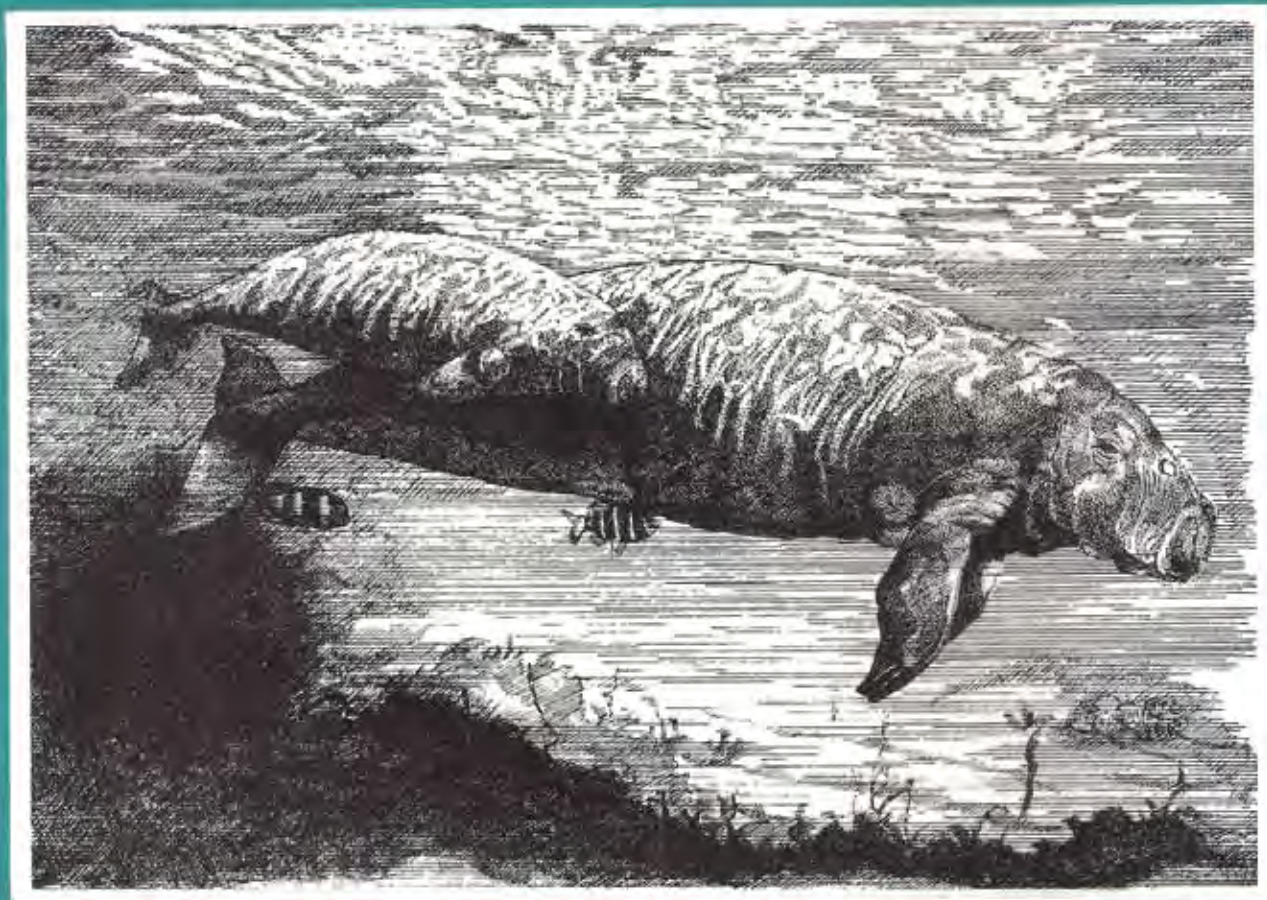


DIRECTORY OF NATIONAL PARKS AND SANCTUARIES IN
ANDAMAN AND NICOBAR ISLANDS

MANAGEMENT STATUS AND PROFILES



PRATIBHA PANDE

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Editors

Directory of National Parks and Sanctuaries in Andaman and Nicobar Islands

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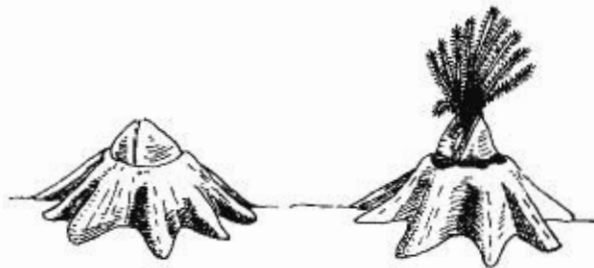
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Note to Readers

Even as this volume was going to press (December 1991), one of the Research Team members, Pratibha Pande, visited the Andaman Islands. She travelled to Barren Island Sanctuary, the Button National Parks, Marine National Park, Mt. Harriet National Park, Narcondam Sanctuary, and others. Updates from her visit are given in the postscript at the end of the volume, pg. 165. Also mentioned in the postscript are some recent (1991) amendments in the Wild Life (Protection) Act of 1972, which have a bearing on the information provided in this volume.

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GLOSSARY AND LIST OF ABBREVIATIONS

Glossary

<i>Chowkidar</i>	Watchman
<i>Gemini craft</i>	A motorised rubber boat
<i>Juru</i>	Strait
<i>Nala</i>	Stream
<i>Pahar</i>	Hill
<i>Patwari</i>	A local-level revenue official
<i>Tikri</i>	Small hill

List of Abbreviations with Their Expansions

(Please see REFERENCES for explanation of abbreviations of sources appearing in square brackets in the text.)

A&N	Andaman and Nicobar
AC	Assistant Commissioner
ACF	Assistant Conservator of Forests
Anon	Anonymous
Approx	Approximately
BNHS	Bombay Natural History Society
BSI	Botanical Survey of India
CCF	Chief Conservator of Forests
CCGO	Commanding Coast Guard Officer
Cu. m.	Cubic metres
CWLW	Chief Wildlife Warden
DC	Deputy Commissioner
DCF	Deputy Conservator of Forests
DFO	Divisional Forest Officer
E	East
Ed.	Editor
FRH	Forest rest house
Ha.	Hectare(s)
IB	Inspection bungalow
IIPA	Indian Institute of Public Administration, New Delhi
INTACH	Indian National Trust for Art and Cultural Heritage, New Delhi
IUCN	International Union for Conservation of Nature and Natural Resources
Is.	Island
Km	Kilometre(s)
Lt. Gen.	Lieutenant General
Lt. Gov.	Lieutenant Governor
M	Metre(s)
MET	Records of the Meteorological Department
MSL	Mean sea level
Mt.	Mount
N	North
NGO	Non-governmental organisation
NGI	Non-governmental individual
No.	Number(s)
NP	National park



N/S	National park and sanctuary
PCCF	Principal Chief Conservator of Forests
PF	Protected Forest
Pk.	Peak
P.O.	Post office
PWD	Public Works Department
Retd.	Retired
R.O	Range Officer
RF	Reserved Forest
RH	Rest house
SANE	Society for Andaman and Nicobar Ecology, Port Blair
Sch.	Schedule(s)
SOI	Survey of India
Sq. km.	Square kilometre(s)
Spp.	Species
U.T.	Union Territory
Vol.	Volume
W or WL	Wildlife
ZSI	Zoological Survey of India



ACKNOWLEDGEMENTS

The directory on Andaman and Nicobar Islands is the second in a series of volumes describing national parks and sanctuaries in India. This work emanates from an ongoing survey of national parks and sanctuaries in India, sponsored by the Wildlife Institute of India. We are grateful to it for supporting this work.

Mrs. Dilnavaz Variava initiated the first study from which this work has progressed. Though she could not keep up her active participation due to other involvements, in spirit she is very much still a part of the team.

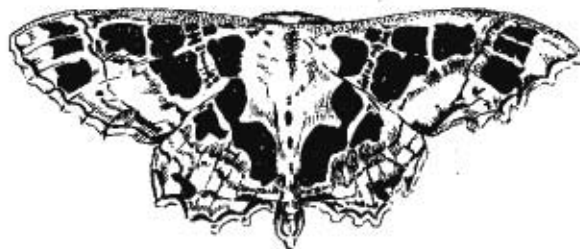
The work on this set of directories would not have started but for the support of Shri Samar Singh, Additional Secretary, Ministry of Environment and Forests, Government of India, and his former colleague, Shri Kishore Rao. Subsequent progress was mainly due to Dr. M.K. Ranjitsinh, Additional Secretary, Ministry of Environment and Forests, Government of India, and Shri H.S. Panwar, Director, Wildlife Institute of India, Dehradun.

Various people have helped in the work for this directory, both in the Andaman and Nicobar Islands and elsewhere. Among them we would especially like to thank Lt. Gen. T.S. Oberoi (Retd.), former Lt. Governor, Andaman and Nicobar Islands; Dr. W.A. Rodgers, Wildlife Institute of India, Dehradun; Shri N.D. Jayal, INTACH, New Delhi; Shri Kumar Ghorpade, Bangalore; Shri S.R. Sharma, former Chief Secretary, A&N Islands; Shri S.S. Chana, former Principal CCF, A&N Island; Shri Samir Acharya, SANE; Shri Sanjay Prakash; Vice Admiral S. Chopra (Retd.), and officials of the Defence Ministry who helped us complete the maps.

Shri I.H. Khan, formerly DCF (Wildlife), A&N Islands, was especially helpful in providing information, and making our visit to A&N fruitful. Thanks are also due to: ACF Shri B.P. Yadav and his staff at Wandur for helping to make our visit to the Marine National Park memorable; RO Shajan Paul, who withstood bouts of sea-sickness in accompanying one of us to the Nicobar sanctuaries; Rajiv Saigal, CO of the Naval Patrol Ship T-53, and his crew; Amar Dash, *Patwari* in the AC's office at Campbell Bay, for guiding one of us to Megapode Island Sanctuary; Mr. Lobo, DFO, Great Nicobar; Shri B.V. Selvaraj, DC, Car Nicobar; Shri Karunakaran of the Nehru Yuvak Kendra, Car Nicobar; and Rear Admiral Auditto for going out of his way to help us.

We owe a special debt of gratitude to members of the Society for Andaman and Nicobar Ecology (SANE), Port Blair, for assisting our team in verifying and supplementing the information contained in this Directory. Some of the data verification was also done by team members on a visit to the islands in connection with a series of environmental education workshops organised by Kalpavriksh and SANE. We are thankful to these organisations for this opportunity.

As always, our colleagues in the IIPA have been most supportive and understanding. Without their help, much of this work would not have been possible.



The Research Team

INTRODUCTION

The primary objective of this set of directories on the national parks and sanctuaries in India is to make available to the public detailed information on protected wildlife areas, which are a part of our common heritage. Considering the pressures that most of our wilderness areas are facing today, from "development" projects, industry, and other activities, the task of preserving at least some areas in their natural state has become one of national significance. But people cannot be expected to respond to this task unless they are informed about these areas, and what they contain and represent. These directories, then, are a small step in this direction.

One symptom of the neglect of our protected areas has been the almost total lack of information about them. The task of building up a reliable data-base is so enormous and complex that it cannot possibly be done by the Government alone. Considering the varied expertise needed to properly understand and catalogue the diverse ecosystems in our parks and sanctuaries, a joint cooperative effort between governmental and non-governmental agencies and individuals is urgently required. It is, therefore, hoped that these directories would help in catalysing a process by which groups and individuals would record information and monitor ecological changes within national parks and sanctuaries.

The directory sheets, and other sections of this volume, contain information on various aspects of the management of national parks and sanctuaries which would be of interest to wildlife managers, researchers, policy makers, and enthusiasts. In addition there are sections giving a broad profile of the A&N Islands, and providing an analysis of the status of wildlife management here.

The A&N Islands are one of the very few areas in India where much of the natural ecosystems are still intact. The tremendous biological and genetic diversity (much of it still unstudied), and the high rate of endemism in fauna and flora, coupled with the sensitive nature of the native inhabitants who are completely dependent on the natural resources of the area, make the task of protecting wilderness areas in these islands critical and urgent (pl. see A&N ISLANDS: AN ECOLOGICAL AND SOCIO-ECONOMIC PROFILE for extended discussion on this). This Directory is therefore not just a catalogue of the parks and sanctuaries in A&N, but an attempt to mobilise the support and sensitivity that these islands deserve.

We recognise that this directory, by perhaps facilitating visits to protected areas, may increase the pressure on them. Though well organised and managed tourist activities are, in our opinion, supportive to the conservation effort, most protected areas in the Andaman and Nicobar Islands have inadequate management resources to deal with visitors. It is therefore clear that management of most of the parks and sanctuaries in A&N Islands needs to be strengthened and we hope that the A&N Administration will heed this.

We intend to continuously up-date the information in this directory, both through our own efforts and with the help of others. Readers are therefore requested to write in, especially to correct any wrong information that we might have reported, or to fill in gaps in our directory sheets, or just because they have something interesting to share.

Those readers who would like to be kept informed about future volumes of the directory, and of other publications, or can contribute information, may please write in to:

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ANDAMAN AND NICOBAR ISLANDS: AN ECOLOGICAL AND SOCIO-ECONOMIC PROFILE

GEOGRAPHICAL AND PHYSICAL FACTS

The Andaman and Nicobar (A&N) Islands are a group of 306 islands, situated off the eastern coast of India, in the Bay of Bengal. They are also called the Bay Islands. Together they constitute a Union Territory (U.T.) of the Union of India, and are divided into 2 districts: Andaman, north of the 10^o channel, and Nicobar to the south. The two are separated by about 160 km. of sea. Being close to the equator and surrounded by the sea, the islands have a tropical climate. Precipitation is heavy; with both north-east and south-west monsoons being received, it rains seven months in a year. Cyclones sometimes occur, at the change of monsoons. Temperatures are moderate, and the average relative humidity is quite high. A brief geographical and physical profile of the islands is given below in Table 1.

Table 1: [Anon 1986; met]
Geographical and Physical Profile of A&N Islands

Total area	8,24,900 ha. (8249 sq. km.)
Area of Andaman District	6,40,800 ha. (6408 sq. km.)
Area of Nicobar District	1,84,100 ha. (1841 sq. km.)
Latitude	6 ^o 45'N to 13 ^o 41' N
Longitude	92 ^o 12' E to 93 ^o 57' E
Minimum temperature	16.7 ^o C
Maximum temperature	36.1 ^o C
Mean annual rainfall	3180.5 mm.
Average relative humidity	77%
Coastline	1962 km.
Exclusive economic zone	approx. 600,00,000 ha. (6,00,000 sq. km.)
Area under cultivation	15,000 ha. (150 sq. km.)
Area under plantations	30,000 ha. (300 sq. km.)
Area under forests	7,09,400 ha. (7094 sq. km.)

"The islands are emergent peaks of a submerged mountain related to the Arakan Yoma Range of mainland Burma" [Saldanha 1987]. Barring a few islands in Nicobar, the terrain is mostly undulating "with main ridges running north-south. There are also spur hills running east-west. In between the main ridges, deep inlets and creeks are formed by the submerged valleys. The average width of the islands is only about 20 km. There are few flatlands and perennial streams. In Great Nicobar, there are 5 perennial rivers" [Anon 1986].

There is a scarcity of ground water and the soil is generally poor. Soil types are variable, from heavy clay to clay loams, sandy loams and sand [Nair 1984].

SOCIO-ECONOMIC FEATURES

At present, 38 islands in A&N are inhabited. A brief demographic profile is given below in Table 2.

Table 2: [Saldanha 1987; Bose 1991]
Demographic Profile of A&N Islands

	1951	1961	1971	1981	1991 (provisional)
Total population	30,971	63,548	1,15,133	1,88,254	2,78,000
Population of Andaman District	18,962	48,985	93,468	1,57,821	
Population of Nicobar District	12,009	14,563	21,665	30,433	

As can be seen from Table 2, there has been a nine-fold increase in the population of A&N from 1951 to 1991. Most of this increase has been due to the immigration from the Indian mainland, and very little due to internal growth in the population. Due to this, the population growth rate is almost double that of India as a whole [Anon 1988].

Of the total population in 1981 (details for 1991 are still unavailable), the vast majority (88%) were settlers from outside the islands. They include ex-convicts of the British penal colony and their descendants, refugees from Bangladesh (then East Pakistan), repatriates from Sri Lanka, ex-servicemen, migrants from various parts of the sub-continent, labourers who were brought in mainly from Bihar to work with the Andaman Public Works Department, and a large number of government and public sector personnel. These settlers are engaged in commercial, industrial, agricultural and tertiary activities in A&N. According to the 1981 census, a total workforce of 62,680 was divided into the following occupations: agriculture, animal husbandry, fishing, forestry, and plantations (23,205), mining and quarrying (193), manufacturing, processing, servicing, and repairs (8164), construction (9454), trade and commerce (4692), transport and commerce (2918), and government service, health work, and legal and social/political workers (14,014) [Census 1981].

Out of nearly 2 lakh people residing in the A&N islands in 1981, the original inhabitants, the tribals, accounted for only around 12% of the total population. They are divided into 6 tribal groups: the Andamanese, the Onge, the Sentinalese, and the Jarawas in Andaman Islands, and the Shompens, and the Nicobarese in the Nicobar Islands. Only the Nicobarese, with a population of 22,000, are numerically substantial. The rest of the tribes together number only around 600 people, or about 0.32% of the total population of A&N.

TRIBES

The origins of the 6 tribes of A&N are unclear. There is a distinctive racial difference between the Andaman tribes and their counterparts in Nicobar. The former are Negrito, while the latter are Mongoloid. This, along with other indications, has produced certain theories regarding their respective origins. It is believed that the Andaman tribals had reached the islands ". . . as early as 670 A.D. . ." [Whitaker 1985], and arrived by boat from South East Asia since they ". . . show a considerable affinity to the Semangs of Malaysia and the Aetas of Philippines. . ." [Whitaker 1985]. The Nicobarese ". . . must have migrated sometime before the Christian era from what was then a part of India, the land now occupied by the Burmese, Talaings (Mons), Shans and Malays. They are offshoots of some Mongoloid race." [Singh 1978]. The origin of Shompens is not known ". . . but it looks as though the Shompens have a Malayan strain which, in all probability is mixed with the Dravidian" [Singh 1978]. The Andaman tribes are primarily hunter-gatherers, while the Nicobar tribes are mainly horticulturalists and herders.

The six tribal groups have had varied contact with outsiders, and assimilation into the Indian mainstream. On the one hand are the Nicobarese, who have integrated well, while on the other hand are the Jarawas and the Sentinalese, who still violently resist most efforts at contact. Somewhere along the middle range are the Shompens, who avoid contact but are not particularly hostile, and the Andamanese and Onge, who have accepted the presence of outsiders.

A look at the population figures of all the A&N tribes, except the Nicobarese, and perhaps the Jarawas, shows a downward trend till recently, which is in sharp contrast to the population figures of settlers. These tribals are mostly, in fact, just barely holding on (see below).

The horror story of the A&N tribes, can be traced back to the arrival of the first settlers along with "modern civilization" at Port Blair, though in later years a number of other factors were also contributive.

It was in the late 18th Century that the sea faring nations of the West made their contact with the islands, mostly to replenish their supply of drinking water. The British. . . made a first attempt at establishing a settlement at Port Cornwallis (North Andamans) in 1788. This was abortive. A second attempt was made in 1858 in Port Blair. Land was cleared for a prison and a penal colony set up. [Saldanha 1987].

The Andaman tribes: After the setting up of the penal colony in Port Blair, several skirmishes between the Andamanese and the British took place, with many killings on both sides. Finally, friendly relations

with the tribals were established. However, new killers emerged in the form of diseases brought in by the settlers, to which the tribals had no resistance, like pneumonia, syphilis, and measles. This along with a shrinkage of their habitat, due to the ever increasing influx of settlers, resulted in a rapid erosion in the number of the Andamanese. Today, from a population of around 5,000 in 1857, only 32 Andamanese (including three non-tribals, a lady and her two children from previous marriage, who have joined a tribal family) survive on Strait Island [Saldanha 1987]. However, the population has stabilised somewhat in the last three decades; having gone down to a precarious 19 in 1961, it has slowly climbed up subsequently [Verma 1989].

The first contact of the **Onge** with outsiders in 1867, on their former stronghold of Little Andaman Island, resulted in 70 of them being killed. However, after friendly relations had been established, the same story of succumbing to diseases and being pushed back by the arrival of settlers was repeated. The Onge have now been relegated to a reserve at Dugong Creek, having to share their former territories with about 7000 settlers and 700 Nicobarese [Saldanha 1987]. From a population of 672 in 1901, their population has gone down to a mere 98 in 1989 [Verma 1989]. Their numbers, like that of the Andamanese, have stabilised over the last two decades [Verma 1989].

The **Jarawas**, who are today confined to a tribal reserve in the western part of Middle Andaman and South Andaman, as well as the **Sentinelese**, located on the North Sentinel island, are the tribes which have till recently remained hostile to outsiders.

The hostility of the **Jarawas** has been given varied explanations [Awaradi 1990]. One of the first theories is that they became so because of the activities of slave traders from the Malayan islands, centuries ago. Another theory holds that the Jarawas resented the British attempts to befriend them with the help of the Great Andamanese, with whom the Jarawas had relations of enmity. Yet another hypothesis is that the Jarawas became hostile after seeing the decimation of other Negritos, like the Andamanese, at the hands of the British. In addition, due to their hostile position, the British are reported to have undertaken many punitive missions against them [Whitaker 1985]. These tribals also suffered at the hands of the Japanese during the Second World War, when the A&N islands were controlled by the latter for around two years. Many Jarawas were then captured, tortured, and killed, ostensibly as part of the efforts of the Japanese to curb the underground resistance organised by the British in A&N [Kothari 1989]. Due to the above mentioned factors, the population of the Jarawas continued to decline till about the 1940's. However, though reliable estimates are obviously impossible to obtain, their number is reported to have increased, from around 50 in 1951 to 200 in 1985 [Saldanha 1987; the 1981 census also reported a population of 200]. If this is true, this is probably due to their isolation from the outside world.

A small population of Jarawas, near the main settlement areas in South and Middle Andaman Islands, has been responding to these efforts since the first friendly contact in 1974, but the tribe as a whole remains hostile to casual efforts at contact and intrusion into their territory [Awaradi 1990; Pandit 1991]. Incidents of Jarawa attacks on people who have intruded into their territory or settled on its eastern fringes continue; a total of 133 such incidents have been recorded between 1947 and 1988 [Awaradi 1990]. A new threat to the existence of the Jarawas has emerged in the form of the Diglipur-Port Blair Andaman Trunk Road, which is mostly bordering the reserve, and at some points even cuts through it. This road has not only reduced the area of the Jarawa reservation, but has also made it vulnerable to greater disturbance [Saldanha 1987]. The road, which is now acknowledged even by the A&N Administration to be an error [IDA 1991], also has the potential of aggravating the conflicts between the Jarawas and travellers on it.

The **Sentinelese** did not, till recently, have any contact with outsiders. However, in 1967 two different teams landed, in close succession, on the North Sentinel Island [fv]. Though no direct contact was made with the Sentinelese, they were spotted and presents were left for them in their huts. Subsequently, another expedition's visit to the island reportedly resulted in a confrontation. The Sentinelese apparently become hostile after this, and were not met until anthropologists were able to establish friendly contact in January and February 1991 [Pandit 1991].

Approximately 80 of these tribals occupy the North Sentinel Island [Verma 1989, citing the 1981 census], and their being left alone at present is probably the best that can be done for them and their long term survival. This has been suggested recently by S.A. Awaradi, former Director of Tribal Welfare, A&N Administration [Awaradi 1990].

The Nicobar Tribes: The Shompens, who inhabit and greatly depend on the forests of the central uplands of Great Nicobar Island, currently face a threat from the construction of a road from Campbell Bay to Kopenheat, horizontally bifurcating the island [Saldanha 1987; fv]. Plans to commence timber extraction operations on Great Nicobar also pose a potential threat to their survival. Perhaps the recent declaration of Great Nicobar as a Biosphere Reserve (see Appendix 8 for details) will help to protect the life-support systems of the Shompens. As in the case of the Andamanese and the Sentinalese, no precise estimate of their population is available. The census of 1901 put their numbers at 348; more recent estimates by R.K. Tiwari, a social worker who has lived with the Shompens for years, put the population at 212 in 1981, declining to 149 in 1989 [Verma 1989].

As mentioned earlier, the Nicobarese form the only tribe in A&N which has been able to adapt to "modern civilisation". This may partly be due to the efforts of many missionaries over the last few centuries. At the moment these tribals are greatly concentrated on Car Nicobar Island, and are mainly engaged in plantation activities and horticulture. 18% of the Nicobarese are literate, while 12% go to school [Saldanha 1987].

It is clear that, with the exception of the Nicobarese, all the indigenous tribal communities of A&N are perilously vulnerable, or close to extinction. This is by far one of the most important issues facing the island's administrators today.

The Karens: Parts of the coastal areas of North Andaman Island, especially around Mayabander, are inhabited by the Karens. These are descendants of a Burmese tribe, whose members were brought as labourers by the British. An American Baptist Mission in Burma sent 45 families in 1925, on the request of the British government [Awaradi 1990]. After Independence, these people were settled as agriculturists on the Middle Andaman Island. Since then, the Karens have acquired an excellent knowledge of the rainforest and the seas, becoming expert hunters and fisherfolk [fv]. The single keel 'Karen boat', strong and mechanised, has become a famous 'brand' in the islands [Awaradi 1990]. These people regularly poach in Interview Island, and fish in the nearby waters. Temporary settlements are made on the Island, or the abandoned timber camp once used by the P.C. Roy Company is utilised for staying the night in search of Spotted deer, Indian wild boar, and turtles [fv]. Weapons used include guns and spears, and dogs are often also brought to track prey down. Reportedly, the Karens are assisted by some police stationed on Interview Island, in return for which the police get regular supplies of meat and other items [fv]. Also, it is reported that the Karens occasionally guide other hunters on the Island [fv].

NATURAL ECOSYSTEMS AND WILDLIFE

With a coastline of almost 2000 km., an Exclusive Economic Zone (EEZ) consisting of 6 lakh sq. km. of marine waters, and some of India's richest rainforests, the A&N Islands are the repository of an immense variety of ecosystems and wildlife. In spite of the fact that the biological investigations of the islands are far from complete, the tally of species and subspecies belonging to each class/group of plants and animals is impressive: over 2200 flowering plants and 120 ferns (besides other plants), 58 mammals, 242 birds, 83 reptiles, 10 amphibians, 750 fishes, 326 coelenterates (corals, sponges, sea anemones, jellyfish, etc.), 407 crustaceans (crabs, lobsters, shrimps, barnacles, etc.), 941 molluscs (limpets, oysters, clams, snails, slugs, squid, mussels, etc.), 1500 insects, 62 spiders and scorpions, and others [Rao 1989; Anon 1986]. What is also significant is that a high percentage of these species and subspecies are endemic, i.e. not found anywhere else in the world. This is largely because of the isolated nature of the islands. Of the flowering plants, for instance, around 200 (almost 10%) are endemic. Interestingly, another 1300 are not found on the Indian mainland, but occur in Malaysia, Burma, Indonesia, and the Polynesian islands [Anon 1986].

Table 3 gives an overview of the faunal diversity of the islands, along with the degree of endemism that each group of animals displays.

Table 4 further details endemism among vertebrate animals.

Table 3: [Rao 1989]
Number of Species/Subspecies and Endemics Known from the A&N Islands

Name of the group	No. of Species/ Subsp.	Endemic Species/ Subsp.	Percentage of endemism	Remarks
Sponges	70	2	-	All marine
Coelenterates	147	-	-	All marine
Corals ¹	179	-	-	All marine
Earthworms	21	7	33.33	All terrestrial
Leeches	2	-	-	All terrestrial
Polychaetes	161	-	-	All marine
Termites	39	19	48.71	All terrestrial
Insects	1500	-	-	All terrestrial. No data on marine species
Spiders and scorpions	62	28	45.16	All terrestrial
Pycnogonids	8	-	-	All marine
Centipedes	17	-	-	All terrestrial
Millepedes	5	-	-	All terrestrial
Crustaceans	407	-	-	Includes terrestrial, freshwater and marine
Molluscs: Terrestrial	100	75	75.00	Includes one introduced species which is a serious pest of garden plants
Freshwater	51	12	21.56	A few species are intermediate hosts for helminth parasites
Marine	790	-	-	Some of the species are of ornamental value. Important resource material, some serve as food for tribals
Echinoderms	331	-	-	Includes species of economic importance
Meiofauna	324	193	-	All marine
Fishes	750	-	-	Mostly marine, a few freshwater
Amphibians	10	2	20.00	Freshwater and mangrove
Reptiles	83	23	31.94	11 Marine
Birds	242	95	39.26	
Mammals	58	33	60.00	3 Marine

**Table 4: [Rao 1989]
Number of Species/Subspecies and Endemics in Vertebrates**

<i>Name of the group</i>	<i>No. of Species/ Subspecies</i>	<i>Endemics</i>	<i>% of Endemicity</i>	<i>Remarks</i>
Mammals				
Macaques	2	1	50.00	
Tree shrews	2	2	100.00	
Terrestrial shrews	4	4	100.00	
Jungle cat	1	–	–	Doubtful occurrence
Palm civet	1	1	100.00	
Pigs	2	2	100.00	
Deer	2	–	–	Introduced from mainland
Bats	26	12	46.15	
Rats	14	11	78.57	
Squirrels	1	–	–	
Marine mammals	3	–	–	
Birds	242	95	39.26	
Reptiles				
Snakes	46	13	28.26	
Lizards	32	10	31.25	
Turtles	4	–	–	
Crocodile	1	–	–	
Amphibians	10	2	20.00	
Fishes	750	–	–	

These plants and animals are the inhabitants of two major types of ecosystems, themselves consisting of several micro-habitats:

1. The island ecosystem, comprising of
 - 1a. The forests
 - 1b. The coasts (including mangrove, littoral, and swamp forests, beaches, and other intertidal zones)
2. The marine ecosystem, comprising of
 - 2a. The deep, open seas
 - 2b. The coral reefs

Forests: At present, the A&N islands are reported to have a forest cover of 86% [Anon 1986]³. According to Champion and Seth, there are 12 forest types occurring in A&N⁴ [Champion and Seth 1968] :

1. Giant evergreen forest (1A/C1)
2. Andamans tropical evergreen forest (1A/C2)
3. Southern hilltop tropical evergreen forest (1A/C3)
4. Cane brakes (1/E1)
5. Wet bamboo brakes (1/E2)
6. Andamans semi-evergreen forest (2A/C1)
7. Andamans moist deciduous forest (3A/C1)
8. Andamans secondary moist deciduous forest (3A/C1/2S1)
9. Littoral forest (4A/L1)
10. Mangrove forest (4B/TS2)
11. Brackish water mixed forest (4B/TS4)
12. Submontane hill valley swamp forest (4C/FS2)⁵

The *Giant evergreen forest* is ". . .the most luxuriant type of forest. . .In the Andamans it is met with on deep alluvial soils near the banks of larger streams but is so intimately mixed with the semi-evergreen forest that delimitation is difficult."⁶ This forest type is generally found in the valleys. Major species include *Dipterocarpus alatus*.

The *Andaman tropical evergreen forest* is "not so luxuriant as the Giant evergreen (*Dipterocarp*) forest. . .but otherwise very similar in composition". It occurs in A&N ". . .as caps to the hills with moist deciduous forests on the slopes". Major species include *Diptocarpus grandiflorus*, *Xanthochymus andamanicum*, and *Dinochloa andamanica*. Some of the most beautiful, epiphytic ferns are common in these forests. The floor is generally moist, with a number of bracket fungi growing on dead twigs. Strong, high, woody climbers are also common.

The *Southern hilltop tropical evergreen forest* is a ". . .more or less inferior edition of the typical wet evergreen, not more than 10 m. high in extreme cases", and is found ". . .on the upper slopes and tops of hills and sometimes on steep slopes lower down". Major species include *Dipterocarpus costatus*, *Mesua ferrea*, and *Memecylon caeruleum*.

Cane brakes consist of an ". . .impenetrable thorny thicket sometimes with a few tall trees standing over it, sometimes without. The stems are typically trailing. . .but some species are more or less erect." Major species in this forest type include *Calamus* spp.

Wet bamboo brakes ". . .are often very dense, even if the bamboos grow in clumps. The bamboos tend to be the smaller types rather than the big clumped species." Major species include *Dipterocarpus* spp., *Oxytenanthera* spp., and *Bambusa sehzostachyoides*.

The *Andamans semi-evergreen forest* is a ". . .luxuriant type of forest with many giant trees which include both deciduous and evergreen species often intimately mixed but frequently in groups. . . Chengappa describes it as the densest forest in Andamans." The main species include *Dipterocarpus alatus*, *D. pilosus*, and *Pterygota alata*.

The *Andamans moist deciduous forest* has a ". . .somewhat irregular top storey of predominantly deciduous trees about 40 m. or more in height. . .Beneath these trees is a rather definite second storey of numerous species including some evergreens. . .and there is a fairly complete shrubby evergreen undergrowth". This forest type is more extensively distributed in the Andamans while it is not so extensively distributed in the Nicobars. The major species include *Pterocarpus dalbergioides*, *Terminalia bialata*, and *T. procera*.

The *Andamans secondary moist deciduous forest* is characterised by a ". . .more or less even aged pole crop." This forest type is found in "worked over areas of the primary type." The major species include *Canarium euphyllum*, *Pterocymbium tinctorium*, and *Salmalia insignis*.

The *Littoral forests* occur "all round the coast wherever a fair width of sandy beach occurs, including sandy bars on the sea face of the river deltas." In the Andamans, *Manilkara littoralis* is the most characteristic species of this forest type.

The *Mangrove forest* is a ". . .closed evergreen forest of moderate height composed of trees specially adapted to survive on tidal mud which is permanently wet with salt water and submerged every tide." The major species include *Rhizophora mucronata*, which occurs in the Andamans and *Bruguiera conjugata*, which occurs in the Nicobars.

The *Brackish water mixed forest* ". . .is the finest development of the tidal forests and may be a closed forest over 33 m. high (*Bruguiera* and *Heritiera*). . ." This forest type is probably not found in the Nicobars. Major species found in the Andamans are *Heritiera littoralis*, *Brownlowia lanceolata*, and *Phoenix paludosa*.

The *Submontane hill valley swamp forest* is an "irregular forest of a limited number of mainly evergreen species able to withstand the wetness of the sites occupied. The trees are usually lowcrowned and branchy and there is often a dense growth of *Calamus*, while *Ficus* and monocotyledons such as *Alpinia* often form the undergrowth."

The forests of A&N are significant not only because quite a few plant species found in them are endemic, but also because a few others are not found on the Indian mainland, but are closer to Burmese

and Malaysian flora [Thothathri 1962]. This may be due to the geographical proximity of the islands to Burma and Malaysia. Among the species occurring here whose main distribution is Burma, are *Anaxagorea luzoniensis*, *Dipterocarpus incanus*, *Ancistroctidus tectorius*, and *Olax imbricata*. Those which are commonly found in Malaysia, and occur in A&N are *Pyrrosia longifolia*, *Scolopia spinosa*, *Ficus gibbosa*, *Ficus rumphii*, and *Clerodendrum viscosum*.

There are interesting differences in vegetational composition between various islands of the Andamans, between various islands of the Nicobars, and between the Andamans and Nicobars [Thothathri 1962].

South Andaman forests have a profuse growth of epiphytic vegetation, mostly ferns and orchids; the Middle Andamans harbour mostly moist deciduous forests; North Andaman is characterised by wet evergreen type, with plenty of woody climbers. The northern islands of the Nicobars (including Car Nicobar and Battimaliv) are marked by a complete absence of evergreen forests, while such forests form the dominant vegetation in the central and southern islands of the Nicobars. Grasslands occur only in the Nicobars, and while deciduous forests are common in the Andamans, they are almost absent in the Nicobars. Several species are endemic to either of the two island groups—the Tree fern *Alsophila albosetacea* to the Nicobars, the major timber species *Dipterocarpus* spp. (*Gurjan*) and *Pterocarpus dalbergioides* (*Padauk*) to the Andamans.

Coasts: A large proportion of the islands and, consequently, most of the coastal stretches in A&N are uninhabited and unused by humans, and constitute among the most valuable of such ecosystems in India. Beaches with smooth, sandy stretches, or shell and coral-littered lengths, can be found on almost all islands. But the coastline can also be rough, rocky, and jagged. Sandy beaches are the preferred habitat of a number of crabs, whose tiny trails can be seen all over. These beaches are also the nesting sites of sea turtles and of birds like terns. Many other beach species live under the sand, including worms, bivalves (like clams), burrowing crabs, and sea-urchins.

At low tide, large areas of the intertidal zone get exposed, revealing some species of corals (the very few that can withstand the sun), boulders, and the attached mussels, limpets, and other such organisms. The water pools left in depressions, when the tide recedes, are themselves fascinating reservoirs of life. Sea cucumbers, starfish, eels, and other creatures abound there.

Coral Reefs and Deep Seas: The coral reefs and marine waters of A&N are perhaps the richest in India, and amongst the most diverse in the world. A large number of species of corals have been identified so far. But, apart from corals, the reefs are home to a wide range of other marine creatures which thrive due to the abundance of food and nutrients. These include plants like sea grasses, and animals like fish, coelenterates (sponges etc.), molluscs (shells, clams, etc.), and other invertebrates. The profusion of species in coral reefs, in fact, has earned them the nickname "rainforests of the sea". In the A&N the coral formations vary greatly, from small clusters near the shore, to longitudinal barrier reefs (upto 320 km. in length!) extending deep into the sea.

The deep seas themselves have an entirely unique composition of flora and fauna. Phytoplankton (microscopic floating plants) and algae are the predominant vegetation, while crustaceans (shrimps, lobsters, etc.), zooplankton (microscopic herbivores), larger invertebrates like squids and octopuses, and fish are the common animals. The A&N marine waters also harbour several mammal species, including the Dugong, the Common dolphin, the False killer whale, the Blue whale, and the Sperm whale. Four species of sea turtles (and possibly a fifth, the Loggerhead, whose existence is unconfirmed), the Saltwater crocodile, and a number of sea snakes represent the marine reptilian fauna.

Forest exploitation: Amongst the first instances of commercial forestry operations took place in 1853, when one of Asia's largest sawmills was set up in Chatham near Port Blair [Saldanha 1987]. In 1883, the Forest Department was set up. The major commercial hardwood species then were Gurjan (*Dipterocarpus alatus*) and Padauk (*Pterocarpus dalbergioides*). In 1929, the Swedish multinational WIMCO set up a match factory [Saldanha 1987].

This and the Chatham sawmill remained the two major wood based industrial units in A&N until recently. By 1950, around 49,000 cu.m. of timber was being extracted annually [Saldanha 1987].

After Independence, however, the forests of A&N came under increasing pressure. This was due to the large scale influx of immigrants in the 1950s and 1960s, for whom vast areas were clearfelled, as also due to the establishment of various large and small scale wood based industrial units. The demands for fuel wood of the increasing population affected specific ecosystems such as mangroves. Major new wood based industrial units included Asian Polymers Pvt. Ltd., Andaman Timber Industries Limited, and Jayshree Timber Products, along with about 30 other small scale factories [Kothari 1989].

In addition, timber extraction techniques have also improved, resulting in greater exploitation of forests, and an increase in the number of species considered viable for extraction. As a result, by 1986, 40 species had been identified as being commercially viable (from about 20 in the 1930s) [Saldanha 1987], while around 1,43,000 cubic metres (cu.m.) of timber was being extracted annually [Oka undated], a three fold increase since 1950. Table 5 gives data relevant to timber extraction in the A&N Islands.

**Table 5: [Oka Undated]
Timber Extraction in A&N Islands (1988)**

<i>Agency</i>	<i>Extraction (in cu.m.)</i>
Forest Department	56,553
Forest Corporation	26,513
Major wood-based industries	38,369
Settlers/agriculturists	1,577
	<u>1,23,012</u>

The efforts of the Forest Department to manage the growing demands on the forests of the islands have not been entirely successful. Though a number of forest management plans were formulated, starting in 1906, for a number of reasons (including financial and administrative difficulties, differences of opinion between officials, and the situation created by the World Wars) these were never put into operation [Roy and Mathews 1983]. Haphazard working of forests, especially where private companies were given their felling coupes, was therefore common. It was only in 1970 that a plan was implemented. Secondly, even carefully worked out forestry practices yielded mixed results. The most famous of these is the "Andaman Canopy Lifting Shelterwood System", which yields good regeneration. Unfortunately, it also leads to the changing of the character of the forests from being evergreen to deciduous [Nair 1984]. This is because this system, focusing on increasing the density of commercially useful trees relative to other species, resulted in a considerable thinning of the canopy. The increased entry of sunlight and drying up of the soil, and erosion in heavy rains, hampered the regeneration of evergreen species. Even the former Inspector-General of Forests, S.K. Seth, was forced to admit that "though the method is well suited to these islands, a slightly different spectrum of vegetation compared to the original crop results. . . there is greater preponderance of deciduous elements" [Nair 1984]. However, foresters feel that this is still the best system for forestry operations in these islands [Oka undated].

The rate of deforestation in the islands is not very high. But given the extremely fragile nature of these ecosystems, increasing industrial and domestic demands on them must be viewed as a continuing threat. Already it is estimated that, "an area of about 100,000 ha. (almost 12% of the total land area of the union territory) has been clearfelled in the one century of operation." [Whitaker 1985].⁷ Efforts will have to be made to divert pressures from forests by introducing alternatives where available, and formulating an ecologically sound development strategy for the future. Attempts should be made to try and avoid replacing natural forests with plantations like Coconut and Red oil palm, since these result in loss of genetic variability as also excessive soil run-off.

In a step which has come not too soon, the Island Development Authority (see below, DEVELOPMENT ACTIVITIES, p. 12, for details on the IDA) has decided to phase out timber logging from the islands. In its 5th meeting, held in January 1989 at Car Nicobar, the IDA on the urging of the

then Prime Minister, decided "that wood extraction to feed such (wood-based) industries should be reduced to lead to a stopping in the next few years. . .the Ministry of Environment and Forests (should) prepare a phased schedule in this direction" [IDA 1989]. Accordingly the Ministry issued instructions (vide D.O. no. 1-5/87-FRY/SUII dated July 7, 1989) to the A&N Administration to notify a ban on new wood-based industries as well as on expansion of existing activities of industries. The first step was to reduce the extraction from 1.50 lakh cu.m. to 1 lakh cu.m. [Sinha 1991], then, over a period which has not been specified, completely stop timber extraction. Already extraction of timber for sale to the mainland has been stopped, as has clearfelling [Oka undated]. The system of granting felling coupes to private companies has also been discontinued.

Destruction of Coral Reefs: Over the years, the coral reefs have also come under threat. The clearing of forests for settlements and agriculture, the cutting of mangroves for industrial and domestic fuel, have led to the depositing of excessive silt in the shallow waters close to the shores [Rajan and Poddar 1988; Dorairaj et al 1987]. This has resulted in the choking of corals. Industrial effluents and other types of pollution have also led to the destruction of corals.

One particularly distressing example of the destruction of corals was reported by the Society for Andaman and Nicobar Ecology (SANE), in 1987. They discovered that the Military Engineering Service was extracting thousands of cubic metres of coral off Kamorta Island, near the Naval Helipad at INS Kardip, for use in construction of shore protection pillars [Kothari 1989].

Other sources of damage to the coral reefs in A&N include coral mining, use of explosives for fishing in the reef region, collection of corals for souvenirs by tourists and traders, and other tourist activities like scuba and snorkel diving [Dorairaj et al 1987]. Another threat to the coral reefs has emerged in the form of the " . . . crown of thorns star fish, *Acanthaster planci*, a dreaded coral predator . . ." which " . . . has been recently reported from the reefs of Andaman and Nicobar Islands." [Dorairaj et al 1987]. Its outbreak in some areas, notably the Marine National Park at Wandur, could partly be due to increased nutrient inflow from silt washing down deforested slopes [Soundararajan 1989]. Further studies are needed to establish the precise reasons, to assess damage to corals, and to suggest remedial measures.

Bad as it is in itself, the destruction of corals also affects the well being of other marine eco-systems and fauna which are directly or indirectly dependent upon them. A tremendous variety of fish life, for instance, thrive in the nutrient rich waters around coral formations, and suffer serious decline when these formations are destroyed. In addition, coral reefs curb the fury of the sea, helping to stabilise coastal strips. Wherever these reefs are damaged, erosion of the coasts soon follows.

Impact of Development Activities on Wildlife: The developmental and demographic pressures which have led to the thinning of the A&N forests, and to the degradation of its marine ecosystems, have also been responsible for endangering some of the wildlife species of the islands (see Appendices 2 and 7). These include at least three species of sea turtles: Olive ridley (*Lepidochelys olivacea*), Green sea (*Chelonia mydas*), and Hawksbill (*Eretmochelys imbricata*), and possibly a fourth, the Leathery or Leatherback (*Dermochelys coriacea*). Sand quarrying on nesting beaches, poaching of eggs, and pollution have greatly endangered each of these. The massive Estuarine or Saltwater crocodile (*Crocodilus porosus*) has also declined appreciably due to these factors, as also others like hunting for its hide, and the use of nylon nets in modern fishing [Tikader and Das 1985; Khan 1983].

A tragic case is that of the Megapode (*Megapodius freycinet*). Of late, the labourers brought in to Great Nicobar Island, from Bihar, for army and engineering works, have reportedly been indulging in hunting of the Megapode and collection of its eggs. The result is that perhaps only a few hundred Megapodes are left [Kothari 1989].

Till the 1960's, Battimalv Island, which is a stronghold of the Nicobar pigeon (*Caloenas nicobarica*) was a Naval target shelling site. This may have resulted in a decline in population of this threatened bird, the current status of which is not known [fv].

Nobody knows how many of the smaller or less conspicuous reptiles, amphibians, insects and other fauna may be endangered—indeed, we are not even aware of what we may have already lost, since scientific exploration of these islands is far from complete.

The effort to preserve wildlife on the islands has consisted mainly of declaring national parks and sanctuaries. Indeed, A&N can boast of having the largest number of protected areas of any state or union territory in India. But despite the fact that 100 national parks and sanctuaries have now been declared in A&N, the Wildlife Wing of A&N has been unable to enforce adequate protection due to a paucity of funds and staff, and there is a lack of research and monitoring which can help in formulating management strategies (for further details, please see WILDLIFE MANAGEMENT IN ANDAMAN AND NICOBAR ISLANDS, p. 15).

Introduction of Exotics: Island ecosystems which have evolved in isolation can be quite fragile, susceptible to even minor ecological interference. This may be due to a variety of factors, including the highly specialised and narrowly adaptive nature of their flora and fauna. The introduction of exotic species into such ecosystems can therefore be highly disruptive. This has been amply shown in the case of many oceanic islands where rabbits, goats, dogs, and other domestic or wild animals have been introduced, and have caused considerable ecological devastation often leading to decline or extinction of native species.

The Andaman and Nicobar Islands have also had their share of introductions. Amongst the most disruptive of these was the introduction of Spotted deer *Axis axis* by the British in the early part of this century. With virtually no predators except crocodiles and humans, these deer have multiplied rapidly to a population of several thousand [Whitaker 1985]. No systematic study on their ecological impact seems to have been done, but they are known to adversely affect forest regeneration, and cause serious crop losses amongst the islands' settlers [Whitaker 1985].

Amongst birds, two potentially disastrous introductions are the Common myna, *Acridotheres tristis*, and the House sparrow, *Passer domesticus* [Whitaker 1985]. Both have increased in numbers, and could drive out local species occupying the same ecological niches.

Table 6 gives an overview of the faunal introductions into the islands.

**Table 6: [Rao 1989, Whitaker 1985]
List of Introduced Species**

Common name	Scientific name	Year of introduction	Remarks
Five-striped palm squirrel	<i>Funambulus pennanti</i>	1940s	Port Blair area; An orchard pest
Domestic dog	<i>Canis familiaris</i>	1850s	Feral dogs are a serious threat to the Andaman pig and Leathery turtle
Domestic cat	<i>Felis chaus</i>	1850s	A serious threat to some endemic vertebrates
Spotted deer (Chital)	<i>Axis axis</i>	1905-1930	Distributed throughout Andamans. A crop pest, also hindering forest regeneration. Meat eaten by settlers
Hog deer	<i>Axis porcinus</i>	1905-1930	Rare
Barking deer	<i>Muntiacus muntjak</i>	1905-1930	Distributed in Middle Andaman
Domestic goat	<i>Capra hircus</i>	1700s	Barren Is., Cinque Is.
Leopard	<i>Panthera pardus</i>	1950s	In Middle Andaman but now presumed dead
Elephant	<i>Elephas maximus</i>	1960s	A breeding herd of 30-40 in the Interview Island, 14 in the west of North Andaman

Rats	<i>Mus musculus</i> <i>Rattus rattus</i>		—
Common mynah	<i>Acridotheres tristis</i>	1867	Introduced in Ross Island. May replace local species
House sparrow	<i>Passer domesticus</i>	1892, 1895	May replace local species
Grey partridge	<i>Francolinus pondicerianus</i>	1890	Populations established around Port Blair, where it was introduced
Peafowl	<i>Pavo cristatus</i>	1868	Ross Island
Giant snail	<i>Achatina fulica</i>	1940s	Reportedly introduced by the Japanese as a protein supplement. Now a serious pest of gardens and plantations. Eradication drives are annually organised.

Consolidated information on plant introductions is hard to come by. Parkinson (1923) noted 110 exotic species, while, much later, Thothathri (1962) gave a figure of 64. Many of the introduced plants are ornamental, such as *Michelia champaca*, *Cananga odorata*, *Hibiscus rosa-sinensis*, *Leucaena glauca*, *Quisqualis indica*, *Allemanda cathartrea*, *Delonix regia*, *Ixora coccinea*, *Bougainvillea glabra*, and *Mirabilis jalapa*. Then there are the economically useful plants: cereals, fruits, vegetables, and other fruit crops like *Annona squamosa*, *Brassica oleracea*, *Citrus medica*, *C. maxima*, *Mangifera indica*, *Phaseolus spp.*, *Psidium guajava*, *Punica granatum*, *Musa sapientum*, *Citrullus vulgaris*, *Carica papaya*, *Cucumis melo*, *Anacardium occidentale*, *Ricinus communis*, *Ananas comosus*, *Areca catechu*, *Zea mays*, and *Oryza sativa*; and plantations crops like *Hevea brasiliensis* (rubber), *Coffea arabica* (coffee), and *Tectona grandis* (teak).

Considerable areas of forest have been converted to coconut plantations. Though it is not certain if this species is an exotic to the area, it is found on only a few of the islands. Weeds such as *Eupatorium sp.*, and *Lantana camara*, are also intruding into the forest on many islands. There are many other weeds whose seeds have probably been introduced into the islands mixed up with imported grains or attached to the belongings of convicts and settlers. But some deliberate introduction has also taken place. On Great Nicobar Island, which till recently had not experienced such intrusions, the paramilitary organisation YATRIK has been planting the exotic *Lantana sp.* alongside a road it is constructing through the rain forest [fv]. *Lantana* has already caused considerable damage to forest and agricultural ecosystems in many parts of mainland India, and its introduction into these islands can only be regarded with great alarm.

DEVELOPMENT ACTIVITIES

The A&N islands are ecologically and culturally very fragile. The development activities in these islands must be undertaken while keeping this in mind. The tragedy however is, that most development activities undertaken in the past (as well as many of those which are proposed), have been (or are likely to be) mostly destructive from the ecological and social point of view. The policy of settling people in large numbers, and lack of discouragement to unplanned entry of people from the mainland, has been coupled with encouragement of activities which are out of harmony with the environment, and a direct threat to the tribal people of these islands. A spurt in activities like agriculture, plantations, logging and related activities like timber based industries, construction, and unplanned or unregulated tourism have already damaged the ecological and cultural richness of the islands. A number of reports by expert committees have taken the view that any further large-scale damage is not advisable [Anon 1986; Anon 1988.]

Future development of the islands is therefore a great challenge. Two urgent considerations are uppermost here: one, the need to make the islands as self-sufficient in food and other essential items as possible; and second, the need to ensure sustainable employment to all inhabitants. The sectors from which these two objectives can be met are agriculture, industry, fisheries, forestry, tourism, and services. Each of these has its own set of potentialities and problems.

(a) *Agriculture*: The Planning Commission estimates that at most 5 persons per hectare can be supported by agriculture in A&N, and "considering the topography, and need for biosphere reserves, tribal and forest reserves, it is unlikely that the total (potential) agricultural land, including crops and plantations would be much more than 50,000 ha." [Anon 1986]. This implies, that the present population of A&N is already over the maximum agricultural carrying capacity of the islands. Also, about 46,000 ha. are already under cultivation and plantations [Anon 1986]. Indeed, a number of factors militate against substantial expansion of this sector: no unforested flat land left, poor soils, lack of groundwater, high rate of soil erosion on exposed slopes, pests like the Giant snail, danger from exotic weeds, and the negative impact of agricultural practices like fertiliser and pesticide use.

However, it is possible that the spread of more appropriate land uses and technology, and encouragement of fisheries (see below) could augment the food production, reducing the need to import from the mainland.

Cash cropping in the islands is currently dominated by trees like Coconut, Red oil palm, Betelnut, Rubber, etc. There have been a number of problems with these plantations, including low yields, ecological damage, pest attack, wastage in harvesting operations, and the like [Anon 1986; Anon 1988]. While no great increase in plantation area is advisable, since it will involve clearance of natural forest, there is plenty of scope for optimising yields from the existing plantations, and for intercropping with non-tree crops in agricultural fields. Additionally, crops like coffee, cocoa, clove, nutmeg, pepper, and cinnamon can be grown in moderation within forest areas, without significant ecological damage [Anon 1986]. There is also a potential for setting up ancilliary units, provided they are environmentally sound, for processing and using by-products.

(b) *Industry*: As in the case of agriculture, there is not much potential for generating employment in this sector. Most of the industrial units at present are forest-based, and will have to be converted or shut down when timber operations are phased out (see below, *Forestry*). Already, the WIMCO management is contemplating shutting down its match factory at Port Blair [Mohanty 1991]. Ecological and energy considerations make any expansion of large industrial units inadvisable. The viable options for the islands then include small and medium-scale industries based on fisheries and other marine resources, plantations, animal husbandry, and similar activities [Anon 1986].

(c) *Fisheries*: This is widely perceived as the sector with the greatest employment potential. It is estimated that as against a present annual catch of about 6500 tonnes, the potential yields can be of the order of 50,000 to 820,000 tonnes (the reasons for this wide range of estimates are unclear) [Anon 1988]. A number of measures have therefore been suggested by various expert committees, including motorisation of traditional boats, introduction of deep sea trawling, training in efficient fish-catching techniques, and extension of marketing facilities [Anon 1986; Anon 1988]. Industries ancillary to the fisheries sector like canning and processing, or boat building, could also provide employment.

However, several doubts have been raised about the wisdom of going in for a sudden and unplanned expansion of fisheries: the danger of overexploitation (especially present when rushing into an area with rich potential), the potential conflicts between traditional fisherfolk and trawler owners (so apparent in most of India's coastal areas), the risk of marine pollution and damage to coral reefs, and other similar problems. There is also the ethical question to be tackled, which has made hunting of most terrestrial creatures an unacceptable employment generator.

Finally there is the danger of simplistic assessments of 'carrying capacity' of the islands based on the fisheries potential. For instance, one proposal asserts that the 6 lakh sq. km. exclusive economic zone (EEZ) around the islands is capable of supporting a population of 6 lakh people, based on the formula that each square kilometre of the EEZ is capable of supporting one person [Kothari 1989]. The basis on

which these figures were calculated, is not at all clear, nor is it clear if other factors (energy, habitation and freshwater needs of such a large population, etc.) have been considered.

(d) *Forestry*: Since, the IDA has taken a decision to phase out timber and other extraction activities in natural forest areas, this sector will have very little employment potential. There is also not much scope for large-scale plantation activity; already, fresh teak plantation has been given up, and no natural forest areas are to be cleared for raising any other plantations [Sinha 1991]. However, replanting of degraded areas, and other such environmental restoration programmes can be expanded in the future.

(e) *Tourism*: At first glance, the A&N Islands are eminently suited for rapid and large-scale expansion of tourism. Repeated administrations have tried to push ambitious schemes to promote the visit of tourists, especially foreigners. However, the necessity of heavily subsidising tourists (in terms of expensive services like freshwater, electricity, transportation, food provisions, etc.) makes this sector economically problematic. In addition, uncontrolled or inappropriate tourism can have severe ecological and cultural repercussions, as are already being felt in parts of the islands. Expansion of this sector is therefore possible only in a limited way.

(f) *Others*: There is likely to be some expansion of employment possibilities in other sectors, such as services, trade, and commerce. One proposal which has generated a lot of controversy, is that of a Free Trade Zone in Great Nicobar. This could have potentially disastrous effects on the ecological sustainability of the islands, and cultural survival of its tribals. Fortunately this proposal seems to have been shelved for the time being.

It is clear that these islands cannot tolerate any further large-scale expansion of population, or of industrial, agricultural, and forestry activities. At current trends of immigration and natural growth of the existing population, the islands will have over 4.15 lakh people by 2001. However, if immigration can be drastically curtailed, the population will be a more manageable 3.13 lakhs [Ministry of Labour 1988]. Any future developmental plan for A&N must be mindful of this. It must respect both the fragility of the area's natural ecosystems, as also the survival needs of its indigenous populations.

Development strategies for the A&N Islands are laid out by the Island Development Authority (IDA), set up in 1985. With the Prime Minister of India as its Chairperson, the IDA is serviced by the Environment and Forests Division of the Planning Commission, and has, as its members, various cabinet ministers, secretaries, and non-governmental experts. Increasingly, the IDA itself has considered the ecological and social fragility of these islands as being of the highest priority, a view that is endorsed by a range of non-governmental groups and individuals in the fields of wildlife and environment, anthropology, social work, and health.

NOTES

1. There is considerable discrepancy in the figure of coral species given by different authorities: Tikader mentions 80 species [Tikader and Das 1985], Rao quotes 179 [Rao 1989], and Dorairaj, 135 [Dorairaj *et al* 1987].
2. Rao does not specify in his article if this symbol (-) indicates 'none' or 'information not available'.
3. The 1989 annual report of the Forest Survey of India (FSI) on the state of India's forests estimates the forest cover of A&N to be 91.96%, which is significantly greater than the 86.20% forest area recorded by the Forest Department in 1986 [Anon 1989]. According to the FSI, this is because "the substantial proportion of vegetal cover, owned privately or by agencies other than the Forest Department, have not been shown as forests in the official records." [Anon 1989]
4. According to Dr. S.C. Nair, the *Myristica swamp forest* also occurs in A&N [Nair 1984]. However, Champion and Seth (1968) do not list this forest type as occurring in A&N. The only place in India where this forest type occurs, according to Champion and Seth, is Kerala.
5. Though in their state-wise forest type distribution table, Champion and Seth (1968) mention this type under A&N, their detailed description of this type does not refer to A&N as one of the places where it is distributed.
6. This and all other following quotes on forest types are from Champion and Seth, 1968.
7. There is a discrepancy between these figures and the FSI (see footnote no. 2 above), even if one assumes that almost all of A&N (i.e. 100%) was forested once, and that 13% destruction still leaves a cover of about 87%. The discrepancy may partly be resolved if the area under plantations (30,000 ha., or approx. 3.6% of the A&N land mass) is added to the area still under forests, reaching a figure of approx. 90%, close to the FSI figure.

WILDLIFE MANAGEMENT IN ANDAMAN AND NICOBAR ISLANDS

AN OVERVIEW OF THE PROTECTED AREA NETWORK

A protected area network was set up in the Andaman and Nicobar Islands relatively recently. It was only in 1977, much after the enactment of the Wildlife (Protection) Act in 1972, that the first four sanctuaries were created. Five national parks were notified in 1979, and one more in 1983. One more sanctuary was set up in 1981, four more in 1985, and another eighty five in 1987, making a total of 100 national parks and sanctuaries (please also see CODE, NAME, AREA, AND YEAR OF NOTIFICATION OF NATIONAL PARKS AND SANCTUARIES IN A&N). These Protected Areas now cover a total area of 73,311.53 ha. Of this area, about one-third is spread over marine waters, leaving a protected land mass which is about 6% of the area of the union territory.

STRUCTURE OF THE FOREST DEPARTMENT AND THE WILDLIFE WING

The Forest Department of the Andaman and Nicobar Administration is headed by a Principal Chief Conservator of Forests (PCCF). A number of Conservators of Forests (CFs) under the PCCF are in charge of various wings. One of these is the Wildlife Wing, the CF in charge of which is also the Chief Wildlife Warden of A&N. He is assisted by two Deputy Conservators of Forest, one based in Mayabandar in North Andaman Island, and the other at Port Blair, in South Andaman Island. There is also an Assistant Conservator of Forest (ACF) at Campbell Bay, Great Nicobar Island, and an ACF at the Marine National Park, Wandur.

BIOSPHERE AND TRIBAL RESERVES

In addition to the 100 national parks and sanctuaries, substantial areas in the islands are demarcated Tribal Reserves, under the Andaman and Nicobar Islands (Protection of Aboriginal Tribes) Regulations of 1956. While their primary function is to safeguard the interests of the vulnerable tribal communities of Andaman and Nicobar Islands, they also serve as protected forest areas. The single major difference, of course, is that the wildlife is not strictly protected, since traditional hunting, trapping, and other such activities of the tribals continue. The chances of this having led to any serious wildlife decline are remote, given the low populations and simple technologies of these tribes. The only exception to this may be in Great Nicobar Island, where the Nicobarese hunt the Megapode (*Megapodus freycinet*) and collect its eggs. But even here, it is possibly outsiders who are causing far greater damage (for greater details, please see A&N ISLANDS: AN ECOLOGICAL AND SOCIO-ECONOMIC PROFILE, p. 1).

The following are the designated tribal reserves [Chana, Pers. comm., 1989]:

1. 11,900 ha. on Great Nicobar Island, for the Shompens
2. 25,200 ha. on Little Andaman Island, for the Onges
3. 6,000 ha. on North Sentinel Island, for the Sentinalese
4. 60 ha. on Strait Island, for the Andamanese
5. 63,886 ha. on the western part of Middle and South Andaman Islands, for the Jarawas

There is also a move to declare large areas in the islands as Biosphere Reserves. A large part of the Great Nicobar Island has already been designated as the Great Nicobar Biosphere Reserve (see Appendix 8 for details), while the entire North Andaman Island along with several surrounding islands is proposed to be given the status of North Andaman Biosphere Reserve [Ministry of Environment and Forests 1989b].

MANAGEMENT STATUS—A PROFILE

The declaration of a wildlife habitat as a national park or sanctuary does not by itself ensure its effective protection. A number of other measures are needed for this, including completion of the procedures laid down in the Wild Life (Protection) Act of 1972, building up and implementation of management plans, and provision of adequate staff, funds, equipment, and research inputs.

Table 1 below gives a quick overview of the status of various critical management parameters in each of 15 national parks and sanctuaries in A&N for which detailed information is available. Greater details on these parameters are given in the individual directory sheets. The table also provides a consolidated statement for the whole union territory. The other 85 sanctuaries are omitted from this table, since detailed information on these was not available. However, it is known that for most of the parameters grouped under legal status, human presence, and management, the answer would be in the negative for these 85 sanctuaries.

For the 15 parks and sanctuaries dealt with here, the picture that emerges is categorised into four heads: legal status, ecological factors, human presence and management.

Legal Status: The completion of legal procedures, as laid down in the Wild Life (Protection) Act, is essential for the proper management of a national park or sanctuary. It must be kept in mind that the set of procedures applicable to a national park was till very recently different to that applicable to a sanctuary. In the latter case, an area was first declared a sanctuary (under Section 18 of the Act), and then steps were taken to determine, extinguish, acquire or otherwise adjust the existing rights of people in the area (Sections 19 to 26 of the Act). In the case of a national park, an intention to constitute an area as a national park was first declared (Section 35 of the Act), then all the steps prescribed for a sanctuary (Sections 19 to 26) were followed, and only then was the area notified a national park (Section 35 (4) of the Act).

Legal procedures were, therefore, considered completed for a sanctuary if all the rights had been settled, either under the 1972 Act or under any previous act. For a national park, however, completion was achieved only when the final notification was issued (for further details, see 'Legal Status' in KEY TO THE DIRECTORY SHEETS, p. 35; for recent changes in the Act, see the Postscript, p. 165).

In A&N, none of the parks or sanctuaries have completed their legal procedures. It must, however, be remembered that most of these areas have no known human rights, leases, or activities, hence the wildlife authorities may not have considered necessary the steps beyond notification of the area. The Wild Life (Protection) Act of 1972 does not, however, allow for such an exemption. In any case, while non-completion of legal procedures may be justified in the present circumstances, it could leave these areas open to future human pressures. This would be especially so in the case of national parks, since for all of them only the intention to notify has been declared.

Ecological Factors: There are many physical and biological factors which have a bearing on the management of an area. Two such factors which are important in the parks and sanctuaries of mainland India, *forest fires* and *droughts*, are virtually non-existent in A&N, due to the high humidity and rainfall. The question of counter-measures therefore does not arise. In their place, *gales* and *cyclones* are major climatic factors influencing the habitat, sometimes causing damage to standing trees (as reported, for instance, from North Reef Island Sanctuary). All of the parks and sanctuaries in A&N reported the occurrence of gales and cyclones.

It must be noted that without a deeper analysis, it is not possible to judge the impact of these occurrences on the ecosystem and its constituents.

Disease among fauna has been reported from only one park and none of the sanctuaries in A&N. The solitary case of disease is of corals in the Marine National Park. No area has reported *diseases among flora*. It must be noted, however, that research on the parks and sanctuaries, and monitoring of flora and fauna, is virtually non-existent, and so diseases among fauna and flora, even if present, would go unnoticed.

Vaccination of livestock is not done in any of the parks or sanctuaries in A&N. However, grazing has been reported from only one national park (Saddle Peak) and one sanctuary (Narcondam). It must also be noted that there are very few animals, such as the introduced Spotted deer, to which diseases can be transmitted. Vaccination is therefore not relevant to most protected areas in A&N.

The presence of locally threatened species is of critical importance in determining the management priorities of an area. Two of the six national parks and eight of nine sanctuaries reported one or more species as being locally threatened, while for the rest no information was available. However, these

figures must be regarded with caution, for a standard definition of 'locally threatened' is very difficult to provide, and in this case was left to the perceptions of the wildlife authorities.

Human Presence: Very few wildlife habitats in mainland India are completely free of human presence. In A&N, most of the protected areas do not have any human habitation inside, or even adjacent to, their boundaries. However, this does not necessarily immunise them from human disturbance. Local people, visitors, foreign vessels entering illegally, members of governmental and defence agencies, all contribute to continuous and increasing disturbance to many of these sanctuaries and national parks. Also, while at present human activities in the parks and sanctuaries of A&N may be absent or minimal, they could increase in future. Management priorities have to be developed keeping in mind this possibility.

Only one of six national parks (Marine) and none of the nine sanctuaries in A&N reported the existence of *rights, leases, or concessions* within them, though various activities are carried out by people in neighbouring areas. However, one other park (Saddle Peak) reported human settlements inside it. The people in these settlements would be carrying out activities inside this park throughout the year, but these activities do not have the status of rights, leases, or concessions. In addition, the Nicobarese are allowed hunting, under Section 65 of the Wild Life (Protection) Act of 1972—this activity may be carried out on Megapode Island Sanctuary [fv].

Grazing, legal or illegal, exists in one of the six national parks (Saddle Peak) and one of the nine sanctuaries (Narcondam).

More common is the presence of *illegal activities*, reported from two of the six national parks and seven of the nine sanctuaries of A&N. Of course the range and intensity of such activities differs considerably from area to area, but it is significant that, despite minimal human presence, there are still so many areas with illegal activities.

Tourists visit only two of the six national parks and one of the nine sanctuaries. Most areas are either closed to tourism, or inaccessible, or both.

Three of the six national parks and three of the nine sanctuaries reported the existence of *activities by government departments and agencies other than the wildlife authorities* inside the national parks and sanctuaries. Such activities are forbidden in national parks and illegal, without the permission of the Chief Wildlife Warden, in sanctuaries. Even in sanctuaries, they have to be in consonance with wildlife management. Their presence in six areas is therefore of some concern.

Conflicts between wildlife protection interests and the interests of the local human communities, illegal activities, or tension with wildlife authorities are factors that can lead to physical *clashes* between local people and wildlife officials. No area in the islands has reported them.

Management Activities and Facilities: Amongst the first management inputs that are needed to tackle the multiple problems outlined above, is a *management plan*. Such a plan "should identify the major objectives of the park/sanctuary, assemble comprehensive background data, establish the relationship of different factors to each other, identify the priority areas and strategies for protection and management, and indicate locations for buildings and facilities" [Kothari, Pande, Singh, and Variava, 1989].

The record of A&N in this respect is bad, with no park or sanctuary having a plan. It may be said with some justification that many of the protected areas need no management save protection, and therefore require no elaborate management plans. However, there do not exist even basic statements of purpose, and programmes for giving protection to these areas, which are the bare minimum in terms of planning.

Management of wildlife reserves also requires financial inputs, for staff salaries, protection and management work, equipment, research, and so on. For proper long-term planning and for relative independence in the functioning of the park or sanctuary authorities, it is necessary that each area have a *separate budget*, though this may not be so for every area in A&N. However, none of the parks and sanctuaries here have a separate budget.

Most of the areas also have no *forest or wildlife personnel* stationed exclusively for them, the exceptions being three of six parks and three of nine sanctuaries. However, this may not be as alarming as it sounds (for discussion on this, please see KEY TO THE DIRECTORY SHEETS, p. 35).

Equipment, including vehicles, for use by the staff is available in one of the parks and one of the sanctuaries. In most, of course, the absence of staff makes the presence of equipment irrelevant. However, as most of the parks and sanctuaries are remote islands, the absence of appropriate seafaring vessels in adequate numbers inhibits proper management.

Zonation of the area of a national park or sanctuary has been considered essential for proper protection and management. A report of the Indian Board for Wildlife on eliciting public support for wildlife conservation states: "Of over-riding and primary importance is the need for each individual reserve to adopt a 'core-buffer-multiple use surrounds' structure, wherein a restricted forest i.e. buffer surrounds the core insulating it from an outer multiple use area, the last comprising forests and villages where land use practices are compatible with wildlife conservation" [Indian Board for Wildlife, 1983].

None of parks and sanctuaries in A&N have zonation. Again, the relevance of this step is uncertain in the case of many areas, which are small and need to be protected in their entirety.

Proper management of a wildlife reserve requires an adequate data base, which can be obtained only by appropriate research. Also essential is the monitoring of habitat changes, of flora and fauna, and of management activities themselves. *Research and monitoring* have usually been given very little attention in Indian wildlife reserves; in A&N, it has been reported from only one park and two sanctuaries.

Employment of labour is often resorted to for protection and development work within protected areas. In A&N, two of the six parks and only one of the sanctuaries reported such use of labour.

One final parameter of importance to management is the interaction of the wildlife authorities with the local people. Building up a relationship of harmony and mutual support requires not only a sensitivity to the needs of the local communities, but also an active extension programme amongst them. Of vital importance in this would be the involvement of non-governmental organisations and individuals who could mediate between officials and local people. Such NGOs and NGLs could also help in research, and perhaps most importantly, in monitoring the success or failure of management strategies.

In A&N, however, *extension programmes* are non-existent or irrelevant in parks or sanctuaries. There is also no *NGO/NGI associated* with any protected area, though a few groups and individuals are involved with overall wildlife conservation issues in the islands (for names, please see *KEY TO THE DIRECTORY SHEETS*, p. 35).



TABLE 1: MANAGEMENT STATUS OF NATIONAL PARKS AND SANCTUARIES IN ANDAMAN AND NICOBAR ISLANDS: SOME PARAMETERS

	National Parks						Sanctuaries									TOTAL					
	MAR	MID	MOU	NOR	SAD	SOU	BAR	BAT	INT	MEG	NAR	NORR	SAL	SOU	TIL	YES		NO		OTHERS	
																NP	S	NP	S	NP	S
LEGAL STATUS																					
COMPLETION OF LEGAL PROCEDURES	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	0	0	6	9	0	0
ECOLOGICAL FACTORS																					
FIRE OCCURRENCE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	0	0	6	9	0	0
FIRE COUNTER-MEASURES	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	0	0	0	0	6	9
DROUGHT OCCURRENCE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	0	0	6	9	0	0
DROUGHT COUNTER-MEASURES	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	0	0	0	0	6	9
DISEASE AMONG FAUNA	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	1	0	5	9	0	0
DISEASE AMONG FLORA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	0	0	6	9	0	0
VACCINATION PROGRAMME	I	I	I	I	N	I	I	I	I	I	N	I	I	I	I	0	0	1	1	5	8
THREATENED SPECIES	Y	?	?	?	Y	?	Y*	Y	Y	Y	?	Y	Y	Y	Y	2	8	0	0	4	1
GALES AND CYCLONES	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	6	9	0	0	0	0
HUMAN PRESENCE																					
RIGHTS/LEASES/CONCESSIONS	Y	N	N	N	N	N	N	N	N	N+	N	N	N	N	N	1	1	5	8	0	0
HUMAN HABITATION INSIDE	N	N	N	N	Y	N	N	N	Y**	N	Y***	N	N	N	N	1	2	5	7	0	0
GRAZING	N	N	N	N	Y	N	N	N	N	N	Y	N	N	N	N	1	1	5	8	0	0
OFFENCES/ILLEGAL ACTIVITIES	Y	N	N	N	Y	N	Y	N	Y	Y	Y	Y	Y	N	Y	2	7	4	2	0	0
TOURISM	Y	N	N	N	Y	N	N	N	N	N	N	N	Y	N	N	2	1	4	8	0	0
USE BY OTHER GOVERNMENT AGENCIES	Y	N	Y	N	Y	N	N	N	Y	N	Y	N	Y	N	N	3	3	3	6	0	0
CLASHES	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	0	0	6	9	0	0
MANAGEMENT																					
MANAGEMENT PLAN	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	0	0	6	9	0	0
SEPARATE BUDGET	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	0	0	6	9	0	0
PERSONNEL	10	0	3	0	2	0	0	0	1\$	3@	0	0	4	0	0	3	3	3	6	0	0
EQUIPMENT	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	1	1	5	8	0	0
ZONING	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	0	0	6	9	0	0
RESEARCH AND MONITORING	Y	N	N	N	N	N	N	N	N	N	Y	N	Y	N	N	1	2	5	7	0	0
EXTENSION/INTERACTION PROGRAMMES	N	I	N	I	N	I	I	I	I	N	I	N	N	I	I	0	0	3	3	3	6
HGO/NGI INVOLVEMENT	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	0	0	6	9	0	0
LABOUR EMPLOYED	Y	N	Y	N	N	N	N	N	N	N	N	N	Y	N	N	2	1	4	8	0	0

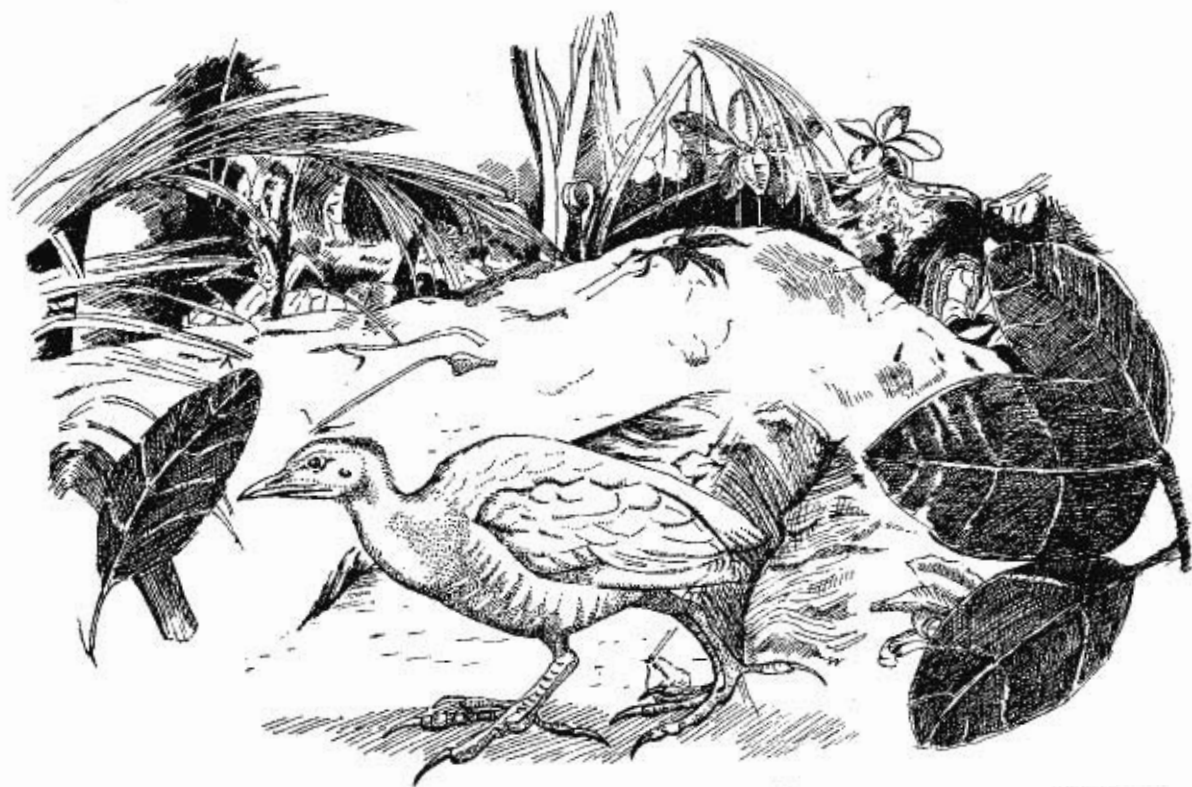
Note: Y = Yes N = No I = Irrelevant ? = No information
 NP = National Park S = Sanctuary

- * Goats are reported to be threatened, but it is important to note that they were introduced into the island in the first place.
- + The Nicobarese tribals are exempted, from hunting restrictions, under Section 65 of the Wild Life (Protection) Act, but this is not a right/lease/concession specific to Megapode Island Sanctuary.
- ** A police outpost, a forest camp, and 3 Coast Guard camps.
- *** A police outpost only.
- \$ Forest personnel (Territorial Wing) are also posted here.
- @ Stationed outside the sanctuary.



Reef heron (*Egretta sacra*), dark and pale phases

NATIONAL PARKS AND SANCTUARIES IN ANDAMAN AND NICOBAR ISLANDS



Megapode (*Megapodius freycinet*), at nest

NOTE ON METHODOLOGY

This directory is a by-product of ongoing studies on the management of national parks and sanctuaries in India. For the purpose of these studies, three questionnaires - I, II, and III- were designed to be filled in by the park/sanctuary Directors, State Governments and non-governmental organisations/individuals, respectively.

The information relevant to the different sections of the directory was first extracted from questionnaire I. Queries were then sent to the State Governments on various gaps or inconsistencies in this information. Field visitors (members of the research team) were also sent to some of the areas to get more detailed and up-to-date information. A list of field visitors is given below.

Responses by the State Government to the queries sent, the field visitors reports and other sources (listed below) were consulted to draft the directory sheets. These directory sheets were then sent back to the State Governments for final checking, and based on their comments and on the comments of other knowledgeable persons, the sheets have been finalised, and data compiled on the management status.

The map of each area is based on the boundaries specified in the notification of each area, and on maps sent by the wildlife authorities along with questionnaire I. Wherever available, Survey of India topographical sheets and Naval Hydrographic maps were also consulted (for a list of map sources, please see REFERENCES at the end of this volume). The maps have been finalised after discussion with State wildlife officials and, in some cases, verification by field visitors.

SOURCES

The information in this directory has been compiled from the following sources:

1. Questionnaire I [QI], filled and returned by the wildlife authorities for each national park and sanctuary
2. Working Plan [WP] for the North Andaman Forest Division within which various parks and sanctuaries fall.
3. Survey of India Topographical Sheets [Tp], Naval Hydrographic maps [Hyd. map], and maps sent in by the wildlife authorities [Map]
4. Gazette notifications of the park/sanctuary [Notif]
5. Answers by the wildlife wing officials to queries [qa]
6. Reports of the field visitors [fv]. (For a full list of field visitors, see below).
7. Map of the National Atlas Organisation, Plate-22, Port Blair [NA]
8. Other published and unpublished material, as listed in the REFERENCES

Sources of information are included, within square brackets, in the text (see REFERENCES for expansions of abbreviations used in text). Where no source is mentioned, it implies that the information was provided by the State Wildlife Wing in Questionnaire I, or as response to queries (sources 1 and 5 above).

LIST OF FIELD VISITORS TO NATIONAL PARKS AND SANCTUARIES OF A&N

<i>Name of N/S</i>	<i>Name of Field Visitor</i>	<i>Time of Visit</i>
Marine National Park	Shekhar Singh Pratibha Pande Ashish Kothari Madhu Ramnath Pallava Bagla	January 1987 January 1989

Mount Harriett National Park	Pratibha PanJe Ashish Kothari	January 1987
Saddle Peak National Park	Pallava Bagla Shekhar Singh Pratibha Pande	January 1989 January 1987
Barren Island Sanctuary	Shekhar Singh Pratibha Pande	January 1987
Salt Water Crocodile Sanctuary	Shekhar Singh Pratibha Pande Ashish Kothari Madhu Ramnath	January 1987
Interview Island Sanctuary	Shekhar Singh Pratibha Pande	January 1987
Megapode Island Sanctuary	Ashish Kothari	February 1987
North Reef Island Sanctuary	Shekhar Singh Pratibha Pande	January 1987
Tillongchang Island Sanctuary	Ashish Kothari	January 1987

The effort to visit South Sentinal Island Sanctuary was frustrated by a cyclonic storm due to which the project personnel, despite reaching the vicinity of the Island, could not land on it. Rough seas also prevented a landing on Battimalv Island despite reaching it. Many of the newly declared island sanctuaries were observed from the ship by the project personnel, but as they are small and uninhabited, landings were not attempted.



CODE, NAME, AREA, AND YEAR OF NOTIFICATION OF NATIONAL PARKS AND SANCTUARIES IN ANDAMAN AND NICOBAR ISLANDS

(It must be emphasised that the area of each national park or sanctuary given below is as notified. This may be different from the area of the park/sanctuary on the map; such verification has not been done except in the case of the 15 parks and sanctuaries for which directory sheets are given).

<i>Code</i>	<i>Name of Park/Sanctuary</i>	<i>Area in Ha.</i>	<i>Year of Notification</i>
A&N/N/MAR	MARINE NATIONAL PARK	28150.00	1983
A&N/N/MID	MIDDLE BUTTON ISLAND NATIONAL PARK	64.75	1979
A&N/N/MOU	MOUNT HARRIETT NATIONAL PARK (Harriet)**	4662.00	1979
A&N/N/NOR	NORTH BUTTON ISLAND NATIONAL PARK	44.00	1979
A&N/N/SAD	SADDLE PEAK NATIONAL PARK	3254.88	1979
A&N/N/SOU	SOUTH BUTTON ISLAND NATIONAL PARK	3.80	1979
Total Parks Area		36179.43*	
A&N/S/ARI	ARIAL ISLAND SANCTUARY (Ariel)**	5.00	1987
A&N/S/BAM	BAMBOO ISLAND SANCTUARY	5.00	1987
A&N/S/BAR	BARREN ISLAND SANCTUARY	810.00	1977
A&N/S/BAT	BATTIMALV ISLAND SANCTUARY	223.00	1985
A&N/S/BEL	BELLE ISLAND SANCTUARY	8.00	1987
A&N/S/BEN	BENETT ISLAND SANCTUARY (Bennet)**	346.00	1987
A&N/S/BIN	BINGHAM ISLAND SANCTUARY	8.00	1987
A&N/S/BLI	BLISTER ISLAND SANCTUARY	26.00	1987
A&N/S/BLU	BLUFF ISLAND SANCTUARY	114.00	1987
A&N/S/BON	BONDOVILLE ISLAND SANCTUARY (Boudeville)**	255.00	1987
A&N/S/BRU	BRUSH ISLAND SANCTUARY	23.00	1987
A&N/S/BUC	BUCHANAN ISLAND SANCTUARY	933.00	1987
A&N/S/CHA	CHANEL ISLAND SANCTUARY (Channel)**	13.00	1987
A&N/S/CIN	CINQUE ISLANDS SANCTUARY	951.00	1987
A&N/S/CLY	CLYDE ISLAND SANCTUARY (Clyd)**	54.00	1987
A&N/S/CON	CONE ISLAND SANCTUARY	65.00	1987
A&N/S/CURL	CURLEW ISLAND SANCTUARY	3.00	1987
A&N/S/CURB	CURLEW (B.P.) ISLAND SANCTUARY	16.00	1987
A&N/S/DEF	DEFENCE ISLAND SANCTUARY	1049.00	1987
A&N/S/DOTI	DOT ISLAND SANCTUARY	18.00	1987
A&N/S/DOTT	DOTTREL ISLAND SANCTUARY	13.00	1987
A&N/S/DUN	DUNCAN ISLAND SANCTUARY	73.00	1987
A&N/S/EASI	EAST ISLAND SANCTUARY	611.00	1987
A&N/S/EAS2	EAST OR INGLIS ISLAND SANCTUARY	355.00	1987
A&N/S/EGG	EGG ISLAND SANCTUARY	5.00	1987
A&N/S/ELA	ELAT ISLAND SANCTUARY (Flat)**	936.00	1987
A&N/S/ENT	ENTRANCE ISLAND SANCTUARY	96.00	1987
A&N/S/GAN	GANDER ISLAND SANCTUARY	5.00	1987

A&N/S/GIR	GIRJAN ISLAND SANCTUARY (Gurjan)**	16.00	1987
A&N/S/GOO	GOOSE ISLAND SANCTUARY	1.00	1987
A&N/S/HUM	HUMP ISLAND SANCTUARY	47.00	1987
A&N/S/INT	INTERVIEW ISLAND SANCTUARY	13300.00	1985
A&N/S/JAM	JAMES ISLAND SANCTUARY	210.00	1987
A&N/S/JUN	JUNGLE ISLAND SANCTUARY	52.00	1987
A&N/S/KWA	KWANGTUNG ISLAND SANCTUARY	57.00	1987
A&N/S/KYD	KYD ISLAND SANCTUARY	800.00	1987
A&N/S/LAN	LANDFALL ISLAND SANCTUARY	2948.00	1987
A&N/S/LAT	LATOUCHE ISLAND SANCTUARY	96.00	1987
A&N/S/MAN	MANGROVE ISLAND SANCTUARY	39.00	1987
A&N/S/MAS	MASK ISLAND SANCTUARY	78.00	1987
A&N/S/MAY	MAYO ISLAND SANCTUARY	10.00	1987
A&N/S/MEG	MEGAPODE ISLAND SANCTUARY	12.50	1985
A&N/S/MON	MONTGOMERY ISLAND SANCTUARY (Montgomery)**	21.00	1987
A&N/S/NAR	NARCONDAM ISLAND SANCTUARY	681.20	1977
A&N/S/NORB	NORTH BROTHER ISLAND SANCTUARY	75.00	1987
A&N/S/NORI	NORTH ISLAND SANCTUARY	49.00	1987
A&N/S/NORR	NORTH REEF ISLAND SANCTUARY	348.40	1977
A&N/S/OLI	OLIVER ISLAND SANCTUARY	16.00	1987
A&N/S/ORC	ORCHID ISLAND SANCTUARY	10.00	1987
A&N/S/OX	OX ISLAND SANCTUARY	13.00	1987
A&N/S/OYS1	OYSTER ISLAND -1 SANCTUARY	8.00	1987
A&N/S/OYS2	OYSTER ISLAND -2 SANCTUARY	21.00	1987
A&N/S/PAG	PAGET ISLAND SANCTUARY	736.00	1987
A&N/S/PAR	PARKINSON ISLAND SANCTUARY	34.00	1987
A&N/S/PAS	PASSAGE ISLAND SANCTUARY	62.00	1987
A&N/S/PAT	PATRIC ISLAND SANCTUARY (Petrie)**	13.00	1987
A&N/S/PEA	PEACOCK ISLAND SANCTUARY (Pocock)**	62.00	1987
A&N/S/PIT	PITMAN ISLAND SANCTUARY (Petman)**	137.00	1987
A&N/S/POI	POINT ISLAND SANCTUARY	307.00	1987
A&N/S/POT	POTANMA ISLANDS SANCTUARY	16.00	1987
A&N/S/RAN	RANGER ISLAND SANCTUARY	426.00	1987
A&N/S/REE	REEF ISLAND SANCTUARY	174.00	1987
A&N/S/ROP	ROPER ISLAND SANCTUARY	146.00	1987
A&N/S/ROS	ROSS ISLAND SANCTUARY	101.00	1987
A&N/S/ROW	ROWE ISLAND SANCTUARY	1.00	1987
A&N/S/SAL	SALT WATER CROCODILE SANCTUARY (Lohabarrack)**	2221.00*	1981
A&N/S/SAN	SANDY ISLAND SANCTUARY	158.00	1987
A&N/S/SEA	SEA SERPENT ISLAND SANCTUARY	78.00	1987
A&N/S/SHA	SHARK ISLAND SANCTUARY (Snark)**	60.00	1987
A&N/S/SHE	SHEARME ISLAND SANCTUARY	785.00	1987
A&N/S/SIR	SIR HUGH ROSE ISLAND SANCTUARY	106.00	1987
A&N/S/SIS	SISTERS ISLAND SANCTUARY	36.00	1987
A&N/S/SNA1	SNAKE ISLAND -1 SANCTUARY	73.00	1987
A&N/S/SNA2	SNAKE ISLAND -2 SANCTUARY	3.00	1987
A&N/S/SOUB	SOUTH BROTHER ISLAND SANCTUARY	124.00	1987
A&N/S/SOUR	SOUTH REEF ISLAND SANCTUARY	117.00	1987

A&N/S/SOUS	SOUTH SENTINAL ISLAND SANCTUARY (Sentinel)**	161.00	1977
A&N/S/SPI1	SPIKE ISLAND -1 SANCTUARY (Speke)**	42.00	1987
A&N/S/SPI2	SPIKE ISLAND -2 SANCTUARY	1170.00	1987
A&N/S/STO	STOAT ISLAND SANCTUARY	44.00	1987
A&N/S/SUR	SURAT ISLAND SANCTUARY	31.00	1987
A&N/S/SWA	SWAMP ISLAND SANCTUARY	409.00	1987
A&N/S/TABD	TABLE (DELGARNO) ISLAND SANCTUARY	229.00	1987
A&N/S/TABE	TABLE (EXCELSIOR) ISLAND SANCTUARY	169.00	1987
A&N/S/TAL	TALABAICHA ISLAND SANCTUARY (Talakaicha)**	321.00	1987
A&N/S/TEM	TEMPLE ISLAND SANCTUARY	104.00	1987
A&N/S/TIL	TILLONGCHANG ISLAND SANCTUARY	1683.00	1985
A&N/S/TRE	TREE ISLAND SANCTUARY	3.00	1987
A&N/S/TRI	TRILBY ISLAND SANCTUARY	96.00	1987
A&N/S/TUF	TUFT ISLAND SANCTUARY	29.00	1987
A&N/S/TUR	TURTLE ISLANDS SANCTUARY	39.00	1987
A&N/S/WES	WEST ISLAND SANCTUARY	640.00	1987
A&N/S/WHA	WHARF ISLAND SANCTUARY	11.00	1987
A&N/S/WHI	WHITE CLIFF ISLAND SANCTUARY	47.00	1987

Total Sanctuaries Area	37132.10@
Total Area of Parks/Sanctuaries	73311.53+

DISTRICTS WITHIN WHICH NATIONAL PARKS/SANCTUARIES ARE LOCATED

All the national parks and sanctuaries are located in Andaman District, except three sanctuaries—Battimalv Is., Megapode Is., and Tillongchang Is.—which are in Nicobar District.

- ** The name/spelling given in brackets is also used for the Park/Sanctuary in some official documents, such as the Survey of India topographical sheets.
- # About two-thirds of this is marine water area. The protected land mass under national parks is therefore about 1.5% of the total area of the union territory (8,24,900 ha.).
- * The notified area of Salt Water Crocodile Sanctuary is 10,000 ha. However, the actual map area is much smaller, and A&N wildlife authorities have stated that the actual area is 2221 ha. [PCCF fax 1991].
- @ A small percentage of this is marine water area. So the protected land mass under sanctuaries constitutes about 4.30% of the total area of the union territory.
- + The protected land mass (please see footnotes # and @ above) is about 5.8% of the total area of the union territory.





NICOBAR ISLANDS: SANCTUARIES

Andaman
Sea

Car Nicobar

20

23

Revello Channel

Sombrero Channel

Little Nicobar I.

Campbell Bay

Great
Nicobar I.

49



Bay of
Bengal

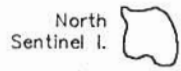
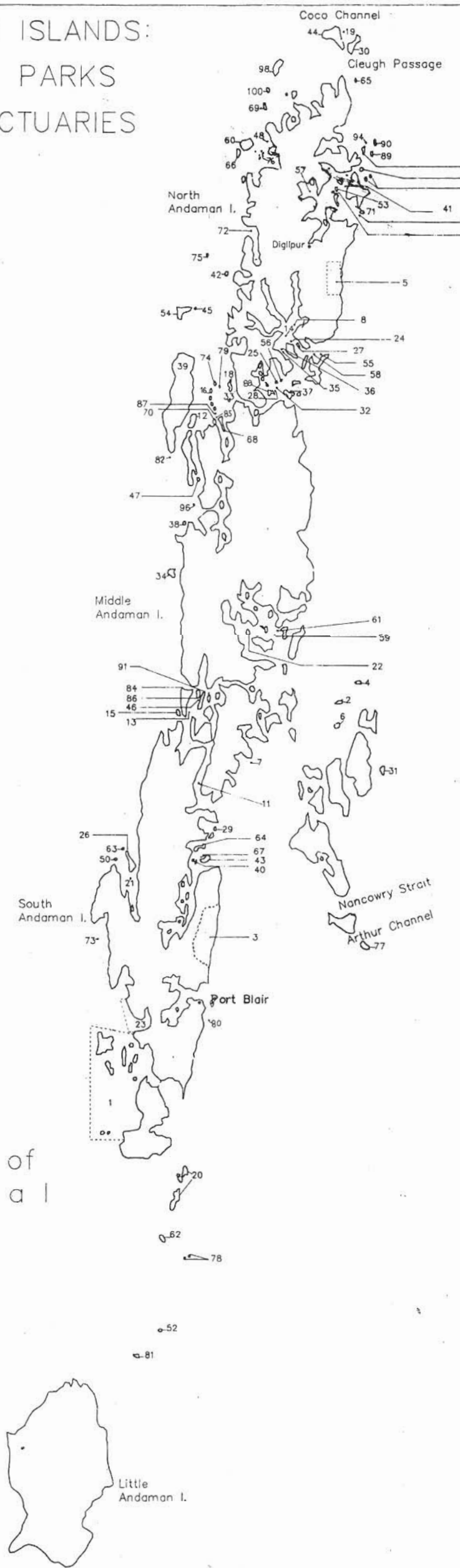
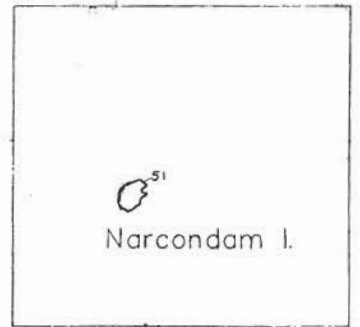
20 km

Based upon Survey of India map with the permission of the Surveyor General of India.

The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line.

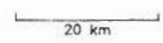
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ANDAMAN ISLANDS: NATIONAL PARKS AND SANCTUARIES



Bay of Bengal

Andaman Sea



Note: Names of national parks and sanctuaries, corresponding to the numbers above, are given on pp. 31-33.

Based upon Survey of India map with the permission of the Surveyor General of India.
The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line.
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MAP REFERENCE NUMBERS OF NATIONAL PARKS AND SANCTUARIES IN ANDAMAN AND NICOBAR ISLANDS

(Serial number here corresponds to the number of the park/sanctuary on the Maps of A&N, pp. 29-30. Separate maps of each park and sanctuary are either with their respective directory sheets, or in the case of those protected areas for which no sheets are given, on plates whose numbers are given below in column 4.)

Sr. no. on UT maps	Code	Name of Park/Sanctuary	Map plate no.
1	A&N/N/MAR	MARINE NATIONAL PARK	(with sheet)
2	A&N/N/MID	MIDDLE BUTTON ISLAND NATIONAL PARK	(with sheet)
3	A&N/N/MOU	MOUNT HARRIETT NATIONAL PARK	(with sheet)
4	A&N/N/NOR	NORTH BUTTON ISLAND NATIONAL PARK	(with sheet)
5	A&N/N/SAD	SADDLE PEAK NATIONAL PARK	(with sheet)
6	A&N/N/SOU	SOUTH BUTTON ISLAND NATIONAL PARK	(with sheet)
7	A&N/S/ARI	ARIAL ISLAND SANCTUARY	10
8	A&N/S/BAM	BAMBOO ISLAND SANCTUARY	5
9	A&N/S/BAR	BARREN ISLAND SANCTUARY	(with sheet)
10	A&N/S/BAT	BATTIMALV ISLAND SANCTUARY	(with sheet)
11	A&N/S/BEL	BELLE ISLAND SANCTUARY	10
12	A&N/S/BEN	BENETT ISLAND SANCTUARY	6
13	A&N/S/BIN	BINGHAM ISLAND SANCTUARY	9
14	A&N/S/BLI	BLISTER ISLAND SANCTUARY	5
15	A&N/S/BLU	BLUFF ISLAND SANCTUARY	9
16	A&N/S/BON	BONDOVILLE ISLAND SANCTUARY	6
17	A&N/S/BRU	BRUSH ISLAND SANCTUARY	3
18	A&N/S/BUC	BUCHANAN ISLAND SANCTUARY	6
19	A&N/S/CHA	CHANEL ISLAND SANCTUARY	1
20	A&N/S/CIN	CINQUE ISLANDS SANCTUARY	16
21	A&N/S/CLY	CLYDE ISLAND SANCTUARY	13
22	A&N/S/CON	CONE ISLAND SANCTUARY	8
23*	A&N/S/SAL	SALT WATER CROCODILE SANCTUARY	(with sheet)
24	A&N/S/CURL	CURLEW ISLAND SANCTUARY	5
25	A&N/S/CURB	CURLEW (B.P.) ISLAND SANCTUARY	6
26	A&N/S/DEF	DEFENCE ISLAND SANCTUARY	13
27	A&N/S/DOTI	DOT ISLAND SANCTUARY	5
28	A&N/S/DOTT	DOTTREL ISLAND SANCTUARY	6
29	A&N/S/DUN	DUNCAN ISLAND SANCTUARY	12
30	A&N/S/EAS1	EAST ISLAND SANCTUARY	1
31	A&N/S/EAS2	EAST OR INGLIS ISLAND SANCTUARY	11
32	A&N/S/EGG	EGG ISLAND SANCTUARY	6
33	A&N/S/ENT	ENTRANCE ISLAND SANCTUARY	6
34*	A&N/S/ELA	ELAT ISLAND SANCTUARY	7
35	A&N/S/GAN	GANDER ISLAND SANCTUARY	5
36	A&N/S/GOO	GOOSE ISLAND SANCTUARY	5
37*	A&N/S/GIR	GIRJAN ISLAND SANCTUARY	6
38	A&N/S/HUM	HUMP ISLAND SANCTUARY	7
39	A&N/S/INT	INTERVIEW ISLAND SANCTUARY	(with sheet)
40	A&N/S/JAM	JAMES ISLAND SANCTUARY	12

41	A&N/S/JUN	JUNGLE ISLAND SANCTUARY	3
42	A&N/S/KWA	KWANGTUNG ISLAND SANCTUARY	4
43	A&N/S/KYD	KYD ISLAND SANCTUARY	12
44	A&N/S/LAN	LANDFALL ISLAND SANCTUARY	1
45	A&N/S/LAT	LATOUCHE ISLAND SANCTUARY	(with Sr.no.54)
46	A&N/S/MAN	MANGROVE ISLAND SANCTUARY	9
47	A&N/S/MAS	MASK ISLAND SANCTUARY	7
48	A&N/S/MAY	MAYO ISLAND SANCTUARY	2
49	A&N/S/MEG	MEGAPODE ISLAND SANCTUARY	(with sheet)
50	A&N/S/MON	MONTOGEMERY ISLAND SANCTUARY	13
51	A&N/S/NAR	NARCONDAM ISLAND SANCTUARY	(with sheet)
52	A&N/S/NORB	NORTH BROTHER ISLAND SANCTUARY	17
53	A&N/S/NORI	NORTH ISLAND SANCTUARY	3
54	A&N/S/NORR	NORTH REEF ISLAND SANCTUARY	(with sheet)
55	A&N/S/OLI	OLIVER ISLAND SANCTUARY	5
56	A&N/S/ORC	ORCHID ISLAND SANCTUARY	6
57	A&N/S/OX	OX ISLAND SANCTUARY	3
58	A&N/S/OYS1	OYSTER ISLAND -1 SANCTUARY	5
59	A&N/S/OYS2	OYSTER ISLAND -2 SANCTUARY	8
60	A&N/S/PAG	PAGET ISLAND SANCTUARY	2
61	A&N/S/PAR	PARKINSON ISLAND SANCTUARY	8
62	A&N/S/PAS	PASSAGE ISLAND SANCTUARY	16
63	A&N/S/PAT	PATRIC ISLAND SANCTUARY	13
64	A&N/S/PIT	PITMAN ISLAND SANCTUARY	12
65	A&N/S/PEA	PEACOCK ISLAND SANCTUARY	1
66	A&N/S/POI	POINT ISLAND SANCTUARY	2
67	A&N/S/POT	POTANMA ISLANDS SANCTUARY	12
68	A&N/S/RAN	RANGER ISLAND SANCTUARY	6
69	A&N/S/REE	REEF ISLAND SANCTUARY	2
70	A&N/S/ROP	ROPER ISLAND SANCTUARY	6
71	A&N/S/ROS	ROSS ISLAND SANCTUARY	3
72	A&N/S/ROW	ROWE ISLAND SANCTUARY	4
73	A&N/S/SAN	SANDY ISLAND SANCTUARY	13
74	A&N/S/SEA	SEA SERPENT ISLAND SANCTUARY	6
75	A&N/S/SHA	SHARK ISLAND SANCTUARY	4
76	A&N/S/SHE	SHEARME ISLAND SANCTUARY	2
77	A&N/S/SIR	SIR HUGH ROSE ISLAND SANCTUARY	14
78	A&N/S/SIS	SISTERS ISLAND SANCTUARY	16
79	A&N/S/SNA1	SNAKE ISLAND -1 SANCTUARY	6
80	A&N/S/SNA2	SNAKE ISLAND -2 SANCTUARY	15
81	A&N/S/SOUB	SOUTH BROTHER ISLAND SANCTUARY	17
82	A&N/S/SOUR	SOUTH REEF ISLAND SANCTUARY	(with Sr.no.39)
83	A&N/S/SOUS	SOUTH SENTINAL ISLAND SANCTUARY	(with sheet)
84	A&N/S/SPI1	SPIKE ISLAND -1 SANCTUARY	6
85	A&N/S/SPI2	SPIKE ISLAND -2 SANCTUARY	9
86	A&N/S/STO	STOAT ISLAND SANCTUARY	9
87	A&N/S/SUR	SURAT ISLAND SANCTUARY	6
88	A&N/S/SWA	SWAMP ISLAND SANCTUARY	6
89	A&N/S/TABD	TABLE (DELGARNO) ISLAND SANCTUARY	3
90	A&N/S/TABE	TABLE (EXCELSIOR) ISLAND SANCTUARY	3
91	A&N/S/TAL	TALABAICHA ISLAND SANCTUARY	9

92	A&N/S/TEM	TEMPLE ISLAND SANCTUARY	3
93	A&N/S/TIL	TILLONGCHANG ISLAND SANCTUARY	(with sheet)
94	A&N/S/TRE	TREE ISLAND SANCTUARY	3
95	A&N/S/TRI	TRILBY ISLAND SANCTUARY	3
96	A&N/S/TUF	TUFT ISLAND SANCTUARY	7
97	A&N/S/TUR	TURTLE ISLANDS SANCTUARY	3
98	A&N/S/WES	WEST ISLAND SANCTUARY	2
99	A&N/S/WHA	WHARF ISLAND SANCTUARY	3
100	A&N/S/WHI	WHITE CLIFF ISLAND SANCTUARY	2

- * On earlier drafts of this directory, some sanctuaries were spelt differently or given names used in official documents other than the notification. The present list uses only notification names and spellings. Changes have therefore been made for the the following sanctuaries : Elat (earlier listed under its other name, Flat), Girjan (earlier spelt Gurjan), Peacock (earlier listed under the name Pocock), Pitman (earlier spelt Petman), and Salt Water Crocodile (earlier listed as Crocodile). Their serial numbers, and correspondingly their numbers on the Union Territory map (23 for Salt Water Crocodile Sanctuary, 34 for Elat Island Sanctuary, 37 for Girjan Island Sanctuary, 65 for Peacock Island Sanctuary, and 64 for Pitman Island Sanctuary), have been retained here, since changing them to accommodate alphabetical reordering would have entailed considerable changes in the map.





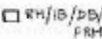

















Greater racket-tailed drongo *Dicurus paradiseus*

KEY TO MAPS

[Names of national parks and sanctuaries appearing in the maps are taken from the relevant notifications. Alternative names used in the other official documents (such as Survey of India toposheets), are also given on the maps. Vernacular names of parks and sanctuaries, where available, are in the PROFILE OF 83 OTHER SANCTUARIES IN ANDAMAN AND NICOBAR ISLANDS (pg.107). These vernacular names are not given on the maps. However, in a few cases, places within or near a park/sanctuary have both an English and a vernacular name, or two alternative English names -- both are given on the map, with the vernacular or second English name in brackets.

Island boundaries or coastline have been shown along the highwater line depicted in the Survey of India toposheets, except where mentioned otherwise. These maps do not indicate foreshore rocks and danger line (shallow water extent) around the islands. Hence they are considered unfit for purposes of navigation and landing.

Only perennial streams, marked as such on the SOI toposheets, are shown on the maps.]

	Boundaries of National Parks and Sanctuaries		
	Perennial streams; → Shows flow of water; ↻ Indicates a flow of water in both directions (incoming and outgoing tide)		
	Rest House/Inspection Bungalow/Dak Bungalow/Forest Rest House		
	Imaginary boundary around mangrove patches, named as islands on Hydrographic maps		
	Large water areas, e.g. Andaman Sea		Lighthouse
	Mangroves	P.O.	Police outpost
	Surveyed coastline, high water line	N.	Nalla
	Foreshore sand	Mt.	Mount
	Foreshore and inland mud	Pk.	Peak
	Metalled roads	Pt.	Point
	Unmetalled roads	Is.	Island
	Paths		Ridge
	Highest point		Steep cliff
	Other peaks/high points	↓	Landing area
	Spring	•	Habitation
	Perennial inland lakes, big\small		Dispensary

KEY TO THE DIRECTORY SHEETS

Information for 15 of the 100 national parks and sanctuaries in Andaman and Nicobar Islands is given in directory sheets.* The format and content of these directory sheets is explained below. Headings of sections, as they appear in the directory sheets, are given in **bold** and CAPITAL letters. The kind of information each section contains is described in square brackets, in *italics*, after the heading. Where headings of sections do not appear in the directory sheets (eg. Highlights), these are also given within brackets. Wherever relevant, qualifications and clarifications regarding each section are given after the description, in normal print.

[Code: *Appears at the top right-hand corner of first page of each directory sheet. Each national park or sanctuary has a code consisting of three elements as follows:*

1. *The first two or three letters denote the State, eg. A&N for Andaman and Nicobar Islands and RAJ for Rajasthan;*
2. *The next letter denotes whether the area is a national park (N) or a sanctuary(S);*
3. *The next three or four letters denote the first three or four letters of the first word in the name of the park or sanctuary. Where the first three letters of the first word are identical for two or more parks or sanctuaries in a state, a fourth letter has been used. Where the first four letters too are identical, the first letter of the second word in the name has been put at the fourth place in the code. For example A&N/S/CURL for Curlew Island Sanctuary and A&N/S/CURB for Curlew (B.P.) Island Sanctuary. Where, however, even the second word in the name is the same for more than one sanctuary, the fourth place in the code is given a serial number. For instance, A&N/S/OYS1 for Oyster Island - 1 Sanctuary, and A&N/S/OYS2 for Oyster Island - 2 Sanctuary.*

(For a full list of codes and names of national parks and sanctuaries of Andaman and Nicobar Islands, see pp. 25-27).]

[NAME OF PARK/SANCTUARY]

[**HIGHLIGHTS:** *Gives a brief description of the area, highlighting the ecological, topographical, historical, and cultural values.*]

[**LEGAL STATUS:** *[Gives the date on which a sanctuary or national park was notified. For national parks where final notification has not been issued (see explanation below) it gives the date when the intent to constitute the area into a national park was declared. Wherever available, notification numbers are also given.]*

The Wild Life (Protection) Act, 1972, (hereafter called the Act) which governs the setting up and management of national parks and sanctuaries, prescribes a number of steps for the establishment of protected areas.

These steps are:

1. Notification of the area as a sanctuary [Section 18 (1)] or declaration of intent to make it into a national park [Section 35 (1)].
2. Identification of the rights existing in the area [Section 19].
3. Acquisition, settlement, exclusion of these rights [Section 24].
4. Final notification in the case of national parks [Section 35 (4)].

* These are the 15 which were declared prior to January 1987, and for which a substantial amount of information is available: Marine, Mount Harriett, Saddle Peak, North Button Is., Middle Button Is., and South Button Is. National Parks, and Barren Is., Battimalv Is., Interview Is., Megapode Is., Narcondam Is., North Reef Is., Salt Water Crocodile, South Sentinal Is., and Tillongchang Is. Sanctuaries. The other 85 are uninhabited islands with little or no management input, and minimal information. Whatever details are available about 83 of these sanctuaries are given in tabular form after their maps, on pp. 107 to 114. The two remaining ones, Latouche Island Sanctuary and South Reef Island Sanctuary, are clubbed with North Reef Island Sanctuary and Interview Island Sanctuary, respectively, since they are geographically very close.

In the Directory sheets the phrases "declared a sanctuary" (without any qualifying statement) and "intention declared to constitute it into a national park" are used for those sanctuaries and national parks respectively where the legal procedures have not been completed.

However, though for none of the parks and sanctuaries in Andaman and Nicobar Islands have the legal procedures been completed, in most no rights exist. Consequently, the non-completion of legal procedures might not cause immediate difficulties in such areas, but may be a source of future embarrassment if human pressures start growing.

Status of Nicobaris in the Wild Life (Protection) Act, 1972: Section 65 of the Wild Life (Protection) Act 1972 grants a special status to Nicobari tribals. It states :

Nothing in this Act shall affect the hunting rights conferred on the Scheduled Tribes of the Nicobar Islands in the Union Territory of Andaman and Nicobar Islands by notification of the Andaman and Nicobar Administration, No.40/67/F. No.G635 Vol. III, dated the 28th April, 1967, published at pages 1 to 5 of the Extraordinary issue of the Andaman and Nicobar Gazette, dated the 28th April, 1967.

The only wildlife protected area on which this exemption has some potential impact is Megapode Island Sanctuary, off the south-western coast of Great Nicobar Island.

AREA: [*Gives the total area of the park or sanctuary in hectares, rounded off to two decimal places; and in square kilometers, within parentheses, also rounded off to two decimal places.*]

LOCATION: [*Gives the administrative district(s) within which the area is located, the latitudinal and longitudinal range of the area, and the nearest town, airport, and, where relevant, helipad.*]

The nearest railheads for Andaman and Nicobar Islands are Calcutta and Madras, and these have not been separately mentioned in individual directory sheets.

APPROACH(ES): [*Gives distances and convenient approaches to the area, from union territory headquarters or other prominent towns or cities. Unless otherwise specified, the routes mentioned are by road.*]

Approaches to parks and sanctuaries have been given from Port Blair, Car Nicobar or Great Nicobar (Campbell Bay), whichever is the nearest.

Port Blair can be reached either by air or ship from Calcutta (1255 km) or Madras (1133 km).

TOPOGRAPHY: [*Gives altitudinal range.*]

Though the lowest point for parks and sanctuaries has been shown as 0 metres above mean sea level, strictly speaking for those areas which include portions of the sea within their boundaries, the lowest point would be on the sea floor level.

Climate being similar throughout, the following information [met] applies to all parks and sanctuaries in the Andaman and Nicobar Islands, and has not been repeated in each directory sheet:

Mean Annual Rainfall : 3180.5 mm

Rainy months : May to November

Maximum temperature : 36.1° C

Minimum temperature : 16.7° C

FLORA: [*Describes the vegetation, and identifies the forest types, as per the revised list of Champion and Seth [Champion and Seth 1968]. A checklist of the trees, and other plants, found in the area, is also given. Wherever available, information is given about plantations, introduced plant species, and species which are locally threatened (i.e., those that are threatened in the area, irrespective of whether they are threatened in the U.T./country as a whole). Consolidated lists of trees and other plants, found in all the parks and sanctuaries, appear in the appendices with scientific, English, and vernacular names.*]

Please see comments below in FAUNA, regarding the lack of comprehensive information on each park and sanctuary.

FAUNA: [Lists mammals, birds, reptiles, amphibians, insects and other fauna occurring in the area. Also lists locally threatened species, i.e., those that are threatened in the area, irrespective of whether they are threatened in the U.T./country as a whole.]

Usually only common names of fauna are listed. However, if common names are not known for a particular species, its scientific name is given. The common and scientific names, and distribution, of species listed in the directory are given in Appendix 3.]

In the fauna list, where only a genus is known that has only two species, or only two of its species can possibly occur in the area under question, both the species have been mentioned with a slash (/) in between and a question mark (?) after them. This means "one of the two or both".

The common names of various species are listed in alphabetical order with the generic name first. A list of the common names along with the corresponding scientific names has been provided in the appendices at the end of the directory.

There are inconsistencies in the usage of common and scientific names among different sources. For the purpose of this directory usage has been standardised according to the following sources:

Mammals : Prater 1980, and Tikader and Das 1985 (for species not listed in Prater)

Birds : Ripley 1982

Reptiles : Daniel 1983, and Tikader and Das 1985 (for species not listed in Daniel)

Insects : Ghorpade, Pers. comm. 1991

Invertebrates (other than insects) : Tikader, Daniel, and Rao 1986

For A&N Islands, it is important to note the high degree of endemism of species and subspecies (for figures, see Tables 3 and 4 in A&N ISLANDS: AN ECOLOGICAL AND SOCIO-ECONOMIC PROFILE, p. 1). Hence both species and subspecies of mammals, birds, and reptiles are listed in Appendices 4 to 6, though the directory sheets only have the all-India standardised lists of species.

Since the above mentioned standard works for birds and reptiles do not contain, for the better part, common names of subspecies, the following sources were used to obtain these for Appendices 4 to 6:

Birds : Ali and Ripley 1983

Reptiles : Tikader and Das 1985

Unfortunately, usage of common names is not always uniform between the sources mentioned above. For instance, *Artamus leucorhynchus* is called the Whitebreasted swallow-shrike in Ali and Ripley (1983), and the Whiterumped swallow-shrike in Ripley (1892). Readers wishing to refer to Appendices 4 to 6 for the distribution of animals mentioned in directory sheets are advised to look under the relevant genus (in this case, Swallow-shrike), and, for those names not found here, check the given footnotes. Alternatively, the scientific names given in Appendices 4 to 6 can be compared to those given in Appendix 3. Please also see relevant explanation in each of these appendices.

The available lists of mammals, birds, reptiles, amphibia, fish, insects and other forms of life found in parks and sanctuaries, or in A&N as a whole, are neither complete nor always current. It is, therefore, expected that all the fauna listed for any park or sanctuary might have occurred there at some point in time, but whether all of it still exists there is not certain. It also should be obvious that these listings may be only a fraction of the wildlife found in these areas.

The population and density of species has not been mentioned except occasionally in a most general way. This is mainly because even minimally reliable information on these aspects was not available.

Since exploitation of marine resources has not been very intense in Andaman and Nicobar Islands, the water surrounding most of its various islands remains rich in marine flora and fauna. This would obviously be true of all its national parks and sanctuaries, since they all have at least one boundary adjoining the sea. It is however unclear in many cases whether any part of the sea is actually part of the park or sanctuary or not; this is complicated by the rise and fall of the tide, and by the presence of salt-water creeks entering the landmass of many islands. Unfortunately systematic studies on marine wildlife have not been done separately for each national park and sanctuary. Perhaps the only listing worth mentioning is that which was made for the Marine National Park, reproduced in the directory

sheet of this park. It is quite likely that a substantial portion of this list is applicable to many of the other parks and sanctuaries.

The absence of separate lists of marine fauna and flora from the directory sheets of most of the areas should therefore be interpreted not as an absence of such wildlife in these areas, but merely as a lack of information.

Though sea mammals like the dugong and dolphin have been reported from many areas, they have been deleted from lists of those parks and sanctuaries which do not have a portion of the sea *within* their boundaries. Though this is technically correct, it might be kept in mind that these two mammals are frequently reported from the *surrounds* of most of the parks and sanctuaries.

Similarly, cobras have been reported from some of the areas, but as it is not known which of the three possible species is being referred to, they have not been included in the lists given in the directory sheets.

OCCURRENCE AND CONTROL OF DISEASE: [*Gives information about flora and fauna epidemics and diseases, if any.*]

Information under this head has been reported from very few of A&N's protected areas, presumably because there is no research and monitoring in most of them.

OTHER FACTORS AFFECTING HABITAT: [*Gives details of forest fires, frost, gales and cyclones, hailstorms, hot winds, pollution, waterlogging, avalanches, erosion and land slides, wherever one or more of these phenomena occur.*]

WATER RESOURCES: [*Lists natural and artificial water sources, both perennial and seasonal.*]

Fresh water is relatively scarce on these islands, the major sources being seasonal streams and waterholes fed by the abundant rains, and underground aquifers. Most of the smaller islands have virtually no permanent or long-duration fresh water source at all.

Wherever possible, availability of fresh water sources is indicated for each national park and sanctuary. What is not mentioned in individual directory sheets, but ought to be emphasised here, is that the sea is a major source of water for all the parks and sanctuaries. It is uncertain whether any of the terrestrial fauna would use salt water for drinking (there are unconfirmed reports of the goats on Barren Island Sanctuary having adapted to this). But certainly the sea is an important source of food for such fauna, and also a habitat and source of nourishment for myriad marine faunal and floral species.

PERSONNEL: [*Gives designation and number of staff, and identifies the local in-charge.*]

The majority of national parks and sanctuaries in Andaman and Nicobar Islands have no wildlife personnel stationed inside. For these, protection and other management is afforded by the staff of the nearest wildlife office. This would usually be in the form of occasional patrolling, or a visit in the wake of reports of any untoward incident. In the case of some of the remote islands, like Barren, Narcondam, Battimalv, and Tillongchang Sanctuaries, and the recently declared 85 island sanctuaries in the Andamans, even this level of staff presence is absent or very rare.

The absence of staff is not necessarily a negative factor. Many of the parks and sanctuaries not only have no habitation but virtually no reported human pressure. Their sheer inaccessibility is their best protection. Indeed, given the fragility of their ecosystems, any staff stationed in them could well themselves become a serious source of disturbance. These factors, along with the logistical problems of transporting essential supplies across large distances of sea, and the hardships that would have to be faced by anyone living on these remote islands, make stationing of personnel on them an exercise of doubtful value.

In the Andaman group of islands, Marine National Park, Mount Harriett National Park, Saddle Peak National Park, Interview Island Sanctuary, and Salt Water Crocodile Sanctuary have wildlife staff posted exclusively for them. The rest of the parks and sanctuaries are looked after by the general wildlife staff under the control of the Deputy Conservator of Forest (WL) at Mayabandar, and the Deputy Conservator of Forest (WL) at Haddo (Port Blair).

In the Nicobar group of islands, only Megapode Island Sanctuary has staff posted exclusively for it. All the three sanctuaries are under the overall control of the DFO (Territorial), Great Nicobar. There is, under him, an Assistant Conservator of Forest (WL) at Campbell Bay (Great Nicobar Island).

EQUIPMENT: [Lists equipment available at or for the area. Does not list basic equipment like torches and lathis, nor office equipment and furniture.]

RESEARCH AND MONITORING: [Details research and monitoring work on/in the park or sanctuary. Also indicates availability of literature on the area.]

Very little research and monitoring has been carried out specific to any park or sanctuary in the A&N.

HUMAN PRESENCE: [Gives details regarding rights and leases, habitation, grazing, offences and illegal activities, tourism, use by other government agencies, and other miscellaneous activities within the area, indicating extent and type of activity.]

Most parks and sanctuaries in Andaman and Nicobar Islands are uninhabited. Where there is some habitation in or around, the number of villages and population figures mentioned are those given by the state wildlife authorities, except in the case of Marine National Park and Salt Water Crocodile Sanctuary, for which 1981 census figures were used.

INFORMATION FOR VISITORS: [Indicates best time for visiting the area, accommodation and other facilities available, and future plans, if any, to extend tourist facilities.]

Information for visitors has been given for only those areas where tourism is allowed and convenient. Permission to enter any of the parks or sanctuaries needs to be taken from the Chief Wildlife Warden at Port Blair. This is readily given for areas such as Marine National Park, Mount Harriett National Park, and the Salt Water Crocodile Sanctuary. As most of the remaining national parks and sanctuaries in the Andaman and Nicobar Islands do not have any public ferry, and cannot be easily reached without the help of the local administration, no specific rules pertaining to entry of visitors have been framed. Considering there is no order closing these areas to visitors, in principle it is possible to visit them, subject to the restrictions outlined below.

The following entry regulations are mentioned in the brochure on Andaman and Nicobar Islands, brought out by the India Tourism Development Corporation [ITDC undated]:

Indian nationals do not require permission to visit Andaman and Nicobar Islands. However, to visit certain reserved areas inhabited by tribals they need to have permits from the Deputy Commissioner, Andamans, at Port Blair.

Foreign nationals need special permits to visit the Andaman and Nicobar Islands.

None of the parks and sanctuaries in Andaman and Nicobar Islands employ trained tourist guides. Their absence has not, as such, been remarked upon separately for each area.

Clarifications pertaining to all or many of the above sections:

Date of Information: For some items, the date that the information pertains to has been given in the text. For most others, the information has been checked with the State Wildlife authorities upto February, 1989. An update on personnel, offences, and some other information was obtained from the PCCF, A&N Island, in July 1991. However, in many items, like population, fauna and flora listing, etc., the information is not necessarily as on February 1989 or July 1991, but as on the last update by the State authorities, or as per the date of the source.

Information not available: Wherever it is indicated, for a head or item, that information is not available, it means that information is not available with the Wildlife Wing of A&N, including the park/sanctuary authorities. It is however possible that this information is available with some other source, but we have not been able to procure it.

Additional Clarifications and Qualifications

The directories of other states/U.T.s of India, brought out or under preparation at the IIPA, contain a number of other section heads, which are omitted in the case of A&N because they are not applicable. These include: Zoning, Budget, Management Plan, Community Interaction Programmes, and NGOs/Individuals Associated.

While there is no separate **BUDGET** allocation for any park or sanctuary in A&N, there is an allocation for the wildlife wing which is used to manage these areas. The details are as follows:

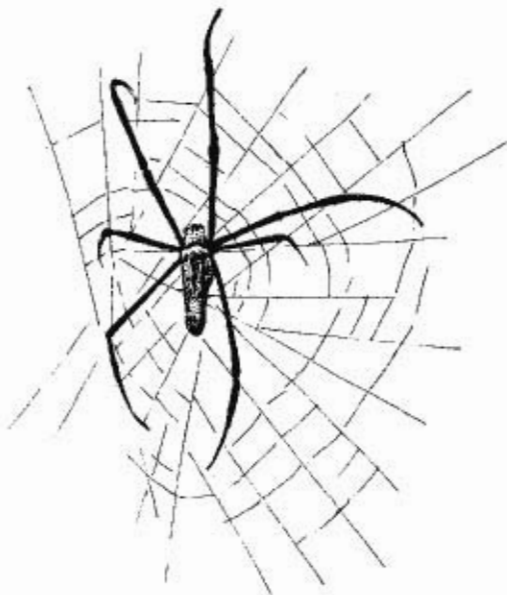
ANNUAL BUDGET OF THE WILDLIFE WING, FOREST DEPARTMENT, A&N

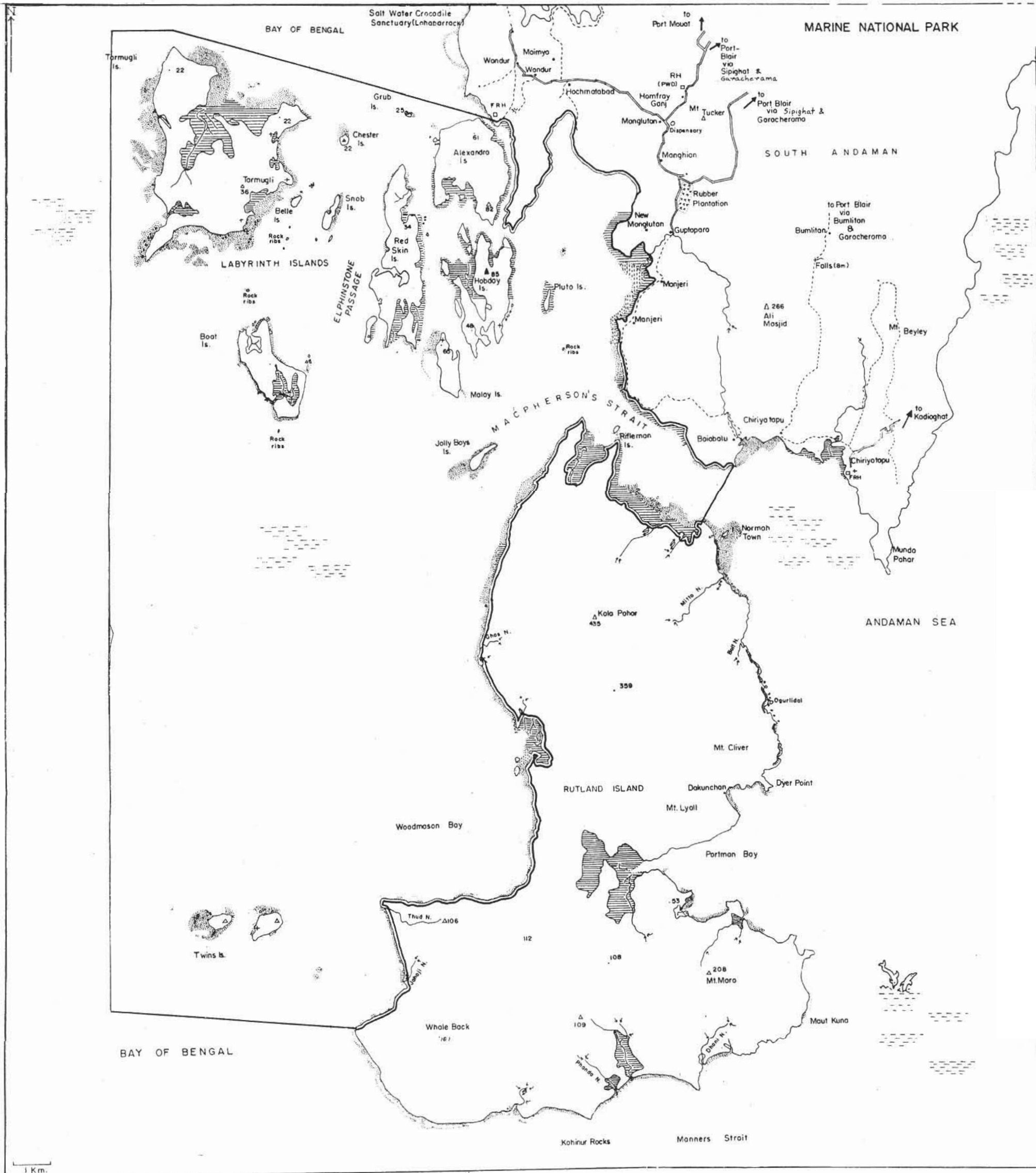
Year	Non-plan (Rs.)	Plan (Rs.)	Total (Rs.)
1985-86	18,44,000	Not known	Not known
1986-87	22,33,000	12,50,000	34,83,000
1987-88	21,88,000	21,46,000	43,34,000
1988-89	26,53,000	26,60,000	53,13,000
1989-90	30,70,000	31,00,000	61,70,000
1990-91	69,65,000	33,00,000	102,65,000

While there is no **NGO/INDIVIDUAL ASSOCIATED** with any specific park/sanctuary, one group actively involved in wildlife conservation is the Society for Andaman and Nicobar Ecology (SANE), Port Blair.

As most of the parks and sanctuaries in the A&N Islands do not have staff, **CONTACT ADDRESSES** for each area have not been given separately in the directory sheets. These are given below:

- 1) Chief Wildlife Warden
Forest Department
Chatham
Port Blair 744 102
Andaman and Nicobar Islands
- 2) Deputy Conservator of Forest (WL)
Haddo
Port Blair 744 102
Andaman and Nicobar Islands
- 3) Deputy Conservator of Forest (WL)
Mayabandar 744 204
Andaman and Nicobar Islands
- 4) Assistant Conservator of Forest (WL)
Campbell Bay
Great Nicobar 744 302
Andaman and Nicobar Islands





Based upon Survey of India map with the permission of the Surveyor General of India.
 The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line.

MARINE NATIONAL PARK

This is one of the three marine parks in India, the other two being in Gujarat and Tamil Nadu. Stretching over 15 major islands and several islets of the Labyrinth Island group, its boundaries run sometimes along the coast, sometimes inland [notif]. The park encompasses an enchanting stretch of marine waters, lushly vegetated islands, vast coral reefs, and sparkling silver beaches. The marine fauna is immensely rich, and includes four (and possibly a fifth—see FAUNA below) species of sea turtles, the Dugong, and the Saltwater crocodile. The flora is also extremely diverse, including among the largest remaining stretches of protected mangroves in India. The Park is separated by a small stretch of open sea from the Salt Water Crocodile sanctuary in the North.

Its proximity to Port Blair, its accessibility to both Indian and foreign tourists, and a concentration of settlements along its borders have resulted in considerable recent disturbance to this valuable area.

Some of the islands in the park are also known by their vernacular or local names: Lamba Pahar for Red Skin Island, China Pahar for Boat Island, Naw Nariyal for Malay Island, Goltikri for Jolly Boys Island, and Laltikri for Rifleman Island.

LEGAL STATUS: Intention declared to notify the area into a national park on May 24, 1983 vide notification no. 314/83/CF/WL/43—Vol.I [notif].

AREA: 28150 ha. (281.5 sq. km) [notif]

LOCATION: District Andaman; *Latitudinal Range* 11° 22'06" to 11° 36'34" N [Tp]; *Longitudinal Range:* 92° 30'00" to 92° 40'33" E [Tp]; *Nearest Town* Port Blair (22 km); *Nearest Airport* Port Blair (20 km)

APPROACHES: From Port Blair to Garacherama (6 km), on to Sipighat (4 km), then Manghian (7 km), Manglutan (3 km), to Hochmatabad (3 km), and on to Wandur (1 km), from where the Park is 2 km. Alternatively, from Port Blair to Sipighat on the above route, then to Homfray Ganj (5 km), on to Manglutan (1 km), then as above.

TOPOGRAPHY: *Altitude* 0 to 85 m [Tp].

FLORA: The major forest types include Andaman Tropical Evergreen Forest 1A/C2, Littoral Forest 4A/L1 and Mangrove Forest (Tidal Swamp Forest) 4B/TS2. There is no information on threatened species of flora in the Park.

A list of trees and other vegetation appears at the end of the sheet.

FAUNA:

Mammals [QI, Khan undated, FD undated]

Bat, Dobson's Horseshoe

Boar, Indian Wild

Civet, Himalayan Palm

Deer, Spotted

Dolphin, Common

Fox, Flying

Lists of birds, reptiles, and invertebrates are annexed at the end of the sheet.

The Green sea turtle and Leathery turtle are locally threatened due to poaching and egg collection. The Whitebellied sea eagle is also reported to be locally threatened [QI, fv].

The Crown-of-thorns starfish *Acanthaster planci*, a predator of corals, is believed to be overpopulated in some parts of the park, and is causing considerable localised damage to the reefs [Wood 1989].

The park authorities have attempted captive breeding of crocodiles, hatched from eggs collected in the wild.

OCCURRENCE AND CONTROL OF DISEASE: Corals are reported to display symptoms of the White band disease, in which a 1 cm. wide white band advances from the base to the tip of the coral formation, weakening or killing it [Wood 1989]. The origin of this infestation is not known, but it could be caused by bacteria. *Acropora* sp. of corals are especially affected [Wood 1989].

OTHER FACTORS AFFECTING HABITAT: Occasional gales, cyclones and hailstorms. Sedimentation from soil run-off, due to logging and land clearance on South Andaman and Rutland Islands, is reported to be damaging coral reefs in the park [Wood 1989].

WATER RESOURCES: Two perennial streams each on Redskin Island and Tarmugli Island, one on Hobday Island, and six on Rutland Island. In addition, there are several seasonal streams on Tarmugli Island, Redskin Island, Boat Island, Malay Island, and Hobday Island, and six springs on Tarmugli, Hobday, Malay, and Twins Islands.

PERSONNEL: One Assistant Conservator of Forests (ACF), two Deputy Range Officers, two Foresters, and five Forest Guards [PCCF fax 1991]. The ACF is locally in-charge.

EQUIPMENT: One fixed wireless set and two pairs of binoculars. There are also three dinghies fitted with outboard motors, and one motor launch, a motor vessel and one gemini craft.

RESEARCH AND MONITORING: Park authorities have undertaken research on Leathery and Green sea turtles. Their findings have not been published yet.

HUMAN PRESENCE:

Rights and Leases: The inhabitants of the adjacent villages continue to fish within the park, and are given licences by the Fisheries Department [FV].

Habitation : The Park itself is uninhabited, but there are 8 adjacent or nearby villages, with a total population of around 3000 [Census 1981].

Tourism: Tourists are allowed to visit only two islands in the Park, Jolly Boys and Red Skin. A total of 13,983 people visited the Park in 1990-91. The number of visitors in a day is reported to be about 100 in the peak season (December-January).

Illegal Activities and Offences: Diving for shells, collection of corals, fishing and poaching by villagers and visitors to the Park, is reported. Tourists are also known to sometimes visit a few of the islands closed to visitors [fv]. 9 offences were booked in 1986-87, but none subsequently [PCCF fax 1991]. Wandur jetty is used by local fishermen to dock and repair their boats, causing oil spillage, but it is not clear if this is considered an illegal activity [fv].

Use by Other Government Agencies: The PWD employs labour for the maintenance of a road within the Park.

Miscellaneous: Between 1983-84 and 1986-87, approximately 171 labourers were employed from adjacent villages for protection, maintenance and construction work.

INFORMATION FOR VISITORS: December to March is the best time for visiting the Marine National Park, as the sea is calm.

There is one manned checkpoint at Wandur. Permits are required by all visitors and entry at night is prohibited. A Forest Rest House is also located at Wandur.

Films are occasionally shown at the park, and binoculars for use by visitors are available with Park authorities. Private boats are available through local travel agents. Additional information on the park can be had from a booklet and map available at Wandur.

There is one interpretation centre at Wandur which houses some museum specimens, a few photographs, and paintings of the local fauna. It is proposed to get a slide projector, a colour television and a video cassette recorder, for showing slides and films to visitors.

ANNEXURE

Trees [QI, Chaudhuri 1987, FD undated, Singh *et al* 1986, Goel and Rao 1988]

<i>Actephila excelsa</i>	<i>Hopea odorata</i>
<i>Anaxagorea luzoniensis</i>	<i>Kandelia candel</i>
<i>Artocarpus chaplasha</i>	<i>Knema glaucescens</i>
<i>Artocarpus gomeziana</i>	<i>Lumnitzera racemosa</i>
<i>Avicennia officinalis</i>	<i>Manilkara littoralis</i>
<i>Baccaurea ramiflora</i>	<i>Memecylon pauciflorum</i>
<i>Barringtonia asiatica</i>	<i>Morinda citrifolia</i>
<i>Bruguiera gymnorhiza</i>	<i>Myristica spp.</i>
<i>Bruguiera parviflora</i>	<i>Pandanus odoratissimus</i>
<i>Calophyllum soulattri</i>	<i>Pandanus tectorius</i>
<i>Carapa moluccensis</i>	<i>Planchonella longipetiolata</i>
<i>Ceriops tagal</i>	<i>Planchonia valida</i>
<i>Cordia subcordata</i>	<i>Derris indica</i>
<i>Corypha umbraculifera</i>	<i>Pterospermum acerifolium</i>
<i>Croton argyratus</i>	<i>Rhizophora apiculata</i>
<i>Cryptocarya andamanica</i>	<i>Rhizophora mucronata</i>
<i>Dipterocarpus grandiflorus</i>	<i>Secamone andamanica</i>
<i>Endospermum chinense</i>	<i>Sonneratia apetala</i>
<i>Erythrina variegata</i>	<i>Sonneratia caseolaris</i>
<i>Euphorbia epiphyllodes</i>	<i>Terminalia catappa</i>
<i>Excoecaria agallocha</i>	<i>Thespesia populnea</i>
<i>Guetarda speciosa</i>	<i>Xylocarpus granatum</i>
<i>Heritiera littoralis</i>	<i>Xylocarpus moluccensis</i>
<i>Hibiscus tiliaceus</i>	

Other Vegetation [QI, Chaudhuri 1987, Ellis 1987, FD undated, Singh *et al* 1986, Goel and Rao 1988, Parkinson 1923]

<i>Acanthus ilicifolius</i>	<i>Dalbergia pinnata</i>
<i>Acrostichum aureum</i>	<i>Dinochloa andamanica</i>
<i>Ancistrocladus tectorius</i>	<i>Gnetum contractum</i>
<i>Artabotrys speciosus</i>	<i>Ipomoea pes-caprae</i>
<i>Caesalpinia crista</i>	<i>Lygodium microphyllum</i>
<i>Calamus palustris</i>	<i>Memecylon pauciflorum</i>
<i>Caryota mitis</i>	<i>Mucuna gigantea</i>
<i>Christella subpubescens</i>	<i>Nephrolepis hirsutula</i>
<i>Clerodendrum inerme</i>	<i>Salacia chinensis</i>
<i>Colubrina asiatica</i>	<i>Scyphiphora hydrophyllacea</i>
<i>Corypha umbraculifera</i>	
<i>Crinum asiaticum</i>	

Birds [QI, Khan undated, FD undated, fv]

Bee-eater, Chestnut-headed	Cuckoo, Himalayan
Crow, Jungle	Cuckoo, Indian
Crow-pheasant	Cuckoo, Small
Cuckoo, Emerald	Cuckoo, Violet

Cuckoo-dove, Andaman
 Dove, Emerald
 Dove, Red Turtle
 Dove, Spotted
 Eagle, Andaman Dark Serpent
 Eagle, Whitebellied Sea
 Harrier, Marsh
 Harrier, Pale
 Hawk-eagle, Crested
 Hawk-owl, Andaman Brown
 Kingfisher, Blue-eared
 Kingfisher, Common
 Kingfisher, Storkbilled
 Kingfisher, Threetoed
 Kingfisher, Whitecollared
 Kite, Pariah
 Koel
 Lorikeet, Indian

Reptiles [Khan undated, FD undated]

Crocodile, Estuarine
 Monitor, Water
 Turtle, Green
 Turtle, Hawksbill

Insects (Butterflies)

Clubtail, Andaman
 Clubtail, Common
 Helen, Andaman
 Jay, Great
 Jay, Tailed
 Mime, Common

Corals [Khan undated]

Acropora armata
Acropora brueggemanni
Acropora calamaria
Acropora canalis
Acropora clathrata
Acropora clavigera
Acropora conigera
Acropora corymbosa

Myna, Hill
 Myna, Whiteheaded
 Nightjar, Longtailed
 Owl, Andaman Scops
 Owl, Barn
 Parakeet, Alexandrine
 Parakeet, Redcheeked
 Pigeon, Andaman Wood
 Pigeon, Green Imperial
 Pigeon, Greyfronted Green
 Swiftlet, Andaman Greyrumped
 Swiftlet, Whitebellied
 Teal, Grey
 Teal, Lesser Whistling
 Tern, Blacknaped
 Tree Pie, Andaman
 Woodpecker, Fulvousbreasted Pied
 Woodpecker, Indian Great Black

Turtle, Leathery
 Turtle, Loggerhead*
 Turtle, Olive Ridley

Mormon, Andaman
 Mormon, Common
 Mormon, Great
 Rose, Common
 Rose, Crimson
 Swordtail, Fivebar

Acropora digitifera
Acropora diversa
Acropora formosa
Acropora humilis
Acropora hyacinthus
Acropora intermedia
Acropora irregularis



Whitecollared kingfisher
Halcyon chloris

* Occurrence doubtful, since only authentic records in India are off the Tamil Nadu Coast [Das 1985].

Acropora nasuta
Acropora palmerae
Acropora pacifica
Acropora pulchra
Acropora rectina
Acropora robusta
Acropora squarrosa
Acropora surculosa
Acropora variabilis
Acropora palifera
Favia pallida
Favia speciosa
Favites abdita
Favites halicora
Fungia echinata
Fungia fungites
Fungia horrida
Galaxea fascicularis
Goniastrea pectinata

Crabs [FD undated]

Calappa hepatica
Etisus laevinanus
Grapsus spp.
Leptodius sanguineus
Maluta vistor
Mictyris longicarpus
Sesarma bidens
Tetragonon spp.

Hermit Crabs [FD undated]

Aniculus aniculus
Aniculus strigatus
Birgus latro
Calcinus gaimardii
Calcinus herbstii
Calcinus latens
Clibanarius arethusa
Clibanarius corallinus
Clibanarius humilis
Clibanarius longitarsus
Clibanarius merguensis
Clibanarius olivaceus
Clibanarius striolatus
Coenobita cavipes
Coenobita clypeata

Prawns [FD undated]

Heterocarpus gibbosus
Metapenaeopsis coniger
Metapenaeopsis mogiensis

Goniopora columna
Goniopora peteolata
Goniopora stokesi
Goniopora tenuidens
Leptoseris papyracea
Lobophyllia hemprichii
Merulina ampliata
Montipora foliosa
Mussa angulosa
Platygyra sinensis
Pocillopora damicornis
Pocillopora spp.
Porites nigrescens
Porites porites
Porites tenuis
Symphyllia recta
Stylophora spp.

Thalamita crenata
Thalamita prymna
Thalamita spp.
Uca dussumieri
Uca annulipes
Uca vocens
Uca spp.

Coenobita perlata
Coenobita rugosa
Coenobita spp.
Dardanus deformis
Dardanus guttatus
Dardanus megistos
Dardanus varipes
Dardanus vulnerans
Diogenes avarus
Diogenes spp.
Pagurus pergranulatus
Pagurus zebra
Pagurus spp.
Reguristes ciliatus

Nematocarcinus spp.
Palaemom spp.



Sea Urchins [Khan undated]

Diadema setosum
Echinostrephus molaris
Echinothrix diadema
Laganum depressum

Prionocidaris baculosa
Prionocidaris verticillatus
Stylocidaris tiara
Tripneustes gratilla

Sea Pens [FD undated]

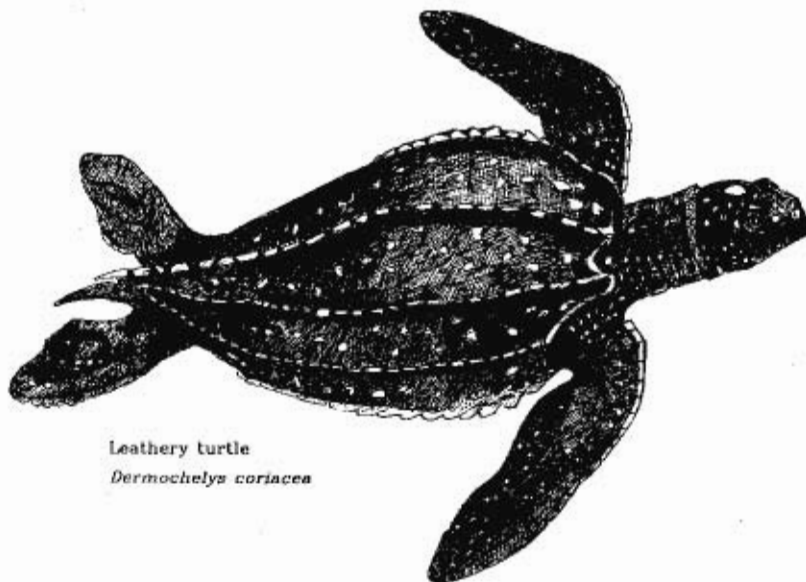
Cavernularia obesa
Dendronephthya booleyi
Pennatula pendula

Pteroeides chinense
Pteroeides crassum

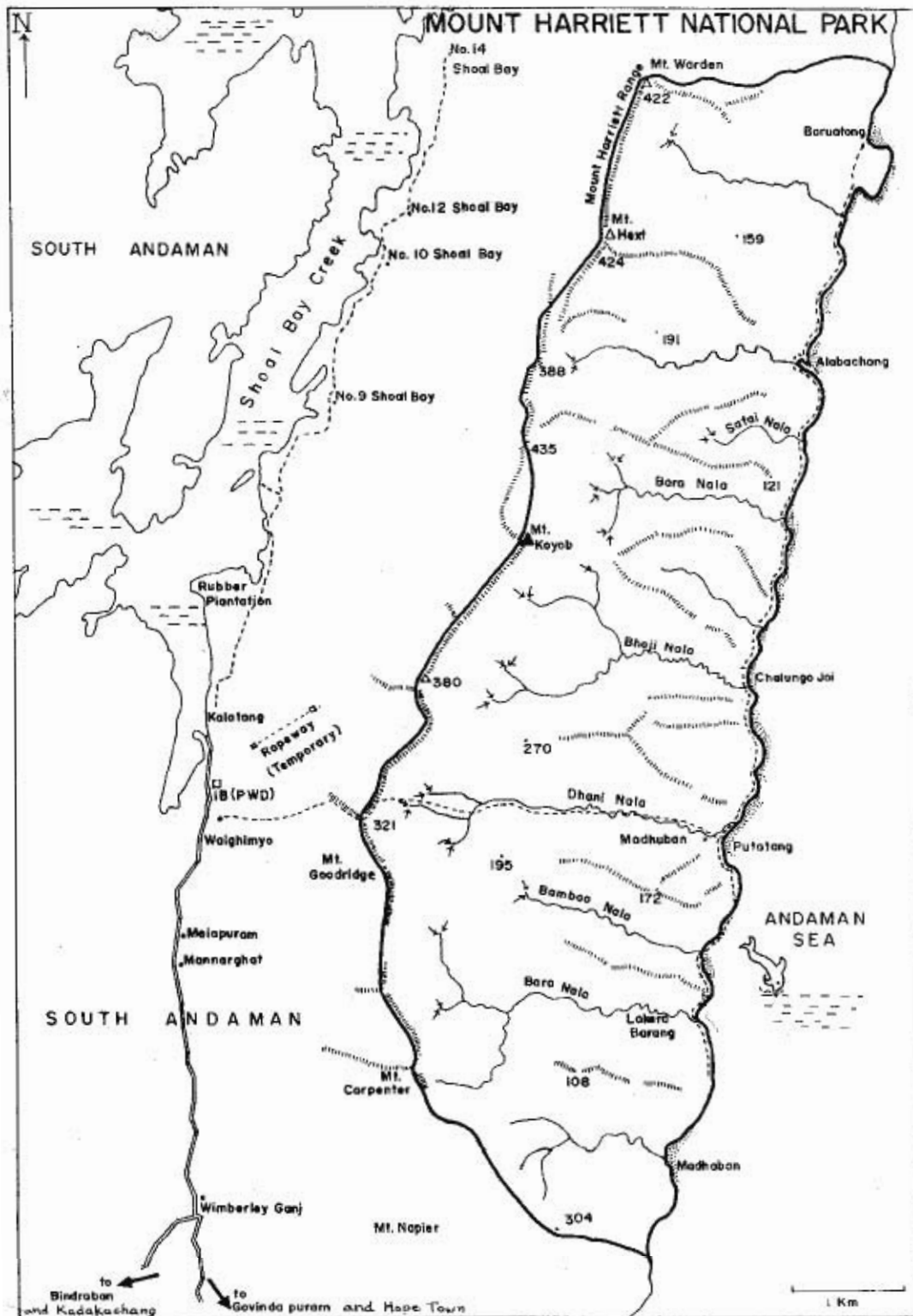
Sea stars and Brittle stars [Khan undated]

Acanthaster planci
Archeaster typicus
Astropecten monacanthus
Astropecten polyacanthus
Craspidaster hesperus
Culcita novaeguineae
Echinothrix calamaris
Enchinaster lunonicus

Ogmaster capella
Ophiocoma scolopendrina
Ophioleis cincta
Ophiomatrix annulosa
Ophioplocus imbricatus
Patiriella pseudoexigua



Leathery turtle
Dermochelys coriacea

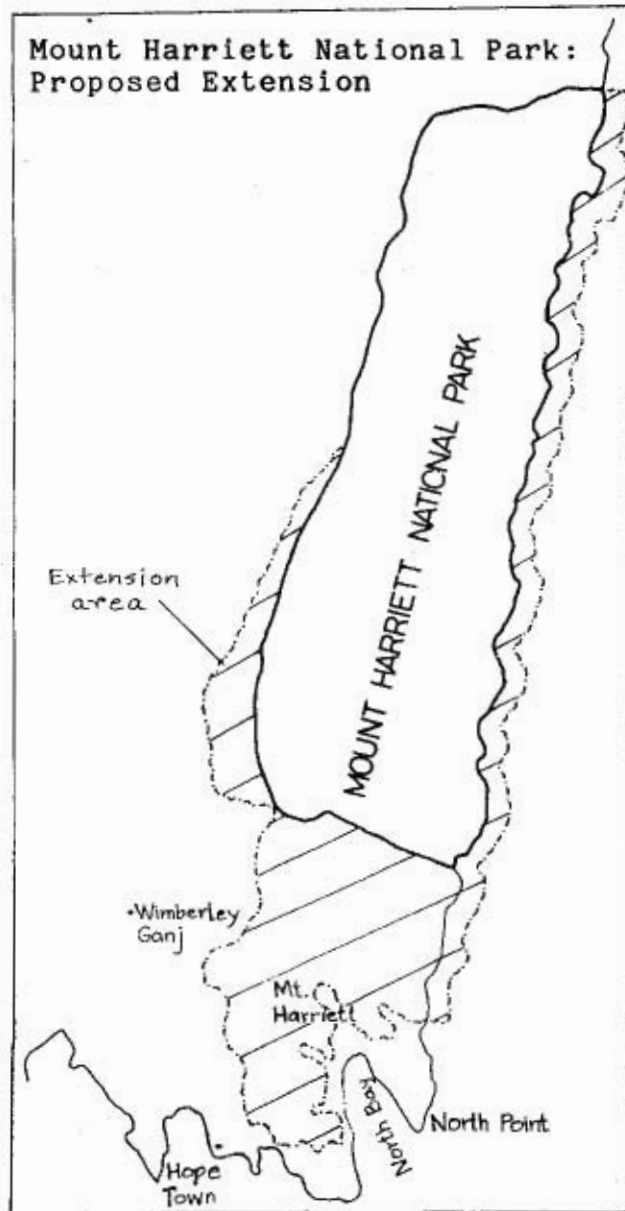


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Mount Harriett National Park:
Proposed Extension



MOUNT HARRIETT NATIONAL PARK

Containing some of the highest peaks of the Andaman Islands, the Mount Harriett range is covered with dense evergreen and semi-evergreen forests. Having been left largely untouched, these forests are in prime condition, though growing settlements around the Park threaten them. While detailed studies have not yet been undertaken in the area, preliminary assessments indicate a rich diversity of floral and faunal life. The Park is also one of the few wildlife protected areas in Andamans which is easily accessible. The area was earlier a Reserved Forest, notified as such on April 17, 1963.

There is a proposal to add portions of the North Andaman Reserve Forest to the west and south of the park [Het, Pers. comm. 1991]. This would include Mount Harriett Peak itself, which seems to have been left out by mistake in the original notification [Khan, Pers. comm. 1991].

LEGAL STATUS: Intention declared to notify the area into a national park, on November 13, 1979, vide notification no. Silva/G-88 [notif].

AREA: 4662 ha. (46.62 sq. km). There is a proposal to extend the area by another 1700 ha. to include the entire Mt. Harriett Range [Chana, Pers. comm. 1989].

LOCATION: District Andaman; *Latitudinal Range* 11°43'57" to 11°51'55" N [Tp]; *Longitudinal Range* 92°43'41" to 92°47'11" E [Tp]; *Nearest Town* Wimberley Ganj (approx. 6 km); *Nearest Airport* Port Blair (38 km)

APPROACHES: Port Blair to Hope Town by ferry, then to Govindapuram (4 km), on to Wimberley Ganj (2 km), and finally to Waighimyo (4 km), from where the park is 2 km. Alternately, Port Blair to Garach-erama (6 km), then circling around Flat Bay to Sipighat (4 km) and Chauldali (4 km), on to Homfray's Ghat (14 km), then Kadakachang (18.5 km), further to Wimberley Ganj (2 km), and then as above.

TOPOGRAPHY: *Altitude* 0 to 460 m [Tp]

FLORA: Forest types include Andaman Tropical Evergreen 1A/C2, Andaman Moist Deciduous 3A/C1 and Andaman Semi-Evergreen 2A/C1 [Chaudhuri 1987].

Trees [QI, Chaudhuri 1987, fv]

<i>Adenanthera spp.</i>	<i>Dipterocarpus grandiflorus</i>
<i>Albizia lebbek</i>	<i>Ficus racemosa</i>
<i>Albizia procera</i>	<i>Ficus hispida</i>
<i>Anacardium occidentale</i>	<i>Ficus variegata</i>
<i>Artocarpus chaplasha</i>	<i>Lagerstroemia hypoleuca</i>
<i>Artocarpus gomezianus</i>	<i>Lannea spp.</i>
<i>Anacardium occidentale</i>	<i>Mesua ferrea</i>
<i>Cocos nucifera</i>	<i>Planchonia spp.</i>
<i>Calophyllum spp.</i>	<i>Pterocarpus dalbergioides</i>
<i>Citrus spp.</i>	<i>Terminalia bialata</i>
<i>Diospyros marmorata</i>	<i>Terminalia procera</i>

Other Vegetation [QI, Chaudhuri 1987, Ellis 1987, Upreti and Singh 1988]

<i>Bambusa lineata</i>	<i>Christella dentata</i>
<i>Calamus andamanicus</i>	<i>Dinochloa andamanica</i>
<i>Calamus longisetus</i>	<i>Pteridium aquilinum</i>
<i>Calamus palustris</i>	<i>Pteridium spp.</i>
<i>Calamus viminalis</i>	

There is no information on threatened species of flora.

FAUNA:**Mammals** [Chaudhuri 1987, fv]

Bat, Dobson's Horseshoe	Deer, Spotted
Bat, Andaman Horseshoe	Flying Fox, (Andaman)
Boar, Indian Wild	Flying Fox, Malayan Large
Civet, Himalayan Palm	Shrew, Andaman Island Spiny
Deer, Barking	

Birds [Tikader and Das 1985, Osmaston 1932, Osmaston 1906, Chaudhuri 1987, fv]

Bluebird, Fairy	Minivet, Scarlet
Drongo, Andaman	Shrike, Brown
Drongo, Greater Racket-tailed	Swift, Large Brownthroated Spinetail
Drongo, Lesser Racket-tailed	Swift, The
Eagle, Crested Serpent	Teal, Grey
Hawk-eagle, Crested	Tree Pie, Andaman
Kingfisher, Threetoed	Warbler, Palefooted Bush
Lorikeet, Indian	

There is no information on reptiles, amphibia, fish, and insects occurring in the Park, nor on any locally threatened species of fauna.

OCCURRENCE AND CONTROL OF DISEASE : None

OTHER FACTORS AFFECTING HABITAT: Gales and cyclones are reported to occur.

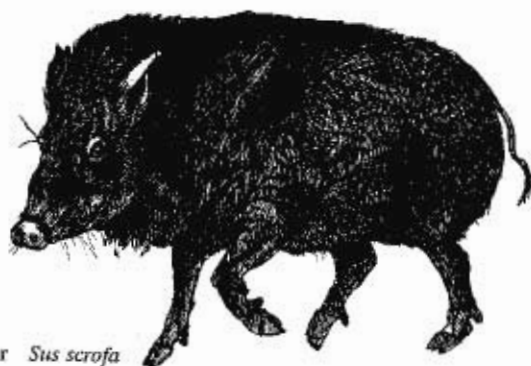
WATER RESOURCES: 21 perennial and several seasonal streams run through the park [QI, Tp].

PERSONNEL : One Range Officer and two Foresters [PCCF fax 1991].

EQUIPMENT: None

RESEARCH AND MONITORING : None

INFORMATION FOR VISITORS: A Forest Rest House is located on Mt. Harriett, south of the park, in the proposed extension area. A watch tower and a picnic hut are proposed to be constructed near this FRH.



Indian wild boar *Sus scrofa*

SADDLE PEAK NATIONAL PARK

Saddle Peak, at 737 metres above sea level, is the highest point in the A&N Islands. Shaped like a double-humped saddle, the park runs north to south along the eastern coast of North Andaman Island.

Though logged in the past, the park's littoral and evergreen forests are thick and luxuriant. Most of the eastern boundary of the National Park borders the sea with a long and rocky beach. The park also has a fresh-water pool from which water is piped to Diglipur town.

The one kilometer flat stretch between the sea and the foot of the peak has unfortunately been encroached upon, in recent years, by families from the Indian mainland. This is causing increasing destruction of the forests.

This area was constituted a Protected Forest vide notification no. 115/47—5/50 DN, dated 3.9.1963.

LEGAL STATUS: Intention notified to make the area into a national park on 13th November, 1979 vide notification no. Silva/G-88 [notif].

AREA: 3253.88 ha. (32.54 sq. km) [notif]. There is a proposal to add another 2500 ha. of forest area [Chana, Pers. comm. 1989].

LOCATION: District Andaman; *Latitudinal Range* 13°07'32" to 13°12'04" N [Tp]; *Longitudinal Range* 93°00'00" to 93°02'19"E [Tp]; *Nearest Town* Diglipur (Approx. 10 km); *Nearest Airport* Port Blair (225 km).

APPROACHES: From Port Blair to Diglipur (220 km) by ferry, and on to the Park on foot [fv].

TOPOGRAPHY: *Altitude* 0 to 737 m [Tp]

FLORA: Forest types include Andaman Tropical Evergreen 1A/C2, Andaman Moist Deciduous 3A/C1, Andaman Semi-Evergreen 2A/C1, Cane Brake 1/E1 and Wet Bamboo 1/E2 [Chaudhuri 1987], and Littoral 4A/L1 [fv].

Trees [QI, Chaudhuri 1987, Parkinson 1923]

Bombax insigne

Canarium manii

Cratoxylum cochinchinensis

Diospyros marmorata

Dipterocarpus costatus

Euphorbia epiphyllodes

Sageraea elliptica

Other Vegetation [Balakrishnan and Rao 1983, Ellis 1987]

Actinostachys digitata

Antrophyum reticulatum

Coelogyne thailandica

Egenolfia appendiculata var. *vivipera*

Humata spp.

Mecodium exsertum

Phraetia secunda

Phymatosorus nigrescens

Selaginella ciliaris

Schoenorchis minutiflora

Diospyros marmorata and *Sageraea elliptica* are reported to be threatened due to poor regeneration.

FAUNA:

Mammals

Bat, Andaman Horseshoe

Bat, Lesser Shortnosed Fruit

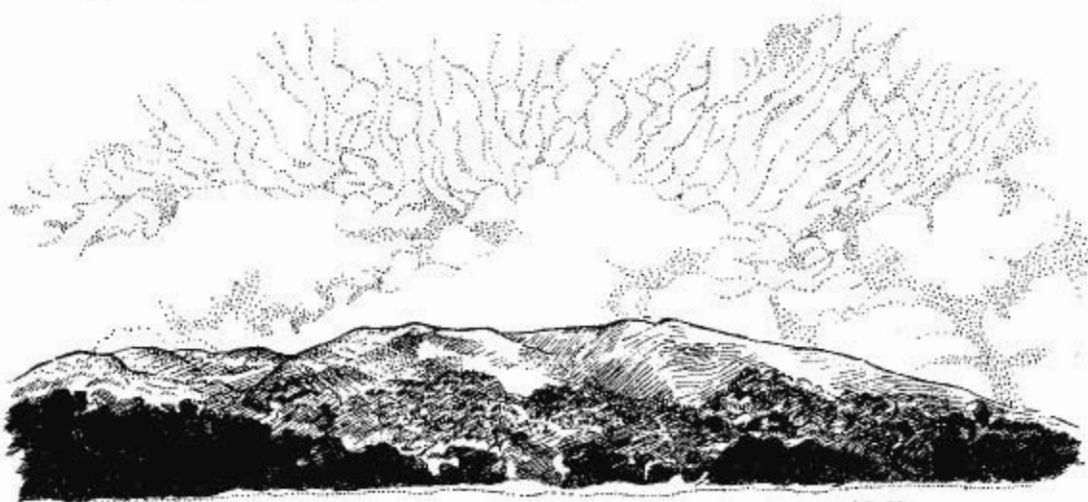
Boar, Indian Wild

Civet, Himalayan Palm

Deer, Spotted

Flying Fox, (Andaman)

Shrew, Andaman Island Spiny



Birds [QI, Chaudhuri 1987, fv]

Baza, Indian Blackcrested
Crake, Andaman Banded
Dove, Emerald
Eagle, Crested Serpent
Eagle, Whitebellied Sea
Hawk-eagle, Crested
Heron, Reef
Kingfisher, Blackcapped
Kingfisher, Storkbilled

Kingfisher, Whitecollared
Lorikeet, Indian
Myna, Hill
Parakeet, Alexandrine
Parakeet, Redbreasted
Pigeon, Andaman Wood
Pigeon, Imperial
Woodpecker, Indian Great Black

Reptiles [fv]

Crocodile, Estuarine

Monitor, Water

The Indian wild boar is reported to be locally threatened. No listings of insects, fish, and amphibia of the Park are available.

OCCURRENCE AND CONTROL OF DISEASE : None

OTHER FACTORS AFFECTING HABITAT: Gales and cyclones occur from June to August.

WATER RESOURCES: There is one seasonal and one perennial natural water hole, besides 10 perennial and 132 seasonal streams [QI, Tp, fv].

PERSONNEL: One Deputy Range Officer and one Forest Guard [PCCF fax 1991].

EQUIPMENT: None

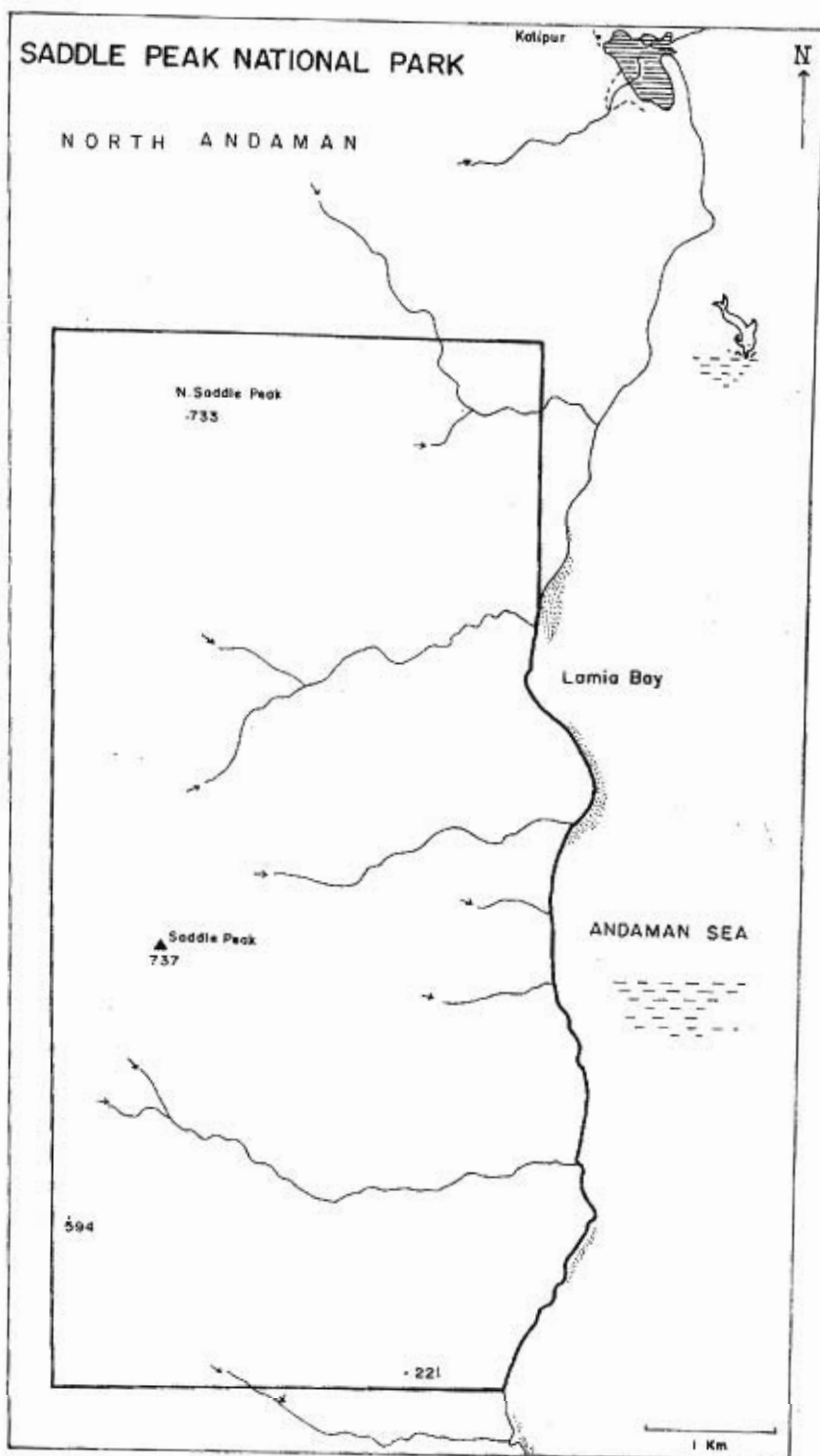
RESEARCH AND MONITORING: None

HUMAN PRESENCE:

Use by other Government Agencies: The PWD has a pipeline running through the Park supplying water to Diglipur [fv].

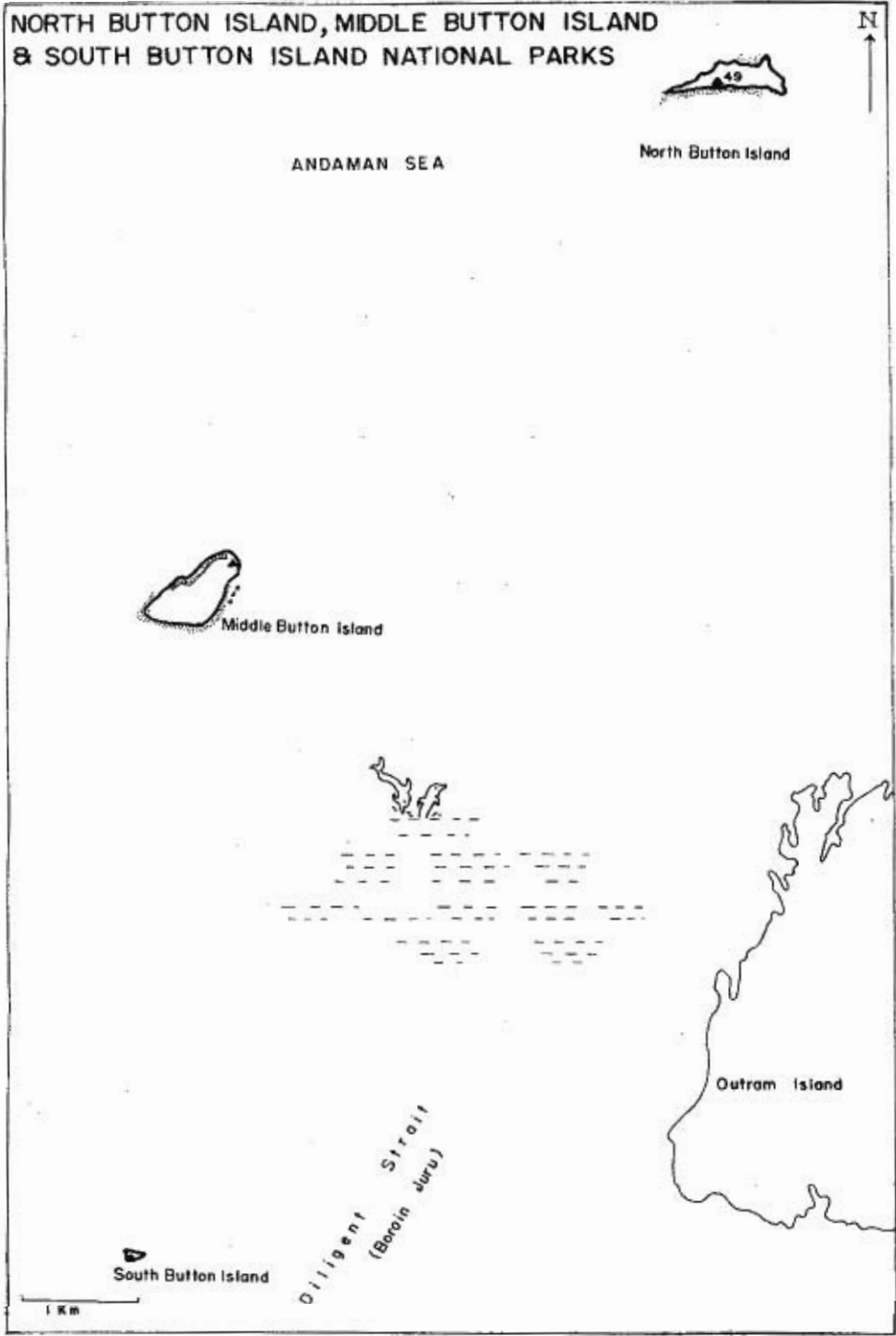
Illegal Activities: There is encroachment by families from Bihar (locally referred to as Ranchis) inside the Park. Their numbers are not known but they have cleared forests for cultivation; they also rear livestock, hunt, and collect firewood and minor forest produce from within the Park [fv].

Tourism: Students and trekkers visit the Park, though rarely and in small numbers [fv].



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**NORTH BUTTON ISLAND, MIDDLE BUTTON ISLAND
& SOUTH BUTTON ISLAND NATIONAL PARKS**



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NORTH BUTTON ISLAND NATIONAL PARK * MIDDLE BUTTON ISLAND NATIONAL PARK SOUTH BUTTON ISLAND NATIONAL PARK

These tiny islands, located off the south-eastern shore of Middle Andaman Island, form an arc in the northern part of Ritchie's Archipelago. They are reported to contain significant undisturbed breeding habitat for sea turtles as well as the endemic Andaman grey-rumped swiftlet (*Collocalia fuciphaga inexpectata*) [Chaudhari 1987]. No detailed ecological study seems to have been done of these islands.

Locally, the North Button Island is called Chauga-len-jug, the Middle Button Island Kaichawa, and the South Button Island Aega-lot-barai [Tp, Hydrographic Map].

LEGAL STATUS: Intention notified to make the areas into national parks on 13th November, 1979 vide notification no. Silva/G-88 [notif].

AREA:

North Button Island National Park: 44.00 ha. (0.44 sq.km) [notif]
Middle Button Island National Park: 64.75 ha. (0.64 sq.km) [notif]
South Button Island National Park: 3.00 ha. (0.03 sq.km) [notif]

LOCATION: District Andaman

North Button Island National Park

Latitudinal Range 12°18'46" to 12°18'58" N [Tp]

Longitudinal Range 93°03'52" to 93°04'25" E [Tp]

Middle Button Island National Park

Latitudinal Range 12°16'19" to 12°16'39" N [Tp]

Longitudinal Range 93°01'25" to 93°01'51" E [Tp]

South Button Island National Park

Latitudinal Range 12°13'23" to 12°13'26" N [Tp]

Longitudinal Range 93°01'19" to 93°01'23" E [Tp]

Nearest Town Port Blair (70 km); Nearest Airport Port Blair (70 km)



APPROACHES: From Port Blair to the National Parks (70 km approx.) by ship. No public ferry service is available.

TOPOGRAPHY:

North Button Island National Park: Altitude 0 to 49 m [Tp]

Middle Button Island National Park: Altitude 0 to 33 m [Tp]

South Button Island National Park: Altitude 0 to 21 m [Tp]

* NOTE : Since much of the information on these three National Parks was common, or there was no way of differentiating, they are clubbed together here. Information presented is thus relevant for all three, unless otherwise specified.

FLORA: The main forest types on the Button Islands are Andamans Tropical Evergreen 1A/C2, Andaman Semi-Evergreen 2A/C1, Littoral Forest 4A/L1 and Mangrove Forest (Tidal Swamp Forest) 4B/TS2 [QI, Chaudhuri 1987].

Trees [QI, Chaudhuri 1987]

Barringtonia asiatica
Bruguiera parviflora
Bruguiera spp.
Diospyros spp.
Dipterocarpus spp.
Ficus spp.
Hibiscus tiliaceus
Manilkara littoralis
Planchonia valida

Derris indica
Pandanus spp.
Rhizophora apiculata
Sterculia spp.
Terminalia bialata
Terminalia catappa
Terminalia procera
Thespesia populnea

Other Vegetation

Ipomoea pes-caprae

There is no information on any threatened species of flora in these Islands.

FAUNA:

Mammals [QI, Chaudhuri 1987]

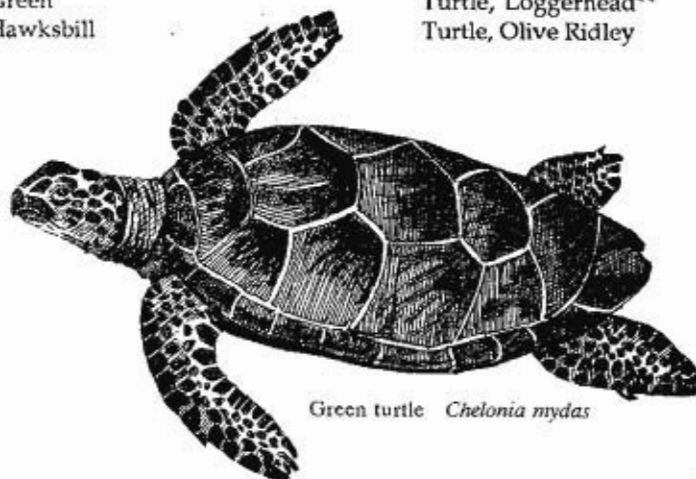
Boar, Indian Wild
 Civet, Himalayan Palm

Deer, Spotted *
 Flying fox

Reptiles [QI, Chaudhuri 1987]

Monitor, Water
 Turtle, Green
 Turtle, Hawksbill

Turtle, Leathery
 Turtle, Loggerhead**
 Turtle, Olive Ridley



Green turtle *Chelonia mydas*

* Occurrence doubtful, since this is not an indigenous species, and seems unlikely to have been introduced, or swum across to, these remote islands.

** Occurrence doubtful, only authentic reports are from Tamil Nadu coast [Das 1985].

Birds [QI, Chaudhuri 1987, Tikader and Das 1985]

Cuckoo-dove, Andaman	Myna, Common
Dove, Emerald	Myna, Hill
Drongo, Andaman	Parakeet, Alexandrine
Eagle, Crested Serpent	Parakeet, Redbreasted
Eagle, Whitebellied Sea	Pigeon, Andaman Wood
Egret, Large	Pigeon, Green Imperial
Heron, Grey	Pipit, Redthroated
Heron, Reef	Shikra
Kingfisher, Blackcapped	Swiftlet, Andaman Greyrumped
Kite, Pariah	Waterhen, Whitebreasted
Koel	Whimbrel

Insects (Butterflies)

Birdwing, Common	Mormon, Great
Clubtail, Common	Rose, Common
Jay, Great	Swordtail, Fivebar
Jay, Tailed	

No information is available on species of fish and amphibia found in the Parks, nor on any threatened faunal species.

OCCURRENCE AND CONTROL OF DISEASE: None

OTHER FACTORS AFFECTING HABITAT: Gales and cyclones are known to occur besides occasional hail storms.

WATER RESOURCES: There is one perennial natural water hole each on North and Middle Button Islands, and a natural lake of brackish water on South Button Island*.

PERSONNEL: None

EQUIPMENT: None

RESEARCH AND MONITORING: None

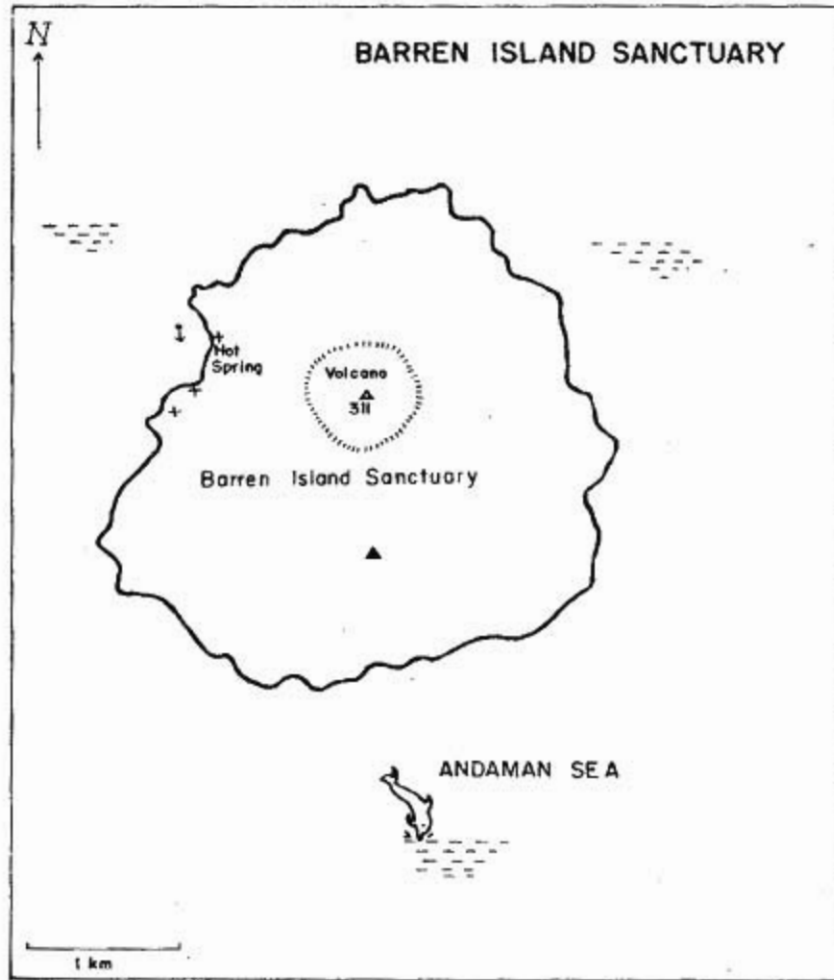
HUMAN PRESENCE: None

INFORMATION FOR VISITORS: Visitors are not allowed on these islands.

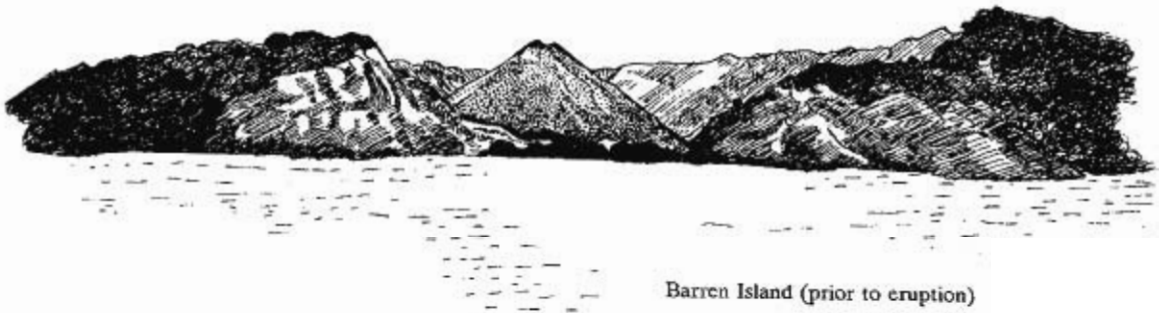


Andaman cuckoo-dove
Macropygia rufipennis

* These waterbodies are not marked on the relevant toposheets, and their location could not be confirmed with the wildlife authorities.



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Barren Island (prior to eruption)

BARREN ISLAND SANCTUARY

Very much in the news even as this Directory goes to press, Barren Island contains what may be India's only active volcano. In May 1991, Mt. Barren started belching out large masses of red hot lava, smoke, and fire which continued well into September. This eruption took place after 188 years, the last recorded activity having taken place in 1803 [Abdulali 1971].

The sight of this remote volcanic island rising straight out of the sea is awe-inspiring, its active cone encircled by the rim of a much larger and older volcano. The single narrow beach-head, the only landing spot, is on the west side of the island, in a gap formed by the flow of lava in the distant past. The current eruption appears to have closed off this gap, perhaps foreclosing any landing possibilities in the near future [Acharya 1991]. Interestingly, the fire and smoke seem to come from a vent on the side of the cone, and not from the main crater itself [Anon 1991].

Vegetation on the sides of the old volcano is dense, but otherwise the island is sparsely vegetated. A few goats inhabit the island, and it is believed that they were released there in 1891 with the purpose of providing sustenance to any ship-wrecked sailors who might reach the island [Abdulali 1971]. These goats may not have survived the volcanic eruption. Indeed, considerable damage must have occurred to both flora and fauna by the recent eruption—an expedition to the island reported "burnt-out trees, dead fish and crabs, skeletons of wild (sic) goats, a macabre scenario of death and destruction" [Parida 1991]. Also noticed was a great increase in water temperature due to lava flow into the sea, and "a continuous rain of dark, powdered, metallic dust (which) had ruined the equilibrium of the marine ecosystem", destroying the coral formation and possibly causing much other damage to sea life [Parida 1991].

LEGAL STATUS: Declared a sanctuary on 19th February, 1977 vide notification no. CF/WL/19 [notif].

AREA: 810 ha. (8.10 sq. km) [notif]

LOCATION: District Andaman; *Latitudinal Range* 12°16'11" to 12°18'00" N [Tp]; *Longitudinal Range* 94°50'19" to 94°52'04" E [Tp]; *Nearest Town* Port Blair (132 km) [NA]; *Nearest Airport* Port Blair (132 km) [NA]

APPROACHES: Port Blair to Mount Barren (132 km), by ship [NA]. No public ferry is available.

TOPOGRAPHY: *Altitude* 0 to 354 m [Tp]

FLORA: There is sparse vegetation on this island (as its name suggests), except on the old volcano's sides. The forests that do exist include Giant Evergreen 1A/C1, and Andamans Tropical Evergreen 1A/C2. There is no information on threatened species; the recent eruption may have put much of the island's flora into this category.

Other Vegetation [Balakrishnan and Rao 1983; Parkinson 1923]

Actephila excelsa

Ixora cuneifolia

FAUNA:

Mammals [QI, Tikader and Das 1985, Hill 1971, Abdulali 1971]

Flying Fox

Goat, Domestic (Feral)

Rat, Common House

Once reported to be in "hundreds" [Tikader and Das 1985], it is not known if any of the goats have survived the recent eruption.

Birds [Tikader and Das 1985, Chaudhuri 1987, Osmaston 1908]

Cuckoo, Emerald	Pigeon, Green Imperial
Dove, Emerald	Pigeon, Nicobar
Eagle, Whitebellied Sea	Pigeon, Pied Imperial
Flycatcher, Brown	Pipit, Redthroated
Flycatcher, Spotted	Teal, Grey
Kingfisher, Ruddy	Waterhen, Whitebreasted
Koel	White-eye
Parakeet, Alexandrine	Woodpecker, Darjeeling Pied

Reptiles

Monitor, Water

No listing of insects, amphibia, fish, and other fauna of the island is available.

OCCURRENCE AND CONTROL OF DISEASE: None

OTHER FACTORS AFFECTING HABITAT: Gales and cyclones occur in May and June. The recent volcanic eruption will most likely remain the dominant influence on the habitat for some time to come.

WATER RESOURCES: Prior to the recent eruption, there were 28 seasonal streams and 3 springs including a hot water one, on the island [Tp]. The current situation is unknown.

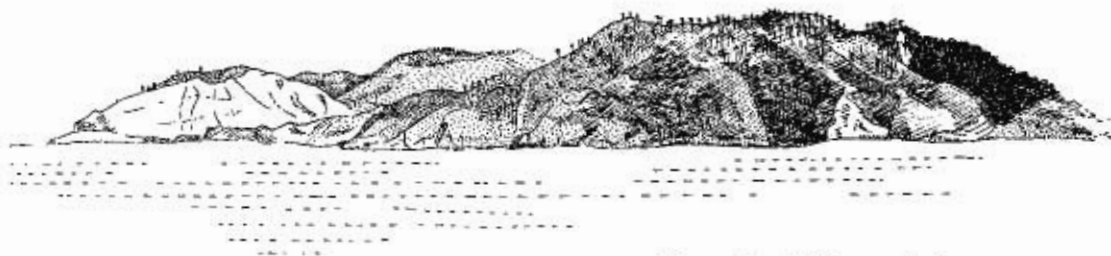
PERSONNEL: None

EQUIPMENT: None

RESEARCH AND MONITORING: None

HUMAN PRESENCE:

Illegal Activities: Fishermen from foreign countries reportedly dynamite the sea around Barren Island for fish. In January 1987, 14 jars of foreign origin, containing a white granular substance allegedly used to attract fish to the surface of the sea before dynamiting them, were confiscated on the island [fv].



Barren Island (after eruption)

BATTIMALV ISLAND SANCTUARY

This island sanctuary has no human population, and is one of the last strongholds of the Nicobar pigeon. It is a small flat island with low vegetation, and coconut groves which are all bent to one side by centuries of forceful sea winds. The island was used by the Navy for shelling practice until the 1960's.

Remotely situated in the midst of rough seas, the island is not only difficult to approach but almost impossible to land on, as there are no beaches and inlets where ordinary craft can be used. Like all of Nicobar's sanctuaries, Battimalv has hardly been studied.

LEGAL STATUS: Declared a sanctuary on January 1985 vide notification no. CF/WL/50—Vol.I [notif].

AREA: 223 ha. (2.23 sq. km) [notif]

LOCATION: District Nicobar; *Latitudinal Range* 08°48'45" to 08°50'29" N [Tp]; *Longitudinal Range* 92°50'12" to 92°51'11" E [Tp]; *Nearest Town* Car Nicobar (30 km); *Nearest Airport* Car Nicobar (30 km); *Helipad* Car Nicobar (30 km)

APPROACHES: From Port Blair by ship or air to Car Nicobar (282 km) and on to the sanctuary by ship (30 km) [fv & NA]. The island is not serviced by public ferry.

TOPOGRAPHY: *Altitude* 0 to 83 m [Tp]

FLORA: Forest types include Andaman Tropical Evergreen 1A/C2, Andaman Semi-Evergreen 2A/C1, Littoral Forest 4A/L1, Mangrove Forest (Tidal Swamp Forest) 4B/TS2 [QI, Chaudhuri 1987].

Trees [QI, Chaudhuri 1987]

Areca triandra

Barringtonia asiatica

Canarium euphyllum

Cocos nucifera

Hibiscus spp.

Manilkara littoralis

Rhizophora mucronata

Pandanus spp.

Pterygota alata

Terminalia catappa

Other Vegetation [QI, Chaudhuri 1987]

Calamus andamanicus

Calamus palustris

There is no information on threatened species of flora.

FAUNA:

Mammals

Boar, Indian Wild

Birds [QI, Tikader and Das 1985, Butler 1899, fv]

Eagle, Whitebellied Sea

Megapode

Petrel, Duskyvented Storm

Pigeon, Nicobar

Pigeon, Pied Imperial

Tropic-bird, Longtailed

Reptiles [QI, Khan undated]

Lizard, Green Forest

Skink, Tytler's

Insects (Butterflies)

Birdwing, Common

Clubtail, Andaman

Jay, Tailed

Mormon, Common

Rose, Crimson

Swordtail, Fivebar

Listings of fish, amphibians, and other fauna found in the sanctuary are not available.

The Nicobar pigeon is reported to be threatened.

OCCURRENCE AND CONTROL OF DISEASE: None

OTHER FACTORS AFFECTING HABITAT: Gales, cyclones and hailstorms occur occasionally.

WATER RESOURCES: None

PERSONNEL: None

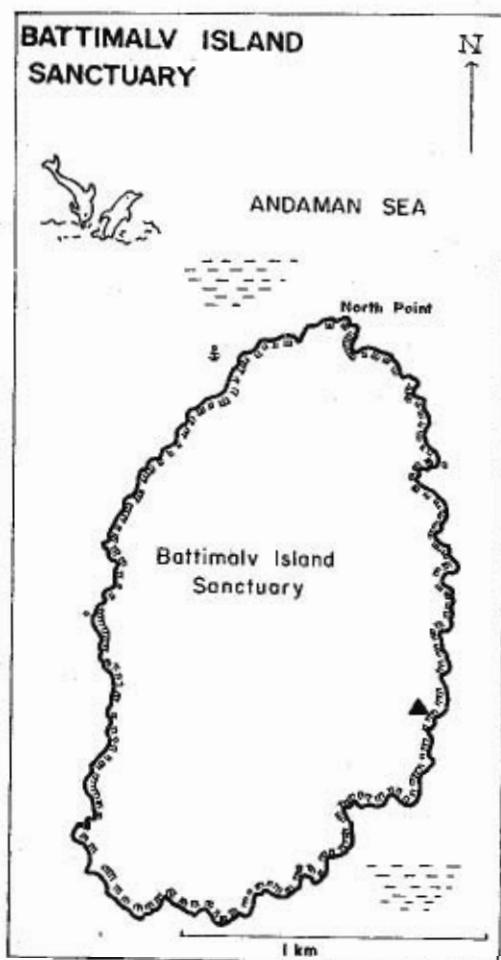
EQUIPMENT: None

RESEARCH AND MONITORING: None

HUMAN PRESENCE: None



Nicobar pigeon *Caloenas nicobarica*



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INTERVIEW ISLAND SANCTUARY

While approaching the island from the sea one is struck by the windblown appearance of the forests, especially in the north-west of the Island. Obviously the Island marks the confluence of very strong winds which have permanently shaped the tree-tops.

Near the beach, in the south of the Island, there is a perennial freshwater pool inside a shallow cave. Legend has it that the pool has never been fathomed. Certainly efforts at finding the bottom with a ship's plumbline were not successful. In the cavern around the pool hundreds of Whitebellied swiftlets *Collocalia esculenta* have made their nests. The slightest disturbance sends these birds flying in and out of the sun light, looking very much like flashes of fire.

This island was contracted out for timber extraction in the fifties to a Calcutta firm, which started operations, laying tracks for its haulage coaches, and bringing in elephants from the mainland. Reportedly this operation ran into trouble and was abandoned, along with the elephants, who have since turned feral. Interview is now the largest island sanctuary in A&N.

Declared a Protected Forest on 3rd September, 1963, and a Reserved Forest on 15th March, 1971. Renotified a Reserved Forest on 6th July 1977.

LEGAL STATUS: Declared a sanctuary in January, 1985 vide notification no. CF/WL/50-Vol. I [notif].

AREA: 13300 ha. (133 sq. km) [notif]

LOCATION: District Andaman; Latitudinal Range 12°46'56" to 12°59'02" N [Tp]; Longitudinal Range 92°39'04" to 92°43'23" E [Tp]; Nearest Town Mayabandar (20 km); Nearest Airport Port Blair (170 km)

APPROACHES: Port Blair to Mayabandar by ferry (approx. 150 km). From Mayabandar to Interview Island by boat (20 km.) [NA]. Alternatively from Port Blair to Interview Island direct by ship (approx. 200 km), around Cape Price.

TOPOGRAPHY: Altitude 0 to 87 m [Tp]

FLORA: The major forest types include Andaman Tropical Evergreen Forest 1A/C2, Andaman Semi-Evergreen Forest 2A/C1, Littoral Forest 4A/L1 and Mangrove Forest (Tidal Swamp Forest) 4B/TS2.

Trees [QI, Chaudhuri 1987, Thothathri 1960]

Avicennia officinalis

Albizia lebbek

Anazagorea luzoniensis

Areca triandra

Artocarpus chaplasha

Artocarpus gomezianus

Baccaurea ramiflora

Barringtonia asiatica

Bruguiera gymnorhiza

Bruguiera parviflora

Calophyllum inophyllum

Calophyllum soulattri

Caryota mitis

Ceriops tagal

Champereia griffithii

Claoxylon indicum

Cordia subcordata

Croton argyratus

Derris indica

Dillenia pentagyna

Diospyros marmorata

Diospyros undulata

Dipterocarpus costatus

Dipterocarpus grandiflorus

Dipterocarpus incanus

Dipterocarpus pilosus

Drypetes andamanica

Endospermum chinense

Erioglossum rubiginosum

Erythrina variegata

Euphorbia epiphyllodes

Excoecaria agallocha

Garcinia andamanica

Glochidion sp.

Hibiscus tiliaceus

Hopea odorata

<i>Hydnocarpus laurifolia</i>	<i>Pterocarpus dalbergioides</i>
<i>Kandelia candel</i>	<i>Pterocymbium tinctorium</i>
<i>Lagerstroemia hypoleuca</i>	<i>Pterospermum acerifolium</i>
<i>Maesa ramentacea</i>	<i>Pterygota alata</i>
<i>Manilkara littoralis</i>	<i>Rhizophora apiculata</i>
<i>Micromelum minutum</i>	<i>Rhizophora mucronata</i>
<i>Morinda citrifolia</i>	<i>Sonneratia caseolaris</i>
<i>Myristica andamanica</i>	<i>Streblus asper</i>
<i>Orophaea hexandra</i>	<i>Syzygium samarangense</i>
<i>Pandanus odoratissimus</i>	<i>Terminalia bialata</i>
<i>Picrasma javanica</i>	<i>Terminalia catappa</i>
<i>Pipturus incanus</i>	<i>Terminalia procera</i>
<i>Planchonella longipetiolata</i>	<i>Thespesia populnea</i>
<i>Planchonia valida</i>	<i>Xanthophyllum andamanicum</i>
<i>Pometia pinnata</i>	

Other Vegetation [QI, Chaudhuri 1987, Thoaththri 1960]

<i>Actephila excelsa</i>	<i>Maesa andamanica</i>
<i>Allophyllus cobbe</i>	<i>Mallotus acuminatus</i>
<i>Ancistrocladus tectorius</i>	<i>Mallotus andamanicus</i>
<i>Caesalpinia crista</i>	<i>Mucuna gigantea</i>
<i>Calamus palustris</i>	<i>Oxytenanthera spp.</i>
<i>Calamus spp.</i>	<i>Paederia foetida</i>
<i>Chiococca sp.</i>	<i>Picrasma javanica</i>
<i>Clerodendron spp.</i>	<i>Polyalthia jenkinsii</i>
<i>Clinogyne grandis</i>	<i>Pteris longifolia</i>
<i>Coffea liberica</i>	<i>Pteris vittata</i>
<i>Colubrina asiatica</i>	<i>Pycnarrhena calocarpa</i>
<i>Dinochloa andamanica</i>	<i>Rinorea bengalensis</i>
<i>Gnetum contractum</i>	<i>Sarcostigma wallichii</i>
<i>Gnetum scandens</i>	<i>Scaevola frutescens</i>
<i>Harrisonia bennetii</i>	<i>Thunbergia laurifolia</i>
<i>Ilex sp.</i>	<i>Vigna marina</i>
<i>Ipomoea spp.</i>	<i>Ziziphus glabrata</i>
<i>Ixora nigricans</i>	

36.41 ha. of teak was planted in the period 1956-63. Thinning operations were proposed to be carried out over this area from 1984, but there is no information if this was ever done [WP]. 4-5 ha. of *Lagerstroemia hypoleuca* were planted in the early 1970s [fv].

FAUNA:**Mammals**

Boar, Indian Wild	Dog, Domestic (Feral)
Deer, Spotted	Elephant, Indian (Feral)

Birds [QI, fv]

Bee-eater, Chestnutheaded	Oriole, Blacknaped
Bluebird, Fairy	Parakeet, Alexandrine
Bulbul, Redvented	Parakeet, Redcheeked
Lorikeet, Indian	Pigeon, Andaman Wood
Myna, Hill	Swiftlet, Whitebellied

Reptiles

Crocodile, Estuarine
Monitor, Water

Turtle, Hawksbill

Insects (Butterflies) [QI, Chaturvedi 1982]

Clubtail, Andaman
Clubtail, Common
Jay, Great
Jay, Tailed
Mormon, Common

Mormon, Great
Rose, Common
Sapphire, Purple
Sunbeam, Burmese

Listings of amphibia, fish, and other fauna found in the sanctuary are not available. Domestic dogs, introduced to the island in 1850's, have now turned feral posing a serious threat to wildlife, especially the Indian wild boar [Whitaker 1985]. Spotted deer and Indian elephant are introduced species. The Elephant and the Hawksbill turtle are reported to be threatened by poaching.

OCCURRENCE AND CONTROL OF DISEASE: None

OTHER FACTORS AFFECTING HABITAT: Gales and cyclones occur in December and May-June. Hailstorms are also reported.

WATER RESOURCES: 12 perennial and over a hundred seasonal streams criss-cross this island [Tp]. In addition, there are three springs [Tp].

PERSONNEL: One Forester [PCCF fax 1991]. In addition, a Territorial Wing forest camp has been established on the eastern coast and is manned by one Range Officer and one Forester.

EQUIPMENT: None. The police outpost (see below) has one fixed wireless set.

RESEARCH AND MONITORING: None

HUMAN PRESENCE:

Use by other Government Agencies: There is a 10-man police outpost on the island, occupying 1 ha. of land. There is also a forest camp, and 3 Coast Guard camps [QI, Tp].

Illegal Activities: Interview Island is the traditional hunting ground of the Karens, originally a Burmese tribe now settled around Mayabandar. They are reported to make temporary shelters on the island, spending several nights poaching deer and pigs, and turtles during the nesting season. Besides traditional weapons they also use modern fire arms. They are also believed to act as guides for poachers coming from islands further away. After the monsoons they come to Interview Island for beachcombing to pick up floatsam, ropes, cans, and other ship debris [fv].

Miscellaneous: In 1985, five elephants reportedly crossed over from the island to Diglipur and one to Mayabandar. They are reported to have killed one Forest Department elephant at each place.

Collection of edible swallow (species not known) nests has been reported in the past [McVean 1976], but there is no report of recent collections.

A&N/S/SOUR

SOUTH REEF ISLAND SANCTUARY

AREA: 117.00 ha. (1.17 sq.km.) [notif]

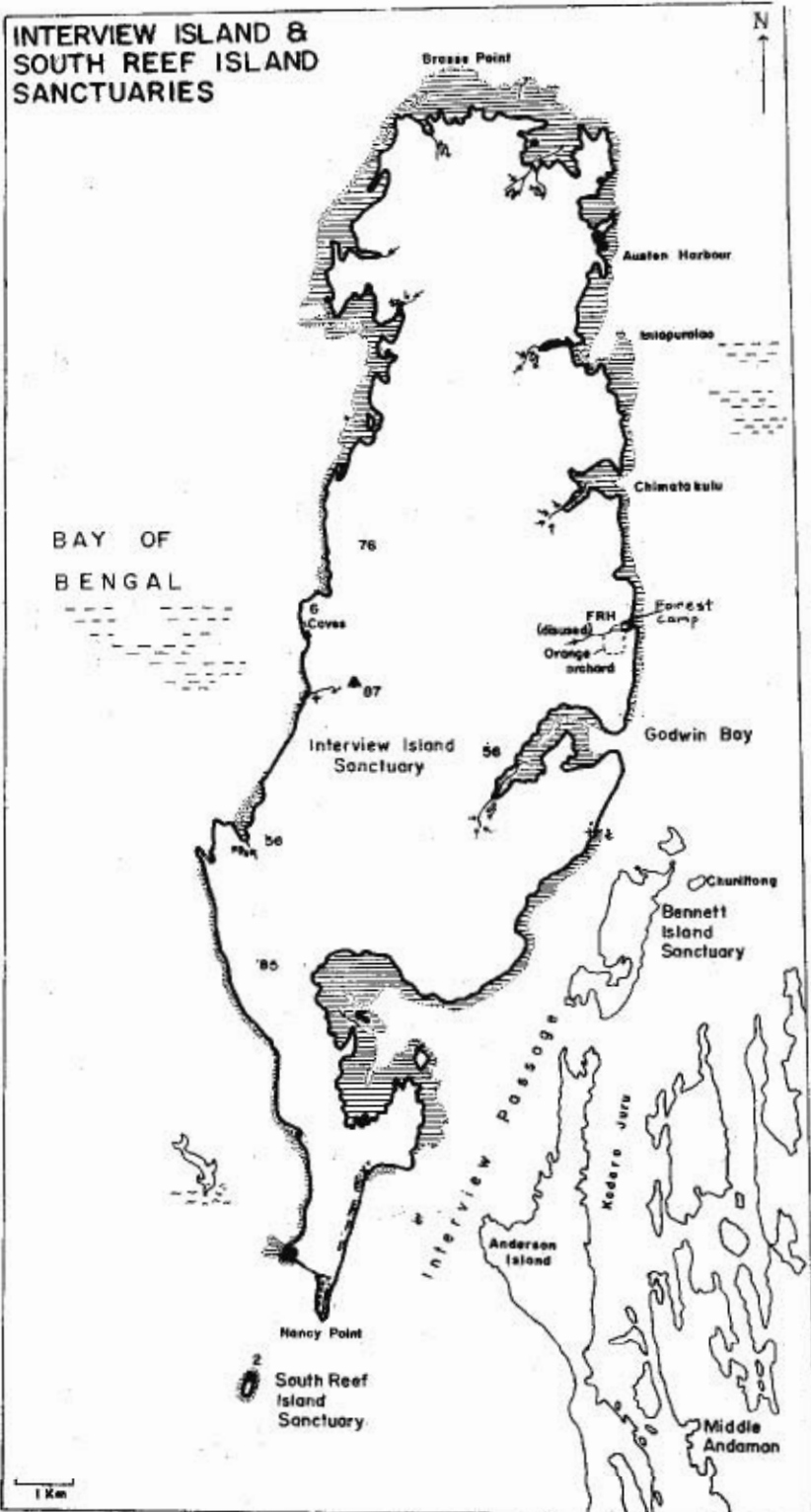
HIGHEST POINT: 2 m [tp]

WATER RESOURCES: None [tp]

LOCATION: District Andaman

Latitude: 12°46'11" to 12°46'25" N [tp]

Longitude: 92°39'25" to 92°39'33" E [tp]



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MEGAPODE ISLAND SANCTUARY

India's southernmost wildlife sanctuary, this is one of the last strongholds of the greatly endangered Megapode. It is a tiny island just off the south-western coast of Great Nicobar Island, thickly vegetated and ringed by sponge and coral beds. Unfortunately it is far easier to approach than most of the other island sanctuaries of Andaman and Nicobar, as one can walk across from the main island during low tide. It is therefore susceptible to greater human interference. The Megapode population is reported to be threatened due to poaching and egg collection by local people.

LEGAL STATUS: Declared a sanctuary in January, 1985 vide notification no. CF/WL/50-Vol. I [notif].

AREA: 12.5 ha. (0.12 sq. km) [notif]

LOCATION: District Nicobar; Latitudinal Range 06°50'39" to 06°50'56" N [Tp]; Longitudinal Range 93°46'51" to 93°47'10" E [Tp]; Nearest Town Campbell Bay (42 km); Nearest Airport Car Nicobar (342 km); Helipad Campbell Bay (42 km)

APPROACHES: From Port Blair by ship to Campbell Bay. On by the north-south road to Chingeh (approx. 30 km), then on foot to Piloboha hamlet (approx. 6 km), across the bay on boat to Inhinloe hamlet, then again on foot to Pulo Bakka (approx. 4 km), and on to Megapode Island (2 km), the final short stretch by boat, or on foot at low tide [fv].

TOPOGRAPHY: Altitude 0 to 10 m

FLORA: Forest types include Andamans Semi-Evergreen 2A/C1, Littoral Forests 4A/L1, and Mangrove (Tidal Swamp) Forests 4B/TS2.

Trees [QI, Chaudhuri 1987]

Areca triandra

Barringtonia asiatica

Canarium euphyllum

Cocos nucifera

Rhizophora mucronata

Pandanus spp.

Pterygota alata

Terminalia catappa

Other Vegetation [QI, Chaudhuri 1987]

Calamus andamanicus

Calamus palustris

There is no information on any threatened species of flora.

FAUNA:

Birds [QI, fv]

Drongo, Greater Racket-tailed

Eagle, Whitebellied Sea

Koel

Megapode

Myna, Hill

Oriole, Blacknaped

Pigeon, Andaman Wood

Pigeon, Green Imperial

Pigeon, Greyfronted Green

Pigeon, Pied Imperial

Starling, Glossy

Swallow

Whimbrel

Reptiles

Monitor, Water

Insects (Butterflies)

Birdwing, Common

Jay, Tailed

Mime, Common

Swordtail, Fivebar

There is no information on mammals, amphibia, fish, and other fauna found in this sanctuary. The Megapode is reported to be a locally threatened species due to egg collection and trapping [fv].

OCCURRENCE AND CONTROL OF DISEASE: None

OTHER FACTORS AFFECTING HABITAT: Gales, cyclones and occasional hailstorms occur.

WATER RESOURCES: Several seasonal streams [fv].

PERSONNEL: One Forester, one Forest Guard [PCCF fax 1991].

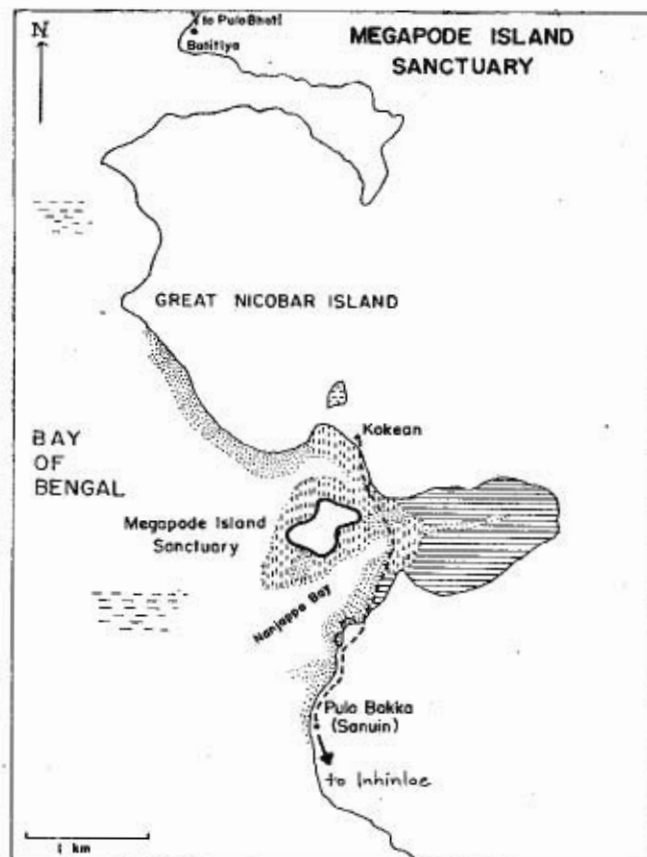
EQUIPMENT: None

RESEARCH AND MONITORING: None

HUMAN PRESENCE:

Rights and Leases: None specifically in the sanctuary. However, the Nicobarese tribals are allowed, under the Wildlife (Protection) Act, 1972, Section 65, to hunt any wildlife (for further details, see KEY TO THE DIRECTORY SHEETS above).

Habitation: The sanctuary itself is an uninhabited island but in the surrounding area there are 3 villages, on Great Nicobar Island, with an estimated population of 95.



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NARCONDAM ISLAND SANCTUARY

This remote island sanctuary forms a stepping stone in the long chain of submerged and semi-submerged hills which extends from Burma and includes the Andaman and Nicobar Islands. Heavily forested, the Island is believed to be a craterless volcano long extinct [Khan undated]. Indeed, its name is said to derive from *naraka* = hell and *kundam* = pit, indicating that the volcano may well have been recorded as active in human memory [Abdulali 1971]. Its uniqueness lies in its population of the Narcondam hornbill, *Rhyticeros narcondami*, a species found nowhere else in the world, but thriving here. The Island is difficult to reach without a good seafaring vessel, which is perhaps fortunate in that it restricts human disturbance.

Declared a Protected Forest on 3rd September, 1963, and a Reserved Forest on 15th March, 1971. Renotified a Reserved Forest on 6th July, 1977.

LEGAL STATUS: Declared a sanctuary on 19th February, 1977 vide notification no. CF/WL/19 [notif].

AREA: 681.2 ha (6.81 sq.km) [notif]

LOCATION: District Andaman; Latitudinal Range 13°25'47" to 13°27'49"N [Tp]; Longitudinal Range 94°14'31" to 94°16'13" E [Tp]; Nearest Town Diglipur (approx. 140 km); Nearest Airport Port Blair (291 km)

APPROACHES: Port Blair to Narcondam Island by ship (291 km) [NA]. There is no public ferry.

TOPOGRAPHY: Altitude 0 to 705 m [Tp]

FLORA: Forest types include Andaman Tropical Evergreen 1A/C2, Andaman Semi-evergreen 2A/C1, Andaman Moist Deciduous 3A/C1, Littoral Forest 4A/L1 and Mangrove Forest (Tidal Swamp Forest) 4B/TS2.

Trees [QI, Abdulali 1971, Chaudhuri 1987, Hussain 1984, Parkinson 1923]

<i>Aphanamixis polystachya</i>	<i>Ixora brunnescens</i>
<i>Barringtonia asiatica</i>	<i>Musa spp.</i>
<i>Bombax insigne</i>	<i>Pandanus spp.</i>
<i>Carica papaya</i>	<i>Parishia insignis</i>
<i>Caryota mitis</i>	<i>Pterocarpus dalbergioides</i>
<i>Cocos nucifera</i>	<i>Sideroxylon spp.</i>
<i>Dipterocarpus spp.</i>	<i>Sterculia rubiginosa</i>
<i>Ficus spp.</i>	<i>Terminalia bialata</i>
<i>Garuga pinnata</i>	<i>Terminalia catappa</i>
<i>Glyptopetalum calocarpum</i>	<i>Tetrameles nudiflora</i>
<i>Hibiscus tiliaceus</i>	<i>Thespesia populnea</i>

Other Vegetation [QI, Balakrishnan and Rao 1983, Chaudhuri 1987, Hussain 1984]

<i>Amorphophallus rex</i>	<i>Ipomoea pes-caprae</i>
<i>Capparis sepiaria</i>	<i>Scaevola frutescens</i>
<i>Capparis tenera</i>	<i>Strychnos narcondamensis</i>

There is no information on threatened species of flora. Banana, Papaya and Coconut have been introduced [Hussain 1984].

FAUNA:**Mammals** [Khan undated, Osmaston 1905, Abdulali 1971, Abdulali 1974]

Flying Fox, (Nicobar) *

Birds [Khan undated, Osmaston 1905, Biswas 1985, Abdulali 1971]

Bee-eater, Bluetailed

Dove, Emerald

Dove, Rufous Turtle

Drongo, Ashy

Eagle, Whitebellied Sea

Flycatcher, Brown

Flycatcher, Redbreasted

Heron, Chinese Pond

Heron, Reef

Hornbill, Narcondam

Kingfisher, Blackcapped

Koel

Myna, Hill

Nightjar, Indian Jungle

Owl, Andaman Scops

Parakeet, Alexandrine

Parakeet, Redcheeked

Pigeon, Green Imperial

Pigeon, Pied Imperial

Pipit, Redthroated

Roller, Broadbilled

Sandpiper, Common

Shrike, Brown

Sunbird, Olivebacked

Swallow

Swiftlet, Himalayan

Tern, Brownwinged

Thrush, Dark

Thrush, Siberian Ground

Turnstone

Wagtail, Forest

Wagtail, Grey

Warbler, Dusky Leaf

Warbler, Palelegged Leaf

Warbler, Thickbilled

Warbler, Yellowbrowed Leaf

Waterhen, Whitebreasted

Whimbrel

Reptiles [Khan undated, Biswas 1984, Hussain 1984]

Gecko, Banded

Gecko, Dwarf

Gecko, Emerald

Monitor, Water

Skink, Tytler's

Snake, Amphibious Sea

Snake, Flying

Insects [Hussain 1984]*Chrysochroa ignita****Mimilia princeps*****Crustaceans** [Hussain 1984]*Cardisoma hirtipes***

There is no information on amphibia, fish, and other fauna found on the Island, nor on any threatened species.

OCCURRENCE AND CONTROL OF DISEASE: None**OTHER FACTORS AFFECTING HABITAT :** Gales and cyclones are reported to occur from June to August.**WATER RESOURCES:** There is one perennial stream, over 40 seasonal ones, and one spring [Tp]. In addition, there is one artificial well used by the police personnel.**PERSONNEL:** None**EQUIPMENT:** None

* See Appendix 3, footnote 1

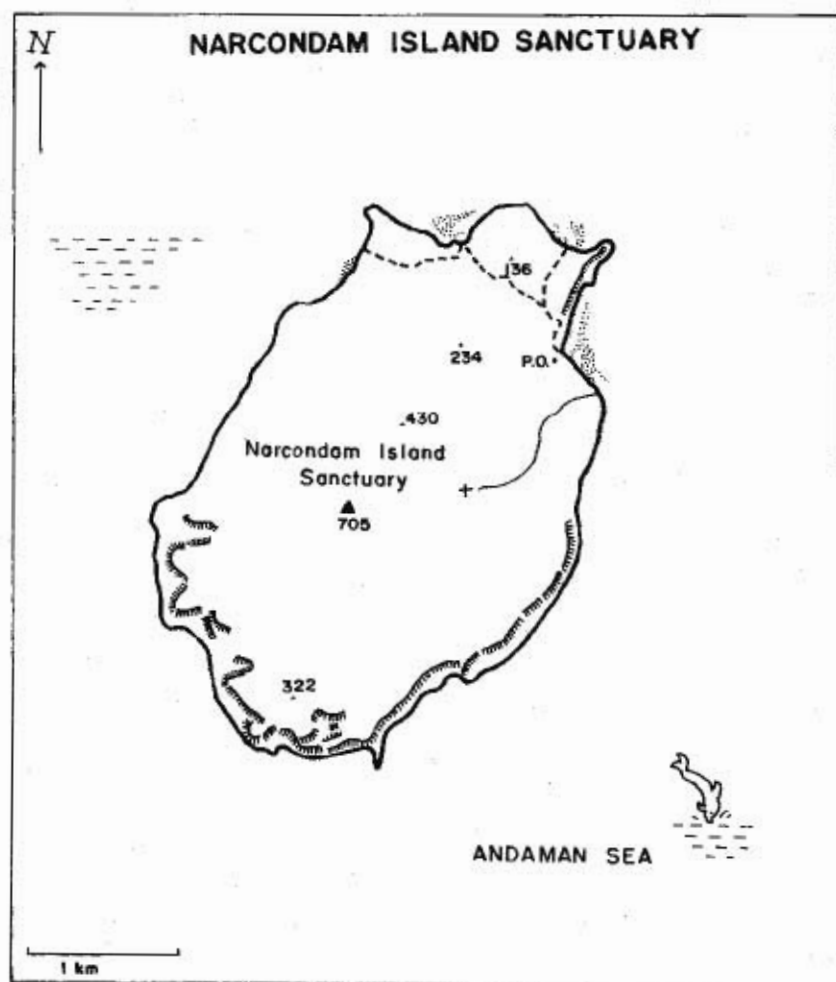
** Common names of these species were not available.

RESEARCH AND MONITORING: Researchers of the Bombay Natural History Society have conducted studies, mainly on birds, on the Island [Abdulali 1974, Hussain 1984].

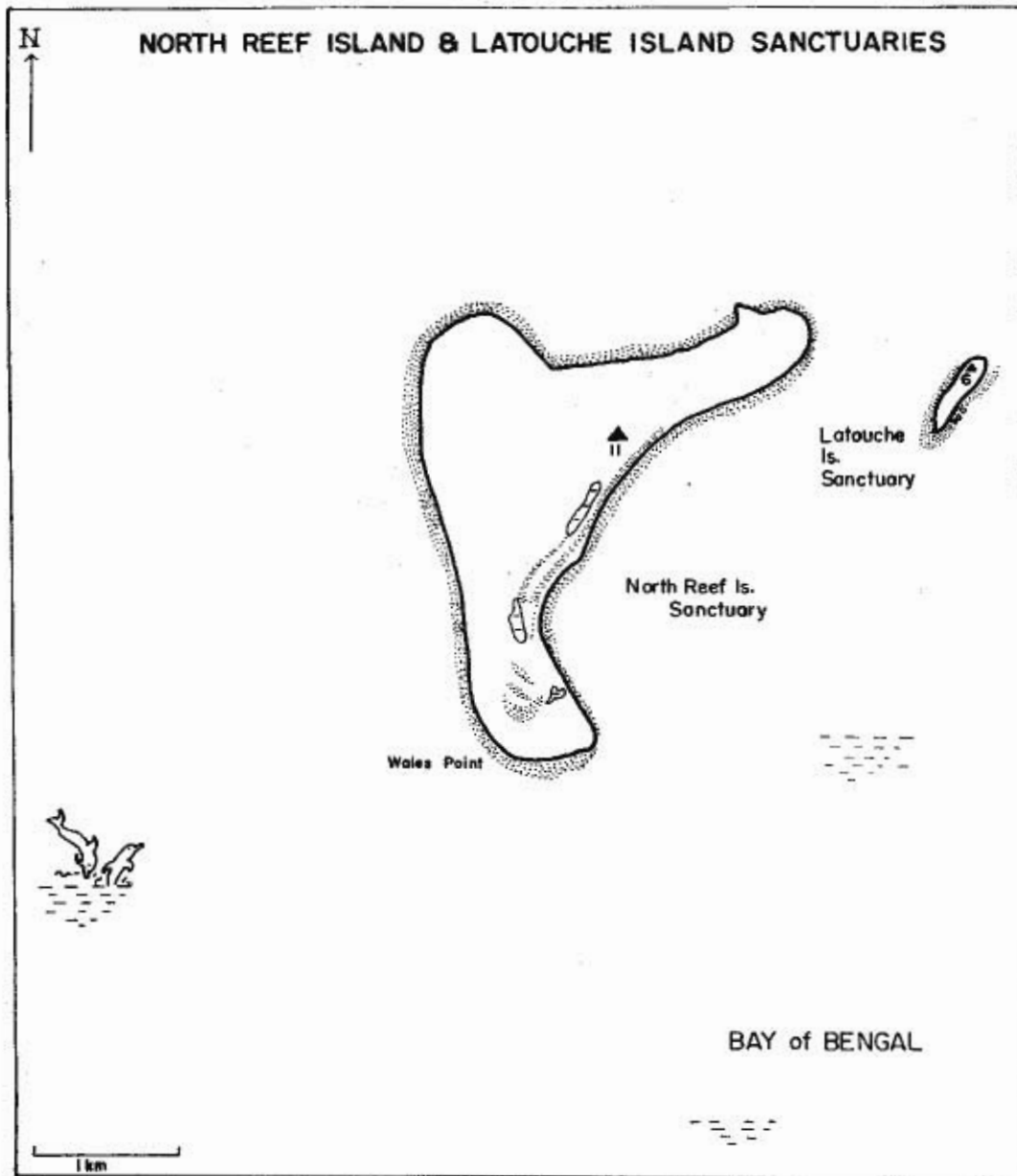
HUMAN PRESENCE:

Use by Other Government Agencies: There is a 10 man police outpost on the Island.

Miscellaneous: The police personnel have released goats on the Island, the ecological impact of which has not been assessed.



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NORTH REEF ISLAND SANCTUARY

This is amongst the most beautiful of the islands in the Andamans. It certainly has among the best beaches, with white fine sand which stretches well out into the sea, surrounded by beautiful coral formations. The northern beach of the island has a breath-taking collection of dead trees, bleached by the sun and the water, moulded into the most fascinating shapes.

The island itself has a good population of the Grey or Andaman teal. It has no permanent human population but is used by fisherfolk as a camping site for a few days every year.

This island was declared a Protected Forest on 3rd September, 1963, a Reserved Forest on 15th March 1971, and renotified a Reserved Forest on 6th July, 1977.

LEGAL STATUS: Declared a sanctuary on 19th February, 1977, vide notification no. CF/WL/19 [notif].

AREA: 348.4 ha (3.48 sq. km) [notif]

LOCATION: District Andaman; *Latitudinal Range* 13°04'17" to 13°05'51" N [Tp]; *Longitudinal Range* 92°41'53" to 92°43'21" E [Tp]; *Nearest Town* Mayabandar (30 km); *Nearest Airport* Port Blair (approx. 225 km)

APPROACH: Port Blair to North Reef Island by ship (approx. 225 km) [NA].

TOPOGRAPHY: *Altitude* 0 to 11 m [Tp]

FLORA: Forest types include Andaman Evergreen 1A/C2, Andaman Semi-Evergreen 2A/C1, Mangrove (Tidal swamp) 4B/TS2 and Littoral Forest 4A/L1 [Chaudhuri 1987, fv].

Trees [QI, Chaudhuri 1987; Parkinson 1923]

Bombax insigne

Bombax spp.

Bruguiera spp.

Casuarina spp.

Cocos nucifera

Derris indica

Dipterocarpus spp.

Ficus microcarpa

Hibiscus tiliaceus

Mesua spp.

Manilkara littoralis

Rhizophora spp.

Terminalia spp.

Thespesia populnea

Other Vegetation [QI, Chaudhuri 1987]

Cuscuta spp.

Cyperus spp.

Desmodium umbellatum

Ipomoea pes-caprae

There is no information on threatened species of flora.

FAUNA:

Mammals [Chaudhuri 1987]

Boar, Indian Wild

Birds [QI, Khan undated, fv]

Bittern, Yellow

Dove, Red Turtle

Drongo, Andaman

Eagle, Crested Serpent

Eagle, Whitebellied Sea

Egret, Smaller

Heron, Reef

Kingfisher, Whitecollared

Parakeet, Alexandrine

Teal, Cotton

Pigeon, Andaman Wood

Pigeon, Nicobar

Rail, Bluebreasted Banded

Redshank, Common

Sandpiper, Green

Shikra

Snipe, Great

Sunbird, Olivebacked

Swallow-shrike, Whiterumped

Tern, Blacknaped

Teal, Cotton

Teal, Grey

Teal, Lesser Whistling

Reptiles [Chaudhuri 1987]

Monitor, Water

The Grey teal, Lesser whistling teal and Water monitor are reported to be threatened due to poaching [fv]. There is no listing available for insects, amphibia, fish, and other fauna of the Island.

Tern, Blacknaped

Wagtail, Forest

Turtle, Green

OCCURRENCE AND CONTROL OF DISEASE: None

OTHER FACTORS AFFECTING HABITAT: Gales and cyclones are known to occur from June to August causing coconut and casuarina trees to get uprooted.

WATER RESOURCES: There are 3 perennial waterholes.

PERSONNEL: None

EQUIPMENT: None

RESEARCH AND MONITORING: None

HUMAN PRESENCE:

Illegal Activities: The Sanctuary is an uninhabited island but reportedly fisherfolk, from neighbouring North Andaman Island, camp here, sometimes for several nights at a stretch. They build temporary huts for their stay, during which they fish in the sea around the Island and dry their catch on the beaches. Poaching of turtles and collection of firewood is also reported. [fv].



A&N/S/LAT

LATOUCHE ISLAND SANCTUARY

AREA: 96.00 (0.96 sq.km.) [notif]

HIGHEST POINT: 6 m [tp]

WATER RESOURCES: None [tp]

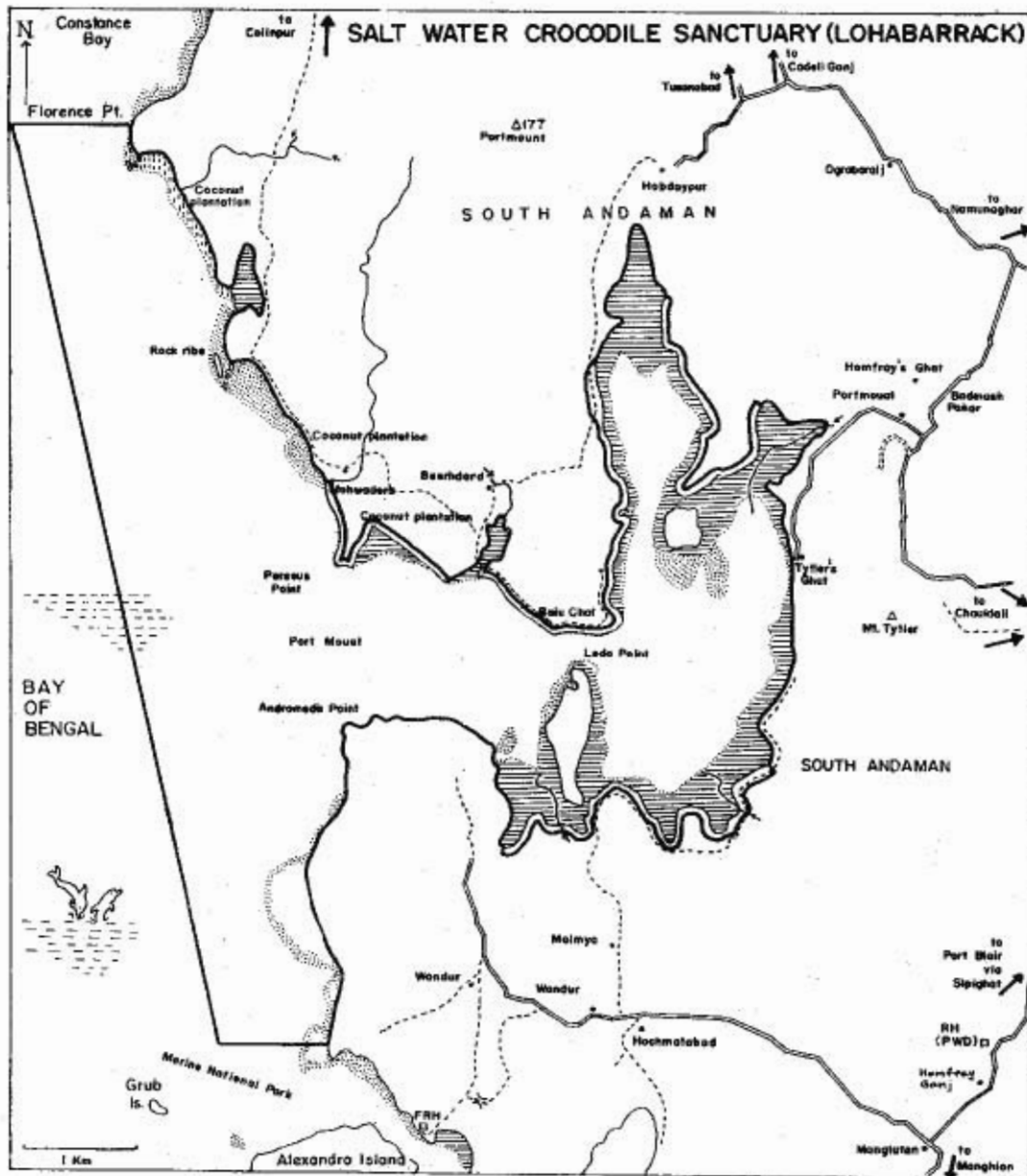
LOCATION: District Andaman

Latitude: 13°05'22" to 13°05'31" N

Longitude: 92°43'50" to 92°44'02" E



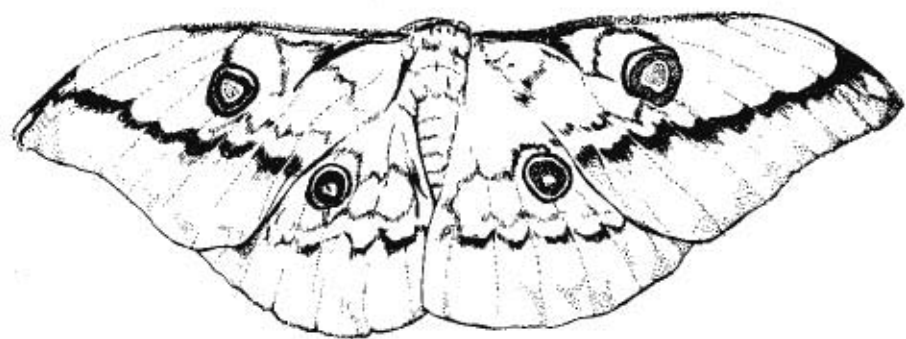
Grey teal *Anas gibberifrons*



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SALT WATER CROCODILE SANCTUARY

This area of rich marine waters, mangroves and littoral forests is essentially a northern extension of the Marine National Park. Its creeks and inlets are reported to harbour a significant population of the Estuarine or Salt-water crocodile, now a greatly threatened reptile in the Andamans. It is also one of the few sanctuaries in Andaman and Nicobar islands to have its own management staff. Like the Marine Park, this area too suffers considerable disturbance from local settlers, and because of illegal fishing and poaching.

The sanctuary boundaries run sometimes along the coast of the South Andaman Island, sometimes inland [notif].

LEGAL STATUS: Declared a sanctuary on 3rd May, 1981, vide notification no. 273/83/EL/G-118 Vol. I [notif].

AREA: 2221 ha. (22.21 sq. km) [PCCF fax 1991] *

LOCATION: District Andaman; *Latitudinal Range* 11°35'38" to 11°40'08" N [Tp]; *Longitudinal Range* 92°35'02" to 92°39'00" E [Tp]; *Nearest Town* Port Blair (21 km); *Nearest Airport* Port Blair (25 km)

APPROACHES: From Port Blair to Garacherama (6 km), on to Sipighat (4 km), Homfray Ganj (5 km), Manglutan (1 km), Hochmatabad (3 km), and finally to Maimya (1 km), from where the sanctuary boundary is 1 km. Alternatively, from Port Blair to Sipighat on the above route, then to Chauldali (7 km), on to Portmouat (3 km), and finally to Tytler's Ghat (2 km), on the edge of the sanctuary. The sanctuary is of course also approachable by sea from the Marine National Park.

TOPOGRAPHY: *Altitude* 0 to 15 m

FLORA: Thick Mangrove (tidal swamp) Forest 4B/TS2 lines the creeks and marine waters which comprise this sanctuary. Other forest types include Andaman Tropical Evergreen Forest 1A/C2, Andaman Semi-Evergreen Forest 2A/C1, and Littoral Forest 4A/L1.

Trees [QI, Chaudhuri 1987]

Avicennia spp.

Bruguiera spp.

Ceriops spp.

Dipterocarpus spp.

Rhizophora spp.

Terminalia spp.

There is no information on other vegetation, or on threatened flora.

FAUNA:

Mammals [QI, Khan undated]

Boar, Indian Wild

Civet, Himalayan Palm

Deer, Spotted

Dolphin, Common

Flying Fox, (Narcondam Small) **

Rat, Brown

Birds [QI, Khan undated]

Crow, Jungle

Crow-pheasant

Cuckoo, Emerald

Cuckoo, Himalayan

Cuckoo, Indian

Cuckoo, Small

Cuckoo, Violet

Cuckoo-dove, Andaman

Dove, Red Turtle

Eagle, Andaman Dark Serpent

Eagle, Crested Serpent

Eagle, Whitebellied Sea

* The notified area of this sanctuary is 10,000 ha. [notif]. However, the map area is much smaller, and the A&N wildlife authorities have stated that the notification is wrong, and that the actual area is 2221 ha. [PCCF fax 1991].

** See Appendix 3, footnote 1

Falcon, Peregrine	Owl, Barn
Harrier, Marsh	Parakeet, Alexandrine
Harrier, Pale	Parakeet, Redbreasted
Hawk-eagle, Crested	Parakeet, Redcheeked
Hawk-owl, Andaman Brown	Pigeon, Andaman Wood
Kingfisher, Blue-eared	Pigeon, Green Imperial
Kingfisher, Common	Pigeon, Greyfronted Green
Kingfisher, Storkbilled	Swiftlet, Andaman Greyrumped
Kingfisher, Threotoed	Swiftlet, Whitebellied
Kingfisher, Whitecollared	Teal, Cotton
Kite, Pariah	Teal, Grey
Koel	Teal, Lesser Whistling
Lorikeet, Indian	Tree Pie, Andaman
Myna, Hill	Woodpecker, Fulvousbreasted Pied
Owl, Andaman Scops	Woodpecker, Indian Great Black
Reptiles [QI, Khan undated]	
Crocodile, Estuarine	Turtle, Hawksbill
Monitor, Water	Turtle, Leathery
Turtle, Green	Turtle, Olive Ridley

Listings of amphibia, fish, and insects found in the sanctuary are not available. The Estuarine crocodile, and all species of sea turtles are reported to be locally threatened due to poaching [fv]. A programme to rear and release crocodiles was started, but stopped after releasing 12 animals, due to local opposition [Whitaker, Pers. comm., 1989].

OCCURRENCE AND CONTROL OF DISEASE: None

OTHER FACTORS AFFECTING HABITAT: Gales and cyclones occur in November-December. Hailstorms are also reported.

WATER RESOURCES: There are two natural water holes, of which only one is perennial. There are also some perennial springs.*

PERSONNEL: There is one Range Officer, and three Foresters [PCCF fax 1991].

EQUIPMENT: Two pairs of binoculars.

RESEARCH AND MONITORING: The bio-ecology and breeding biology of Salt-water crocodile and turtles has been studied by the former DCF (WL), Shri I.H. Khan, and ACF (WL), Shri B.P. Yadav.

HUMAN PRESENCE:

Habitation: There are no villages inside the sanctuary. Nine villages lie in the adjoining or nearby areas, with a population of around 1500 [Census 1981].

Illegal Activities and Offences: Two cases of poaching were recorded in 1984. Local villagers come to fish in the sea off the Sanctuary and have set up five temporary huts on the beach for the purpose [fv].

Use by Other Government Agencies : The Military Engineering Service was extracting sand from within the sanctuary till 1985, but this has since stopped [fv].

Tourism : No composite information is available on the number of tourists visiting the sanctuary in the year as a whole.

* As these waterbodies are not marked on the relevant toposheets, their location could not be ascertained.

Miscellaneous: 41 labourers were employed in 1987, a few of whom were also used for protection work [iv].

INFORMATION FOR VISITORS: November to March is the best time for visiting the sanctuary, as the sea is calm. Permits are required by all visitors and entry at night is prohibited.

Though no accommodation is available inside the sanctuary, the facilities available at Wandur, for the Marine National Park, can be availed of (please see MARINE NATIONAL PARK for details).



SOUTH SENTINAL ISLAND SANCTUARY

Situated about 25 km north-west of Little Andaman Island, this sanctuary is a flat coral island. "Lagoons mark about half the length of the shore, the rest being rocky or sandy. A magnificent sandy beach extends along the north-west coast* which surpasses in beauty any other known beach of India" [Davies and Altevogt 1976]. The Sanctuary was set up primarily to protect the Giant robber crab (*Birgus latro*), the world's largest land crab. The beach is also reported to be an ideal nesting site for sea turtles. The rest of the island "is canopied by dense forest trees, lianas, and brambles" [Davies and Altevogt 1976].

The Onge tribe knows this island as Inang-go-gue [Tp].

LEGAL STATUS: Declared a sanctuary on 19th February, 1977 vide notification no. CF/WL/19 [notif].

AREA: 161.2 ha. (1.61 sq. km) [notif]

LOCATION: District Andaman; *Latitudinal Range* 10°58'23" to 10°59'00" N [Tp]; *Longitudinal Range* 92°12'46" to 92°13'41" E [Tp]; *Nearest Town* Port Blair (103 km); *Nearest Airport* Port Blair (103 km)

APPROACHES: Port Blair to South Sentinal Island by ship (103 km). No public ferry available. Alternately, Port Blair to Little Andaman by ferry (120 km), and then on to South Sentinal Island by ship (25 km).

TOPOGRAPHY: *Altitude* 0 to 6 m [Tp]

FLORA: Forest types include Andamans Tropical Evergreen 1A/C2 (75 ha. approx.), Littoral Forest 4A/L1 (50 ha. approx.) and Mangrove Forest (Tidal Swamp Forest) 4B/TS2 (36 ha. approx.).

Trees [Chaudhuri 1987, Davis and Altevogt 1976, Osmaston 1907; Parkinson 1923]

<i>Aglaia argentea</i>	<i>Manilkara littoralis</i>
<i>Barringtonia asiatica</i>	<i>Pandanus</i> spp.
<i>Cocos nucifera</i>	<i>Pemphis acidula</i>
<i>Diospyros</i> spp.	<i>Rhizophora apiculata</i>
<i>Dipterocarpus</i> spp.	<i>Terminalia bialata</i>
<i>Hibiscus tiliaceus</i>	<i>Terminalia procera</i>

Other Vegetation [Chaudhuri 1987, Davis and Altevogt 1976, Osmaston 1907]

Ipomoea pes-caprae

FAUNA:

Mammals [QI, Khan undated, Hill 1971]

Flying Fox, (Andaman) **

Birds [QI, Khan undated, Osmaston 1907]

Crow, Jungle	Parakeet, Alexandrine
Dove, Emerald	Pigeon, Green Imperial
Eagle, Crested Serpent	Pigeon, Nicobar
Eagle, Whitebellied Sea	Pigeon, Pied Imperial
Kingfisher, Whitecollared	Plover, Great Stone
Koel	Whistler, Mangrove
Myna, Hill	White-eye
Myna, Whiteheaded	

* According to the relevant SOI toposheet, this is on the south-west part of the island.

** See Appendix 3, footnote 1

Reptiles [QI, Chaudhuri 1987, Khan undated]

Crocodile, Estuarine	Turtle, Loggerhead*
Monitor, Water	Turtle, Olive Ridley
Snake, Colubrine Amphibious Sea	Turtle, Leathery
Turtle, Green	

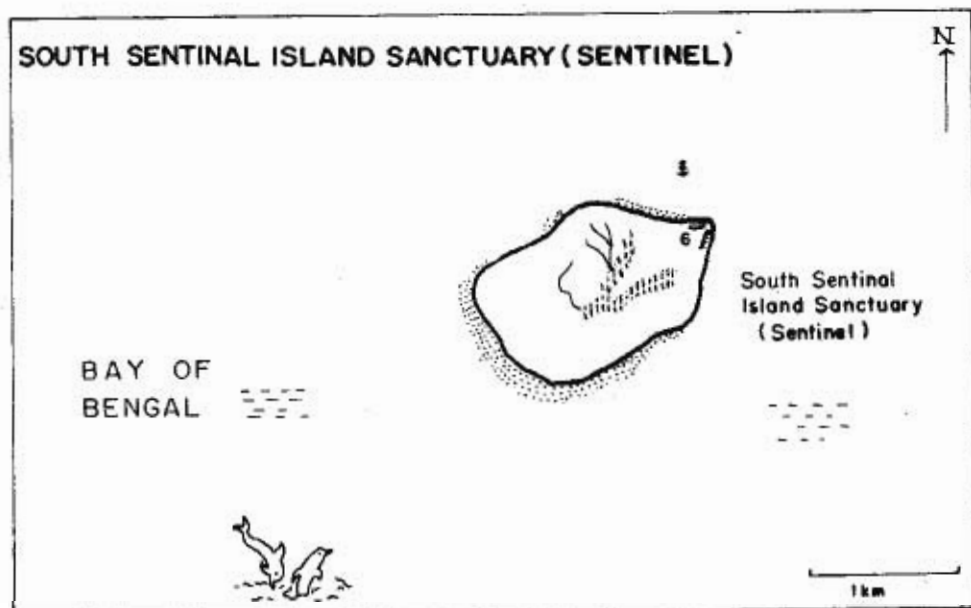
Crustaceans

Crab, Giant Robber

Listings of amphibians, fish, insects, and other fauna found on the Island are not available. Threatened species on the Island include the Giant robber crab, Pied imperial pigeon and Whitebellied sea eagle. All species of turtles are also reportedly threatened.

OCCURRENCE AND CONTROL OF DISEASE: None**OTHER FACTORS AFFECTING HABITAT:** Gales and cyclones occur in November and December, and there are occasional hailstorms.**WATER RESOURCES:** There are four streams [Tp].**PERSONNEL:** None**EQUIPMENT:** None**RESEARCH AND MONITORING:** None**HUMAN PRESENCE:** None

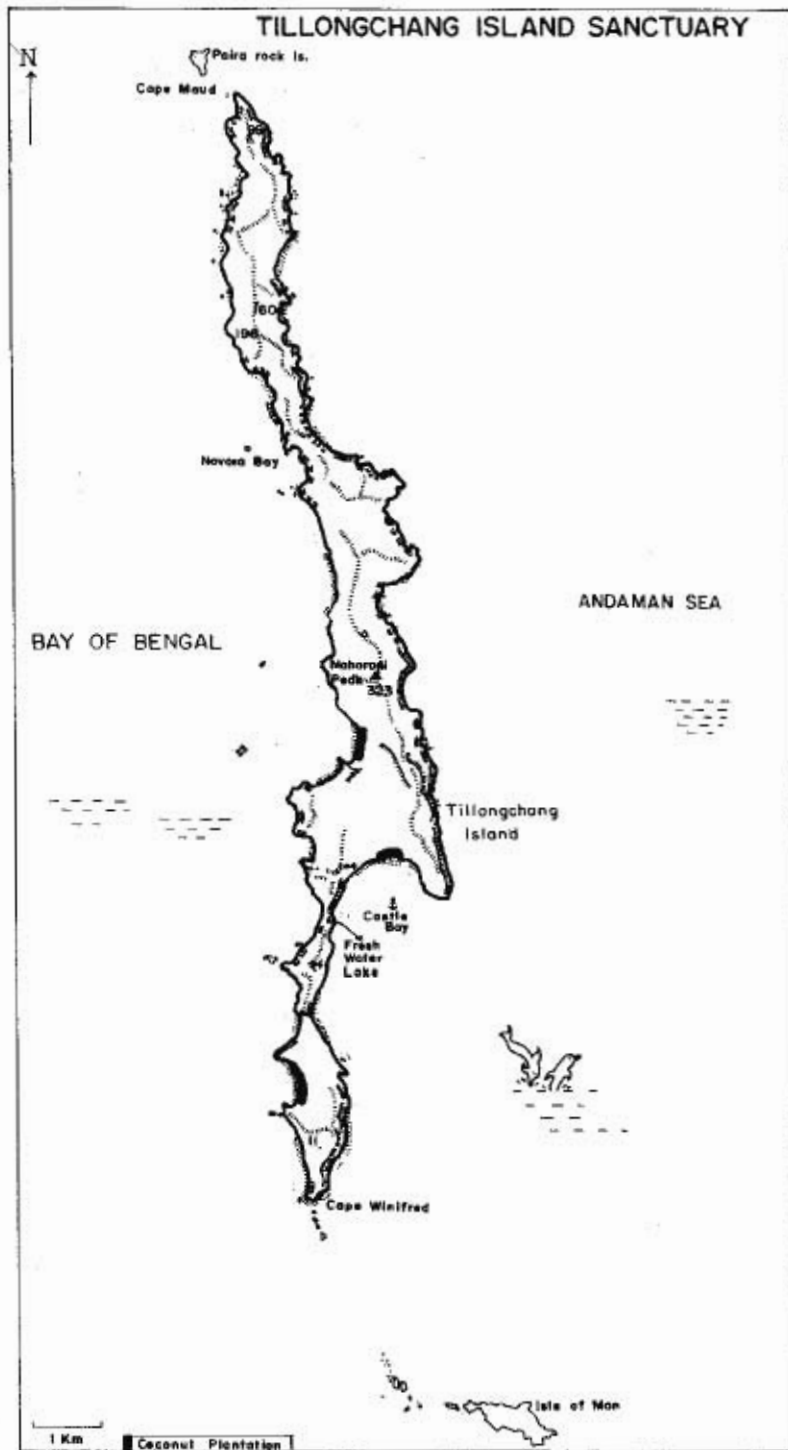
* Occurrence doubtful; only authentic records are from Tamil Nadu coast [Das 1985].



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TILLONGCHANG ISLAND SANCTUARY

Set up to protect the rare and endangered northern subspecies (*nicobariensis*) of the Megapode, this remote island has no human population. Apart from the Megapode the island also harbours the Nicobar pigeon and the very rare Nicobar tiger bittern [Tikader and Das 1985]. Relative to most other island sanctuaries in Andaman and Nicobar, Tillongchang has considerable diversity of topography. Sheer cliffs, thickly vegetated rolling hills, mangrove patches, and long beaches combine into a remarkable blend which still remains largely unstudied.

With rough seas around it most of the year, and only one or two suitable landing spots, it is difficult to approach except by a good seafaring vessel and an appropriate landing craft. However, Nicobarese tribals of the nearest inhabited islands of Camorta, Teresa, and Trinkat, wizards as they are at sea travel, do manage to get here often. There is evidence of some poaching and illegal coconut extraction by them, and perhaps occasionally by passengers and crew of passing ships. The Nicobarese who land here have reported the continued abundance of pigs, crocodiles, snakes, and other wildlife [Anon 1981].

LEGAL STATUS: Declared a sanctuary in January 1985 vide notification no. CF/WL/50—Vol. I [notif].

AREA: 1683 ha. (16.83 sq. km) [notif]

LOCATION: District Nicobar; Latitudinal Range 08°25'11" to 08°34'32" N [Tp]; Longitudinal Range 93°36'15" to 93°38'07" E [Tp]; Nearest Town Car Nicobar (approximately 112 km); Nearest Airport and helipad Car Nicobar (approximately 112 km).

APPROACHES: From Port Blair by ship or air to Car Nicobar Island (282 km), then to the sanctuary (approximately 112 km) by ship [fv]. No public ferry available.

TOPOGRAPHY: Altitude 0 to 323 m [Hyd. map].

FLORA: Forest types include Andaman Tropical Evergreen 1A/C2, Andaman Semi-evergreen 2A/C1, Littoral Forest 4A/L1, and Mangrove Forest (Tidal Swamp Forest) 4B/TS2 [QI, Chaudhuri 1987].

Trees [QI, Chaudhuri 1987]

Areca triandra

Avicennia spp.

Bruguiera spp.

Calamus palustris

Canarium euphyllum

Ceriops spp.

Cocos nucifera

Hibiscus spp.

Manilkara spp.

Pandanus spp.

Pterygota alata

Rhizophora spp.

Terminalia catappa

There are three coconut plantations [Tp]. However, there is no information on by whom, or when, they were started. There is no information on threatened species of flora in the sanctuary.

FAUNA:**Mammals** [QI, Chaudhuri 1987, fv]

Bat, Lesser Shortnosed Fruit
 Boar, Indian Wild
 Deer, Spotted *

Flying Fox, (Nicobar) **
 Shrew, Nicobar Spiny

Birds [QI, Chaudhuri 1987, Tikader and Das 1985, fv]

Bittern, Tiger
 Drongo, Lesser Racket-tailed
 Eagle, Crested Serpent
 Eagle, Whitebellied Sea
 Heron, Reef
 Megapode

Parakeet, Redcheeked
 Pigeon, Andaman Wood
 Pigeon, Green Imperial
 Pigeon, Nicobar
 Pigeon, Pied Imperial

Reptiles [QI, Biswas 1984, Anon 1981]

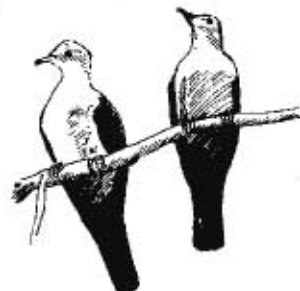
Crocodile, Estuarine
 Lizard, Green Forest

Monitor, Water

Insects (Butterflies)

Birdwing, Common
 Jay, Great
 Jay, Tailed

Mormon, Andaman
 Swordtail, Fivebar



No listings are available of the amphibian, fish, and other fauna found in the sanctuary. The Megapode is reported to be threatened, due to poaching by local people [fv].

OCCURRENCE AND CONTROL OF DISEASE: None

OTHER FACTORS AFFECTING THE HABITAT: Gales, cyclones and occasional hailstorms are reported.

WATER RESOURCES: There is one perennial lake, and 67 streams [QI, Tp]. It is not known how many, if any, of these streams are perennial.

PERSONNEL: None

EQUIPMENT: None

RESEARCH AND MONITORING: None

HUMAN PRESENCE:

Illegal Activities: Coconut extraction and poaching are reported [fv].

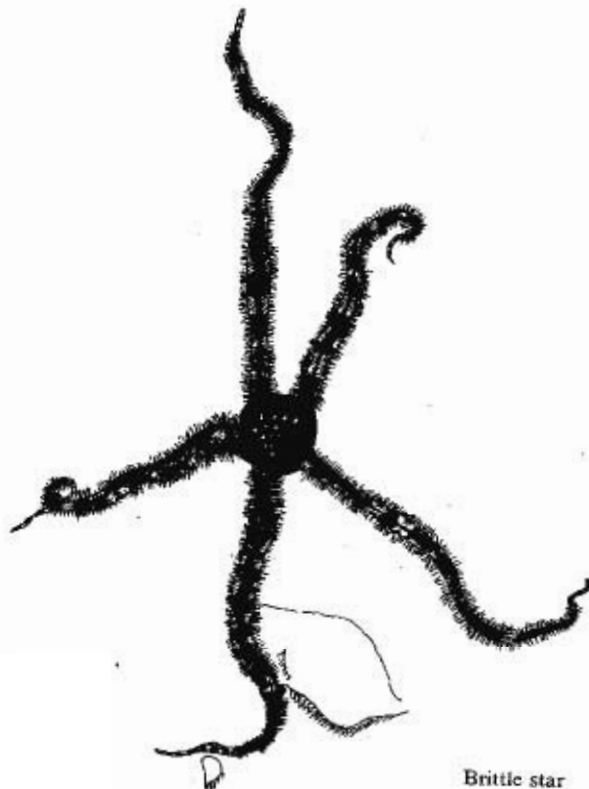
* Authentic sightings of Spotted deer are only from the Andaman islands. Its occurrence in the Nicobars is doubtful, as there is no record of its having been introduced there [Tikader and Das 1985].

** See Appendix 3, footnote 1

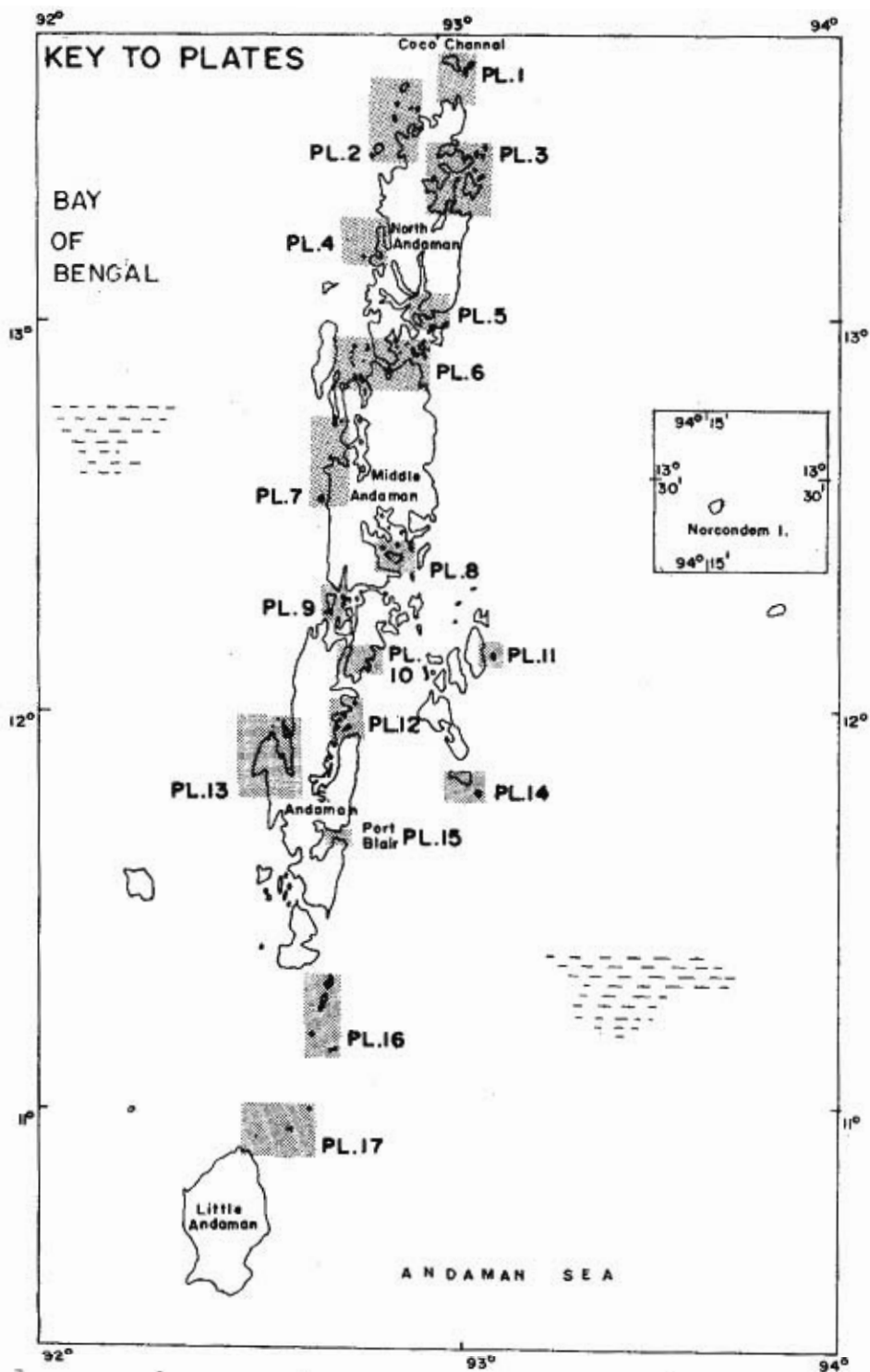
MAPS OF 83 OTHER SANCTUARIES IN ANDAMAN AND NICOBAR ISLANDS

Of the 100 national parks and sanctuaries in A&N, 85 were declared on one date in 1987. Very little information is available on these, but maps depicting them could be made from Survey of India toposheets and Naval Hydrographic maps. Two of these, Latouche Island Sanctuary and South Reef Island Sanctuary, have been included in the directory sheet and map of North Reef Island Sanctuary and Interview Island Sanctuary, respectively, due to their geographical proximity. The remaining 83 sanctuaries are depicted in the following 17 plates. Available information on these is presented in tabular form in the PROFILE OF 83 OTHER SANCTUARIES IN ANDAMAN AND NICOBAR ISLANDS, following the plates, on pp. 107-114.

The notified area of many of these sanctuaries differs considerably from the area as shown on the maps. One possible reason for this may be that the notified area includes the mangroves, foreshore rocks, sand/mud patches, and intertidal zone surrounding the islands, whereas, in the absence of a definite boundary description in the notification, the maps have been made taking the high water line as the boundary. This discrepancy could not be resolved.



Brittle star



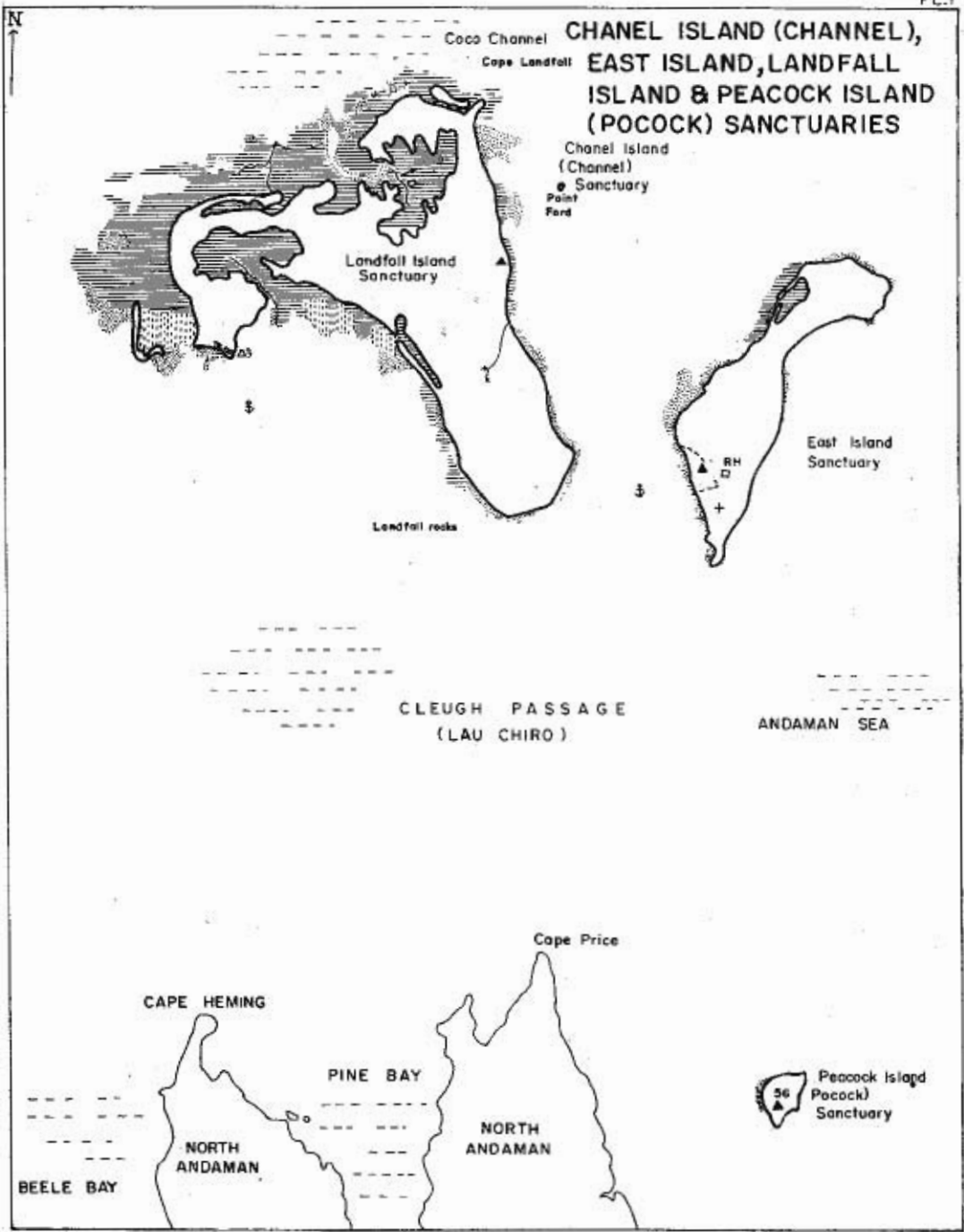
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LIST OF MAP PLATES OF 83 OTHER SANCTUARIES IN ANDAMAN & NICOBAR ISLANDS

- Plate - 1
Chanel (Channel) Island, East Island, Landfall Island, and Peacock (Pocock) Island Sanctuaries
- Plate - 2
Mayo Island, Paget Island, Point Island, Reef Island,
Shearme Island, West Island and White Cliff Island Sanctuaries
- Plate - 3
Brush Island, Jungle Island, North Island, Ox Island, Ross Island, Table (Delgarno) Island, Table
(Excelsior) Island, Temple Island, Tree Island, Trilby Island, Turtle Island and Wharf Island
Sanctuaries
- Plate - 4
Kwangtung (Machua Tikri) Island, Rowe Island and Shark (Snark) Island Sanctuaries
- Plate - 5
Bamboo Island, Blister Island, Curlew Island, Dot Island, Gander Island, Goose Island, Oliver
Island and Oyster - 1 Island Sanctuaries
- Plate - 6
Benett (Bennet) Island, Bondoville (Boudeville) Island, Buchanan Island, Curlew (B.P.) Island,
Dottrel Island, Egg Island, Entrance Island, Girjan (Gurjan) Island, Orchid Island, Ranger Island,
Roper Island, Sea Serpent Island, Snake - 1 Island, Spike - 1 (Speke) Island, Surat Island and Swamp
Island Sanctuaries
- Plate - 7
Elat (Flat) Island, Hump Island, Mask Island, and Tuft Island Sanctuaries
- Plate - 8
Cone Island, Oyster - 2 Island, and Parkinson Island Sanctuaries
- Plate - 9
Bingham Island, Bluff Island, Mangrove Island, Spike - 2 Island, Stoat Island, and Talabaicha
(Talakaicha) Island Sanctuaries
- Plate - 10
Arial (Ariel) Island and Belle Island Sanctuaries
- Plate - 11
East or Inglis Island Sanctuary
- Plate - 12
Duncan Island, James Island, Kyd Island, Pitman (Petman)
Island, and Potanma Island Sanctuaries
- Plate - 13
Clyde Island, Defence Island, Montogemery (Montgomery) Island,
Patric (Petrie) Island and Sandy Island Sanctuaries
- Plate - 14
Sir Hugh Rose Island Sanctuary
- Plate - 15
Snake - 2 Island Sanctuary
- Plate - 16
Cinque Islands, Passage Island and Sisters Island Sanctuaries
- Plate - 17
North Brother Island and South Brother Island Sanctuaries

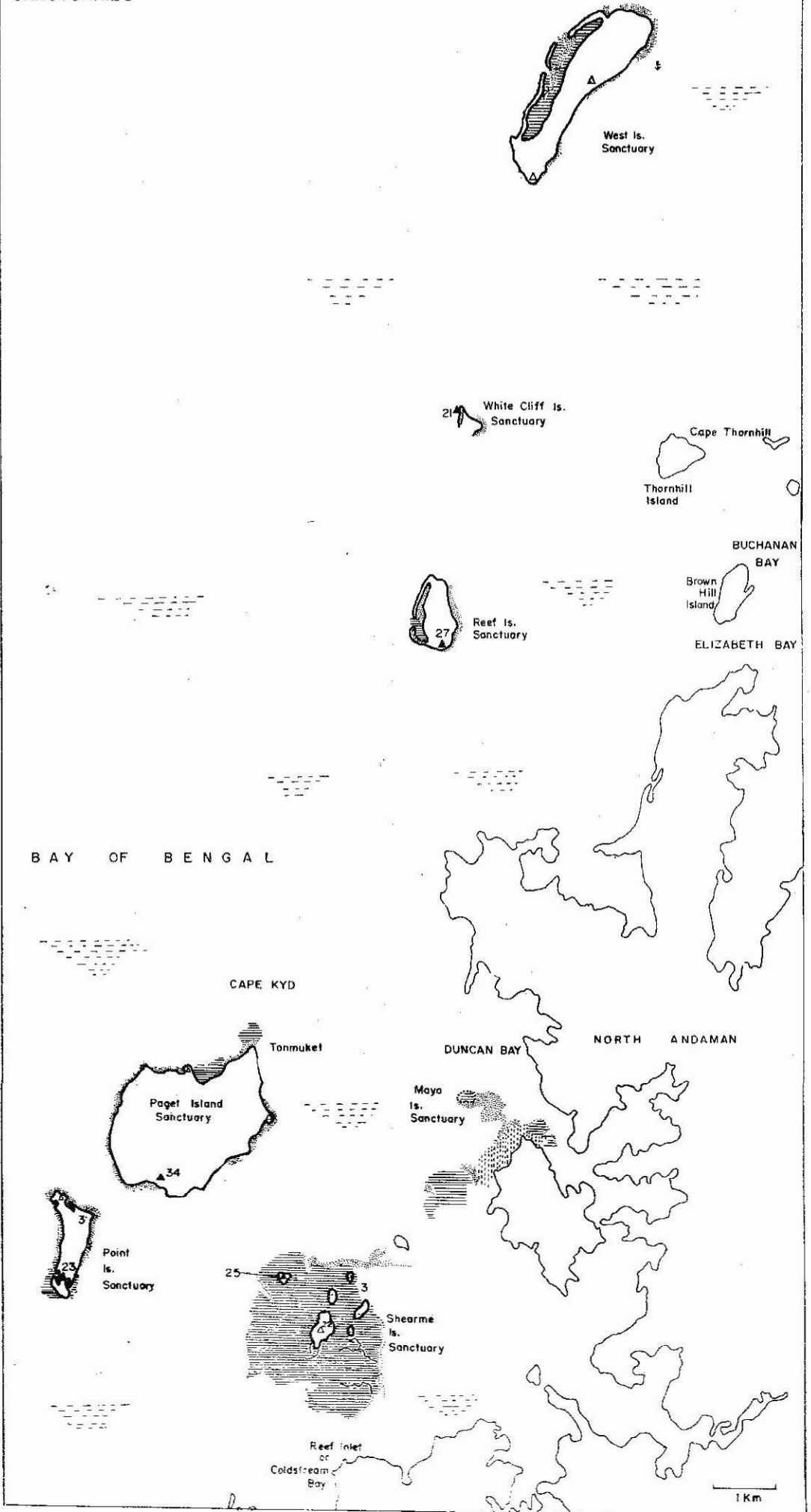


Duskyvented storm petrel
Fregetta tropica



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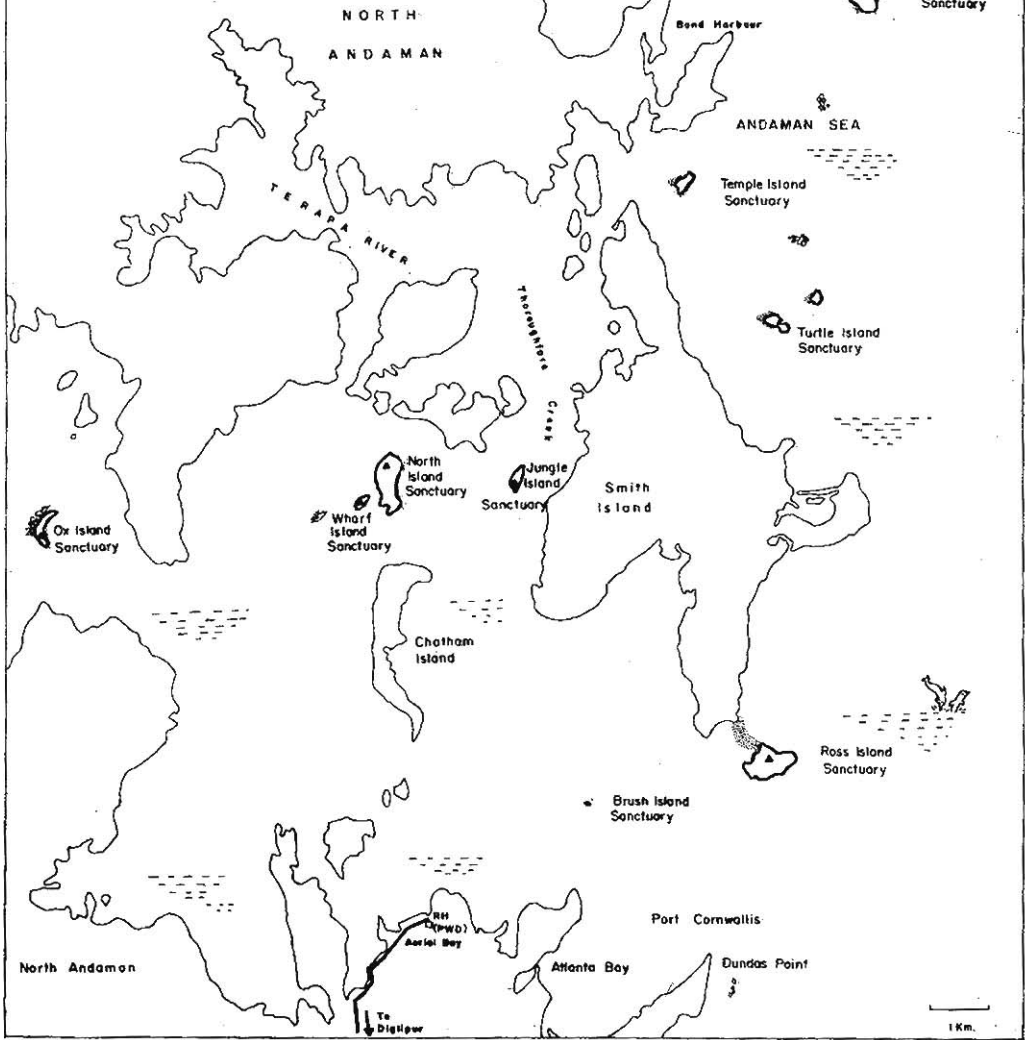
MAYO ISLAND, PAGET ISLAND, POINT ISLAND, REEF ISLAND, SHEARME ISLAND, WEST ISLAND & WHITE CLIFF ISLAND SANCTUARIES



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**BRUSH ISLAND, TABLE (DELGARNO) ISLAND, TABLE (EXCELSIOR) ISLAND, OX ISLAND
JUNGLE ISLAND, NORTH ISLAND, ROSS ISLAND, TEMPLE ISLAND,
TREE ISLAND,
TRILBY ISLAND,
TURTLE ISLAND,
& WHARF ISLAND
SANCTUARIES**



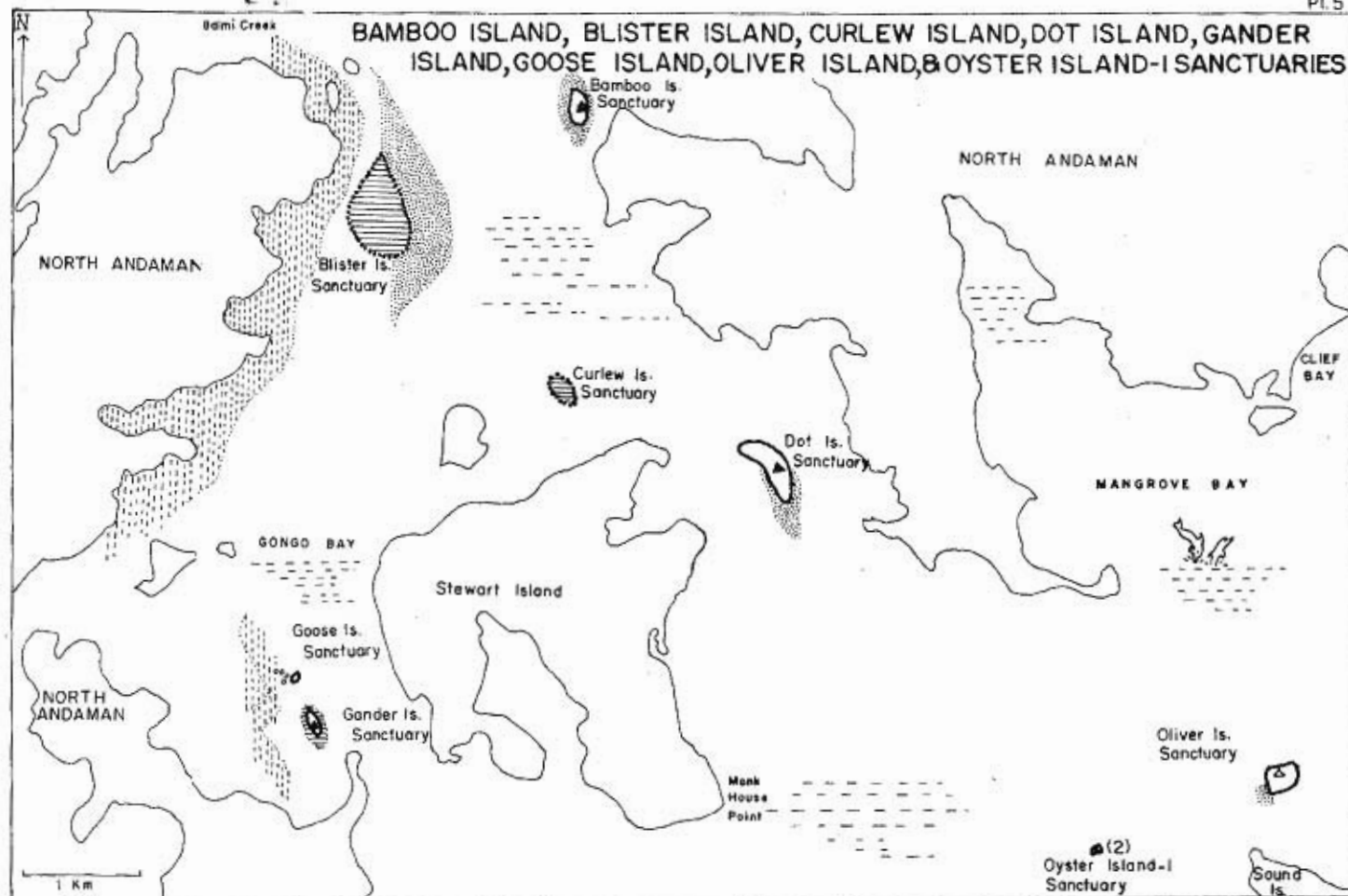
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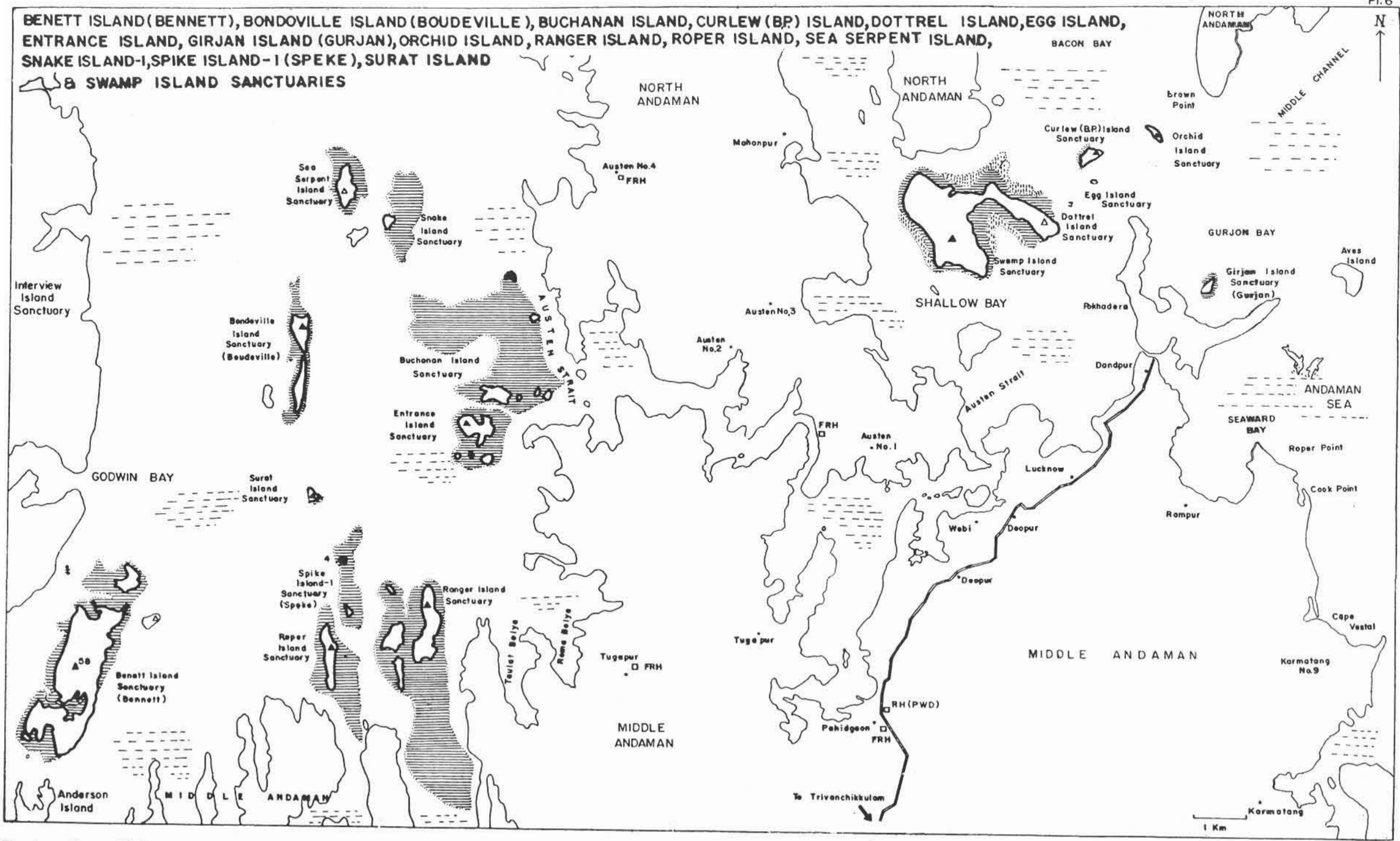
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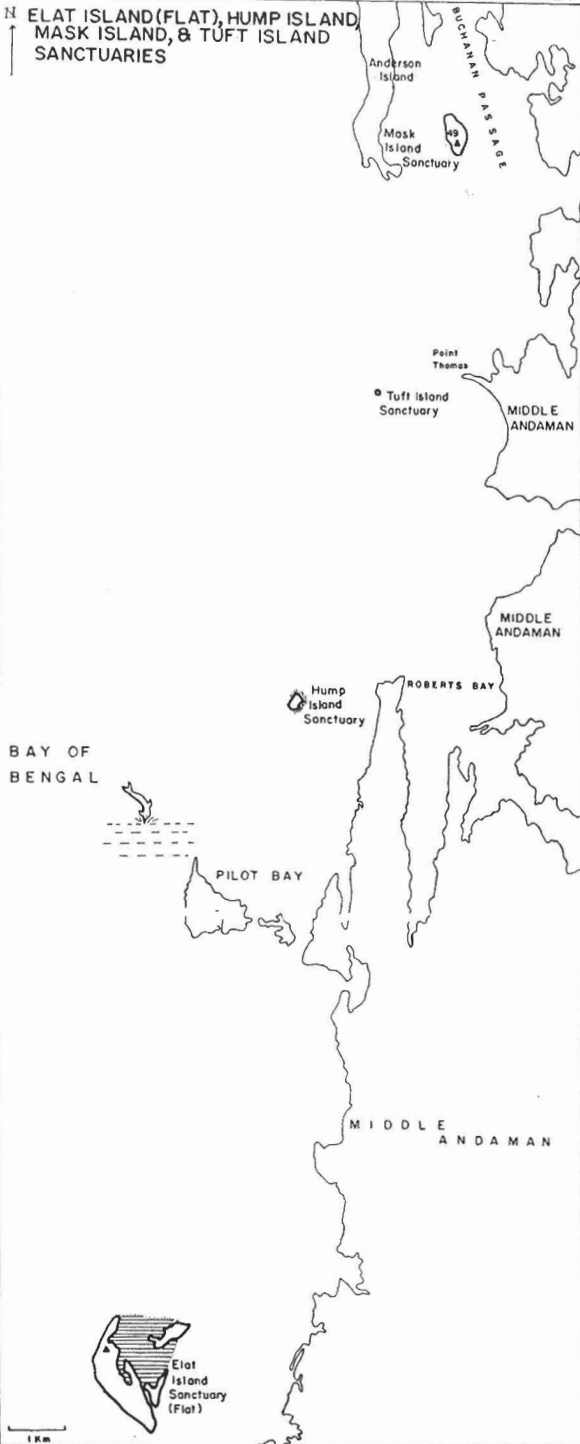
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BENNETT ISLAND (BENNETT), BONDOVILLE ISLAND (BOUDEVILLE), BUCHANAN ISLAND, CURLEW (BP) ISLAND, DOTTREL ISLAND, EGG ISLAND, ENTRANCE ISLAND, GIRJAN ISLAND (GURJAN), ORCHID ISLAND, RANGER ISLAND, ROPER ISLAND, SEA SERPENT ISLAND, SNAKE ISLAND-I, SPIKE ISLAND-I (SPEKE), SURAT ISLAND & SWAMP ISLAND SANCTUARIES

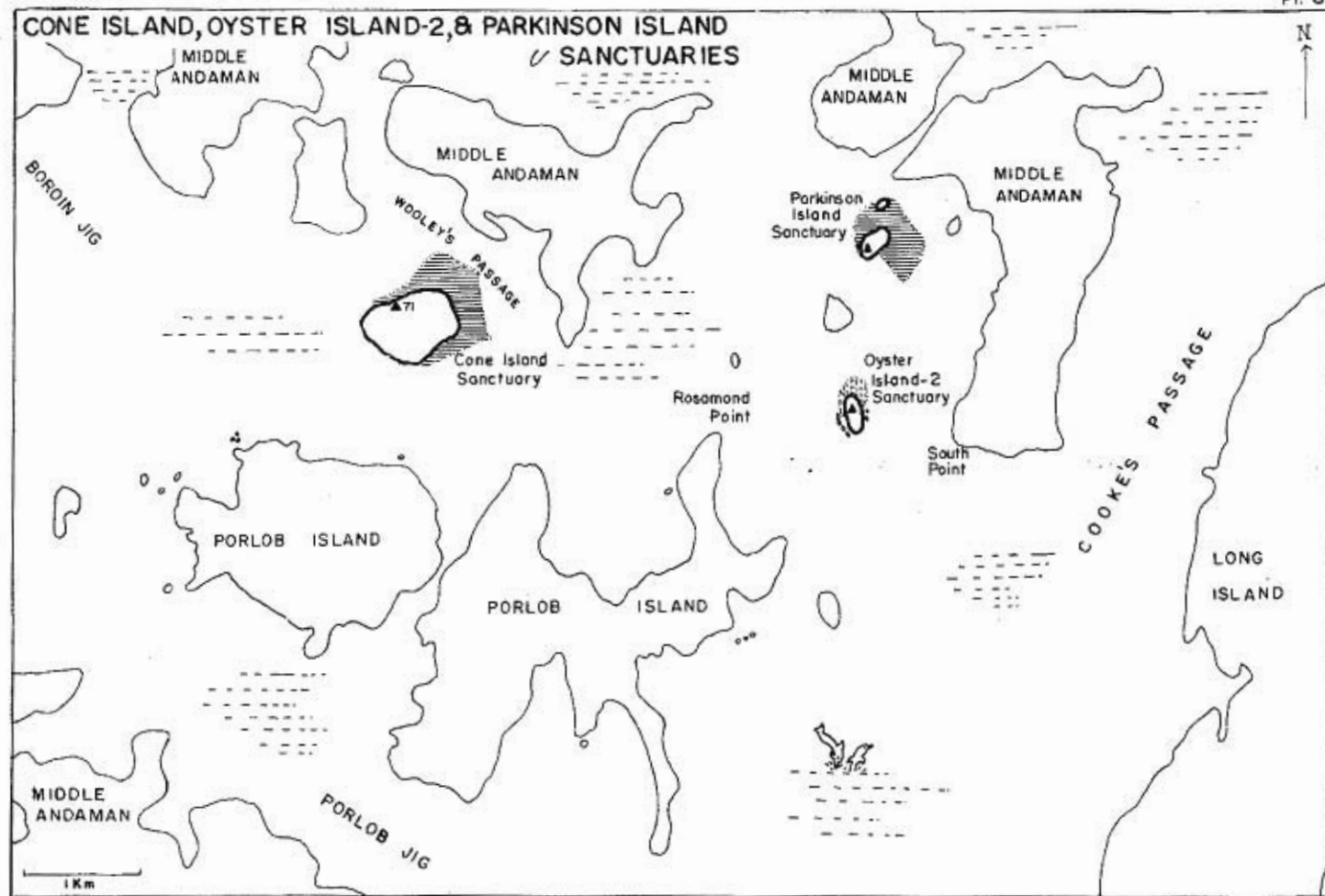


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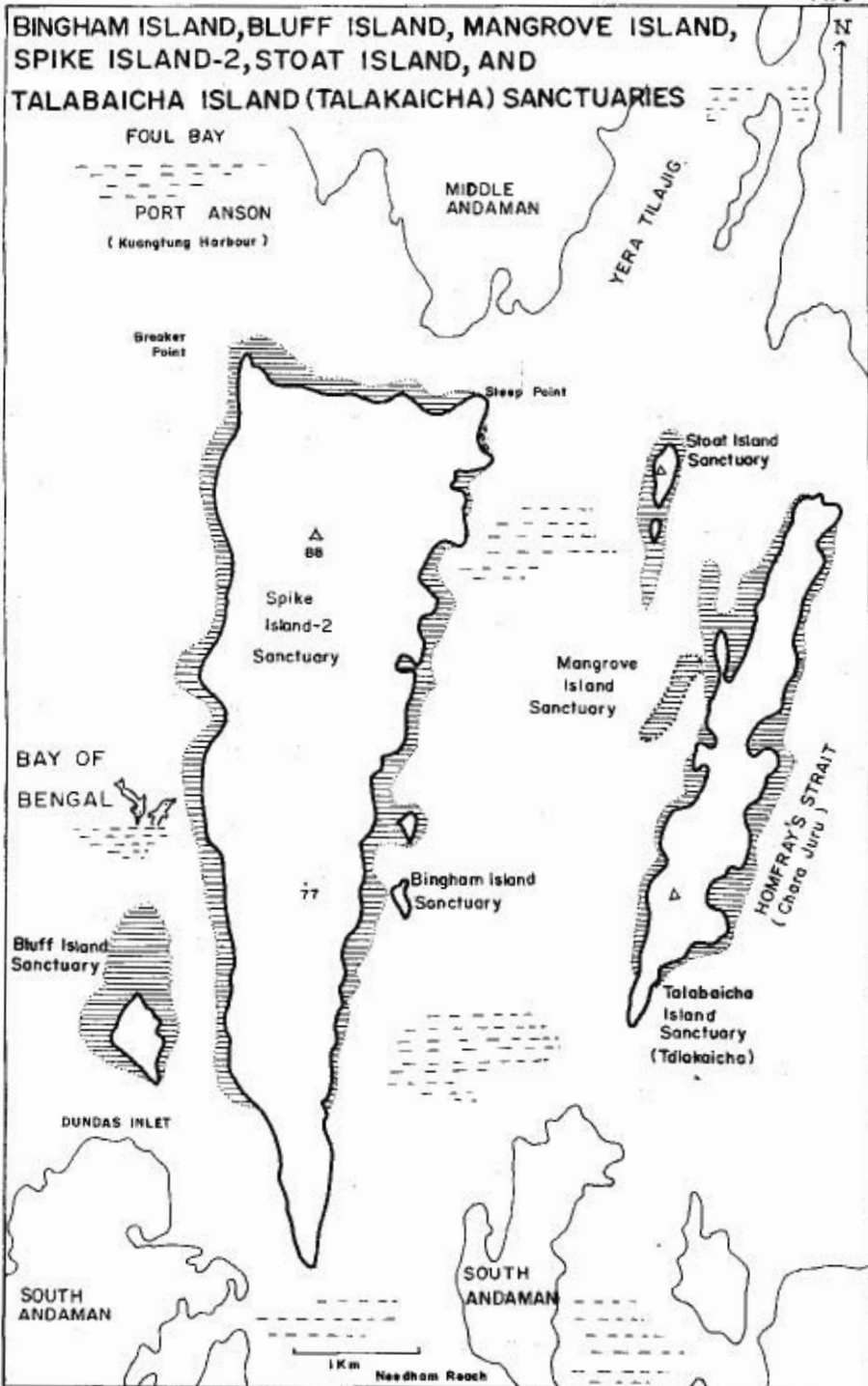
ELAT ISLAND (FLAT), HUMP ISLAND, MASK ISLAND, & TUFT ISLAND SANCTUARIES



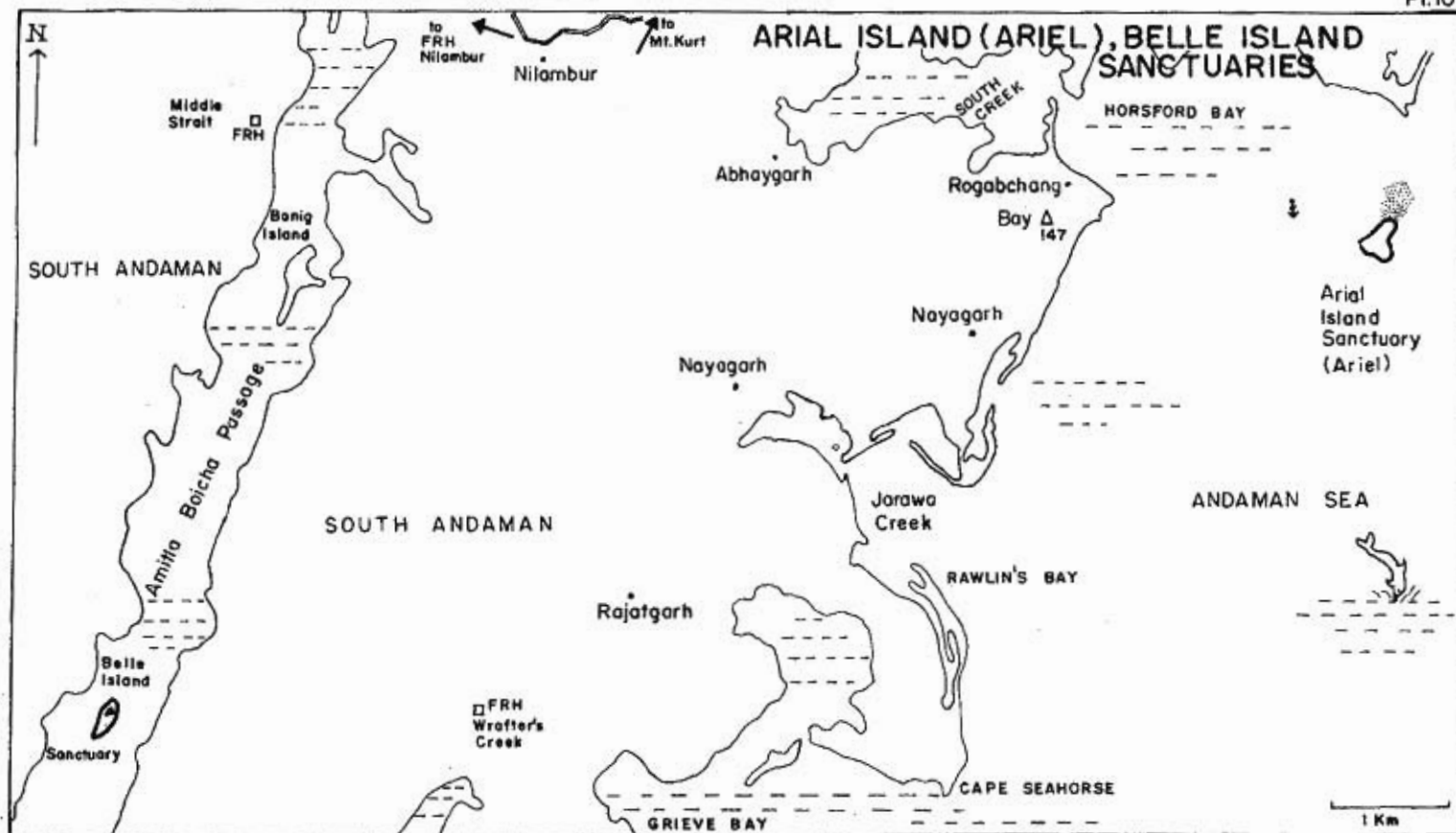
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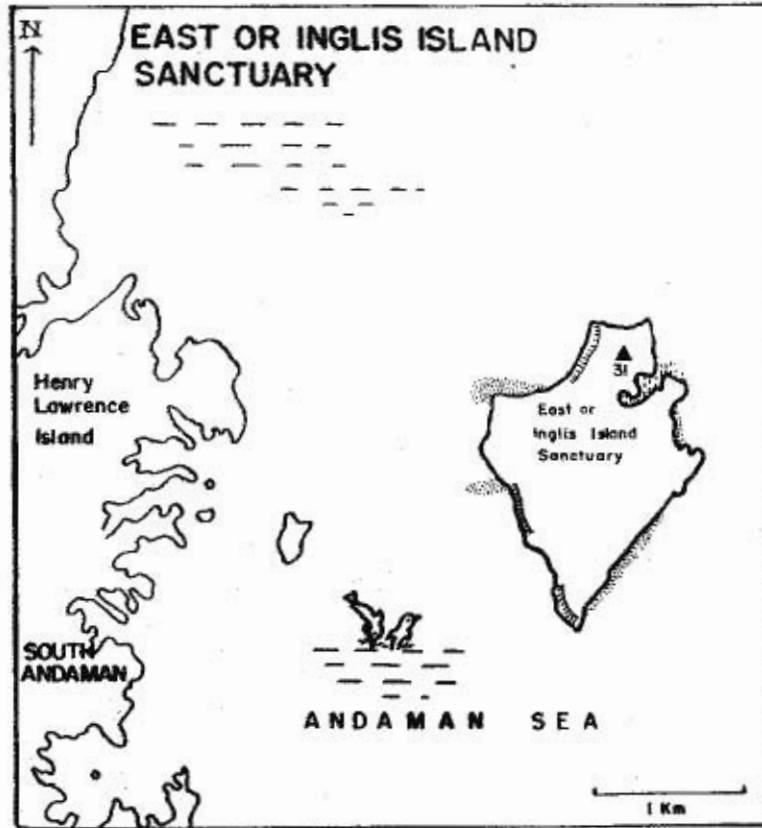
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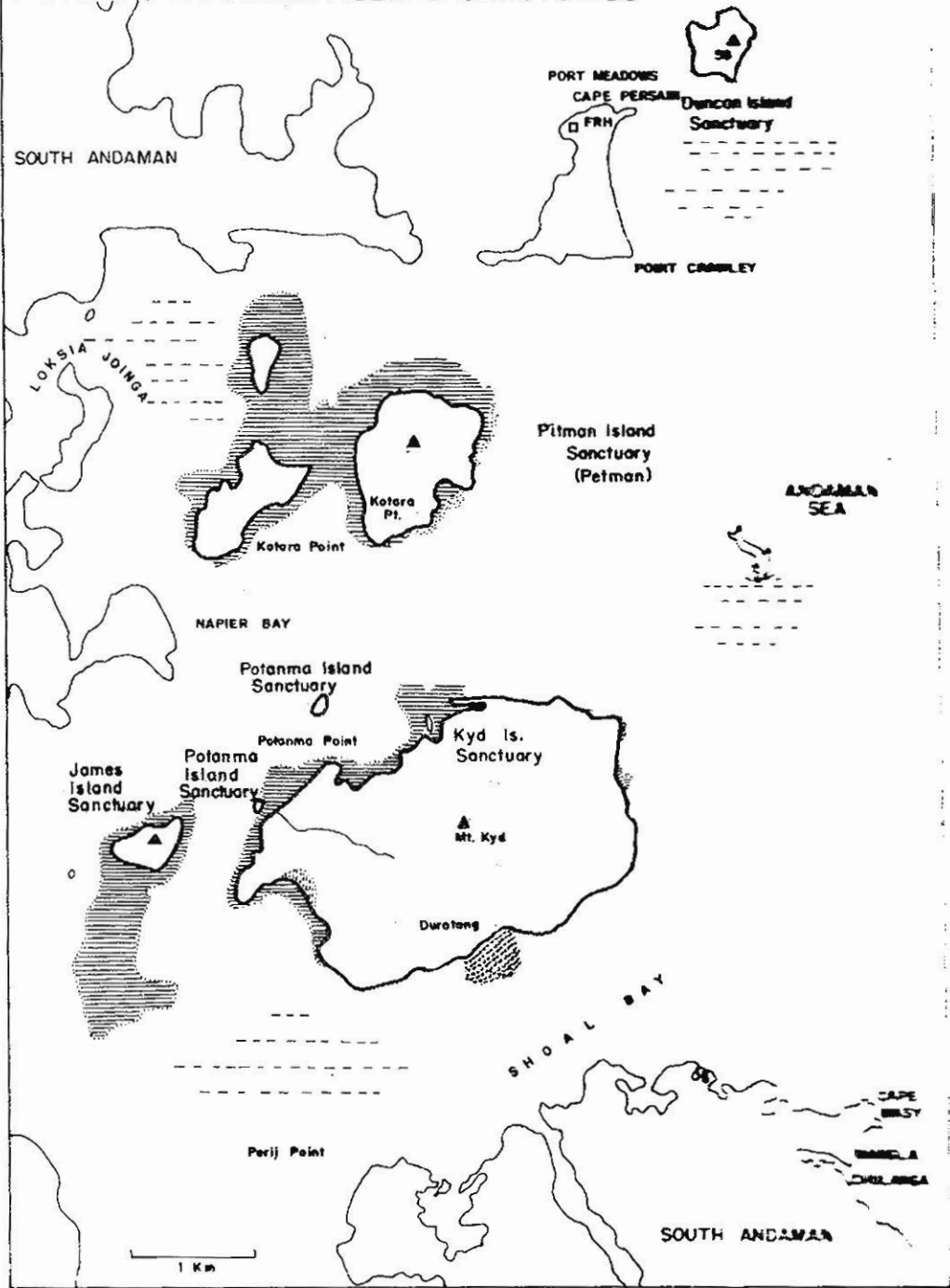
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DUNCAN ISLAND, JAMES ISLAND, KYD ISLAND, PITMAN ISLAND (PETMAN) & POTANMA ISLAND SANCTUARIES

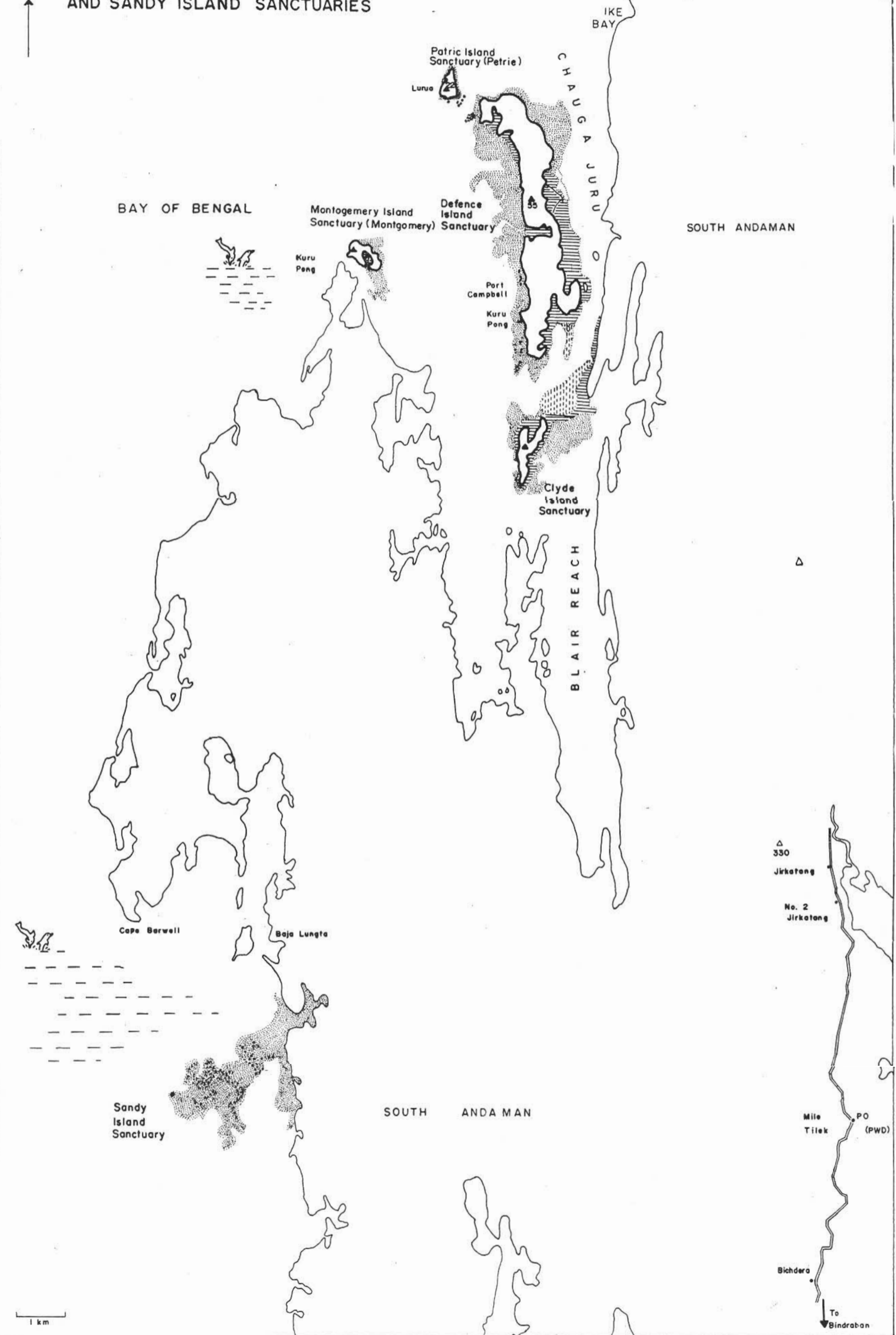


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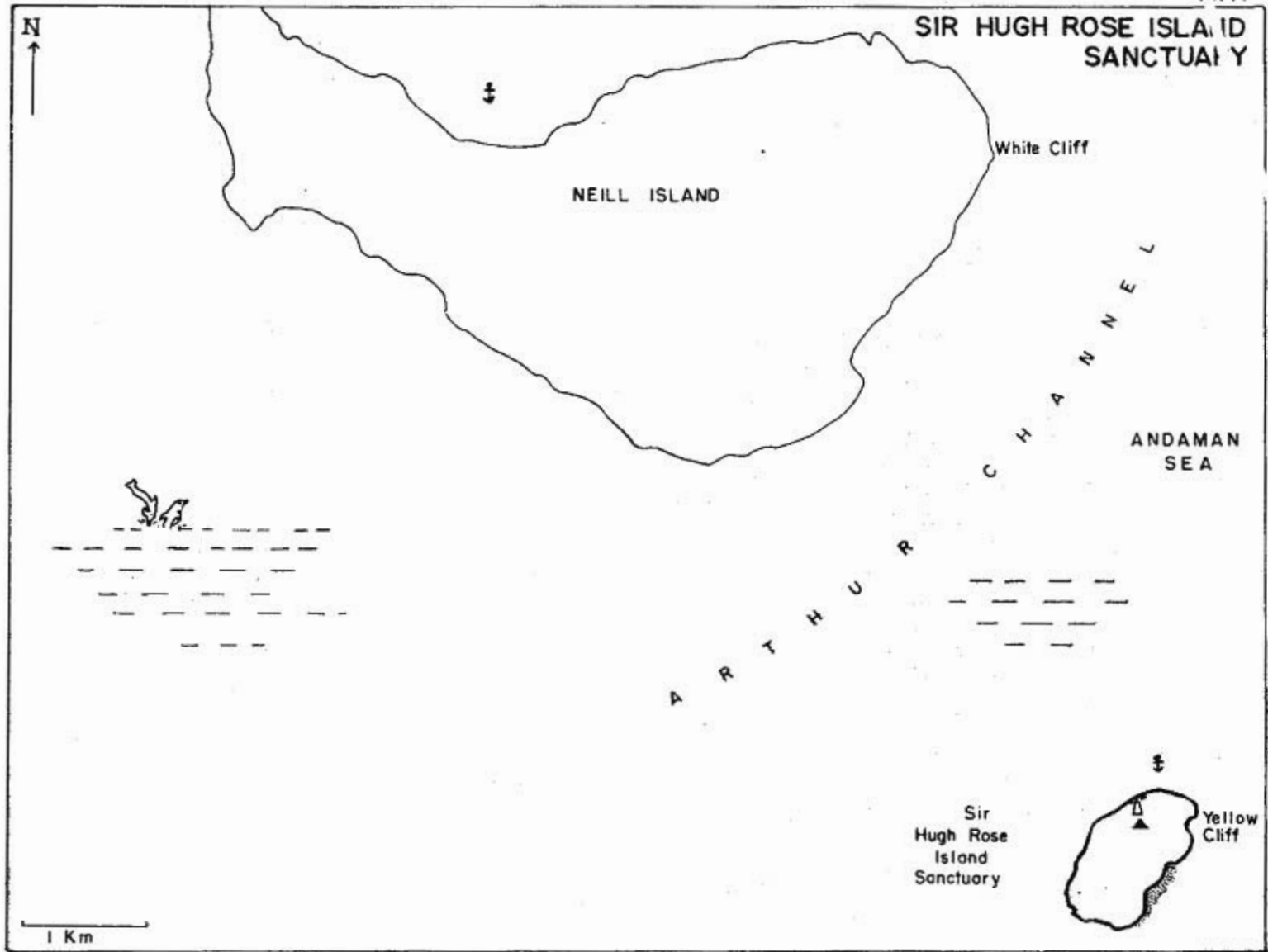
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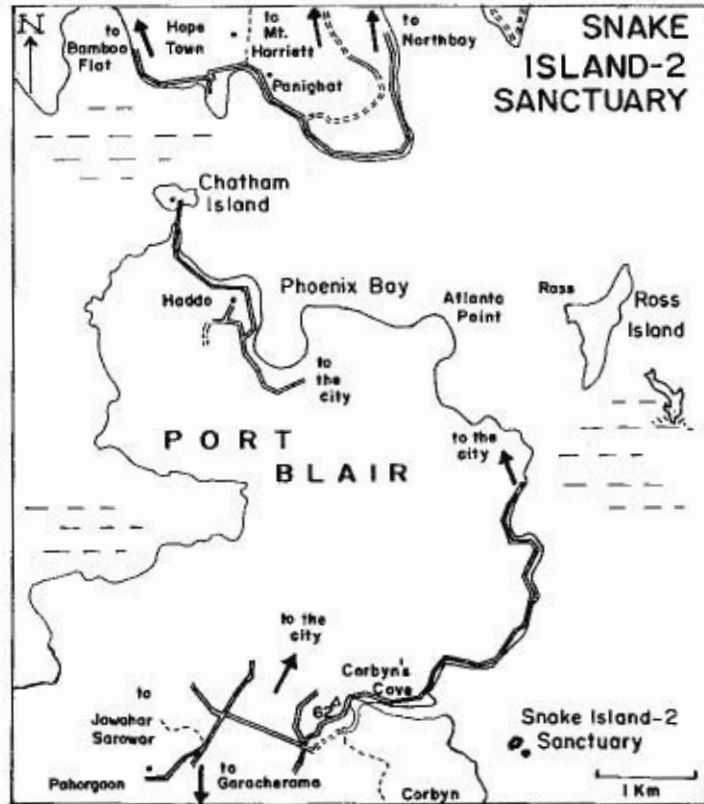
CLYDE ISLAND, DEFENCE ISLAND, MONTGOMERY ISLAND (MONTGOMERY), PATRIC ISLAND (PETRIE), AND SANDY ISLAND SANCTUARIES



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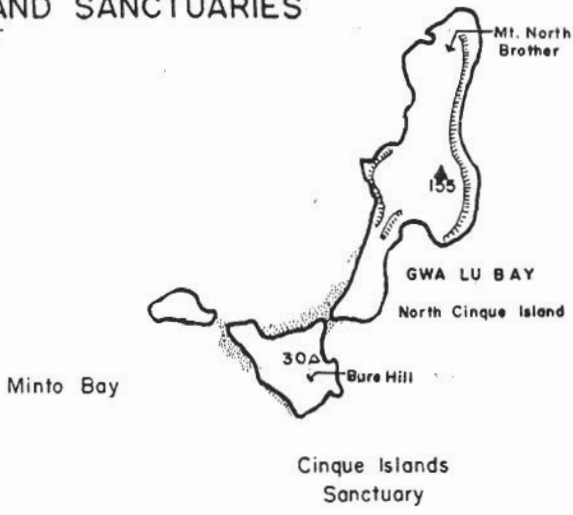
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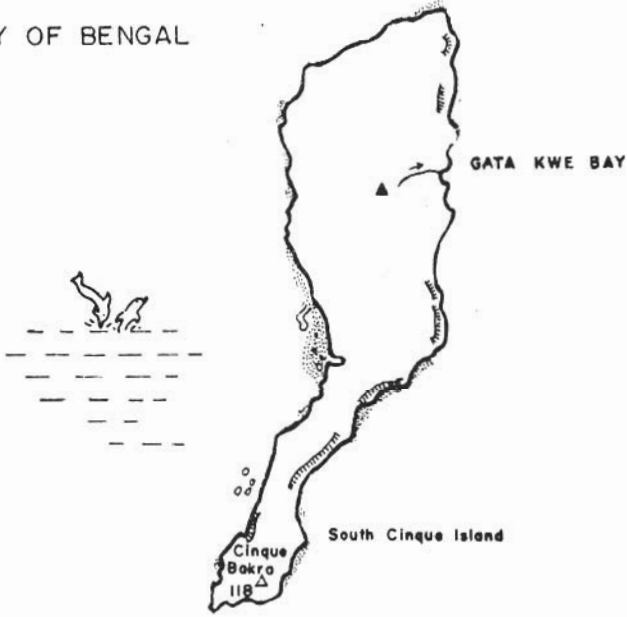
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CINQUE ISLANDS, PASSAGE ISLAND & SISTERS ISLAND SANCTUARIES

MANNERS STRAIT



BAY OF BENGAL

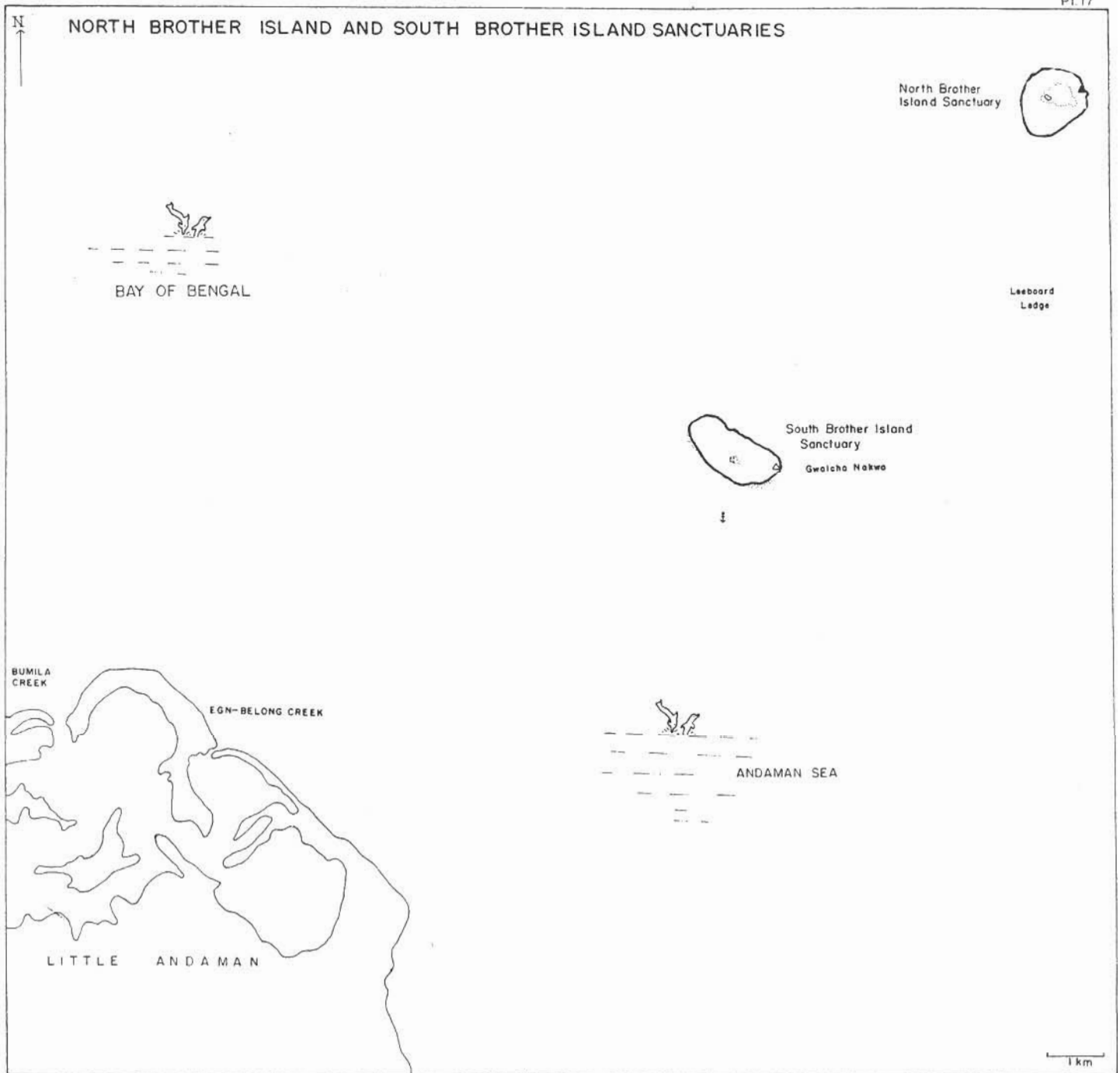


The Sisters Island Sanctuary



1 Km

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PROFILE OF 83 OTHER SANCTUARIES IN ANDAMAN AND NICOBAR ISLANDS

[The sources used to compile the information below are : (1). For area, Notification No. CF/WL/50-Vol.1, dated 19 January, 1987, A&N Administration (Forest Department).

(2). For the rest of the information, relevant Survey of India toposheets and Naval Hydrographic Maps (for full list of these, see *References and Bibliography*).]

PLATE 1

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/LAN	2948	41	1 P 9 S	N	13°37'33" to 13°40'20" N	92°55'10" to 93°01'57" E	PF
A&N/S/EASI	611	56	1 S ^{vii}	N	13°37'12" to 13°39'12" N	93°02'39" to 93°04'07" E	PF
A&N/S/PEA	62	56	—	N	13°33'33" to 13°33'56" N	93°03'12" to 93°03'30" E	PF
A&N/S/CHA	13	30	—	N	13°39'45" N ^{viii}	93°01'54" E	—

PLATE 2

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/WES	640	18	—	N	13°34'26" to 13°36'00" N	92°53'03" to 92°54'23" E	PF
A&N/S/WHI	47	20	—	N	13°32'06" to 13°32'27" N	92°52'35" to 92°52'48" E	—
A&N/S/REE	174	27	—	N	13°30'04" to 13°30'41" N	92°52'07" to 92°52'33" E	PF
A&N/S/PAG	736	34	2 S	N	13°25'05" to 13°26'30" N	92°49'21" to 92°50'56" E	PF
A&N/S/SHE ^{ix}	785	22	—	N	13°23'41" to 13°24'26" N	92°50'03" to 92°51'50" E	—
A&N/S/POI	307	23	—	N	13°24'07" to 13°25'57" N	92°48'50" to 92°49'12" E	PF
A&N/S/MAY	10	x	—	N	13°26'00" to 13°26'08" N	92°52'36" to 92°52'39" E	—

PLATE 3

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/OX	13	22	—	N	13°19'50" to 13°20'14" N	92°58'05" to 92°58'16" E	PF
A&N/S/TABD (Chirumea)	229	2	—	N	13°24'40" to 13°25'07" N	93°05'21" to 93°05'48" E	PF
A&N/S/TABE (Tau ra miku)	169	30	—	N	13°25'43" to 13°26'13" N	93°05'55" to 93°06'21" E	PF
A&N/S/JUN	52	2	—	N	13°20'19" to 13°20'33" N	93°02'21" to 93°02'26" E	PF
A&N/S/BRU	23	—	—	N	13°17'34" N ^{viii}	93°03'00" E	—
A&N/S/NORI	49	67	—	N	13°20'07" to 13°20'40" N	93°01'08" to 93°01'23" E	PF
A&N/S/ROS	101	47	—	N	13°17'57" to 13°18'09" N	93°04'21" to 93°04'50" E	—
A&N/S/TEM (Toararo)	104	—	—	N	13°22'57" to 13°23'08" N	93°03'46" to 93°03'57" E	PF
A&N/S/TRE	3	—	—	N	13°25'53" N ^{viii}	93°04'34" E	—
A&N/S/TRI (Cho-a-pong)	96	32	—	N	13°24'43" to 13°25'48" N	93°04'09" to 93°04'27" E	PF
A&N/S/TUR ^{xi} (Tarabalu)	39	28	—	N	13°21'46" to 13°22'06" N	93°04'34" to 93°05'06" E	PF
A&N/S/WHA	11	23	—	N	13°20'09" to 13°20'25" N	93°00'59" to 93°01'05" E	—

PLATE 4

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/KWA (Machua Tikri)	57	12	—	N	13°10'00" to 13°10'10" N	92°47'45" to 92°47'56" E	—
A&N/S/ROW	1	13	—	N	13°14'50" N ^{viii}	92°50'32" E	—
A&N/S/SHA ^{xii}	60	3	—	N	13°11'59" to 13°12'02" N	92°10'27" to 92°10'30" E	—

PLATE 5

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/BAM	5	9	—	N	13°02'55" to 13°03'07" N	92°56'00" to 92°56'08" E	—
A&N/S/BLI ^x	26	—	—	N	13°02'19" to 13°02'49" N	92°54'52" to 92°55'25" E	—
A&N/S/CURL ^x	3	—	—	N	13°01'39" to 13°01'49" N	92°55'57" to 92°56'02" E	—
A&N/S/DOTI	18	30	—	N	13°01'13" to 13°01'29" N	92°56'50" to 92°57'02" E	PF
A&N/S/GOO	1	—	—	N	13°00'21" to 13°00'23" N	92°54'35" to 92°54'38" E	—
A&N/S/GAN	5	—	—	N	13°00'06" to 13°00'13" N	92°54'41" to 92°54'43" E	—
A&N/S/OYS1	8	2	—	N	12°59'40" N ^{viii}	92°59'29" E	—
A&N/S/OLI	16	25	—	N	12°59'49" to 12°59'56" N	92°59'12" to 92°59'23" E	—

PLATE 6

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/BEN ^{xvi}	346	58	—	N	12°49'54" to 12°52'51" N	92°42'36" to 92°43'48" E	PF
A&N/S/BON ^{xiii}	255	36	—	N	12°53'22" to 12°54'32" N	92°45'32" to 92°45'34" E	PF
A&N/S/BUC ^{ix}	933	40	—	N	12°53'33" to 12°54'54" N	92°42'27" to 92°43'00" E	PF
A&N/S/CURB	16	52	—	N	12°56'00" to 12°56'28" N	92°48'27" to 92°48'41" E	PF
A&N/S/DOTT	13	—	—	N	12°55'36" to 12°55'39" N	92°48'18" to 92°48'23" E	—
A&N/S/EGG	5	33	—	N	12°55'50" to 12°55'52" N	92°48'33" to 92°48'38" E	—
A&N/S/ENT ^{xiv}	96	18	—	N	12°52'55" to 12°53'32" N	92°42'05" to 92°42'27" E	PF
A&N/S/GIR	16	—	—	M	12°54'44" to 12°54'51" N	92°49'38" to 92°49'48" E	PF
A&N/S/ORC	10	3	—	M	12°56'14" to 12°56'26" N	92°49'05" to 92°49'17" E	—

A&N/S/RAN ^{xiv}	426	50	—	M	12°50'44" to 12°51'41" N	92°41'18" to 92°42'57" E	PF
A&N/S/ROP	146	38	—	M	12°50'37" to 12°51'15" N	92°40'40" to 92°40'52" E	PF
A&N/S/SEA	78	45	—	N	12°55'30" to 12°55'56" N	92°40'42" to 92°41'02" E	PF
A&N/S/SNA1	73	—	—	N	12°55'18" to 12°55'27" N	92°41'17" to 92°41'26" E	PF
A&N/S/SUR	31	11	—	M	12°52'27" to 12°52'38" N	92°40'32" to 92°40'38" E	PF
A&N/S/SWA	409	92	—	N	12°54'51" to 12°55'55" N	92°46'40" to 92°47'13" E	PF
A&N/S/SPI1 ^{xv}	42	14	—	N	12°51'21" to 12°51'59" N	92°40'52" to 92°41'02" E	—

PLATE 7

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/ELA ^{xvi}	936	32	—	M	12°13'11" to 12°32'20" N	92°40'13" to 92°41'11" E	PF
A&N/S/HUM	47	—	—	M	12°38'16" to 12°38'23" N	92°42'12" to 92°42'22" E	PF
A&N/S/TUF	29	—	—	M	12°41'16" N ^{viii}	92°48'00" E	—
A&N/S/MAS	78	49	—	M	12°43'33" to 12°43'57" N	92°43'36" to 92°43'51" E	—

PLATE 8

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/CON	65	71	1 S	M	12°24'42" to 12°25'03" N	92°51'47" to 92°52'09" E	PF
A&N/S/OYS2 (Keora Tikri)	21	33	—	M	12°24'29" to 12°24'34" N	92°53'59" to 92°54'05" E	—
A&N/S/PAR ^{xiii}	34	2	—	M	12°25'11" to 12°25'29" N	92°54'05" to 92°54'13" E	—

PLATE 9

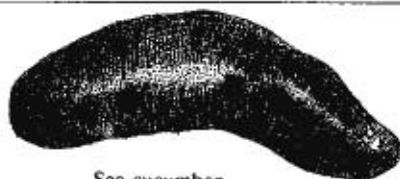
Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/BIN	8	—	—	S	12°15'24" to 12°15'29" N	92°43'05" to 92°43'09" E	—
A&N/S/BLU (Lurua)	114	—	—	S	12°14'41" to 12°14'57" N	92°41'59" to 92°42'04" E	—
A&N/S/MAN ^x	39	—	—	S	12°16'18" N ^{viii}	92°44'20" E	—
A&N/S/SPI2 ^{xiii}	1170	88	28 S	S	12°13'46" to 12°17'51" N	92°42'13" to 92°43'31" E	RF
A&N/S/TAL	321	46	—	S	12°14'48" to 12°17'16" N	92°44'10" to 92°45'10" E	RF
A&N/S/Sto ^{xiii}	44	23	—	S	12°17'03" to 12°17'29" N	92°44'17" to 92°44'22" E	RF

PLATE 10

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/ARI (Cgole Ti)	5	—	—	S	12°08'50" to 12°09'07" N	92°50'43" to 92°50'55" E	RF
A&N/S/BEL	8	30	—	S	12°06'33" to 12°06'43" N	92°44'25" to 92°44'33" E	RF

PLATE 11

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/EAS2 ^{xvii} (Sial-ereme)	355	31	2 S	S	12°07'45" to 12°08'54" N	93°06'45" to 93°07'35" E	RF



Sea cucumber

PLATE 12

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/KYD	800	206	1 P 16 S	S	11°56'38" to 11°57'57" N	92°44'16" to 92°46'07" E	RF
A&N/S/DUN ^{xviii}	73	58	—	S	12°00'39" to 12°01'00" N	92°46'23" to 92°46'41" E	RF
A&N/S/JAM	210	41	—	S	11°57'11" to 11°57'25" N	92°43'43" to 92°44'06" E	RF
A&N/S/POT ^{xi}	16	—	—	S	11°57'25" to 11°57'57" N	92°44'21" to 92°44'42" E	—
A&N/S/PIT ^{xvi}	137	51	1 S	S	11°58'35" to 11°59'34" N	92°44'07" to 92°45'27" E	RF

PLATE 13

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/CLY	54	31	—	S	11°54'17" to 11°55'02" N	92°35'50" to 92°36'09" E	RF
A&N/S/DEF	1049	55	—	S	11°55'41" to 11°58'37" N	92°35'24" to 92°36'34" E	RF
A&N/S/MON	21	37	—	S	11°56'39" to 11°57'00" N	92°33'56" to 92°34'37" E	—
A&N/S/PAT ^{xix}	13	22	—	S	11°58'35" to 11°58'55" N	92°34'59" to 92°35'10" E	—
A&N/S/SAN (Tawarcha)	158	—	—	S	11°47'39" N ^{viii}	92°31'56" E	—

PLATE 14

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/SIR (Kaichowa-Bar)	106	38	3 S	S	11°46'39" to 11°47'16" N	93°04'46" to 93°05'22" E	RF

PLATE 15

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/SNA2 ^{xi}	3	—	—	S	11°38'07" to 11°38'12" N	92°45'23" to 92°45'28" E	—

PLATE 16

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/CIN ^{xx} (Gue-a-lue)	951	163	1 P 7 S	S	11°14'25" to 11°19'57" N	92°41'21" to 92°43'31" E	RF
A&N/S/PAS (Cha-go-da)	62	86	—	S	11°10'32" to 11°11'24" N	92°40'29" to 92°40'57" E	RF
A&N/S/SIS ^{xi} (Takoa-te & Te-Joma-de)	36	77	1 S	S	11°08'20" to 11°08'48" N	92°43'26" to 92°44'23" E	RF&PF

PLATE 17

Code (and Vernacular Name)	Area (in Ha.)	Highest Point (msl) ⁱ	Water Resources ⁱⁱ (Streams)	Zone ⁱⁱⁱ	Latitude ^{iv}	Longitude ^v	Reserve or Protected Forest ^{vi}
A&N/S/NORB (De-Ta-le)	75	4	.vii	S	10°58'46" to 10°59'24" N	92°39'36" to 92°40'07" E	RF
A&N/S/SOUB (Egu-china-koi)	124	2	—	S	10°55'41" to 10°56'11" N	92°36'26" to 92°37'21" E	RF

NOTES

- i All highpoints are given in metres above sea level (msl). A hyphen (-) indicates that the relevant toposheet and hydrographic map did not have a high point marked on the island.
- ii All water resources given are freshwater streams, either perennial (P) or seasonal (S). A hyphen (-) indicates that there is no known freshwater source, except where indicated otherwise.
- iii N = North Andamans; M = Middle Andamans; S = South Andamans
- iv N = North
- v E = East
- vi PF = Protected Forest; RF = Reserved Forest. A hyphen (-) indicates that the area has not been classified as either PF or RF.
- vii There is also one spring on the island.
- viii The island as defined by the high water mark, and as shown on the relevant SOI toposheet, is too small (e.g. Chanel Island) to make it possible to calculate the range of latitude and longitude. In some cases (e.g. Brush

Island), the high water mark is not shown at all. Hence, only a point in the centre of the island has been mentioned.

- ix A group of six islands connected and surrounded by mangroves.
- x The toposheet shows this as only a circle or patch of mangroves, with no indication of a highwater shore line or firm land in between.
- xi A pair of islands.
- xii Called Snark Island on SOI toposheet.
- xiii A pair of islands surrounded by mangroves.
- xiv A group of four islands connected and surrounded by mangroves.
- xv Spelt 'Speke Island' on SOI toposheet.
- xvi A group of three islands connected by mangroves.
- xvii Also called 'Inglis Island' on SOI toposheet.
- xviii Called 'Duncan (Entry) Island' on SOI toposheet.
- xix Spelt 'Petrie Island' on SOI toposheet.
- xx North and South Cinque Islands are combined into one sanctuary. North Cinque itself consists of three islands.

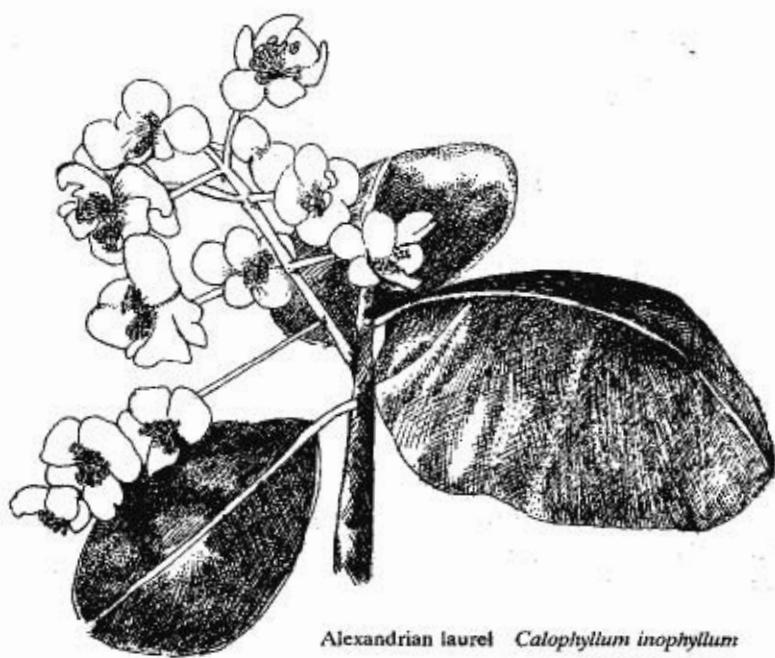


Spiny chiton *Acunthopleura spiniger*

APPENDICES



Narcondam hornbill *Rhyticeros narcondami*



Alexandrian laurel *Calophyllum inophyllum*

APPENDIX 1

LIST OF PLANTS REPORTED FROM NATIONAL PARKS AND SANCTUARIES IN ANDAMAN AND NICOBAR ISLANDS

LATIN NAME	VERNACULAR (ENGLISH) NAME	OCCURRENCE			FAMILY
		A	Ni	En I/E/D	
<i>Acanthus ilicifolius</i>	Khaya (Sea Holly)	+	+	I	ACANTHACEAE
<i>Acrostichum aureum</i>					ACROSTICHACEAE
<i>Actephila excelsa</i>		+	+	I	EUPHORBIACEAE
<i>Actinostachys digitata</i> ¹		+	D		SCHIZAEACEAE
<i>Adenantha</i> spp.		+	+		FABACEAE
<i>Albizia lebbek</i>	Koko (The Siris Tree, East Indian Walnut)	+	+	E	FABACEAE
<i>Albizia procera</i>	Sit (White Siris, Tall-tongue Pod)	+	-	I	FABACEAE
<i>Allophyllus cobbe</i>		+		I	SAPINDACEAE
<i>Amorphophallus rex</i>		+	D		ARACEAE
<i>Anacardium occidentale</i>	Tihon Thayet (The Cashew Nut, The Ceylon Mango, Goa Almond)	+	D	E	ANACARDIACEAE
<i>Anaxagorea luzoniensis</i>		+	-	I	ANNONACEAE
<i>Ancistrocladus</i> spp.		+	D		ANCISTROCLADACEAE
<i>Ancistrocladus tectorius</i> ²		+	D	I	ANCISTROCLADACEAE
<i>Antrophyum reticulatum</i>		+	D		ANTROPHYACEAE
<i>Aphanamixis polystachya</i> ³	Amoora	+	+	I	MELIACEAE
<i>Areca triandra</i>	Tawkun (The Wild Areca Palm)	+	+	I	ARECACEAE
<i>Artabotrys speciosus</i>		+			ANNONACEAE
<i>Artocarpus chaplasha</i>	Taugpeinne (Chaplash)	+	+	I	MORACEAE
<i>Artocarpus gomezianus</i>	Myauklbk, Barhal (Monkey Jack)	+	+	I	MORACEAE
<i>Avicennia officinalis</i>	Thame (White Mangrove)	+	+	I	AVICENNIACEAE
<i>Avicennia</i> spp.		+	+	I	AVICENNIACEAE
<i>Baccaurea ramiflora</i> ²	Kanazo, Kataphal	+	+	I	EUPHORBIACEAE
<i>Bambusa lineata</i>		+	D	I	POACEAE
<i>Barringtonia asiatica</i> ²	(Queen of the Seashores)	+	+	I	LECYTHIDACEAE
<i>Bombax insigne</i>	Didu, Simal (The Silk Cotton Tree)	+	+	I	BOMBACACEAE
<i>Bombax</i> spp.		+	+		BOMBACACEAE
<i>Bruguiera gymnorhiza</i>	(Harpoon-handle Tree, Orange Mangrove)	+	+	I	RHIZOPHORACEAE
<i>Bruguiera parviflora</i>		+	+	I	RHIZOPHORACEAE
<i>Bruguiera</i> spp.		+	+	I	RHIZOPHORACEAE
<i>Caesalpinia crista</i> ²	Kalein, Sagauk (The Fever Nut, Bonduc Nut)	+	+	I	CAESALPINIACEAE
<i>Calamus andamanicus</i>	Thaing Kyein (The Thick Cane)	+	+	I	ARECACEAE
<i>Calamus longisens</i>	Jungli Kyein, Jungli Bet	+	+	I	ARECACEAE
<i>Calamus palustris</i>	Yamata, Nagata	+	R	I	ARECACEAE
<i>Calamus</i> spp.		+	+	I	ARECACEAE
<i>Calamus viminalis</i>	Kyein-ga	+	-	I	ARECACEAE
<i>Calophyllum inophyllum</i>	Ponyet (The Alexandrian Laurel)	+	+	I	CLUSIACEAE
<i>Calophyllum soulavii</i> ²	Lalchini, Dakartafada (The Nicobar Canoe Tree)	+	+	I	CLUSIACEAE

LATIN NAME	VERNACULAR (ENGLISH) NAME	OCCURRENCE			FAMILY
		A	Ni	En I/E/D	
<i>Calophyllum</i> spp.		+	+		CLUSIACEAE
<i>Canarium euphyllum</i>	Dhup (Andaman Canary Tree)	+	+	I	BURSERACEAE
<i>Canarium manii</i>		+		I	BURSERACEAE
<i>Capparis sepiaria</i>		+	-	I	CAPPARACEAE
<i>Capparis tenera</i>		+	-	I	CAPPARACEAE
<i>Carica papaya</i>	Papita, Thinbaw Thee (The Papaya, Papaw Tree)	+	+	E	CARICACEAE
<i>Caryota mitis</i>	Minbaw, Mari Supari	+	+	I	ARECACEAE
<i>Casuarina</i> spp.		+	D	I	CASUARINACEAE
<i>Cerios</i> spp.		+	+	I	RHIZOPHORACEAE
<i>Cerios tagal²</i>		+	+	I	RHIZOPHORACEAE
<i>Champeria griffithii</i>	Sansi, Sansiyweta	+	-	I	OPILIACEAE
<i>Chiococca</i> sp.		+		I	RUBIACEAE
<i>Christella dentata³</i>		+	D		THELYPTERIDACEAE
<i>Christella subpubescens³</i>		+	D		THELYPTERIDACEAE
<i>Citrus</i> spp.	(Orange)	+	D	E	RUTACEAE
<i>Claoxylon indicum</i>		+		I	EUPHORBIACEAE
<i>Clerodendrum inerme</i>	(The Thornless Chance Tree of Australia)	+	+	I	VERBENACEAE
<i>Clerodendrum</i> spp.		+	+	I	VERBENACEAE
<i>Clinogyne grandis³</i>	Yong, Kala Pathi	+	+	I	MARANTACEAE
<i>Cocos nucifera</i>	Nariyal (Coconut Tree)	+	+	E	ARECACEAE
<i>Coelogyne thailandica</i>		+	D		ORCHIDACEAE
<i>Coffea liberica</i>	(Liberian Coffee)	+		E	RUBIACEAE
<i>Colubrina asiatica</i>	Kanaywet (The Indian Snakewood)	+	+	I	RHAMNACEAE
<i>Cordia subcordata</i>		+	+	I	BORAGINACEAE
<i>Corypha umbraculifera</i>		+		I	ARECACEAE
<i>Cratoxylum cochinchinensis²</i>		+	+	I	HYPERICACEAE
<i>Crinum asiaticum</i>	(Asiatic Poison Bulb, Antidote Lily)	+	+	I	AMARYLLIDACEAE
<i>Croton argyratus</i>		+	+	I	EUPHORBIACEAE
<i>Cryptocarya andamanica</i>		+	-	I	LAURACEAE
<i>Cuscuta</i> spp.		+	D	I	CONVOLVULACEAE
<i>Cyperus</i> spp.		+	D	I	CYPERACEAE
<i>Dalbergia pinnata²</i>		+		I	FABACEAE
<i>Deris indica³</i>	Thinwin, Karanj, Sukchan (The Ponga Oil Tree, Indian Bech)	+	+	I	FABACEAE
<i>Desmodium umbellatum</i>		+	+	I	FABACEAE
<i>Dillenia pentagyna</i>	(Dillenia)	+	+	I	DILLENACEAE
<i>Dinochloa andamanica²</i>	Wanwe, Bel Bamboo, Baradaha-barat (The Climbing Bamboo)	+	D	I	POACEAE
<i>Diospyros marmorata²</i>	Thitkya, Pechada (Zebra-wood, Andaman Marblewood, Persimmon)	+	-	I	EBENACEAE
<i>Diospyros</i> spp.		+	-	I	EBENACEAE
<i>Diospyros undulata</i>		+	-	I	EBENACEAE

LATIN NAME	VERNACULAR (ENGLISH) NAME	OCCURRENCE			FAMILY
		A	Ni	En I/E/D	
<i>Dipterocarpus costatus</i> ²		+	--	I	DIPTEROCARPACEAE
<i>Dipterocarpus grandiflorus</i>		+	--	I	DIPTEROCARPACEAE
<i>Dipterocarpus incanus</i>		+		I	DIPTEROCARPACEAE
<i>Dipterocarpus pilosus</i>		R	--	I	DIPTEROCARPACEAE
<i>Dipterocarpus</i> spp.	Gurjan	+	--	I	DIPTEROCARPACEAE
<i>Drypetas andamanica</i>		+		I	EUPHORBIACEAE
<i>Egenolfia appendiculata</i> ¹		+	D		BOLBITIDACEAE
<i>Endospermum chinense</i>		+	D	I	EUPHORBIACEAE
<i>Erioglossum rubiginosum</i> ²		+	--	I	SAPINDACEAE
<i>Erythrina variegata</i> ²	Khathit, Pinle-kathit (Indian Coral Tree)	+	--	I	FABACEAE
<i>Euphorbia epiphyllodes</i>	Zizaung, Sabar	+	--	* I	EUPHORBIACEAE
<i>Excoecaria agallocha</i>	Tayaw, Yekin (Blinding Tree, Agallocha)	+	+	I	EUPHORBIACEAE
<i>Ficus hispida</i>	Ka-aung, Gular	+	+	I	MORACEAE
<i>Ficus microcarpa</i> ²	Nyavng-ok (Swamp Fig Tree)	+	+	I	MORACEAE
<i>Ficus racemosa</i> ²	Thapan, Ye Thapan, Lal Gular (The Cluster Fig Tree, Wild Fig Tree)	+	--	I	MORACEAE
<i>Ficus</i> spp.		+	+		MORACEAE
<i>Ficus variegata</i>		+	--	I	MORACEAE
<i>Garcinia andamanica</i>	Madaw	+	+	* I	CLUSIACEAE
<i>Garuga pinnata</i>		+	--	I	BURSERACEAE
<i>Glochidion</i> sp.		+		I	EUPHORBIACEAE
<i>Glyptopetalum calocarpum</i>		+		I	CELASTRACEAE
<i>Gnetum contractum</i> ²	Gyutnwe, Subrut	+	D	I	GNETACEAE
<i>Guettarda speciosa</i>	Domdomah (Sea Coast Teak)	+	+	I	RUBIACEAE
<i>Harrisonia bennetii</i>	Soogyin	+	--	I	SIMAROUBACEAE
<i>Heritiera littoralis</i>	Mawtda, Pinle-kanazo, Sundri (The Red Mangrove of Queensland)	+	+	I	STERCULIACEAE
<i>Hibiscus</i> spp.		+	+		MALVACEAE
<i>Hibiscus tiliaceus</i>	Thinban, Safed Chilka (Yellow Mallow Tree, Coast Cotton Tree)	+	+	I	MALVACEAE
<i>Hopea odorata</i>	Thingan, Safed Thingan, Rimda (The White Thingan)	+	+	I	DIPTEROCARPACEAE
<i>Humata</i> spp.		+	D		DAVALLIACEAE
<i>Hydnocarpus laurifolia</i> ²				I	FLACOURTIACEAE
<i>Ilex</i> spp.		+	D		AQUIFOLIACEAE
<i>Ipomoea pes-caprae</i> ²	(The Goats-foot Creeper)	+	+	I	CONVOLVULACEAE
<i>Ipomoea</i> spp.		+	+		CONVOLVULACEAE
<i>Ixora brunnescens</i>		+	+	* I	RUBIACEAE
<i>Ixora cuneifolia</i>		+	D	* I	RUBIACEAE
<i>Ixora nigricans</i>		+		I	RUBIACEAE
<i>Kandelia candel</i> ²		R	--	I	RHIZOPHORACEAE
<i>Knema glaucescens</i> ¹		+	+	I	MYRISTICACEAE
<i>Lagerstroemia hypoleuca</i>	Pyinma, Pabda (Andaman Pyinma)	+	--	* I	LYTHRACEAE

LATIN NAME	VERNACULAR (ENGLISH) NAME	OCCURRENCE			FAMILY
		A	Ni	En I/E/D	
<i>Lannea</i> spp.		+	+		ANACARDIACEAE
<i>Lumnitzera racemosa</i>		+	+	*	COMBRETACEAE
<i>Lygodium microphyllum</i> ²		+	D		LYGODIACEAE
<i>Maesa andamanica</i>		+	-	*	MYRSINACEAE
<i>Maesa ramentacea</i>		+			MYRSINACEAE
<i>Mallotus acuminatus</i>		+			EUPHORBIACEAE
<i>Mallotus andamanicus</i>		+			EUPHORBIACEAE
<i>Manilkara littoralis</i> ¹	Mohwa, Pinle-mohwa, Dogola (The Andaman Bulletwood Tree)	+	+	*	SAPOTACEAE
<i>Manilkara</i> spp.		+	+		SAPOTACEAE
<i>Mecodium exsertum</i> ¹		+	D		HYMENOPHYLLACEAE
<i>Memecylon pauciflorum</i>		+			LYTHRACEAE
<i>Mesua ferrea</i>	Gangaw (Mesua)	+	-		CLUSIACEAE
<i>Mesua</i> spp.		+	D		CLUSIACEAE
<i>Micromelum minutum</i> ²	(The Sea Island Apple Berry)	+	-		RUTACEAE
<i>Morinda citrifolia</i>	Nibase	+	+		RUBIACEAE
<i>Mucuna gigantea</i>	Myauk-gonyin (Elephant Cowitch, Cowitch Bean)	+	+		FABACEAE
<i>Musa</i> spp.		+	+		MUSACEAE
<i>Myristica</i> spp.		+	+		MYRISTICACEAE
<i>Nephrolepis hirsutula</i> ³		+	D		NEPHROLEPIDACEAE
<i>Orophaea hexandra</i>		+			ANNONACEAE
<i>Oxytenanthera</i> spp.		+	+		POACEAE
<i>Paederia foetida</i>		+			RUBIACEAE
<i>Pandanus odoratissimus</i>	(Screw-pine)	+	+		PANDANACEAE
<i>Pandanus</i> spp.		+	+		PANDANACEAE
<i>Pandanus tectorius</i> ²	Sathapu, Keora (The Fragrant Screw-pine)	+	+		PANDANACEAE
<i>Parishia insignis</i>	(Red Dhup)	+	-		ANACARDIACEAE
<i>Phraetia secunda</i>		+	D		ORCHIDACEAE
<i>Picrasma javanica</i>		+	-		SIMAROUACEAE
<i>Pipturus incanus</i> ²		+			MORACEAE
<i>Planchonella longipetiolata</i> ³	Lambapatti	R	-		SAPOTACEAE
<i>Planchonella</i> spp.		+	D		SAPOTACEAE
<i>Planchonia</i> spp.		+	D		LECYTHIDACEAE
<i>Planchonia valida</i> ²	Lal Bombway (The Red Bombway Tree)	+	-		LECYTHIDACEAE
<i>Polyalthia jenkensii</i> ²		+			ANNONACEAE
<i>Pometia pinnata</i> ²	Thitkandu (Kasai Tree)	+	+		SAPINDACEAE
<i>Pteridium aquilinum</i> ³	Bracken, Brake	+	D		PTERIDIACEAE
<i>Pteridium</i> spp.		+	D		PTERIDIACEAE
<i>Pteris longifolia</i>		+			PTERIDIOIDEAE
<i>Pteris vinata</i>		+	D		PTERIDACEAE
<i>Pterocarpus dalbergioides</i> ²	Padauk (The Andaman Redwood, Andaman Padauk)	+	-	*	FABACEAE
<i>Pterocymbium tinctorium</i> ³	Papita	+	+		STERCULIACEAE

LATIN NAME	VERNACULAR (ENGLISH) NAME	OCCURRENCE			FAMILY
		A	Ni	En I/E/D	
<i>Pterospermum acerifolium</i>	Hathipaila, Taung-petwun	+	-	I	STERCULIACEAE
<i>Pterygota alata</i> ¹	Letkok, Taung-petwun (The Buddha's Coconut Tree)	+	+	I	STERCULIACEAE
<i>Phymatosorus nigrescens</i> ¹		+	D		POLYPODIACEAE
<i>Picrasma javanica</i>		+		I	SIMAROUBACEAE
<i>Pycnarrhena calocarpa</i> ¹		+		I	MENISPERMACEAE
<i>Rhizophora apiculata</i> ²	Pyu, Khari, Lakri	+	+	I	RHIZOPHORACEAE
<i>Rhizophora mucronata</i> ²	Pyu, Khari, Lakri (True Mangrove, Black Mangrove)	+	+	I	RHIZOPHORACEAE
<i>Rhizophora</i> spp.		+	+	I	RHIZOPHORACEAE
<i>Rinorea bengalensis</i> ^{1,2}	Kyadoo	+	+	I	VIOLACEAE
<i>Sageraea elliptica</i>	Chai (The Andamanese Bow-wood Tree)	R	--	I	ANNONACEAE
<i>Salacia chinensis</i> ²		+		I	CELASTRACEAE
<i>Sarcostigma wallichii</i>		+	-	I	ICACINACEAE
<i>Scaevola frutescens</i> ²	(The Fan Flower)	+	+	I	GOODENIACEAE
<i>Schoenorchis minutiflora</i>		+	D		ORCHIDACEAE
<i>Scyphiphora hydrophyllacea</i>		+	-	I	RUBIACEAE
<i>Secamone andamanica</i>		+	D	* I	ASCLEPIADACEAE
<i>Selaginella ciliaris</i> ²		+	D		SELAGINELLACEAE
<i>Sonneratia apetala</i>		+	D	I	SONNERATIACEAE
<i>Sonneratia caseolaris</i> ^{1,2}		R	+	I	SONNERATIACEAE
<i>Sterculia rubiginosa</i>		R	-	I	STERCULIACEAE
<i>Sterculia</i> spp.		+	+	I	STERCULIACEAE
<i>Strobilus asper</i>	Ochne, Cheroot Pathi (Siamese Rough-Bush)	+		I	MORACEAE
<i>Strychnos narcondamensis</i>		+	D	* I	LOGANIACEAE
<i>Syzygium samarangense</i> ³	Jungli Jamun, Taw Thabye (Mankil, Semarang Rose-Apple, Water Apple)	+	-	I	COMBRETACEAE
<i>Terminalia bialata</i>	Safed Chuglam (The Andaman Ash, White Chuglam Tree, Silvergrey Wood)	+	+	I	MYRTACEAE
<i>Terminalia catappa</i>	Badam (The Indian Almond Tree, The Bengal Almond, Olive Bark Tree, Fijian Almond Tree)	+	+	I	COMBRETACEAE
<i>Terminalia procera</i>	Safed Bombway (The White Bombway Tree)	+	+	* I	COMBRETACEAE
<i>Terminalia</i> spp.		+	+		COMBRETACEAE
<i>Tetrameles nudiflora</i>	Thitpok, Tipok (The Andamanese Canoe Tree)	+	-	I	DATISCAEAE
<i>Thespesia populnea</i>	(Portia Tree, Umbrella Tree, Indian Tulip Tree, False Rosewood)	+	+	I	MALVACEAE
<i>Thunbergia laurifolia</i>		+	+	I	THUNBERGIACEAE
<i>Vigna marina</i> ²	Pinle-pe (The Seashore Pea)	+	+	I	FABACEAE
<i>Xanthophyllum andamanicum</i>	Letpyaw	+	+	* I	XANTHOPHYLLACEAE
<i>Xylocarpus granatum</i> ²	(Puzzle Fruit Tree)	+	+	I	MELIACEAE
<i>Xylocarpus moluccensis</i> ¹		+	+	I	MELIACEAE
<i>Ziziphus glabrata</i>		+		I	RHAMNACEAE

Sources for Vernacular, English, and Family Names:

Council of Scientific and Industrial Research 1986; Dixit 1984; Ellis 1987; Parkinson 1923; Saldanha 1984

Sources for Occurrence:

Parkinson 1923; Rao 1986; Thothathri 1960

Key

- A = Andaman
 Ni = Nicobar
 En = Endemic (If a plant is endemic to Andaman and Nicobar Islands a "*" has been put in the endemic column.)
 R = Recorded (but specimens not examined)
 + = Present
 -- = Absent
 I = Indigenous
 E = Not indigenous (exotic)
 D = Occurrence doubtful
 ? = Record doubtful

All blank spaces indicate that no information was available regarding the distribution of the species.

¹: Species whose generic name has changed (see List 1 below)[@]²: Species whose specific name has changed (see List 2 below)[@]³: Species whose generic and specific names have changed (see List 3 below)[@]

LIST 1

CURRENT NAME

Actinostachys digitata
Drypetes andamanica
Egenolfia appendiculata
Knema glaucescens
Manilkara littoralis
Mecodium exsertum
Phymatosorus nigrescens
Pterygota alata
Pynarrhena calocarpa
Rinorea bengalensis
Sonneratia caseolaris
Xylocarpus moluccensis

OBSOLETE NAME

Schizaea digitata
Hemicyclia andamanica
Bolbitis appendiculata
Myristica glaucescens
Mimusops littoralis
Hymenophyllum exsertum
Pleopeltis nigrescens
Sterculia alata
Antitaxix calocarpa
Alsodeia bengalensis
Rhizophora caseolaris
Carapa moluccensis

@ Sources for Name Changes:

Chandra and Gaur 1988; Dixit 1984; Saldanha 1984

*Rhizophora* sapling

LIST 2

CURRENT NAME

Ancistrocladus tectorius
Baccaurea ramiflora
Barringtonia asiatica
Caesalpinia crista
Calophyllum soulatri
Ceriops tagal
Cratoxylum cochinchinensis
Dalbergia pinnata
Dinochloa andamanica
Diospyros marmorata
Dipterocarpus costatus
Erioglossum rubiginosum
Erythrina variegata
Ficus microcarpa
Ficus racemosa
Gnetum contractum
Hydnocarpus laurifolia
Ipomoea pes-caprae
Kandelia candel
Lygodium microphyllum
Micromelum minutum
Pandanus tectorius
Pipturus incanus
Planchonia valida
Polyalthia jenkinsii
Pometia pinnata
Pterocarpus dalbergioides
Rhizophora apiculata
Rhizophora mucronata
Rinorea bengalensis
Salacia chinensis
Scaevola frutescens
Selaginella ciliaris
Sonneratia caseolaris
Vigna marina
Xylocarpus granatum

OBSOLETE NAME

Ancistrocladus extensus
Baccaurea sapida
Barringtonia speciosa
Caesalpinia nuga
Calophyllum spectabile
Ceriops candolleana
Cratoxylum polyanthum
Dalbergia tamarindifolia
Dinochloa kjankorreh
Diospyros oocarpa
Dipterocarpus alatus
Erioglossum edule
Erythrina indica
Ficus retusa
Ficus glomerata
Gnetum scandens
Hydnocarpus wightiana
Ipomoea biloba
Kandelia rheedii
Lygodium scandens
Micromelum pubescens
Pandanus fascicularis
Pipturus velutinus
Planchonia littoralis, Planchonia andamanica
Polyalthia andamanica
Pometia tomentosa
Pterocarpus indicus
Rhizophora conjugata
Rhizophora mangle
Rinorea zeylanica
Salacia prinoides
Scaevola koenigii
Selaginella exigua
Sonneratia acida
Vigna lutea
Xylocarpus obovata



LIST 3

CURRENT NAME

Aphanamixis polystachya
Christella dentata
Christella subpubescens
Clinogyne grandis
Derris indica
Nephrolepis hirsutula
Planchonella longipetiolata
Pteridium aquilinum
Pterocymbium tinctorium
Syzygium samarengense

OBSOLETE NAME

Amoora rohituka
Polypodium dentatum
Nephrodium molle
Donax canniiformis
Pongamia pinnata
Polypodium hirsutulum
Sideroxylon longipetiolatum
Pteris aquilina
Sterculia campanulata
Eugenia javanica

APPENDIX 2

THREATENED * PLANTS OF ANDAMAN AND NICOBAR ISLANDS

LATIN NAME	DISTRIBUTION
<i>Actinodaphne macroptera</i>	South Andaman Island
<i>Adenia penangiana</i>	Nicobars
<i>Aeschynanthes griffithii</i>	South Andaman Island
<i>Aglaia fusca</i>	Andamans
<i>Aglaonema nicobaricum</i>	Nicobars
<i>Amomum aculeatum</i>	South Andaman Island
<i>Amomum maximum</i>	South Andaman Island
<i>Amoora manii</i>	South Andamans
<i>Amorphophallus carnosus</i>	Andamans
<i>Amorphophallus longistylus</i>	South Andamans
<i>Amorphophallus oncophyllus</i>	South Andamans
<i>Amorphophallus rex</i>	Narcondam Island
<i>Anoectochilus nicobaricus</i>	Great Nicobar Island
<i>Antidesma andamanicum</i>	South Andamans
<i>Antidesma coriaceum</i>	Kamorta Island
<i>Antidesma tomentosum</i>	Kamorta Island
<i>Appendicula reflexa</i>	Great Nicobar Island
<i>Archidendron ellipticum</i>	Kamorta Island
<i>Ardisia andamanica</i>	Andamans
<i>Ardisia andamanica</i> var. <i>effusa</i>	South Andaman Island
<i>Artabotrys nicobarianus</i>	Great Nicobar Island
<i>Artocarpus peduncularis</i>	Nicobars
<i>Aspidopterys elliptica</i>	Andamans
<i>Aspidopterys tomentosa</i>	Andamans
<i>Aulacodiscus premnoides</i>	Andamans
<i>Barclaya longifolia</i>	South Andaman Island
<i>Begonia andamanica</i>	Andamans
<i>Bentinckia nicobarica</i>	Kamorta Island
<i>Blumeodendron kurzii</i>	Andaman & Nicobar Islands
<i>Bombax insigne</i> var. <i>polystemon</i>	Narcondam Island
<i>Bosenbergia albo-lutea</i>	Andamans
<i>Brakenridgea hookeri</i>	Middle Andaman Island
<i>Breymia racemosa</i>	Nicobars
<i>Bridelia kurzii</i>	Kamorta Island
<i>Buchanania sessiliflora</i>	Katchal Island
<i>Bulbophyllum crassipes</i>	Andamans
<i>Bulbophyllum rufinum</i>	Andamans
<i>Burmannia championii</i>	Great Nicobar Island
<i>Calamus dilaceratus</i>	Andamans
<i>Calamus nicobaricus</i>	Nicobars
<i>Calophyllum kuntzleri</i>	South Andaman Island
<i>Calophyllum wallichianum</i>	Nicobars
<i>Carex cryptostachys</i>	Great Nicobar Island
<i>Carex rafflesiana</i>	Great Nicobar Island

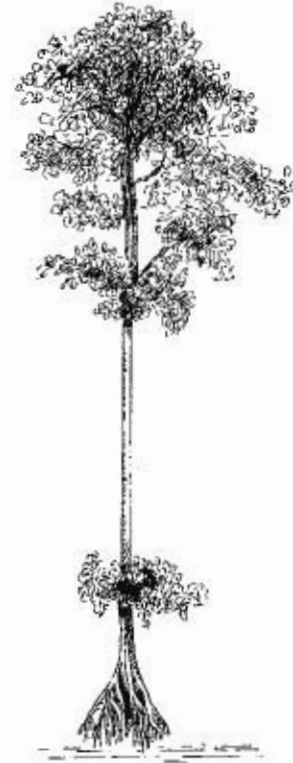
LATIN NAME

DISTRIBUTION

Casearia grewiaefolia var. *deglabrata*
Cassine viburnifolia
Ceratostylis subulata
Claoxylon longipetiolatum
Cleisostoma elegans
Cleistocalyx nicobaricus
Clerodendrum lankawiense var.
andamanens
Clerodendrum penduliferum
Cnesmone javanica var. *glabriuscula*
Coelogyne thailandica
Coelogyne trinervis
Coelospermum truncatum
Colona javanica
Connarus monocarpus
Connarus nicobaricus
Corypha macropoda
Crinum pusillum
Cryptocarya ferrarsi
Cryptocarya ferrea
Cryptocoryne ciliata
Cupania adenophylla
Cupania lessertiana
Cyathostenma viridiflorum
Cymbidium pubescens
Cyperus kurzii
Cyperus sanguinolentus
Cypholophus moluccanus
Cyrtandra burttii
Cyrtandra occidentalis
Dendrobium pensile
Dendrobium tenuicaule
Derris elliptica
Dichapetalum gelonoides
Dioscorea rogersii
Dioscorea vexans
Diospyros multibracteata
Diplospora abnormis
Diplospora andamanica
Dipterocarpus kerrii
Drypetes andamanica
Drypetes leiocarpa
Elaeocarpus macrocerus
Ellipanthus calophyllus
Ellipanthus tomentosus var. *gibbosus*
Embelia microcalyx

Nicobars
 South Andaman Island
 Great Nicobar Island
 Andamans
 Andaman & Nicobar Islands
 Katchal Island
 South Andaman Island

 Nicobars
 South Andamans
 Saddle Peak, North Andamans
 South Andaman Island
 Middle Andamans
 Kamorta Island
 Nicobars
 Great Nicobar Island
 South Andaman Island
 Nicobars
 Middle Andaman Island
 Kamorta Island
 Great Nicobar Island
 Nancowry Island
 Andamans
 North Andaman Island
 Great Nicobar Island
 Andamans
 Andamans
 Great Nicobar Island
 Great Nicobar Island
 Great Nicobar Island
 Great Nicobar Island
 Middle Andamans
 Great Nicobar Island
 South Andaman Island
 Andamans
 Andamans
 Car Nicobar Island
 Katchal Island
 North Andaman Island
 South Andaman Island
 South Andamans
 South Andamans
 Great Nicobar Island
 South Andaman Island
 Andamans
 Katchal Island



LATIN NAME	DISTRIBUTION
<i>Endospermum peltatum</i>	South Andaman Island
<i>Enkleia malaccensis</i>	Andamans
<i>Eulophia nicobarica</i>	Car Nicobar Island
<i>Excoecaria rectinervis</i>	Katchal Island
<i>Ficus andamanica</i>	South Andaman Island
<i>Ficus capillipes</i>	Andamans
<i>Ficus chrysocarpa</i>	Kamorta Island
<i>Ficus costata</i>	Nicobars
<i>Ficus fulva</i>	Andamans
<i>Garcinia brevirostris</i>	Andamans
<i>Garcinia cadelliana</i>	South Andaman Island
<i>Garcinia calycina</i>	Kamorta Island
<i>Garcinia hambroniana</i>	South Andaman Island
<i>Garcinia kingii</i>	Andamans
<i>Ginalloa andamanica</i>	South Andaman Island
<i>Globba pauciflora</i>	South Andaman Island
<i>Glochidion andamanicum</i>	South Andamans
<i>Gomphandra comosa</i>	South Andaman Island
<i>Gonostylus macrophyllus</i>	Great Nicobar Island
<i>Greenia jackii</i>	Great Nicobar Island
<i>Grewia acuminata</i>	Great Nicobar Island
<i>Grossourdia muscosa</i>	Middle Andamans
<i>Gynotroches axillaries</i>	Great Nicobar Island
<i>Habenaria andamanica</i>	South Andaman Island
<i>Hedyotis andamanica</i>	South Andaman and Nicobars
<i>Hedyotis congesta</i> var. <i>nicobarica</i>	Nicobars
<i>Hedyotis macrophylla</i>	Nicobars
<i>Hedyotis nicobariensis</i>	Nicobars
<i>Helicteres angustifolia</i>	Kamorta Island
<i>Henslowia erythrocarpa</i>	Kamorta Island
<i>Homalonema griffithii</i> var. <i>ovata</i>	Great Nicobar Island
<i>Homalonema nutans</i>	Great Nicobar Island
<i>Hopea helferi</i>	North Andaman Island
<i>Horsfieldia macrocarpa</i> var. <i>canarioides</i>	Andamans
<i>Hypoestis andamanica</i>	Middle Andaman Island
<i>Hypolytrum balakrishnanii</i>	Middle Andaman Island
<i>Hypolytrum conspectum</i>	Andamans
<i>Ixora andamanica</i>	Andamans
<i>Ixora capituliflora</i>	Andamans
<i>Ixora cuneifolia</i>	Barren Island
<i>Ixora cuneifolia</i> var. <i>macrocarpa</i>	Pulu Milo Island
<i>Ixora fluminalis</i>	South Andaman Island
<i>Ixora hymenophylla</i>	Andamans
<i>Ixora longibracteata</i>	Nicobars
<i>Ixora tenuifolia</i>	Nicobars
<i>Jasminum andamanicum</i>	South and Middle Andamans

LATIN NAME	DISTRIBUTION
<i>Jasminum unifoliolatum</i>	North Andaman Island
<i>Kaempferia siphonantha</i>	Andamans
<i>Kibara coriacea</i>	Nicobars
<i>Korthalsia rogersii</i>	Havelock Island
<i>Lasianthus andamanicus</i>	Andamans
<i>Lasianthus constrictus</i>	Andamans
<i>Lasianthus kurzii</i>	Andamans
<i>Lasianthus obscurus</i>	Andamans
<i>Litsea leiantha</i>	South Andamans
<i>Lophopetalum wallichii</i>	Andamans
<i>Malleola andamanica</i>	South and Little Andamans
<i>Mangifera andamanica</i>	South Andaman Island
<i>Mastixia tetrandra</i>	South Andaman Island
<i>Mastixia trichotoma</i> var. <i>maingayii</i>	Great Nicobar Island
<i>Memecylon coeruleum</i>	Andamans
<i>Memecylon excelsum</i>	Nicobars
<i>Mesua manii</i>	South Andaman Island
<i>Microchites polyantha</i>	Andamans
<i>Mimusops andamanensis</i>	Andamans
<i>Mitrephora andamanica</i>	Baratang Island
<i>Molineria latifolia</i>	Middle Andaman Island
<i>Mussaenda wallichii</i>	Great Nicobar Island
<i>Nauclea gageana</i>	Andamans
<i>Neolitsea andamanica</i>	Andamans
<i>Neolitsea nicobarica</i>	Nicobars
<i>Neoscrotechinia nicobarica</i>	Nicobars
<i>Nervilia punctata</i>	Nicobars
<i>Olax imbricata</i> var. <i>membranifolia</i>	Katchal Island
<i>Ophiorrhiza nicobarica</i>	Great Nicobar Island
<i>Orophaea salicifolia</i>	Middle Andaman Island
<i>Orophaea torulosa</i>	Middle Andaman Island
<i>Parastemon urophyllus</i>	Nicobars
<i>Payena lucida</i>	Andamans
<i>Phalaenopsis speciosa</i>	Andamans
<i>Phalaenopsis tetrapsis</i>	Andaman and Great Nicobar Islands
<i>Phaleria macrocarpa</i>	Great Nicobar Island
<i>Phanera nicobarica</i>	Great Nicobar Island
<i>Philydrium lenuginosum</i>	Andamans
<i>Phraetia secunda</i>	Saddle Peak, North Andamans
<i>Phrynium cadellianum</i>	Andamans
<i>Phrynium paniculatum</i>	Great Nicobar Island
<i>Phyllanthus gomphocarpus</i>	Car Nicobar and Great Nicobar Islands
<i>Piper clypeatum</i>	Great Nicobar Island
<i>Piper minutum</i>	Katchal Island

LATIN NAME	DISTRIBUTION
<i>Pithecellobium monadelphum</i>	Nicobars
<i>Pittosporum ferrugineum</i>	Nicobars
<i>Plecosperrum andamanicum</i>	Andamans
<i>Plocoglottis javanica</i>	Great Nicobar Island
<i>Podochilus microphyllus</i>	Great Nicobar Island
<i>Polyalthia lateriflora</i>	Car Nicobar Island
<i>Polyalthia macrophylla</i>	Andamans
<i>Popowia parvifolia</i>	Nicobars
<i>Premna pyramidata</i>	Great Nicobar Island
<i>Prismatomeris andamanica</i>	South Andaman Island
<i>Procris frutescens</i>	Nicobars
<i>Prunus javanica</i>	Andamans
<i>Psychotria andamanica</i>	Andamans
<i>Psychotria helferi</i> var. <i>angustifolia</i>	South Andaman Island
<i>Psychotria helferiana</i>	Andamans
<i>Psychotria nicobarica</i>	Katchal Island
<i>Psychotria pendula</i>	South Andaman Island
<i>Psychotria polyneura</i> var. <i>longipetiolata</i>	Andamans
<i>Psychotria tylophora</i>	Katchal Island
<i>Pteroceras alatum</i>	Nicobars
<i>Pubistylis andamanensis</i>	Andamans
<i>Reissantia andamanica</i> *	South Andaman Island
<i>Reissantia nicobarica</i> *	Nicobars
<i>Rinorea longiracemosa</i>	Nicobars
<i>Saccopetalum horsfieldii</i>	Katchal Island
<i>Saccopetalum tectonum</i> *	Andamans
<i>Sageraea listeri</i> var. <i>andamanica</i>	Andamans
<i>Sandoricum indicum</i>	Andamans
<i>Schoenorchis minutiflora</i>	Saddle Peak
<i>Scindapsus cuscuaria</i>	Nicobars
<i>Scirpodendron ghaeri</i>	Great Nicobar Island
<i>Scleria neesii</i>	Car Nicobar Island
<i>Sceloporia kermodii</i>	Andamans
<i>Scutellaria andamanica</i>	South Andaman Island
<i>Smilax polyacantha</i>	Kamorta Island
<i>Smythea calpicarpa</i>	Andamans
<i>Spathistemon javense</i>	Great Nicobar Island
<i>Sphyranthera lutescens</i>	Middle Andaman Island
<i>Stephania andamanica</i>	South Andaman Island
<i>Sterculia macrophylla</i>	Great Nicobar Island
<i>Strobilanthes andamanensis</i>	Andamans
<i>Strongydon ruber</i>	South Andaman Island
<i>Strychnos narcondamensis</i>	Narcondam Island
<i>Symplocos fasciculata</i>	Great Nicobar Island
<i>Syzygium andamanicum</i>	Andamans
<i>Syzygium kurzii</i> var. <i>andamanica</i>	South Andaman Island

LATIN NAME	DISTRIBUTION
<i>Syzygium manii</i>	Middle Andaman Island
<i>Tadehagi triquetrum</i>	South Andamans
<i>Taeniophyllum andamanicum</i>	Baratang Island
<i>Teijsmanniodendron pteropodium</i>	Great Nicobar Island
<i>Tetrastigma andamanicum</i>	Andamans
<i>Tinomiscium petiolare</i>	Nicobars
<i>Tinospora andamanica</i>	Andamans
<i>Tournefortia wallichii</i>	Nicobars
<i>Trigonostemon aurantiacus</i>	South Andaman Island
<i>Trigonostemon laevigatus</i>	Andamans
<i>Trivalvaria dubia</i> *	Andamans
<i>Tylophora globifera</i>	South Andaman Island
<i>Urophyllum andamanicum</i>	South Andamans
<i>Uvaria andamanica</i>	South Andaman Island
<i>Uvaria hamiltonii</i> var. <i>kurzii</i>	Andamans
<i>Uvaria nicobarica</i>	Great Nicobar Island
<i>Uvaria sumatrana</i>	Andamans
<i>Vernonia patula</i>	South Andaman Island
<i>Vitex wimberleyi</i>	South Andaman Island
<i>Wendlandia andamanica</i>	North Andaman Island
<i>Zeuxine andamanica</i>	South Andaman Island
<i>Zeuxine rolfiana</i>	South Andaman Island

Source: Balakrishnan and Rao (1983)

The term 'threatened' has been used here in accordance with the internationally accepted usage coined by the International Union for Conservation of Nature and Natural Resources (IUCN). This term is used for species which are in one of the following categories [Jain and Sastry 1990]:

Endangered: Species/taxa in danger of extinction and whose survival is unlikely if factors threatening them continue to operate.

Vulnerable: Species/taxa likely to move into the endangered category in the near future if threatening factors continue to operate.

Rare: Species/taxa with small world populations that are not at present endangered or vulnerable, but are at risk of becoming so.

* Species whose names have changed [Chandra and Gaur 1988]. The current and obsolete names of these species are listed below:

CURRENT NAME	OBSOLETE NAME
<i>Reissantia andamanica</i>	<i>Hippocratea andamanica</i>
<i>Reissantia nicobarica</i>	<i>Hippocratea nicobarica</i>
<i>Saccopetalum tectonum</i>	<i>Miliusa tectona</i>
<i>Trivalvaria dubia</i>	<i>Polyalthia macrophylla</i>

APPENDIX 3

COMMON AND SCIENTIFIC NAMES OF MAMMALS, BIRDS, REPTILES, AND BUTTERFLIES REPORTED FROM NATIONAL PARKS AND SANCTUARIES IN A&N ISLANDS

[This contains a listing of only those species which have been recorded in national parks and sanctuaries in A&N. A more comprehensive listing of mammals, birds, and reptiles found in the islands as a whole appears in Appendices 4 to 6.]

Common Name	Scientific Name
MAMMALS¹	
Bat, Andaman Horseshoe	<i>Rhinolophus cognatus</i>
Bat, Dobson's Horseshoe	<i>Rhinolophus affinis</i>
Bat, Lesser Shortnosed Fruit	<i>Cynopterus brachyotis</i>
Boar, Indian Wild	<i>Sus scrofa</i>
Civet, Himalayan Palm	<i>Paguma larvata</i>
Deer, Barking or Muntjak	<i>Muntiacus muntjak</i>
Deer, Spotted or Chital	<i>Axis axis</i>
Dog, Domestic (Feral)	<i>Canis domesticus</i>
Dolphin, Common	<i>Delphinus delphis</i>
Elephant, Indian (Feral)	<i>Elephas maximus</i>
Flying Fox	<i>Pteropus giganteus</i>
Flying Fox, (Andaman) ²	<i>Pteropus melanotus</i>
Flying Fox, (Narcondam Small) ²	<i>Pteropus melanotus</i>
Flying Fox, (Nicobar) ²	<i>Pteropus melanotus</i>
Flying Fox, Malayan Large	<i>Pteropus vampyrus</i>
Goat, Domestic (Feral)	<i>Capra hircus</i>
Rat, Brown	<i>Rattus norvegicus</i>
Rat, Common House	<i>Rattus rattus</i>
Shrew, Andaman Island Spiny	<i>Crocidura hispida</i>
Shrew, Nicobar Spiny	<i>Crocidura nicobarica</i>
BIRDS³	
Baza, Indian Blackcrested	<i>Aviceda leuphotes</i>
Bee-eater, Bluetailed	<i>Merops philippinus</i>
Bee-eater, Chestnutheaded	<i>Merops leschenaulti</i>
Bittern, Tiger	<i>Gorsachius melanolophus</i>
Bittern, Yellow	<i>Ixobrychus sinensis</i>
Bluebird, Fairy	<i>Irena puella</i>
Bulbul, Redvented	<i>Pycnonotus cafer</i>
Crake, Andaman Banded	<i>Rallina canningi</i>
Crow, Jungle	<i>Corvus macrorhynchos</i>
Crow-pheasant	<i>Centropus sinensis</i>
Cuckoo, Emerald	<i>Chalcites maculatus</i>
Cuckoo, Himalayan	<i>Cuculus saturatus saturatus</i>
Cuckoo, Indian	<i>Cuculus micropterus</i>
Cuckoo, Small	<i>Cuculus poliocephalus</i>
Cuckoo, Violet	<i>Chalcites xanthorhynchus</i>
Cuckoo-dove, Andaman	<i>Macropygia rufipennis</i>



Dove, Emerald
 Dove, Red Turtle
 Dove, Rufous Turtle
 Dove, Spotted
 Drongo, Andaman
 Drongo, Ashy
 Drongo, Greater Racket-tailed
 Drongo, Lesser Racket-tailed
 Eagle, Andaman Dark Serpent
 Eagle, Crested Serpent
 Eagle, Whitebellied Sea
 Egret, Large
 Egret, Smaller
 Falcon, Peregrine
 Flycatcher, Brown
 Flycatcher, Redbreasted
 Flycatcher, Spotted
 Harrier, Marsh
 Harrier, Pale
 Hawk-eagle, Crested
 Hawk-owl, Andaman Brown
 Heron, Chinese Pond
 Heron, Grey
 Heron, Reef
 Hornbill, Narcondam
 Kingfisher, Blackcapped
 Kingfisher, Blue-eared
 Kingfisher, Common
 Kingfisher, Ruddy
 Kingfisher, Storkbilled
 Kingfisher, Threetoed
 Kingfisher, Whitecollared
 Kite, Pariah
 Koel
 Lorikeet, Indian
 Megapode
 Minivet, Scarlet
 Myna, Common
 Myna, Hill
 Myna, Whiteheaded
 Nightjar, Indian Jungle
 Nightjar, Longtailed
 Oriole, Blacknaped
 Owl, Andaman Scops
 Owl, Barn
 Parakeet, Alexandrine
 Parakeet, Redbreasted
 Parakeet, Redcheeked
 Petrel, Duskyvented Storm
 Pigeon, Andaman Wood
 Pigeon, Green Imperial

Chalcophaps indica
Streptopelia tranquebarica
Streptopelia orientalis
Streptopelia chinensis
Dicrurus andamanensis
Dicrurus leucophaeus
Dicrurus paradiseus
Dicrurus remifer
Spilornis elgini
Spilornis cheela
Haliaeetus leucogaster
Ardea alba
Egretta intermedia
Falco peregrinus
Muscicapa latirostris
Muscicapa parva
Muscicapa striata
Circus aeruginosus
Circus macrourus
Spizaetus cirrhatu
Ninox affinis
Ardeola bacchus
Ardea cinerea
Egretta sacra
Rhyticeros narcondami
Halcyon pileata
Alcedo meninting
Alcedo atthis
Halcyon coromanda
Pelargopsis capensis
Ceyx erithacus
Halcyon chloris
Milvus migrans
Eudynamys scolopacea
Loriculus vernalis
Megapodius freycinet
Pericrocotus flammeus
Acridotheres tristis
Gracula religiosa
Sturnus erythropygius
Caprimulgus indicus
Caprimulgus macrurus
Oriolus chinensis
Otus balli
Tyto alba
Psittacula eupatria
Psittacula alexandri
Psittacula longicauda
Fregatta tropica
Columba palumboides
Ducula aenea



Blackcapped kingfisher
Halcyon pileata

Pigeon, Greyfronted Green
 Pigeon, Nicobar
 Pigeon, Pied Imperial
 Pipit, Redthroated
 Plover, Great Stone
 Rail, Bluebreasted Banded
 Redshank, Common
 Roller, Broadbilled
 Sandpiper, Common
 Sandpiper, Green
 Shikra
 Shrike, Brown
 Snipe, Great
 Starling, Glossy
 Sunbird, Olivebacked
 Swallow
 Swallow-shrike, Whiterumped
 Swift, Large Brownthroated Spinetail
 Swift, The
 Swiftlet, Andaman Greyrumped
 Swiftlet, Himalayan
 Swiftlet, Whitebellied
 Teal, Cotton
 Teal, Grey
 Teal, Lesser Whistling
 Tern, Blacknaped
 Tern, Brownwinged
 Thrush, Dark
 Thrush, Siberian Ground
 Tree Pie, Andaman
 Tropic-bird, Longtailed
 Turnstone
 Wagtail, Forest
 Wagtail, Grey
 Warbler, Dusky Leaf
 Warbler, Palefooted Bush
 Warbler, Palelegged Leaf
 Warbler, Thickbilled
 Warbler, Yellowbrowed Leaf
 Waterhen, Whitebreasted
 Whimbrel
 Whistler, Mangrove
 White-eye
 Woodpecker, Darjeeling Pied
 Woodpecker, Fulvousbreasted Pied
 Woodpecker, Indian Great Black

Treron pompadora
Caloenas nicobarica
Ducula bicolor
Anthus cervinus
Esacus magnirostris
Rallus striatus
Tringa totanus
Eurystomus orientalis
Tringa hypoleucos
Tringa ochropus
Accipiter badius
Lanius cristatus
Gallinago media
Aplonis panayensis
Nectarinia jugularis
Hirundo rustica
Artamus leucorhynchus
Chaetura gigantea
Apus apus
Collocalia fuciphaga
Collocalia brevirostris
Collocalia esculenta
Nettapus coromandelianus
Anas gibberifrons
Dendrocygna javanica
Sterna sumatrana
Sterna anaethetus
Turdus obscurus
Zoothera sibirica
Dendrocitta bayleyi
Phaethon lepturus
Arenaria interpres
Motacilla indica
Motacilla cinerea
Phylloscopus fuscatus
Cettia pallidipes
Phylloscopus tenellipes
Acrocephalus aedon
Phylloscopus inornatus
Amaurornis phoenicurus
Numenius phaeopus
Pachycephala grisola
Zosterops palpebrosa
Picoides darjellensis
Picoides macei
Dryocopus javensis



Blacknaped tern *Sterna sumatrana*

REPTILES⁴

Crocodile, Estuarine or Salt-water Crocodile	<i>Crocodylus porosus</i>
Gecko, Banded	<i>Cyrtodactylus rubidus</i>
Gecko, Dwarf	<i>Cnemaspis kandiana</i>
Gecko, Emerald	<i>Phelsuma andamanense</i>
Lizard, Green Forest	<i>Goniocephalus subcristatus</i>
Monitor, Water	<i>Varanus salvator</i>
Skink, Tytler's	<i>Mabuya tytleri</i>
Snake, Amphibious Sea	<i>Laticauda laticauda</i>
Snake, Colubrine Amphibious Sea	<i>Laticauda colubrina</i>
Snake, Flying	<i>Chrysopelea paradisi</i>
Turtle, Green	<i>Chelonia mydas</i>
Turtle, Hawksbill	<i>Eretmochelys imbricata</i>
Turtle, Leathery	<i>Dermochelys coriacea</i>
Turtle, Loggerhead ⁵	<i>Caretta caretta</i>
Turtle, Olive Ridley	<i>Lepidochelys olivacea</i>

BUTTERFLIES⁶

Birdwing, Common	<i>Troides helena ferrari</i>
	<i>T. h. heliconoides</i>
Clubtail, Andaman	<i>Atrophaneura rhodifer</i>
Clubtail, Common	<i>Atrophaneura coon sambilanga</i>
Helen, Andaman	<i>Papilio fuscus andamanicus</i>
Jay, Great	<i>Graphium eurypylus macronius</i>
Jay, Tailed	<i>Graphium agamemnon andamanica</i>
	<i>G. a. decoratus</i> , <i>G. a. pulo</i>
Mime, Common	<i>Papilio clytia flavolimbatu</i>
Mormon, Andaman	<i>Papilio mayo</i>
Mormon, Common	<i>Papilio polytes nikobarus</i>
	<i>P. p. stichioides</i>
Mormon, Great	<i>Papilio memnon agenor</i>
Rose, Common	<i>Atrophaneura aristolochiae camorta</i>
	<i>A. a. goniopeltis</i> , <i>A. a. kondulana</i>
	<i>A. a. sawi</i>
Rose, Crimson	<i>Atrophaneura hector</i>
Sapphire, Purple	<i>Heliophorus epicles indicus</i>
Sunbeam, Burmese	<i>Curepis saronis saronis</i>
Swordtail, Fivebar	<i>Graphium antiphates epaminondas</i>

1 Common names have been standardised from Prater (1980), and for species not available in this text, from Tikader and Das (1985).

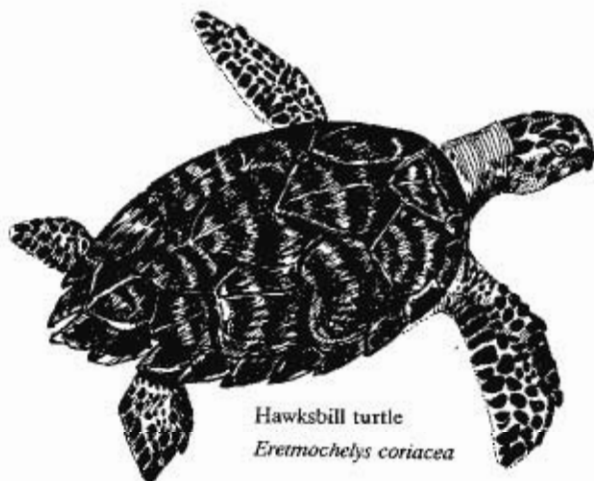
2 In the standard sources used, the Flying fox *Pteropus melanotus* has been given no separate common name from the Flying fox *P. giganteus*. However, Tikader and Das (1985) give common names to the three subspecies of *P. melanotus*. To distinguish the two species in the directory sheets, these subspecific common names have been used in brackets. In the sheets, therefore, 'Flying fox' refers to *P. giganteus*, while 'Flying fox (Andaman, Narcondam Small, or Nicobar)' refers to *P. melanotus*.

3 Common names have been standardised from Ripley (1982).

4 Common names have been standardised from Daniel (1983), and for species not available there, from Tikader and Das (1985).

5 Occurrence doubtful; no authentic record [Das 1985].

6 This is a listing only of Swallowtail butterflies (*Papilionidae*), as reported from national parks and sanctuaries in A&N. Listings of other insects were not readily available. The names of these butterflies were checked on the basis of information supplied by Kumar Ghorpade, Editor, *Colemania* [Ghorpade, Pers. comm. 1991]. Subspecies do not seem to have been given distinct common names.



Hawksbill turtle
Eretmochelys coriacea

MAMMALS OF ANDAMAN AND NICOBAR ISLANDS

This is a complete listing of species and subspecies known to occur in the Andaman and Nicobar Islands. This is distinct from the list of only species reported from the various national parks and sanctuaries, which appears in Appendix 3. Most other volumes in this state-wise series of directories of national parks and sanctuaries will not contain such a comprehensive listing of species and subspecies; this volume is an exception because of the high degree of endemism of species and subspecies of fauna in the A&N Islands (for figures on this, please see A&N ISLANDS: AN ECOLOGICAL AND SOCIO-ECONOMIC PROFILE).

This list is taken from Tikader and Das (1985). In some cases, the common name used there is such that the animal would be placed in the alphabetical list away from other related animals. For instance, the False killer whale is called the False killer, and would be listed under 'K' rather than under 'W' with other whales. In such cases, the more standard name, from Prater (1980), is used in brackets to supplement the name given by Tikader and Das. Thus the False killer is listed as '(Whale), False Killer'.

It must also be noted that the common names of species listed in the directory sheets are standardised from Prater (1980), and are in many cases different from the common names used in Tikader and Das (1985). For instance, *Funambulus pennanti* is called the Northern palm squirrel by Tikader and Das, and Five-striped palm squirrel by Prater. In addition, common names of subspecies given here are in some cases substantially different from the common name of species referred to in the directory sheets. For instance, the Andaman masked palm civet referred to here is a subspecies of the Himalayan palm civet. All these differences are noted in footnotes to this list. Readers are advised to check under the common English genus name (e.g. Civet), and then refer to the relevant footnotes. Alternatively, readers can compare the scientific names given here with those given in Appendix 3.

Common Name	Scientific Name	Distribution/Endemism*
Bat, Andaman Lesser Shortnosed Fruit	<i>Cynopterus brachyotis brachysoma</i>	A,E
Bat, Bentwinged	<i>Miniopterus australis pusillus</i>	N
Bat, Blackbeared Tomb ¹	<i>Taphozous melanopogon melanopogon</i>	A
Bat, Blyth's Clubfooted	<i>Tylonycteris pachypus fulvida</i>	A
Bat, Blyth's Pouchbearing	<i>Taphozous saccolaimus crassus</i>	N
Bat, Dobson's Horseshoe	<i>Rhinolophus affinis andamensis</i>	A,E
Bat, Dobson's Longtongued Fruit	<i>Eonycteris spelaea</i>	A
Bat, Fulvus Leafnosed	<i>Hipposideros fulvus fulvus</i>	N
Bat, Insular Mouseeared	<i>Myotis dryas</i>	A,E
Bat, Lesser Yellow	<i>Scotophilus kuhli</i>	N
Bat, Little Nicobar Leafnosed	<i>Hipposideros ater nicobarulae</i>	N,E
Bat, Nicobar Leafnosed	<i>Hipposideros diadema nicobarensis</i>	N,E
Bat, Nicobar Lesser Shortnosed Fruit	<i>Cynopterus brachyotis scherzeri</i>	N,E
Bat, North Andaman Horseshoe	<i>Rhinolophus cognatus famulus</i>	N,E
Bat, Shortnosed Fruit	<i>Cynopterus sphinx</i>	A
Bat, South Andaman Horseshoe	<i>Rhinolophus cognatus cognatus</i>	A,E
Bat, Tickell's	<i>Ilesperoptenus tickelli</i>	A
Cat, Jungle	<i>Felis chaus</i>	A,?
Civet, Andaman Masked Palm ²	<i>Paguma larvata tytlerei</i>	A,E
Deer, Barking	<i>Muntiacus muntjak</i>	A
(Deer, Spotted) or Chital	<i>Axis axis</i>	A
Dolphin, Common	<i>Delphinus delphis</i>	A,N
Dugong	<i>Dugong dugon</i>	A,N
Flying Fox, Andaman	<i>Pteropus melanotus tytlerei</i>	A

Flying Fox, Car Nicobar	<i>Pteropus faunulus</i>	N,E
Flying Fox, Indian	<i>Pteropus giganteus</i>	A,N
Flying Fox, Malayan Large	<i>Pteropus vampyrus</i>	A,N
Flying Fox, Narcondam Small	<i>Pteropus melanotus satyrus</i>	A,E
Flying Fox, Nicobar	<i>Pteropus melanotus melanotus</i>	N,E
Macaque, Nicobar Crab-eating	<i>Macaca fascicularis umbrosa</i>	N,E
Macaque, Pigtailed	<i>Macaca nemestrina leonina</i>	A?
Mouse, House	<i>Mus musculus castaneus</i>	A
Pig, Andaman Wild ³	<i>Sus scrofa andamanensis</i>	A,E
Pig, Nicobar Wild ³	<i>Sus scrofa nicobaric</i>	N,E
Pipistrelle, Indian	<i>Pipistrellus coromandra</i>	N
Pipistrelle, Nicobar	<i>Pipistrellus camortae</i>	N,E
Rat ⁴	<i>Rattus burrescens</i>	N,E
Rat	<i>Rattus burrus</i>	N,E
Rat	<i>Rattus burrus</i>	N,E
Rat	<i>Rattus palmarum</i>	A,N,E
Rat	<i>Rattus pulliventer</i>	N,E
Rat	<i>Rattus rogersi</i>	A
Rat	<i>Rattus stoicus</i>	A,E
Rat	<i>Rattus taciturnus</i>	A,E
Rat, House	<i>Rattus rattus alexandrinus</i>	A,N
Rat, House	<i>Rattus rattus andamanensis</i>	A,E
Rat, House	<i>Rattus rattus atridorsum</i>	A,E
Rat, House	<i>Rattus rattus flebilis</i>	A,E
Rat, House	<i>Rattus rattus holchu</i>	A,N,E
Shrew, Andaman Island Spiny	<i>Crocidura hispida</i>	A,E
Shrew, Jenkin's Andaman Spiny	<i>Crocidura jenkinsi</i>	A,E
Shrew, Miller's Andaman Spiny	<i>Crocidura andamanensis</i>	A,E
Shrew, Nicobar Spiny	<i>Crocidura nicobarica</i>	N,E
Shrew, Nicobar Tree	<i>Tupaia nicobarica nicobarica</i>	N,E
Shrew, Nicobar Tree	<i>Tupaia nicobarica surda</i>	N,E
Squirrel, Northern Palm ⁵	<i>Funambulus pennanti</i>	A
Vampire, Malay False	<i>Megaderma spasma</i>	A
Whale, Blue ⁶	<i>Balaenoptera musculus</i>	
(Whale), False Killer	<i>Pseudorca crassidens</i>	A,N
Whale, Sperm ⁶	<i>Physeter catodon</i>	

* A = Andamans N = Nicobars E = Endemic ? Occurrence doubtful; no recent record

¹ A subspecies of Bearded sheath-tailed bat

² A subspecies of Himalayan palm civet

³ Subspecies of Indian wild boar

⁴ Neither Tikader and Das (1985) nor Prater (1980), listed any distinct common names for this and the following species of rats, except the House rat *Rattus rattus*.

⁵ Same as Fivestriped palm squirrel

⁶ These whales were not listed in Tikader and Das (1985), but have been mentioned in other sources [Chana undated].

BIRDS OF ANDAMAN AND NICOBAR ISLANDS

This is a complete listing of species and subspecies known to occur in the Andaman and Nicobar Islands. This is distinct from the list of only species reported from the various national parks and sanctuaries, which appears in Appendix 3. Most other volumes in this state-wise series of directories of national parks and sanctuaries will not contain such a comprehensive listing of species and subspecies; this volume is an exception because of the high degree of endemism of species and subspecies of fauna in the A&N Islands.

This list is taken from Tikader and Das (1985), and differs from it only in so far as common names have been taken from the more standard reference work by Ali and Ripley (1983). It must also be noted that the common names of species listed in the directory sheets are standardised from Ripley (1982), and are in some cases different from the common names used by Ali and Ripley (1983). For instance, *Artamus leucorhynchus* is called Whitebreasted swallow-shrike by Ali and Ripley (1983), and Whiterumped swallow-shrike in Ripley (1982). In addition, common names of subspecies given here are in some cases substantially different from the common name of species referred to in the directory sheets. For instance, the East Siberian collared bush chat referred to here is a subspecies of the Stone chat. All these differences are noted in footnotes to this list. Readers are advised to check under the common English genus name (e.g. Chat), and then refer to the relevant footnotes. Alternatively, readers can compare the scientific names given here with those given in Appendix 3.

Common Name	Scientific Name	Distribution/Endemism*
Baza, Andaman Blackcrested	<i>Voiceda leuphotes andamanica</i>	A,E
Bee-eater, Andaman Chestnutheaded	<i>Merops leschenaulti andamanensis</i>	A,E
Bee-eater, Bluetailed	<i>Merops philippinus</i>	A,N
Bittern, Chestnut	<i>Ixobrychus cinnamomeus</i>	A,N
Bittern, Nicobar Tiger	<i>Gorsachius melanolophus minor</i>	A,E
Bittern, Yellow	<i>Ixobrychus sinensis</i>	A,N
Bluebird, Fairy	<i>Irena puella puella</i>	A,N
Bluethroat, Northern	<i>Erithacus svecicus svecicus</i>	A
Bulbul, Andaman Blackheaded	<i>Pycnonotus atriceps fuscoflavescens</i>	A,E
Bulbul, Andaman Redwhiskered	<i>Pycnonotus jocosus whistleri</i>	A,E
Bulbul, Nicobar	<i>Hypsipetes nicobariensis</i>	N,E
Bunting, Little	<i>Emberiza pusilla</i>	A
Bunting, Yellowbreasted	<i>Emberiza aureola aureola</i>	N
Chat, Siberian Blue	<i>Erithacus cyane cyane</i>	A
Chat, East Siberian Collared Bush ¹	<i>Saxicola torquata stejnegeri</i>	A
Cock, Water	<i>Gallicrex cinerea</i>	A,N
Crake, Andaman Banded	<i>Rallina canningi</i>	A,E
Crake, Eastern Baillon's	<i>Porzana pusilla pusilla</i>	A
Crow, Eastern Jungle	<i>Corvus macrorhynchus levaillanti</i>	A
Crow-Pheasant, Andaman	<i>Centropus andamanensis</i>	A,N,E
Cuckoo	<i>Cuculus canorus canorus</i>	A
Cuckoo, Emerald	<i>Chalcites maculatus</i>	A,N
Cuckoo, Himalayan	<i>Cuculus saturatus saturatus</i>	A,N
Cuckoo, Indian	<i>Cuculus micropterus micropterus</i>	A,N
Cuckoo, Violet	<i>Chalcites xanthorhynchus xanthorhynchus</i>	A,N
Cuckoo-Dove, Andaman	<i>Macropygia rufipennis andamanica</i>	A,E
Cuckoo-Dove, Nicobar	<i>Macropygia rufipennis rufipennis</i>	N,E
Cuckoo-Shrike, Andaman Large	<i>Coracina novaehollandiae andamana</i>	A,E
Cuckoo-Shrike, Barred	<i>Coracina striataa dobsoni</i>	A,E

Cuckoo-Shrike, Nicobar Pied	<i>Coracina nigra davisoni</i>	A,N,E
Curlew, Eastern	<i>Numenius arquata orientalis</i>	A,N
Curlew-Sandpiper	<i>Calidris testacea</i>	A,N
Dove, Andaman Emerald	<i>Chalcophaps indica maxima</i>	A,E
Dove, Burmese Red Turtle	<i>Streptopelia tranquebarica humilis</i>	A
Dove, Nicobar Emerald	<i>Chalcophaps indica augusta</i>	N,E
Drongo, Andaman Racket-tailed	<i>Dicrurus paradiseus otiosus</i>	A,E
Drongo, Ashy	<i>Dicrurus leucophaeus leucogenis</i>	A
Drongo, Large Andaman	<i>Dicrurus andamanensis dicruriformis</i>	A,E
Drongo, Nicobar Racket-tailed	<i>Dicrurus paradiseus nicobariensis</i>	A,E
Drongo, Small Andaman	<i>Dicrurus andamanensis andamanensis</i>	A,E
Drongo, Whitecheeked Grey	<i>Dicrurus leucophaeus salangensis</i>	A
Duck, Spotbill	<i>Anas poecilorhyncha poecilorhyncha</i>	A
Eagle, Andaman Dark Serpent	<i>Spilornis elgini</i>	A,E
Eagle, Andaman Pale Serpent ²	<i>Spilornis cheela davisoni</i>	A,N,E
Eagle, Great Nicobar Crested Serpent	<i>Spilornis klossi</i>	N,E
Eagle, Malayan Crested Serpent	<i>Spilornis cheela malayensis</i>	N
Eagle, Nicobar Crested Serpent	<i>Spilornis cheela minimus</i>	N,E
Eagle, Whitebellied Sea	<i>Haliaeetus leucogaster</i>	A,N
Egret, Cattle	<i>Bubulcus ibis coromandus</i>	A,N
Egret, Eastern Large	<i>Ardea alba modesta</i>	A
Egret, Little	<i>Egretta garzetta garzetta</i>	A,N
Egret, Smaller	<i>Egretta intermedia intermedia</i>	A,N
Falcon, Eastern Peregrine	<i>Falco peregrinus japonensis</i>	A,N
Falcon, Shaheen	<i>Falco peregrinus peregrinator</i>	N
Flowerpecker, Andaman ³	<i>Dicaeum concolor virescens</i>	A,E
Flycatcher, Andaman Blacknaped Monarch	<i>Hypothymis azurea tytleri</i>	A,E
Flycatcher, Brown	<i>Muscicapa latirostris</i>	A,N
Flycatcher, Car Nicobar Blacknaped Monarch	<i>Hypothymis azurea idiochroa</i>	N,E
Flycatcher, Eastern Redbreasted	<i>Muscicapa parva albicilla</i>	A
Flycatcher, Nicobar Blacknaped Monarch	<i>Hypothymis azurea nicobarica</i>	N,E
Flycatcher, Nicobar Paradise	<i>Terpsiphone paradisi nicobarica</i>	A,N,E
Flycatcher, Olive	<i>Rhinomyias brunneata nicobarica</i>	A,N
Godwit, Bartailed	<i>Limosa lapponica baueri</i>	N
Goshawk, Horsfield's	<i>Accipiter soloensis</i>	A,N
Greenshank	<i>Tringa nebularia</i>	A,N
Harrier, Marsh	<i>Circus aeruginosus aeruginosus</i>	A,N
Harrier, Montagu's	<i>Circus pygargus</i>	A
Harrier, Pale	<i>Circus macrourus</i>	A
Hawk-Eagle, Andaman Crested	<i>Spizaetus cirrhatus andamanensis</i>	A,E
Hawk-Owl, Andaman Brown	<i>Ninox affinis affinis</i>	A,E
Hawk-Owl, Hume's Brown	<i>Ninox scutulata obscura</i>	A,N,E
Hawk-Owl, Nicobar Brown	<i>Ninox affinis isolata</i>	N,E
Heron, Andaman Little Green	<i>Ardeola striatus spodiogaster</i>	A,N,E
Heron, Chinese Pond	<i>Ardeola bacchus</i>	A
Heron, Eastern Grey	<i>Ardea cinerea rectirostris</i>	A,N
Heron, Eastern Purple	<i>Ardea purpurea manilensis</i>	A,N
Heron, Eastern Reef	<i>Egretta sacra</i>	A,N
Heron, Indian Pond or Paddybird	<i>Ardeola grayii grayii</i>	A,N
Heron, Night	<i>Nycticorax nycticorax nycticorax</i>	A,N

Hoopoe, Tibetan	<i>Upupa epops saturata</i>	A
Hornbill, Narcondam	<i>Rhyticeros narcondami</i>	A,E
Kestrel, East Himalayan	<i>Falco tinnunculus interstinctus</i>	A
Kestrel, European	<i>Falco tinnunculus tinnunculus</i>	A
Kingfisher, Andaman Blue-eared	<i>Alcedo meninting rufigaster</i>	A,E
Kingfisher, Andaman Ruddy	<i>Halcyon coromanda mizorkhina</i>	A,E
Kingfisher, Andaman Storkbilled	<i>Pelargopsis capensis osmastoni</i>	A,E
Kingfisher, Andaman Threetoed Forest	<i>Ceyx erithacus macrocarus</i>	A,N,E
Kingfisher, Andaman Whitebreasted	<i>Halcyon smyrnensis saturator</i>	A,N,E
Kingfisher, Andaman Whitecollared	<i>Halcyon chloris davisoni</i>	A,E
Kingfisher, Blackcapped	<i>Halcyon pileata</i>	A,N
Kingfisher, Indian Small Blue ⁴	<i>Alcedo atthis bengalensis</i>	A,N
Kingfisher, Nicobar Storkbilled	<i>Pelargopsis capensis intermedia</i>	N,E
Kingfisher, Nicobar Whitecollared	<i>Halcyon chloris occipitalis</i>	N,E
Kite, Brahminy	<i>Haliastur indus indus</i>	A
Kite, Pariah	<i>Milvus migrans govinda</i>	A
Knot, Eastern	<i>Calidris tenuirostris</i>	A
Koel, Andaman,	<i>Eudynamys scolopacea dolosa</i>	A,N,E
Lapwing, Greyheaded	<i>Vanellus cinereus</i>	A
Lorikeet, Indian	<i>Loriculus vernalis vernalis</i>	A,N
Magpie-Robin, Andaman	<i>Copsychus saularis andamanensis</i>	A,E
Megapode, North Nicobar	<i>Megapodius freycinet nicobariensis</i>	A,N,E
Megapode, South Nicobar	<i>Megapodius freycinet abbotti</i>	N,E
Minivet, Andaman Scarlet	<i>Pericrocotus flammeus andamanensis</i>	A,E
Minivet, Ashy	<i>Pericrocotus divaricatus divaricatus</i>	A
Minivet, Eastern Small	<i>Pericrocotus cinnamomeus vividus</i>	A
Moorhen, Indian Purple	<i>Porphyrio porphyrio policephalus</i>	A,N
Moorhen, Malay	<i>Gallinula chloropus orientalis</i>	A
Munia, Andaman Whitebacked	<i>Lonchura striata fumigata</i>	A,E
Munia, Nicobar Whitebacked	<i>Lonchura striata semistriata</i>	N,E
Myna, Andaman Hill	<i>Gracula religiosa andamanensis</i>	A,N,E
Myna, Andaman Whiteheaded	<i>Sturnus erythropygius andamanensis</i>	A,E
Myna, Common	<i>Acridotheres tristis tristis</i>	A
Myna, Daurian	<i>Sturnus sturninus</i>	A,N
Myna, Katchal Whiteheaded	<i>Sturnus erythropygius katchalensis</i>	N,E
Myna, Nicobar Whiteheaded	<i>Sturnus erythropygius erythropygius</i>	N,E
Nightjar, Andaman Longtailed	<i>Caprimulgus macrurus andamanicus</i>	A,E
Nightjar, Japanese Jungle	<i>Caprimulgus indicus jotaka</i>	A
Noddy, Whitecapped	<i>Anous tenuirostris worcesteri</i>	A
Oriole, Andaman Blackheaded	<i>Oriolus xanthornus reubeni</i>	A,E
Oriole, Andaman Blacknaped	<i>Oriolus chinensis andamanensis</i>	A,E
Oriole, Nicobar Blacknaped	<i>Oriolus chinensis macrourus</i>	N,E
Osprey	<i>Pandion haliaetus haliaetus</i>	A
Owl, Andaman Barn	<i>Tyto alba deroepstorffii</i>	A,E
Owl, Andaman (Lesser) Scops ⁵	<i>Otus scops modestus</i>	A,E
Owl, Andaman Scops	<i>Otus balli</i>	A,E
Owl, Nicobar Scops	<i>Otus scops nicobaricus</i>	N,E
Parakeet, Andaman Redbreasted	<i>Psittacula alexandri abbotti</i>	A,E
Parakeet, Andaman Redcheeked	<i>Psittacula longicauda tytleri</i>	A,E
Parakeet, Blyth's Nicobar	<i>Psittacula caniceps</i>	N,E
Parakeet, Large Andaman ⁶	<i>Psittacula eupatria magnirostris</i>	A,E

Parakeet, Nicobar Redcheeked	<i>Psittacula longicauda nicobarica</i>	N,E
Partridge, South Indian Grey	<i>Francolinus pondicerianus pondicerianus</i>	A
Pastor, Rosy	<i>Sturnus roseus</i>	A
Peafowl, Common	<i>Pavo cristatus</i>	A
Pelican, Spottedbilled or Grey	<i>Pelecanus philippensis philippensis</i>	N
Petrel, Wilson's Storm	<i>Oceanites oceanicus oceanicus</i>	A?
Pie, Andaman Tree	<i>Dendrocitta bayleyi</i>	A,E
Pigeon, Andaman Green Imperial	<i>Ducula aenea andamanica</i>	A,E
Pigeon, Andaman Greyfronted Green	<i>Treron pompadora chloroptera</i>	A,N,E
Pigeon, Andaman Wood	<i>Columba palumboides</i>	A,N,E
Pigeon, Nicobar	<i>Caloenas nicobarica nicobarica</i>	A,N,E
Pigeon, Nicobar Green Imperial	<i>Ducula aenea nicobarica</i>	N,E
Pigeon, Pied Imperial	<i>Ducula bicolor</i>	A,N
Pipit, Blyth's	<i>Anthus godlewskii</i>	A
Pipit, Redthroated	<i>Anthus cervinus</i>	A,N
Pipit, Richard's ⁷	<i>Anthus novaeseelandiae richardi</i>	A
Pitta, Nicobar Hooded	<i>Pitta sordida abbotti</i>	N,E
Plover, Australian Stone	<i>Esacus magnirostris magnirostris</i>	A
Plover, Crab	<i>Dromas ardeola</i>	A,N
Plover, Easter Golden	<i>Pluvialis dominica fulva</i>	A,N
Plover, Eastern Sand	<i>Charadrius asiaticus veredus</i>	A
Plover, European Little Ringed	<i>Charadrius dubius curonicus</i>	A
Plover, Grey	<i>Pluvialis squatarola</i>	A,N
Plover, Large Sand	<i>Charadrius leschenaultii leschenaultii</i>	A,N
Plover, Pamir's Lesser Sand	<i>Charadrius mongolus atrifrons</i>	A,N
Pratincole, Collared	<i>Glareola pratincola maldivarum</i>	A,N
Quail, Indian Yellowlegged Button	<i>Turnix tanki tanki</i>	A,N
Quail, Nicobar Bluebreasted	<i>Coturnix chinensis trinkutensis</i>	N,E
Rail, Andaman Bluebreasted Banded	<i>Rallus striatus obscurior</i>	A,N,E
Redshank, Common	<i>Tringa totanus totanus</i>	A,N
Roller, Andaman Broadbilled	<i>Eurystomus orientalis gigas</i>	A,E
Sandpiper, Broadbilled	<i>Limicola falcinellus falcinellus</i>	A,N
Sandpiper, Common	<i>Tringa hypoleucos hypoleucos</i>	A,N
Sandpiper, Green	<i>Tringa ochropus</i>	A
Sandpiper, Terek	<i>Tringa terek</i>	A,N
Sandpiper, Wood	<i>Tringa glareola</i>	A
Shama, Andaman	<i>Copsychus malabaricus albiventris</i>	A,E
Shikra, Car Nicobar	<i>Accipiter badius butleri</i>	N,E
Shikra, Katchal	<i>Accipiter badius obsoletus</i>	N,E
Shrike, Brown	<i>Lanius cristatus cristatus</i>	A,N
Shrike, Philippine ⁸	<i>Lanius cristatus lucionensis</i>	A,N
Snipe, Fantail	<i>Gallinago gallinago gallinago</i>	A
Snipe, Great	<i>Gallinago media</i>	A
Snipe, Jack	<i>Gallinago minima</i>	A
Snipe, Pintail	<i>Gallinago stenura</i>	A,N
Sparrow, Indian House	<i>Passer domesticus indicus</i>	A
Sparrow-Hawk, Asiatic	<i>Accipiter nisus nisosimilis</i>	A
Sparrow-Hawk, Eastern	<i>Accipiter virgatus gularis</i>	A,N
Stare, Andaman Glossy ⁹	<i>Aplonis panayensis tytleri</i>	A,N,E
Stint, Eastern Little	<i>Calidris ruficollis</i>	A,N

Stint, Little	<i>Calidris minuta</i>	A
Stint, Longtoed	<i>Calidris subminuta</i>	A
Stint, Temminck's	<i>Calidris temminckii</i>	A
Sunbird, Andaman Olivebacked	<i>Nectarinia jugularis andamanica</i>	A,E
Sunbird, Car Nicobar Olivebacked	<i>Nectarinia jugularis proselia</i>	N,E
Sunbird, Nicobar Olivebacked	<i>Nectarinia jugularis klossi</i>	N,E
Sunbird, Nicobar Yellowbacked	<i>Aethopyga siparaja nicobarica</i>	N,E
Swallow, Eastern	<i>Hirundo rustica gutturalis</i>	A,N
Swallow, Javan House	<i>Hirundo tahitica javanica</i>	A
Swallow-Shrike, Whitebreasted ¹⁰	<i>Artamus leucorhynchus humei</i>	A,E
Swift, Brownthroated Spinetail	<i>Chaetura gigantea indica</i>	A
Swift, Eastern ¹¹	<i>Apus apus pekinensis</i>	A
Swiftlet, Andaman Greyrumped	<i>Collocalia fuciphaga inexpectata</i>	A,N,E
Swiftlet, Himalayan	<i>Collocalia brevirostris innominata</i>	A
Swiftlet, Whitebellied	<i>Collocalia esculenta affinis</i>	A,N,E
Teal, Andaman Grey	<i>Anas gibberifrons albogularis</i>	A,E
Teal, Common	<i>Anas crecca crecca</i>	A,N
Teal, Cotton	<i>Nettapus coromandelianus coromandelianus</i>	A
Teal, Lesser Whistling	<i>Dendrocygna javanica</i>	A,N
Tern, Eastern Blacknaped	<i>Sterna sumatrana sumatrana</i>	A,N
Tern, Indian Lesser Crested	<i>Sterna bengalensis bengalensis</i>	A,N
Tern, Javan Gullbilled	<i>Gelochelidon nilotica affinis</i>	A
Tern, Noddy	<i>Anous stolidus pileatus</i>	A,N
Tern, Brownwinged	<i>Sterna anaethetus anaethetus</i>	A
Tern, Rosy	<i>Sterna dougallii korustes</i>	A
Tern, Sooty	<i>Sterna fuscata nubilosa</i>	A
Tern, Whitewinged Black	<i>Chlidonias leucopterus</i>	A
Thrush, Andaman Ground ¹²	<i>Zoothera citrina andamanensis</i>	A,E
Thrush, Dark	<i>Turdus obscurus</i>	A
Thrush, Blue Rock	<i>Monticola solitarius pandoo</i>	A,N
Thrush, Nicobar Ground ¹²	<i>Zoothera citrina albogularis</i>	N,E
Thrush, Whitebrowed Ground	<i>Zoothera sibirica sibirica</i>	A
Thrush, Whitebrowed Ground ¹³	<i>Zoothera sibirica davisoni</i>	A
Tropic-bird, Redtailed	<i>Phaethon rubricauda rubricauda</i>	N?
Tropic-bird, White	<i>Phaethon lepturus lepturus</i>	A,N
Turnstone	<i>Arenaria interpres interpres</i>	A,N
Wagtail, Blueheaded Yellow	<i>Motacilla flava beema</i>	N
Wagtail, Forest	<i>Motacilla indica</i>	A
Wagtail, Grey	<i>Motacilla cinerea cinerea</i>	A,N
Wagtail, Greyheaded Yellow	<i>Motacilla flava thunbergi</i>	A,N
Wagtail, Shorttailed Greyheaded Yellow	<i>Motacilla flava simillima</i>	A
Wagtail, Whitefaced Pied ¹⁴	<i>Motacilla alba leucopsis</i>	A
Warbler, Andaman Palefooted Bush	<i>Cettia pallidipes osmastonii</i>	A,E
Warbler, Arctic Leaf	<i>Phylloscopus borealis borealis</i>	A
Warbler, Eastern Greenish Leaf	<i>Phylloscopus trochiloides trochiloides</i>	A
Warbler, Largebilled Leaf	<i>Phylloscopus magnirostris</i>	A
Warbler, Malay Streaked Fantail	<i>Cisticola juncidis malaya</i>	N
Warbler, Manipur Dusky Leaf	<i>Phylloscopus fuscatus mariae</i>	A
Warbler, Palelegged Leaf	<i>Phylloscopus tenellipes</i>	N
Warbler, Pallas's Central Asian Grasshopper	<i>Locustella certhiola centralasiae</i>	A,N

Warbler, Pallas's Siberian Grasshopper	<i>Locustella certhiola rubescens</i>	A
Warbler, Siberian Dusky Leaf	<i>Phylloscopus fuscatus fuscatus</i>	A
Warbler, Siberian Yellowbrowed Leaf	<i>Phylloscopus inornatus inornatus</i>	A
Warbler, Streaked Grasshopper	<i>Locustella lanceolata</i>	A,N
Warbler, Thickbilled	<i>Acrocephalus aedon aedon</i>	A,N
Waterhen, Andamans Whitebreasted	<i>Amaurornis phoenicurus insularis</i>	A,N,E
Whimbrel	<i>Numenius phaeopus phaeopus</i>	A,N
Whimbrel, Eastern	<i>Numenius phaeopus variegatus</i>	A
Whistler, Mangrove	<i>Pachycephala grisola</i>	A
White-eye, Nicobar	<i>Zosterops palpebrosa nicobarica</i>	A,N,E
Woodpecker, Andaman Black ¹⁵	<i>Dryocopus javensis hodgci</i>	A,E
Woodpecker, Andaman Spottedbreasted Pied ¹⁶	<i>Picoides macei andamanensis</i>	A,E

* A = Andamans

N = Nicobars

E = Endemic

? = Occurrence doubtful

1 A subspecies of Stone chat

2 A subspecies of Crested serpent eagle (two more subspecies are also found)

3 A subspecies of Plaincoloured flowerpecker

4 A subspecies of Common kingfisher

5 Ali and Ripley (1983) use the same common name for this as well as *Otus balli*. To differentiate, we have used the middle name 'lesser', given in Tikader and Das (1985), in brackets.

6 A subspecies of Alexandrine parakeet

7 A subspecies of Paddyfield pipit

8 A subspecies of Brown shrike

9 A subspecies of Glossy starling

10 Same as Whiterumped swallow-shrike

11 A subspecies of The swift

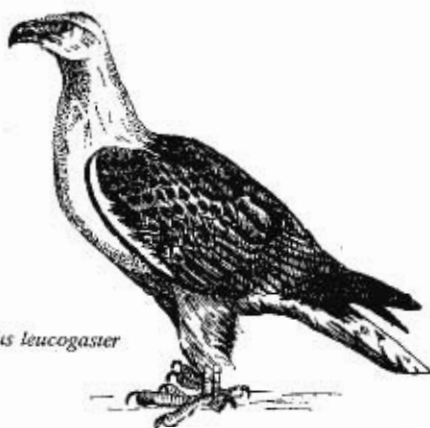
12 Both subspecies of Orangeheaded ground thrush

13 No separate common name is given to the subspecies *davisoni* from the subspecies *sibirica*

14 A subspecies of White wagtail

15 A subspecies of Indian great black woodpecker

16 A subspecies of Fulvousbreasted pied woodpecker

Whitebellied sea eagle *Haliaeetus leucogaster*

REPTILES OF ANDAMAN AND NICOBAR ISLANDS

This is a complete listing of species and subspecies known to occur in the Andaman and Nicobar Islands. This is distinct from the list of only species reported from the various national parks and sanctuaries, which appears in Appendix 3. Most other volumes in this state-wise series of directories of national parks and sanctuaries will not contain such a comprehensive listing of species and subspecies; this volume is an exception because of the high degree of endemism of species and subspecies of fauna in the A&N Islands.

This list is largely taken from Tikader and Das (1985); additional sources used are Bhaskar (undated) and Whitaker (undated). It must be noted that the common names of species listed in the directory sheets are mostly standardised from Daniel (1983), and are in many cases different from the common names used by Tikader and Das, and in other sources. For instance, *Phelsuma andamanense* is called Andaman day gecko by Tikader and Das (1985), and Emerald gecko by Daniel (1983). In all such cases, the differences are noted in footnotes to this list. Readers are advised to check under the common English genus name (e.g. Gecko) and then refer to the relevant footnotes. Alternatively, readers can compare the scientific names given here with those given in Appendix 3.

Common Name	Scientific Name	Distribution/Endemism*
Bronze Back, Andaman	<i>Dendrelaphis ahaetulla andamanensis</i>	A,N,E
Bronze Back, Daudin's	<i>Dendrelaphis tristis</i>	N
Bronze Back, Painted	<i>Dendrelaphis pictus andamanensis</i>	A
Bronze Back, Tiwari's	<i>Dendrelaphis humayuni</i>	N
Cobra, King	<i>Ophiophagus hannah</i>	A
Cobra, Monocellate	<i>Naja naja kaouthia</i>	A
Crocodile, Estuarine	<i>Crocodilus porosus</i>	A,N
Gecko	<i>Cosymbotus platyurus</i>	N
Gecko	<i>Hemiphyllodactylus typus typus</i>	N
Gecko, Andaman Day ¹	<i>Phelsuma andamanense</i>	A,N,E
Gecko, Curtailed ²	<i>Cyrtodactylus rubidus</i>	A,N,E
Gecko, Flapsided	<i>Platyurus sp.</i>	A
Gecko, Flying	<i>Ptychozoon kuhli</i>	N
Gecko, Forest Day ³	<i>Cnemaspis kandiana</i>	A,N
Gecko, House	<i>Hemidactylus frenatus</i>	A,N
Gecko, Smith's	<i>Gekko smithi</i>	A
Gecko, Spotted	<i>Gehyra mutilata</i>	A,N
Gecko, Stripeheaded	<i>Lepidodactylus lagubris</i>	A,N
Keelback, Striped	<i>Amphiesma stolata</i>	A
Krait, Andaman Banded	<i>Bungarus andamanensis</i>	A,E
Krait, Common	<i>Bungarus caeruleus</i>	A,N
Krait, Many Banded	<i>Bungarus multicinctus</i>	A,N
Kukri, Andaman Banded	<i>Oligodon woodmasoni</i>	A,N,E
Lizard, Andaman Garden	<i>Calotes andamanensis</i>	A,E
Lizard, Common Garden	<i>Calotes versicolor</i>	A
Lizard, Garden	<i>Calotes calotes</i>	N
Lizard, Green Forest	<i>Goniocephalus subcristatus</i>	A,N,E
Lizard, Green Garden	<i>Calotes cristatellus</i>	N
Lizard, Spotted Garden	<i>Calotes jubetus</i>	N
Lizard, Tiwari's Garden	<i>Calotes danieli</i>	N,E
Lizard, Whitelipped Garden	<i>Calotes mystaceus</i>	A,N

Monitor, Andaman Water	<i>Varanus salvator andamanensis</i>	A,N,E
Python, Reticulated	<i>Python reticulatus</i>	N
Skink	<i>Mabuya rudis</i>	N
Skink, Andaman	<i>Mabuya andamanensis</i>	A,E
Skink, Blackstriped	<i>Riopa bowringi</i>	A
Skink, Bronzeback	<i>Sphenomorphus maculatus</i>	A,N
Skink, Brown	<i>Mabuya rugifera</i>	N
Skink, Brownbacked	<i>Sphenomorphus maculatum</i>	A,N
Skink, Lesser Brownback	<i>Leiopisma macrotis</i>	N,E
Skink, Lined	<i>Mabuya multifasciata</i>	N
Skink, New Guinea Limbless	<i>Dibamus novae-guineae</i>	N
Skink, Nicobar Legless	<i>Typhloscincus nicobaricus</i>	N,E
Skink, Nicobar Tree	<i>Dasia nicobaarensis</i>	N,E
Skink, Peter's	<i>Sphenomorphus quadrivittatum</i>	N
Skink, Tree	<i>Dasia olivacea</i>	A,N
Skink, Tytler's	<i>Mabuya tytleri</i>	A,E
Skink, Whitestriped	<i>Scincella macrotympanum</i>	A,E
Snake, Amphibious Sea	<i>Laticauda laticauda</i>	N
Snake, Andaman Blind	<i>Typhlops andamanensis</i>	A,E
Snake, Andaman Cat	<i>Boiga andamanensis</i>	A,E
Snake, Andaman Water	<i>Xenochropis piscator andamanensis</i>	?
Snake, ? Water ⁴	<i>Xenochropis piscator melanzostus</i>	A
Snake, Banded Swamp	<i>Cantoria violacea</i>	A
Snake, Biswas's Wolf	<i>Lycodon tiwarii</i>	A,N,E
Snake, Blackheaded Hill	<i>Sibynophis bistrigatus</i>	N
Snake, Boie's Cat	<i>Boiga dendrophilus</i>	N
Snake, Boie's Water	<i>Xenochropis trianguligera</i>	N
Snake, Brown Wolf	<i>Lycodon aulicus capucinus</i>	A,E
Snake, Colubrine Amphibious Sea	<i>Laticauda colubrina</i>	A,N
Snake, Common Blind	<i>Typhlops braminus</i>	A,N
Snake, Common Water	<i>Xenochropis piscator piscator</i>	A
Snake, Dogfaced Water	<i>Cerberus rhynchops</i>	A,N
Snake, Elephant Trunk	<i>Acrochordus granulatus</i>	N
Snake, Flying	<i>Chrysopelea paradisi</i>	A
Snake, Green Tree	<i>Dendrelaphis cyanochloris</i>	A,N
Snake, Indian Rat	<i>Ptyas mucosus</i>	A
Snake, Nicobar Stripedneck	<i>Liopeltis nicobariensis</i>	N,E
Snake, Nicobar Water	<i>Xenochropis nicobarensis</i>	N,E
Snake, Oat's Blind	<i>Typhlops oatesi</i>	A,E
Snake, Smith's Cat	<i>Boiga ochracea walli</i>	A,N
Snake, Sunbeam	<i>Xenopeltis unicolor</i>	A
Snake, Whitebellied Water	<i>Gordonia leucobalia</i>	N
Tokay, Asian	<i>Gecko gecko</i>	A,N
Tortoise, Malayan Box	<i>Cuora amboinensis</i>	N
Trinket, Green	<i>Elaphe prasina</i>	A
Trinket, Redtailed	<i>Elaphe oxycephala</i>	A,N
Trinket, Yellowstriped	<i>Elaphe flavolineata</i>	A,N
Turtle, Green Sea	<i>Chelonia mydas</i>	A,N
Turtle, Hawksbill	<i>Eretmochelys imbricata squamata</i>	A,N
Turtle, Leathery or Leatherback	<i>Dermochelys coriacea</i>	A,N

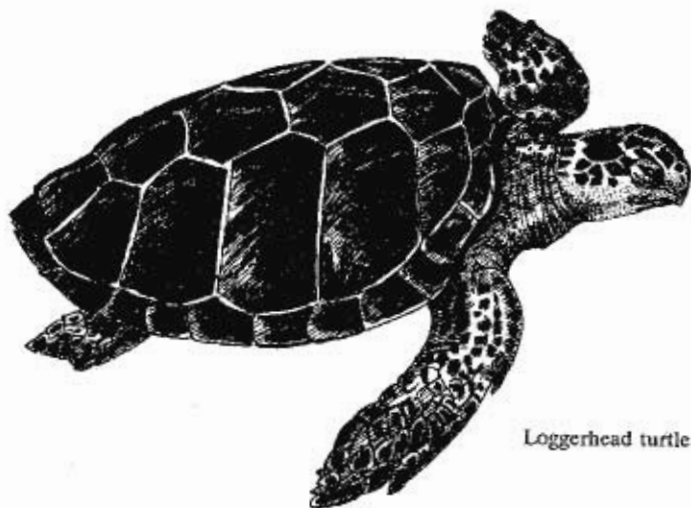
Turtle, Loggerhead	<i>Caretta caretta</i>	?
Turtle, Olive Ridley	<i>Lepidochelys olivacea</i>	A,N
Turtle, Southern Flapshelled	<i>Lissemys punctata granosa</i>	A
Viper, Andaman Pit ¹	<i>Trimeresurus purpureomaculatus andersoni</i>	A,N,E
Viper, Brownspeckled Pit	<i>Trimeresurus labialis</i>	A,N,E
Viper, Cantor's Pit	<i>Trimeresurus cantori</i>	A,N,E
Viper, Whitelipped Pit	<i>Trimeresurus albolabris</i>	A,N

* A = Andamans

N = Nicobar

E = Endemic

? = Occurrence doubtful

¹ Also called Emerald gecko² Also called Banded gecko³ Also called Dwarf gecko⁴ No common name given in Tikader and Das (1985)Loggerhead turtle *Caretta caretta*

APPENDIX 7

THREATENED ANIMALS OF ANDAMAN AND NICOBAR ISLANDS¹

Common name	Scientific name	Distribution ²
MAMMALS		
Dolphin, Common	<i>Delphinus delphis</i>	A, N
Dugong or Sea cow	<i>Dugong dugon</i>	A, N
Macaque, Crab-eating	<i>Macaca fascicularis</i>	N
Pig, Andaman Wild ³	<i>Sus scrofa andamanensis</i>	A
Whale, Blue	<i>Balenoptera musculus</i>	A, N
Whale, Sperm	<i>Physeter catodon</i>	A, N
BIRDS		
Eagle, Whitebellied Sea	<i>Haliaeetus leucogaster</i>	A, N
Falcon, Peregrine	<i>Falco peregrinus</i>	N
Hornbill, Narcondam	<i>Rhyticeros narcondami</i>	A
Megapode	<i>Megapodius freycinet</i>	N
Osprey	<i>Pandion haliaetus</i>	A
Pigeon, Nicobar	<i>Caloenas nicobarica nicobarica</i>	A, N
Teal, Grey or Andaman	<i>Anas gibberifrons albogularis</i>	A
REPTILES		
Crocodile, Estuarine	<i>Crocodylus porosus</i>	A, N
Monitor, Andaman Water	<i>Varanus salvator andamanensis</i>	A, N
Python, Reticulated	<i>Python reticulatus</i>	N
Turtle, Green	<i>Chelonia mydas</i>	A, N
Turtle, Hawksbill	<i>Eretmochelys imbricata</i>	A, N
Turtle, Leathery	<i>Dermochelys coriacea</i>	A, N
Turtle, Olive Ridley	<i>Lepidochelys olivacea</i>	A, N

Sources: Tikader 1983, Rao 1989

1 The term 'threatened' has been used in accordance with the internationally accepted usage coined by the International Union for Conservation of Nature and Natural Resources (IUCN). This term is used for species which are in one of the following categories [Jain and Sastry 1980]:

Endangered: Species/taxa in danger of extinction and whose survival is unlikely if factors threatening them continue to operate.

Vulnerable: Species/taxa likely to move into the endangered category in the near future if threatening factors continue to operate.

Rare: Species/taxa with small world populations that are not at present endangered or vulnerable, but are at risk of becoming so.

2 A = Andamans N = Nicobars

3 A subspecies of Indian wild boar

GREAT NICOBAR BIOSPHERE RESERVE

Biosphere Reserves

The Indian Man and Biosphere (MAB) Programme, modeled after the UNESCO (MAB) Programme, envisages the conservation of representative ecosystems which are genetically and ecologically rich. Such ecosystems are designated Biosphere Reserves, with the "objectives of

- a. conserving the diversity and integrity of plants and animals within natural ecosystems,
- b. safeguarding genetic diversity of species on which their continuing evolution depends,
- c. providing areas for ecological and environmental research, and
- d. providing facilities for education and training." [Ministry of Environment and Forests, 1989c].

The model followed internationally also envisages the designation of several zones in each Biosphere Reserve:

- a. **Natural or Core Zone:** Managed for minimum human interference to serve as a baseline for the biological region; research, educational and training activities are carefully controlled and must be non-manipulative."
- b. **Manipulative or Buffer Zone:** Managed for research, education and training activities, and manipulative methods and techniques are permitted. Traditional activities including timber extraction, hunting, fishing, and grazing are permitted in a controlled manner.
- c. **Reclamation or Restoration Zone:** Managed to study and reclaim lands and natural resources where heavy natural or human-caused alteration has passed ecological threshold or where biological processes have been interrupted or where species have become totally extinct.
- d. **Stable Cultural Zone:** Managed to protect and study ongoing culture and land use practices which are in harmony with the environment. Local residents and their activities be strictly controlled." [Ministry of Environment and Forests, 1989c].

So far, the designation of Biosphere Reserves is not done under any law. It is now proposed to introduce a clause allowing for this, in the Wildlife (Protection) Act of 1972. Alternatively, in the long run, a specific law on this may be considered [Ministry of Environment and Forests, 1989c]. At the moment, management of the Reserves is in the hands of the concerned State Government, while the Central Government extends full financial assistance for approved activities, technical expertise and know-how, and detailed guidelines for management.

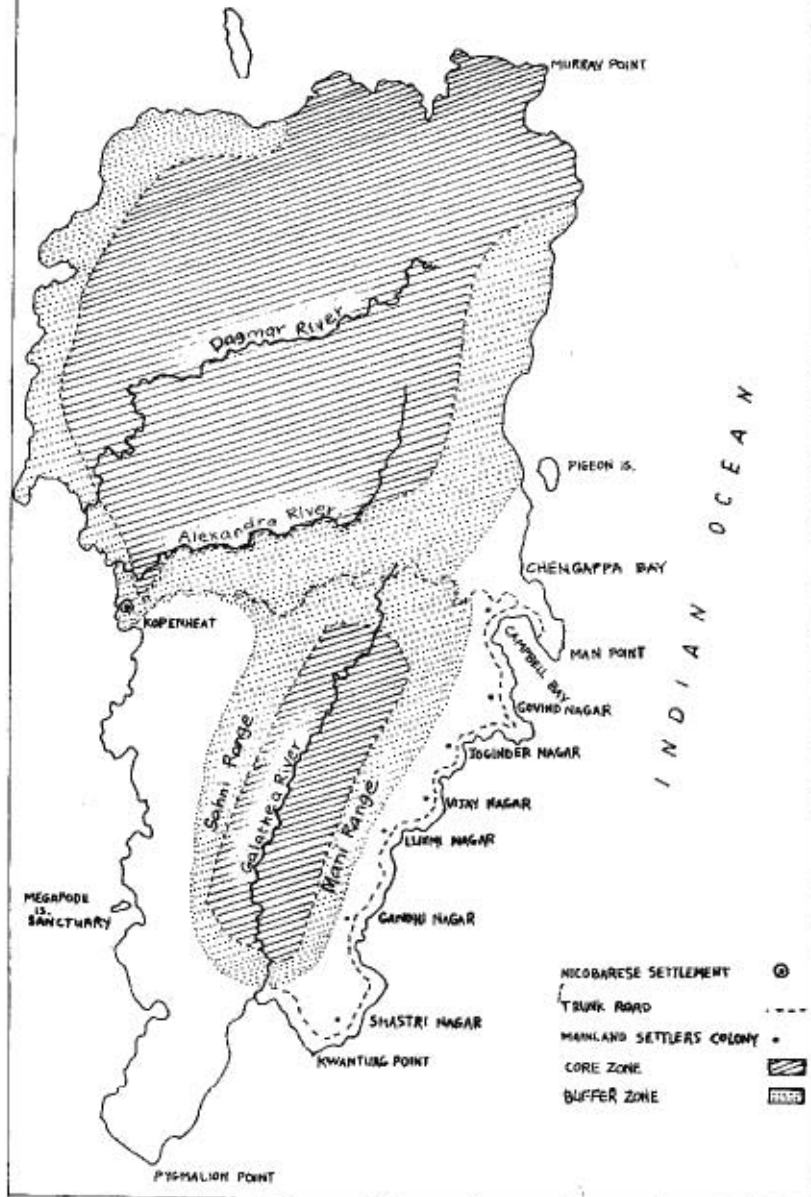
The Great Nicobar Biosphere Reserve

On January 6, 1989, the Ministry of Environment and Forests, Government of India, designated a major part of Great Nicobar Island as a Biosphere Reserve, by Government Order No. J.22010/14/89-CSC [Ministry of Environment and Forests, 1989c]. The Reserve extends, in two parts, over 88,500 ha. (885 sq. km), or about 85% of the Island. The area covered is not part of, nor does it contain, any existing national park or sanctuary, though the designation of the biosphere reserve as a park or sanctuary has been suggested by the Wildlife Institute of India (please see Appendix 9 for the proposal).

Reproduced below are extracts from the Project Document on the Great Nicobar Biosphere Reserve, prepared by the Ministry of Environment and Forests [Ministry of Environment and Forests, 1989a]. The report is based primarily on work done by the Botanical Survey of India.

[*Editorial Note* : Minor editorial changes have been made in the text, which is otherwise reproduced verbatim. For greater details on the summary points made below, please see the original document. An outline map of the Reserve is also included here.]

GREAT NICOBAR BIOSPHERE RESERVE



- NICOBARESE SETTLEMENT 
- TRUNK ROAD 
- MAINLAND SETTLERS COLONY 
- CORE ZONE 
- BUFFER ZONE 

Introduction

Great Nicobar Island, the southern most island of this archipelago and in fact the southern most land piece of India, is situated between 6°45'N and 7°15'N latitudes and 93°38' and 93°55'E longitudes. The island lies about 482 km. south of Port Blair and 145 km. north of the northern tip of Sumatra. The island is about 55 km. long between Murray point in the north to Pygmalion Point (now called Indira Point) in the south. It has a width of about 30 km. in the north but the island narrows down to only about 3 km. in the southern tip. The total geographical area approximates to 1045 sq. km.

Need for Biosphere Reserve

The following is a summary of the justification for establishment of a Biosphere Reserve in this island.

- (1) The island is situated at a phytogeographically strategic point.
- (2) About 85% of primary forest areas of the island are still virgin and rich in species content.
- (3) Endowed with immense genetic resources of wild plant species such as timber trees, fruit trees, ornamental plants, medicinal plants, etc. the island harbours rich genetic germplasm resources.
- (4) About 11% of the vascular flora (so far surveyed) are endemic to these islands.
- (5) About 30% of the flora are extra-Indian i.e. occurring (elsewhere) only in S.E. Asian countries.
- (6) Details of faunistic survey certainly show endemism among animals in the island, as well as their interrelationship with plants.
- (7) About 30 species of plants are rare among the known flora, and are endangered and confined to one or few localities each on this island.
- (8) *Cyathea albo-setacea*, a characteristic tree fern and *Phalaenopsis speciosa*, a beautiful ornamental orchid are endemics, and found only in this and adjacent islands.
- (9) Similarly, some endemic birds are characteristic of the island ecosystem (e.g. the Megapode *Megapodus freycinet nicobariensis*).
- (10) The Shompens, an aboriginal tribe with very limited population, are a source of much valuable information regarding the usefulness of many unknown species.
- (11) Impact of external forces, especially tourism, is practically nil at present.
- (12) Politically the island is at a strategic position, and grave danger looms over the flora or fauna from accelerated developmental activities in the near future.

Zonation of the Reserve

Entire northern part of the island starting from the Alexandra river (west coast) to Chengappa Bay (east-coast) i.e. between 7°N and 7°20'N latitude, and 93°37'E and 93°56' E longitudes as Core Zone I. (Area-520 sq. km. as Core Zone-I and 90 sq. km. as its Buffer Zone). The southern part between the two hilly ranges (Sahni range and Mani range) including the river Galathea (6°60' N and 7°N. latitude and 93°37'E. and 93°56'E longitudes) as Core Zone II. (Area-185 sq.km. as Core Zone-II. and 90 sq.km. as its Buffer Zone). (Please see map for zonation).



PROPOSALS FOR AN IMPROVED WILDLIFE PROTECTED AREA NETWORK IN ANDAMAN AND NICOBAR ISLANDS

In 1984, the Government of India commissioned the Wildlife Institute of India, Dehradun, to evaluate the adequacy of the existing network of wildlife protected areas and to propose a network that covers the range of biological diversity in the country. The Institute's report, released in 1988, includes recommendations for an improved protected area network in each state [Rodgers and Panwar 1988b]. This is based on a biogeographical classification of the country's ecosystems into several distinct zones and provinces [Rodgers and Panwar 1988a].

For Andaman and Nicobar Islands, the report recommends the creation of four new national parks and seven new sanctuaries, upgradation of four existing sanctuaries and three clusters of existing sanctuaries into national park status, extension in area of two national parks, and the clustering of several other existing sanctuaries into compact units for more efficient management. It also suggests that all or part of the tribal reserves in both Andaman and Nicobar be given sanctuary status.

If the suggestions made by the Wildlife Institute of India are accepted, the total area covered by the protected area network in A&N will become 2,31,300 ha. (2313 sq. km.), as against the present 73,311.53 ha. (733.12 sq. km.). This will be 27.8% of the total area of the union territory, compared to about 5.8% at present.¹

(Editorial note: The text given below is reproduced almost verbatim from Rodgers and Panwar (1988a); any changes made are only for the sake of clarity. Spellings of existing national parks or sanctuaries have been changed, wherever necessary, according to the relevant notifications, to match the usage in the rest of the directory. Our own comments are given in footnotes.)

BIOGEOGRAPHICAL DIVISIONS

The zone is split into two distinct units:

- 9A Andaman Islands (with Barren and Narcondam Islands)
- 9B Nicobar Islands

The Andaman group is by far the largest, with 324 islands totaling 6,491 sq km. Most of the land mass is taken up by 'Great Andaman', which is really 5 islands separated by creeks. Little Andaman is some distance to the south. For conservation planning several sub-divisions or biogeographic regions are recognized. These are:

1. North Andaman
2. Middle Andaman
3. South Andaman, Baratang and Rutland
4. Little Andaman
5. Ritchie Archipelago (geologically recent with calcium rich soils)
6. Off-shore Volcanics
7. East Coast Islands
8. West Coast Islands

The Nicobar group is much smaller, with only 24 islands. Three sub-divisions are recognized:

- 1) North group - Car Nicobar and Battimalv
- 2) Teresa, Tillongchang, Kamorta etc.
- 3) Little Nicobar and Great Nicobar.

CONSERVATION PROPOSALS

Proposals discussed in this report are of four types:

- a: those designed to upgrade the status of existing Protected Areas (PAs)
- b: the creation of major conservation units in each province
- c: the establishment of smaller representative PAs in each biogeographic sub-division.
- d: general suggestions for increased conservation efficiency.

These proposals are detailed below:

- a) Only 3 tiny islets out of 97 protected areas² are parks (and they total less than 1 sq km); all others are sanctuaries. Some of these do have values of international significance and warrant full park status. These are
 - : **Narcondam Island** (7 sq km), the only area for Narcondam hornbill.
 - : **North Reef Island** (3 sq km), with the largest population of Grey or Andaman teal, plus a Saltwater crocodile population.³
 - : **South Sentinal Island** (2 sq km), one of two islands⁴ which may still have robber crabs, plus a very large green turtle nesting beach.
 - : **Barren Island** (2 sq km), an isolated volcano, with little closed forest cover. This is at present a sanctuary which is listed as protecting "feral goats"! There is NO merit in protecting ecologically disastrous goats. Their impact on natural values should be investigated and, if necessary they should be removed and the island's ecological succession monitored.
 - : It is proposed to give park status to all islets in the west coast **Shearme group** (11), the northern **Landfall group** (4) and the east coast **Table - Brush group** (12) as representatives of their respective situations.⁷
- b) Three major protected area units are recommended:
 - i) In the Middle Andamans, the area around **Mount Diavolo** to the east of the Grand Trunk Road is proposed as a 200 sq km park with a surrounding 200 sq km sanctuary buffer. The PA should include the mountain peak and sizeable areas of coastal forest.
 - ii) In the **Little Andamans**, a 300 sq km National Park is proposed for the entire south-western half of the island. This area of the Little Andamans may be the largest extent of undisturbed forest left in the whole Andaman group. Specific values include saltwater crocodile, turtle beaches, robber crabs etc. on the coast, and many of the Andaman endemic bird species including the Grey or Andaman teal in the forest. A core and buffer zone arrangement will be necessary to accommodate the few Onge tribe people who still live in these forests.
 - iii) In the Nicobars, the northern portion of Great Nicobar and all Little Nicobar should be protected as follows. All of **Little Nicobar** and surrounding islets (Pulo Milo, Trees, Trak, Mecen) to be a National Park (160 sq km). In Great Nicobar the northern area, north of **Casuarina Bay-Dogma River** and **Mount Thullier** to be a wildlife sanctuary (200 sq km), with a core area around Mount Thullier and Laful to be a 100 sq km National Park.⁵
- c) Representative protected areas are proposed as follows:
 - 1) North Andamans
 - : The **northern-most peninsula** past Shyam Nagar as a WLS.
 - : A proportion of the **central ridge** from Nischintapur to Swarajgram as a WLS.
 - : An area of **mangrove** in the south-west near Austin to Kishorinagar as a WLS.
 - 2) South Andamans
 - : **Extension** of Mount Harriett NP north to cover all of the small peninsula, an extra 70 sq km.⁶
 - : Creation of a sanctuary in **West Rutland** from Mount Ford, and to act as a buffer for the Marine National Park.

- 3) Ritchie's Archipelago : To add adjacent **Outram Island**, which has 20 sq km of almost intact forest, to the existing **Button National Park** of 1 sq km.
- 4) Central Nicobars : To create a 50 sq km sanctuary on **Kamorta Island**.
- d) General suggestions
- i) The present number of tiny individual island sanctuaries be amalgated into ten logical groups for more efficient administration. Suggestions are:

<i>West Coast</i> ⁷	<i>North East, South Coast</i> ⁷
Shearme Group of 11 islands (to be Park)	Landfall Group of 4 islets (to be Park)
Interview Islet Groups of 10 islets (note N & S Reef become Parks)	Table - Brush Group of 12 islets (to be park)
Spike Group of 6 islets	Kyd Group 4 islets
Defence Group of 4 islets	Sound Islet Group 12 islets
	Oyster Group 3 islets
	Cinque Island Group 6 islets

ii) The larger block of mangroves be surveyed with a view to bringing a greater proportion into the protected area network.

iii) The forest territorial divisions develop a much larger number of 'preservation plots' in natural forest communities.

iv) The status of the tribal reserves to be clearly thought out and recommendations acted upon. There are 742⁸ sq km of Jarawa Reserve in Middle and South Andamans. There are (or were!) Reserves for the Onge in Little Andaman and Shompen in Great Nicobar, but these have fallen into "disuse".

Giving all or part of these reserves sanctuary status under the wildlife act can allow traditional people to pursue their way of life, but gives a strong legal deterrent to any form of non-compatible land use.

DISCUSSION

Priorities

The scale of biological values in the Andaman and Nicobar Islands is so great that all protected area proposals must be seen as a major priority. However it is still possible to see proposals that are of extreme significance for protected area planning. Priority classes are as follows.

<i>National Priority</i>	<i>Zonal Priority</i>	<i>State Priority</i>
(Andamans)		
North Andaman Peninsula WLS	North Andaman Ridge WLS	None
Mount Diavolo NP & WLS	South West Mangrove WLS	
Mount Harriett NP (Extension)	Barren Island NP	
West Rutland NP	Landfall Island Group NP	
Little Andaman NP	Table - Brush Group NP	
South Sentinal NP	Shearme Island Group NP	
Outram & Button Island NP		
Narcondam Island NP		
North Reef Island NP		
(Nicobars)		
Mount Thullier NP	Kamorta WLS	
Great Nicobar WLS		
Little Nicobar NP		

Management Inputs

This report is not primarily concerned with management issues. However the scale of resource values in the Andaman and Nicobar is so great that some comment on important management issues must be made.

- a) **Outposts.** The placing of outposts of security personnel on remote islands does create serious impact on natural resources. Where possible such outposts should be manned by wildlife staff.
- b) **Patrolling.** The wildlife wing must be given greater marine patrolling ability with large and small boats. Wildlife personnel should be placed on all police, coastguards, forest patrolling vessels.
- c) **Tourist rights within National Parks.** Tourism in NPs must be regulated. Coral collecting, beach camping etc. must be prevented.
- d) **Hunting.** Hunting, especially by Karen people, is an increasing problem which requires strict control.
- e) There is an immediate need for more wildlife staff and management resources to instigate proper control and monitoring activities.

NOTES

- 1 The protected areas of A&N Islands cover substantial stretches of marine waters also. Discounting this, the land mass under national parks and sanctuaries at present is about 5.80% of the total area of the union territory. Unfortunately it is not clear from the WII report, how much area should similarly be discounted from its total. The proportion of protected land area to total U.T. area, as proposed by WII, will correspondingly be smaller.
- 2 It is unclear why the figure of 97 has been used. The total number of national parks and sanctuaries in A&N is 100. Of these, 96 are full islands, two (Marine National Park and Salt Water Crocodile Sanctuary) are a mix of islands, marine waters, and coastal strips, and two (Mount Harriett and Saddle Peak National Parks) are parts of the 'mainland' islands of Great Andaman. The "3 tiny islets" being referred to are probably the North, Middle, and South Button National Parks.
- 3 Also a stronghold of the Water monitor.
- 4 The other being Great Nicobar Island [Tikader, Daniel, and Rao 1986].
- 5 The northern portion of Great Nicobar Island has recently been designated a Biosphere Reserve [Ministry of Forests and Environment 1989c] However, this does not accord it any legal status, and the implications of this declaration, in terms of protection, are as yet unclear. See Appendix 8.
- 6 The Forest Department of A&N is proposing extension of Mount Harriett National Park on all but the northern side [PCCF fax 1991] (please see directory sheet and maps of Mount Harriett National Park, pp. 49-52).
- 7 The report does not specify which islands comprise the Groups listed. We can deduce, on the basis of our maps, that their composition is as follows :

Shearme Group	:	Mayo, Paget, Point, Reef, Shearme, West, White Cliff, Rowe, Shark, and Kwangtung Islands (11th island not clear).
Interview Group	:	Surat, Spike-1, Roper, Ranger, Entrance, Buchanan, Bondoville, Sea Serpent, Snake-1, and Benett Islands.
Spike Group	:	Spike-2, Bingham, Bluff, Mangrove, Stoat, and Talabaicha Islands.
Defence Group	:	Clyde, Defence, Montogemery, and Patric Islands.
Landfall Group	:	Landfall, Chanel, East, and Peacock Islands.
Table-Brush Group	:	Brush, Table (Delgarno), Table (Excelsior), Jungle, North, Ox, Ross, Temple, Tree, Trilby, Turtle, and Wharf Islands.
Kyd Group	:	Duncan, James, Kyd, and Potanma Islands.
Sound Group	:	Dot, Bamboo, Blister, Curlew, Gander, Goose, Oliver, Oyster-1, Swamp, Curlew (B.P.), Orchid, and Girjan Islands.
Oyster Group	:	Cone, Oyster-2, and Parkinson Islands.
Cinque Group	:	Cinque (North and South), Passage, Sisters, North Brother, and South Brother Islands.
- 8 The area of the Jarawa reserve as notified is 63886 ha.

REFERENCES

References for Text

- Abdulali, H. (1971) : 'Narcondam Island and Notes on Some Birds from the Andaman Islands', *JBNHS* Vol. 68 (2)
- Abdulali, H. (1974) : 'Fauna of Narcondam Island', *JBNHS* Vol. 71 (3)
- Acharya, S. (1991): 'Barren Island: Activities at a Glance', unpublished report appended to letter to the Lt. Governor, A&N Islands, dt. 29 June 1991
- Ali, Salim and Ripley, S. Dillon (1983) : *A Pictorial Guide to Birds of the Indian Subcontinent*, Oxford University Press and BNHS, Delhi
- Anon. (1981): 'Travels in the Andaman and Nicobar Islands - 1979', *Hamadryad*, January 1981
- Anon. (1983): *Hundred Years of Forestry in Andamans*, Forest Department, Andaman and Nicobar Islands
- Anon. (1986): *An Integrated Environmentally Sound Development Strategy for the Andaman and Nicobar Islands*, Planning Commission, Government of India
- Anon. (1988): *Island Development Possibilities: Report of the Expert Group constituted by the Island Development Authority: Volume - II*, The Steering Committee of the Island Development Authority, Planning Commission, Government of India
- Anon. (1989): *The State of Forest Report: 1989*, Forest Survey of India, Government of India
- Anon. (1991): 'Scientists Visit Barren Island Volcano', *The Daily Telegrams*, Port Blair, 28 June, 1991
- Awaradi, S.A. (1990): *Computerised Master Plan (1991-2021) for Welfare of Primitive Tribes of Andaman and Nicobar Islands*, A&N Administration, Port Blair
- Balakrishnan, N.P., and Rao M.K. Vasudeva (1983): 'Dwindling Plant Species of Andaman and Nicobar Islands' in Jain, S.K. and Rao, R.R. (eds.) : *An Assessment of Threatened Plants of India*, Botanical Survey of India, Calcutta
- Bhaskar, S. (undated): 'Sea Turtle Survey in the Andaman and Nicobars' (mimeo)
- Biswas, B. (1984): 'Some Notes on the Reptiles of the Andaman and Nicobar Islands', *JBNHS* Vol. 81 (2)
- Biswas, B. (1985): 'Comments on Ripley's *A Synopsis of Birds of India and Pakistan - Second ed. (1982)*', *JBNHS* Vol. 82 (1)
- Bose, Ashish (1991): *Population of India, 1991 Census Results and Methodology*, B.R. Publishing Corporation, Delhi
- Butler, A.L. (1899) : 'Birds of the Andaman and Nicobar Islands', *JBNHS* Vol. 12 (2,3,4)
- Census 1981: *Census of India 1981, A Portrait of Population: Andaman and Nicobar Islands*, Directorate of Census Operations, A&N Islands, Government of India
- Champion, H.G. and Seth, S.K. (1968): *A Revised Survey of the Forest Types of India*, Government of India
- Chana, S.S. Pers. comm. (1989): 'Letter No. CWLW/G/22/553 from S.S. Chana, PCCF, A&N Islands, Dt. 19 July 1989
- Chana, S.S. (undated): 'Environment and its Management — Andaman and Nicobar Islands' (mimeo)
- Chandra, V. and Gaur, R.C. (1988): Name Changes in Common Indian Plants, *Indian Forest Records* (New Series): Botany Vol. 7 (1)
- Chaturvedi, N.C. (1982): 'Butterflies from Andaman Islands with Some New Records', *JBNHS* Vol. 79 (3)
- Chaudhuri, A.B. (1987): 'Biogeography of A&N Islands Part I and II' (Mimeo)
- Council for Scientific and Industrial Research (1986): *The Useful Plants of India*, Publications and Information Directorate, CSIR, New Delhi
- Daniel, J.C. (1983): *The Book of Indian Reptiles*, BNHS, Bombay
- Das, I. (1985): *Indian Turtles: A Field Guide*, World Wildlife Fund - India (Eastern Region), Calcutta
- Davies, A.T. and Altevogt, R. (1976): 'Giant Turtles and Robber Crabs of the South Sentinel', *Yojana* Vol. 20 (13)
- Dir. of Information (1989): 'Ocean Odour : Andaman and Nicobar Islands' (brochure), Directorate of Information, Publicity and Tourism, A&N Administration
- Dixit, R.D (1984) : *A Census of the Indian Pteridophytes*. Flora of India Series -4, Botanical Survey of India, Dept. of Environment, New Delhi

- Dorairaj, K., Soundarajan, R., and Singh N. T. (1987); *Corals of Andaman and Nicobar Islands: A Status Report*, Central Agricultural Research Institute
- Ellis, J.L. (1987): 'The Pteridophytic Flora of Andaman and Nicobar Islands', *Journal of the Andaman Science Association* Vol. 3 (2)
- FD (undated): 'Marine National Park, Wandoor', Forest Department, A&N Islands
- fv : Field visitors to national parks and sanctuaries
- Ghorpade, Pres. Comm. (1991): Personal Communication from Kumar Ghorpade, Editor, *Colemania*, 14 February, 1991
- Goel, A.K. and Rao, M.K.V. (1988): 'A New Species of Secamone (Asclepiadaceae) from South Andamans (India)', *JBNHS* Vol. 85 (1)
- Het, Ram, Pers. comm. (1991): Letter No. CWLW/WL/22/410, dt. 5 July, 1991, from Shri Ram Het, Chief Wildlife Warden, A&N Islands
- Hill, J.E. (1971): 'A Note on Pteropus (Chiroptera : Pteropidae) from the Andaman Islands', *JBNHS* Vol. 68 (1)
- Hussain, S.A. (1984): 'Some Aspects of the Biology and Ecology of Narcondam Hornbill (*Rhyticeros narcondami*)', *JBNHS* Vol. 81 (1)
- Hyd. map: Maps of Bay of Bengal, India - Andaman Islands, Naval Hydrographic Office, Dehradun
- IDA (1989): Minutes of the Fifth Meeting of the Island Development Authority, Car Nicobar, 6 January, 1989
- IDA (1991): Draft Minutes of the Meeting of the Expert Group on Primitive Tribes of A&N Islands, constituted by the Chairman, Island Development Authority, June 20, 1991
- Indian Board for Wildlife (1983): *Eliciting Public Support for Wildlife Conservation*, Report of the Task Force, Indian Board for Wildlife, Department of Environment, Government of India, New Delhi.
- ITDC (undated): 'Andaman and Nicobar Islands', India Tourism Development Corporation, New Delhi (brochure)
- Jain, S.K. and Sastry, A.R.K. (1980): *Threatened Plants of India: A State of the Art Report*, Botanical Survey of India, Calcutta
- Jain, S.K. and Rao, R.R. (eds.) (1983): *An Assessment of Threatened Plants of India*, Botanical Survey of India, Calcutta
- Khan, I.H. (undated): 'Wildlife and its Management in Andaman and Nicobar Islands' (mimeo)
- Khan, I.H. (1983): 'Wildlife', in Anon (1983)
- Khan, I.H., Pers. comm. (1991): Oral communication with Shri I.H. Khan, former DCF (WL), Port Blair, in Delhi in May 1991
- Kothari, A. (1989): 'Andaman and Nicobar: Colonisation of the Final Frontier', in Bagla, P. and Menon, S. (ed.): *Ravaged Forests and Soiled Seas*, Kalpavriksh, New Delhi
- Kothari, A., Pande, P., Singh, S., and Variava, D. (1989): *Management of National Parks and Sanctuaries in India: A Status Report*, Indian Institute of Public Administration, N. Delhi
- Map: Map sent by Andaman and Nicobar Forest Department
- McVean, D.N. (1976): *Report on Land Use in the Andaman and Nicobar Islands*, International Union For Conservation of Nature and Natural Resources
- met: *Climatological Tables of Observations in India (1960)* (Abridged), India Meteorological Department
- Ministry of Environment and Forests (1989a): *Great Nicobar Biosphere Reserve*, Project Document - 11, Government of India, June 1989
- Ministry of Environment and Forests (1989b): *North Andaman Biosphere Reserve*, Project Document - 13, Government of India, June 1989
- Ministry of Environment and Forests (1989c): *Biosphere Reserve in India*, Government of India, June 1989
- Ministry of Labour (1988): *Group Constituted to Look into the Unemployment Problems in Andaman and Nicobar and Lakshadweep Islands: Report on Short-term Measures*, Government of India, June 1988
- Mohanty, S. (1991): 'WIMCO to Close Match Unit at Port Blair', *Sunday Observer*, July 7, 1991
- N A : National Atlas Organization, Plate 22 - Port Blair

- Nair, C.T.S. (1989): 'Environmental Issues in Forest Land Use in the Andaman Islands', in Saldanha, Cecil J. (1989): *Andaman, Nicobar and Lakshadweep: An Environmental Impact Assessment*, Oxford and IBH Publishing Co. Pvt. Ltd., N. Delhi
- Nair, Dr. Sathis Chandran (1984); *Natural Resources Conservation and Development In Andaman and Nicobar Islands*, Department of Environment, Government of India
- Narayanan, Pers. comm. (1990): Oral communication with A.K. Narayanan, Dir. (C.S.), Ministry of Environment and Forests, Government of India
- notif: Gazette notification of a park or sanctuary.
- Oka, A.G. (undated): 'Timber Extraction in Andaman and Nicobar Islands', Ministry of Environment and Forests, Government of India (mimeo)
- Osmaston, B.B. (1905): 'A visit to Narcondam', *JBNHS* Vol. 16 (4)
- Osmaston, B.B. (1906): 'Notes on Andaman Birds with Accounts of the Nidification of Several Species Whose Nests and Eggs have not been Hitherto described', *JBNHS* Vol. 17 (1,2)
- Osmaston, B.B. (1907): 'A Visit to South Sentinel Island', *JBNHS* Vol. 18 (1)
- Osmaston, B.B. (1908): 'A Visit to Barren Island in the Andamans', *JBNHS* Vol. 18 (2)
- Osmaston, B.B. (1932): 'Some Andaman Birds', *JBNHS* Vol. 35 (4)
- Pandit, T.N. (1991): 'Close Encounters with the Stone Age', *Times of India Sunday Review*, 28 April 1991
- Parida, M. (1991): 'The Dumb Mountains Speak', *Times of India Sunday Review*, 7 July 1991
- Parkinson, C.E.(1923): *A Forest Flora of the Andaman Islands*. Government Central Press, Simla. Reprint (undated) Bhishen Singh Mahendra Pal Singh, Dehradun
- PCCF fax (1991): Fax message from the PCCF, A&N Islands, to Shri Shekhar Singh, Advisor (E&F), Planning Commission, 5 July 1991
- Prater, S.H. (1980): *The Book of Indian Animals*, BNHS, Bombay
- qa: Answers to various queries, provided by the State Wildlife Wing
- Q1: Questionnaire I filled and returned by the wildlife authorities of each national park and sanctuary
- Rajan and Poddar, Niresh (1988); *Corals*, SANE Awareness Series; INTACH, Andaman and Nicobar Chapter, and Society for Andaman and Nicobar Ecology, Port Blair
- Rao, N.V. Subba (1989): 'Fauna of Andaman and Nicobar Islands: Diversity, Endemism, Endangered Species and Conservation Strategies', in Saldanha, Cecil J. (1989): *Andaman, Nicobar and Lakshadweep: An Environmental Impact Assessment*, Oxford and IBH Publishing Co. Pvt. Ltd., N. Delhi
- Rodgers, W.A. and Panwar, H.S. (1988a): *Planning a Wildlife Protected Area Network in India Vol. 1: The Report*, Wildlife Institute of India, Dehra Dun
- Rodgers, W.A. and Panwar, H.S. (1988b): *Planning a Wildlife Protected Area Network in India Vol. 2: State Summaries*, Wildlife Institute of India, Dehra Dun
- Roy, S.B. and Mathews, B.A. (1983): 'A Glance at the Past History of Andaman Forests', in Anon (1983)
- Saldanha, C.J. (1984): *Flora of Karnataka Vol. 1*, Oxford University Press and IBH Publishing Co.
- Saldanha, C.J. (1987); *The Andaman and Nicobar Islands: An Environmental Impact Assessment*, Centre for Taxonomic Studies, St. Joseph's College Bangalore
- Singh, N. Iqbal (1978): *The Andaman Story*, Vikas Publishing House Pvt. Ltd., N. Delhi
- Singh, V.P., Mall, L.P., Garge, A., and Pathak, S.M. (1986): 'Some Ecological Aspects of Mangrove Forests of Andaman Islands', *JBNHS* Vol. 83 (3)
- Sinha, B.P. (1991): 'Forestry in Andaman and Nicobar Islands', *Sunday Observer*, July 7, 1991
- Soundararajan (1989): *Crown of Thorns*, SANE Awareness Series 3, INTACH, A&N Chapter, and Society for Andaman and Nicobar Ecology, Port Blair
- Thothathri, K.(1960): 'Studies on the Flora of the Andaman Islands', *Bulletin of the Botanical Survey of India* Vol. 2 (3&4)
- Thothathri, K. (1962): 'Contributions to the Flora of the Andaman and Nicobar Islands', *Bulletin of the Botanical Survey of India* Vol. 4 (1-4)
- Tikader, B.K. (1983): *Threatened Animals of India*, Zoological Survey of India, Calcutta

- Tikader, B.K. and Das, A.K. (1985): *Glimpses of Animal Life of Andaman and Nicobar Islands*, Zoological Survey of India, Calcutta
- Tikader, B.K., Daniel, A. and Rao, N.V. Subba (1986): *Sea Shore Animals of A&N Islands*, Zoological Survey of India, Calcutta
- Tp : Survey of India topographical sheet
- Upreti, D.K. and Singh, A. (1988): 'Lichen Family *Collembataceae* from Andaman Islands, India', *JBNHS* Vol. 85 (1)
- Verma, I.C. (1989): *Saving the Tribal Groups of Andaman and Nicobar Islands from Extinction: An Action-Oriented Research Project*, Island Development Authority, N. Delhi
- WP: Forest Division Working Plan
- Whitaker, R. (1985): *Endangered Andamans*, Environmental Services Group, WWF-India, and MAB India, Department of Environment
- Whitaker, Pers. comm. (1989): Personal communication from Romulus Whitaker, 10 September, 1989
- Whitaker, R. (undated): Herpetological Survey in the Andamans (mimeo)
- Wood, E. (1989): *Corals: Wandoor Marine National Park*, SANE Awareness Series 4, INTACH, A&N Chapter, September 1989

Sources of Information for Maps

The maps of the Union Territory of Andaman and Nicobar Islands are based on the National Atlas of the Government of India. The map of each national park or sanctuary has been made from one or more sources. The two main sources used are Survey of India topographical sheets and Naval Hydrographic Maps, relevant for each area. Of these only the Survey of India topographical sheets are restricted. The scale of all the topographical sheets used is 1:50,000, while that of the Naval Hydrographic Maps used is 1:150,000, unless otherwise specified.

Boundaries of each of the maps drawn, as also place-name spellings, were also taken from the gazette notifications of each park and sanctuary. The notification numbers for the 15 parks and sanctuaries for which directory sheets are given, appear in their respective sheets. The other 85 sanctuaries were all declared by one notification, No. CF/WL/50-Vol.1, dated 19 January, 1987.

Union Territory Maps

1. National Atlas of India, Plate 22: Port Blair, National Atlas Organisation, Government of India, 1977
2. Location map of National Parks and Sanctuaries in Andaman and Nicobar Islands, Wildlife Wing, A&N Forest Department

Directory Sheet Maps

Marine National Park

1. Tp nos.: 87A/10 - 1st ed. (1979); 87A/11 - 1st ed. (1986)
2. Hydrographic Map no.: 405 (1976)

Mount Harriett National Park

1. Tp no.: 87A/9 - 1st ed. (1986); 87A/10 - 1st ed. (1979); 87A/13 - 1st ed. (1986); 87A/14 - 1st ed. (1979)
2. Hydrographic Map no.: 404 (1976)

Saddle Peak National Park

1. Tp no.: 86G/4 - 1st ed. (1979)
2. Hydrographic Map no.: 402 (1972)

North Button Island, Middle Button Island and South Button Island National Parks

1. Tp no.: 86H/3 - 1st ed. (1978); 86H/4 - 1st ed. (1979)
2. Hydrographic Map no.: 404 (1976)

Barren Island Sanctuary

1. Tp no.: 86H/5 - 1st ed. (1978)

Battimalv Island Sanctuary

1. Tp no.: 87C&D - 1st ed. (1977)
2. Hydrographic Map no.: 4004 (1983)*

Interview Island and South Reef Island Sanctuaries

1. Tp no.: 86D/9 - 1st ed. (1978)
2. Hydrographic Map no.: 403 (1973)

Megapode Island Sanctuary

1. Tp no.: 88F/9 & 13 - 1st ed. (1985)
2. Hydrographic Map no.: 409 (1976)

Narcondam Sanctuary

1. Tp no.: 86K/3 - 1st ed. (1977); 86K/7 - 1st ed. (1977)

North Reef Island and Latouche Island Sanctuaries

1. Tp no.: 86C/12 - 1st ed. (1978)
2. Hydrographic Map no.: 402 (1972)

Salt Water Crocodile Sanctuary

1. Tp no.: 87A/10 - 1st ed. (1979)
2. Hydrographic Map no.: 405 (1976)

South Sentinal Sanctuary

1. Tp no.: 87B/1 - 1st ed. (1985)
2. Hydrographic Map no.: 405 (1976)

Tillongchang Island Sanctuary

1. Tp no.: 87H/10 - 1st ed. (1986)
2. Hydrographic Map no.: 408 (1976)

Other Maps**Plate - 1****Chanel Island, East Island, Landfall Island, and Peacock Island Sanctuaries**

1. Tp no.: 86C/14 - 1st ed. (1980); 86G/2 - 1st ed. (1981)
2. Hydrographic Map no.: 402 (1972)

Plate - 2**Mayo Island, Paget Island, Point Island, Reef Island, Shearme Island, West Island and White Cliff Island Sanctuaries**

1. Tp no.: 86C/14 - 1st ed. (1980); 86C/15 - 1st ed. (1980)
2. Hydrographic Map no.: 402 (1972)

Plate - 3**Brush Island, Table (Delgarno) Island, Table (Excelsior) Island, Jungle Island, North Island, Ox Island, Ross Island, Temple Island, Tree Island, Trilby Island, Turtle Islands and Wharf Island Sanctuaries**

1. Tp no.: 86C/15 - 1st ed. (1980); 86G/3 - 1st ed. (1979)
2. Hydrographic Map no.: 402 (1972)

Plate - 4**Kwangtung Island, Rowe Island, and Shark Island Sanctuaries**

1. Tp no.: 86C/16 - 1st ed. (1979)
2. Hydrographic Map no.: 402 (1972)

Plate - 5**Bamboo Island, Blister Island, Curlew Island, Dot Island, Gander Island, Goose Island, Oliver Island and Oyster-1 Island Sanctuaries**

1. Tp no.: 86C/16 - 1st ed. (1979); 86D/13 - 1st ed. (1981)
2. Hydrographic Map no.: 402 (1972)

Plate - 6**Benett Island, Bondoville Island, Buchanan Island, Curlew (B.P.) Island, Dottrel Island, Egg Island, Entrance Island, Girjan Island, Orchid Island, Ranger Island, Roper Island, Sea Serpent Island,**

Snake-1 Island, Spike Island, Surat Island and Swamp Island Sanctuaries

1. Tp no.: 86D/9 - 1st ed. (1978); 86D/13 - 1st ed. (1981)
2. Hydrographic Map no.: 403 (1973); 4008 (1982)** plan of 4008 (1982)***

Plate - 7

Elat Island, Hump Island, Mask Island, and Tuft Island Sanctuaries

1. Tp no.: 86D/10 - 1st ed. (1978)
2. Hydrographic Map no.: 403 (1973)

Plate - 8

Cone Island, Oyster-2 Island, and Parkinson Island Sanctuaries

1. Tp no.: 86D/15 - 1st ed. (1980)
2. Hydrographic Map no.: 403 (1973)

Plate - 9

Bingham Island, Bluff Island, Mangrove Island, Spike-2 Island, Stroat Island, and Talabaicha Island Sanctuaries

1. Tp no.: 86D/11 - 1st ed. (1978); 86D/12 - 1st ed. (1978); 86D/15 - 1st ed. (1980)
2. Hydrographic Map no.: 404 (1976)

Plate - 10

Arial Island and Belle Island Sanctuaries

1. Tp no.: 86D/12 - 1st ed. (1978); 86D/16 - 1st ed. (1980)
2. Hydrographic Map no.: 404 (1976)

Plate - 11

East or Inglis Island Sanctuary

1. Tp no.: 86H/4 - 1st ed. (1979)
2. Hydrographic Map no.: 404 (1976)

Plate - 12

Duncan Island, James Island, Kyd Island, Pitman Island, and Potanma Islands Sanctuaries

1. Tp no.: 86D/16 - 1st ed. (1980); 87A/9 - 1st ed. (1986); 87A/13 - 1st ed. (1986)
2. Hydrographic Map no.: 404 (1976); 4002 (1961)*

Plate - 13

Clyde Island, Defence Island, Montogemery Island, Patric Island and Sandy Island Sanctuaries

1. Tp no.: 87A/9 - 1st ed. (1986)
2. Hydrographic Map no.: 404 (1976)

Plate - 14

Sir Hugh Rose Island Sanctuary

1. Tp no.: 87E/1 - 1st ed. (1986)
2. Hydrographic Map no.: 404 (1976)

Plate - 15

Snake-2 Island Sanctuary

1. Tp no.: 87A/10 - 1st ed. (1979); 87A/14 - 1st ed. (1979)

Plate - 16

Cinque Islands, Passage Island and Sisters Islands Sanctuaries

1. Tp no.: 87A/11 - 1st ed. (1986); 87A/12 - 1st ed. (1985)
2. Hydrographic Map no.: 405 (1976)

Plate - 17

North Brother Island and South Brother Island Sanctuaries

1. Tp no.: 87B/9 - 1st ed. (1986)
2. Hydrographic Map no.: 405 (1976)

1:25,000

** 1:35,000

*** 1:12,500

A SELECT BIBLIOGRAPHY ON ANDAMAN AND NICOBAR ISLANDS

[Note: This Bibliography has been extracted primarily from C.J. Saldanha's *A Select Bibliography on the Andaman and Nicobar Islands for An Environmental Impact Assessment*, Centre for Taxonomic Studies, Bangalore, 1988]

ACRONYMS AND CODES USED IN BIBLIOGRAPHY

ACRONYM	EXPANSION
BBSI	Bulletin of the Botanical Survey of India
BCMFRI	Bulletin of the Central Marine Fisheries Research Institute
BIM	Bulletin of the Indian Museum
CMFRI-N	Central Marine Fisheries Research Institute—Newsletter
HYFA	Hundred Years of Forestry in Andamans (1883-1983), Forest Department, Andaman and Nicobar Islands
IJMS	Indian Journal of Marine Sciences
JASA	Journal of the Andaman Science Association
JASB	Journal of the Asiatic Society of Bengal
JBNHS	Journal of the Bombay Natural History Society
JETB	Journal of Economic and Taxonomic Botany
JIAS	Journal of the Indian Anthropological Society
MIM	Memoirs of the Indian Museum
PASB	Proceedings of the Asiatic Society of Bengal
PIAS(P&AS)	Proceedings of the Indian Academy of Sciences (Plant and Animal Sciences)
PISC	Proceedings of the Indian Science Congress
PUSNHM	Proceedings of the United States Natural History Museum
PZSL	Proceedings of the Zoological Society—London
RIM	Records of the Indian Museum
RZSI	Records of the Zoological Survey of India

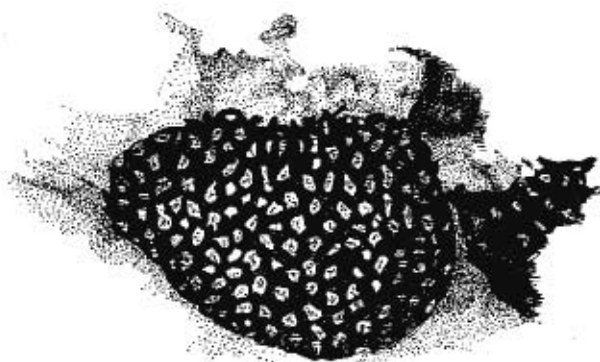
- Abdulali, H. (1964): 'The Birds of The Andaman & Nicobar Islands', *JBNHS* Vol. 61
- Abdulali, H. (1966): 'More New Races of Birds from the Andaman and Nicobar Islands', *JBNHS* Vol. 63
- Abdulali, H. (1967): 'The Birds of the Nicobar Islands with Notes on Some Andaman Birds', *JBNHS* Vol. 64 (2)
- Abdulali, H. (1979): 'Birds of Great and Car Nicobar with Some Notes on Wildlife Conservation in the Islands', *JBNHS* Vol. 75 (3)
- Abdulali, H. (1981): 'Additional notes on Andaman Birds', *JBNHS* Vol. 78 (1)
- Abidi, S.A.H. (1979): *Sea Wealth Around Us*, Andaman and Nicobar Administration
- Annandale, N. (1905): 'Addition to the Collection of Oriental Snakes in the Indian Museum: 11 Specimens of Andaman and Nicobars', *JASB* Vol. 1
- Annandale, N. and Hora, S.L. (1925): 'Fresh Water Fish from the Andaman Islands', *RIM* Vol. 27 (2)
- Anon. (1859): 'Zoology of the Andaman Island', *Zoologist* Vol. 17
- Anon. (1978): 'The Vanishing Turtle', *CMFRI-N* Vol. 7
- Anon. (1980): 'Special Number on Zoology of Andaman and Nicobar Islands', *RZSI* Vol. 77 (1-4)
- Anon. (1983): *Hundred Years of Forestry in Andamans (1883-1983)*, Forest Department, Andaman and Nicobar Islands
- Anon. (1983): *Red Oil Palm Plantation in the Andaman and Nicobar Islands—Environmental Assessment*, Department of Environment, Government of India (Mimeo)
- Anon. (1983): *Report of the Project for Formulating a Land Evaluation Survey of Andaman and Nicobar Islands*, Department of Environment, Government of India

- Anon. (1985): *Environmental Problems of the Marine and Coastal Areas of India : National Report* (No. 59), United Nations Environment Programme
- Anon. (1985): *Review of Management Practices in the Forests of Andaman and Nicobar Islands*, Forest Department, Port Blair
- Anon. (1986): *The Useful Plants of India*, Publications and Information Directorate, Council of Scientific and Industrial Research, New Delhi
- Anon. (1987): *Corals of Andaman and Nicobar Islands*, Central Agricultural Research Institute, Port Blair
- Anon. (1987): *Land Use Patterns in the Andaman and Nicobar Islands*, Planning Commission, New Delhi
- Ansari, Z.A. and Parulekar, A.H. (1981): 'Meiofauna of the Andaman Sea', *IJMS* Vol. 10
- Arora, G.S. and Nandi, D.N. (1980): 'On the Butterfly Fauna of Andaman and Nicobar Islands (India): Papilionidae', *RZSI* Vol. 77
- Arora, G.S. and Nandi, D.N. (1982): 'On the Butterfly Fauna of Andaman and Nicobar Islands II: Piepridae', *RZSI* Vol. 80
- Balakrishnan, N.P. (1976): *Our Orchids*, Andaman and Nicobar Administration
- Balakrishnan, N.P. (1979): 'Recent Botanical Studies in Andaman and Nicobar Islands', *BBSI* Vol. 19
- Balakrishnan, N.P. and Chakrabarty, T. (1980): 'Descriptive Notes on Some New or Little Known Orchids of Nicobar Islands', *BBSI* Vol. 20
- Balakrishnan, N.P. and Nair, N.G. (1979): 'New Records of Orchids From Andaman Islands', *BBSI* Vol. 18
- Balakrishnan, N.P. and Nair, N.G. (1983): 'New Taxa and Record from Saddlepeak, Andaman Islands', *BBSI* Vol. 24
- Balakrishnan, N.P. et al. (undated): *Status Survey of the Floral Constituents in the Island Ecosystem of Great Nicobar Island*, Botanical Survey of India (Mimeo)
- Banerji, I. (1958): 'Mangrove Forests of Andamans', *Tropical Silviculture* Vol. 20
- Bartlett, A.D. (1869): 'Andaman Monkey (*Macacus andamanensis*)', *Land & Water* Vol. 8
- Beavan, R. (1867): 'Avifauna of the Andaman Islands', *Ibis* Vol. 2 (3)
- Bell, F.L. (1887): 'Report on a Collection of Echinodermata from the Andaman Islands', *PZSL*
- Bhargava, O.P. (1956): 'Tribes of Andaman & Nicobar Islands', *Forest Rangers College Magazine* Vol. 32
- Bhargava, O.P. (1958): 'Tropical Evergreen Virgin Forests of Andaman Islands', *The Indian Forester* Vol. 84
- Bhaskar, S. and Whitaker, R. (1983): 'Sea Turtle Resources—The Andamans', *BCMFRI* Vol. 34
- Bhatte, S.S. (1958): 'Logging in Andamans', *The Indian Forester* Vol. 84 (4)
- Bhatte, S.S. (undated): *A Note on the Organisation and Activities of Forest Department—Andaman and Nicobar Islands*, Forest Department—Port Blair
- Biswas, D.K., (1961): 'People of Andaman', *Vanyajati* Vol. 9
- Biswas, S. (1984): 'Some Notes on the Reptiles of the Andaman and Nicobar Islands', *JBNHS* Vol. 81 (2)
- Biswas, S. and Sanyal, D.P. (1977): 'Notes on the Reptilia Collection from Great Nicobar Island during the Great Nicobar Expedition in 1966', *RZSI* Vol. 72
- Biswas, S. and Sanyal, D.P. (1980): 'A Report on the Reptilia Fauna of Andaman & Nicobar Islands in the Collection of Zoological Survey of India', *RZSI* Vol. 77
- Blyth, E. (1845-46): 'Notices and Descriptions of Various New and Little Known Species of Birds', *JASB* Vol. 14 & 15
- Blyth, E. (1846): 'Notes on the Fauna of Nicobar Islands', *JASB* Vol. 15
- Bopaiah, K.M. (1983): 'A Forester's Life as it used to be', in *HYFA*
- Butler, A.L. (1900): 'The Birds of the Andaman and Nicobar Islands', *JBNHS*, Vol. 13 (1)
- Chana, S.S. (1977): 'Wildlife and Its Protection', *Yojana* Vol. 20, N. Delhi
- Chaturvedi, M.D. (1953): *Forests of Nicobar Islands*, Ministry of Food and Agriculture
- Chaturvedi, Y. (1980): 'Mammals of the Andamans and Nicobars, their Zoogeography and Faunal Affinity', *RZSI* Vol. 77
- Chawla, S. and Pandit, T.N. (1981): *Bibliography on Andaman and Nicobar Islands*, Anthropological Survey of India, Calcutta
- Chengappa, B.S. (1963): 'Aboriginal Tribes of Andamans', *The Indian Forester* Vol. 89

- Cory, C.P. (1902): 'Some Further Notes on the Narcondam Hornbill (*R. Narcondami*)', *JBNHS* Vol. 14 (2)
- Dagar, J.C. (1986): 'Some Ecological Aspects of Mangrove Vegetation of the Andaman & Nicobar Islands in India', *Sylbootrop: Philippines Forest Research Journal*, 7
- Dagar, J.C. and Dagar, H.S. (1986): 'Mangroves and some Coastal Plants in Ethnobotany of the Tribals of Andaman & Nicobar', *JASA* Vol. 2 (2)
- Daniel, A. and Prem-Kumar, V.K. (1968): 'The Coconut Crab (*Birgus latro*) (Crustacea: Paguridae) in the Great Nicobar Island', *JBNHS* Vol. 64 (3)
- Das, A.K. (1985): *Estuarine Fauna of Andaman and Nicobar Islands: State of Art Report*, Estuarine Biology, Zoological Survey of India (Mimeo) 27
- Day, F. (1870): 'On the Fishes of the Andaman Islands', *PZSL* Vol. 10
- Dorairaj, K. and Soundararajan, R. (1985): 'Exploited Marine Fishery Resources of Andaman & Nicobar Islands', *JASA* Vol. 1 (1)
- Ellis, J.L. (1987): 'A Botanical Tour of Andaman Islands', *JASA* Vol. 2 (2)
- Ferrar, Lt. Col. M.L. (1948): 'Butterflies of the Andamans and Nicobars', *JBNHS* Vol. 47 (3)
- Hawkins, R.E. (Ed.) (1986): *Encyclopedia of Indian Natural History*, Bombay Natural History Society, and Oxford University Press, Delhi
- Herre, A.W.C.T. (1939): 'On a Collection of Littoral & Freshwater Fishes from the Andaman Islands', *RIM* Vol. 41 (4)
- Herre, A.W.C.T. (1941): 'A List of Fishes known from the Andaman Islands', *MIM* Vol. 13 (3)
- Hill, J.E. (1967): 'The Bats of the Andaman and Nicobar Islands', *JBNHS* Vol. 64 (1)
- Hore, D.K. and Balakrishnan, N.P. (1984): 'Orchids of Great Nicobar Islands and their Conservation', *JBNHS* Vol. 81
- Hume, A.O. (1874): 'Contributions to the Ornithology of India: Islands of Bay of Bengal', *Stray Feathers* Vol. 2
- James, D.B. (1983): *Some Observations & Remarks on the Endangered Marine Animals of Andaman & Nicobar Islands*, Paper Presented at the Symposium on Endangered Marine Animals & Marine Parks, Cochin, 12- 16 January, 1985
- Jayal, N.D. (1986): *Andaman and Nicobar Islands—Our Unique Tropical Heritage* (Mimeo)
- Khan, I.H. (1983): Wild Life, in *HYFA*
- Kumaran, M. (1973): *Fishery Potential of Andaman and Nicobar Islands*, Proceedings of the Symposium on Living Resources of Seas Around India, CMFRI
- Lakshminarayana, R. (1986): 'A Note on Light Fishing Around Port Blair (Andamans)', *JASA* Vol. 2 (2)
- Lal Mohan, R.S. (1983): 'Marine Turtle Resources', *BCMFRI* Vol. 34
- Lal Mohan, R.S. (1983): 'Saltwater Crocodile Resources', *BCMFRI* Vol. 34
- Macnae, William (1968): 'A General Account of the Fauna and Flora of Mangrove Swamps and Forests in the Indo-Pacific Regions', *Advances in Marine Biology* Vol. 6
- Madhupratap, M. et. al. (1981): 'Zooplankton Abundance of the Andaman Sea', *IJMS* Vol. 10
- Mall, L.P., Singh, V.P., Garge, A., Pathak, S.M., and Dandoria, M.S. (1985): 'A New Approach Towards the Mangrove Forest Flora of Andaman Islands', *The Indian Forester* Vol. 111 (5)
- Marichamy, R. (1974): 'Fishery Resources of Andaman Sea', *Seafood Export Journal* Vol. 6 (10)
- McEachern, J. and Towle, Edward L. (1974): *Ecological Guidelines for Island Development*, International Union for Conservation of Nature and Natural Resources
- Menon, P.M.G. (1976): 'Fisheries in the Andamans', *Yojana* Vol. 20 (13)
- Miller, G.S. (1902): 'Descriptions of New Species of Mammals of the Andaman and Nicobar Islands', *JBNHS* Vol. 14
- Miller, G.S. (1902): 'Mammals of the Andaman and Nicobar Islands', *PUSNHM* Vol. 24
- Moitra, S.M. (1983): 'The Forests' in *HYFA*
- Moore, F. (1877): 'Lepidopterous Fauna of the Andaman & Nicobar Islands', *PZSL*
- Mouvat, F.J. (1863): *Adventures and Researches among the Andaman Islands*, Hurst and Blackett, London

- Mukherjee, D.D. (1935): 'Notes on Some Rare and Interesting Fishes from the Andaman Islands with Description of two new Fresh Water Gobies', *RIM* Vol. 37 (3)
- Mustafa, Arif M. (1981): 'Fish & Fisheries of Andaman & Nicobar Islands', Dissertation CIFE, Bombay
- Mustafa, Arif M. (1987): *Endangered Coral Reefs of Bay Islands & their Ornamental Fishes*, Mimeo
- Nair, G.K. (1958): *Piscine Wealth of the Andamans*, Andaman and Nicobar Administration
- Nath, B. and Chaturvedi, Y. (1975): 'On a Collection of Mammals from Andaman & Nicobar Islands', *BIM* Vol. 8 (1)
- Nayyar, M.P. and Sastry, A.R.K. (1988): *Red Data Book of Indian Plants*—Vol. 1. Botanical Survey of India, Calcutta
- Osmaston, B.B. (1906): 'Mangroves and Paroquets', *JBNHS* Vol. 17 (1)
- Pandit, T.N. (1970): 'Area Study—Andaman & Nicobar Islands, the Ecological & Cultural Adaptations of the Various Ethnic Groups', in Sinha, S.C. (ed.) *Research Programmes on Cultural Anthropology & Allied Disciplines*
- Pandit, T.N. (1971): *Aborigines of the Bay Islands—A Review*, Andaman & Nicobar Information
- Pandit, T.N. (1976): 'Original Inhabitants of the Andaman & Nicobar Islands', *Yojana* Vol. 20 (13)
- Pandit, T.N. (1985): 'The Tribal and the Non-Tribal in Andaman Islands: A Historical Perspective', *JIAS* Vol. 20
- Pillai, C.S.C. (1972): *Stony Corals of the Seas Around India*, Proceedings of Symposium on Corals & Coral Reefs, 1
- Prain, D. (1891): 'Non-indigenous Species of the Andaman Flora', *PASB* Vol. 59
- Prain, D. (1892): 'Remarks on the Fauna of Narcondum Island, Nicobar', *PASB* Vol. 59
- Prain, D. (1893): 'On the Flora of Narcondum & Barren Islands', *PASB* Vol. 62
- Qasim, S.Z. and Ansari, Z.A. (1981): 'Food Components of the Andaman Sea', *IJMS* Vol. 10
- Qasim, S.Z. and Kureishy, T.W. (1986): *Biological Diversity in the Seas Around India: Present Status and Major Threats*, Indian Academy of Sciences (Animal Science/Plant Science Supplement)
- Raha, M.K. and Coomar P.C. (1986): 'Anthropological Researches in Andaman and Nicobar Islands', *JASA* Vol. 2 (1)
- Rao, G.C. (1987): 'Effects of Pollution on Meiofauna in a Sandy Beach at Great Nicobar', *JASA* Vol. 3 (1)
- Rao, G.C. (1987): *Effects of Exploitation and Pollution on Littoral Fauna in Bay Islands*, Proceedings of the Symposium of Management Coastal Ecosystems, Andaman Science Association
- Rao, G.C. and M.K. Dev Roy (1985): 'The Fauna of the Bay Islands', *JASA*, Vol. 1 (1)
- Rao, M.K. Vasudeva (1983): *Interim Report for Biosphere Reserves on North Andaman Island*, Botanical Survey of India, Andaman & Nicobar Circle (Mimeo)
- Rao, M.K.V. (1986): 'A Preliminary Report on the Angiosperms of Andaman- Nicobar Islands', *JETB* Vol. 8 (1)
- Rao, N.V. Subba (1987): *Fauna of Andaman and Nicobar Islands Diversity, Endemism, Endangered Species & Conservation Strategies*, Zoological Survey of India, Calcutta (Mimeo)
- Rao, N.V. Subba, et al. (1980): 'On Freshwater Molluscs of Andaman & Nicobar Islands', *RZSI* Vol. 77
- Reddiah, K. (1977): 'The Coral Reefs of the Andaman and Nicobar Islands', *RZSI* Vol. 72
- Rego, L.H.A. (1985): *Forests of the Andamans*, Diocese of Port Blair
- Sahni, K.C. (1958): 'Mangrove Forests in the Andaman & Nicobar Islands', *The Indian Forester* Vol. 84
- Sewell, Major R.B. Seymour (1922): 'A Survey Season in the Nicobar Islands on the R.I.M.S. Investigator, October 1921—March 1922', *JBNHS* Vol. 28 (4)
- Shrikant, L.M. (1961): 'Scheduled Tribes of Andaman & Nicobar Islands', *Vanyajati* Vol. 9
- Silas, E.G. (1983): 'An Indicative Survey of the Mariculture Potential of Andaman and Nicobar Islands', *BCMFRI* Vol. 34
- Singh, N.T. (1986): 'Ecology and Productivity of the Indian Coastal Region', *JASA* Vol. 2 (2)
- Singh, N.T. & Gajja, B.L. (1987): *Ecological Considerations and Agricultural Development of Andaman & Nicobar Islands*, Central Agricultural Research Institute, Port Blair
- Sinha, A.K. (1983): 'Regeneration of Forests' in *HYFA*
- Sinha, A.K. (1983): 'Social Forestry' in *HYFA*

- Sivaprakasam, T.E. (1979): *The Living Resources of Andaman & Nicobar Seas*, Andaman and Nicobar Administration
- Srinivasan, M.M. (1957): *Forests*, Andaman and Nicobar Administration
- Srinivasan M.S. (1986): 'Geology of Andaman and Nicobar Islands', *JASA* Vol. 2 (1)
- Srivastava, G.S. and Singha, A. (1962): 'Vegetation Around Mud Volcanoes in Andaman Islands', *Science & Culture* Vol. 28
- St. John, J.H. (1898): 'Notes on the Narcondam Hornbill', *JBNHS* Vol. 12 (1)
- Talwar, P.K. (undated): *The Marine Fishes of Andaman & Nicobar Islands*, Handbook Zoological Survey of India, Calcutta
- Thangam, E.S. (1966): 'Introduction of Some Birds in Andaman & Nicobar Islands During 1960-1965', *The Indian Forester* Vol. 92 (7)
- Thothathri, K.(1976): 'Ethnobotanical Studies in Andaman & Nicobar Islands', *PISC* Vol. 6
- Thothathri, K. (1977): 'A Review on the Floristic Studies in the Andaman and Nicobar Islands upto 1970', *BBSI* Vol. 9
- Tikader, B.K. (1977): 'Studies on Spider Fauna of Andaman & Nicobar Islands, Indian Ocean', *RZSI* Vol. 72
- Tikader, B.K. (1984): *Birds of Andaman & Nicobar Islands*, Zoological Survey of India, Calcutta
- Tytler, R.C. and Beavan, R. (1867): 'The Avifauna of Andaman Islands', *Ibis* Vol. (2) 3
- Untawale, A.G. and Wafar, S. (1982): *Annotated Bibliography of Indian Mangroves*, National Institute of Oceanography
- Varmah, J.C. (1971): *Our Forests*, Andaman & Nicobar Information
- Verghese, G. (1983): 'Elephant-Backbone of Andaman Forest Industry & its Management' in *HYFA*
- Wafar, M.V.M. (1986): 'Corals and Coral Reefs of India', *PIAS(P&AS)*
- Whitaker, R. (1983): 'Crocodile Resources in the Andaman & Nicobars', *BCMFRI* Vol. 34
- Zama, L. (1976): 'Forestry in the Andamans', *Yojana* Vol. 20



POSTSCRIPT

(January 1992)

Subsequent to the finalisation of the directory for publication, one of the editors (Pratibha Pande) visited the Andaman Islands from 24 December, 1991 to 4 January, 1992. While there, she visited some protected areas which we had not been to before: Narcondam Island Sanctuary, and North, Middle, and South Button Island National Parks. She also visited Barren Island Sanctuary, one of the few persons to have done so after the volcanic eruption there in mid-1991. Mt. Harriett and Marine National Parks were revisited.

The new information obtained on this visit could not be included in the relevant places in this Directory, but is important enough to justify inclusion as a postscript. The information is given below separately for each area, and under the relevant sub-heading. This should be read in conjunction with the existing information in the Directory.

Please note that these additions relate not only to the individual area Directory Sheets, but also to other relevant parts of the Directory, such as APPENDIX 3, and REFERENCES. These have also been updated in this Postscript.

Lastly, very recent amendments in the Wild Life (Protection) Act of 1972 have a bearing on the information in this Directory, and specifically on the contents of the section on Legal Status in KEY TO THE DIRECTORY SHEETS. These changes are also given below.

KEY TO THE DIRECTORY SHEETS

LEGAL STATUS: In late 1991, the Wild Life (Protection) Amendment Act, 1991, was promulgated. Among its many substantial amendments are the ones relating to setting up of national parks and sanctuaries. The earlier difference between the process of creating a park and that of creating a sanctuary, mentioned in this Directory on pg. 16 and pg. 35, has been removed. State governments will now be required to declare an intention to notify a sanctuary [Section 18(1)], and only after going through the necessary legal procedures (Sections 19 to 25), can the area be finally notified [Section 26(1)].

In addition, if parks or sanctuaries are being notified in areas which are already reserved forests, or which fall in the territorial waters of India, there will now be no need to go through the procedures under Sections 19 to 25.

Another important amendment is that in sanctuaries, the Collector can allow, in consultation with the state Chief Wildlife Warden, the continuation of rights [Section 17(c)].

MARINE NATIONAL PARK (A&N/N/MAR)

FAUNA: Elephants used in Forest Department operations on the adjoining South Andaman and Rutland Islands sometimes swim across into the Park. One such elephant was spotted on Malay Island, within the Park, during the visit [fv].

Mammals [Forest department undated]

Rat, Common House

Reptiles [Forest Department undated]

Snake, Amphibious Sea

Snake, Colubrine Amphibious Sea

Amphibians [Forest Department undated]

Frog, Saltwater *Rana cancrivora*

Toad, Indian *Bufo melanostictus*

Fish [Forest Department undated]

Liza sp.

Rhynchobatus sp.

Sardinella gibbosa

Corals [Forest Department undated]

Acropora cancellata

Montipora composita

Acropora echinata

Montipora fruticosa

Euphyllia glabrescens

Montipora hispida

Goniastrea benhami

Pocillopora elegans

Goniastrea retiformis

Stulophora mordax

Crabs [Forest Department undated]

Scylla serrata

Hermüt Crabs [Forest Department undated]

Diogenes custos

Paguristes ciliatus

Prawns [Forest Department undated]

Macrobrachium lar

Sea stars [Forest Department undated]

Ophiarthrum pictum

Ophiocoma erinaceus

MOUNT HARRIETT NATIONAL PARK (A&N/N/MOU)

AREA: According to an alternate proposal for extending the area, shown on a map by the Wildlife Wing, the proposed total area of the Park will become 7217 ha [map]. The added area will include a stretch of the coast and sea along the eastern boundary of the Park [map]. However, a part of the southern extension area is at the moment under the control of the Coconut Plantation Corporation, which has old plantations there [fv].

APPROACHES: An alternate route is: from Chatham jetty in Port Blair to Bamboo Flat jetty by ferry. Then by road to Hope Town (2 km), further to Panighat (0.5 km), and on to Chunna Bhatta (1 km). Finally, uphill to the FRH (approx. 5 km). The Park boundary is 7 km from here, on foot, via Kalapathar.

FLORA: The Botanical Survey of India is reported to have completed a floristic survey of the area, the results of which are to be published by mid-1992 [fv].

FAUNA:

Birds [fv]

Bee-eater, Chestnutheaded	Myna, Hill
Bulbul, Redwhiskered	Oriole, Blacknaped
Crow-pheasant	Parakeet, Redcheeked
Cuckoo-shrike, Barred	Pigeon, Green Imperial
Cuckoo-shrike, Large	Sandpiper, Common
Eagle, Andaman Dark Serpent	Swiftlet, Whitebellied
Eagle, Whitebellied Sea	Woodpecker, Fulvousbreasted
Kingfisher, Blackcapped	Woodpecker, Indian Great Black

PERSONNEL: One Range Officer, three Foresters, and two Forest Guards [fv].

RESEARCH AND MONITORING: The Botanical Survey of India has reportedly conducted floristic surveys of the area [fv].

HUMAN PRESENCE:

Use by other Government Agencies: The Forest Department has a 1.2 ha. elephant training camp at Madhuban, where eight personnel are stationed. Elephants from this camp are at times allowed to roam free in the forest.

NORTH, MIDDLE, SOUTH BUTTON NATIONAL PARKS

(A&N/N/NOR, A&N/N/MID, A&N/N/SOU)

AREA: A proposal is being made, by the wildlife authorities, to extend the area of these parks, by including Outram Island and the waters between all four islands [fv]. With this extension, it is proposed to constitute a single protected area, the Buttons National Park, encompassing the earlier three parks and the area added. This Park would extend over about 23,000 ha.

FAUNA:

Birds [fv]

Curlew	Sandpiper, Common
Kingfisher, Whitecollared	Sandpiper, Green
Myna, Whiteheaded	Sunbird, Olivebacked
Parakeet, Redchecked	

HUMAN PRESENCE:

Illegal Activities and Offences: Signs of human presence on North and Middle Button Islands are plentiful, including traces of fire, stands meant probably for drying fish, bottles, and painted marks on trees [fv]. The stump of a tree that seemed to have been cut was seen on Middle Button Island. The identity of those who have left such signs, and their purpose for visiting the islands, are not known.

Use by other Government Agencies: Lighthouses have been put up on each island [fv].

BARREN ISLAND SANCTUARY (A&N/S/BAR)

Lava flow from the recent eruption has been in the same direction (westwards) as in the past [fv]. While it was earlier reported that the lava flow has blocked off the landing site [Acharya 1991], it is now possible to land on both sides of the solidified lava ledge. A small bay with shallow water has formed on one side of the ledge. The rim of the volcano has burst, and huge quantities of ash and morrain have been deposited on the edges of the slope, changing the profile of the volcano. Towards the west of the volcano, vegetation has been almost completely wiped out. It has also been seriously affected towards the south-west, but is still plentiful on the south-east.

Goats were seen alive on the southern part of the island; at least some of them have obviously survived the eruption. Other, smaller fauna, like crabs, was also noticed.

The anchorage point has shifted southwards by about 1 km from where it is now marked on the map.

FLORA: (Reported prior to eruption)**Trees** [Rao et al., 1990]*Eugenia sp.**Ficus gibbosa**Ficus microcarpa**Glochidion calocarpum***Other Vegetation** [Rao et al., 1990]*Delima sp.**Dioscorea sp.**Dodonaea viscosa**Licula sp.**Mallotus sp.**Onychium siliculosum**Pogonatherum crinitum**Pteris sp.**Vitex negundo***FAUNA:** (Reported prior to eruption)**Mammals** [Rao et al., 1990]

Bat, Andaman/Dobson's (?) Horseshoe

Dolphin, Common

Rat, Common House

Rat (*Rattus stoicus*)**Birds** [Rao et al., 1990]

Cuckoo, Indian

Heron, Reef

Myna, Hill

Parakeet, Redcheeked

Pigeon, Andaman Wood

Sunbird, Olivebacked

Swiftlet, Whitebellied

Reptiles [Rao et al., 1990]

Lizard, Garden

Corals [Rao et al., 1990]*Acropora digitefera**Acropora robusta**Acropora sp.**Favites abdita**Montipora foliosa**Pocillopora brevicornis**Pocillopora sp.**Porites sp.*

Detailed listings of fishes, molluscs, crustaceans, insects, centipedes, and spiders also appear in Rao et al. (1990).

INTERVIEW ISLAND SANCTUARY (A&N/S/INT)

FLORA: The Botanical Survey of India has reportedly completed floristic surveys, the results of which are to be published soon [fv].

RESEARCH AND MONITORING: The Botanical Survey of India has reportedly conducted floristic surveys [fv].

NARCONDAM ISLAND SANCTUARY (A&N/S/NAR)

FLORA: Police personnel stationed here (see HUMAN PRESENCE below) have planted several fruit trees (Banana, Mango, Lemon, Neem, Papaya, and Coconut) and vegetables, near their camp [fv].

FAUNA:

Mammals [Hussain, 1984]

Flying Fox, (Narcondam Small)

Rat (*Rattus sp.*)

Birds [fv]

Eagle, Andaman Dark Serpent

Swiftlet, Whitebellied

Cats introduced by the police may have become feral [fv].

HUMAN PRESENCE:

Use by Other Government Agencies: The police outpost has 17 personnel. Their camp has some permanent structures, and substantial plantation of fruit trees and vegetables has been done around them [fv].

Miscellaneous: The goats released by the police had multiplied rapidly, but during the last two years attempts have been made to shift them out [fv]. Over 100 still remain. In addition, the police have introduced cats in a bid to contain the rat population. These cats may have become feral [fv].

SOUTH SENTINAL ISLAND SANCTUARY (A&N/S/SOU)

FAUNA:

Birds [Abdulali 1971]

Sunbird, Olivebacked

WATER RESOURCES: There is also a saline water swamp [Abdulali 1971].

APPENDIX 3

COMMON AND SCIENTIFIC NAMES OF MAMMALS, BIRDS, REPTILES, AND BUTTERFLIES REPORTED FROM NATIONAL PARKS AND SANCTUARIES IN A&N ISLANDS

MAMMALS

Rat *Rattus stoicus*

BIRDS

Bulbul, Redwhiskered	<i>Pynonotus jocosus</i>
Cuckoo-shrike, Barred	<i>Coracina striata</i>
Cuckoo-shrike, Large	<i>Coracina novaehollandiae</i>
Curlew	<i>Numenius arquata</i>

REFERENCES

- Forest Department (undated): *Marine National Park, Wandoor*, Forest Department, Andaman & Nicobar Islands, Port Blair
- Rao, G.C., Mitra, B. and Rajan, P.T. (1990): 'A Biological Exploration of the Barren Island,' *Journal of the Andaman Science Association* Vol. 6(2)

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Pratibha Pande, is a member of the National Parks and Sanctuaries Survey team at IIPA, and a wildlife artist who has widely exhibited her paintings. Some of these have been used for the Bombay Natural History Society greeting cards, and others for postage stamps.

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The editors have been assisted by an editorial team consisting of biologists, social scientists, field workers, and wildlife enthusiasts.

OTHER RELATED PUBLICATIONS OF IIPA

Management of National Parks and Sanctuaries in India: A Status Report by Ashish Kothari, Pratibha Pande, Shekhar Singh, and Dilnavaz Variava, 1989 (Hard cover - Rs. 250; Paperback - Rs. 150)

Contains a comprehensive compilation of data on India's national parks and sanctuaries, a fold-out map showing their locations, and 171 pages of tables.

Directory of National Parks and Sanctuaries in Himachal Pradesh by Shekhar Singh, Ashish Kothari, and Pratibha Pande, 1991 (Hard cover - Rs. 250; Paperback - Rs. 150)

The first in a series of state-wise reports, compiles essential information on the biological, management, human, and other aspects of every national park and sanctuary in the state, with detailed maps.

Forthcoming

Directory of National Parks and Sanctuaries in Gujarat

Directory of National Parks and Sanctuaries in Karnataka