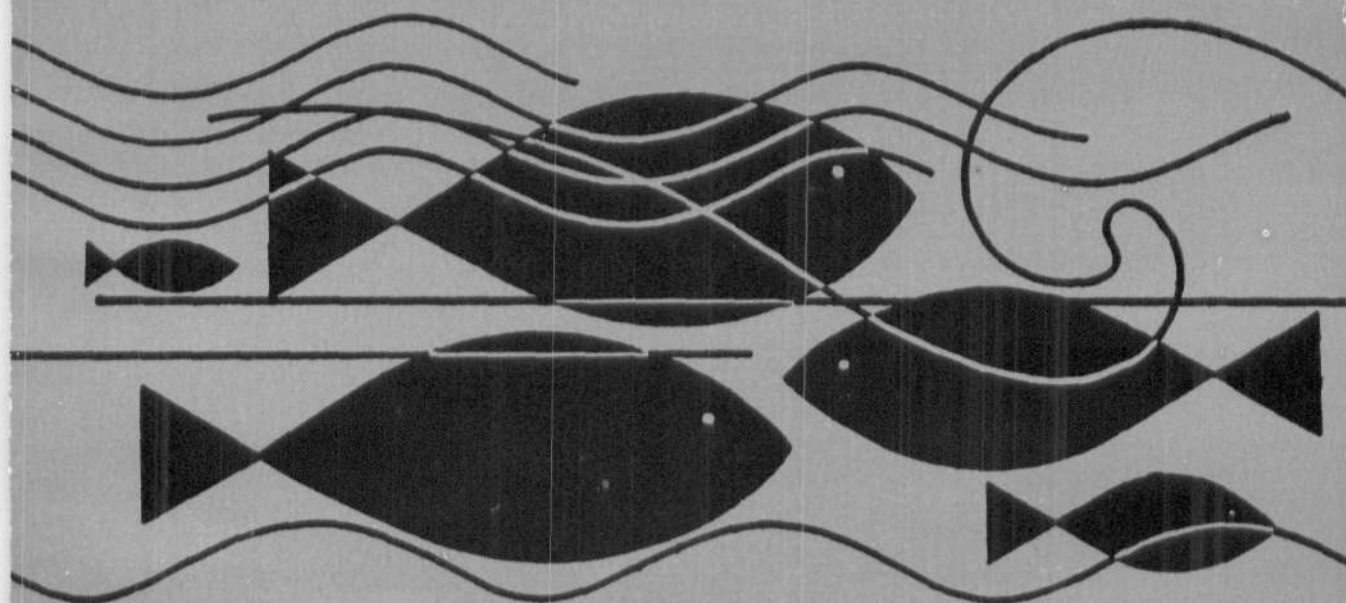


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an
appraisal
of the
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of
lakshadweep and
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Central Marine Fisheries Research Institute
P. B. No. 2704, E.R.G. Road, Cochin 682 031, India
Indian Council of Agricultural Research
September 16-18, 1987

**AN APPRAISAL OF THE MARINE FISHERIES
IN THE ISLAND TERRITORIES LAKSHADWEEP AND
ANDAMAN AND NICOBAR ISLANDS**

K. ALAGARAJA

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PREFACE

The Central Marine Fisheries Research Institute, Cochin, is the premier organisation in the country conducting research in marine fisheries, leading to rational exploitation, management and conservation of living marine resources. The Institute, since its inception, has been collecting data on the catch and effort along with biological information on the exploited marine fisheries resources of the country, using a standardised, stratified, multistage random-sampling method. In addition to making use for biological studies, including assessment of stocks, these data have been processed and utilised to furnish estimates of annual marine fish production in different states over the past 38 years.

With the changed objectives and functions of the Institute in recent times, greater emphasis has been laid on the assessment of stocks for better management, and also to indicate the possible sources of additional production in the context of modern technological innovations in fishing practices and consequent increase in the capability of fishing of both traditional and mechanised sectors.

With the continued increase in fishing effort and intense exploitation of certain resources in different parts of the country, a need has arisen to examine critically the present status of exploited stocks, the fishing intensity, the number of boats and types of gear, the infrastructural facilities for handling, storage, transportation and marketing of catches, the status of the under exploited resources, and the new or additional resources available beyond the presently exploited areas of each maritime state to provide necessary technical

advice to the respective governments for rational exploitation, management and conservation of the resources.

It is with this in view that the data pertaining to each maritime state and Union Territory for the period 1975-84 are presented as separate special publications. This number deals with the appraisal of the marine fisheries of the Union Territories Lakshadweep and Andaman and Nicobar Islands. Data for this Number are supplied by the respective Directorates of Fisheries, which is gratefully acknowledged.

I have great pleasure to place on record my appreciation of the effort put in by Dr. K. Alagaraja to bring out this Number.

P.S.B.R. James
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AN APPRAISAL OF THE MARINE FISHERIES IN THE ISLAND TERRITORIES LAKSHADWEEP AND ANDAMAN AND NICOBAR ISLANDS

K. Alagaraja

INTRODUCTION

Lakshadweep and Andaman & Nicobar Islands, the two Union Territories situated in the Arabian sea and Bay of Bengal respectively, are strategically important to India in many ways. With regard to the marine fisheries in these territories, there is a vast scope to improve, enlarge and intensify the activities in order to reap a good harvest in a sustainable manner. In this volume an account on the status of marine fisheries of Lakshadweep is dealt with first, followed by the account on Andaman and Nicobar Islands, hereafter referred to as Andamans. In the Numbers concerned with the other maritime states of India, the data on census of marine fishermen population, craft and tackle etc. and on the exploited marine fishery resources have been collected, processed and analysed by the Central Marine Fisheries Research Institute, Cochin. Whereas, for these two Island territories the data have been obtained from the respective Fisheries Directorates. For the exploited marine fishery resources data for the ten year period 1975-84 have been considered.

The Union Territory of Lakshadweep with an area of 28.5 sq. km. lies between 8° and 12° 30'N latitudes and 71° and 74° E longitudes. Coral reefs, atolls and lagoons are some of the characteristic features of these Islands. Among the 27 Islands only ten are inhabited. Located on the Laccadive Chagos ridge, this territory is subject to both the monsoons. During

June-September the southwest monsoon showers on these Islands, followed by the northeast monsoon during November-February. The climate is more or less the same as that of Kerala. The flora and fauna of the coral reefs and the marine resources are greatly influenced by the lagoons of this region. The backbone of economy of this Union Territory are tuna and coconuts.

The Andaman group of Islands, fringed by lagoons and coral reefs, is situated between 6° and 14°N latitude and 92° and 94°E longitude in the southeast Bay of Bengal. More or less at an equidistance of about 1200 km from Calcutta and Madras, these Islands enjoy both the monsoons. However, the rainfall from southwest monsoon is more. Some Islands are blessed with perennial streams and rivers. Owing to the tropical climate most of the Islands are covered with tropical forests. Peculiarly, in this Union Territory fishing is not a traditional occupation. Fishing is mostly done by the fishermen families of West Bengal, Andhra Pradesh and Kerala who have settled there. With Port Blair as the base, Fishery Survey of India, the erstwhile Exploratory Fisheries Project, had conducted many surveys to assess the marine fishery resources of the region.

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MARINE FISHING VILLAGES, FISH LANDING CENTRES, FISHERMEN POPULATION, CRAFT AND GEAR AND INFRASTRUCTURE FACILITIES OF LAKSHADWEEP

The data on fishing villages, fishlanding centres, census of fisherfolk, their educational status, and craft and gear particulars have been obtained from the Directorate of Fisheries Department of Lakshadweep Union Territory. There are 10 fishing villages and 11 landing centres in Lakshadweep. There are about 10,700 fisherfolk. Among them 6,900 are adults and the rest are children. Males and females in the adult population form 57% and 43% respectively, males numbering about 3,900 and females 3,000.

There are 3,680 fisherfolk who have received education of primary to higher levels. Those who have received the primary level education are 2,500 (68%) followed by 760 secondary level (21%) and 430 above—secondary level (11%).

There are 3,750 fishermen engaged in actual fishing, among whom 2,100 persons are engaged in full-time fishing, 200 in part-time fishing and the rest 1,450 in occasional fishing

Of the fishing craft, about 235 are mechanised and 488 are non-mechanised in the Lakshadweep groups of Islands. Mechanised boats used for pole-and-line fishing form about 49%, numbering 114, followed by those for troll line 45% (106) and long line 6% (15). Under non-mechanised group, all the 488 boats are plank built boats.

There are about 600 gill nets, 210 boat seines (drag nets), 305 shore seines and 1,360 cast nets. These are in addition to 1,500 units of hooks and lines and 115 units of pole and line.

Each landing centre is provided with a jetty for landing facilities, thus accounting for 11 jetties in the Union Territory. There is one slipway at Kavarathi. At Minicoy there is one ice factory and a cold storage.

EXPLOITED MARINE FISHERIES IN LAKSHADWEEP

As mentioned earlier, groupwise annual marine fish landings for the ten year period 1975-84 are obtained from the Directorate of Fisheries, Lakshadweep and the same are presented in the Appendix. The average annual marine fish landings were 3,500 tonnes during the decade. Though there were fluctuations in the annual total landings during 1975-79 with the minimum of 2,300 tonnes in 1977 and the maximum of 3,800 tonnes in 1977, a steady increase from 2,900 tonnes in 1980 to 5,330 tonnes in 1984 has been noticed during the rest of the period under review.

Groupwise Contribution: Major contribution to the total landings has been accounted for by tunnies forming about 68% in the average. The overall trend in the landings of tunnies during the ten year period is the same as that of total marine fish landings in the region during the decade thus clearly indicating the dependence of marine fisheries of Lakshadweep

on this single group. Fluctuations have been observed in the landings of tunnies in the first five years without having any clear cut trend. However, in the rest of five years an increasing trend has been found. The maximum landings of 4,300 tonnes recorded were in 1984 and the minimum of 1,170 tonnes in 1977. Major species that contribute to tuna fisheries of this area are the oceanic species of tunas. The dominant species among them are skipjack and yellowfin tuna.

Other groups that contributed to the average total annual landings, in the order of abundance were elasmobranchs (290 tonnes), perches (230 tonnes), carangids (90 tonnes), halfbeaks & fullbeaks (80 tonnes) and bill fishes (40 tonnes) each contributing below 10% only. Fluctuations in these groups were not that much to affect the total landings as the contribution from each group was not significant. October to March is the best season accounting for more than 75% of the total annual catches, reflecting the westcoast fishing season.

Gearwise Contribution: The data pertaining the last five years of the decade under review are considered under this item. Gearwise details are given in Table 1.

From the Table 1, it is evident that major contribution comes from pole and line. The increasing trend in its contribution has been clearly reflected both in total landings as well as in the landings of tunas. An average the annual contribution is estimated at about 2,300 tonnes during

Table: 1. Annual gearwise catches (in tonnes) in Lakshadweep during 1980-84.

Gear	1980	1981	1982	1983	1984
Pole and line	1160	1636	2366	2573	3713
Trollline	854	878	966	921	828
Castnet	56	25	27	35	24
Shoreseine	410	401	462	508	382
Gillnet	128	128	112	137	77
Harpooning	72	36	41	89	102
Handline	4	7	7	11	7
Longline	225	189	220	268	198
Total	2909	3300	4201	4542	5331

this 5 year period accounting for about 56% in the total landings. The next major gear is troll line contributing about 890 tonnes annually on an average accounting for 22% in the total landings followed by shoreseine with a contribution of 11%, longline 5%, gillnet 3%, harpooning 2%, castnet 1% and the rest by handline. There is no clear cut trend in the landings of these gears as in the case of pole and line.

SCOPE FOR INCREASING THE MARINE FISH LANDINGS IN THE UNION TERRITORY OF
LAKSHADWEEP

At present, fishing is done mostly in the nearshore waters using pole and line. Pole and line fishing is done by using live-bait to catch tunas, the mainstay of marine fisheries in this Union Territory. In case the availability of live-bait resources is affected it certainly will reflect on the tuna landings and hence on the total marine fish landings of Lakshadweep. These bait fishes are coral-associated. At present corals both live and dead are heavily exploited thus effecting the live-bait resources. Hence to maintain the present level of exploitation, the ecological niche of the region should not be disturbed and culture of live-bait fishes may be attempted.

From the present level of exploitation there is no much scope to increase the yield. Extension of operation over the space and species may have greater scope to increase the catches. Indications are there to increase the yield from tunas by introducing larger boats for pole and line (Silas and Pillai, 1982) with better navigational and storage facilities. Attempts should be made to exploit other groups of fishes available in these waters. It has been pointed out that there is a very good scope to exploit fishes other than tunas such as carangids, perches and sharks (Kumaran and Gopakumar, 1986).

Using conventional methods it is very difficult to assess the potential yield of tunas which are migratory. The assessment made by George et al.(1977) indicates on exploitation potential of about 50,000 tonnes. Fishery resources survey of the seas around the Lakshadweep Islands may be undertaken to assess the exploitation potential of all the resources including tuna.

CENSUS ON FISHERMEN POPULATION CRAFT AND GEAR ETC. IN THE UNION TERRITORY OF
ANDAMANS

Andaman and Nicobar Islands have a coast line of about 1,962 km. The continental shelf area is only 16,000 sq. km as the seas around the Islands are deep within a short distance from shore. An area of about 0.6 million sq. km is coming under EEZ around this group of Islands.

As mentioned earlier there are no traditional fishermen in these Islands. Present day fishing is mostly done by the fishermen of mainland settled here. There are about 2,300 fishermen among whom 1,700 are engaged in full time fishing, 400 in part time and the rest in occasional fishing.

There are about 945 fishing craft in this Union Territory of which 900 are country craft and the rest are mechanised ones. Due to unfavourable bottom topography, trawling is not done here. Among the gear, gill nets dominate numbering about 700 followed by 562 cast nets 26 anchor nets and 19 shore seines. Apart from these there are a large number of hooks and lines.

There are 2 jetties at Port Blair available for berthing and unloading for fishing vessels apart from ten other jetties in different Islands used for transport facilities between Islands. These ten jetties can also be used by fishing craft for their purposes. One ice plant having a capacity of 5 tonnes with a cold storage capacity of 15 tonnes is available at Port Blair (Anon, 1980).

EXPLOITED MARINE FISHERIES IN ANDAMANS

Over the ten year period namely 1975-84, there was an increasing trend in the total marine fish landings in this Union Territory through out. From 1975 to 1981, the increase was, however, not that significant when compared to the increase in the rest of the period. In the first seven years the total landings increased from 1,100 tonnes to 1,860 tonnes registering a growth of 69% whereas in the later part the landings increased from 1,860 tonnes in 1981 to 6,200 tonnes in 1984 registering an impressive growth of 233%. The average annual marine fish landings during the decade under review was 2,500 tonnes.

Groupwise Contribution: From the table given in the Appendix on the composition of marine fish landings during 1975-84 it is clear that there is no single dominant group contributing even 20% of the total landings. Among the groups other sardines contributed about 16% to the average annual landings during the decade. Starting with a contribution of about 70 tonnes in 1975 this group contributed 1,100 tonnes in 1984 with an average of 410 tonnes. As in the total landings, the jump in the landings of other sardines was noticed in 1982 with 970 tonnes when compared to 260 tonnes in the previous year. Next in order of abundance comes perches with an average landings of 330 tonnes forming 13% of the total average annual landings. In the landings of perches, however, there is no increasing trend throughout the ten year period. Silver bellies is the third largest group

The over all trend is clearly reflected in the landings of south Andaman except in the year 1983 when the landings were less than in 1982. The sudden increase in the total landings from 1982 onwards was also due to the sudden increase in the landings of South Andaman during these years. From the Table, it is clear that Andaman group of Islands contribute the maximum to the landings of the Union Territory.

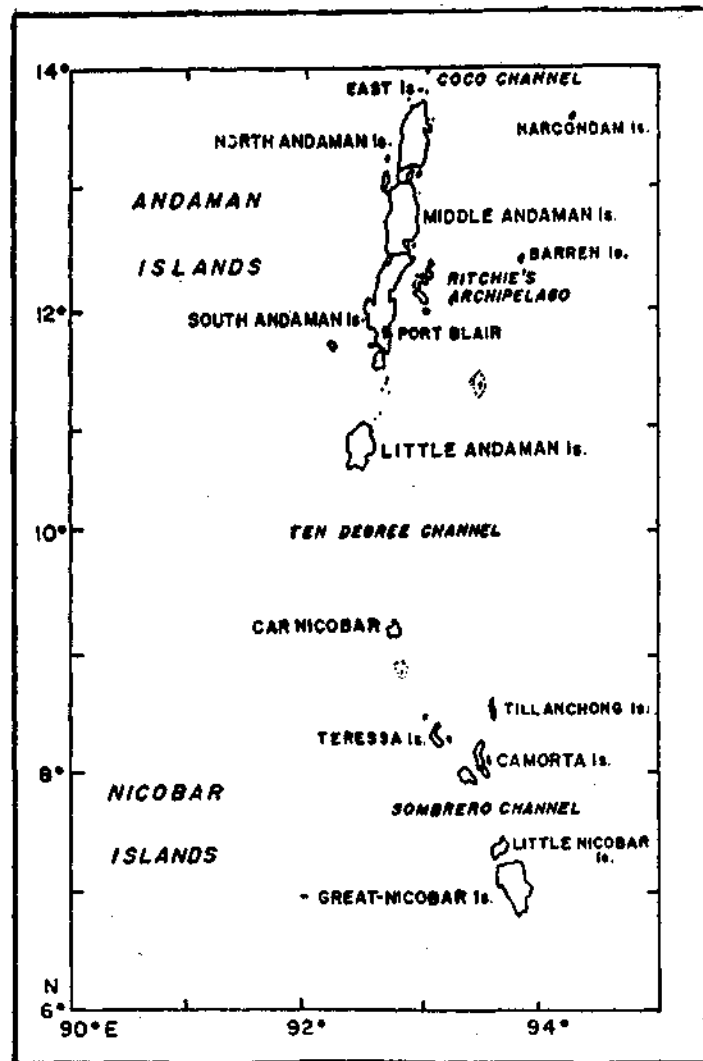
TABLE 4: *Regionwise marine fish landings (in tonnes) in Andamans during 1980-84*

Region	1980	1981	1982	1983	1984
Mayabunder	87	85	191	229	523
Diglipur	155	141	129	168	215
Rangat	188	148	316	489	582
South Andaman	1268	1347	3035	2553	4267
Little Andaman	—	—	—	66	107
Car Nicobar	15	26	23	120	184
Nancowry	15	25	49	81	110
Great Nicobar	75	90	116	161	138
Total	1803	1862	3859	3867	6226

The overall trend is clearly reflected in the landings of south Andaman except in the year 1983, when the landings were less than in 1982. The sudden increase in the total landings from 1982 onwards was also due to the sudden increase in the landings of south Andaman during these years. From the Table 4, it is clear that Andaman group of Islands contribute the maximum to the landings of the Union Territory.

SCOPE FOR INCREASING THE MARINE FISH LANDINGS IN THE UNION TERRITORY OF ANDAMAN AND NICOBAR ISLANDS

From the data on marine fish landings it is seen that maximum landings have been accounted for from the Andaman Islands only, and that too south Andaman. One of the factors for such contribution is the availability of infrastructure facilities in this region. Since other regions of these Islands are not less productive, it may safely be assumed that if the present level of exploitation available in the south Andaman region is extended to these regions there is ample scope to increase the marine fish landings from this Union Territory. For this Union Territory also the present data base is not strong enough for assessment of potential yield. However, exploratory surveys conducted by Government of India vessels (Sudarsan, 1978) and studies made on the basis of primary productivity etc (Abidi, 1979; Sivaprakasan, 1979; Kumaran, 1973 and George et al., 1977) have indicated a potential harvestable stock in the range 50,000 tonnes-1,60,000 tonnes. Apart from these resources, there is vast scope to exploit molluscan resources available in these waters.



Andamans & Nicobar islands

From the foregoing it may be stated that the potential harvestable stock is many times more than the present landings. Whatever that may be, the basic questions to be answered in such estimates are on the commercial importance of the species available for exploitation and the economic viability of fishing operations. Since the species indicated in the above studies are commercially important, harvest, post harvest and marketing facilities have to be developed, improved and intensified as per the requirements of each region, in order to increase the fish catch from this Union Territory, otherwise exploited by foreign vessels.