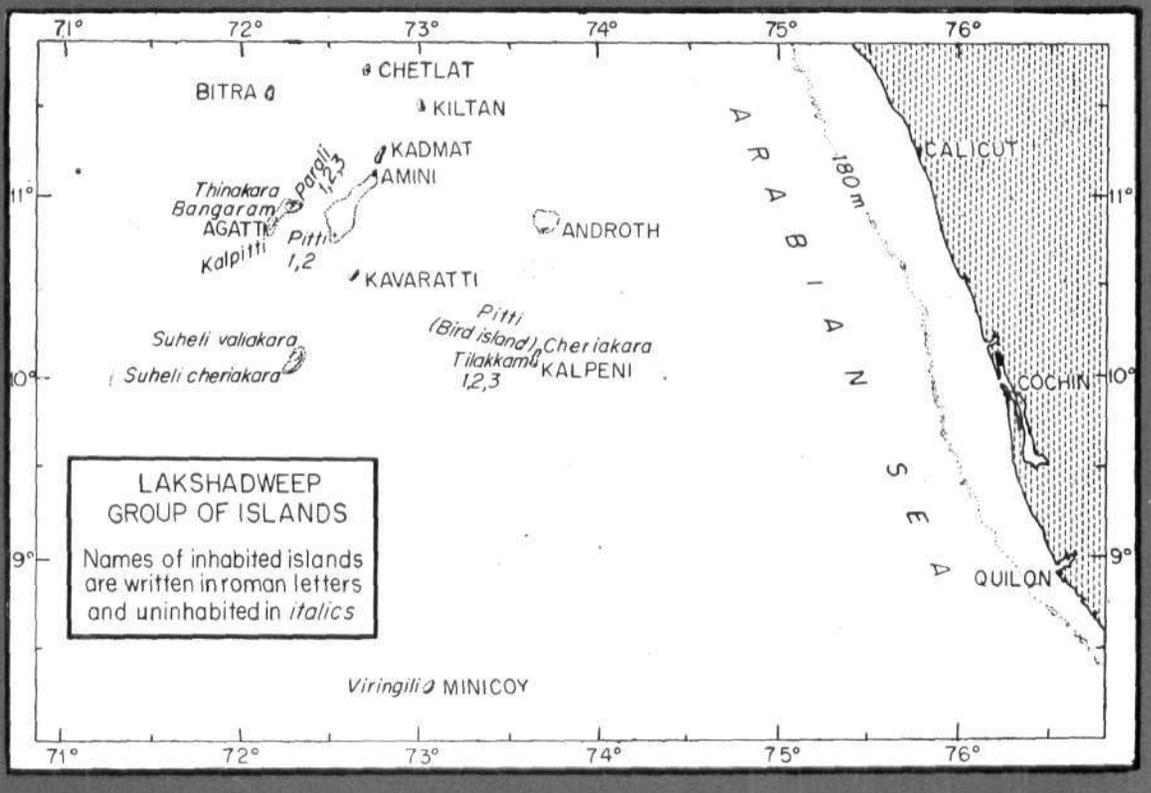
MARINE FISHERIES INFORMATION SERVICE

SPECIAL ISSUE ON LAKSHADWEEP



No. 68

JULY, 1986

Technical and Extension Series

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE

COCHIN, INDIA

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

LAKSHADWEEP — GENERAL FEATURES AND SOME CONSIDERATIONS

S. Jones*

Rtd. Director, Central Marine Fisheries Research Institute

The Union Territory of Lakshadweep, internationally known as the Laccadives, consists of 10 inhabited islands and 17 uninhabited islets with a total land area of 28.5 sq. km lying between 8° and 12° 30′ N latitudes and 71° and 74° E longitudes. These consist of coral formations built up on a submarine ridge rising steeply from a depth of about 1500 m to 4000 m off the west coast of India. In fact the Laccadive, Maldive and Chagos Archipelagoes form an interrupted chain of coral atols** and reefs on a contiguous submarine bank covering a distance of over 2000km (Fig. 1). Comparatively the Maldives form the largest group among these with about 1100 islands of which 204 are inhabited and having a total land area of 320 sq. km. The population of Maldives is about 1,80,000 as against about 35,000 in Lakshadweep. The Chagos never had any indigenous population and was colonised only in the last century when it formed a part of the Mauritius Administration under the British. It has since been given to the Americans for the establishment of the naval base of Diego Garcia.

The Lakshadweep came under the Central Administration in 1956 with the reorganisation of states on linguistic basis and with it one can rightly say that the area entered into a new phase of progressive development. Till then there was hardly any unified or concerted administration and the islands were under the control of the collectorates of Malabar and South Kanara districts of the erstwhile Madras State, a continuation of the legacy of British suzerainty over these islands that came in two phases, the southern islands in 1792 with the fall of Cannanore and the northern islands in 1799 with the death of Tippu Sultan at the battle of Seringapatnam. The people of the southernmost island of Minicoy are ethnically related to Maldivians and speak the Mahl or Divehi language while the rest speak Malayalam with a characteristic local slang as a result of isolation.

Information in detail about Lakshadweep relating to its geographical features, land fauna and flora, history etc. can be had from Ellis (1924) and Mannadiar (1977). The particulars regarding the inhabited islands are given in Table-1.

The uninhabited islands numbering 17 have a total land area of only 2.3 sq. km and of these Bangaram as a tourist resort and Suheli as a coconut growing and fishing centre are of special interest. Pitti or the bird island is a small reef with a sand bank covering an area of 1.21 hectare lying 24 km northwest of Kavaratti where terns in thousands nest.

The atols** rest on an under water platform of about 100 fathoms deep. Corals cannot grow very deep in the ocean and what we see at present depicts millenia of interaction between the submarine bank, tectonic activity and the level of the ocean, particularly during the Pleistocene period, when a great quantity of water was locked up in continental glaciers. The rims of the atols can grow only to a height which would prevent its exposure during low tides. A reef rimming an atol may be about 300 metres or more across with channels in its perimeter allowing the inflow and outflow of water in the lagoon with the tides. The islands are formed by the accumulation of coral sand in the form of sand bars which eventually get stabilised with vegetation and in course of time get compressed into soft sandstone. Generally the height of land above sea level is about one to two metres, rarely in some places a little more. Some of the islands, subjected to heavy storms, have coral boulders heaped up on one side.

Androth has no lagoon unlike the other atols. Bitra has perhaps the most magnificent lagoon; the island having a land area of only 10.52 hectares. Similarly Minicoy also has a large and deep lagoon, with a

* Santinivas, Nanthancode, Trivandrum.

** "Atoll" or "atol" is derived from the Divehi (Maldivian) world "*atolu*". According to Bell (1940) the eminent archaeologist who did the pioneer research in the Maldives, the word should be spelt "atol" and not "atoll".

Table 1. *Inhabited Islands (Alphabetically arranged)**

Sl. No.	Name	Geographic location	Distance from Cochin in nautical miles	Area in sq. km	Population (1971 census)	Language
1.	Agatti	Lat. 10° 51′ N Long. 72° 11′ E	248	2.7	3155	Malayalam
2.	Amini	Lat. 11° 07′ N Long. 72° 44′ E	220	2.6	4542	„
3.	Androth	Lat. 10° 49′ N Long. 73° 41′ E	158	4.8	5425	„
4.	Bitra	Lat. 11° 36′ N Long. 72° 10′ E	261	0.1	112	„
5.	Chetlat	Lat. 11° 41′ N Long. 72° 43′ E	233	1.0	1200	„
6.	Kadmat	Lat. 11° 13′ N Long. 72° 47′ E	220	3.1	2416	„
7.	Kalpeni	Lat. 10° 05′ N Long. 73° 39′ E	155	2.3	3152	„
8.	Kavaratti	Lat. 10° 33′ N Long. 72° 38′ E	213	1.6	4420	„
9.	Kiltan	Lat. 11° 29′ N Long. 73° E	218	3.6	2046	„
10.	Minicoy	Lat. 8° 17′ N Long. 73° 04′ E	215	4.4	5342	Mahl (Divehi)

boat channel on the north-eastern side giving safe access and anchorage to vessels of about 3 m draught.

The outer edges of the atols drop precipitously to the ocean floor. Mostly on the eastern side, the outer edge of the atol overhangs the precipitous shelf. The eastern side is generally more sheltered from wind and current facilitating anchoring of vessels.

Availability of drinking water is the most essential requirement for the colonisation of the islands. The rainfall is a little more in the south than in the north showing an average of about 1,640 mm for Minicoy and 1,504 mm for Amini. The rainiest months are from June to September with June receiving the maximum amount. The rain-water sinks into the porous sand of the islands to form a subsurface layer of fresh water lens which is utilised by digging small wells about 2 to 3 metres deep.

The climate is more or less comparable to that of the coastal areas of Kerala, warm and humid but bearable. Maximum temperature may range from 35°C to 38°C and the minimum may come down to 17°C to 18°C. Occasionally cyclonic storms occur, the oldest and the most serious recorded being the one that struck Kalpeni and Androth on April 15, 1847. The subsequent ones were in 1891, 1922, 1948, 1963 and 1965 but never of the magnitude of the first one.

The mineral resources of the islands consist of low grade phosphates, derived out of bird droppings before the islands were colonised by man, and calcium carbonate sands. Exploitation of these are linked with the very existence of these islands and any attempt made in this direction should not turn out suicidal.

The two most important items coming under the flora and fauna of the islands are the coconut and fishes which form the mainstay of the people of the islands. Coconuts form the real tree of life of the islanders and every part of it is of use to them in one way or other. There are several kinds of plants in the islands but none

* The area of Androth is given as 4.8 sq km. and that of Minicoy as 4.4 sq. km. Minicoy is considered the largest of the islands in the Laccadive Archipelago with an area of 1,120 acres with Androth coming next with an area of 1,067 acres (Ellis 1924). It therefore remains to be checked if the areas given for the two islands in the gazetteer should be interchanged.

of such importance as the coconut tree. No cereal of any significant importance is grown in the islands. Plantains and a variety of ordinary vegetables are grown for home use. There are some trees like jack, mango, breadfruit, Indian laurel, portia etc. The drumstick plant is widely distributed. Tubers and underground stems like tapioca, yam and colocasia, gourds, legumes etc are cultivated in small quantities for local use. A variety of wild herbs and shrubs grow and new plants are occasionally introduced from the mainland. The area available is so limited and the population is registering such a steady increase that there is very little space for any large scale cultivation. Further, there is limitation regarding availability of water for any extensive agricultural operations.

Until the territory came under Central Administration, large scale fishing was in vogue only in Minicoy. Within the last quarter of a century remarkable strides have been made in fishery development. The Central Marine Fisheries Research Institute has made a comprehensive study of the fish fauna of the entire Archipelago (Jones & Kumaran, 1980). The progress made in fishery development will be dealt with in detail by the concerned persons elsewhere in this volume. There is no land fauna of any special importance except perhaps the tree rat which is of a very destructive nature.

The people there are all muslims who are very devoted to their religion. They are very peace loving, and criminal records are few and far between, perhaps the lowest in the Indian Union. Till it became a Union Territory no permanent police force was stationed in the islands. Records of criminal assaults are reported to be very few and murders are practically unknown, perhaps one in a few decades. However, their propensity to litigation is said to be rather high, an outlet for their emotions being probably found in this sort of diversion! A certain type of caste system was in existence evidently based on their background as migrants from India before islamisation. The social structure in Minicoy bears close affinities with that in the Maldives. The *Athiri* or the village system is of a special kind there and the women there have a very dominant position in the society, perhaps unlike anywhere else among the Muslims. Even in ancient days it had a special status and was reported to have been ruled by queens. The inhabitants of all the other islands are migrants from Kerala several centuries ago. Maloney (1980) after a comprehensive study of the social conditions in the Maldives has compared the same with those of Lakshadweep. This and the publication by Kutty (1972) may be referred for details.

General remarks

Having had the opportunity to visit all the inhabited islands in Lakshadweep and make a general study of the conditions there, I take the liberty of offering some general remarks as my personal views for the consideration of the planners who contemplate to develop the economy of these islands in the coming years. The 27 islands ranging in area from about a hectare to nearly 5 sq. km have total land area of only 28.5 sq.km forming nothing but little specks in the Indian Ocean, with a water spread of over 73 million sq.km. The tiny bits of land rising hardly 2 m above sea level has perhaps the most mysterious origin covering millions of years owing to a continuous process of growth, destruction and consolidation, involving millions of tiny organisms, mostly colonial. The submarine bank that supports the atols rise from depths ranging from 1,500 metres to 4,000 metres. In short the islands arise more or less steeply from great depths. The particulars of the great cyclonic storm of April, 1847 that hit Kalpeni and Androth as stated briefly in the Gazetteer (Mannadiar, 1977) are given below.

"...It commenced in Kalpeni about 8 P.M. on 15th April, passed to Androth and finally reached Kiltan after devastating these two islands. All the houses in Kalpeni were damaged and many were entirely washed away. The population of that island prior to the hurricane was reckoned at 1,642. Of these, 246 were drowned or washed away by the storm. One hundred and twelve perished in the ensuing five months from famine or from the diseases engendered by unwholesome and insufficient food, 376 escaped to the coast, leaving in the island 908, of whom nearly four-fifths were women and children. The plantations in the island were completely destroyed. Out of upwards of 1,05,000 full grown coconut trees, the number before the storm, only 768 survived. In Androth, the population before the storm was 2,576. Many people perished in the storm and large numbers of the survivors migrated to other islands. Those left in the island numbered only 900. The coconut trees were almost completely destroyed".

The above will give an idea of the conditions of existence of these islands. They are beautiful, idyllic and exhilarating but once any rise happens to the sea level - a mere metre and a half - the yawning and precipitous sea bottom is the fate! We have to bear in mind the above fact while planning.

Development of cottage industries, I am sure, will receive the attention of planners and these are therefore,

left to the experts in the field. However, in this connection, it would be necessary to bear in mind the availability of the well disciplined and hardworking women folk of the islands who form a potential labour force of great importance.

The land and the resources available therein being very limited we have necessarily to look towards the sea around the islands for further development. There is a vast expanse of oceanic waters and it is best that we think of the optimum utilisation of the resources therein. As already stated the progress made in fishery development by the Lakshadweep Administration is appreciable. Pole and line fishing with live-bait has been extended to all the islands while previously it was confined only to Minicoy. Sea is an area from where we can harvest without sowing. The living resources therein are of the renewable category under proper management, though not inexhaustible in the strict sense. He who takes it gets it. It is the property of all or *res communis* and at the same time the property of none or *res nullius*. According to international convention each country has its right over its territorial waters and exclusive economic zone (EEZ). The Lakshadweep Sea is estimated to have an annual fishery potential of about 90,000 tonnes while the present yield as per statistics of 1984 is reported to have reached only about 5,000 tonnes a year. This gulf has necessarily to be narrowed till an optimum level of catch is reached. It is needless to say that there are constraints for achieving this. As usual it is a chain of requirements, one affecting the other. Some of the major ones are availability of live-bait, man power, craft and gear and adequate infrastructure facilities on the shore. At present the skipjack catch which forms the major fishery is almost entirely dependent on the availability of live-bait fish. Long line brings in the other tuna and related fishes apart from sharks and some pelagic fishes. The fishing as practised now is bound to limit the catches at more or less the present level unless a break-through is made.

We have not been successful in purse seining for skipjack. However, it is reported that a very successful purse seine fishery has been built up in Seychelles mainly by the French, but also Spanish, Ivory Coast and British vessels raising the catch from 1,000 tonnes in 1981 to 1,00,000 tonnes in 1984. The catches consist mainly of skipjack and yellow fin. If things are to continue at this rate the repercussions it will have on the tuna stocks in the Indian Ocean are quite obvious. Tunas are highly migratory fishes. Nature does not allow a vacuum to exist in the biological complex of the ocean. It is only natural that tuna shoals from the surrounding areas should migrate to the intensively fished zone where more abundant food should become available. As the fishing range increases, tuna stocks in a progressively wider area will get affected by a gradual process of thinning out. It is therefore felt that a complete reorientation in the development programme of our oceanic fisheries is called for to be taken up at national level. This will enable the islands to be used as a reconnoitering base and a springboard for a greater expansion of our fishing range. Fishing being a concurrent subject it is only appropriate that the development of the same in Lakshadweep and surrounding areas is taken as a national problem.

The adjacent Republic of Maldives where the skipjack fishery constitutes the mainstay of the islanders, the current annual catch is 60,000 tonnes. It is steadily on the increase. The coral reefs and atols there are quite extensive and support live-bait fishes of considerable magnitude, perhaps unknown anywhere else. Their mainstay is *Spratelloides japonicus* and *S. delicatulus* followed by *Lepidozygus tapeinosoma* and a variety of small fishes caught from the vicinity of reefs and from lagoons. Survival of certain species in bait-wells is a problem and experimental research to mitigate this disadvantage is called for. It is desirable that we keep a close watch and make a study of the work done elsewhere for solving similar problems.

It has been said that some visitors to these islands seeing the beautiful and peaceful set up there give vent to their feelings, in their enthusiasm, in terms of air strips, helipads, factories etc without taking into consideration the existing limitations of space, man power, local resources etc. These ideas might even tend to appear exciting and plausible to many of the innocent local people who would not have understood properly what these would ultimately lead to. At the same time we hear the cry for the need to protect the ecological and environmental conditions there which for obvious reasons are very delicately poised by nature. These islands are nature's precious gifts and it is left to us to look after and develop them with the utmost care and foresight without destroying them.