9,159	6,076	6,140	11,380	8,873	7,959	1·19
27,379	29,872	20,272	25,041	10,928	19,327	20,592	3·09
5,816	5,549	5,428	5,320	6,748	8,898	5,236	0·79
1,91,469	1,23,731	69,234	1,89,016	1,67,884	1,10,299	80,064	12·02
45,720	39,958	41,167	32,003	19,764	19,551	37,815	5·68
902	991	844	3,345	1,050	1,649	5,105	0·77
1,245	2,660	3,046	8,443	6,475	9,044		
12,700	29,346	24,477	35,885	22,103	19,168	32,156	4·83
4,509	3,960	8,108	7,522	4,962	5,872		
30,663	15,581	21,474	20,654	15,256	12,054	20,970	3·15
1,19,500	67,188	57,210	1,08,564	93,844	83,933	68,794	10·33
212	238	597	482	865	1,307		
379	348	383	213	493	149	370	0·05
984	388	1,668	6,470	1,206	4,154	2,203	0·33
6,787	11,959	9,389	9,804	15,377	8,958	9,914	1·49
3,055	2,166	1,526	2,568	2,165	1,596	2,427	0·36
14,846	5,974	7,666	6,649	5,920	2,802	5,816	0·87
29,972	25,565	20,442	24,947	29,917	32,439	36,320	5·45
38,427	41,918	31,830	17,467	19,515	20,586	29,498	4·43
10,767	18,133	9,773	21,583	22,551	7,364	16,490	2·48
3,238	3,014	2,658	4,212	3,517	3,517	3,359	0·50
5	59	2	9	7	14	16	0·00

APPENDIX II

S. No. Name of fish	1950	1951	1952	1953	1954	1955	1956
(*d*) Other carangids	..	..	..	..	..	..	..
(*e*) *Coryphaena*	..	..	..	..	..	..	775
(*f*) *Elacate*	..	..	..	..	..	..	..
15(*a*) *Leiognathus*	9,931	17,309	8,357	9,408	14,875	6,966	17,360
(*b*) *Gazza*							
16 *Lactarius*	5,343	2,719	5,904	..	5,773	5,652	10,168
17 Pomfrets	4,903	9,220	5,923	20,531	18,614	13,682	12,701
18 Mackerel	89,163	1,04,900	78,014	70,748	28,258	22,796	16,431
19 Seer fish	6,906	7,091	6,312	4,505	6,255	6,045	12,265
20 Tunnies	4,693	848	862	899	2,321	3,371	3,670
21 *Sphyraena*	..	211	1,517	236	4,052	393	3,360
22 *Mugil*	..	44	297	..	41	208	257
23 *Bregmaceros*	2,202	4,831	3,205	14,566	9,753	3,190	1,310
24 Soles	30,194	1,962	6,469	4,794	1,684	5,595	9,122
25(*a*) Penaeid prawns	74,877	76,797	77,001	90,687	1,54,225	1,06,626	66,910
(*b*) Non-penaeid prawns							92,372
(*c*) Other crustaceans							270
26 Cephalopods	..	..	..	..	..	..	...
27 Miscellaneous	59,872	42,595	27,278	52,276	19,953	24,099	10,911
TOTAL	5,80,022	5,33,916	5,28,348	5,81,463	5,88,258	5,95,725	7,18,779
Effort (in 1000 man-hours)	..	..	..	...	..	..	...
Catch/man-hours (in Kgrms.)	..	..	..	..	..	..	..

* Figures relate to carangids.

†Total of crustaceans.

.. means not available.

Contd.

1957	1958	1959	1960	1961	1962	Average	Percentage
..	..	...	154	113	537	268	0·04
423	820	471	228	138	172	534	0·08
..	..	..	272	185	255		
16,909	12,865	13,200	15,760	15,763	18,104	13,800	2·07
958	343	293	634	201	164		
8,101	16,363	13,842	14,502	8,898	7,656	8,743	1·31
16,205	16,587	17,389	21,850	16,488	25,678	15,367	2·31
89,010	1,23,282	62,198	1,33,655	34,485	29,103	67,849	10·18
8,921	7,889	6,590	8,650	11,449	10,941	7,986	1·20
3,014	3,239	2,866	5,615	7,805	2,297	3,192	0·48
523	830	972	1,985	1,389	1,120	1,382	0·21
1,051	743	246	912	862	880	504	0·08
1,138	3,884	3,821	6,096	3,900	3,164	4,697	0·70
3,687	12,860	10,361	14,108	7,730	17,644	9,708	1·46
74,648	29,204	27,632	31,759	39,083	48,251		
61,374	55,987	37,805	36,271	23,685	34,984	96,191	14·49
791	1,508	2,093	2,571	2,038	1,031		
1,36,813†	86,699†	67,530†	70,601†	64,806†	84,266†		
..	3	349	467	94	96	202	0·03
10,710	7,544	17,743	12,287	13,782	19,852	24,531	3·68
8,75,516	7,55,994	5,84,587	8,79,681	6,83,569	6,44,244	6,57,700	100·00
3,18,147	3,13,255	2,47,379	2,16,273	2,09,847	2,17,844		
2·47	2·40	2·34	4·02	3·22	2·92		

APPENDIX III (*a*)

State-wise Marine Fish Landings in India during the year 1950 (*Figures in Tonnes*)

Serial Number	Name of fish	W. Bengal & Orissa	Andhra	Madras	Kerala	Mysore	Maharashtra	Gujarat	Trawler catch	Total
1	2	3	4	5	6	7	8	9	10	11
1	Elasmobranchs	..	2,734	5,793	8,096	687	52	..	..	17,362
2	Eels	..	..	..	..	..	..	..	..	..
3	Cat fishes	..	5,595	818	3,709	1,008	532	117	..	11,779
4	*Chirocentrus*	..	878	3,314	3,745	..	..	..	..	7,937
5	(*a*) Oil sardine	..	..	923	12,806	16,087	4,604	..	..	34,420
	(*b*) Other sardines	10,924	17,259	19,656	21,820	4,290	1,262	..	..	75,211
	(*c*) *Hilsa ilisha*	..	..	..	..	..	..	..	..	..
	(*d*) Other *Hilsa*	..	..	..	..	..	..	..	..	..
	(*e*) *Anchoviella*	1,653	7,993	6,568	8,027	379	..	..	..	24,620
	(*f*) *Thrissocles*									
	(*g*) Other clupeids	2,071	3,476	..	..	..	13,015	4,630	..	23,192
6	(*a*) *Harpodon nehereus*	..	541	..	..	..	10,046	3,574	..	14,161
	(*b*) *Saurida, Saurus and Scopelus*									

7 *Hemirhamphus and Belone*	..	..	..	..	..	..	..	..	..	..
8 Flying fish	..	304	1,705	..	..	..	...	..		2,009
9 Perches	..	911	20,630	3,083	127	724	257	...		25,732
10 Red mullets	1	758	278	69	...	263	94	...		1,463
11 Polynemids	—	—	—	—	—	—	—	..	..	
12 Sciaenids	...	4,057	4,295	5,210	3,164	9,899	3,197	..		29,822
13 Ribbon fish	—	2,408	3,091	5,444	987	4,590	1,588	..		18,108
14 (*a*) *Caranx*	...	1,801*	1,446*	2,133*	580*	162*	—	—		6,122*
(*b*) *Chorinemus*	—	—	—	—	—	—	—	..	..	
(*c*) *Trachynotus*	—	—	—	—	—	—	—	..	..	
(*d*) Other carangids	—	—	—	—	—	—	—	..	..	
(*e*) *Coryphaena*	...	...	—	—	—	—	—	..	..	
(*f*) *Elacate*	..	—	..	..	..	—	—	..	..	
15 (*a*) *Leiognathus*										
(*b*) *Gazza*	..	2,743	3,821	7,253	793	516	148			15,274
16 *Lactarius*										

APPENDIX III (a) *Contd.*

1	2	3	4	5	6	7	8	9	10	11
17	Pomfrets	..	1,263	1,791	511	54	947	337	..	4,903
18	Mackerel	..	998	5,385	70,889	10,733	1,158	..	..	89,163
19	Seer fish	..	5,766	248	822	70	..	..	..	6,906
20	Tunnies	..	..	2,047	2,521	95	30	..	..	4,693
21	*Sphyraena*	..	..	..	..	..	..	..	..	..
22	*Mugil*	..	..	..	..	..	..	..	..	..
23	*Bregmaceros*	..	..	..	..	..	1,624	578	..	2,202
24	Soles	..	..	..	26,934	3,164	96	..	..	30,194
25	(*a*) Penaeid prawns (*b*) Non-penaeid prawns (*c*) Other crustaceans	171	7,431	436	7,276	995	43,223	15,345	..	74,877
26	Cephalopods	..	..	..	..	..	..	..	..	..
27	Miscellaneous	867	15,763	3,668	11,699	3,589	3,654	16,960	3,672	59,872
	TOTAL	15,687	82,679	85,913	2,02,047	46,802	96,397	46,825	3,672	5,80,022

* The figures relate to carangids.

APPENDIX III (*b*)

State-wise Marine Fish Landings in India during the year 1951 (*Figures in Tonnes*)

Serial Number	Name of fish	W. Bengal & Orissa	Andhra	Madras	Kerala	Mysore	Maharashtra	Gujarat	Trawler catch	Total
1	2	3	4	5	6	7	8	9	10	11
1	Elasmobranchs	57	5,996	8,941	12,126	1,823	548	28	..	29,519
2	Eels	..	..	..	..	..	..	..	..	..
3	Cat fishes	111	5,795	2,653	2,913	4,374	1,444	57	..	17,347
4	*Chirocentrus*	51	566	566	..	66	20	..	..	1,269
5	(*a*) Oil sardine	..	..	15	15,160	1,957	108	..	..	17,240
	(*b*) Other sardines	3,058	8,591	11,876	17,500	8,990	2,388	..	..	52,403
	(*c*) *Hilsa ilisha*	..	..	..	..	..	..	..	..	..
	(*d*) Other *Hilsa*	..	..	..	..	..	..	..	..	..
	(*e*) *Anchoviella* (*f*) *Thrissocles*	136	3,171	28,704	26,428	441	527	156	..	59,563
	(*g*) Other clupeids	580	3,029	590	264	253	6,362	2,236	..	13,314
6	(*a*) *Harpodon nehereus* (*b*) *Saurida Saurus and Scopelus*	10	111	9	..	10	5,254	1,868	..	7,262
7	*Hemirhamphus and Belone*	..	..	..	..	..	..	..	..	..

APPENDIX III (b) *Contd.*

1	2	3	4	5	6	7	8	9	10	11
8	Flying fish	..	948	1,203	..	..	..	..	..	2,151
9	Perches	184	1,237	1,226	..	117	196	57	..	3,017
10	Red mullets	2	1,409	83	31	..	..	..	..	1,525
11	Polynemids	260	143	79	..	30	215	73	..	800
12	Sciaenids	146	3,182	5,300	5,739	4,132	11,174	3,541	..	33,214
13	Ribbon fish	53	1,110	5,128	7,804	325	1,871	655	..	16,946
14	(*a*) *Caranx*	101*	2,209*	1,681*	4,720*	937*	171*	..	..	9,819*
	(*b*) *Chorinemus*	..	..	..	..	..	..	..	..	..
	(*c*) *Trachynotus*	..	..	..	..	..	..	..	..	..
	(*d*) Other carangids	..	..	..	..	..	..	..	..	..
	(*e*) *Coryphaena*	..	..	..	..	..	..	..	..	..
	(*f*) *Elacate*	..	..	..	..	..	..	..	..	..
15	(*a*) *Leiognathus* (*b*) *Gazza*	9	3,187	2,062	11,055	1,926	1,389	400	..	20,028
16	*Lactarius*									
17	Pomfrets	65	961	1,364	5,873	741	172	44	..	9,220
18	Mackerel	40	1,276	2,098	59,314	33,742	8,430	..	..	1,04,900

19 Seer fish	137	4,944	306	751	695	240	18	..		7,091
20 Tunnies	8	123	355	349	10	3	..	..		848
21 *Sphyraena*	..	1	104	102	3	1	..	..		211
22 *Mugil*	28	..	1	13	1	1	..	..		44
23 *Bregmaceros*	..	..	—	..	..	3,563	1,268	..		4,831
24 Soles	..	134	10	1,017	473	271	57	..		1,962
25 (*a*) Penaeid prawns	..	..	..							
(*b*) Non-penaeid prawns	48	5,055	2,086	8,766	2,204	43,371	15,267	..		76,797
(*c*) Other crustaceans										
26 Cephalopods	..	—	—	..	..	..	..	..		..
27 Miscellaneous	..	5,991	1,279	11,107	1,303	792	18,014	4,109		42,595
TOTAL	5,084	59,169	77,719	1,91,032	64,553	88,511	43,739	4,109		5,33,916

* The figures relate to carangids.

APPENDIX III (c)

State-wise Marine Fish Landings in India during the year 1952 (*Figures in Tonnes*)

Serial Number	Name of fish	W. Bengal & Orissa	Andhra	Madras	Kerala	Mysore	Maharashtra	Gujarat	Trawler catch	Total
1	2	3	4	5	6	7	8	9	10	11
1	Elasmobranchs	234	4,199	15,870	15,877	979	731	160	..	38,050
2	Eels	..	..	..	..	..	..	..	..	..
3	Cat fishes	85	4,860	4,365	4,348	3,657	1,339	92	..	18,746
4	*Chirocentrus*	109	520	1,167	33	54	208	68	..	2,159
5	(*a*) Oil sardine	..	..	1,727	6,619	4,378	1,172	..	..	13,896
	(*b*) Other sardines	2,721	9,408	13,715	16,572	3,204	1,331	177	..	47,128
	(*c*) *Hilsa ilisha*	..	..	..	..	..	..	..	..	..
	(*d*) Other *Hilsa*	..	..	..	..	..	..	..	..	..
	(*e*) *Anchoviella*	346	3,729	19,133	17,594	351	397	109	..	41,659
	(*f*) *Thrissocles*									
	(*g*) Other clupeids	327	3,357	731	141	341	12,199	4,303	..	21,399
6	(*a*) *Harpodon nehereus*	39	326	19	..	..	17,896	6,367	..	24,647
	(*b*) *Saurida, Saurus and Scopelus*									
7	*Hemirhamphus and Belone*	..	..	..	..	..	..	..	..	..

8 Flying fish	..	783	591	..	..	..	..	—	1,374
9 Perches	235	1,362	3,836	2,862	21	3,649	1,296	—	13,261
10 Red mullets	3	430	84	..	—	421	150	..	1,088
11 Polynemids	681	81	46	—	35	174	58	..	1,075
12 Sciaenids	368	3,421	3,685	3,065	15,898	9,310	1,631	...	37,378
13 Ribbon fish	69	1,204	17,008	14,368	54	2,188	776	...	35,667
14 (*a*) *Caranx*	41*	1,198*	4,008*	4,122*	248*	58*	7*	..	9,682*
(*b*) *Chorinemus*	..	..	..	..	..	..	..	..	..
(*c*) *Trachynotus*	..	..	..	..	..	..	..	..	..
(*d*) Other carangids	..	..	..	..	..	..	..	..	..
(*e*) *Coryphaena*	..	..	..	..	..	..	..	..	..
(*f*) *Elacate*	..	..	..	..	...	..	...	..	..
15 (*a*) *Leiognathus*									
(*b*) *Gazza*	40	1,429	5,446	5,877	1,176	293	..	..	14,261
16 *Lactarius*									
17 Pomfrets	156	1,239	1,377	366	120	1,974	691	..	5,923
18 Mackerel	2	665	1,094	24,748	40,186	11,319	..	..	78,014
19 Seer fish	462	4,434	843	172	201	163	37	..	6,312

APPENDIX III (c)—*Contd.*

1	2	3	4	5	6	7	8	9	10	11
20	Tunnies	13	5	395	423	..	19	7	..	862
21	*Sphyraena*	..	..	668	770	41	31	7	..	1,517
22	*Mugil*	17	..	74	91	89	26	..	..	297
23	*Bregmaceros*	..	..	..	..	..	2,364	841	..	3,205
24	Soles	..	4	243	3,863	795	1,186	378	..	6,469
25	(*a*) Penaeid prawns (*b*) Non-penaeid prawns (*c*) Other crustaceans	151	4,450	2,840	6,305	1,052	45,936	16,267	..	77,001
26	Cephalopods	..	..	..	..	..	..	..	..	..
27	Miscellaneous	30	4,278	745	1,129	267	1,798	17,229	1,802	27,278
	TOTAL	6,129	51,382	99,710	1,29,345	73,147	1,16,182	50,651	1,802	5,28,348

* The figures relate to carangids.

APPENDIX III (*d*)

State-wise Marine Fish Landings in India during the year 1953

(*Figures in Tonnes*)

Serial Number	Name of fish	W. Bengal & Orissa	Andhra	Madras	Kerala	Mysore	Maharashtra	Gujarat	Trawler catch	Total
1	2	3	4	5	6	7	8	9	10	11
1	Elasmobranchs	185	3,165	7,499	4,295	352	197	101	118	15,912
2	Eels	..	..	..	..	..	..	..	..	..
3	Cat fishes	..	2,033	10,654	5,029	2,489	2,369	600	144	23,318
4	*Chirocentrus*	89	536	1,520	7	5	74	26	..	2,257
5	(*a*) Oil sardine	..	—	..	42,012	8,568	1,251	—	..	51,831
	(*b*) Other sardines	4,597	3,361	7,401	4,980	522	117	—	..	20,978
	(*c*) *Hilsa ilisha*	..	..	..	..	..	—	..	..	..
	(*d*) Other *Hilsa*	—	..	..	..	..	—	..	..	..
	(*e*) *Anchoviella*	558	3,861	10,211	9,955	452	3,020	1,040	..	29,097
	(*f*) *Thrissocles*									
	(*g*) Other clupeids	734	4,325	2,440	247	165	6,267	4,842	..	19,020
6	(*a*) *Harpodon nehereus*	..	488	76	..	..	23,613	21,084	..	45,261
	(*b*) *Saurida, Saurus and Scopelus*									
7	*Hemirhamphus and Belone*	..	..	..	..	..	..	..	..	..

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APPENDIX III (d)—*Contd.*

1	2	3	4	5	6	7	8	9	10	11
8	Flying fish	..	169	330	..	..	..	..	..	499
9	Perches	—	960	3,151	178	41	30	6	92	4,458
10	Red mullets	..	586	298	—	—	199	71	..	1,154
11	Polynemids	—	118	444	—	—	181	65	203	1,011
12	Sciaenids	11	4,238	4,561	945	882	16,954	6,520	427	34,538
13	Ribbon fish	74	1,302	12,638	12,965	70	21,579	7,670	—	56,298
14	(*a*) *Caranx*	23*	722*	3,723*	2,504*	124*	65*	20*	..	7,181*
	(*b*) *Chorinemus*	..	...	...	..	...	..	..	..	..
	(*c*) *Trachynotus*	..	..	..	..	..	..	..	..	..
	(*d*) Other carangids	..	..	..	..	..	..	..	..	..
	(*e*) *Coryphaena*	..	..	..	..	..	..	..	..	..
	(*f*) *Elacate*	..	..	..	..	..	..	..	..	..
15	(*a*) *Leiognathus*									
	(*b*) *Gazza*	24	1,461	4,625	2,223	835	240	—	...	9,408
16	*Lactarius*									
17	Pomfrets	47	1,250	1,332	5,698	509	8,050	3,645	..	20,531

18* Mackerel	24	853	312	13,875	43,041	12,643	..	..	70,748
19 Seer fish	145	2,161	1,908	152	13	94	32	..	4,505
20 Tunnies	44	15	435	394	11	..	..	..	899
21 *Sphyraena*	..	..	221	15	..	..	..	..	236
22 *Mugil*	—	..	..	..	..	..	..	..	..
23 *Bregmaceros*	—	—	..	..	..	10,744	3,822	..	14,566
24 Soles	..	12	10	3,950	634	156	32	..	4,794
25 (*a*) Penaeid prawns (*b*) Non-penaeid prawns (*c*) Other crustaceans	71	5,778	2,060	2,131	439	57,448	22,760	..	90,687
26 Cephalopods	—	—	..	—	..	..	..	..	..
27 Miscellaneous	257	5,284	1,322	444	50	31,791	12,578	550	52,276
TOTAL	6,883	42,678	77,171	1,11,999	59,202	1,97,082	84,914	1,534	5,81,463

* The figures relate to carangids.

APPENDIX III (c)

State-wise Marine Fish Landings in India during the year 1954

(Figures in Tonnes)

Serial Number	Name of fish	W. Bengal & Orissa	Andhra	Madras	Kerala	Mysore	Maha-rashtra	Gujarat	Trawler catch	Total
1	2	3	4	5	6	7	8	9	10	11
1	Elasmobranchs	299	1,228	6,811	4,319	1,654	652	965	92	16,020
2	Eels	..	..	..	..	..	..	..	..	..
3	Cat fishes	1	888	7,017	8,897	2,017	2,052	749	76	21,697
4	*Chirocentrus*	249	2,051	2,634	131	73	145	96	..	5,379
5(*a*)	Oil sardine	..	..	1,401	29,276	3,199	78	..	..	33,954
(*b*)	Other sardines	6,475	1,356	6,129	5,279	298	36	..	..	19,573
(*c*)	*Hilsa ilisha*	71	541	64	44	27	244	1,054	..	2,045
(*d*)	Other *Hilsa*	..	..	..	..	..	..	..	..	..
(*e*)	*Anchoviella*	309	2,398	14,971	13,049	400	515	169	..	31,811
(*f*)	*Thrissocles*									
(*g*)	Other clupeids	198	9,462	2,388	1,919	218	8,837	3,152	..	26,174
6(*a*)	*Harpodon nehereus*	10	369	332	7	4	16,413	18,916	..	36,051
(*b*)	*Saurida, Saurus & Scopelus*									
7	*Hemirhamphus & Belone*	..	..	..	..	..	..	..	..	..

8 Flying fish	..	70	1,896	...	..	..	..	..	1,966
9 Perches	85	335	3,111	165	117	589	275	112	4,789
10 Red mullets	..	54	529	225	..	536	191	...	1,535
11 Polynemids	62	372	864	10	15	583	215	163	2,284
12 Sciaenids	176	1,990	8,836	4,851	2,364	40,480	14,331	183	73,211
13 Ribbon fish	150	1,258	8,072	6,254	118	9,974	3,730	...	29,556
14(*a*) *Caranx*	7*	438*	7,148*	7,524*	970*	268*	54*	..	16,409*
(*b*) *Chorinemus*	..	..	..	..	..	..	..	..	..
(*c*) *Trachynotus*	..	..	..	..	..	..	..	..	..
(*d*) Other carangids	..	..	..	..	..	..	..	..	..
(*e*) *Coryphaena*	..	..	..	..	..	..	..	..	..
(*f*) *Elacate*	..	..	..	..	..	..	..	..	..
15(*a*) *Leiognathus*									
(*b*) *Gazza*	55	1,168	7,713	10,333	1,140	202	37	...	20,648
16 *Laciartus*									
17 Pomfrets	53	489	1,350	5,562	650	6,953	3,557	...	18,614
18 Mackerel	5	64	614	7,492	15,829	4,254	..	..	28,258
19 Seer fish	273	1,415	2,902	692	570	176	227	...	6,255

APPENDIX III (e)—*Contd.*

1	2	3	4	5	6	7	8	9	10	11
20	Tunnies	44	14	1,085	1,131	36	11	..	..	2,321
21	*Sphyraena*	—	—	1,973	2,066	12	1	..	—	4,052
22	*Mugil*	1	—	..	..	..	..	40	..	41
23	*Bregmaceros*	—	..	..	..	..	7,194	2,559	..	9,753
24	Soles	—	22	360	1,105	104	71	22	..	1,684
25	(*a*) Penaeid prawns (*b*) Non-penaeid prawns (*c*) Other crustaceans	554	2,478	2,566	4,881	471	1,05,691	37,584	..	1,54,225
26	Cephalopods	—	..	..	..	..	..	..	..	..
27	Miscellaneous	429	3,663	3,153	1,822	305	7,211	3,008	362	19,953
	TOTAL	9,506	32,123	93,919	1,17,034	30,591	2,13,166	90,931	988	5,88,258

* The figures relate to carangids.

APPENDIX III (f)

State-wise Marine Fish Landings in India during the year 1955 (*Figures in Tonnes*)

Serial Number	Name of fish	W. Bengal & Orissa	Andhra	Madras	Kerala	Mysore	Maha-rashtra	Gujarat	Trawler catch	Total
1	2	3	4	5	6	7	8	9	10	11
1	Elasmobranchs	309	2,030	6,441	5,360	2,870	2,409	999	33	20,451
2	Eels	8	74	70	28	26	8,041	4,104	...	12,351
3	Cat fishes	94	1,625	3,640	4,357	3,786	3,966	1,186	24	18,678
4	*Chirocentrus*	380	1,754	1,256	332	109	307	246	...	4,384
5	(*a*) Oil sardine	..	..	4,882	20,388	4,332	845	..	..	30,447
	(*b*) Other sardines	2,058	11,454	11,658	13,771	2,186	563	..	..	41,690
	(*c*) *Hilsa ilisha*	81	614	72	50	31	277	1,196	...	2,321
	(*d*) Other *Hilsa*	..	..	..	..	..	...	..	..	..
	(*e*) *Anchoviella*	483	7,394	8,165	8,617	413	440	150	...	25,662
	(*f*) *Thrissocles*									
	(*g*) Other clupeids	296	3,913	2,158	1,620	197	8,159	3,122	1	19,466
6	(*a*) *Harpodon nehereus*	..	325	109	2	7	67,318	36,356	..	1,04,117
	(*b*) *Saurida, Saurus & Scopelus*									
7	*Hemirhamphus & Belone*	..	..	..	..	..	..	..	..	..

APPENDIX III (f)—*Contd.*

1	2	3	4	5	6	7	8	9	10	11
8	Flying fish	..	30	3,228	..	..	..	...	..	3,258
9	Perches	112	2,125	2,894	1,371	87	274	163	49	7,075
10	Red mullets	...	856	226	46	...	...	...	...	1,128
11	Polynemids	121	138	218	102	20	7,873	3,221	68	11,761
12	Sciaenids	174	6,766	5,309	2,800	1,045	19,997	7,144	47	43,282
13	Ribbon fish	224	2,605	12,062	10,469	212	5193	1,906	..	32,671
14(*a*)	*Caranx*	6*	6,041*	5,786*	5,706*	554*	217*	50*	..	18,360*
	(*b*) *Chorinemus*	..	..	..	..	..	..	..	..	..
	(*c*) *Trachynotus*	..	..	..	..	..	..	..	..	..
	(*d*) Other carangids	...	..	..	...	...	..	..	..	..
	(*e*) *Coryphaena*	..	..	..	..	..	..	..	..	..
	(*f*) *Elacate*	...	...	..	...	..	..	..	..	..
15(*a*)	*Leiognathus*									
	(*b*) *Gazza*	73	3,291	5,634	3,332	249	39	..	..	12,618
16	*Lactarius*									
17	Pomfrets	132	1,165	1,255	623	82	5,983	4,440	2	13,682

18 Mackerel	2	702	1,048	5,345	12,175	3,524	..	..	22,796
19 Seer fish	393	2,273	1,496	851	428	333	271	..	6,045
20 Tunnies	32	38	1,326	1,525	346	104	...	..	3,371
21 *Sphyraena*	..	..	210	150	26	7	..	..	393
22 *Mugil*	11	..	1	3	9	3	181	..	208
23 *Bregmaceros*	..	..	..	...	...	2,353	837	..	3,190
24 Soles	..	2	760	4,161	413	196	63	..	5,595
25(*a*) Penaeid prawns (*b*) Non-penaeid prawns (*c*) Other crustaceans	378	3,515	4,048	6,557	973	67,286	23,869	..	1,06,626
26 Cephalopods	..	..	..	..	..	..	..	..	..
27 Miscellaneous	601	5,384	6,830	7,891	108	2,979	193	113	24,099
TOTAL	5,968	64,114	90,782	1,05,457	30,684	2,08,686	89,697	337	5,95,725

* The figures relate to carangids.

APPENDIX III (g)

State-wise Marine Fish Landing in India during the year 1956 (*Figures in Tonnes*)

Serial Number	Name of fish	W. Bengal & Orissa	Andhra	Madras	Kerala	Mysore	Maharashtra	Gujarat	Andaman & Nicobar	Trawler catch	Total
1	2	3	4	5	6	7	8	9	10	11	12
1	Elasmobranchs	275	1,584	6,609	6,208	2,062	2,967	1,649	1	502	21,857
2	Eels	8	22	..	6	3	2,042	728	—	484	3,293
3	Cat fishes	117	1,093	4,307	9,362	3,193	3,666	1,394	—	175	23,307
4	*Chirocentrus*	197	476	2,591	300	125	2,376	854	—	3	6,922
5(*a*)	Oil sardine	..	..	552	5,065	1,369	414	12	—	..	7,412
(*b*)	Other sardine	1,350	6,747	13,166	13,461	1,044	585	89	9	2	36,453
(*c*)	*Hilsa ilisha*	328	542	21	33	21	198	742	—	—	1,885
(*d*)	Other *Hilsa*										
(*e*)	*Anchoviella*	242	7,641	8,287	9,611	408	610	193	3	3	26,998
(*f*)	*Thrissocles*										
(*g*)	Other clupeids	2,591	4,016	3,212	882	120	17,145	6,325	1	66	34,358
6(*a*)	*Harpodon nehereus*	3,052	96	1	1	5	73,458	51,068	—	32	1,27,713
(*b*)	*Saurida, Saurus and Scopelus*	..	164	212	5	38	528	184	—	36	1,167

7 *Hemirhamphus & Belone*	—	152	63	3	109	227	71	2	..	627
8 Flying fish	—	6	2,384	—	—	90	32	—	—	2,512
9 Perches	161	353	3,869	2,936	179	313	111	21	328	8,271
10 Red mullets	13	2,784	3,060	3,409	—	965	344	—	3	10,578
11 Polynemids	555	84	342	6	14	5,726	2,076	—	195	8,998
12 Sciaenids	533	6,541	9,899	7,563	1,782	22,426	7,828	—	865	57,437
13 Ribbon fish	1,377	2,177	9,003	4,046	254	5,312	2,310	—	2	24,481
14(*a*) *Caranx* (*b*) *Chorinemus*	34	3,278	14,305	36,598	1,268	918	212	9	6	56,628*
(*c*) *Trachynotus*	..	..	..	..	..	..	..	..	..	..
(*d*) Other carangids	..	..	..	—	..	..	—	..	—	—
(*e*) *Coryphaena* (*f*) *Elacate*	..	29	366	204	141	35	..	..	..	775
15(*a*) *Leiognathus* (*b*) *Gazza*	75	1,034	7,553	8,323	228	122	18	7	—	17,360
16 *Lactarius*	48	1,946	4,393	3,219	423	133	6	—	—	10,168
17 Pomfrets	184	1,294	2,045	2,647	198	4,238	2,054	—	41	12,701
18 Mackerel	17	1,110	1,286	8,986	3,177	1,634	213	4	4	16,431

APPENDIX III (g)—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12
19	Seer fish	171	1,204	3,739	1,878	2,634	2,046	579	11	3	12,265
20	Tunnies	48	126	1,527	1,755	87	94	26	..	7	3,670
21	*Sphyraena*	1	28	1,498	1,596	181	54	..	2	..	3,360
22	*Mugil*	9	2	27	22	1	..	194	2	..	257
23	*Bregmaceros*	..	..	..	..	..	965	345	..	..	1,310
24	Soles	..	3	125	7,614	723	534	111	..	12	9,122
25(*a*)	Penaeid prawns	3,882	4,401	8,543	14,086	305	25,376	10,284	2	31	66,910
(*b*)	Non-penaeid prawns	..	735	262	..	..	67,348	24,026	..	1	92,372
(*c*)	Other crustaceans	..	55	50	11	110	32	..	..	12	270
26	Cephalopods	..	..	..	..	..	..	..	..	..	..
27	Miscellaneous	614	2,753	1,839	2,377	77	1,946	3,940	3	362	10,911
	TOTAL	15,882	52,476	1,15,136	1,52,213	20,279	2,44,523	1,15,018	77	3,175	7,18,779

* The figures relate to carangids.

APPENDIX III (h)

State-wise Marine Fish Landings in India during the year 1957 *(Figures in Tonnes)*

Serial Number	Name of fish	W. Bengal & Orissa	Andhra	Madras	Kerala	Mysore	Maha-rashtra	Gujarat	Andaman & Nico-bar	Goa	Trawler catch	Total
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Elasmobranchs	104	2,201	5,440	3,644	1,807	6,791	2,646	1	..	447	23,081
2	Eels	3	53	85	3	6	3,590	1,937	..	..	720	6,397
3	Cat fishes	112	1,182	3,555	9,265	1,676	10,079	1,296	—	..	214	27,379
4	*Chirocentrus*	136	404	3,119	249	22	1,334	530	1	—	21	5,816
5(*a*)	Oil sardine	..	..	389	1,75,851	5,779	9,122	328	..	..	..	1,91,469
(*b*)	Other sardines	541	3,257	9,493	26,375	1,570	4,454	13	17	..	..	45,720
(*c*)	*Hilsa ilisha*	41	394	6	..	1	7	453	..	..	..	902
(*d*)	Other *Hilsa*	101	283	39	71	..	84	667	..	..	..	1,245
(*e*)	*Anchoviella*	545	6,945	3,129	2,046	17	12	..	6	..	..	12,700
(*f*)	*Thrissocles*	173	812	1,518	816	384	649	110	—	..	47	4,509
(*g*)	Other clupeids	613	2,310	1,757	3,249	738	13,983	7,926	2	..	85	30,663
6(*a*)	*Harpodon nehereus*	1,643	399	..	..	..	58,663	58,773	..	..	22	1,19,500
(*b*)	*Saurida Saurus* and *Scopelus*	..	63	140	1	2	4	..	..	—	2	212

APPENDIX III (h)—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13
7	*Hemirhamphus* and *Belone*	..	10	69	12	22	264	..	2	..	..	379
8	Flying fish	..	5	916	..	..	63	..	..	..	..	984
9	Perches	5	1,130	3,120	1,211	215	440	173	28	..	465	6,787
10	Red mullets	2	921	1,386	744	..	..	..	..	..	2	3,055
11	Polynemids	21	151	285	5	14	8,603	5,422	..	..	345	14,846
12	Sciaenids	543	3,304	4,963	2,148	2,325	10,677	5,010	..	..	1,002	29,972
13	Ribbon fish	917	2,909	11,458	14,688	46	6,433	1,959	..	..	17	38,427
14(*a*)	*Caranx*	37	476	5,351	4,438	121	292	28	9	..	15	10,767
	(*b*) *Chorinemus*	3	102	1,397	534	195	635	372	..	..	..	3,238
	(*c*) *Trachynotus*	..	5	..	..	..	..	..	..	..	..	5
	(*d*) *Coryphaena* & *Elacate*	..	17	154	79	60	113	..	..	..	..	423
15(*a*)	*Leiognathus*	232	5,347	4,476	4,781	1,885	147	..	6	..	35	16,909
	(*b*) *Gazza*	..	631	244	83	..	..	..	..	..	..	958
16	*Lactarius*	1	469	3,477	3,670	354	13	..	..	..	117	8,101
17	Pomfrets	255	1,546	1,790	551	27	6,621	5,360	..	..	55	16,205
18	Mackerel	83	1,005	1,400	26,187	55,754	4,575	..	5	..	1	89,010

19 Seer fish	157	1,107	3,767	2,096	731	720	325	11	..	7	8,921
20 Tunnies	..	18	1,518	1,150	24	293	10	1	..	..	3,014
21 *Sphyraena*	9	16	274	208	10	5	..	1	..	..	523
22 *Mugil*	4	17	63	427	4	2	530	2	..	2	1,051
23 *Bregmaceros*	..	..	..	..	..	1,083	55	..	..	..	1,138
24 Soles	3	213	156	2,724	172	292	106	..	..	21	3,687
25(*a*) Penaeid prawns	1,025	1,056	1,554	20,277	1,340	32,146	17,106	1	..	143	74,648
(*b*) Non-penaeid prawns	754	867	324	50	1	40,810	18,568	..	..	..	61,374
(*c*) Other crustaceans	5	252	238	76	43	158	4	..	..	15	791
26 Cephalopods	—	—	—	—	—	..	..	..	..	..	..
27 Miscellaneous	198	585	2,634	2,217	745	2,513	1,283	3	..	532	10,710
TOTAL	8,266	40,462	79,684	3,09,926	76,090	2,25,670	1,30,990	96		4,332	8,75,516

APPENDIX III (i)

State-wise Marine Fish Landings in India during the year 1958 (*Figures in Tonnes*)

Serial Number	Name of fish	W. Bengal & Orissa	Andhra	Madras	Kerala	Mysore	Maharashtra	Gujarat	Andaman & Nicobar	Goa	Trawler Catch	Total
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Elasmobranchs	145	2,731	6,470	6,103	2,683	4,130	1,401	1	..	622	24,286
2	Eels	..	28	12	30	27	5,495	3,014	..	..	553	9,159
3	Cat fishes	93	1,136	4,772	10,462	2,258	8,736	2,071	..	..	344	29,872
4	*Chirocentrus*	175	677	2,542	471	70	1,336	244	..	..	34	5,549
5(*a*)	Oil sardine	..	..	146	1,18,971	469	4,145	..	..	..	..	1,23,731
(*b*)	Other sardines	762	2,892	7,759	23,833	1,021	3,678	..	13	..	..	39,958
(*c*)	*Hilsa ilisha*	25	107	53	41	22	219	522	..	..	2	991
(*d*)	Other *Hilsa*	127	846	34	5	131	85	1,432	..	..	..	2,660
(*e*)	*Anchoviella*	377	3,703	19,054	6,038	1	165	..	8	..	..	29,346
(*f*)	*Thrissocles*	239	721	853	1,271	294	503	79	..	..	..	3,960
(*g*)	Other clupeids	749	1,755	2,066	3,313	268	4,689	2,439	2	56	244	15,581
6(*a*)	*Harpodon nehereus*	149	326	2	..	..	39,486	27,217	..	..	8	67,188

(*b*) *Saurida, Saurus & Scopelus*	..	114	112	1	..	2	..	..	..	9	238
7 *Hemirhamphus & Belone*	1	55	133	80	22	55	..	2	..	..	348
8 Flying fish	..	35	336	..	..	16	1	..	..	..	388
9 Perches	56	496	4,586	5,201	243	373	474	23	..	507	11,959
10 Red mullets	..	256	828	447	..	399	232	..	..	4	2,166
11 Polynemids	127	145	544	37	..	3,165	1,704	..	..	252	5,974
12 Sciaenids	357	2,467	4,995	4,072	1,432	7,798	3,183	..	..	1,261	25,565
13 Ribbon fish	589	1,310	24,545	8,233	42	5,173	1,969	..	..	57	41,918
14(*a*) *Caranx*	1	656	9,119	7,892	101	317	34	7	..	6	18,133
(*b*) *Chorinemus*	7	190	706	1,019	349	612	119	..	..	12	3,014
(*c*) *Coryphaena & Elacate*	..	33	244	167	206	170	..	..	..	..	820
(*d*) *Trachynotus*	..	..	59	..	..	..	..	..	..	..	59
15(*a*) *Leiognathus*	88	728	5,116	5,785	368	754	..	6	..	20	12,865
(*b*) *Gazza*	13	180	146	1	3	..	..	..	..	..	343
16 *Lactarius*	12	460	12,241	2,762	567	133	..	..	..	188	16,363
17 Pomfrets	410	1,792	1,644	1,776	46	6,466	4,388	..	..	65	16,587

APPENDIX III (i)—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13
18	Mackerel	37	293	393	55,476	65,365	1,707	1	10	..	..	1,23,282
19	Seer fish	86	944	3,513	1,291	1,147	579	311	11	..	7	7,889
20	Tunnies	19	23	777	1,660	210	550	--	..	..	..	3,239
21	*Sphyraena*	44	8	399	341	26	9	--	2	..	1	830
22	*Mugil*	85	30	45	11	--	119	435	3	14	1	743
23	*Bregmaceros*	..	--	--	--	--	3,168	716	..	..	..	3,884
24	Soles	20	73	119	10,939	1,606	32	41	--	4	26	12,860
25(*a*)	Penaeid prawns	481	1,516	1,028	13,973	650	6,359	5,196	1	..	..	29,204
(*b*)	Non-penaeid prawns	779	806	896	842	7	35,272	17,308	--	..	77	55,987
(*c*)	Other crustaceans	10	874	548	37	16	22	1	--	--	--	1,508
26	Cephalopods	--	--	--	--	--	--	--	--	3	--	3
27	Miscellaneous	204	440	1,221	2074	592	1,835	602	3	143	430	7,544
	TOTAL	6,267	28,846	1,18,056	2,94,655	80,242	1,47,752	75,134	92	220	4,730	7,55,994

APPENDIX III (*j*)

State-wise Marine Fish Landings in India during the year 1959 (*Figures in Tonnes*)

Serial Number	Name of fish	W. Bengal & Orissa	Andhra	Madras	Kerala	Mysore	Maharashtra	Gujarat	Andaman & Nicobar	Goa	Trawler Catch	Total
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Elasmobranchs	133	2,549	6,536	6,009	1,937	4,486	1,138	3	..	655	23,446
2	Eels	...	41	236	9	12	4,148	1,231	..	...	399	6,076
3	Cat fishes	135	894	2,444	5,116	6,657	4,189	615	..	..	222	20,272
4	*Chirocentrus*	146	740	2,012	444	375	1,183	484	1	..	43	5,428
5(*a*)	Oil sardine	..	1,080	...	62,036	3,321	2,797	..	..	..	..	69,234
(*b*)	Other sardine	391	2,448	8,143	18,412	1,736	9,804	1	19	..	213	41,167
(*c*)	*Hilsa ilisha*	75	129	24	14	..	112	488	..	..	2	844
(*d*)	Other *Hilsa*	19	836	153	81	109	126	1,704	..	..	18	3,046
(*e*)	*Anchoviella*	183	3,332	11,215	9,165	530	52	..	..	..	..	24,477
(*f*)	*Thrissocles*	29	568	1,567	4,023	1,223	652	40	6	..	..	8,108
(*g*)	Other clupeids	601	1,113	2,915	5,231	272	7,681	3,223	4	263	171	21,474
6(*a*)	*Harpodon nehereus*	119	525	2	...	5	27,279	29,266	..	..	14	57,210
(*b*)	*Saurida, Saurus & Scopelus*	5	38	326	205	1	21	..	..	..	1	597

APPENDIX III (*j*)—*Contd.*

1 2	3	4	5	6	7	8	9	10	11	12	13
7 *Hemirhamphus & Belone*	4	69	247	28	2	30	—	3	—	—	383
8 Flying fish	...	2	1,661	—	..	5	...	...	..	—	1,668
9 Perches	196	310	5,208	2,327	289	301	92	29	...	637	9,389
10 Red mullets	18	226	1,064	12	1	202	...	...	..	3	1,526
11 Polynemids	86	113	493	47	2	4,208	2,505	..	..	212	7,666
12 Sciaenids	235	2,377	5,196	3,197	2,067	4,628	1,779	..	..	963	20,442
13 Ribbon fish	219	2,979	19,837	6,400	77	1,770	512	..	..	36	31,830
14(*a*) *Caranx*	8	121	6,601	2,650	124	239	12	12	..	6	9,773
(*b*) *Chorinemus*	8	157	1,047	865	46	395	126	..	..	14	2,658
(*c*) *Coryphaena & Elacate*	..	19	250	99	41	61	..	..	..	1	471
(*d*) *Trachynotus*	..	..	2	..	..	..	..	..	..	..	2
15(*a*) *Leiognathus*	204	1,352	4,990	5,555	858	221	..	6	..	14	13,200
(*b*) *Gazza*	12	143	138	..	..	..	..	..	..	..	293
16 *Lactarius*	2	365	9,565	2,968	750	9	..	..	..	183	13,842
17 Pomfrets	163	1,170	2,239	1,296	121	10,143	2,181	..	..	76	17,389

18 Mackerel	79	434	975	24,689	29,332	6,675	..	14	..	..	62,198
19 Seer fish	95	1,004	2,593	1,402	642	632	191	10	..	21	6,590
20 Tunnies	35	41	377	2,238	109	62	..	1	..	3	2,866
21 *Sphyraena*	21	7	455	475	4	5	..	3	..	2	972
22 *Mugil*	2	9	35	13	1	4	174	7	1	..	246
23 *Bregmaceros*	...	1	...	..	..	3,182	638	..	..	..	3,821
24 Soles	56	72	341	9,372	264	235	15	...	1	5	10,361
25(*a*) Penaeid prawns	626	1,836	1,634	14,067	1,601	5,746	1,823	..	..	299	27,632
(*b*) Non-penaeid prawns	4	868	184	500	—	25,803	10,431	..	..	15	37,805
(*c*) Other crustaceans	1	1,118	761	117	78	16	..	..	1	1	2,093
26 Cephalopods	..	3	—	288	15	42	..	..	1	..	349
27 Miscellaneous	52	375	2,031	2,025	223	7,673	4,706	5	127	526	17,743
TOTAL	3,962	29,464	1,03,497	1,91,375	52,825	1,34,817	63,375	123	394	4,755	5,84,587

APPENDIX III(*k*)

State-wise Marine Fish Landings in India during the year 1960 (*Figures in Tonnes*)

Serial Number	Name of fish	W. Bengal & Orissa	Andhra	Madras	Kerala	Mysore	Maharashtra	Gujarat	Andamans	Laccadive	Goa	Trawler Catch	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Elasmobranchs	279	5,857	9,190	7,289	1,886	2,676	7,235	3	..	7	1,146	35,568
2	Eels	..	99	202	..	...	3,094	2,436	..	..	..	309	6,140
3	Cat fishes	146	1,656	2,026	11,177	2,337	3,861	3,426	..	..	..	412	25,041
4	*Chirocentrus*	298	1,223	2,371	286	204	679	244	1	..	..	14	5,320
5	Oil sardine	..	...	...	1,85,929	2,776	21	...	..	..	..	290	1,89,016
(*b*)	Other sardines	1,144	5,694	8,299	14,504	1,676	664	...	22	..	..	..	32,003
(*c*)	*Hilsa ilisha*	18	105	36	20	..	229	2,937	..	..	..	..	3,345
(*d*)	Other *Hilsa*	5	2,782	238	12	12	981	4,413	..	..	..	..	8,443
(*e*)	*Anchoviella*	285	7,519	12,507	14,164	1,408	1	..	..	..	..	1	35,885
(*f*)	*Thrissocles*	78	1,941	1,948	2,366	574	571	35	9	..	..	..	7,522
(*g*)	Other clupeids	542	1,693	3,018	5,361	358	7,257	1,880	3	..	380	162	20,654
6(*a*)	*Harpodon nehereus*	106	705	29	...	1	29,592	78,129	..	..	..	2	1,08,564

(*b*) *Saurida, Saurus & Scopelus*	3	118	339	16	1	5	..	..	..	..	..	482
7 *Hemirhamphus & Belone*	11	20	80	21	41	37	..	3	..	..	..	213
8 Flying fish	..	11	6,457	..	..	2	..	..	..	..	..	6,470
9 Perches	110	1,181	4,691	2,364	191	545	116	40	..	..	566	9,804
10 Red mullets	4	1,215	1,092	5	..	250	..	..	..	..	2	2,568
11 Polynemids	149	302	648	12	19	719	4,572	..	..	..	228	6,649
12 Sciaenids	425	4,389	5,783	4,476	1,610	4,630	2,291	..	..	..	1,343	24,947
13 Ribbon fish	360	2,423	11,915	633	152	1,771	206	..	..	..	7	17,467
14(*a*) *Caranx*	66	574	9,475	10,343	659	433	14	12	..	..	7	21,583
(*b*) *Chorinemus*	12	696	1,914	673	89	262	566	..	..	..	..	4,212
(*c*) *Coryphaena & Elacate*	..	55	212	177	35	21	..	..	..	..	..	500
(*d*) *Trachynotus*	..	2	..	..	7	..	..	..	..	..	..	9
(*e*) Other carangids	..	..	97	..	57	..	..	..	..	..	..	154
15(*a*) *Leiognathus*	140	3,152	6,058	5,809	518	44	..	5	..	..	34	15,760
(*b*) *Gazza*	12	582	40	..	..	..	..	..	..	..	..	634
16 *Hactarius*	..	1,093	5,869	6,314	1,083	89	..	..	..	..	54	14,502

APPENDIX III (k)—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14
17	Pomfrets .	207	2,440	2,325	353	329	3,856	12,279	..	..	..	61	21,850
18	Mackerel .	46	2,862	1,166	35,485	81,882	12,187	..	8	..	..	19	1,33,655
19	Seer fish .	204	1,402	2,651	2,174	1,157	388	630	9	..	..	35	8650
20	Tunnies .	5	91	381	4,046	204	367	..	1	454	..	66	5,615
21	*Sphyraena* .	11	9	614	1,319	5	22	..	5	..	..	..	1,985
22	*Mugil* .	..	48	51	4	7	132	648	5	..	17	..	912
23	*Bregmaceros* .	..	1	..	..	..	6,095	..	..	..	..	..	6,096
24	Soles .	51	157	660	12,715	388	120	6	..	..	5	6	14,108
25	(*a*) Penaeid prawns .	803	1,591	1,872	12,583	420	9,278	4,917	..	..	..	295	31,759
	(*b*) Non-penaeid prawns .	..	1,003	275	23	..	34,605	365	..	..	..	..	36,271
	(*c*) Other Crustaceans .	3	1,423	823	175	72	48	25	..	..	1	1	2,571
26	Cephalopods .	..	1	18	417	14	12	..	..	..	5	..	467
27	Miscellaneous	9	605	2,440	3,360	385	1,628	612	3	55	1,024	2,166	12,287
	TOTAL .	5,532	56,720	1,07,810	3,44,605	1,00,557	1,27,172	1,27,982	129	509	1,439	7,226	8,79,681

APPENDIX III (I)

State-wise Marine Fish Landings in India during the year 1961 (*Figures in Tonnes*)

Serial Number	Name of fish	W.Bengal & Orissa	Andhra	Madras	Kerala	Mysore	Maha-rashtra	Gujarat	Goa	Andaman & Nicobar	Minicoy & Laccadive	Trawler catch	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Elasmobranchs	209	8,155	10,110	8,403	953	2,501	2,226	..	3	25	969	33,554
2	Eels	..	959	123	2	..	9,785	194	..	..	..	317	11,380
3	Cat fish	158	1,494	2,135	3,113	436	1,957	1,178	..	..	..	457	10,928
4	*Chirocentrus*	227	1,992	3,139	280	81	905	122	..	1	..	1	6,748
5(*a*)	Oil sardine	..	..	1	1,66,006	1,417	460	..	..	..	..	..	1,67,884
(*b*)	Other sardines	1,727	5,891	6,346	5,213	294	266	11	..	16	..	..	19,764
(*c*)	*Hilsa Ilisha*	170	149	52	..	..	174	505	..	..	..	..	1,050
(*d*)	Other *Hilsa*	48	2,974	527	123	40	288	2,473	..	..	..	2	6,475
(*e*)	*Anchoviella*	468	4,367	10,831	6,112	94	223	8	..	..	..	..	22,103
(*f*)	*Thrissocles*	63	998	1,589	630	719	928	17	..	17	..	1	4,962
(*g*)	Other clupeids	674	1,739	3,989	351	396	6,698	1,113	140	2	..	154	15,256
6(*a*)	*Harpodon nehereus*	159	555	1	..	..	26,892	66,235	..	..	..	2	93,844

APPENDIX III (l)—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	(*b*) *Sanrida & Saurus* . .	8	263	589	5	..	..	..	..	..	..	..	865
7	*Hemirhamphus & Belone* .	11	46	97	128	68	140	..	..	3	..	..	493
8	Flying fish .	...	12	1,168	..	..	26	..	..	..	..	..	1,206
9	Perches . .	137	1,250	8,984	1,283	81	2,906	184	..	39	1	512	15,377
10	Red mullets .	18	238	1,336	226	1	341	..	..	..	..	5	2,165
11	Polynemids .	95	304	703	21	12	1,383	3,226	..	..	..	176	5,920
12	Sciaenids .	279	4,035	7,730	2,501	2,706	10,080	1,336	..	..	..	1,250	29,917
13	Ribbon fish .	361	3,681	8,371	4,047	59	2,434	557	..	..	..	5	19,515
14(*a*)	*Caranx* .	215	861	16,156	4,389	308	528	78	..	11	2	3	22,551
	(*b*) *Chorinemus* .	10	443	1,448	883	11	410	311	..	..	..	1	3,517
	(*c*) *Trachynotus*	..	2	5	..	..	..	..	..	..	..	..	7
	(*d*) Other carangids .	..	..	113	..	..	..	..	..	..	..	..	113
	(*e*) *Coryphaena* .	..	19	93	26	..	..	..	..	..	..	..	138
	(*f*) *Elacate* .	..	41	102	13	..	24	..	..	..	..	..	185

15(*a*) *Leiognathus*	750	2,054	6,330	6,060	317	207	—	..	11	..	34	15,763
(*b*) *Gazza*	46	70	85	—	—	—	—	—	..	..	..	201
16 *Lactarius*	—	1,044	6,175	1,416	111	137	—	—	—	—	15	8,898
17 Pomfrets	228	1,460	2,038	654	113	5,818	6,106	—	1	..	70	16,488
18 Mackerel	21	1,176	5,607	20,044	7,276	355	—	—	5	—	1	34,485
19 Seer fish	214	2,801	4,345	2,883	250	489	456	—	8	1	2	11,449
20 Tunnies	7	209	1,634	4,503	228	334	47	—	2	841	..	7,805
21 *Sphyraena*	9	10	1,091	234	20	21	1	—	3	—	..	1,389
22 *Mugil*	68	12	77	25	13	50	533	81	3	—	..	862
23 *Bregmaceros*	—	—	—	—	—	3,879	21	—	—	—	..	3,900
24 Soles	150	218	1,105	5,882	307	61	4	1	—	—	2	7,730
25(*a*) Penaeid prawns	1,612	2,797	1,819	20,393	545	8,166	3,012	—	1	—	738	39,083
(*b*) Non-penaeid prawns	..	689	1,008	43	10	21,744	190	—	—	—	1	23,685
(*c*) Other crustaceans	4	496	1,311	105	58	46	13	4	—	—	1	2,038
26 Cephalopods	6	—	5	28	1	53	—	1	—	—	..	94
27 Miscellaneous	772	1,002	5,133	1,468	318	1,130	1,239	225	5	2	2,488	13,782
TOTAL	8,924	54,506	1,23,501	2,67,493	17,248	1,11,839	91,396	452	131	872	7,207	6,83,569

APPENDIX III (*m*)

State-wise Marine Fish Landings in India during the year 1962 (*Figures in Tonnes*)

Serial Number	Name of fish	W. Bengal & Orissa	Andhra	Madras	Kerala	Mysore	Maha-rashtra	Gujarat	Goa	Andaman & Nico-bar	Minicoy & Laccadive	Trawlers catch	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Elasmobranchs	184	7,395	11,569	3,281	1,750	2,313	13,187	..	4	26	1,052	40,761
2	Eels	..	682	267	3	..	7,183	343	..	..	..	395	8,873
3	Cat fishes	129	2,606	3,672	1,702	484	2,065	8,145	..	3	..	521	19,327
4	*Chirocentrus*	149	1,257	6,251	179	87	747	225	..	2	..	1	8,898
5(*a*)	Oil sardine	..	..	..	91,203	14,099	4,995	2	..	..	..	..	1,10,299
(*b*)	Other sardines	1,049	7,783	5,847	3,889	237	690	40	..	16	..	..	19,551
(*c*)	*Hilsa ilisha*	9	27	194	..	53	177	1,187	..	..	..	2	1,649
(*d*)	Other *Hilsa*	17	4,329	940	63	48	178	3,466	..	3	..	..	9,044
(*e*)	*Anchoviella*	577	5,053	7,862	5,231	86	336	8	..	15	..	..	19,168
(*f*)	*Thrissocles*	46	1,303	2,539	1,136	208	612	27	..	..	..	1	5,872
(*g*)	Other clupeids	564	1,470	3,527	1,242	289	3,930	886	..	..	..	146	12,054
6(*a*)	*Harpodon nehereus*	159	485	..	..	..	28,835	54,454	..	..	..	..	83,933

(*b*) *Saurida & Saurus*	2	108	833	339	..	24	..	..	..	..	1	1,307
7 *Hemirhamphus & Belone*	3	9	83	16	20	12	..	..	4		..	149
8 *Flying fish*	..	28	4,124	..	..	2	..	..	..	..	..	4,154
9 Perches	68	1,215	3,196	892	142	2,948	118	..	36	1	342	8,958
10 Red mullets	6	525	194	526	..	333	..	..	..	..	12	1,596
11 Polynemids	2	403	822	37	65	653	730	..	..	..	90	2,802
12 Sciaenids	516	3,963	6,122	1,227	6,295	8,351	4,380	..	..	..	1,585	32,439
13 Ribbon fish	592	2,976	13,645	636	669	1,776	286	..	..	...	6	20,586
14(*a*) *Caranx*	78	473	5,154	1,228	211	113	73	..	10	6	18	7,364
(*b*) *Chorinemus*	16	1,132	1,827	208	18	143	169	..	..	..	4	3,517
(*c*) *Trachynotus*	..	4	7	3	..	...	..	..	..	..	..	14
(*d*) Other carangids	..	..	527	10	...	..	..	..	..	..	..	537
(*e*) *Coryphaena*	..	71	61	40	..	...	..	..	..	..	..	172
(*f*) *Elacate*	2	56	140	11	24	21	..	..	..	..	1	255
15(*a*) *Leiognathus*	472	2,082	6,360	5,281	3746	130	3	..	10	...	20	18,104
(*b*) *Gazza*	..	19	145	..	..	...	...	..	..	..	..	164
16 *Lactarius*	3	625	5,290	1,403	233	84	...	..	..	..	18	7,656

APPENDIX III (m)—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14
17	Pomfrets	138	3,759	2,499	9,549	137	4,006	5,519	..	4	..	67	25,678
18	Mackerel	15	601	3,115	11,938	11,446	1,971	..	..	15	..	2	29,103
19	Seer fish	139	4,347	3,955	1,533	234	458	247	..	15	12	1	10,941
20	Tunnies	17	994	262	723	..	151	16	..	1	132	1	2,297
21	*Sphyraena*	1	79	978	54	1	..	4	..	3	..	..	1,120
22	*Mugil*	..	6	232	50	3	104	482	..	3	..	..	880
23	*Bregmaceros*	..	..	..	..	..	3,162	2	..	..	..	..	3,164
24	Soles	106	162	947	16,189	205	25	9	..	..	..	1	17,644
25(*a*)	Penaeid prawns	2,178	1,305	2,526	29,218	2,379	8,077	1,498	..	1	..	1,069	48,251
(*b*)	Non-penaeid prawns	27	374	10	..	..	33,725	848	..	..	..	..	34,984
(*c*)	Other crustaceans	..	213	755	22	35	2	4	..	..	..	..	1,031
26	Cephalopods	12	5	2	16	7	53	1	..	..	..	..	96
27	Miscellaneous	672	2,103	4,956	2,343	693	5,323	1,390	..	10	1	2,361	19,852
	TOTAL	7,948	60,027	1,11,435	1,91,421	43,904	1,23,708	97,751	..	155	178	7,717	6,44,244