Forests and Allied Matters in the Andaman & Nicobar Islands: Report for the Supreme Court

I

Mangroves in Wandoor National Park

Shekhar Singh

REPORT OF THE COMMISSION SET UP UNDER ORDERS OF THE SUPREME COURT ON THE STATUS OF FORESTS AND OTHER ALLIED MATTERS IN THE ANDAMAN AND NICOBAR ISLANDS

VOL I

Report and Annexes

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TABLE OF CONTENTS

PREFACE

This report has been prepared under the directions of the Supreme Court of India, in a short period of 7 weeks. Consequently, it suffers from many of the shortcomings that a hurried process has. Also, because of the shortage of time, the report focuses mainly on the Andaman group of Islands. This is also because they have far greater problems related to forest working and other adverse environmental impacts, than the Nicobar group. The shortage of time also prevented a visit to the Nicobar islands, though I have visited them earlier for other purposes.

In the preparation of this report I have been greatly assisted by the help and cooperation of the Lt. Governor of the Andaman and Nicobar Islands, Shri NN Jha, and by other officers of the A&N administration, especially of the forest department. I would particularly like to acknowledge my gratitude to Shri SS Patnaik, Principal Chief Conservator of Forests, Shri PV Savant, Chief Conservator of Forests, Shri DV Negi, Conservator, Shri Khazan Singh, Chief Wildlife Warden, and Shri RSC Jayaraj, DCF, all of the Andaman and Nicobar Islands Forest Department.

Thanks are also due to Dr. Rauf Ali and Dr. Harry Andrews of the Andaman & Nicobar Environmental Team (ANET), to Dr. Ravi Sankaran of SACON, and to Shri Samir Acharya of SANE. I am particularly grateful to all the individuals, groups and associations who took the trouble and found the time to meet with me during my two visits to the Islands,

On the mainland, I benefited much from interactions with Shri JC Daniels and Shri Debi Goenka of the Bombay Natural History Society. I was also fortunate enough to meet some other members of the Society and have detailed discussions with them. Shri Pankaj Shekhsaria and Shri Ashish Kothari of Kalpavriksh also provided much useful information and ideas.

Officers of the Ministry of Environment and Forests, Government of India, especially Shri MK Jiwrajika and Shri AR Chadha, were also very helpful and forthcoming with information and advice, as were officers of the Planning Commission, Ministry of non-conventional energy and the Forest Survey of India.

Finally, I owe a large debt to my colleagues at the IIPA, especially Shri Raman Mehta, Ms. Vishaish Uppal, Shri Arpan Sharma, and Shri Harish Sharma, two of whom accompanied me to the islands and all of them toiled day and night to complete this report in time.

Shekhar Singh
New Delhi

30 January, 2002

CONCLUSIONS AND MAIN RECOMMENDATIONS

A. CONCLUSIONS

1. The Andaman and Nicobar Islands (ANI) are an internationally acknowledged hot spot for biodiversity. These islands have over 2500 species of flowering plants (223 species endemic – not found anywhere else in the world), 5100 species of animals (100 freshwater, 2100 terrestrial and 2900 marine), 179 species of corals, making it the richest coral reef in India, 52 species of mammals (33 species endemic), 244 species of birds (96 endemic) and 76 species of reptiles (24 endemic). The fact that these islands have a relatively small population and low population density, and that they are remote and difficult to access, makes them one of the last places in India where, with a little effort, biodiversity can be effectively conserved, and that too without serious adverse impacts on the local inhabitants.
2. Given the unique biodiversity values in the Andaman and Nicobar Islands (ANI) and their extreme ecological fragility, the major objective of forest and ecosystem management in these Islands should be biodiversity conservation and protection of the habitat of the tribals living in the forests. ANI has a preponderance of evergreen and semi-evergreen tropical rain forests, which are not only the richest biodiversity pools in the world but are also very fragile.
3. One of the major threats to the biodiversity of the forests of ANI is the stress on commercial forestry. The forest department and the Andaman and Nicobar Islands Forest Plantation and Development Corporation (ANIFPDC) currently follow a "conversion" forestry system where natural forests are worked, commercial species extracted and the worked forests regenerated and managed in a manner such that there is a resultant preponderance of commercial species for future harvesting. In the process, biodiversity is deliberately destroyed. Surprisingly, this is being done according to prescriptions in working plans that have been approved by the MoEF. In some areas, the natural forests have been totally cleared and replaced with plantations of padauk, gurjan, teak, or a combination of these and other commercial species. As per decisions taken by the Island Development Authority (IDA), under the Chairmanship of the Prime Minister, and

recommendations of the Director General of Forests, the Ministry of Environment and Forests (MoEF) and the ANI Administration started phasing out forest working and lowered extraction levels from 1,23,678 cum in 1988-89 to 1,03,660 cum in 1990-91. However, they subsequently arbitrarily raised the level of extraction to 1,35,523 cum in 1994-95. Fortunately, with the closing down of three of the main wood based industries, the extraction levels have now come down. Nearly 60% of the exploitable forests (excluding the tribal reserve and protected areas) in South Andamans, Mayabandar and Baratang, have already been "worked" and exploited and, consequently, their natural profile significantly changed and their biodiversity value compromised, perhaps forever.

4. Another major threat to the forests of the Islands is because of encroachment of forest areas. The A&N Administration had already identified and regularised the forest encroachments of 1367 families who had encroached up to 1978, on over 2500 ha. of forestland. However, a large proportion of these families continue to occupy additional forestland and continue to further expand and degrade their holdings. Even the families shifted to their designated sites have reportedly encroached additional land. Also, some of the families that had been identified as pre 1978 have, since then, sold their encroached land and shifted elsewhere. The families that have bought these encroached lands are now claiming to be pre 1978 encroachers. In addition, an estimated 2325 families have encroached subsequent to 1978 on 2633.654 ha of forestland. Many of these encroachments are in some of the last remaining natural lowland forests in North Andaman. They also appear to be growing in size and in numbers

5. The most significant of the remaining natural forests in Andamans are those within the Jarawa Reserve in South and Middle Andaman and the Onge Reserve in Little Andaman. In recent years the Andaman Trunk Road has been opened and passes contiguous to and in some cases through the tribal reserve. This road, and the increased access to the Jarawas, poses a major threat not only to the Jarawa tribals but also to the forests that they have protected for so many years.

6. The Ministry of Environment and Forests (MoEF) has been granting permission under the Forest (Conservation) Act, 1980 for the diversion of forestland for non-forest uses on a case-by-case basis without determining the optimality of the land use and the future options that such a clearance could compromise.
7. Poachers from Myanmar and other neighbouring countries come to poach timber, sea cucumbers and other species, especially in North Andaman. There are also local poachers operating in the Islands. The forest department does not appear to have the requisite legal and the infrastructure, especially in terms of humanpower, arms, and fast boats, to prevent poaching.
8. Many exotic species of animals and plants have been introduced in the Islands, with a very destructive impact on forest regeneration. The introduction of oil palms in Little Andaman and of teak in various parts of the islands has also had a significant negative impact.
9. Approximately 2,23,937 cubic metres of sand was officially extracted from the beaches of the Islands in the three years 1998-2001. 72 beaches around the islands were used for extraction. In addition, it is alleged by local people that there is also illegal extraction of sand, which is considerable. The extraction of sand is being arbitrarily allowed by the MoEF and is causing a lot of environmental damage. It is also not a sustainable method of resource use. However, there appears to be no effort to phase out the extraction and to move towards other, more sustainable and safer, methods of construction.
10. The ability of the fragile ecosystem of these islands to withstand the impact of tourism is limited. Apart from disturbance to the forests, there is also disturbance to the marine and coastal ecosystem, especially to the coral reefs. The Islands offer a great potential for high value, low volume, specialised eco-tourism that can be done with minimal infrastructure and follows the principles of dispersion and flexibility.

B. MAIN RECOMMENDATIONS

Harvesting of Forests

1. Felling of trees and collection of non-timber forest produce (NTFP) should be banned from the forests of Little Andaman Island and all tribal reserves except for i) collection of NTFP from already worked forests of Little Andaman and from forest areas designated for the purpose in the Nicobar group of Islands, for meeting the legitimate consumption of local inhabitants; and ii) collection of timber and other forest produce by tribals living within tribal reserves for meeting their bonafide needs.
2. Harvesting of all forest produce including timber and NTFP should be completely prohibited from National Parks and Sanctuaries.
3. In addition to areas covered under 1 & 2 above, no felling of trees should be allowed in any unworked forest area, i.e., area where felling of trees as per working plans, working schemes, felling schemes or approved working plans, has not taken place earlier. There should also be no diversion of forestland from any such unworked area or from areas covered under 1 and 2 above, without the specific orders of the Supreme Court.
4. No felling of trees for whatsoever reasons or justification should be carried out to supply to, or to meet the raw material requirement of, plywood, veneer, blockboard, match stick or any other such wood based units except to local small-scale units (including saw mills) solely for meeting the local requirement for sawn timber and other wood based products.
5. For meeting the timber and other forest produce requirements of inhabitants of the ANI, felling of trees from forest areas not covered under 1, 2 & 3 above, i.e., forest area worked earlier in accordance with working plans, working schemes, felling schemes or approved working plan and excluding areas falling within national parks, sanctuaries, tribal reserves, or Little Andaman, may be allowed. Such felling may be undertaken as per prescriptions of the working plans approved by the MoEF. These plans should also contain action plans for removing, in a phased manner, trees of commercial species that are in number or concentration in excess of what is found in a natural forest of the same type and

similar location. Concurrently, efforts should be made to bring back the forest to its natural profile by encouraging /reintroducing those species of fauna and flora that naturally occurred in these forests prior to their being "converted". The working plan should also contain sufficient provisions for regeneration of felled areas. In accordance with an earlier Supreme Court order of 22nd September, 2000, felling of trees should be allowed only it sufficient financial provisions for implementing the working plan prescriptions have been made.

6. In the meanwhile, the present ban on felling of trees may be continued and the local requirement of timber and other forest produce may be met by utilising the already felled trees and sawn timber lying with the forest department and the ANIFPDC.

7. Once the stock of already felled trees and sawn timber is depleted, the local requirement of timber should be met, as far as possible, by harvesting the mono culture and mixed plantations of padauk, gurjan, teak and other species. The felling of trees from already worked natural forest, as specified in 5 above, should be undertaken only to meet the balance requirement. However, if the local requirement of timber and other forest produce is more than what could be obtained by felling of plantations and sustainably extracting trees from worked areas, as specified in 5 above, the same may be met by bringing timber in from other parts of the country. Under no circumstances should the over harvesting of the forest available for felling under para 5 above be permitted or undertaken.

8. There should be no expansion of monoculture or commercial plantations on forestland. The existing plantations of oil palm, rubber and teak are reportedly no longer viable and should be phased out. The land so released should, in so far as it is forestland, be regenerated as specified earlier. No exotic species of fauna or flora should be introduced into the islands. Accordingly, a suitable set of guidelines and procedures should be developed for the purpose. Consequently, the Andaman and Nicobar Islands Forest Plantation and Development Corporation Ltd. (ANIFPDC) should be wound up as it was primarily set up to promote commercial forestry and plantations, especially in Little Andaman.

9. Government departments, including defence and PWD, should be supplied fuel wood and other required forest produce by the forest department and should not be permitted to directly collect these from the forests.

Working Of Wood Based Units

10. There should be a complete ban on the establishment of any new wood based unit for the next 10 years.
11. All existing small-scale wood based units (saw mills) should be relocated within industrial estates or, where industrial estates are not feasible, in locations contiguous to forest offices or otherwise convenient for the forest department to monitor. This relocation should be completed within one year, after which the non-complying saw mills should be closed down. These saw mills should also be required to obtain a licence from the ANI Forest Department within three months and to maintain such records as may be prescribed by the forest department. Their licence may be renewed every year at the discretion of the ANI Forest Department, after the department has satisfied itself that a) the unit was not involved in the use of any illegal timber; b) the prescribed records were properly maintained; c) all provision of the act, rules and the terms and conditions stipulated by the forest department from time to time have been complied with. Necessary rules, guidelines etc., for the purpose, should be prescribed by the forest department within three months.
12. No subsidy of any type, including transport subsidy, should be given to any wood based unit.
13. Existing medium and large scale wood based industries (including plywood, veneer, and match industries) can be allowed to function provided they import their entire requirement of wood and other forest based raw materials from the mainland or from abroad. No subsidies should be allowed to them.
14. No timber, either as logs or as sawn timber or plywood/veneer, or in any other form, should be transported out of the Islands through any means whatsoever. This should not, however, inhibit the transportation, as personal baggage, of a reasonable quantity of wooden handicrafts by tourists or of personal articles by those permanently leaving the islands. Also, where a wood based industry, as

specified in 13 above, imports its entire wood and forest based raw material requirement, then it should be permitted to export its finished product.

Encroachments

15. Any further regularisation of encroachments on forestland in any from, including allotment/use of forestland for agricultural or horticultural purposes, should be strictly prohibited.
16. All those families who have been identified as having encroached on forest land prior to 1978 and have not yet shifted to their allotted rehabilitation sites, should be given three months notice to vacate their encroachments and shift to the allotted land. Failing this, their allotment should be cancelled and they should be forcibly evicted within three months of the deadline being over, without any further claim to land or any other form of rehabilitation.
17. Similarly, those among the pre-1978 families that have shifted to their allotted sites but have occupied more land than they were entitled to, should also be given three months notice to vacate the extra land occupied by them. On the expiry of this notice period, the allotments of those who have not complied with this notice should be cancelled and they should be forcibly evicted within three months, without any further claim to compensation or land.
18. All post 1978 forest encroachments should be completely removed forthwith and, in any case, within six months. Post 1978 encroachers (except for foreign nationals) should be allotted homesteads in revenue land and training and opportunity for self-employment or for other types of livelihood activities provided. Necessary powers for the eviction of encroachers should be given to the forest department. For the purpose, an effective action plan should be prepared and implemented under direct supervision, monitoring and control of a committee comprising of the Lt. Governor, Chief Secretary, Principal Chief Conservator of Forests of ANI, and reputed local NGO representatives. The Chief Secretary, ANI, may be asked to file a monthly progress report in the Supreme Court.
19. In order to prevent any further encroachments and rampant immigration, the Administration should, within three months, regulate the entry of people to the islands by having the Islands declared as an inner line area and by imposing

relevant restrictions under section 3 and other provisions of the Environment (Protection) Act of 1986. In accordance with this, non-residents entering the islands should have to invariably register themselves so that those who do not return to the mainland within a reasonable time can be traced and, where they have illegally encroached on land, can be evicted from these encroachments at the earliest. In addition, entry to the more vulnerable and forested areas of the Islands should be restricted. Once this regulation is in position, the administration should in a time bound manner issue identity cards to all the residents so that there is no gap in the period of identification and issuance of ID cards. This would ensure that fresh illegal encroachers are easily identified. Subsidised travel to the Islands should, once identity cards have been issued, be available only to bonafide residents of the Islands.

Other General Issues

20. For the conservation and protection of the forests and other ecosystems, an effective action plan should be prepared by the ANI Forest Department, in consultation with local NGOs and experts. This plan should also envisage a suitable enhancement of the protected area network, especially in the main islands of the Andaman and in the Nicobar Group. All unworked forest areas in Diglipur, Mayabunder, Middle Andamans and Baratang should be made into national parks, leaving a buffer belt between the national park boundary and the edge of revenue settlements, for protection by village protection committees. In addition, there should be a consolidation of the nearly hundred small island parks and sanctuaries and they should be constituted into viable units encompassing the marine areas surrounding them. This plan, after being approved by the MoEF, should be strictly implemented. The necessary funds, vehicles, equipment, human power, police help and legal power required for the effective implementation of this action plan should be made available by the ANI administration.
21. The Andaman Trunk Road should be closed to all vehicular traffic from Miletilak in South Andaman to the northern boundary of the S. Andaman Island. Similarly, it should be closed to all traffic from Kadamtala (corresponding to Prolobjig camp No.3) in Middle Andaman up to Kaushalya Nagar (corresponding to Porlobjig

camp No. 15). This should be done within three months. Further, no person except for the Jarawas living in the Reserve should be allowed to enter the Reserve by any means unless he/she is permitted by the Principal Chief Conservator of Forests, and the Secretary, Tribal Welfare, ANI Administration, and no such permission should be granted unless the person is proceeding on bonafide work related to the welfare of the tribals or the protection of the area.

22. The practice of distributing timber and NTFP free to settlers should be discontinued. Instead, rural populations should be formed into village forest protection committees and, as per the joint forest protection norms prevalent in other parts of the country, the amount of timber and NTFP required by village communities should be given to them on the basis of a memorandum of understanding, in return for their role in protecting the forests adjacent to their settlements and in detecting and preventing encroachments.
23. The extraction of sand should be phased out and no further extension should be granted after the current extension is over on 30 September, 2002.
24. No concrete or permanent infrastructure for tourism should be built on any forest area in the Islands. Tourist activities in forest areas should be restricted to tented accommodation or temporary wooden/prefabricated structures that can be dismantled easily and moved to another site. These areas should remain under the control of the forest department who should be responsible for ensuring that the quantum and type of tourism is such that it does not in any way degrade the forests or other ecosystems.
25. The felling of 27 trees for the 33 KV transmission line from Bamboo Flat to Minnie Bay, and 17 trees for construction of rural road from Adajig to Flat Bay Village should be permitted as a one-time relaxation, as these projects are already in their final stages, a small number of trees are involved and, reportedly, necessary clearances had been obtained from the MoEF prior to the Supreme Court's order of 10.01.01. However, all other proposals or clearances under the Forest (Conservation) Act of 1980 or the Environment (Protection) Act of 1986, where diversion of land or felling of trees or other activities that would have an

impact on the environment, are still to be undertaken, should be put up for review by the Supreme Court.

REPORT

I. PREAMBLE

Consequent to the order of the Supreme Court, on 26-11-2001, the Ministry of Environment and Forests issued an order on 6-12-2001 (No. 13-19/2001-SU) appointing me a Commissioner to give a report on the state of the forest and other allied matters of the Andaman and Nicobar Islands (copy of order at annex 1).

Accordingly, I made two visits to the Andaman and Nicobar Islands (ANI), the first from 16 to 21 December, 2001, and the second from 16 to 19 January, 2002. Apart from Port Blair, I also visited and held meetings in South, Middle and North Andaman during the first visit, and in Little Andaman during the second visit. In all, 33 public meetings were held and representatives of 52 groups were met (Summary of oral submissions at annex 2; copies of written submissions in Volume III). Meetings were also held with the Lt. Governor, other government officials, scientists, NGOs and with the petitioners (Detailed itinerary enclosed as annex 3)

I also travelled to Mumbai to have a meeting with representatives of Kalpavriksh and the Bombay Natural History Society (BNHS), two of the petitioners, on 24 December, 2001 and met with the Minister and officials of the Ministry of Environment and Forests, Government of India, on 4 January, 2002.

II. STRUCTURE OF THE REPORT

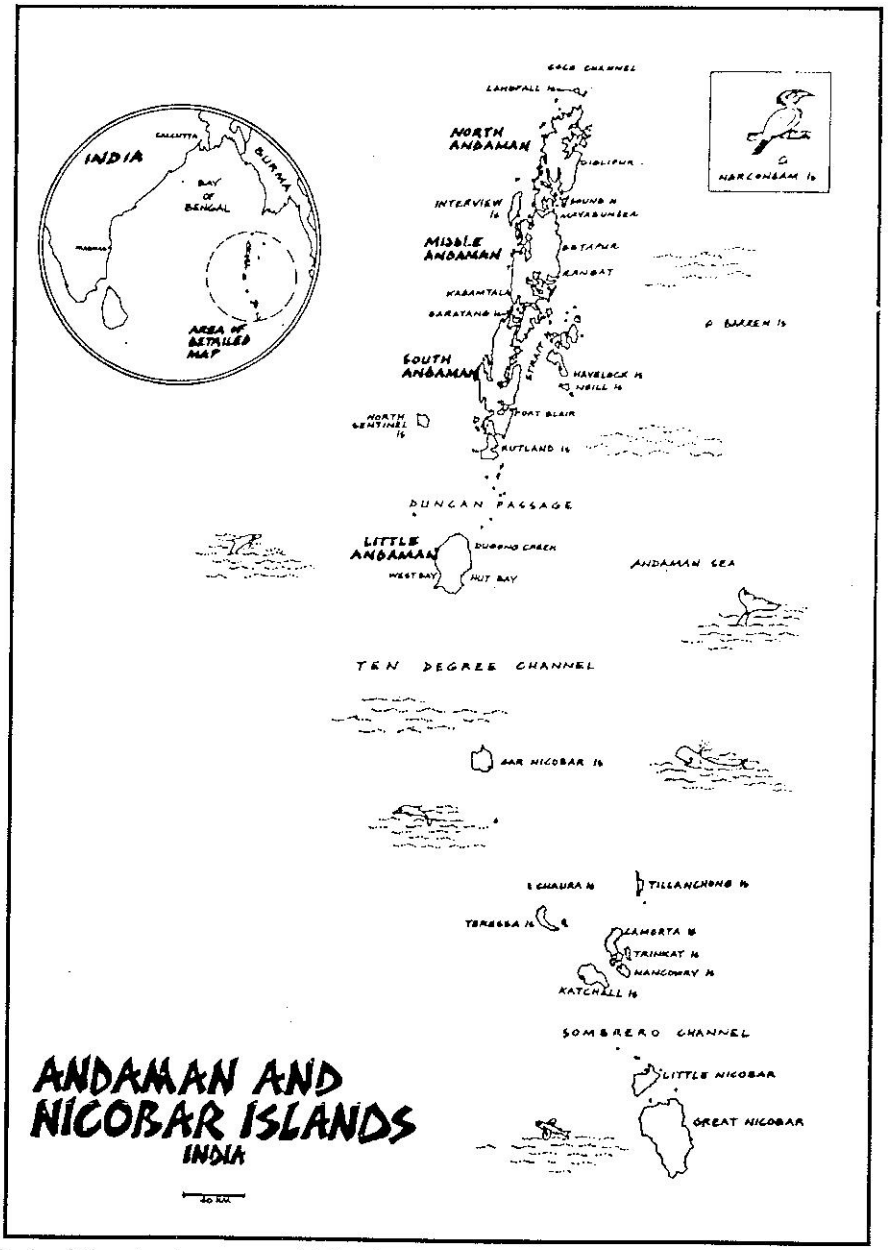
The report, along with the annexes and maps are in Volume I. The conclusions and main recommendations are summarised at the start of the report.

Volume II contains copies of the data that were sent by the Andaman and Nicobar (ANI) administration, copies of the memoranda submitted by the ANI administration, the Member of Parliament from ANI, the ANI Forest Plantation and Development Corporation (ANIFPDC), the various petitioners and the forest workers union. It also contains copies of various documents relied upon as a part of this study, the correspondence with various government departments and a list of people who made oral submissions during the ANI visits.

Volume III contains copies of all the other petitions and memoranda received while visiting ANI.

III. PROFILE OF THE ISLANDS

Location and Area: The Andaman and Nicobar group of islands is situated in the Bay of Bengal, between peninsular India and Mayanmar. It is located between 6^0 45" and 13^0 41" North latitudes, and 92^0 12" and 93^0 57" East longitudes. Arranged in an arc from the north to the south, there are 349 islands, which can be distinguished into two groups geographically. Islands located north of 10^0 N Latitude are the Andaman group of islands while the rest belong to the Nicobar group.



The northernmost point (Land-fall island) is about 901 km away from the mouth of Hoogly River and about 190 km from Myanmar. The southernmost island is Great Nicobar, whose southern most tip is only about 150 km away from Sumatra, Indonesia. The Capital of the Andaman and Nicobar Islands is Port Blair, which is 1255 km from Kolkata, 1190 km from Chennai and 1200 kms from Vishakhapatnam. The Union territory has two districts viz. Andaman and Nicobar.

There are 325 islands in the Andaman group while the Nicobar group has 24 islands. Total geographic area of Andaman and Nicobar Islands is 8249 sq. km., of which, the Andaman group of islands cover 6408 sq. km., while the Nicobar group covers 1841 sq. km. The recorded forest area is 7170.69 sq km (86.93%) and the actual forest cover is 7606 sq km (92.2%).

Out of the total 349 islands only 38 islands are inhabited, 24 in the Andaman group and 12 in the Nicobar group.

There are 547 villages in this Union Territory, of which 504 are inhabited and the remaining 43 are uninhabited. Of these, 355 villages (334 inhabited and 21 uninhabited) are in Andaman district and the remaining 192 villages (170 inhabited and 22 uninhabited) are in the Nicobar district. [District Census handbook of Andaman District, 1991]

Geography and Geology: These islands are the summits of a submerged mountain range lying on the great tectonic suture zone extending from the eastern Himalayas along the Mayanmar border to the Arakan and finally Sumatra and Lesser Sundas.

The physiography of these islands is characterised by undulating topography and intervening valleys. There are, however, some flat islands like Car Nicobar and Trinket.

There are no major perennial fresh water rivers in these islands except Kalpong in North Andaman and Alexendra, Dagmar and Galathea rivers in Great Nicobar. There are several rain fed streams, which dry up during summer. The coastline of these islands forms a large number of bays, lagoons and serpentine creeks, and has a length of about 1962 km. At several places tidal creeks penetrate far inside the land and form outlets for fresh water streams.

Two islands of volcanic origin are found here- the Narcondum and the Barren Islands. The former is now apparently extinct while the latter is still active. [Andaman and Nicobar forest Department Report]

Soil: Soil cover is rather thin, varying from 2m to 5m. It is mostly alluvial on hilltops while diluvial in ridges and valleys. The coastal flats have an admixture of sand, silty clay and diluvial material with fine fragments of coral lime. The soil is, in general, mild to moderately acidic with high humus on top. [Andaman and Nicobar forest Department Report]

Climate: These islands have a tropical climate, which is warm, moist and equable. The temperature ranges from 18^0 C to 34^0 C. The proximity of the sea and the abundant rainfall prevent extremes of heat. An average of 3000 mm per year is received from southwest and northeast months. Humidity is high varying from 66 to 85%. In normal conditions the wind speed is fairly constant (5 knots per hour) but during cyclonic weather it may go as high as 12 to 13 knots per hour. [Andaman and Nicobar forest Department Report]

Demography: The population of these islands as per the last three censuses is shown in the following table:

Population	1981	1991	2001
Andaman District	157,821	241,453	314,239
Nicobar District	30,433	39,208	42,028
Total	**188,254**	**280,661**	**356,265**

The table above shows that the population is growing at a rapid pace. This increase is mainly due to the immigration of people from mainland. The density of population in ANI is about 43 persons per sq. km (All India: 324). Population is mainly dominated by settlers from mainland. Tribal population constitute only 9.45% of the total population. Main occupations of people include agriculture, animal husbandry, fishing, forestry and plantations, construction, transport, trade and commerce. [Andaman and Nicobar forest Department Report and Census of India 2001]

IV. IMPORTANCE OF A&N BIODIVERSITY

The Andaman and Nicobar Islands are an internationally acknowledged hot spot for biodiversity. This is despite the fact that there have been very few intensive studies in these Islands and many of the species still remain to be discovered or identified. However, even the little that is known is enough to establish the very high biodiversity value of these islands.

The fact that these islands have a relatively small population and low population density, and that they are remote and difficult to access, makes them one of the last places in India where, with a little effort, biodiversity can be effectively conserved, and that too without serious adverse impacts on the local inhabitants.

ANDAMAN & NICOBAR ISLANDS BIODIVERSITY AT A GLANCE

•Plant diversity:
–About 2500 flowering plants described
–14% (223 spp.) are endemic- found no where else in the World - and 40% of non-endemics have only extra-Indian distribution
•Animal diversity:
–5100 animals described (100 freshwater, 2100 terrestrial and 2900 marine)
–Coral reefs richest in India- 179 spp.
–Mammals- 52 spp of which 33 are endemic (63%), Birds- 244 spp of which 96 are endemic (39%) and Reptiles –76 spp of which 24 are endemic (32%)
(Source: ANI Forest Department Presentation)

Animal Life

Nature has endowed these islands with a unique and varied animal life both on land as well as in sea. Faunal distribution in these islands is influenced by fauna of both Indo-Chinese and Indo-Malayan regions. Large mammals are absent in both Andaman and Nicobar Islands. Geographic Isolation of these islands has resulted in high degree of endemism. The surrounding seas are equally rich in marine biodiversity. Endemism is more pronounced in land animals.

Faunal diversity and endemism in A & N Islands

Animal Group	No. of special Subspecies	No. of Endemics	% Endemism
Terrestrial Fauna			
Mammalia	55	32	61.5
Aves	246	99	40.2
Reptilia	76	24	31.6
Amphibia	18	3	16.7
Mollusca	110	77	70.0
Arachnida	94	38	40.4
Hemiptera	146	22	15.0
Diptera	214	24	11.2
Coleiotera	878	92	10.5
Lepidoptera	426	52	12.2
Isoptera	40	19	47.5
Odonata	36	4	11.1
Annelida	30	9	30.0
Total	2,366	495	20.92
Marine Fauna			
Mammalia	7	-	-
Reptilia	12	-	-

Animal Group	No. of special Subspecies	No. of Endemics	% Endemism
Pisces	1,200	2	0.2
Echinodermata	350	4	0.4
Mollusca	1,000	18	1.9
Crustacea	600	6	1.0
Polychaeta	184	4	2.2
Anthozoa	326	2	0.6
Porifera	72	-	-
Meiofauna	490	102	21.0
Total	4,241	138	0.11

***Mammals*:** Out of 55 terrestrial and 7 marine mammal species reported so far, **32 species are endemic.** Common mammals found here are Andaman Wild Pig, Crab eating macaque, Andaman masked palm civet, Dugong, Dolphin, Whale, Spotted deer, Andaman spiny shrew, Nicobar tree shrew, Andaman horse-shoe bat, Lesser short nosed bat, elephant etc.

Birds: The rich avi-faunal diversity has always attracted ornithologists and bird watchers to these islands. As many as 246 species and sub species of birds are reported to inhabit these islands and of these **99 species and sub-species are endemic**. Some important species are Andaman Teal, Megapode, Narcondum hornbill, Nicobar pigeon, Green Imperial Pigeon, Nicobar Parakeet, Crested serpent eagle, White-bellied sea eagle, Edible-nest swiftlet, Emerald dove etc.

Reptiles: Sandy Beaches of these islands are famous for turtle nesting. There are 76 terrestrial reptiles. **Of these 24 species are endemic**. Important species include four main species of sea turtles viz., Leatherback turtle, Green sea turtle, Hawksbill turtle, and Olive Ridley turtle. Also found is the Salt-water crocodile, Water monitor lizard, Reticulate Python, sea snakes and many other varieties of snakes including King Cobra.

Corals: ANI are the richest of the Indian region in coral diversity with as many as 179 species covering 2000 sq km. Coral reefs are important breeding and nursery ground for fish and many other organisms and have been aptly called "The Tropical Rain forests in the Sea".

***Marine Life*:** Due to its long coastal stretch, these islands have a very rich marine biodiversity. They harbour more than 1200 species of fish, 350 species of echinoderms, 1000 species of molluscs and many lower forms of life. Among vertebrates, dugongs,

dolphins, whales, salt-water crocodiles, sea turtles, sea snakes etc. are common. (Source: *Andaman and Nicobar Islands: Forests and Environment, Department of Environment and Forests, ANI Administration, March 2001)*

V. THE STATE OF THE FOREST AND OTHER ALLIED MATTERS

Given the unique biodiversity values in the Andaman and Nicobar Islands (ANI) and their extreme ecological fragility, the major objective of forest and ecosystem management in these Islands should be biodiversity conservation. The other objectives that need to be concurrently kept in mind are:

a. Protection of ecological services, like soil and water conservation.
b. Provision of timber and non-timber products for local use.
c. Protection of the habitat of the forest based tribals of the Islands.
d. Recreation.

The fact that ANI has a preponderance of evergreen and semi-evergreen tropical rain forests makes the conservation of forests from the point of view of both biodiversity and ecological services particularly important. Rain forests are not only the richest biodiversity pools in the world but are also very fragile. Most of the nutrients are in the vegetation and the forest litter and the soils are usually shallow. The slightest disturbance of the forest leads not only to significant loss in biodiversity but also to aggravated water runoff and soil erosion. The erosion of soil depletes the land and adversely affects the marine ecosystem, which receives the eroded soil. This is especially true of the ANI, where the topography is undulating and rainfall high. The fact that most forestry operations are carried out so as to finish just before the monsoons further aggravates the situation, as the soils that have been disturbed by the forestry operations do not have time to stabilise before torrential rains wash them out to the sea. Consequently, the coastal and marine ecosystem, including the very rich corals reefs and other marine life, gets badly affected.

The loss in floral biodiversity has an effect on the faunal biodiversity, affecting species of insects, birds, mammals, reptiles and others. This, in turn, also affects the coastal and marine biodiversity.

Keeping this in mind, the major threats to the forests and other ecosystems of ANI are outlined below.

A. COMMERCIAL FORESTRY

One of the major threats to the biodiversity of the forests of ANI is the stress on commercial forestry. For over a hundred years the forests have been subjected to increasing commercial exploitation. The forest department currently follows a "conversion" forestry system where natural forests are worked, commercial species extracted and the worked forests regenerated and managed in a manner such that there is a resultant preponderance of commercial species for future harvesting. In the process, biodiversity is destroyed deliberately. For example, the *Working Plan for The Forests of Little Andaman Islands (1999 to 2009)* states:

> **"Measures to Attain Special Objectives of Management:** It is Proposed to attain the special objectives of management by adopting a suitable natural regeneration technique, supplemented by artificial means wherever necessary, without any deterioration in the site quality, so that the natural forests of Evergreen, Semi-Evergreen and Deciduous types are converted into forest areas containing a higher percentage of more valuable timber species thus increasing the productivity and potential value of these forests. In such places where natural regeneration technique does not result in adequate stocking, it is augmented by dibbling/broadcasting of seeds of valuable species like padauk, gurjan, White Chuglam, Badam etc. and if necessary artificially planting seedlings from nursery stock." (Emphasis added. Written By Prakash M. Bhatt, IFS, Deputy Conservator of Forests,)

Similar passages are found in other working plans of the ANI forest divisions. What is surprising is that the Ministry of Environment and Forests (MoEF) is, even now, approving working plans with such objectives.

In some areas the natural forests have been totally cleared and replaced with plantations of padauk, gurjan, teak, or a combination of these and other commercial species (annex 4).

Forests were also leased out to the private industries and, from 1977, to the Forest Corporation, to fell and "regenerate". Though the practice of leasing forests to the private industry finally stopped in 1990-91, the corporation continues to directly fell and regenerate forests in Little Andaman and in North Andaman Islands.

Whereas this approach might have been in consonance with earlier thinking about forest management, for over two decades now the value of conserving biodiversity is well understood and accepted.

The forests of Andamans have been systematically converted from natural, biodiversity rich, forests to commercial "plantations" primarily to meet the raw material demand of the four medium sized wood based industries that were established in the Islands. These were:

a) WIMCO in South Andaman
b) Andaman Timber Industry (ATI) in South Andaman (Installed capacity 31,160 cum pa)
c) Jayshree Timber Products, Middle Andaman (28,300 cum pa)
d) Kitply Industries Ltd. in Middle Andaman (31,650 cum pa)

Of these, WIMCO closed down some years back and the Andaman Timber Industry and Jayshree Timber Products closed down recently, for various reasons, though prior to the Supreme Court order of October, 2001. Only Kitply Industries was still functioning when the Supreme Court ordered a ban on the felling and processing of all naturally grown trees.

These industries, apart from getting timber from the forests, have also been provided a handsome transport subsidy by the government, to bring in materials and to export their finished products.

The Ministry of Industry, Government of India, had sanctioned a Transport Subsidy Scheme for the wood based industries in the ANI from 1971. Under this scheme, 90% of the cost of transportation of raw material from the main land to the islands and 90% of the cost of transportation of the finished goods to the mainland was reimbursed to the medium and small-scale units by the ministry of Industry. This scheme was amended in 1993 to benefit wood based industries for a period of five years only from the date of commencement of commercial production.

This scheme was again amended, in 1995, and subsidy continued to be paid to the units, irrespective of size, beyond the stipulated 5 years, from March 1995 to March 2000. There is now a proposal to further extend this scheme for, it is argued, that

such subsidies are necessary to ensure that employment is provided in the forest based industries. (Source: Note from the Planning Commission –copy at Volume II page 309).

It is interesting to note that while the three industries, ATI, Jayshree and Kitply, totally employed 1994 persons directly, in the last four years (1997-2001) they drew transport subsidies from the government of around Rs.15 crores, with an annual peak of over 5 crores in just 1999-2000 (For details, see Volume II, page 135-136).

It is questionable, therefore, as to how much, if any thing at all, they contributed to the local economy.

In fact, the Minutes of the Island Development Authority (IDA)[1] meeting of December, 1986, under the chairmanship of the then Prime Minister, record that:

> " Shri Romi Khosla stated that 75 percent of the timber extracted in the islands is used for plywood and match factories, and not for construction purposes. In fact, timber is not used at all as an economic base for durable assets of the Islands. ....Large factories are consuming large amounts of timber in ways which only destroy the inheritance. PM said that such industry should be shut down at the earliest..." (Proceedings of the first meeting of the IDA, 27 December 1986, para 14).

In January 1989, again under the chairmanship of the then Prime Minister, the IDA decided that:

> "...wood extraction to feed the existing industries should be completely phased out in the next few years; if necessary, one should even import the wood needed" (Minutes of the Fifth Meeting of the IDA, January 1989, item No. 6, ix e)).

The then Inspector General of Forests (now re-designated as the Director General of Forests) visited the Islands in October 1989, and also recommended that:

> "Timber extraction in A&N Islands should be restricted to maximum of 1,15,000 cu.m. which is the current requirement and it should be further reduced in

[1] The IDA was constituted on 8th August, 1986 with the Prime Minister as the Chairperson. The members include the Finance Minister, Deputy Chairman of the Planning Commission and ministers of various other ministries (transport, tourism, planning, communications, defence, environment & forests, information and broadcasting, various officials and experts. The functions of the IDA are to (i) decide on policies and programmes for an integrated development of the Islands (ANI and Lakshadweep) keeping in view all aspects of environmental protection as well as the special technical and scientific requirement of the Islands, and (ii) review progress of implementation and impact of the programmes of development.

subsequent years by phasing out supply of timber to major wood base industries." (*Timber Extraction in Andaman & Nicobar Islands*, AG Oka, 1989).

Despite this, the Ministry of Environment and Forests and the A&N Administration, after affecting an initial decline in extraction levels from 1,23,678 cum in 1988-89 to 1,03,660 cum in 1990-91, again raised the level of extraction to 1,35,523 cum in 1994-95 (annex 5). Considering there was no subsequent decision of the IDA or the Prime Minister, reversing the earlier decision, it is not clear on what basis this was done. Fortunately, with the closing down of three of the wood based industries, the extraction levels have now come down.

In addition, timber is also being supplied to the two government saw mills, one in Chatham, South Andaman (installed capacity 24,000 cum pa) and one in Betapur, Middle Andaman (5000 cum pa) (Source: ANI administration, copy at Volume II page 204).

Some of the timber sawn is being exported to the mainland. This is mainly sold in Chennai and Kolkata. The ANI administration maintains depots in these two cities for selling the timber it exports. However, the quantity of sawn timber exported by the administration has not crossed 1000 cum pa for the last 10 years and has fluctuated between 130.77 cum in 1998-99 to 868 cum in 1991-92 (Source: ANI administration, Volume II, page 152).

Locally, timber is used by small-scale sawmills, which numbered about 35 in 2001, with a total installed capacity of around 60,000 cum per annum and an operating capacity of about 25,000 cum pa (annex 6). In addition, there are also over 130 small furniture manufacturers using about 1600 cum of sawn timber (equivalent to about 3000 cum of logs) per year. Much of the timber processed by these two categories is for domestic use, though a small proportion (614 cum in 2000-01) is sent out to Chennai and Kolkata (annex 7).

Only the government saw mills are permitted to saw padauk, the major hardwood in the Islands. This is reportedly being done in order to prevent theft of padauk from the forests. However, as the government saw mills are located only in South and Middle Andaman, the availability of such hardwoods to the people in other parts of the Islands is a problem.

As a result of the commercial orientation of forestry in the Islands, at present nearly 60% of the exploitable forests (excluding the tribal reserve and protected areas) in South Andamans, Mayabandar and Baratang, have already been "worked" and exploited and, consequently, their natural profile significantly changed and their biodiversity value compromised, perhaps forever. Though the ANI forest department have stated that the total area of forests that they work is only 30%, this includes the area of the numerous outlying islands, mostly very small (see list of national parks and sanctuaries at annex 8). Given the nature of island ecology, the biodiversity values of the larger islands are much higher, by and large, than those of small islands of usually 1 sq km or less. Though this is an accepted scientific fact, the actual position in the ANI does not seem to have been studied in detail. The only study that could be found was by Dr Priya Davidar of the Salim Ali School of Ecology and Environmental Sciences. She states:

" ....forests on large islands are very important in the conservation of biodiversity. All the 47 species of forest birds and 57 species of butterflies (out of a total of 65 species recorded in this survey) were recorded on islands larger than 30 sq km in area. Islands smaller than 1 sq km had records of 36 species of forest birds and 39 species of butterflies. On islands smaller than 0.1 sq km, in area, only 20 species of forest birds and 21 species of butterflies were recorded" ('Conservation Priorities for the Andaman and Nicobar Islands', *Journal, Bombay natural History Society*, 93(3), December 1996, p 556 –copy at Volume II, page 277).

Therefore, though many of these small islands, which are in any case mostly inaccessible and therefore not economically viable to work, have been excluded from the "working circle", much of the larger islands, which are far richer in biodiversity, have been worked. Also, in terms of ecological services, like soil and water conservation, the larger islands are far more vulnerable as they are the ones where a majority of the population resides.

In all these areas the vast majority of non-commercial species have either disappeared or their composition been significantly changed. Though enough evidence of this exists, there appear to be very few studies documenting exactly what changes have actually occurred and what species have been lost or decreased in distribution and number. The two studies found dealt with just tree species. One is an unpublished MSc

dissertation of Sonali Pandit, of the Salim Ali School of Ecology and Environmental Sciences, Pondicherry University, (*Regeneration of Important Rainforest Tree Species in Virgin and Selectively Logged Sites in the South Andaman Islands*, not dated). This dissertation was based on a field study of three sites in South Andaman, one that was undisturbed, and the other two that had been worked, of which one was regenerated from 1955 and the other from 1986. According to this study, there were major differences between the composition of the first, undisturbed, patch and the remaining two. Most notable was the fact that the undisturbed site had a predominance of rare, non-commercial species, while in the latter two these had almost disappeared and the preponderance was of commercial species (annex 9).

The second study, done by the Forest Survey of India (FSI) of the Ministry of Environment and Forests, Government of India, also suggested a similar decline in biodiversity (copy at Volume II, page 36-53).

During the second visit to Andamans, the forest department organised for me a visit to what was presumably a good regeneration site. This was a forest "regeneration" site of 1951, in South Andaman. This visit also revealed that the regenerated area had a preponderance of commercial species and that the species composition had drastically changed from its natural profile (forest department report at annex 10).

Recommendations

Forest Harvesting

1) ***Felling of trees and collection of non-timber forest produce (NTFP) should be banned from the forests of Little Andaman Island and all tribal reserves except for i) collection of NTFP from already worked forests of Little Andaman and from forest areas designated for the purpose in the Nicobar group of Islands, for meeting the legitimate consumption of local inhabitants; and ii) collection of timber and other forest produce by tribals living within tribal reserves for meeting their bonafide needs.***
2) ***Harvesting of all forest produce including timber and NTFP should be completely prohibited from National Parks and Sanctuaries.***
3) ***In addition to areas covered under 1 & 2 above, no felling of trees should be allowed in any unworked forest area, i.e., area where felling of trees as per***

working plans, working schemes, felling schemes or approved working plans, has not taken place earlier. There should also be no diversion of forestland from any such unworked area or from areas covered under 1 and 2 above, without the specific orders of the Supreme Court.

4) *No felling of trees for whatsoever reasons or justification should be carried out to supply to, or to meet the raw material requirement of, plywood, veneer, blockboard, match stick or any other such wood based units except to local small-scale units (including saw mills) solely for meeting the local requirement for sawn timber and other wood based products.*

5) *For meeting the timber and other forest produce requirements of inhabitants of the ANI, felling of trees from forest areas not covered under 1, 2 & 3 above, i.e., forest area worked earlier in accordance with working plans, working schemes, felling schemes or approved working plan and excluding areas falling within national parks, sanctuaries, tribal reserves, or Little Andaman, may be allowed. Such felling may be undertaken as per prescriptions of the working plans approved by the MoEF. These plans should also contain action plans for removing, in a phased manner, trees of commercial species that are in number or concentration in excess of what is found in a natural forest of the same type and similar location. Concurrently, efforts should be made to bring back the forest to its natural profile by encouraging /reintroducing those species of fauna and flora that naturally occurred in these forests prior to their being "converted". The working plan should also contain sufficient provisions for regeneration of felled areas. In accordance with an earlier Supreme Court order of 22nd September, 2000, felling of trees should be allowed only it sufficient financial provisions for implementing the working plan prescriptions have been made.*

6) ***In the meanwhile, the present ban on felling of trees may be continued and the local requirement of timber and other forest produce may be met by utilising the already felled trees and sawn timber lying with the forest department and the ANIFPDC.***

7) *Once the stock of already felled trees and sawn timber is depleted, the local requirement of timber should be met, as far as possible, by harvesting the mono culture and mixed plantations of padauk, gurjan, teak and other species. The felling of trees from already worked natural forest, as specified in 5 above, should be undertaken only to meet the balance requirement. However, if the local requirement of timber and other forest produce is more than what could be obtained by felling of plantations and sustainably extracting trees from worked areas, as specified in 5 above, the same may be met by bringing timber in from other parts of the country. Under no circumstances should the over harvesting of the forest available for felling under para 5 above be permitted or undertaken.*

8) *There should be no expansion of monoculture or commercial plantations on forestland. The existing plantations of oil palm, rubber and teak are reportedly no longer viable and should be phased out. The land so released should, in so far as it is forestland, be regenerated as specified earlier. Consequently, the Andaman and Nicobar Islands Forest Plantation and Development Corporation Ltd. (ANIFPDC) should be wound up as it was primarily set up to promote commercial forestry and plantations, especially in Little Andaman.*

9) *At the same time, efforts should be made to reduce the level of demand for timber and for firewood. For the purpose, the A&N Administration should investigate and implement methods of achieving this, including the conversion to the wood and bamboo based "Assam type" construction, which is both less timber intensive, and safer in earthquakes, than the present all-timber or RCC buildings.*

Wood Based Industry

10) *There should be a complete ban on the establishment of any new wood based unit for the next 10 years.*

11) *All existing small-scale wood based units (saw mills) should be relocated within industrial estates or, where industrial estates are not feasible, in locations contiguous to forest offices or otherwise convenient for the forest department to monitor. This relocation should be completed within one year, after which the*

non-complying saw mills should be closed down. These saw mills should also be required to obtain a licence from the ANI Forest Department within three months and to maintain such records as may be prescribed by the forest department. Their licence may be renewed every year at the discretion of the ANI Forest Department, after the department has satisfied itself that a) the unit was not involved in the use of any illegal timber; b) the prescribed records were properly maintained; c) all provision of the act, rules and the terms and conditions stipulated by the forest department from time to time have been complied with. Necessary rules, guidelines etc., for the purpose, should be prescribed by the forest department within three months.

12) No subsidy of any type, including transport subsidy, should be given to any wood based unit.

13) Existing medium and large scale wood based industries (including plywood, veneer, and match industries) can be allowed to function provided they import their entire requirement of wood and other forest based raw materials from the mainland or from abroad. No subsidies should be allowed to them.

14) No timber, either as logs or as sawn timber or plywood/veneer, or in any other form, should be transported out of the Islands through any means whatsoever. This should not, however, inhibit the transportation, as personal baggage, of a reasonable quantity of wooden handicrafts by tourists or of personal articles by those permanently leaving the islands. Also, where a wood based industry, as specified in 13 above, imports its entire wood and forest based raw material requirement, then it should be permitted to export its finished product.

B. USING UNTREATED TIMBER FOR CONSTRUCTION

Another factor contributing to an increasing demand of timber is the fact that most of the timber used in the Islands is not treated prior to being used for construction purposes. This results in its having a very short life, requiring replacement every three or four years. Despite the fact that the then Inspector General of Forests, Government of India, had recommended way back in 1989 that: "No timber should be used without proper preservative and seasoning treatment to prolong the life of timber" (Oka 1989), the current installed capacity for treating timber is only 1,900 cum per annum. (Annex 11),

which is far below the local requirement of treated timber, estimated to be around 5 to 10 thousand cum per annum. Treated timber has a life that is reportedly ten times greater than that of untreated timber. Therefore, by treating all timber, the demand should come down ten fold.

Recommendation

15) All timber, bamboo and cane used for construction and requiring treatment in order to extend its durability and life, should be so treated and the administration should ensure that requisite capacity to treat all such timber is in position within a period of six months. After the expiry of this period, no timber, bamboo or cane of the type requiring treatment should be sold for use in building and construction activities, or used for such purpose, unless it has been appropriately treated.

C. ENCROACHMENTS

Another major threat to the forests of the Islands is because of encroachment of forest areas. The A&N Administration had already identified and regularised the forest encroachments of 1367 families who had encroached up to 1978, on over 2500 ha. of forestland. They were to be regularised/resettled in one hectare land each and 1367 hectares of forestland had, with the approval of the MoEF, been denotified in 1988 for the purpose. However, a large proportion of the families that had to be shifted have not been shifted to their designated sites. Therefore, they continue to occupy forestland and to further expand and degrade their holdings (Source: ANI administration, Volume II, pages171- 173, 71-76). There is no obvious reason why these families have not yet been shifted, despite decisions in the IDA and other bodies to this effect.

Meanwhile, many of the families who continue in, or have been shifted to, their designated sites of 1 ha each have, reportedly, encroached additional land and are now sitting on areas far in excess of those allotted to them. Concurrently, those families who have not yet been shifted continue to reside in forest areas on sites that are mostly much larger than 1 ha and often progressively increasing.

Besides, reportedly some of the families originally identified as pre 1978 have now moved away and in their place new families have settled on their encroached land. These families are reportedly now claiming pre-1978 status.

In addition, an estimated 2325 families have encroached subsequent to 1978 on 2633.654 ha of forestland (details at annex 12). These have now been identified though little action seems to have been taken to remove them from the forest areas.

Unfortunately, many of these encroachments are in some of the last remaining natural lowland forests in North Andaman. Also, they appear to each be growing in size and collectively growing in numbers (Aerial pictures of encroachments in the forests of Diglipur, North Andaman, enclosed from page 47 onwards. Maps of encroachments at annex 13-18).

Recommendations

16) Any further regularisation of encroachments on forestland in any from, including allotment/use of forestland for agricultural or horticultural purposes, should be strictly prohibited.

17) All those families who have been identified as having encroached on forest land prior to 1978 and have not yet shifted to their allotted rehabilitation sites, should be given three months notice to vacate their encroachments and shift to the allotted land. Failing this, their allotment should be cancelled and they should be forcibly evicted within three months of the deadline being over, without any further claim to land or any other form of rehabilitation.

18) Similarly, those among the pre-1978 families that have shifted to their allotted sites but have occupied more land than they were entitled to, should also be given three months notice to vacate the extra land occupied by them. On the expiry of this notice period, the allotments of those who have not complied with this notice should be cancelled and they should be forcibly evicted within three months, without any further claim to compensation or land.

19) All post 1978 forest encroachments should be completely removed forthwith and, in any case, within six months. Post 1978 encroachers (except for foreign nationals) should be allotted homesteads in revenue land and training and opportunity for self-employment or for other types of livelihood activities provided.

20) The forest officials in the ANI should be given requisite powers to do this, including:

- *Power of summary eviction of encroachments: As in the case of Madhya Pradesh, vide Section 80A, IFA, 1927.*
- *Magisterial powers to assistant conservators of forests: The Assistant Conservators of Forests should be appointed as executive magistrates/special executive magistrates in order to oversee the evictions carried out by the Range Officers on receipt of orders of eviction from the estate officers.*

21) For the purpose, an effective action plan should be prepared and implemented under direct supervision, monitoring and control of a committee comprising of the Lt. Governor, Chief Secretary, Principal Chief Conservator of Forests of ANI, and reputed local NGO representatives. The Chief Secretary, ANI, may be asked to file a monthly progress report in the Supreme Court.

22) In order to prevent any further encroachments and rampant immigration, the Administration should, within three months, regulate the entry of people to the islands by having the Islands declared as an inner line area and by imposing relevant restrictions under section 3 and other provisions of the Environment (Protection) Act of 1986. In accordance with this, non-residents entering the islands should have to invariably register themselves so that those who do not return to the mainland within a reasonable time can be traced and, where they have illegally encroached on land, can be evicted from these encroachments at the earliest. In addition, entry to the more vulnerable and forested areas of the Islands should be restricted.

23) Once this regulation is in position, the administration should in a time bound manner issue identity cards to all the residents so that there is no gap in the period of identification and issuance of ID cards. This would ensure that fresh illegal encroachers are easily identified. Subsidised travel to the Islands should, once identity cards have been issued, be available only to bonafide residents of the Islands.

24) Divisional Forest Officers and, where relevant, village protection committees, as described later, should be made responsible for prevention, early detection and quick eviction of new forest encroachers.

25) The forest department should be strengthened and appropriate village institutions set up for the purpose, as detailed later.

D. ROAD THROUGH THE JARAWA TRIBAL RESERVE

Perhaps the best remaining natural forests in the Andaman Islands are in the tribal reserves. The most significant of these are the Jarawa Reserve in South and Middle Andaman and the Onge Reserve in Little Andaman. Due to the earlier hostility of the Jarawas, these areas were left alone. However, in recent years the Andaman Trunk Road has opened up and passes contiguous to and in some cases through the tribal reserve (map at **annex 21**). This road, and the increased access to the Jarawas, poses a major threat not only to the Jarawa tribals but also to the forests that they have protected for so many years. The road has also made it easier for encroachments to take place in the forests by allowing easy access to many forest areas that were earlier not easily approachable.

Interestingly, a high level committee constituted at the behest of the then Prime Minister, Mrs. Indira Gandhi, had suggested in the early 1980s that, as regards the Andaman Trunk Road:

"i) though the absence of any road would be the ideal condition for the Jarawa, the next alternative would be

ii) to realign the road so as to orient it as far away from the boundary for the Jarawa Reserve as possible."

Recommendation

26) The Andaman Trunk Road should be closed to all vehicular traffic from Miletilak in South Andaman to the northern boundary of the S. Andaman Island. Similarly, it should be closed to all traffic from Kadamtala (corresponding to Prolobjig camp No.3) in Middle Andaman up to Kaushalya Nagar (corresponding to Porlobjig camp No. 15). This should be done within three months. Further, no person except for the Jarawas living in the Reserve should be allowed to enter the Reserve by any means unless he/she is permitted by the Principal Chief Conservator of Forests, and the Secretary, Tribal Welfare, ANI Administration, and no such permission should be granted unless the person is proceeding on bonafide work related to the welfare of the tribals or the protection of the area.

E. DIVERSION OF LAND AND FELLING OF TREES FOR DEVELOPMENT PROJECTS AND ACTIVITIES

From time to time the Ministry of Environment and Forests (MoEF) has been granting permission under the Forest Conservation Act for the diversion of forestland for non-forest uses. Naturally grown trees are also being cut for various purposes including for the development of tourist and defence infrastructure. However, there appears to be no land use plan for the Islands and clearances seem to be given on a case by case basis without determining the optimality of the land use and the future options that such a clearance could compromise.

The defence forces have recently constituted a combined command of the Navy, Air force and Army, in the Islands. However, there appears to be no clear understanding of how much land they would require and how many trees need to be cut in the process. There have been requests from them for allowing the felling of over a thousand trees for clearing approaches to runways and for other such requirements. However, no one was able give a consolidated picture of the requirements. Though efforts were made on both the visits to talk to the armed forces representatives on this matter, they were not available.

Recommendations

27) ***The felling of 27 trees for the 33 KV transmission line from Bamboo Flat to Minnie Bay, and 17 trees for construction of rural road from Adajig to Flat Bay Village should be permitted as a one-time relaxation, as these projects are already in their final stages, a small number of trees are involved and, reportedly, necessary clearances had been obtained from the MoEF prior to the Supreme Court's order of 10.01.01. However, all other proposals or clearances under the Forest (Conservation) Act of 1980 or the Environment (Protection) Act of 1986, where diversion of land or felling of trees or other activities that would have an impact on the environment, are still to be undertaken, should be put up for review by the Supreme Court.***

28) ***For the conservation and protection of the forests and other ecosystems, an effective action plan should be prepared by the ANI Forest Department, in consultation with local NGOs and experts. This plan should also envisage a***

suitable enhancement of the protected area network, especially in the main islands of the Andaman and in the Nicobar Group. All unworked forest areas in Diglipur, Mayabunder, Middle Andamans and Baratang should be made into national parks, leaving a buffer belt between the national park boundary and the edge of revenue settlements, for protection by village protection committees. In addition, there should be a consolidation of the nearly hundred small island parks and sanctuaries and they should be constituted into viable units encompassing the marine areas surrounding them. This plan, after being approved by the MoEF, should be strictly implemented. The necessary funds, vehicles, equipment, human power, police help and legal power required for the effective implementation of this action plan should be made available by the ANI administration.

29) Appropriate regulations under existing Acts like the Environment (Protection) Act of 1986, with similar objectives as The Delhi Preservation of Trees Act, 1994, currently in force in the Union Territory of Delhi, should be set in place in ANI, within six months, to regulate the felling of trees on non-forest land.

F. POACHING

Both the government and the local people reported the incidence of poaching of trees, other forest produce, wild animals and marine life. It was stated by many of the citizen groups that poachers from Myanmar and other neighbouring countries also come to poach timber, sea cucumbers and other species, especially in North Andaman. There are also local poachers operating in the Islands. The forest department does not appear to have the infrastructure, especially in terms of manpower, arms and fast boats, to prevent poaching. Also, they appear not to have requisite powers to deter poaching and effectively apprehend poachers.

Recommendations

30) The Forest Department should be immediately strengthened in order to be able to effectively prevent poaching.

31) Forest officers should be given adequate powers, under the Indian Forest Act of 1927 (IFA,) as has been done in other states, to meet the threat of poaching. These could include:

- ***Power of confiscation: as provided for vide Section 52, 52A, 52B and 52C IFA, 1927 in Bihar, Section 52A and 52B in Himachal Pradesh, Section 52, 52A, 52B, and 52C in Madhya Pradesh, Section 62A to 61G of Goa, Section 61a to Section 62G of Gujarat, and Section 61A to 61G of Maharashtra.***
- ***Increase in the limit fixed for amount of compensation for trees under section 68(3) IFA, 1927: The present limit of Rs. 50 is required to be increased to Rs. 10000/- as in Goa.***

32) ***A co-ordination mechanism should be set up where the forest department, the civil administration, the Coast Guard and the Combined Defence Command in ANI can take co-ordinated action against poachers, especially against foreign poachers.***

G. INTRODUCTION OF EXOTICS

The introduction of exotics is always a threat to ecosystems, but it is a special threat to Island ecosystems, as is obvious in the ANI.

Over the years, many exotic species of animals and plants have been introduced in the Islands, some deliberately and many accidentally. Some of those that have had a very destructive impact on forest regeneration include the spotted deer (cheetal) and the elephant. The deer, reportedly brought for aesthetic purposes, have proliferated widely due to the absence of any natural predator in the Islands and have significantly retarded forest regeneration. The elephants were brought to the Islands by a timber logging company, which subsequently abandoned them. Reportedly about sixty of them have become feral and are seriously impacting on the forests in the regions that they are found. The introduction of dogs and cats, many of which have turned feral, also pose a great threat to turtle breeding and other indigenous species

There has also been infestation by various exotic species of weeds, which could prove to be a major deterrent to the regeneration of degraded forest areas, especially areas freed from encroachment.

The introduction of oil palms in Little Andaman and of teak in various parts of the islands has also had a significant negative impact. In fact, the areas in Little Andaman where oil palms were introduced show up clearly as degraded forests in the remote sensing map prepared by the Forest Survey of India (FSI) (maps at annex 19).

Recommendations

33) No exotic species of fauna or flora should be introduced into the islands. Accordingly, a suitable set of guidelines and procedures should be developed for the purpose.

34) A time bound action plan should be drawn up to deal with the exotics already on the island, including weeds, and their removal/eradication should be taken up on a war footing, including the translocation of elephants back to the mainland and the inhibition of breeding, by deer, by darting the alpha males with anti-fertility drugs, as has been successfully tried in other countries.

H. COLLECTION AND DISTRIBUTION OF ROYALTY FREE TIMBER AND NON-TIMBER FOREST PRODUCE

Apart from commercial timber, the forests of these Islands are also providing timber and NTFP for use by the local people (annex 20). There is also "royalty free" distribution of timber.

In addition, government departments like PWD (for construction and repairs of roads) and the defence forces also directly access fuel wood. This not only leads to unregulated extraction but, in some cases, as along the Andaman Trunk Road, is leading to perceptible forest destruction.

Recommendations

35) The practice of distributing timber and NTFP free to settlers should be discontinued. Instead, rural populations should be formed into village forest protection committees and, as per the joint forest protection norms prevalent in other parts of the country, the amount of timber and NTFP required by village communities should be given to them on the basis of a memorandum of understanding, in return for their role in protecting the forests adjacent to their settlements and in detecting and preventing encroachments.

36) Government departments, including defence and PWD, should be supplied fuel wood and other required forest produce by the forest department and should not be permitted to directly collect these from the forests.

37) *Concurrent efforts should be made to minimise demand for forest-based resources. The Administration should encourage the use of sawdust as fuel, as*

is the practice in many other parts of the country. They should also investigate the possibility of replacing firewood as a domestic fuel by gas and consider giving a one-time subsidy for the purchase of gas stoves and cylinders to the poor rural population. Adequate supply of LPG to the Islands should be ensured on a priority basis.

I. MINING OF SAND

The erosion of the beaches and the depletion of coastal and marine species all have an impact on the forests and on the overall ecological status of the Islands. Coastal erosion affects the forests and degrades them directly. Besides, the complex interaction between insects, birds and forest plants gets disrupted as soon as there is degradation of coasts and coastal and marine species. Forest working also affects the coastal ecosystem, especially the coral reefs, by accentuating the flow of silt into the water.

Under the Coastal Regulation Zone (CRZ) notification under section 3(1) and section 3(2)(v) of the Environment (Protection) Act, 1986 and rule 5(3)(d) of the Environment (Protection) Rules, 1986 declaring coastal stretches as coastal regulation zone (CRZ) and regulating activities in the CRZ, "Mining of sands, rocks and other substrata materials, except those rare minerals not available outside the CRZ areas;" were banned. However, a special exception was made for the ANI, as under.

> "Provided that in the Union Territory of the Andaman and Nicobar islands, mining of sands may be permitted by the Committee which shall be constituted by the Lieutenant Governor of the Andaman and Nicobar Islands consisting of Chief Secretary; Secretary, Department of Environment; Secretary, Department of Water Resources; and Secretary, Public Works Department. Committee may permit mining of sand from non-degraded areas for construction purposes from selected sites, in a regulated manner on a case-to-case basis, for a period up to the 30th September, 2000. The quantity of sand mined shall not exceed the essential requirements for completion of construction works including dwelling units, shops in respect of current year and 2000-2001 annual plans. The permission for mining of sand may be given on the basis of a mining plan from such sites and in such quantity which shall not have adverse impacts on the environment."

The MoEF has further extended the period up to 30 September, 2002. However, there is no assessment of the either the general environmental impact on the ecosystem of the Islands because of the extraction of sand, nor a location-specific assessment of the impact of extraction on each specific beach/coastal stretch from where such extraction takes place. Therefore, it is not clear on what basis the MoEF has allowed and continues to allow the extraction of sand. .

According to the figures supplied by the ANI administration, approximately 2,23,937 cubic metres of sand was officially extracted from the beaches of the Islands in the three years 1998-2001. 72 beaches around the islands were used for extraction (annex 22). In addition, it is alleged by local people that there is also illegal extraction of sand, which is considerable.

Sand is primarily extracted for construction purposes. It is undeniable that the extraction of sand is causing a lot of environmental damage and that this is not a sustainable method of resource use. However, there appears to be no effort to phase out the extraction and to move towards other, more sustainable, methods of construction. Also, as the Islands are located in a high earthquake-risk zone, it is undesirable to construct concrete buildings there. Alternative construction material is available in the Islands and the small amount of concrete that still might be needed can easily be made using rock dust.

Recommendations

38) The extraction of sand should be phased out and no further extension should be granted after the current extension is over on 30 September, 2002.

39) As already mentioned earlier, alternate material for construction, including treated bamboo and soft woods, should be encouraged as this is less damaging to the environment and safer in case of an earth quake. Stone dust should be utilised where use of concrete is essential.

J. INAPPROPRIATE TOURISM

The ability of the fragile ecosystem of these islands to withstand the impact of tourism is limited. Apart from disturbance to the forests, there is also disturbance to the marine and coastal ecosystem, especially to the coral reefs. This can be seen in the Wandoor National Park where the coral reefs, in the two islands open to tourists (Jolly Buoy and Redskin),

have almost totally been destroyed. There is also the problem of water availability, disposal of garbage, generation of electricity and the construction of other infrastructure. Also, as most of the food and other goods sold in the Islands are imported form the mainland and the government pays a hefty subsidy for their transportation to the Islands, it is unlikely that the expenditure by the tourists for goods and services in the islands, would result in any net benefit to the economy. In fact, tourists coming by ship are often a net drain on the economy, as the government subsidy on each passenger ticket is also very high.

The Islands offer a great potential for high value, low volume, specialised eco-tourism that can be done with minimal infrastructure and follows the principles of dispersion and flexibility. Special-interest tourists, wanting to view the unique and rich biodiversity of the Islands, can be accommodated in wilderness areas in small clusters of tents with low concentrations in any one place. The location of these tents can be shifted every two or three years to ensure that no one site is inordinately impacted. Besides, there can be some ship-based tourism where specialised tourists are taken around in a ship that anchors at spots of tourist interest and allows day trips in small numbers. In fact, there are already foreign yachts coming and anchoring in the islands, but very little benefit flows from them to the local economy (annex 23).

Recommendations

40) No concrete or permanent infrastructure for tourism should be built on any forest area in the Islands. Tourist activities in forest areas should be restricted to tented accommodation or temporary wooden/prefabricated structures that can be dismantled easily and moved to another site. These areas should remain under the control of the forest department who should be responsible for ensuring that the quantum and type of tourism is such that it does not in any way degrade the forests or other ecosystems.

41) A proper eco-friendly tourism plan should be developed for the Islands within one year. This plan should also do an economic and a distributional analysis to highlight how tourism can make a net contribution to the economy of the Islands and how the economic benefits can be equitably distributed among the various segments of the local society and generate local employment.

42) Such a plan must be in conformity with the requirement for conserving the ecological and cultural integrity of the Islands and not pose a security threat to this strategically important area.

Miscellaneous Recommendations

43) The forest department and the administration of ANI should make public at the beginning of each year the proposed uses of natural resources, including forests. This detailed information specifying, among other things, uses, locations, quantum, purpose and users, and giving details of the basis on which these decisions have been made, should be published in the local news papers and also made available on a web site to be maintained for the purpose by the administration. At the end of each year, actual use, deviations from the proposals and the reasons thereof, must also be similarly made public.

44) The various forest working plans/protected area management plans should also be made accessible to the public, as soon as they are approved. Copies should be kept at all public libraries and other accessible places in the Islands. In addition, copies should be freely made available to the general public, on demand, after charging actual costs of photocopying.

45) All officers of the administration, including forest officers, should undergo an orientation training of at least five days, every three years, to acquaint themselves with the ecological characteristics of the Islands and the options available for their economic development in an environmentally and socially sustainable manner. Officers being posted from the mainland to these islands should be so oriented within three months of their posting.

46) The Government of India and the ANI Administration should consider setting up an Island Development Institute in ANI, that can become a centre of research, training and education for managing island and coastal ecosystems in a sustainable manner. This institute could not only cater to national needs but, over time, also become a regional institution. A proposal to the effect already exists and was submitted to the IDA many years back. It can be suitably modified and considered.

47) There are many areas that need to be properly researched and many problems that need innovative solutions. These include:

- *A assessment of the ecological differences between worked and un-worked forests.*
- *Methods of returning the worked and encroached forests to a their natural state.*
- *Methods of further working forests in a manner that minimises impact on biodiversity and the environment.*
- *Methods to conserve soil and water.*
- *Feasibility of generating energy through non-conventional methods, including wind and tidal energy.*
- *Methods of treating garbage and other pollutants, thereby protecting the coastal and marine environment from degradation.*
- *Methods of using alternate building materials that are environmentally friendly and sustainable.*

These and other required studies should be commissioned on a priority basis so that their findings can be urgently applied for the betterment of the islands.

VI. SOME POSSIBLE IMPLICATIONS OF THE RECOMMENDATIONS

1. There is likely to be some loss of employment, as detailed below, if these recommendations were followed.
   a. Loss of about 300 jobs if Kitlpy Industries close down as a result of these recommendations.
   b. Loss of about 2000 jobs if the Andaman & Nicobar Islands Forest and Plantation Development Corporation closes down.
   c. Loss of some employment (exact quantum not known) due to the ban on export of timber. However, this is likely to be very small, as very little timber was being sent to the mainland by private sawmills. In 1998-99 it was 923 cum, in 99-2000 it was 570 cum and in 2000-01 it was 614 cum.
   d. Surplus staff in the forest department due to curtailing of forest working and extraction.

e. Some loss of livelihood due to the banning of extraction of sand.

f. Some loss of road transport related employment due to the banning of traffic on the Andaman Trunk Road.

g. Need for additional sources of livelihood for about 2300 post 1978 forest encroachers, once they are removed from the forests.

2. However, following from these recommendations, there will also be significant cost saving and additional employment opportunities, as detailed below.

a. Savings on transport subsidies to the forest based industry to the tune of rupees five to six crores per year.

b. Savings from the closing down of two forest depots, one in Chennai and one in Kolkata, reportedly around rupees one crore a year.

c. Additional employment for setting up forest protection forces.

d. Additional employment in regenerating encroached areas and earlier worked forests.

e. Additional employment in the shipping sector due to increased ferry traffic after closing down the Andaman Trunk Road.

3. There are other relatively untapped or under-utilised areas of employment that can be developed. Including:

a. Fisheries – especially coastal – with local involvement. Current estimates suggest that only a small proportion of the fishery potential is being tapped. The islands have a continental shelf of 16 to 35 thousand sq km (according to different sources) and an exclusive economic zone (EEZ) of 600,000 sq km., which is 28% of the total Indian EEZ. The total potential has been variously calculated to be between 12,000 and 1,60,000 tonnes of fish (*Master Plan for Andaman and Nicobar islands for the Development of Fisheries*, Government of India, Ministry of Agriculture, 1989), just from the shelf area. However, more recent estimates are between 45,000 and 1,60,000 tonnes pa. According to the ANI administration, the current levels of harvest are just a fraction of the harvestable potential (Volume II, page 136).

b. Production of goods/food for local use – and the consequent removal of subsidies for transportation of these goods from the mainland. At present, almost all the goods for local consumption come from the mainland. Their transportation, by ship, also costs the government dearly in subsidies. However, many of these goods can be produced locally. This would not only promote local employment and save on subsidies, but also cut down on the requirement for cargo space.

c. Handicrafts. There is great potential for developing artisanal handicrafts industry and this could provide significant additional employment.

d. Swiftlet nest cultivation. This is potentially a very lucrative activity. There is great demand for swiftlet nests in the nearby Southeast Asian countries, and 1 kg fetched between Rupees one and two lakhs. A note describing the potential has been enclosed in Volume II, page 300.

e. Orchids cultivation. This, again, has tremendous potential, as these islands have a large number of very beautiful and rare orchids.

f. Spices/ Medicinal plants – without expanding agricultural land. All official settlers in the islands were given two hectares of flat (valley) land and two hectares of hill land. Much of this hill land is still forested and its conversion to agricultural land, apart from not being economically viable, would also cause significant soil erosion and disrupt the water cycles. Therefore, this land can be used for activities conducive to soil and water conservation, like high value spices/medicinal plants. There are many valuable spices and medicinal plants that are found in the Islands.

g. Eco tourism. This, again, has tremendous potential. High value specialised ecological tourism can generate a fair amount of local employment at all levels.

h. Water and soil conservation works. These are desperately needed in the ANI, which has acute water shortage and is also losing a lot of its topsoil, thereby disrupting the terrestrial, coastal and marine ecosystem. Existing schemes of the government of India, like the watershed programme, can

be extended and strengthened in these islands to both conserve the environment and generate employment.

4. Consequently, the potential for additional employment, if properly developed, is enough to offset any adverse impacts of the recommendations. Besides, if the Island is developed as a centre of education, research and training in island and coastal management, as recommended earlier, many additional jobs can be created. In fact, over time, caution will have to be exercised to ensure that the requirement for human power in the Islands does not exceed the local supply, necessitating further migration from the mainland.

5. There is also some concern expressed by the ANI forest department that if felling in unworked forests was banned then the worked forests and plantations would not be able to support even the local demands for timber. However, detailed discussions with the department and a scrutiny of documents and data brings out the following facts:

   a. The total area of worked forests in the Andamans, excluding Little Andaman, is approximately 1,00,000 ha.

   b. Most of these forests were worked in a manner such that only a proportion of the mature trees of commercial species were extracted and the immature ones left.

   c. Therefore, in each hectare of the worked forests there should now be a large number of mature trees that were either left behind as mother trees or that were immature when the logging was done fifty to sixty years ago, but are now mature and ready for harvesting.

   d. As the surplus number of commercial trees, in excess of what would have been their numbers in a natural forest, have to be removed in order to allow the forests to return to as close a natural form as possible, the extraction of these mature trees would serve the dual purpose of providing timber for local consumption and returning the forests to a near-natural profile.

   e. It has been estimated that at least 10 cum per hectare can be safely and sustainably extracted from these worked forests, though once working

plans are made the figure might go up. Therefore, given that the total available worked forest is 1,00,000 ha, the total availability of commercial timber would work out to 10,00,000 cum. This would be enough to meet the local timber demands (calculated at 30,000 cum per year currently, but likely to go down once timber conservation efforts are put in place) for at least 30 years, by which time additional timber would have become mature and harvestable.

f. In addition. There are over 12,500 ha of plantations of hardwoods done in the islands (annex 4). It is estimated that these plantations, that in any case need to be cleared so that the land can be regenerated, will provide 300 to 500 cum per hectare, depending on the species. This would work out to between 37,50,000 cum to 62,50,000 cum of timber, which would by itself be enough to meet the local hardwood requirements (calculated to be about 25,000 cum per annum - for details see Volume II –page 154-55, 161) for between 150 and 250 years. Needless to say, both in the plantations and in the worked forest areas, extraction should start first in the earliest plots and proceed to newer ones so that adequate time is given for regeneration.

6. The forest department has also expressed a concern that if no export of timber is allowed to the mainland then this might lead to the artificial manipulation of timber prices locally and prices would be artificially forced down, as the forest department would have no option but to sell their timber locally or have it perish. However, considering that the forest department saw mills have a combined capacity of 29,000 cum pa they could, if required, process all the timber that is harvested in a year, thereby preventing it from deteriorating. Besides, once the capacity to treat timber has been enhanced, as recommended, there should be no danger of any timber being wasted if the local sawmills do not pick it up. In case timber in any month is not picked up, felling for subsequent months or seasons could be trimmed to take this into consideration.

7. A concern has also been expressed that forests need to be worked in case they are to remain healthy and "over mature" and dead trees need to be removed. There is also the view that once a tree reaches a certain age, it has a "negative increment" and, therefore, must be cut. However, these arguments do not stand up to scientific scrutiny. Forests have existed and continue to exist in areas where they have never been "managed" by human beings. There are many examples of this in the Andaman and Nicobar Islands itself. The concern for negative increment and for "healthy" forests is a concern that might be relevant to commercial plantations but is certainly not tenable where natural forests are concerned. In fact dead trees are as important a part of natural ecosystems, both as habitat to specialised species of fauna and flora and an input into the soil, as are live trees.

PHOTOGRAPHS

AERIAL VIEW OF ENCROACHMENTS IN THE FORESTS OF DIGLIPUR, ANDAMANS

AAERIAL VIEW OF ENCROACHMENTS IN THE FORESTS OF DIGLIPUR

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AERIAL VIEW OF ENCROACHMENTS IN DIGLIPUR

AERIAL VIEW OF ENCROACHMENTS IN DIGLIPUR

50

AAAERIAL VIEWS OF THE ENCROACHMENTS IN DIGLIPUR

51

AERIAL AND GROUND VIEWS OF THE ENCROACHMENTS IN THE FORESTS OF DIGLIPUR

52

AERIAL VIEW OF THE ENCROACHMENTS IN THE FORESTS OF DIGLIPUR

53

ANNEX 1

ANNEXURE 1

भारत सरकार
पर्यावरण एवं वन मंत्रालय
GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT & FORESTS

No.13-19/2001-SU
Dated: 6.12.2001
Telfax: 4362875

ORDER

The undersigned is directed to refer to the Order of Hon'ble Supreme Court dated 23 .11.2001 in Interlocutory Application No.502 in Writ Petition (Civil) No.202/95 and to convey the appointment of Prof. Shekhar Singh of Indian Institute of Public Administration, New Delhi as a Commissioner to give a Report on the state of the forest and other allied matters of the Andaman & Nicobar Islands. The Report may be submitted preferably within a period of six weeks. The copy of the Order of the Supreme Court dated 23.11.2001 is enclosed herewith.

He shall be entitled for TA & DA as admissible to him in the Indian Institute of Public Administration. The necessary expenditure shall be debited under the budget head 2406.0101- Strengthening of Forest Divisions All other logistic support shall be provided to Prof. Shekhar Singh by the local administration.

This issues with the approval of competent Authority and with the concurrence of Finance Division of this Ministry vide their Dy.No.1510/JS&FA/01 dated 5.12.2001.

(A.R.Chadha)
Deputy Inspector General of Forests

To,

Professor Shekhar Singh
India Institute of Public Administration
I.P Estate, Ring Road,
New Delhi

Copy to :
1. Lt. Governor, Andaman & Nicobar Islands Administration, Port Blair
2. The Director, India Institute of Public Administration, New Delhi
3. The Chief Secretary, Andaman & Nicobar Islands Adminstration, Port Blair.
4. The Principal Chief Conservator of Forests, Andaman & Nicobar Islands, Port Blair.
5. The Managing Director, Andaman & Nicobar Islands Forest & Plantation Development Corporation, Port Blair.
6. The Director (Forest Conservation), MoEF
7. Pay & Accounts Officer, Mo EF
8. IF Division, MoEF
9. Guard File

(A.R.Chadha)
Deputy Inspector General of Forests

ORDER DATED 23.11.2001 IN I.A.NO. 502 IN WRIT PETITION (CIVIL) NO.202/95 – T.N.GODAVARMAN THIRUMULPAD VERSUS UNION OF INDIA & ORS

Affidavits in reply to the application may be filed. It is suggested by the ld.Amicus Curiae that it will be helpful in the Court if an independent survey of Andaman & Nicobar Ecology is undertaken especially in regard to the forest cover of that area. He suggests that Professor Shekhar Singh of the Indian Institute of Public Administration, New Delhi, who is an expert in this area and has worked in Andaman, be requested to give a Report to the Court with regard to the state of the forest and to what extent cutting of trees, if any, can be protected and what is required to be done to improve the ecology and the forest cover of the area. The Ministry of Environment and Forests is directed to appoint Prof. Shekhar Singh as a Commissioner to give a Report on the state of the forest and other allied matters of Andaman & Nicobar Islands. The expenses incurred thereto will be borne by the Ministry of Environment and Forests and Prof.Shekhar Singh may give a Report preferably within a period of six weeks. He will be at liberty to take assistance of such persons as he may deem proper. Apart from the out-of-pocket expenses which will be borne by the expenses by the Ministry of Env. & Forests he will be entitled to such fee as will be determined by the Court on the next date of hearing after receipt of his report.

Till further orders the Administrator, Andaman & Niobar Islands is directed to ensure compliance of this court's order dated 10.10.2001, namely, no naturally grown tree will be cut by any one and no saw-mill, veneer or plywood factory shall utilise any naturally grown trees without further orders from this Court.

List of such factories, saw mills and veneer will be filed by the Andaman & Nicobar Administration within two weeks. They will also file an inventory of the material lying in the Government saw mills.

List after six weeks.

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ANNEX 2

ANNEXURE 2

SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

Sno	Issues That Have Been Raised		Organisations and/cr Individuals That Were Represented									
	PROBLEMS	SOLUTIONS	Small Scale Industries (Sawmills) 16-12-01	A&N Chamber of Commerce 16-12-01	Indian National Port and Dock Worker's Federation 16-12-01	Andaman Furniture Industry 16-12-01	Andaman Forum for Development, Justice and Protection of Environment 16-12-01	ANET, SANE, Bengal Association etc. 16-12-01	Andaman Human Welfare Organisa-tion 16-12-01	Social Welfare Board (Women) 16-12-01	Local Born's Association 16-12-01	Ferrargunj Panchayat 17-12-01
1	There is a threat to the Forests of A&N due to Poaching (Domestic and Foreign)		*		*	*				*	*	*
		Export of logs should be banned to control illegal extraction	*			*						*
		The Coast Guard should be strengthened to control poaching			*							
		The Indian Forest Act needs to be amended to give appropriate punishment to forest offenders										
		If the FD sets up depots to supply local people's needs for forest resources, then people will stop entering the forests										

SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

Sno	Issues That Have Been Raised		Organisations and/or Individuals That Were Represented									
	PROBLEMS	SOLUTIONS	Public Meeting in Baratang 18-12-01	Public Meeting in Kadamtala 18-12-01	Public Meeting in Rangat 18-12-01	Public Meeting in Billiground 18-12-01	Public Meeting in Mayabandar 18-12-01	Public Meeting in Kalighat 19-12-01	Public Meeting in Diglipur 19-12-01	DMK 20-12-01	NCP 20-12-01	CPI 20-12-01
1	There is a threat to the Forests of A&N due to Poaching (Domestic and Foreign)			*	*	*	*	*	*	*	*	
		Export of logs should be banned to control illegal extraction			*				*			
		The Coast Guard should be strengthened to control poaching				*		*				
		The Indian Forest Act needs to be amended to give appropriate punishment to forest offenders				*			*			
		If the FD sets up depots to supply local people's needs for forest resources, then people will stop entering the forests		*		*						

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SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

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	PROBLEMS	SOLUTIONS	Small Scale Industries (Sawmills) 16-12-01	A&N Chamber of Commerce 16-12-01	Indian National Port and Dock Worker's Federation 16-12-01	Andaman Furniture Industry 16-12-01	Andaman Forum for Development, Justice and Protection of Environment 16-12-01	ANET, SANE, Bengal Association etc. 16-12-01	Andaman Human Welfare Organisa-tion 16-12-01	Social Welfare Board (Women) 16-12-01	Local Born's Association 16-12-01	Ferrargunj Panchayat 17-12-01
2	There is a lot of poaching in areas around Diglipur by Foreigners											
3	The few foreign poachers that have been caught till date are marine poachers and not timber poachers											
4	There is a threat to the Forests of A&N due to Encroachment (Domestic and Foreign)		*		*		*	*	*		*	*
		Protection capability of the FD to control poaching and encroachment should be augmented	*		*		*				*	

SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

Sno	Issues That Have Been Raised		Organisations and/or Individuals That Were Represented										
	PROBLEMS	SOLUTIONS	Andaman Express 17-12-01	PST 17-12-01	Mr. Arif Mustafa 17-12-01	Government Employees 17-12-01	South Andaman Panchayats 17-12-01	Congress Party 17-12-01	Mr. T. Ramaswamy 17-12-01	Mr. Arvinder Rai Sharma 17-12-01	CPI (ML) 17-12-01	BJP Delegation 17-12-01	A&N People's Voluntary Organisation 17-12-01
2	There is a lot of poaching in areas around Diglipur by Foreigners		*	*		*				*			
3	The few foreign poachers that have been caught till date are marine poachers and not timber poachers		*										
4	There is a threat to the Forests of A&N due to Encroachment (Domestic and Foreign)					*	*	*		*	*		
		Protection capability of the FD to control poaching and encroachment should be augmented				*		*					

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SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

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	PROBLEMS	SOLUTIONS	Public Meeting in Baratang 18-12-01	Public Meeting in Kadamtala 18-12-01	Public Meeting in Rangat 18-12-01	Public Meeting in Billiground 18-12-01	Public Meeting in Mayabandar 18-12-01	Public Meeting in Kalighat 19-12-01	Public Meeting in Diglipur 19-12-01	DMK 20-12-01	NCP 20-12-01	CPI 20-12-01
2	There is a lot of poaching in areas around Diglipur by Foreigners											
3	The few foreign poachers that have been caught till date are marine poachers and not timber poachers											
4	There is a threat to the Forests of A&N due to Encroachment (Domestic and Foreign)				*	*	*	*	*			
		Protection capability of the FD to control poaching and encroachment should be augmented			*	*		*	*			

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SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

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	PROBLEMS	SOLUTIONS	Small Scale Industries (Sawmills) 16-12-01	A&N Chamber of Commerce 16-12-01	Indian National Port and Dock Worker's Federation 16-12-01	Andaman Furniture Industry 16-12-01	Andaman Forum for Development, Justice and Protection of Environment 16-12-01	ANET, SANE, Bengal Association etc. 16-12-01	Andaman Human Welfare Organisation 16-12-01	Social Welfare Board (Women) 16-12-01	Local Born's Association 16-12-01	Ferrargunj Panchayat 17-12-01
		All encroachers should be removed from the forest and rehabilitated.			*						*	
		Encroachers should be removed from the forest and provided with housing in a single locality					*	*		*		
		Rehabilitated encroachers should be given some land.						*				
		Encroachers who are rehabilitated should not be provided land but should be given viable non agricultural options like fishing, Tourism etc.						*		*		

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SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

Sno	Issues That Have Been Raised		Organisations and/or Individuals That Were Represented										
	PROBLEMS	SOLUTIONS	Andaman Express 17-12-01	PST 17-12-01	Mr. Arif Mustafa 17-12-01	Government Employees 17-12-01	South Andaman Panchayats 17-12-01	Congress Party 17-12-01	Mr. T. Ramaswamy 17-12-01	Mr. Arvinder Rai Sharma 17-12-01	CPI (ML) 17-12-01	BJP Delegation 17-12-01	A&N People's Voluntary Organisation 17-12-01
		All encroachers should be removed from the forest and rehabilitated.						*					
		Encroachers should be removed from the forest and provided with housing in a single locality						*					
		Rehabilitated encroachers should be given some land.											
		Encroachers who are rehabilitated should not be provided land but should be given viable non agricultural options like fishing, Tourism etc.											

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SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

Sno	Issues That Have Been Raised		Organisations and/or Individuals That Were Represented									
	PROBLEMS	SOLUTIONS	Public Meeting in Baratang 18-12-01	Public Meeting in Kadamtala 18-12-01	Public Meeting in Rangat 18-12-01	Public Meeting in Billiground 18-12-01	Public Meeting in Mayabandar 18-12-01	Public Meeting in Kalighat 19-12-01	Public Meeting in Diglipur 19-12-01	DMK 20-12-01	NCP 20-12-01	CPI 20-12-01
		All encroachers should be removed from the forest and rehabilitated.			*							
		Encroachers should be removed from the forest and provided with housing in a single locality										
		Rehabilitated encroachers should be given some land.			*	*			*			
		Encroachers who are rehabilitated should not be provided land but should be given viable non agricultural options like fishing, Tourism etc.			*							

A11

SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

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	PROBLEMS	SOLUTIONS	Small Scale Industries (Sawmills) 16-12-01	A&N Chamber of Commerce 16-12-01	Indian National Port and Dock Worker's Federation 16-12-01	Andaman Furniture Industry 16-12-01	Andaman Forum for Development, Justice and Protection of Environment 16-12-01	ANET, SANE, Bengal Association etc. 16-12-01	Andaman Human Welfare Organisa-tion 16-12-01	Social Welfare Board (Women) 16-12-01	Local Born's Association 16-12-01	Ferrargunj Panchayat 17-12-01
		The regulations in A&N should be suitably amended to make encroachment a criminal offence						*				
		A viable land based alternative to agriculture is horticulture and should be promoted						*				
		Encroachers who need to be rehabilitated could also be absorbed in forest protection, regeneration, stone pulverising etc.						*				

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SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

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		The regulations in A&N should be suitably amended to make encroachment a criminal offence						*					
		A viable land based alternative to agriculture is horticulture and should be promoted											
		Encroachers who need to be rehabilitated could also be absorbed in forest protection, regeneration, stone pulverising etc.											

A13

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SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

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		The regulations in A&N should be suitably amended to make encroachment a criminal offence										
		A viable land based alternative to agriculture is horticulture and should be promoted										
		Encroachers who need to be rehabilitated could also be absorbed in forest protection, regeneration, stone pulverising etc.										

A14

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SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

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		A livelihood option for encroachers as well as other residents of A&N could be Orchid cultivation and sustainable extraction of Swiftlet nests						*				
		The land that had been allotted to ATI and JTP should be given to the landless in A&N										
5	Encroachers who came before 1961 are yet to be regularised						*					
6	Nicobarese labourers of the Forest Corporation in Little Andaman have done massive encroachments											*

A15

A15

SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

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		A livelihood option for encroachers as well as other residents of A&N could be Orchid cultivation and sustainable extraction of Swiftlet nests											
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5	Encroachers who came before 1961 are yet to be regularised												
6	Nicobarese labourers of the Forest Corporation in Little Andaman have done massive encroachments												

A16

A 16

SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

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		The land that had been allotted to ATI and JTP should be given to the landless in A&N										
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A17

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7	There is massive encroachment in forests around Diglipur											*
8	Influx of outsiders is carrying on and is a major threat to the Islands						*	*		*		*
		Additional immigration of outsiders should be stopped through issuing ID cards to A&N residents					*	*				
		Bangladeshi and other foreign nationals should be identified and deported					*					
		Encroachers should be identified and sent back to where they have come from						*				*

A 18

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SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

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7	There is massive encroachment in forests around Diglipur					*				*			
8	Influx of outsiders is carrying on and is a major threat to the Islands					*	*	*		*	*		
		Additional immigration of outsiders should be stopped through issuing ID cards to A&N residents						*					
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9	Because of shutting down of all timber and wood based economic activity, unemployment has gone up. Therefore, all wood based activities cannot be completely shut down.			*	*	*	*		*	*		
10	The Sawmills often deliberately cut timber in sizes that cannot be used in A&N. When it does not get sold domestically, they use that as an excuse to export it											

A21

A21

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11	Logging in A&N has had a very negative impact on the ecology of the islands											
		In the long run, fisheries and tourism could be an alternative to wood based economic activity			*							
		Extraction from forests should be done according to well formulated and approved working plans	*			*				*		
		Harvesting of the forests has not had any negative impacts and should be continued		*								

A24

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A25

A25

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A26

A26

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		The wood based industry could survive with supplementing imported rawmaterial to what is supplied from local resources		*								
12	Sand Extraction is very destructive		*									*
13	Extraction of sand is needed for construction in villages as well as for generating local employment											
		Sand extraction by outsiders should be completely banned. Only local people should be allowed to extract sand								*		

A27

A27

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A28

A28

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A29

A29

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		Stone dust should be used as a substitute for sand in construction										*
		All construction on the coasts should be banned including tourist homes										*
		Soil conservation should be done in A&N	*									
14	There is a sand extracting mafia that needs to be controlled										*	
15	All extraction from forests can not be stopped since timber and/or NTFP is needed for building houses, fencing fields, domestic furniture etc				*						*	*

A30

A30

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15	All extraction from forests can not be stopped since timber and/or NTFP is needed for building houses, fencing fields, domestic furniture etc				*		*	*			*		

A31

A31

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A32

A32

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		Either free royalty or supply of timber at subsidised rate should be continued for people of A&N										*
		All free royalty for settlers should be withdrawn										
		All exports of timber should be stopped to bring down forest harvesting to sustainable levels				*	*				*	*
		There should be JFM in A&N										*
		All forest extraction should be done in A&N under a JFM arrangement										*
		The demand for fuelwood should be reduced through supply of alternatives										

A33

A33

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		All forest extraction should be done in A&N under a JFM arrangement					*						
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A34

A34

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A35

A35

SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

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		Even if all commercial forest extraction by Industry and Sawmills is banned, it will not affect bonafide residents of A&N since the people working in these industries are illegal residents								*		
		The extraction of fuelwood has also been stopped by the Forest Department. This should be allowed										
16	Operations of the Forest Department are expensive and inefficient			*			*		*			*

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		There are FD depots at Chennai and Calcutta that should be shut down immediately as they are a waste of resources										*
17	The FD has become too top heavy and needs more field personnel											
18	The forest officers do not go into the field often enough and remain in their headquarters											
19	The Forest Corporation is very inefficient and wasteful and should be closed down											*

A39

A39

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A41

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20	The regeneration of forests that have been worked is very poor											
21	The quality of timber that is supplied by the FD is not very good			*								
22	There is a lot of timber that has been extracted but is rotting away without being processed											*
23	Trees have been illegally extracted from the Jarawa Reserve, Little Andaman, National Parks and Sanctuaries, RFs etc											

A42

A42

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A44

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24	The Defence establishments in the A&N are growing and are adding to the destruction of the environment. They need to be controlled						*					
		The bulk of the Defence establishments could be located in Campbell Bay or Rutland Island					*					
25	Ban on collection and use of sea shells for bonafide domestic and religious use should be permitted									*		
26	There is no involvement of women in tree planting or protection									*		

A45

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27	Corruption in the A&N Administration needs to be controlled									*		
28	Many officers of the Forest Department have been exporting timber illegally											
29	The Teak plantations in Baratang have failed and should be removed. They have led to a water scarcity in Baratang. Also, if something else is planted, it will grow better											

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A49

A49

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30	The procedures for getting forest resources for domestic consumption are complicated and should be rationalised											
31	400 government quarters near Corbyn's Cove have been made after cutting the forest											
32	Trees have been cut near Megapode Nest to allow visitors to view the Sea											
33	The Dams constructed in Little Andaman do not work											*

A51

A51

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A52

A52

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A 53

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34	At present, settlers are not allowed to harvest any timber that is available in their allotted hilly lands. This should be permitted.											
		Many settlers have planted trees in their hilly lands. People should be allowed to extract them and also do horticulture										
35	The fishermen of Wandoor should be allowed to take shelter in Jolly Buoy in the event of a storm or rough weather											

A54

A54

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A56

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36	The Jarawas need to be protected. Facilities meant for the Jarawas are not reaching them. Also, many programmes of the administration that are meant for their benefit actually harm them.											
		The Jarawas should be left alone and attempts to bring them into the mainstream should be completely stopped										

A57

A57

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A59

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		The shops that have come up along the Jetty at Baratang should be closed because they supply tobacco to the Jarawas in return for money and other goods that the Jarawas beg from travellers on the ATR										
		The Andaman Trunk Road should be closed down since it is leading to the destruction of the Jarawa Reserve. The Jarawas are also threatened by the ATR.										

A60

A60

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		The Andaman Trunk Road should be closed down since it is leading to the destruction of the Jarawa Reserve. The Jarawas are also threatened by the ATR.									*		*

A61

SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

Sno	Issues That Have Been Raised		Organisations and/or Individuals That Were Represented									
	PROBLEMS	SOLUTIONS	Public Meeting in Baratang 18-12-01	Public Meeting in Kadamtala 18-12-01	Public Meeting in Rangat 18-12-01	Public Meeting in Billiground 18-12-01	Public Meeting in Mayabandar 18-12-01	Public Meeting in Kalighat 19-12-01	Public Meeting in Diglipur 19-12-01	DMK 20-12-01	NCP 20-12-01	CPI 20-12-01
		The shops that have come up along the Jetty at Baratang should be closed because they supply tobacco to the Jarawas in return for money and other goods that the Jarawas beg from travellers on the ATR										
		The Andaman Trunk Road should be closed down since it is leading to the destruction of the Jarawa Reserve. The Jarawas are also threatened by the ATR.										

A62

A62

SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

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37	The budget for many of the destructive development activities in A&N should be withdrawn											
		Development activities need to be reoriented to suit local needs and generate local employment										
38	The Airport expansion in Port Blair is very destructive											
39	There are some locations in A&N where Mangroves are still being cut											
40	As a policy, roads should not be encouraged in A&N, but waterways should be used extensively											

A63

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SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

Sno	Issues That Have Been Raised		Organisations and/or Individuals That Were Represented										
	PROBLEMS	SOLUTIONS	Andaman Express 17-12-01	PST 17-12-01	Mr. Arif Mustafa 17-12-01	Government Employees 17-12-01	South Andaman Panchayats 17-12-01	Congress Party 17-12-01	Mr. T. Ramaswamy 17-12-01	Mr. Arvinder Rai Sharma 17-12-01	CPI (ML) 17-12-01	BJP Delegation 17-12-01	A&N People's Voluntary Organisation 17-12-01
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39	There are some locations in A&N where Mangroves are still being cut									*			
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A64

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SUMMARY OF SUBMISSIONS OF NGOs, LOCAL PEOPLE AND THEIR REPRESENTATIVES DURING THE VISIT TO THE ANDAMAN ISLANDS FROM DECEMBER 16 TO DECEMBER 20, 2001

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41	The Supreme Court's order has led to the complete stoppage of work of the PRIs. The court should give an exemption for completion of the work of the PRIs which includes connecting roads, water supply, power lines etc											
42	Baratang has only RFs. Some PFs need to be notified in order to meet the demand for NTFP											

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		A fresh settlement of land in Baratang is needed since there are lot of disputes on the legal status of land between the forest and revenue department, leading to problems for the local people										
		Those people who were employed by the forest department in Baratang and built their homesteads on forest land should be allowed to stay on										
43	People are having problems in getting wood for cremating their dead bodies											

A69

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44	A small sawmill is needed closer to the villages to meet the people's needs											
45	The sawing of Padauk wood in private sawmills should be allowed because Betapur and Chatham are too far and take time to process wood											
46	Local carpenters need wood to meet local people's needs											
47	Attacks by feral elephants on crops and people have become serious											
48	It should be ensured that the workers who are being laid off by ATI and JTP are given a fair deal											

A72

A72

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47	Attacks by feral elephants on crops and people have become serious							*	*			
48	It should be ensured that the workers who are being laid off by ATI and JTP are given a fair deal											*

A74

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ANNEX 3

ANNEXURE 3

ITINERARY

I visited the Islands from **16 December, 2001,** along with two colleagues. During this visit I had meetings with the Lt. Governor, other officers of the administration and officers of the forest department of Andaman and Nicobar Islands (ANI). Along with my colleagues, I also had meetings in Port Blair on **16 and 17 December** where the public and other interested groups and individual were invited, by prior media announcements, to come and express their views. We then travelled by the Andaman Trunk Road (ATR) to Baratang, Kadamtala, Rangat, Betapur, Billiground and Mayabunder on **18 December**, and met with officials, groups and representatives of the people, trade and industry, and with office bearers of Panchayati Raj institutions and political parties along the way. On **19 December** we travelled from Mayabunder to Kalighat and Diglipur, having similar meetings. In total, we were presented written submissions by 52 groups/individuals. We also had 33 meetings where oral submissions were made.

On **19 December**, we flew back from Diglipur to Port Blair in a Navy plane, organised by the ANI administration, after doing an aerial survey of the forests and especially the forest encroachments in Diglipur. During this trip, my colleagues and I were accompanied by various forest officers and part of the way (till Mayabunder) by a representative of one of the petitioners – SANE. However, in most of the public meetings the forest officers were, on my request, not present, so that the people did not feel inhibited.

On **20 December**, we had detailed meetings in Port Blair with various government officials and also with some groups from the industry and from the public. I returned to Delhi on **21 December**, though my two colleagues stayed back for another two days to collect all the documents and information that we required.

I travelled to Mumbai to have a meeting with representatives of Kalpavriksh and BNHS, two of the petitioners, on **24 December**.

I made a second trip to ANI from **16 to 19 January, 2002**, in order to visit Little Andaman Island and to have further discussions with the local officials. On **16 January** I was taken by the forest department to see some of the areas regenerated by them in 1951. I also saw some of the padauk and teak plantations done, the earliest among them being of the 1890s. I later had meetings with the forest department officials.

On **17 January** I travelled to Little Andaman in an Air Force helicopter organised by the ANI administration. I was accompanied by officials of the forest department and of the Andaman and Nicobar Forest Plantation and Development Corporation (ANFPDC). We flew over the forests of Little Andaman to get an aerial view and also landed and met with local officials, a representative of the workers trade union and of the ANFPDC employees association. Later in the day I had meetings with the Lt. Governor and with representatives of SANE.

On **18 January** I visited the Wandoor National Park and the Lohabarrack Sanctuary and also met with scientists from ANET and SACON, at the ANET office. Later in the day I went to the offices of the forest department and the ANFPDC and met with their officers. I returned to Delhi on **19 January**.

ANNEX 4

ANNEXURE 4

LIST OF PLANTATIONS RAISED IN SOUTH ANDAMAN FOREST DIVISION

Sl.No	Year	Location	Area in ha.
(1)	(2)	(3)	(4)
A. TEAK PLANTATIONS			
1.	1954	Jirkatang	02
2.	1956	Mile Tilak	08
3.	1956	Green Tilak	04
4.	1957	Jirkatang	20
5.	1957	Green Tilak	38
6.	1958	Jirkatang	33
7.	1958	Green Tilak	12
8.	1959	Jirkatang	34
9.	1960	Jirkatang	44
10.	1960	Mile Tilak	22
11.	1965	Beachdera	24
12.	1966	Beachdera	20
13.	1966	Jirkatang	40
14.	1967	Beachdera	20
15.	1967	Jirkatang	54
16.	1968	Burataga	30
17.	1968	Beachdera	20
18.	1969	Burataga	30
19.	1970	Burataga	30
20.	1970	Pochang	30
21.	1970	Beachdera	38
22.	1971	Burataga	40
23.	1971	Pochang	40
24.	1972	Pochang	70
25.	1972	Burataga	70
26.	1972	Ograbraj	40
27.	1973	Pochang	70
28.	1973	Burataga	70
29.	1973	Jirkatang No3	20
30.	1973	Burmanallah	24
31.	1973	Burmanallah	40
32.	1974	Pochang	40
33.	1974	Burataga	40
34.	1975	Pochang	35
35.	1975	Burataga	35
36.	1975	Burmanallah	50
37.	1978	Burmanallah	30
38.	1981	Rutland	20
		Total	1287

B. MATCHWOOD PLANTATIONS			
(1)	(2)	(3)	(4)
1.	1957	Jirkatang	09
2.	1957	Green Tilak	05
3.	1958	Jirkatang	20
4	1958	Green Tilak	06
5	1959	Jirkatang	16
6	1959	Green Tilak	10
7	1960	Jirkatang	11
8	1960	Green Tilak	10
9	1961	Jirkatang	34
10	1962	Green Tilak	12
11	1962	Jirkatang No.3	40
12	1962	Green Tilak	20
13	1963	Jirkatang	40
14	1963	Green Tilak	20
15	1968	Beachdera	10
16	1969	Beachdera	10
17	1970	Beachdera	10
18	1971	Beachdera	10
19	1972	Beachdera	10
20	1973	Beachdera	10
		Total	313

C. PADAUK PLANTATIONS			
(1)	(2)	(3)	(4)
1.	1885	Wimberlygunj	26
2.	1886	Wimberlygunj	06
3.	1887	Wimberlygunj	45
4	1889	Wimberlygunj	70
5	1896	Wimberlygunj	60
6	1897	Wimberlygunj	18
7	1902	Wimberlygunj	75
8	1903	Wimberlygunj	06
9	1904	Wimberlygunj	40
10	1904	TLD	26
11	1905	Brindaban	26
12	1906	Wimberlygunj	68
13	1907	Wimberlygunj	74
14	1908	Gopalaka barg	49
15	1908	Wimberlygunj	49
16	1910	Wimberlygunj	54
17	1912	Kadakachang	50
18	1913	Mathura	50

19	1913	Kadakachang	35
20	1914	Kadakachang	30
21.	1914	Wimberlygunj	30
22.	1914	Mathura	30
23.	1915	Mathura	35
24.	1915	Wimberlygunj	35
25.	1915	Kadakachang	35
26	1916	Wimberlygunj	26
27	1970	Burmanallah	100
28	1973	Punanallah	06
29	1973	Burmanallah	61
30	1975	Burmanallah	25
31	1976	Burmanallah	25
32	1978	Burmanallah	61
33	1980	Burmanallah	30
34	1980	Rutland	20
35	1981	Rutland	20
36	1981	Burmanallah	30
37	1983	Burmanallah	30
38	1990	Wimberlygunj	60
		Total	1578

D. ROSE WOOD PLANTATIONS			
1.	1953	Jirkatang	03

E. CHOOI PLANTATIONS			
1.	1972	Beachdera	16
2.	1973	Beachdera	10
		Total	26

F. CASHEWNUT PLANTATIONS			
1.	1958	Mile Tilek	02
2.	1959	Mile Tilek	04
3.	1959	Jirkatang	02
4.	1961	Jirkatang	02
		Total	10

ABSTRACT

1	Teak	1287
2.	Matchwood	313
3.	Rosewood	03
4.	Cashew	10
5.	Chooi	26
6.	Padauk	1578
	Grand Total	3217

LIST OF PLANTATIONS RAISED IN BARATANG FOREST DIVISION

Year	Species	Location	Area in ha.
(1)	(2)	(3)	(4)
1954	Teak	Wrafters Creek	1
1955	Teak	Wrafters Creek	8
1956	Teak	Wrafters Creek	22
1957	Teak	Wrafters Creek	18
1958	Teak	Jarawa Creek	36
1959	Teak	Nilambur	16
1959	Teak	Wrafters Creek	5
1960	Teak	Nilambur	41
1961	Teak	Nilambur	100
1961	Teak	Evergreen Island	32
1961	Teak	Wrafters Creek	24
1962	Teak	Nilambur	16
1962	Teak	Evergreen Island Island	38
1962	Teak	South Creek	112
1963	Teak	Evergreen Island	44
1963	Teak	Nilambur	26
1963	Teak	Roglachang	16
1963	Teak	South Creek	44
1963	Teak	Wrafters Creek	42
1964	Teak	Wrafters Creek	45
1964	Teak	Nilambur	40
1964	Teak	Roglachang	41
1964	Teak	South Creek	18
1964	Teak	Evergreen Island	60
1965	Teak	Wrafters Creek	49
1965	Teak	Middle Strait	56
1965	Teak	Roglachang	44
1966	Teak	Middle Strait	56
1966	Teak	Wrafters Creek	44
1966	Teak	Roglachang	40
1966	Padauk	South Creek	13
1967	Padauk	South Creek	20
1967	Teak	Roglachang	44
1967	Teak	Middle Strait	54
1967	Teak	Wrafters Creek	22
1968	Padauk	South Creek	14
1968	Teak	Roglachang	40
1968	Teak	Middle Strait	32
1968	Teak	Wrafters Creek	28

1969	Teak	Roglachang	40
1969	Teak	Middle Strait	40
1969	Teak	Wrafters Creek	20
1969	Padauk	Preeti Creek	14
1970	Padauk	South Creek	24
1970	Teak	Wrafters Creek	30
1970	Teak	Roglachang	30
1970	Teak	Middle Strait	30
1971	Teak	Middle Strait	40
1971	Teak	Wrafters Creek	40
1971	Teak	Roglachang	40
1971	Padauk	South Creek	24
1972	Padauk	South Cree	20
1972	Teak	Roglachang	20
1972	Teak	Wrafters Creek	52
1972	Teak	Middle Strait	88
1972	Teak	South Creek	40
1973	Teak	Middle Strait	30
1973	Teak	Wrafters Creek	90
1973	Teak	South Creek	40
1974	Teak	Wrafters Creek	50
1974	Teak	South Creek	40
1974	Teak	Middle Strait	30
1975	Teak	South Creek	55
1975	Teak	Wrafters Creek	40
1975	Padauk	South Creek	25
1976	Padauk	South Creek	65
1976	Teak	Wrafters Creek	35
1977	Teak	Wrafters Creek	20
1977	Teak	South Creek	10
1977	Padauk	South Creek	10
1978	Padauk	South Creek	10
1978	Teak	Wrafters Creek	20
1979	Teak	Wrafters Creek	20
1979	Padauk	South Creek	20
1980	Padauk	South Creek	20
1980	Teak	Wrafters Creek	20
1981	Teak	Wrafters Creek	20
1981	Padauk	South Creek	30
1982	Padauk	South Creek	30
1982	Teak	Wrafters Creek	20
1983	Padauk	South Creek	30
1983	Padauk	Wrafters Creek	20
1984	Padauk	South Creek	30
1984	Padauk	Wrafters Creek	20

1985	Padauk	Wrafters Creek	30
1986	Mixed	Wrafters Creek	80
1986	Mixed	Middle Strait	90
1986	Mixed	Sundergarh	100
1992	Pynma	Sundergarh	20
1994	Mixed	Sundergarh	30
		Total	3173

LIST OF PLANTATIONS RAISED IN MAYABUNDER FOREST DIVISION

Year	Species	Location	Area in ha.
(1)	(2)	(3)	(4)
1926	Mixed	Sound Island	2.6
1927	Mixed	Sound Island	3.0
1928	Mixed	Sound Island	3.6
1929	Mixed	Sound Island	6.9
1930	Mixed	Sound Island	19.0
1931	Mixed	Sound Island	12.5
1932	Mixed	Sound Island	10.3
1933	Mixed	Sound Island	6.5
1934	Mixed	Sound Island	3.8
1953	Balsa	Austin I	0.2
1953	Rosewood	Austin I	3.2
1954	Teak	Austin I	0.3
1955	Teak	Austin I	11.3
1956	Teak	Interview I	2.0
1956	Balsa	Austin III	1.6
1956	Teak	Austin II	29.1
1956	Teak	Austin III	18.6
1957	Balsa	Austin III	2.0
1957	Teak	Austin II	10.1
1957	Teak	Austin III	14.2
1957	Matchwood	Austin II	10.1
1957	Matchwood	Austin III	12.1
1957	Matchwood	Austin III	12.1
1958	Teak	Interview I	2.0
1958	Teak	Austin III	12.1
1958	Teak	Tugapur IV	12.1
1958	Teak	Tugapur II	19.4
1958	Matchwood	Tugapur IV	14.2
1958	Matchwood	Tugapur II	7.8
1958	Rosewood	Tugapur II	1.2
1958	Teak	Tugapur I	35.5
1959	Matchwood	Tugapur II	10.1
1959	Rosewood	Tugapur II	12.1
1959	Balsa	Tugapur II	0.7
1959	Mahogani	Tugapur II	0.3
1960	Cashewnut	Austin I	4.0
1960	Teak	Tugapur I	89.0
1960	Matchwood	Tugapur IV	16.2
1960	Rosewood	Tugapur IV	12.1
1961	Teak	Austin IV	32.4

1961	Teak	Austin IV	43.0
1961	Teak	Tugapur V	44.1
1961	Cashewnut	Tugapur III	1.2
1961	Cashewnut	Tugapur I	2.0
1961	Cashewnut	Austin I	0.8
1962	Teak	Austin IV	40.5
1962	Teak	Tugapur I	40.5
1962	Teak	Tugapur II	81.0
1962	Teak	Interview I	20.2
1963	Teak	Tugapur I	47.3
1963	Teak	Tugapur II	41.0
1963	Teak	Austin IV	20.2
1963	Teak	Interview I	12.1
1963	Teak	Tugapur I	17.4
1964	Teak	Tugapur I	37.2
1964	Teak	Tugapur II	89.0
1964	Teak	Austin IV	20.2
1965	Teak	Tugapur II	123.4
1965	Teak	Tugapur V	18.2
1965	Rosewood	Tugapur V	3.2
1966	Teak	Tugapur I	17.4
1966	Teak	Tugapur V	185.0
1966	Teak	Tugapur V	40.5
1967	Teak	Austin IV	33.6
1968	Teak	Tugapur I	10.1
1968	Bamboo	Tugapur I	20.2
1968	Teak	Tugapur V	73.0
1968	Teak	Tugapur V	14.2
1968	Teak	Austin IV	32.4
1969	Bamboo	Tugapur I	2.0
1969	Teak	Tugapur V	32.4
1969	Teak	Tugapur V	12.1
1969	Teak	Austin IV	20.2
1970	Bamboo	Tugapur I	2.0
1970	Bamboo	Austin I	6.1
1970	Teak	Tugapur V	32.4
1970	Bamboo	Tugapur V	2.0
1971	Teak	Tugapur V	16.2
1971	Padauk	Tugapur V	10.1
1971	Matchwood	Tugapur V	4.0
1971	Teak	Austin IV	24.3
1971	Cane	Austin I	20.2
1971	Bamboo	Austin I	8.1
1971	Cane	Tugapur I	20.2
1972	Bamboo	Austin I	8.1

1972	Teak	Austin I	54.7
1973	Teak	Tugapur I	57.0
1973	Padauk	Tugapur I	10.1
1973	Matchwood	Tugapur I	4.0
1972	Cane	Austin I	20.2
1972	Bamboo	Tugapur I	8.1
1973	Teak	Tugapur V	20.2
1973	Teak	Austin IV	20.0
1974	Teak	Tugapur I	20.0
1974	Teak	Tugapur IV	20.0
1974	Padauk	Austin IV	10.0
1974	Padauk	Tugapur II	10.0
1976	Teak	Tugapur VI	10.0
1976	Padauk	Tugapur IV	30.0
1977	Padauk	Austin IV	10.0
1977	Padauk	Tugapur VI	10.0
1977	Padauk	Tugapur VI	10.0
1982	Mixed	Austin X	14.0(ANIFPDC)
1984	Padauk	Austin X	10.0 (ANIFPDC)
1985	Coconut	Austin X	1.0 (ANIFPDC)
		Total	2175.0

LIST OF PLANTATIONS RAISED IN MIDDLE ANDAMAN FOREST DIVISION

I. TEAK PLANTATIONS

S.No	Year of formation	Locations	Area in ha	Remarks
(1)	(2)	(3)	(4)	(5)
1.	1956	Pencharta	0.81	
2.	1957	Pencharta	18.21	
3	1958	Borniyol Coupe IV	20.24	
4	1959	Pencharta, Borniyol Coupe IVb	50.59	
5	1960	Pencharta, Borniyol Coupe IV & V	10.12	
6	1961	Borniyol Vb & Vib	10.12	
7	1962	Porlobjig Ia & IV a, C.F.O.Nallah, Borniyol Vc & VIb	175.24	
8	1963	Porlobjig IV & Va, Sagwan Nallah, Borniyol VIb	130.31	
9	1964	Porlobjig Va, Borniyol VIIb, Thoraktang; Sagwan Nallah	259.41	
10	1965	Polobjig Va, VIa and VIIa, Thoraktang, Sagwan Nallah, Borniyol VIb	182.12	
11	1966	Borniyol VIb, Madrasi Nallah, Porlobjig VIa & VIIa, Thoraktang	211.66	
12	1967	Borniyol VIIa, Madrasi Nallah, Thoraktang	188.19	
13	1968	Thoraktang, Madrasi Nallah, Borniyol VIIb, Porlobjig VIIA	151.76	
14	1969	Bakultala, Thoraktang	73.66	
15	1970	Thoraktang, Parnashala, Sabari, Sagwan Nallah	125.00	
16	1971	Borniyol XI, Porlobjig XI, Thoraktang, Parnashala, Sabari	208.00	
17	1972	Thoraktang, Parnashala, Sabari, Porlobjig IX & XV, Borniyol XI, Sagwan Nallah, Charlungta	345.00	
18	1973	Thoraktang, Parnashala, Sabari, Porlobjig IX & XV, Borniyol XI, Sagwan Nallah, Charlungta	344.00	
19	1974	Thoraktang, Porlobjig IX &	205.00	

		XV, Borniyol XI, Sagwan Nallah, Borniyol XI Parnashala		
20	1975	Thoraktang, Porlobjig IX & XV, Borniyol XI, Sagwan Nallah, Borniyol XI Parnashala	280.00	
21	1976	Porlobjig XV, Borniyol XI, Charlungta	140.00	
22	1977	Porlobjig XV, Borniyol XI, Charlungta	130.00	
23	1978	Porlobjig XV, Charlungta	50.00	
24	1979	Yeratiljig	20.00	
25	1980-1982	NIL	NIL	
26	1983	Yeratiljig	60.00	

II.PADAUK PLANTATIONS

S.No	Year of formation	Locations	Area in ha	Remarks
(1)	(2)	(3)	(4)	(5)
1.	1963	Porlobjig Va	8.09	
2.	1965	Porlobjig VIIa	0.81	
3	1967	Borniyol VIIa	30.35	
4	1968	Porlobjig VIIa	14.16	
5	1969	Thoraktang	8.09	
6	1971	Porlobjig IX	20.00	
7	1972	Porlobjig IX, Borniyol XI	30.00	
8	1973	Porlobjig IX	20.00	
9	1974	Porlobjig IX & XV	50.00	
10	1975	Sabari	40.00	
11	1976	Sabari	40.00	
12	1977	Parnashala	20.00	
13	1978	Yeratiljig	30.00	
14	1979	Yeratiljig	40.00	
15	1980	Yeratiljig	40.00	
16	1981	Yeratiljig	20.00	

III. MISCELLANEOUS SPECIES

S.No	Year of formation	Species	Locations	Area in ha
(1)	(2)	(3)	(4)	(5)

1.	1957	Matchwood	Borniyol IIIb	16.19
2.	1958	Matchwood	Borniyol IV Borniyol IV	40.47 8.09
3	1959	Dalbergia Sissoo	Donald Valley Donald Valley	0.81 8.09
4	1960	Dalbergia Sissoo	Borniyol Vb	20.23
5	1961	Rosewood	Borniyol Vb	40.47
6	1962	Matchwood Matchwood Matchwood Cane	Porlobjig IV Borniyol IVb C.F.O.Nallah Borniyol IIIb	20.23 4.85 16.19 4.05
7	1963	Matchwood Cane	Porlobjig Va Borniyol IIIb	20.23 6.07
8	1964	Matchwood	Porlobjig Va	3.64
9	1965	Matchwood Rosewood Cane	Porlobjig VIIa Porlobjig VIIa Borniyol Ivb	4.05 0.81 14.16
10	1966	Cane	Borniyol VIIIb	12.14
11	1967	Cane	Borniyol VIIIb	10.12
12	1968	Bamboo Matchwood	Borniyol VIIIb Porlobjig	20.22 10.12

LIST OF PLANTATIONS RAISED IN DIGLIPUR FOREST DIVISION

Year	Species	Location	Area in ha.
(1)	(2)	(3)	(4)
1972	Teak	Smith Island	26
1975	Teak	Laxmipur	40
1977	Teak	Laxmipur	30
1978	Teak	Laxmipur	10
		Total	106

ANNEX 5

ANNEXURE 5

331-7309
011-6198048

No.F.22(E)/156/245

OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS
ANDAMAN AND NICOBAR ISLANDS
***

Port Blair, dated the 25th Jan.,2002

To
Prof. Shekhar Singh,
Indian Institute of Public Administration,
Indraprastha Estate, Ring Road,
New Delhi-110002
Fax No.011 3319954

Sub:- Furnishing of information regarding extraction of timber from 1980-81 to 2001-02 regarding.

Sir,

As requested by you, the information on extraction of timber from 1980-81 onwards is furnished here with:

YEAR	TIMBER (in cum.)
1980-81	165726
1981-82	162241
1982-83	147308
1983-84	147309
1984-85	132579
1985-86	145305
1986-87	131888
1987-88	115801
1988-89	123678
1989-90	117746
1990-91	103660
1991-92	105319
1992-93	125670
1993-94	130136
1994-95	135523
1995-96	126579
1996-97	107443
1997-98	77097
1998-99	62623
1999-2000	47617
2000-2001	40053
2001-2002	Nil

Yours faithfully,

(R.S.C. Jayaraj)
Deputy Conservator of Forests
(Headquarters)

A09

ANNEX 6

ANNEXURE 6

LIST OF SAW MILLS

S.No	Name & Address of the Unit	Activity	Installed capacity (cbm)	Operating Capcity (Cbm)
1.	2	3.	4.	5.
	I. PRIVATE SAW MILLS			
	MEDIUM SCALE INDUSTRIES			
1.	M/s. Andaman Timber Industries, Bambooflat, (South Andaman)	Commercial Plywood	31,160	31,375
2.	M/s. Jayashree Timber Products, Bakultala, (Middle Andaman)	Plywood, Block board, veneer	28,300	22,875
3.	M/s. Kitply Industries Ltd, Long Island, (Middle Andaman) (Previous known as M/s. Albion Plywood)	Plywood, Veneer	31,650	19,541
	SMALL SCALE INDUSTRIES			
4.	M/s. Vana Pana Pencil Industry, Garacharma, (South Andaman)	Pencil Slats, Sawn Timber, Match Frame Work,	1800	1126
5.	M/s. Balamurugan Pencil Industry, Sippighat, (South Andaman)	Pencil Slat	1200	429
6.	M/s. Andaman Cottage Pencil Industry, Prothrapur, (South Andaman)	Pencil Slat, Sawn Timber	3600	763
7.	M/s. M.S.Pencil Slat Industry, Sippighat, (South Andaman)	Pencil Slat	2400	399
8.	M/s Wood Link Products, Mayabunder, (North Andaman)	Pencil Slat	1200	69
9.	M/s Bharat Splints Manufacturing Industry, Manpur, (South Andaman)	Pencil Slat, Sawn timber	1200	654
10.	M/S Andaman Cottage Match Industry, Garacharama, (South Andaman)	Pencil slats	1200	726
11.	M/s Arasan Cottage Match Industry, Bhathubasthi,	Match Splints, Sawn Timber	3600	657

	(South Andaman)			
12.	M/S Asia Timber Products, Hut Bay, (Little Andaman)	Match Splints, Pencil Slats, Veneers, Sawn Timber	10000	10423
13.	M/s United Match Timber Chemical, Mayabunder, (North Andaman)	Match splint, Sawn Timber, veneers & Pencil Slats	6000	-
14.	M/S Andaman Wood Products, Junglighat, (South Andaman)	Sawn Timber	3500	814
15.	M/s Sea Island Saw Mill, Ograbraj, Port Mouat, (South Andaman)	Sawn Timber	1800	757
16.	M/s Raj Kumari Saw Mill Junglighat, (South Andaman)	Sawn Timber	1800	646
17.	M/s Kamakshi Furniture Saw Mill, Sippighat, (South Andaman)	Sawn Timber	1800	416
18.	M/s M.S. Timber Industry, Sippighat, (South Andaman)	Sawn Timber	2400	984
19.	M/sGreen Island Timber Industries, Rangat, (Middle Andaman)	Sawn Timber	1800	299
20.	M/s Durga Saw Mill, Diglipur, (North Andaman	Sawn Timber	1800	200
21.	M/s Bepari Wood Industries, Diglipur, (North Andaman)	Sawn Timber	1800	30
22.	M/s Samarias Trading Company, Aerial Bay, (North Andaman)	Sawn Timber	1800	600
23.	M/s Mayabunder Saw Mill, Mayabunder, (North Andaman)	Sawn Timber	3000	670
24.	M/s Teja Engineering Products, Dundas Point, (South Andaman)	Wooden Boats & Wooden furniture	600	379
25.	M/s. Island Industry, Hut Bay (Little Andaman)	Sawn Timber	-	930
26.	M/s. Mukesh Lall Saw Mill, Dhanikhari (South Andaman)	Sawn Timber	1800	782
27.	M/s. Dori Lall Saw Mill, Junglighat, (South	Sawn Timber	-	116

A91

A91

	Andaman)			
28.	M/s. Dori Lall Saw Mill, Prothrapur, (South Andaman)	Sawn Timber	-	632
29.	M/s. Raj Shipping Timber Industry, Dundas Point, (South Andaman)	Sawn Timber	1800	150
30.	M/s. Silver Jubilee Saw Mill, Kadakachang, (South Andaman)	Sawn Timber	1800	469
31.	M/s. Island Wood Products, Havelock, (South Andaman)	Sawn Timber	900	-
32.	M/s. Andaman Wood Link Products, Mayabunder, (North Andaman)	Sawn Timber	1200	231
33.	M/s. Rehabilitation Multipurpose Co-operative society Ltd., Rangat, (Middle Andaman)	Sawn Timber	750	506
34.	M/s. Vinay Lall Saw Mill, Austinabad, (South Andaman)	Sawn Timber	-	-
35.	M/s. Elephant Saw Mill, Campbell bay (Great Nicobar	Sawn Timber	420	420
36.	M/s. Ram Saran Saw Mill, Campbell Bay, Great Nicobar	Sawn Timber	300	300
37.	M/s. Chuk Chuki Saw Mill, Car Nicobar	Sawn Timber	-	-
38.	M/s. Kanuse Saw Mill, Car Nicobar	Sawn Timber	-	-
	II GOVT. SAW MILLS			
1.	Govt Saw Mill, Chatham, Port Blair	Sawn Timber	24000	15000
2.	Govt Saw Mill, Betapur, Middle Andaman	Sawn Timber	5000	3000

A92

A92

ANNEX 7

ANNEXURE 7

B) Sawn Timber exported to Govt. depots at Chennai & Calcutta.

(In cum)

Year	*Total Quantity*
91-92	*868.1*
92-93	*492.7*
93-94	*140.0*
94-95	*792.1*
95-96	*385.2*
96-97	*841.100*
97-98	*649.50*
98-99	*130.77*
99-2000	*152.510*
2000-01	*676.627*
01-02 (upto Nov)	*278.1*

ANNEX 8

ANNEXURE 8

ANNEXURE-III

LIST OF PROTECTED AREAS IN ANDAMAN & NICOBAR ISLANDS

S. No.	Name of National Park	District/Division	Area (Sq.Km.)
1.	Mahatma Gandhi Marine National Park	Andaman	281.50
2.	Rani Jhansi Marine National Park	-do-	256.142
3.	Saddle Peak	-do-	32.536
4.	North Button	-do-	0.44
5.	Middle Button	-do-	0.44
6.	South Button	-do-	0.03
7.	Mount Harriet	-do-	46.62
8.	Campbell Bay National Park	Nicobar	426.23
9.	Galathea National Park	-do-	110.00
		Total	1153.938

S.No.	Name of Sanctuary	District/Division	Area (Sq.Km.)
1.	Lohabarrack Crocodile Sanctuary	Andaman	100.00
2.	Cuthbert Bay	-do-	5.82
3.	Bingham	-do-	0.08
4.	Sir Hugh Rose	-do-	1.06
5.	Pitman	-do-	1.37
6.	James	-do-	2.10
7.	Potanma	-do-	0.16
8.	Kyd	-do-	8.00
9.	Petric	-do-	0.13
10.	Defence	-do-	10.49
11.	Montogomery	-do-	0.21
12.	Clyde	-do-	0.54
13.	Sandy	-do-	1.58
14.	Snake	-do-	0.03
15.	Cinque	-do-	9.53
16.	Passage	-do-	0.62
17.	Sisters	-do-	0.36
18.	North Brother	-do-	0.75
19.	South Brother	-do-	1.24
20.	Bluff	-do-	1.14
21.	Spike	-do-	11.70
22.	Talabaicha	-do-	3.21
23.	Mangrove	-do-	0.39
24.	Stoet	-do-	0.44
25.	Belle	-do-	0.08
26.	Arial	-do-	0.05
27.	East or Inglis	-do-	3.55
28.	Duncan	-do-	0.73
29.	Oyster	-do-	0.08
30.	Parkinson	-do-	0.34
31.	Cone	-do-	0.65
32.	Landfall	-do-	29.48
33.	East	-do-	6.11
34.	West	-do-	6.40
35.	Peacock	-do-	0.62
36.	White Cliff	-do-	0.47
37.	Reef	-do-	1.74
38.	Mayo	-do-	0.10
39.	Paget	-do-	7.36
40.	Shearme	-do-	7.85
41.	Point	-do-	3.07
42.	Ox	-do-	0.13
43.	Snark	-do-	0.60
44.	North	-do-	0.49

A94

45.	Kwangtang	-do-	0.57
46.	Rowe	-do-	0.01
47.	Latauche	-do-	0.96
48.	Jungle	-do-	0.52
49.	Tilby	-do-	0.96
50.	Table (Excelsior)	-do-	1.69
51.	Table (Dalgarno)	-do-	2.29
52.	Temple	-do-	1.04
53.	Turtle	-do-	0.39
54.	Rose	-do-	1.01
55.	Brush	-do-	0.23
56.	Bamboo	-do-	0.05
57.	Blister	-do-	0.26
58.	Dot	-do-	0.18
59.	Curlew	-do-	0.03
60	Oliver	-do-	0.16
61.	Oyster	-do-	0.21
62.	Orchid	-do-	0.10
63.	Curlew (B.P.)	-do-	0.16
64.	Egg	-do-	0.05
65.	Swamp	-do-	4.09
66.	Dottrill	-do-	0.13
67.	Gurjan	-do-	0.16
68.	Sea Serpent	-do-	0.78
69.	Snake	-do-	0.73
70.	Bondaville	-do-	2.55
71.	Buchanan	-do-	9.33
72.	Surat	-do-	0.31
73.	Enterance	-do-	0.96
74.	Benette	-do-	3.46
75.	Roper	-do-	1.46
76.	South Reef	-do-	1.17
77.	Mask	-do-	0.78
78.	Tuft	-do-	0.29
79.	Hump	-do-	0.47
80.	Gander	-do-	0.05
81.	Goose	-do-	0.01
82.	Flat	-do-	9.36
83.	Spike	-do-	0.42
84.	Ranger	-do-	4.26
85.	Wharf	-do-	0.11
86.	Tree	-do-	0.03
87.	Channel	-do-	0.13
88.	Narcandum	-do-	6.812
89.	North Reef	-do-	3.484
90.	Barren	-do-	8.100
91.	South Sentinel	-do-	1.612
92.	Interview Island	-do-	133.00
93.	Glathea Bay	-do-	11.44
94.	Baltimaliv Island	Nicobar	2.07
95.	Tillongchang Island	-do-	16.83
96.	Megapode Island	-do-	0.12
			466.218

A94(i)

ANNEX 9

ANNEXURE 9

REGENERATION OF IMPORTANT RAINFOREST TREE SPECIES IN VIRGIN AND SELECTIVELY LOGGED SITES IN THE SOUTH ANDAMAN ISLAND

A DISSERTATION SUBMITTED IN
PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE (ECOLOGY)

by

SOHALI PANDIT

PROJECT SUPERVISOR

Dr. PRIYA DAVIDAR

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LIST OF CONTENTS

A96

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N.Uma who put up patiently with me during my stay at her place in Port-blair.

Vaigai computer printing where I got this printed.

My family, especially my father who gave me courage and moral support throughout my work and Srikanth and Manju for writing regularly.

A 97

MADRAS CROCODILE BANK
POST BAG No. 4
MAMALLAPURAM-603 104
T.N., S. INDIA

ABSTRACT

The effects of selective logging on the regeneration and composition of a rain forest was studied in the South Andaman Island from February 91 to April 91.

One undisturbed site and two sites selectively felled in 1955 and 1986, were chosen. Seedlings, saplings and adults of all the species in those three sites were enumerated in 50 randomly selected 5m x 5m plots.

Stand density, basal area and IVI of all species in the three sites were estimated. Stand density of non-commercial species in site I was more than commercial species, whereas in sites 2 and 3 the opposite was found to be true. Basal area and IVI also showed the same pattern as the stand density. The species diversity in the three sites were not very different.

Regeneration of commercial species was favoured in logged sites while undisturbed site had poor regeneration of commercial species. The regeneration of species might be enhanced in the logged sites because of higher light levels.

A98

INTRODUCTION

Selective logging has been practised in tropical rain forests because it is believed to be a sustainable system. The commercially important trees are removed and to enhance their regeneration, species which are not economically important are destroyed. These operations selectively favour commercially desirable and light demanding species.

Few studies have been conducted on the effect of selective logging in the tropics, although more work has been done in temperate areas (Borman et al 1974, Valentine 1976, Pierce et al 1972, Likens et al 1970). Webb (1977) studied the nutrient status and regeneration of rain forests in S.E.Asian region. These studies indicate that the original forest is mostly or totally destroyed, as a result of logging operations and conditions may not favour regeneration of the logged species.

The pressure on forests in the South Andamans is increasing because of the market of hard woods, and the dependence of the local population on the forest for fuelwood. Due to selective felling, very few patches of undisturbed forests are left in the South Andaman island.

Logging operations in Andamans follow the "Andaman canopy lifting" system, which has a harvesting cycle of 70-80 years. The regeneration of commercial species is promoted at the expense of non-commercial species.

I did a three month study from February 91 to April 91 in the South Andaman to investigate the effects of selective logging on the forest composition. The objectives were to :

- Compare the population structutre, species diversity, basal area and IVI of important species in forests affected by logging operations and in natural forests.

- Study the regeneration patterns of commercial and non-commercial species in the three sites.

A100

SELECTION FELLING PRACTICE, ITS SUSTAINABILITY AND EFFECTS ON N
TARGET SPECIES

The tropical rain forest has a high diversity of plants. Much the supply of commercial hardwood comes from these rain forea and they are being logged at a very high rate throughout t world Myers (1980).

S.L.Pringle (1976) studied the demand and supply of timb of tropical moist forests and found that from 1950 to 1974 t production of hard wood from these forests had risen seven fo accounting for 66% of the world's total.

Selective logging if performed in a proper way, does n automatically destroy a tropical forest. However, it has effect on the structure and functioning of the forest ecosyst as more "biomass" or "life" is destroyed or injured than the lo that are finally harvested. Intensive "creaming" where ming trees are exploited, has a negative effect on genetic resources Von Maydell (1991).

According to Keyes (1962) selective logging was adopted the dipterocarp forest because forest regeneration and grow increases with higher light levels.Sufficient numbers of you trees of many size classes can be saved under careful logging a can survive and grow vigorously. Besides it is the cheapest a surest means of restocking the dipterocarp forest.

The work conducted by Lamprecht (1986) in Latin America,

De Graff (1984) in Suriname, Wyatt Smith (1961) in Malaysia, Dawkins (1958) in Uganda and some others in Phillipines and Indonesia, all show that when suitable methods are used it is possible to manage tropical forests on sustainable basis, and to convert them into efficient commercial forests in a natural way, while to a large extent retaining the natural combinations of trees.

The silvicultural harvest systems ich have been applied to tropical rain forest are the monocyclic and the polycyclic systems Troup (1955) Dawkins (1958). The polycyclic system is based on removal of selected trees in a series of felling cycles, by contrast monocyclic system removes all the saleable trees at the single operation. The damage to the forest is much more drastic in the monocyclic than in the polycyclic system. The canopy is much more extensively destroyed and big gaps are formed.

There are other silviculture systems which have been developed for the forest. Phillipines selective log ng method Castillo (1973) and Indonesian selective felling method which depends upon advance growth for regeneration. The Phillipines selective felling procedure has a rotation period of 40-50 years Fox (1967).

to be 5.3 million m^3. Of these, damaged trees represented 50%, log tops and branches 34%, stumps 10% and abandoned logs 2.5%.(FAO,UNEP 1981). The report says that log production in insular SE Asia is risen from 36.2 million m^3 to 63.5 m^3 on m^3 in 1979.

J.P.Pascal (1988) concluded th. selective felling and artificial regeneration have resulted in gradual enrichment of useful species and a relative impoverishment of others. The useful ones are planted in the undergrouth and in the opening caused by felling of trees. Floristic composition tends to become simpler, some species that are less common and not useful become still rarer whereas others become more frequent.

D.J.Mabberley says that lianas often tie together several trees, the felling of one of the trees may lead to considerable damage to others. Tracks may take up to 10% or 30% of the forest area. It is estimated that in South East Asia one-third or two-thirds of residual trees are damaged irreparably while upto a third of area is left as bare ground after being compacted by forest machinery.

Burgess (1971) in the study of logging in the lowland mixed dipterocarp forest on Gunung Tebu Malaya shows that 10% of the basal area was removed for timber, 55% destroyed during the logging operation and only 35% remained undamaged. Similarly Johns (1986), found that in a hill Dipterocarp forest 51% of trees > 9.5 cm were destroyed to remove only 3% of the trees. Jacobs (1985) suggests that unless we have a full understanding

A 103

of the time involved in various processes major mistakes in decision on land management and conservation can be made.

According to Paul Woods (1988) selective logging renders the forest susceptible to fire because of accumulation of logging debris and the disturbance (upto 40%) of the previously closed canopy - a situation similar to that in Borneo.

EFFECT OF LOGGING ON REGENERATION & FOREST STRUCTURE

Raich (1988) in his study on seasonal and spatial variations of the light environment in a dipterocarp forest of Malaysia indicates that more light reaches the understorey in gaps than in closed canopy forest but the magnitude of the difference varies seasonally.

Environmental effects of clear felled logging was studied in Gogol valley by Saulei (1984). He found that the logged areas did revegetate fairly rapidly, but the new growth was poorer and less diverse.

Enright (1978) worked in an Araucaria domina d tropical rain forest to see the effect of logging on nutrient status and regeneration. The results indicate that selective logging radically alters the forest both in terms of vegetation and nutrients

Gajaseni and Jordan (1990) studied the effect of selective logging on the forests of Northern Thailand. Selective harvest of teak reduced the volume of trees greater than 60 cm from 100.7 m^3 to 9.5 m^3. The non-commercial trees were destroyed and they had

A104

80 percentage above the girth class of 25 cm.

A study done by Uhl and Guimaraes Vieria (1988) in Brazilian Amazon forest on the impact of selective logging show that in a 52 ha plot, 26% of pre harvest trees were killed or damaged. Total canopy cover was reduced by one half and 8% of area was scarred by logging roads. Original forest is totally destroyed. The resultant site conditions might not favour regeneration of the logged species.

Chandrashekar (pers.comm.) worked on the gap phase dynamics in a rain forest of Kerala. He compared regeneration of a primary species, a secondary species and a late secondary species in selectively logged site and a natural forest. Soil seed density of primary trees was more in natural gaps than in selection felled gaps and no significant difference was found for late secondary trees in the early stages of natural and selection felled gaps.

In their study on the recovery of rain forest overstorey following logging Horne and Walter (1982) found that recovery time of the overstorey trees in the Northern South Wales increased with intensity of logging. Their model predicts that the major overstorey trees will remain present at the recovery but there will be some changes in relative frequencies at the time of initial recovery.

T.B.Miller (1980) compared growth and yield of logged and mixed dipterocarp forest in East Kalimantan. He observed that the average nett growth rate of commercial species after logging

A105

is only 2 to 3 m3/ha/ann. Tagudar (1978) and Johnson (1976) in the similar kind of study estimated that commercial species in Malaysia could produce about 2.5 m3/ha/ann while properly managed regenerated forests are expected to produce at least 3.5 m3/ha/ann at 40 to 50 years.

SELECTIVE LOGGING IN ANDAMANS

The method of selective logging used in Andamans is called "Andaman canopy lifting system". It was developed by Chengappa and was practised for the first time in 1950 on a large scale. 30.5% of the total forest has been converted to natural regeneration area.

Andaman canopy lifting is a monocyclic system.The area to be selectively felled is marked. In each hectare few commercial trees are left as mother trees while other commercially important species of GBH around 1 m are cut. Then non-commercial trees are girdled. Most of the shrubs and the trees of GBH from . 6 to 25cm are removed. The undergrowth is removed for three successive years. This is referred as "brushwood cutting". These operations are called "Refinement" and "Liberation".

Felling is done in that site after 75 to 80 years. The area undertaken for this, is called natural regeneration area (NRA). About one to 1.5 lakh m^3 of timber is extracted every year.

A10:6

ANDAMAN ISLANDS

The study was carried out in the South Andaman Island which is a part of Andaman and Nicobar archipelago, about 1200 km from the Indian sub continent.

The Andamans lie between latitudes 6 45'N and 13 45'N and longitudes of 92 15' and 94 00 N .

The Andaman Islands are a continuation of the Arakan Yoma mountain ranges of West Burma and part of the old Gondwana land mass which stretched from Africa to Australia through the South Asian countries before the drifting of the continent. The present position of the island must have been created when a series of mountain ranges submerged subsequent to Alpine folding. These islands are now considered the summits of submerged mountains except for a few islands of coral formation (Parkinson 1923). These islands were apparently never connected to the continent during the Pleistocene when the ocean levels were lower (Ripley & Beehler 1989).

The topography of area is hilly and undulating. The slopes vary from moderate to steep and are susceptible to heavy soil erosion. The soil is generally loam and sandy loam. Soil depth varies with slope. Shallow soil is characteristic of the higher elevation.

The total geographical area of the islands is about 8300 sq.kms with a population of 1,88,741 (1981 census). More than 80% of the land is under forest cover and about 20% of the forests come under the general equatorial belt of Tropical Rain Forest.

A107

STUDY SITE.

The forests of the Andamans can be classified into five categories: littoral , mangrove , evergreen , deciduous and semi evergreen . South Andaman island has principally evergreen, semi-evergreeen and deciduous types of forest. The study sites were in the evergreen type of forest. Dominant canopy tree species in the evergreen forest are Pterocarpus griffithi, D. turbinatus, Planchonia andamanica, Sideroxylon longipetiolatum, Hopea odorata and Endospermum malaccense in the canopy. The under storey is composed of Careinia sp, Xanthochymus sp, Xanthophyllum andamanicum, Baccaurea sapida and Myristica andamanica, Podocarpus neilrifolia and palms like Pinanga kuhlii and Caryota mitis. Small trees and shrubs are often absent. Anaxagorea luzoniensis is a common shrub. Important climber species are Gnetum scandens, Sarcostima wallichii and Calamus palustris (Parkinson 1923).

The study was carried out in Shoal bay which is 50 km north west of Port Blair.

Three sites in an evergreen forest (within a Km^2 of each other) were chosen. Site 1 was an undisturbed forest patch, site 2 was a natural regeneration area of 1986 And site 3 was a natural regeneration area of 1955.

The dominant trees in site 1 were Myristica andamanica, Baccaurea sapida, and Parishia insignis, the second storey had Orphea hexandra, Aglaia sp. and Cynoxylem sp. Palms like Licuala peltata and Pinanga kuhli were common.

A108

Site 2 had commercially important trees like Evodia glabra, Poon, Parishia insignis, Dipterocarpus griffithi, Amoora Walichi, Planchonia andamanica, Hopea odorata and Podocarpus nerifolia. Non-commercial species were Baccaurea sapida, Mangifera sylvatica, Diospyros pilosula, Dracaena angustifolia, and Syzygia javanica.

Among the shrubs Lasianthus sp. a weed, frequently found in disturbed areas was very common. Thysanolaena agrostis a grass species was also abundant.

Site 3 common species were Dipterocarpus turbinatus, Parishia insignis, Leea sp., Mangifera indica, Licuala peltata, Thysanolaena agrostis, Pavetta sp. and Lasianthus sp.

METHODS

At each site a 100 m x 100 m plot was laid. A magnetic compass was used to maintain a straight line while laying the quadrat to make the plot almost a square. From the plot of 1 ha 50, 5m x 5m sub plots were selected randomly. The total number of seedlings, saplings and adults of all the species were noted in each subplot.

The individuals upto 1 m in height were classified as seedlings, ones having GBH <5 cm as saplings and the rest > 5 cm in GBH were classified as adults. Girth at breast height (GBH) was measured for each adult with the help of meter tape.

All the species were identified with the help of C.E. Parkinsons's Flora of Andaman Islands (1923), herbarium of the Botanical Survey of India, Port-Blair and Dr B.Ramesh, French Institute. Two species remained unidentified so the common names are used.

To see the proportion of canopy cover, at four corners of each sub plot a stick facing the sky at 90 degrees was held to see whether sky was visible or not. These were scored. Total number of covered and uncovered points were added to find the percentage of canopy cover in each site. (Puyravaud - personal communication).

The species in each site were grouped into four categories based on the relative abundance of seedlings and saplings.

Under A category all the species having highest recruitment

A 110

were included, B had all the species with medium recruitment, C had all the species with poor recruitment and D had the species with no recruitment.

Percentage of commercial and non-commercial species in each category were estimated.

The regeneration patterns of commercial and non-commercial species were studied in three sites by two way ANOVA.

A Chi Square test was done to see if the density of deciduous species differed in the three sites.

The IVI was calculated by finding the relative density (RD), relative frequency (RF), and relative dominance (Rdom) of the tree species. Basal area was calculated per species for the three sites (formula given below)

$$\text{Basal area} = C^2 / 4 \times (22/7) = C^2/13.56$$

Where C = the circumference or girth

$$\text{Rdom} = \frac{\text{Total basal area of a species}}{\text{Total basal area of all species}} \times 100$$

$$\text{RF} = \frac{\text{Number of occurence of a species}}{\text{Number of occurence of all species}} \times 100$$

$$\text{RD} = \frac{\text{Total number of the individuals of a species}}{\text{Total number of quadrats taken}} \times 100$$

AIII

IVI was measured by using the formula

IVI = RD + RF + Rdom (Curtis and McIntosh 1951).

Diversity was calculated with the help of Shannon Weiner's Index.

$$\text{diversity} = -\sum (pi \log pi)$$

$$\text{Where } pi = \frac{\text{total number of i'th species}}{\text{total number of all the species}}$$

A112

RESULTS

DIVERSITY

Total number of species found in site 1 was nineteen, in site 2 thirty-one and in site 3 twenty-one. Four species were deciduous in site 1, eleven deciduous species in site 2 and seven deciduous species in site 3. Shannon-Weiner Index showed the values of 0.550, 0.871 and 0.612 for site 1, site 2 and site 3 respectively. Table 3 shows the densities of seedling, saplings and adults of dominant species of the three sites.

REGENERATION

Species were classified into four categories according to their recruitment. Category A,B,C and D. A has maximum density of seedlings and saplings, B had medium density, C poor density and D no recruitment at all (Table 1a,1b). Percentage of commercial and non-commercial species was found in each category (Table 2).

In site 1 three species were present which were not represented in any of the other two sites, these species can be termed as rare non-commercial.

A two way ANOVA showed that there was a significant difference between regeneration of the species in the different sites ($F = 10.2$, $F_{0.01}$ $= 4.10$, $df_{2,10}$). There was no significant difference between regeneration of commercial and non commercial species ($F = 0.108$, $F_{0.05}$ $= 5.99$, $df_{1,6}$)

A113

There was a significant difference between regeneration of deciduous and evergreen species. Regeneration of deciduous species was more in the logged sites. (Chi Square $p < 0.0\%$, $\chi^2 = 1560.5$,).

The light penetration in the site 3 was maximum because it had a canopy cover of 59% approximately, the site 1 had the maximum cover of 80.5% and the site 2 had 77.5%.

BASAL AREA AND IVI

Basal area and IVI's of the adults were calculated. It emphasises those species which are dominant in the terms of size and density.

In the site 1 Myristica andamanica had a maximum basal area of 2.23 and IVI of 0.815. Myristica, Diospyros, Aglaia and Orphea had moderate basal areas and frquency. Of the commercial tree species Dipterocarpus had the basal area of 0.057 m^2. (Table 4a).

In the site 2 commercial trees were dominant. Evodia, Dipterocarpus and Pariahia were present at the high densities. They had basal area of 0.691, 0.408 and 0.223 m^2 respectively. Other species had very low densities (Table 4b).

Site 3 had maximum representation of Dipterocarpus. It had the basal area of 2.246 m^2, Pariahia another commercial species had the basal area of 1.315 m^2. The other species like Xanthophyllum, Myristica and Mangifera had very low densities and basal areas (Table 4c).

A114

GIRTH CLASS DISTRIBUTION

To see the pattern of girth class distribution of the species, girth frequency graphs were plotted. All the three sites showed significant departure from the normal curve. They showed lepto-kurtic distribution or L - shaped distribution for th whole plot analysis. Total number of individuals in the girth class 0-25 cm were maximum in all the three sites. In site 1 high girth classes were wall represented while in sites 2 and 3 high girth classes were missing (Fig 4.5.C).

A115

TABLE 1a

Dominant species of sites 1 and 2 in the four categories

Site 1		Site 2	
Category A		Category A	
Myristica andamanica	N	Poon	C
Orphea hexandra	RN	Demecarpus racemosus	C
Dysoxylem sp.	RN	Sageraea elliptica	N
Aglaia andamanica	RN	Dipterocarpus griffithi	C
Category B		Category B	
Demecarpus racemosus	N	Mangifera indica	N
Baccuarea sapida	N	Planchonia andamanica	C
		Xanthophyllum andamanica	N
		Baccuarea sapida	N
Category C		Category C	
Dipterocarpus griffithi	C	Terminalia manii	C
Lasun	N	Lasun	N
Evodia glabra	N	Semecarpus kurzii	N
Category D		Category D	
Parishia insignis	C	Artocarpus chaplasha	C
Terminalia cattapa	C	Pometia pinnata	C
		Cassia butyrecea	N
		Podocarpus neiirifolia	C
		Gmelina arborea	C

A116

Table 1b

Dominant species of site 3 in four categories

site 3			
Category A		Category C	
Dipterocarpus griffithi	C	Artocarpus chaplasha	C
		Sagerea hexandra	N
		Evodia glabra	C
		Litsea sp	N
		Podocarpus neiirifolia	C
		Pometia pinnata	C
Category B		Category D	
Mangifera indica	N	Terminalia cattapa	C
Parishia indica	C	Planchonia andamanica	C
Diospyros pilosula	N		
Paveta sp.	N		
Psychotria sp.	N		
Demecarpus racemosus	N		
Syzigium javanica	N		
Baccuarea sapida	N		
Xanthophyllum andamanica	N		

N - Non - commercial, C - Commercial, RN - Rare non-commercial

A117

TABLE 2

ercentage of commercial and non-commercial species in tegory.

	Site 1		Site 2		Site	
	C	N	C	N	C	N
A		100%	71%	29%	100%	
B		100%	80%	20%	16%	84%
	65%	35%	33%	66%	80%	20%
D	66%	34%	70%	30%	100%	

C commercial, N non commercial

A 118

TABLE 3

Density/m^2 of seedlings, saplings and adults of dominant species in the three sites.

species	seedling	sapling	adult
SITE 1			
Myristica andamanica	0.258	0.164	0.428
Dipterocarpus pilosula	0.08	0.072	[illegible]
Aglaia sp	0.166	0.131	0.076
Barringtonia sapida	0.020	0.01	0.065
SITE 2			
Lyodia glabra	0.203	0.060	0.052
Dipterocarpus griffithi	0.054	0.069	0.203
Poon	0.203	0.29	0.067
Amoora wallichii	0.067	0.087	0.056
SITE 3			
Dipterocarpus griffithi	0.78	0.298	0.653
Myristica andamanica	0.04	0.092	0.118

A119

TABLE 4a

Importance value index of dominant species of site 1

SPECIES	D	DA	RD	RF	RDOM	IVI
Myristica andamanica	78	2.23	.41	.31	.4642	.81
Lasun	3	.085	.01	.02	.017	.05
Diospyros pilosula	21	.150	.1	.117	.0312	.35
Baccuarea sapida	12	.193	.6	.09	.040	.11
Parishia insignis	5	.398	.026	.03	.082	.138
Xanthophyllum andamanica	6	.100	.031	.05	.020	.102
Dipterocarpus griffithi	3	.057	.015	.02	.011	.046
Terminalia cattapa	5	.039	.026	.03	.0082	.64
Ficus sp.	9	.027	.047	.03	.0056	.13
Calophyllum andamanica	14	.100	.074	.06	.020	.08
Garuga sp.	8	.101	.042	.07	.021	.1
Drimycarpus racemosus	6	.02	.031	.05	.0041	.08
Orophea hexandra	10	.198	.053	.07	.2493	.57

TABLE 4b

Importance value index of dominant species of site 2

SPECIES	D	DA	RD	RF	RDOM	IVI
Evodia glabra	139	.691	.52	.24	.3496	1.109
Dipterocarpus griffithi	34	.408	.12	.04	.2064	.583
Parishia insignis	5	.223	.018	.037	.112	.15
Lasun	2	.0106	.007	.006	.0053	.02
Sageraea elliptica	3	.059	.011	.018	.0298	.07
Baccuarea sapida	2	.03	.007	.006	.015	.02
Terminalia cattapa	5	.035	.018	.02	.0177	.05
Amoora wallichii	15	.0268	.056	.06	.0135	.129
Vitex glabrata	3	.0067	.011	.018	.0033	.701
Planchonia andamanica	5	.0463	.2007	.031	.022	.267
Brassica butyracea	1	.0685	.003	.006	.0346	.04
Leea sp.	3	.0214	.011	.012	.0108	.023
Drimycarpus racemosa	1	.0002	.003	.006	.0001	.009
Podocarpus neerifolia	1	.0005	.003	.006	.0002	.009
Litsea sp.	1	.005	.003	.006	.0002	.00
Diospyros pilosula	1	.0104	.003	.012	.0052	.0
Gmelina arborea	2	.0392	.007	.006	.0198	.05
Eugenia javanica	1	.0572	.003	.006	.0289	.03
Myristica andamanica	5	.0635	.018	.316	.0321	.46
Poon	18	.089	.068	.056	.0450	.16
Xanthophyllum andamanica	2	.0044	.002	.012	.0022	.01
Mangifera sylvatica	10	.071	.037	.031	.0359	.10
Melastoma malabatrum	2	.003	.007	.012	.0001	.01
Pavetea sp	1	.0017	.003	.006	.0008	.00
Dracena angustifolia	3	.0121	.011	.018	.0061	.03

A120

TABLE 4c

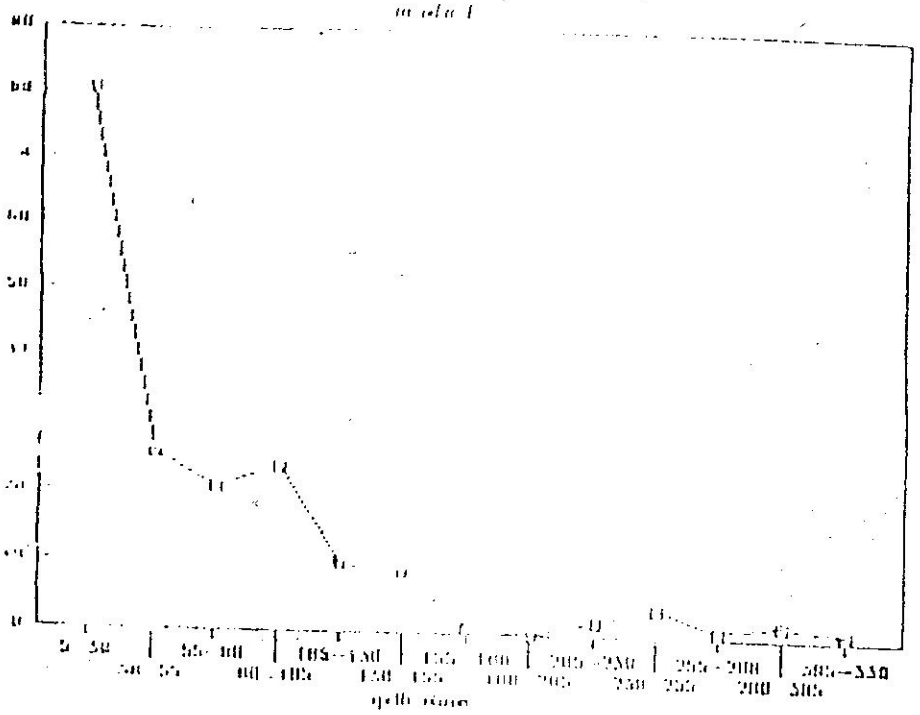
Importance value index of dominant species of site 3

SPECIES	O	BA	RD	RF	RDOM	IVI
Dipterocarpus turbinatus	149	2.246	.6535	.485	.5086	1.645
Myristica andamanica	27	.149	.1184	.087	.003	.239
Mangifera indica	9	.0139	.0394	.058	.003	.099
Parishia insignis	22	1.315	.096	.16	.2978	.558
Terminalia sp.	1	.0069	.004	.009	.0015	.028
Poon	2	.3676	.008	.019	.0832	.11
Planchonia andamanica	1	.0079	.004	.009	.0001	.013
Sageraea elliptica	1	.0113	.004	.009	.0025	.015
Diospyros pilosula	1	.0002	.004	.009	.0006	.013
Baccaurea sapida	1	.201	.004	.009	.0455	.085
Elaeocarpus latifolia	1	.0007	.004	.009	.0001	.013
Evodia glabra	1	.0031	.004	.009	.0007	.193
Xanthophyllum andamanica	2	.0056	.008	.019	.0012	.028
Drimycarpus racemosa	2	.0015	.008	.019	.0012	.027
Podocarpus neerifolia	1	.0644	.04	.009	.0145	.078
Champeria manillana	2	.0015	.008	.019	.0003	.016
Pygeotria sp.	2	.0007	.008	.019	.0002	.165
Artocarpus chaplasha	3	.0256	.013	.029	.0057	.047

O Occurence BA Basal area RD Relative density RF Relative frequency RDOM Relative dominance IVI Importance value index

Fig.4

girth class distribution of species



girth class distribution of species

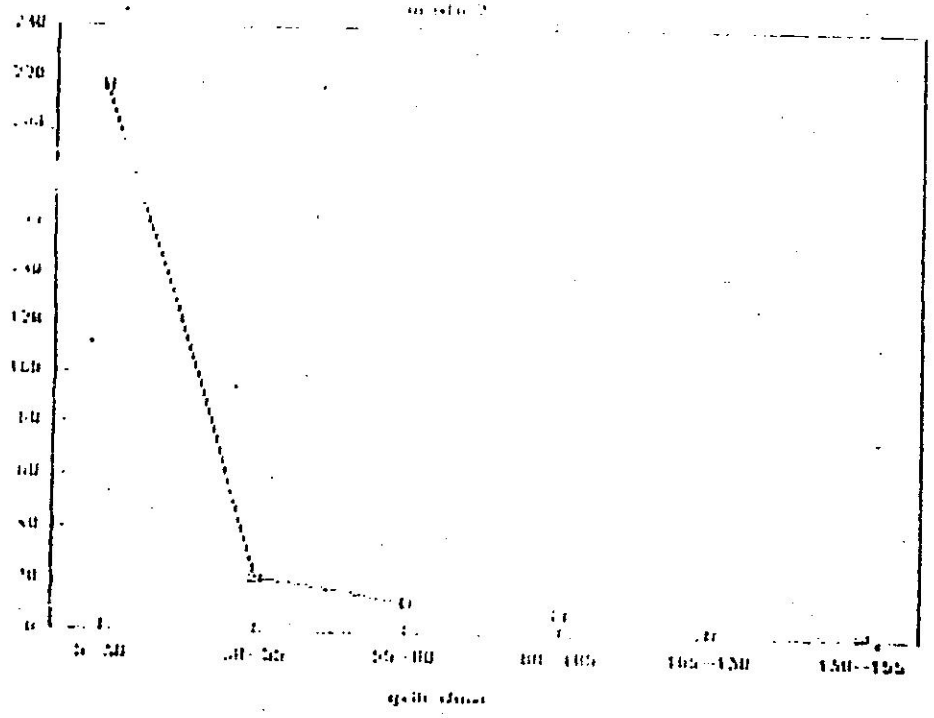


Fig.5

A122

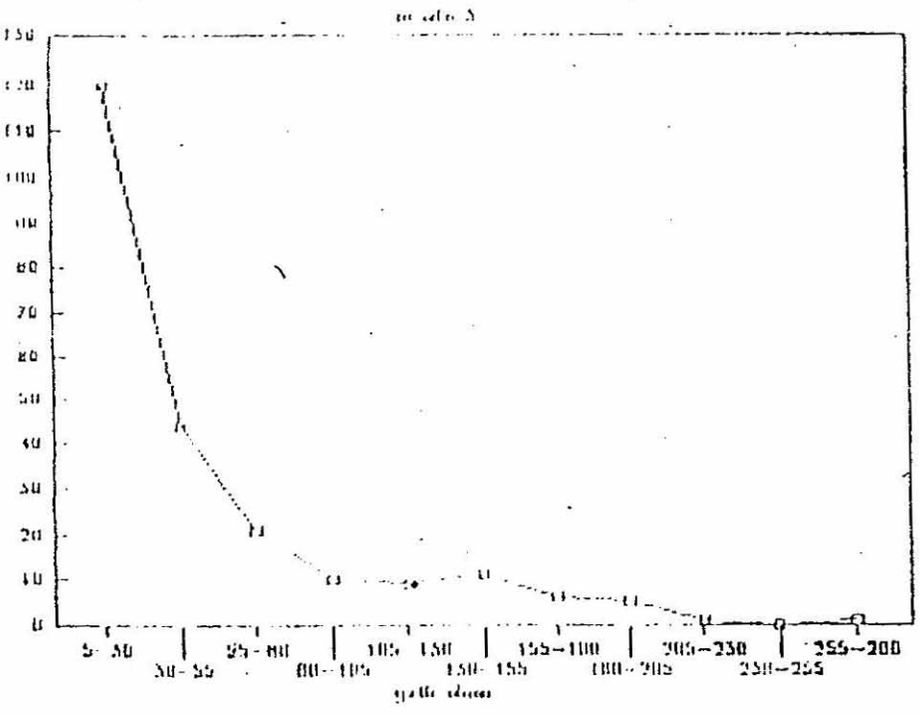

girth class distribution of species
150
120
110
100
90
80
70
60
50
40
30
20
10
0
5-50
50-55
55-80
80-105
105-130
130-155
155-180
180-205
205-230
230-255
255-280
girth class

Fig.6

A123

DISCUSSION

This study shows that the selection felling practice in the Andaman Islands has an effect on the forest structure, but the effect is not very drastic. The notable trend is to change the dominance patterns from non-commercial to commercial trees. This is because of the girdling of non-commercial trees and favouring commercial trees for regeneration. Regeneration of non-commercial tree species is poor in the virgin forest, in logged forest regeneration of commercial species is favoured but non-comaercial species are not eliminated. Large trees are only found in site 1, site 2 had no large trees because of recent felling. The younger age classes of non-commercial species in sites 2 and 3 are fewer in number. This suggests that over time they might be at even lower densities. The increased light levels and temperature also might favour certain trees over others.

Species plotted against the increasing order of their stand density show that in site 2 and site 3 the stand density of commercial species is more than that of non- commercial species (Fig 2,3). In site 1 the stand density of non-commercial species is higher than commercial species (Fig 1).

Rare and non-commercial species were were absent in sites 2 and 3. Rare species might disappear completely if the logging is done over a large scale. A study done in the Gogol valley (Saulei 1984) shows that there was absence of locally valued trees due to removal of their parent trees which were neither fruiting nor shedding their seeds on to the forest floor at the time of

A124

logging to act as a seed source.

There was not much difference between the diversity indices of the three sites. The area sampled was too small to analyse diversity. (Chandrashekar pers. comm.) in his study found that species diversity did not vary much in the felled and unfelled sites. It remained constant with gap size. Primary species came up in smaller gaps and secondary species in larger gaps irrespective of logging.

Plonczak (1988) did a similar kind of study in Venezuela and found that in the subsequent years the number of species per unit area increases in logged sites than in primary forest.

He states the reason that clearing of forests activates the development of seedling reservoir out of its dormancy and within a short time seedlings take advantage of increased light and pass the diameter limit of 10cm. In addition pioneer species are able to immigrate or germinate. Species density increased after the exploitation phase. Site 2 shows similar trends.

In site 1 the understorey was sparce, the number of seedlings and saplings was less than in the logged sites. This is because of the suppression of seedling growth due to inavailability of sufficient light. Higher temperature in the felled sites might also reduce seed dormancy (Chandrashekar pers.comm.).

Forest gaps allow more light to reach reach the understorey and this phenomenon is important to tropical forest regeneration (Hartshorn 1978).

A125

Light availability in the site 3 was maximum and site 1 was minimum. Pioneer and secondary species were present in site 2 and site 3 because of more availability of direct sun light.

The density of adult deciduous species was more than density of seedlings and saplings. It implies that the regeneration of deciduous species is not favoured in any of the sites.

The study shows that commercial species are favoured by selection felling. They are rare in undisturbed forest but become dominant in the NRA's. We need to know more about what kind of secondary forest will develop after felling. Will weeds and deciduous species dominate? The effects on the soil, nutrient status and nutrient cycling needs to be studied. Finally, instead of NRA's the Forest Department should explore the potential of plantations. [Plantations are more efficient and more economically viable. The total area of natural forest disturbed will be less and the volume of timber extracted will be higher.] Further research will shed light on the type of sylvicultural practice that is optimal and sustainable for the Andaman Islands.

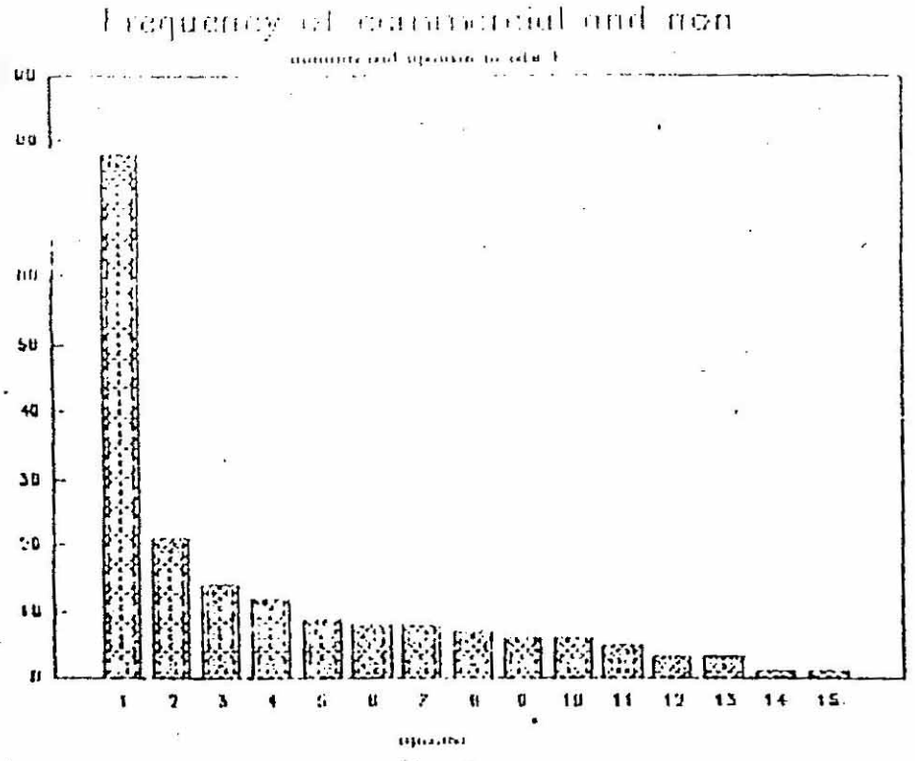
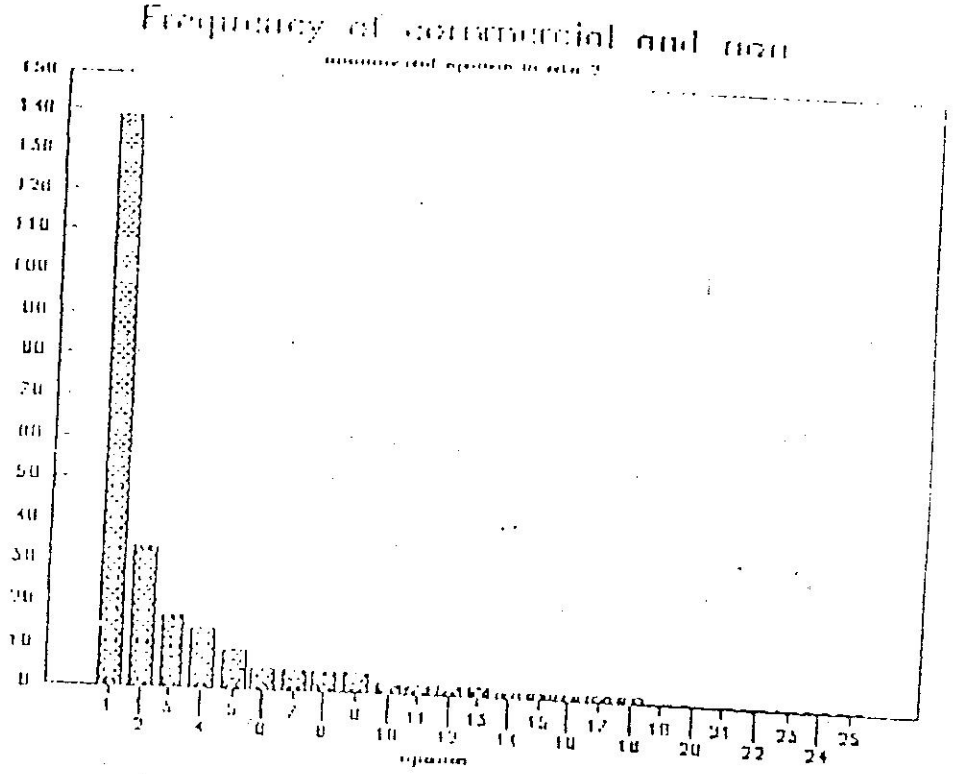


Fig.1

A126

Fig.2



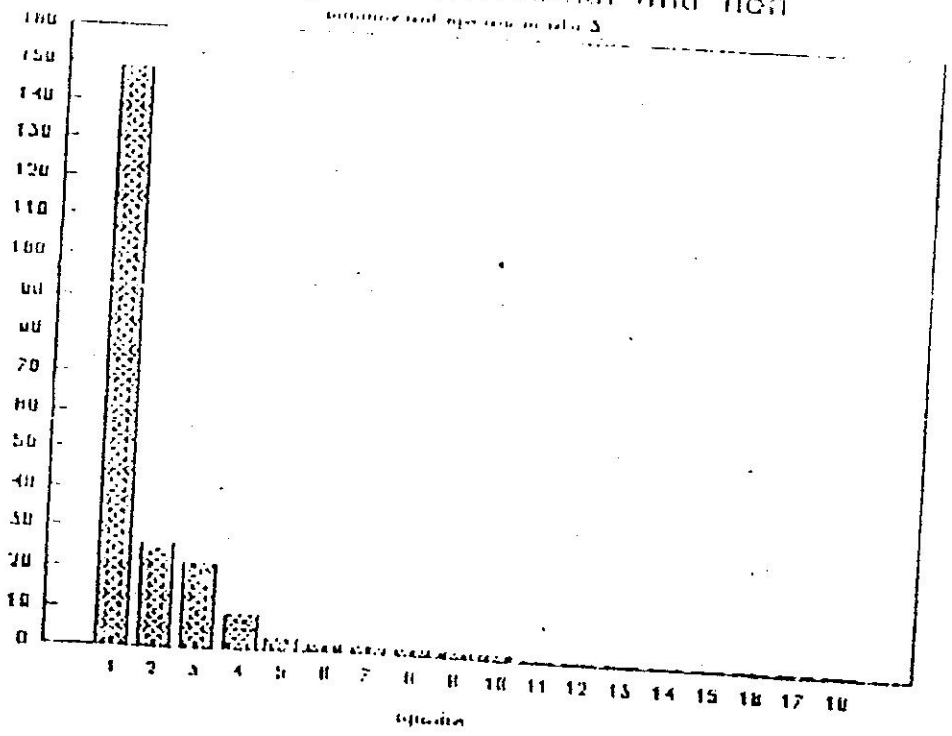
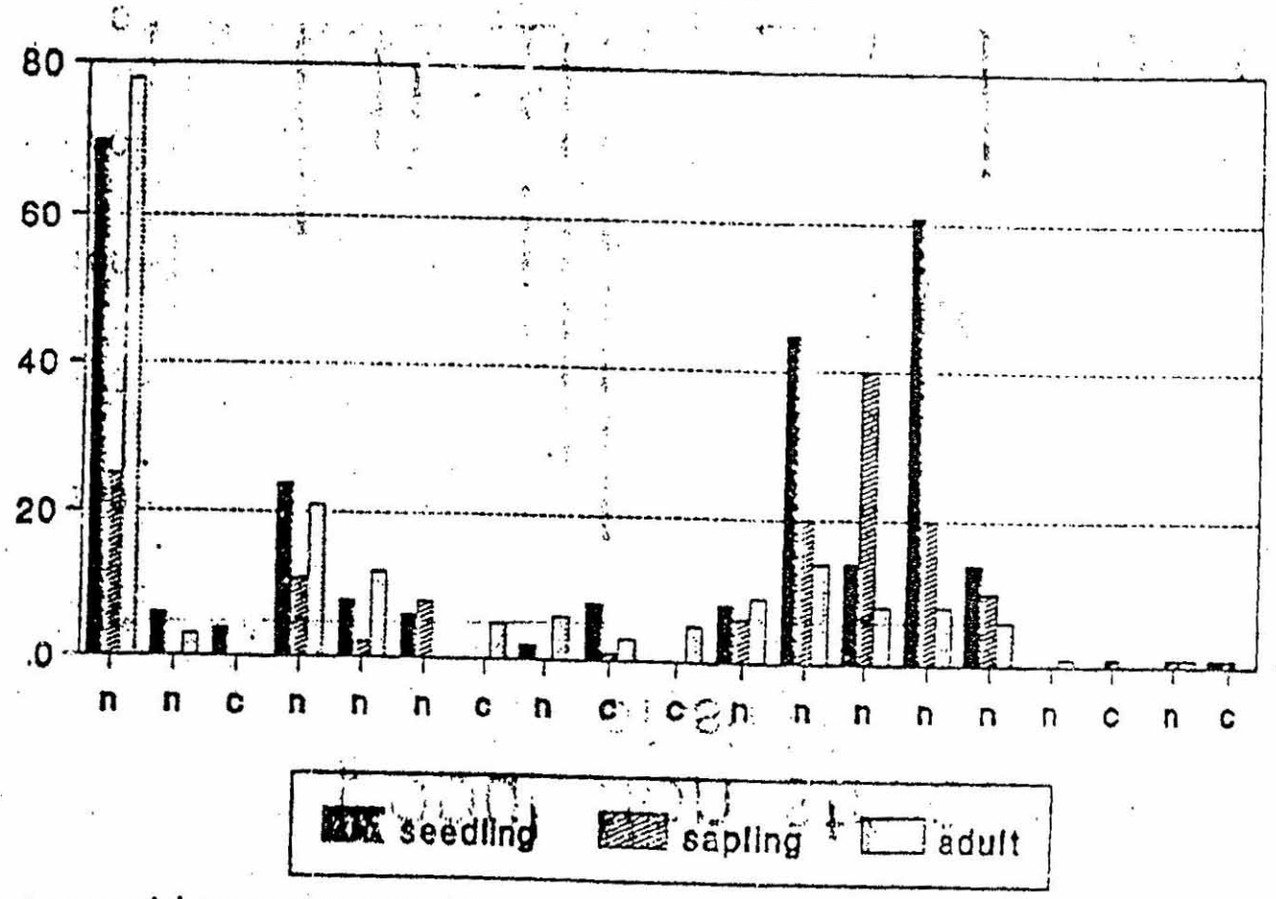


Fig.3

A127

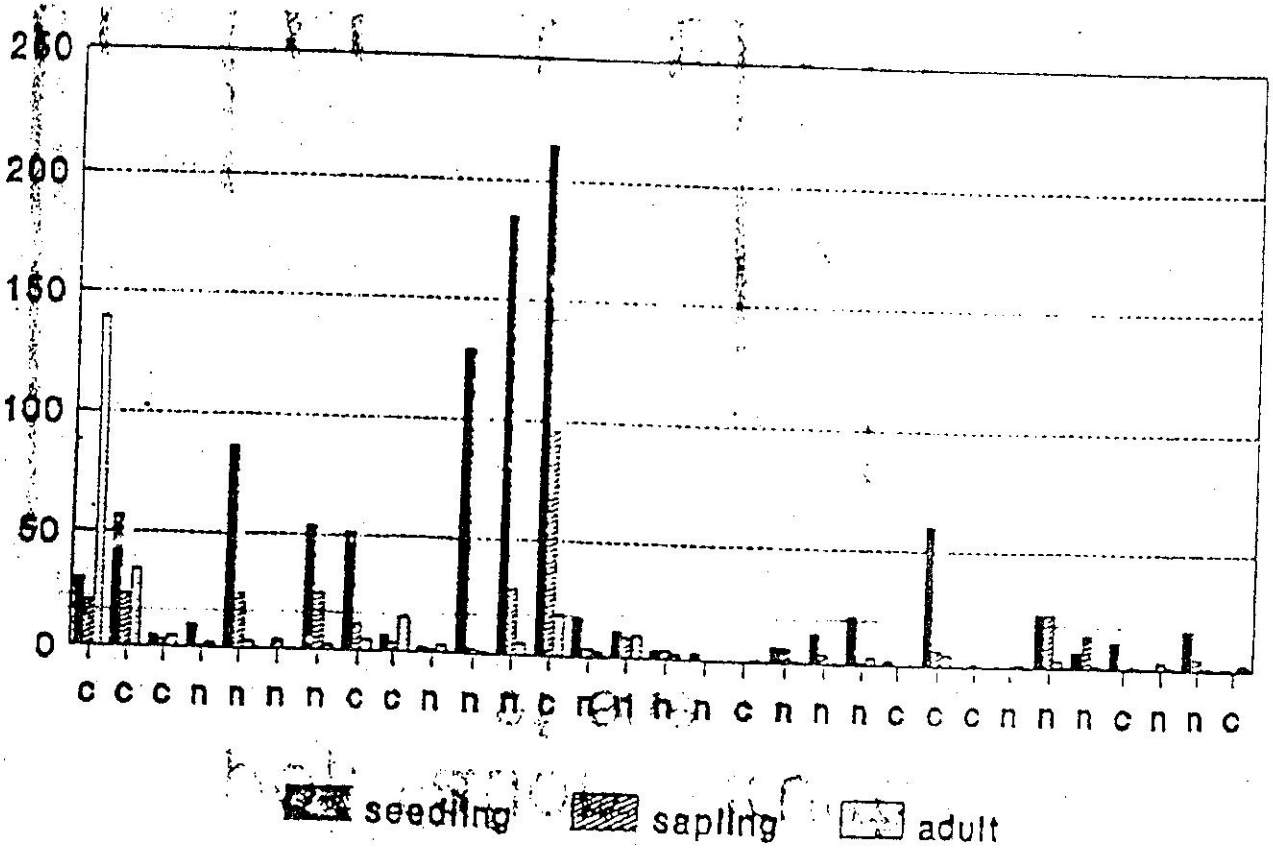
population structure of site 1



c = commercial n = non-commercial

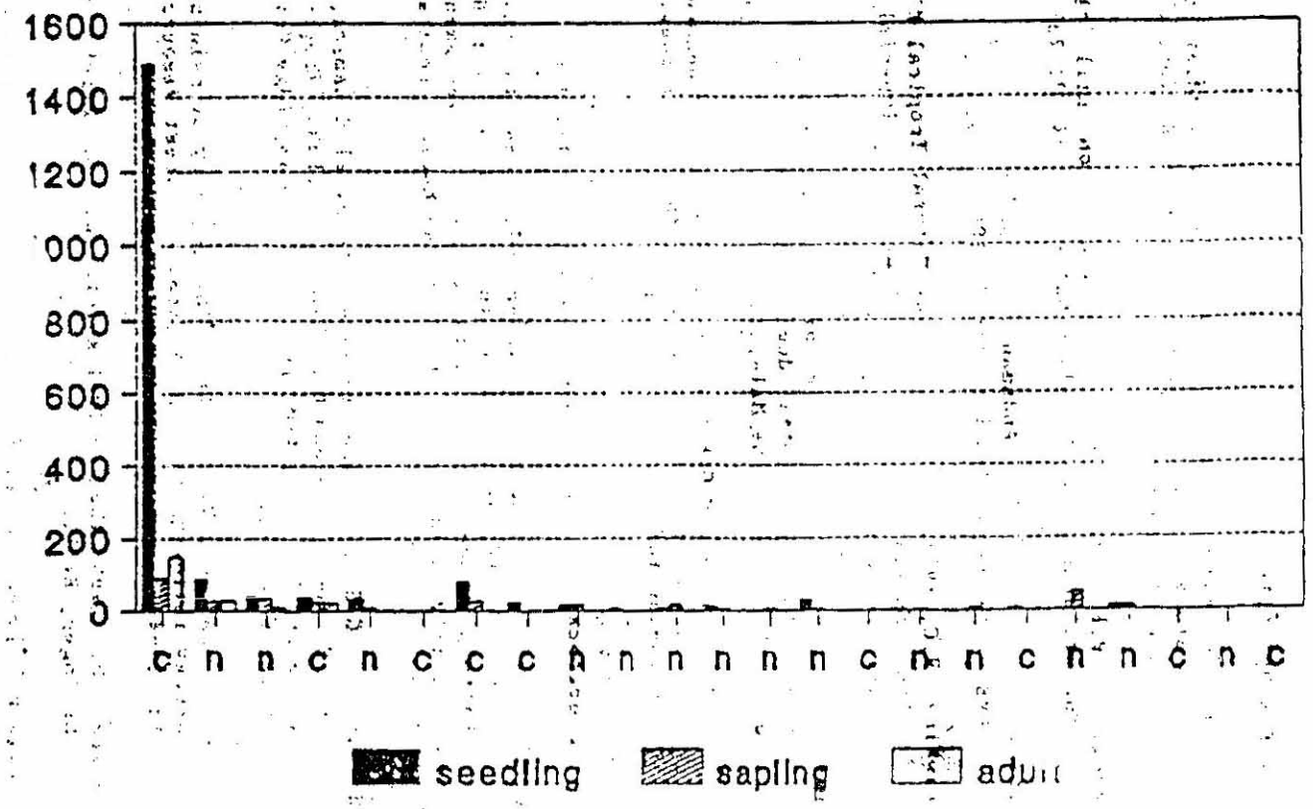
A12P

population structure of site 2



c = commercial n = non-commercial

population structure of site 3



c = commercial n = non-commercial

1130

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A131

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A133.

APPENDIX

LIST OF THE SPECIES FOUND IN THE THREE SITES

Site 1

NO	NAME
1	Myristica andamanica
2	Lasun
3	Poon - Calophyllum sp.
4	Diospyros pilosula
5	Baccuarea sapida
6	Semecarpus kurzii
7	Parishia insignis
8	Xanthophyllum andamanica
9	Dipterocarpus griffithi
10	Terminalia cattapa
11	Champeria manillana
12	Aglaia andamanica
13	Dysoxylum sp.
14	Orophea hexandra
15	Drimycarpus racemosus
16	Artocarpus chaplasha
17	Litsea sp.
18	Evodia glabra
19	Sageraea elliptica

Site 2

NO	NAME
1	Evodia glabra
2	Dipterocarpus turbinatus
3	Parishia insignis
4	Lasun
5	Sageraea elliptica
6	Elaeocarpus latifolia
7	Baccuarea sapida
8	Terminalia cattapa
9	Amoora wallichii
10	Vitex glabrata
11	Eugenia javanica
12	Myristica andamanica
13	Poon
14	Xanthophyllum andamanica
15	Mangifera sylvatica
16	Melastoma malabatrum
17	Semecarpus kurzii

A134

18	Artocarpus chaplasha
19	Pavetta sp.
20	Champeria manillana
21	Dracuna angustifolia
22	Pometia pinnata
23	Terminalia procera
24	Bassia butyracea
25	Leea sp.
26	Drimycarpus racemosus
27	Podocarpus neiifolia
28	Litsea sp.
29	Diospyros pilosula
30	Gmelina arborea

Site 3

NO	NAME
1	Dipterocarpus turbinatus
2	Myristica andamanica
3	Mangifera sylvitica
4	Parishia insignis
5	Eugenia javanica
6	Terminalia tattapa
7	Poon
8	Planchonia andamanica
9	Pavetea sp.
10	Sageraea elliptica
11	Diospyros pilosula
12	Baccuarea sapida
13	Elaeagnus latifolia
14	Semecarpus kurzii
15	Evodia glabra
16	Xanthophyllum andamanica
17	Drimycarpus racemosus
18	Podocarpus neiifolia
19	Champeria manillana
20	Psychotria sp.
21	Artocarpus chaplasha

ANNEX 10

ANNEXURE 10

NOTE

On Jan.16th,2002: Prof. Sekhar Singh, Commissioner appointed by the Ministry of Environment & Forest Govt. of India for giving the report on the state of the Forests & other allied matters of A & N Islands, accompanied by the Conservator of Forests (Southern Circle) visited Natural Regeneration raised by Aided Natural Regeneration System (Andaman Shelterwood canopy lifting regeneration system) in TAILIUT DEWAIAH (T.L.D) area in Jirkatang Range during 1951. Total area of this NRA plot was 520 Hect. The regeneration area was found well stocked having the composition of tree species as below in the order of abundance.

1. Gurjan (Dipterocarpus species)
2. Red Dhup (Parishia insignis)
3. Papita (Pterocymbium tinctorium)
4. Badam (Terminalia procera)
5. Padauk (Piero carpus dalbergioides)
6. Koko (Albizia lebek)
7. Toung Pienne (Artocarpus chaplasha)
8. Pynma (Lagerstroemia hypolica)
9. Tinkla (Nauela gageana)
10. Jhingam (Paganalia rhedii)
11. Didu (Bombax insignis)
12. Red Bombey (Planchonia andamanica)
13. Lalchini (Amoora wallichi)
14. Bakota (Endospermum pavonina)
15. Ywegi (Adenanthera pavonina)
16. Nabbe (Lannea grandis)
17. Poon (Calophyllum ionophyllum)
18. White Dhup (Canarium euphyllum)
19. Thitpok (Teterameles nudiflora)
20. And other miscellaneous species:

The commercial species have attained good girth upto the extent of approximately 200 cm. From the appearance of stock it was evident that the commercially valuable species had been given more importance as regard to the regeneration aspect and the availability of miscellaneous species was quiet less.

Also visited the Paduak Plantations at Wimberlygunj area, raised during 1906 (68 Hect), 1916 (26 Hect), 1896 (60 Hect) and 1897 (80 Hect). Some trees in 1896 plantation area attained girth of more than 200 cm and trees of 1906 plantation attained girth near about 190 cm. In case of the plantation of 1916, the girth attained by the trees were found considerably lesser, which was about 130 cm.

19/11

Divisional Forest Officer
South Andaman

A137

ANNEX 11

ANNEXURE 11

26. Details of wood treatment plants in A&N:

26.1 A Map showing the location of timber treatment plant in A & N Islands is enclosed.

The only treatment plant is located at Chatham saw Mill, Port Blair.

26.2 The Details of installed as well as operating capacity of these plants for treatment of various types of wood is given below: -

Timber Treatment facility is available in Govt Saw Mil Chatham, South Andaman and the following treatment facilities exist.

a) Pressure Treatment
b) Seasoning
c) Oil Preservative

Type of Treatment	*Installed Capacity*	*Operating Capacity (Average)*
Pressure Treatment	900 cbm per Annum (in one Shift)	284 cbm
Seasoning	1000cbm per annum (non – shift)	164 cbm
Oil Preservative	Trial Basis	-

ANNEX 12

ANNEXURE 12

List of post-78 forest encroachment localities, no. of families involved and the extend of area encroached

Sl. No	Name of the Division	Name of the Range	Location	No.of families	Area (in ha.)
1	Diglipur	*Diglipur*	1.Burmachad	73	120.500
			2.Elizabeth bay	130	133.840
			3.Beachdera	86	96.000
			4.Karen Basti	23	25.800
			5.Coffee Dera	30	35.050
			6.Umberchad	53	54.650
			7.Ganeshnagar	101	100.450
			8.Shantinagar	48	57.350
			9.Shyamnagar	84	72.000
			10.Gandhinagar	66	60.110
			11.Radhanagar	86	87.500
			12.Sagardeep	35	29.580
			13.Keralapuram	4	02.000
			14.Swarajgram	23	26.500
			15.Laxmipur	15	21.500
			16.Shibpur	2	01.000
			17.Lamiyabay	8	11.000
			Total	**867**	**934.830**
		Pachimsagar	1.Pachimsagar	127	111.050
			2.Talbagan	93	105.900
			3.Kishorinagar	13	14.100
			Total	**233**	**231.050**
		Kalighat	1. Narikaldanga	5	5.500
			2. Pathilevel	8	8.000
			3. Jaganathdera	6	5.900
			4. Bamboolevel	2	2.000
			5. Narayan tikri	7	7.000
			6. Gunnalevel	6	6.540
			7. Nabagram	6	4.000
			8. Nischintapur	3	2.060
			9. Kalighat	1	0.500
			10.Ramnagar	6	6.000
			Total	**50**	**47.500**
			Grant Total	**1150**	**1213.380**
2	Middle Andaman	*Betapur*	1. Cutbert Bay	104	102.000
			2. Dhaninallah	31	31.000
			3. Panchawati	11	14.140
			4. Sippighat	11	12.800
			5. Sukhanallah	3	3.700
			6. Lowki nallah	149	129.550
			7. Japan tikri	4	4.000
			8. M.Valley	4	2.490
			9. T.V.Kulam	2	1.730
			Total	**319**	**301.410**
		Long Island	1. Sickman dera	46	31.350
			Total	**46**	**31.350**
		Bajlungta	1.Makarta Valley	9	13.000
			2.Foster Valley	9	15.000
			Total	**18**	**28.000**

		Rangat	1.Goal Pahar	20	18.500
			Total	**20**	**18.500**
		Bakultala	1.Kalsi/Charlungta	8	20.500
			Total	**8**	**20.500**
			Grant Total	***411***	***399.76***
3.	South Andaman	*Jirkatang*	1.Jirkatang No.2	3	3.020
			Total	**3**	**3.020**
		Tushnabad	1. J/Nallah	5	6.720
			2. Habdipur	4	5.150
			3. Balughat	1	2.000
			Total	**10**	**13.870**
		Garacharma	1. Birdline/ Brichgunj	15	11.913
			2. Bimbliton	6	3.722
			3. BadaBalu	2	1.960
			4. G'Para/Linedera	12	22.500
			5.Mundapahar	1	0.520
			Total	36	37.615
		Manglutan	1. New Wandoor'	75	68.390
			Wandoor	1	1.500
			2. Manglutan	10	6.440
			3. Nayashar	14	16.850
			4. Maymyo	5	1.800
			5. Dhanikhari	3	3.000
			6. Hasmatabad	108	97.980
			Total		
			Grant Total	157	155.485
4	Baratang	*Adajig*	1.Adajig	23	0.726
			Total	**23**	**0.726**
		Nilambur	1. Oralkatcha	8	1.434
			2. Mirch Tikri	2	4.000
			3. Khatta Khari	10	7.548
			4. Jarawa Creek	5	3.125
			5. Wrafters Creek	4	3.050
			6. Kattan	5	2.150
			7. Nayadera	8	8.000
			8. Bamboonallah	1	0.050
			9. Khadi Basti	7	0.126
			10. South Creek	1	0.050
			11. Flat Bay	3	3.000
			12.Baludera	2	2.500
			Total	**56**	**35.033**
		Havelock	1.Kalapather	1	0.240
				1	**0.240**
			Grant Total	***80***	***35.999***

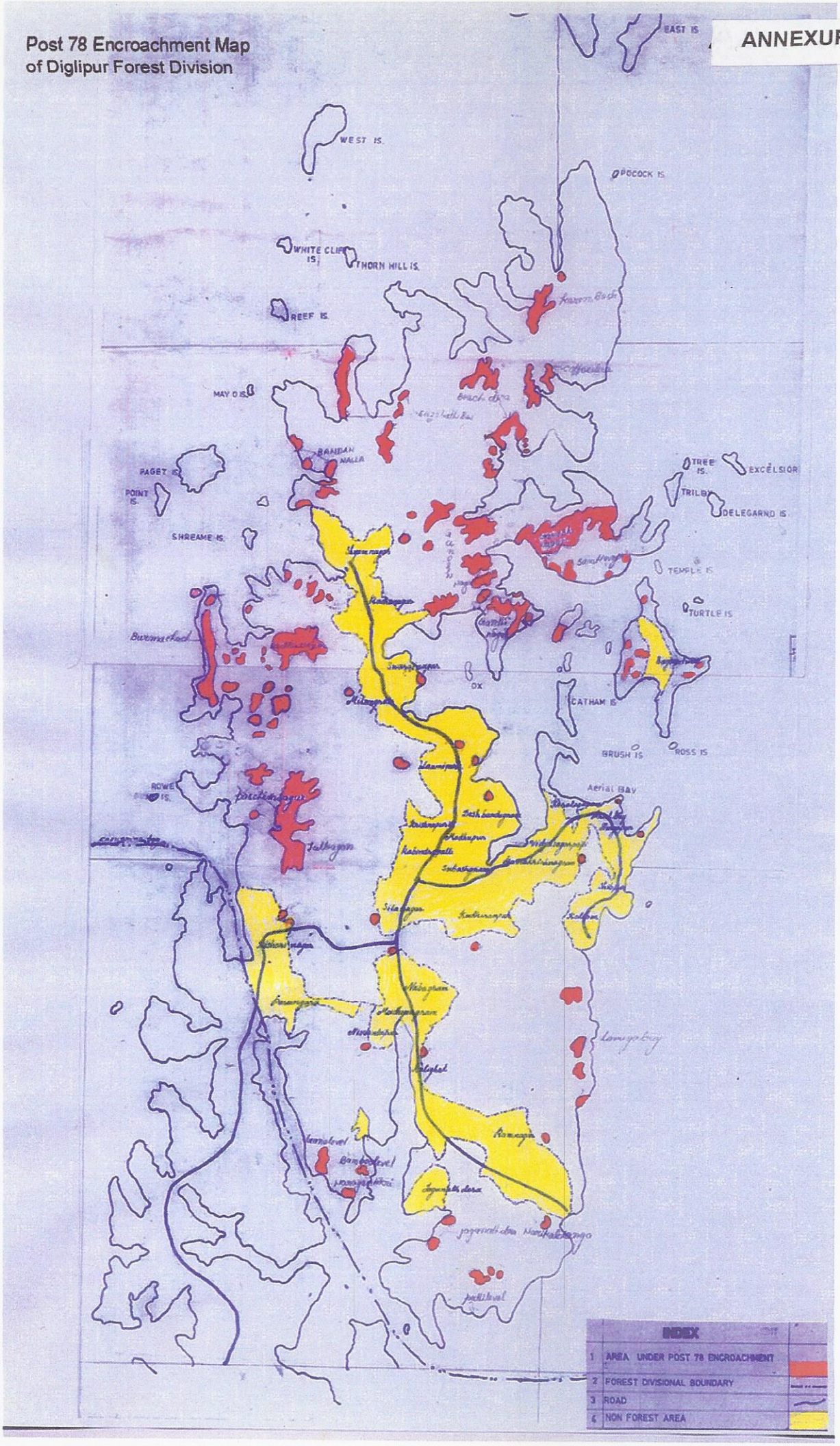
5	Mayabunder	*Mayabunder*	1. Baindabla	42	55.300
			2. Pylon Nallah	67	98.500
			3. Badadabla	16	22.500
			4. Bacon Bay	17	29.000
			5. Mohan Pur	9	14.500
			6. Shri Nagar	6	7.000
			7. Pembroke Bay	21	21.000
			8. Sona Plot	9	14.200
			9. Ganadabla	8	14.000
			10. Gargan Tikry	2	3.000
			11. Shikari Dabla	4	4.000
			12. Goptapoda	8	7.500
			13. Bacon Dabla	4	7.000
			14. Balnicreak	16	20.500
			15. Carlus Plot	8	11.800
			16. Chandlevel	8	11.000
			Total	243	340.800
		Tugapur	1. Bamboo Nallah	2	4.500
			2. Tugapur VII	9	9.500
			3. Tugapur VIII	3	5.500
			4. Tugapur II(D/Sec)	3 13	4.100 14.400
			5. Chugloomgoom	18	20.300
			6. Sippi Tikry	5	6.200
			7. Pudumadurai	1	1.200
			8. Chainpur	23	22.680
			9. Ashanagar	1	1.500
			10. 40 Acre Bajota	3	3.900
			11. Birsa Nagar	2	2.200
			12. Budhanallah	2	2.500
			13. Kainchi Nallah	25	38.200
			14. Ganesh Nagar-I	23	30.000
			15. Ganesh Nagar-II	2	2.400
			16. Peinma dabla	5	6.000
			17. Baludera	6	7.800
			18. Sundari Kari	5	6.400
			19. Karanj Kari	15	19.100
			20. Karanj Kari	7	7.000
			21. Gora Ridge	173	214.400
			Total		
		Karmatang	1.Dhaninallah	6	11.100
			2.Paikat Bay	8	11.900
			3.Karmatang IV	6	7.000
			4.Karmatang	34	44.000
			Total	54	74.000
			Grant Total	473	628.800

A1411

ANNEX 13-18

ANNEXURE 13

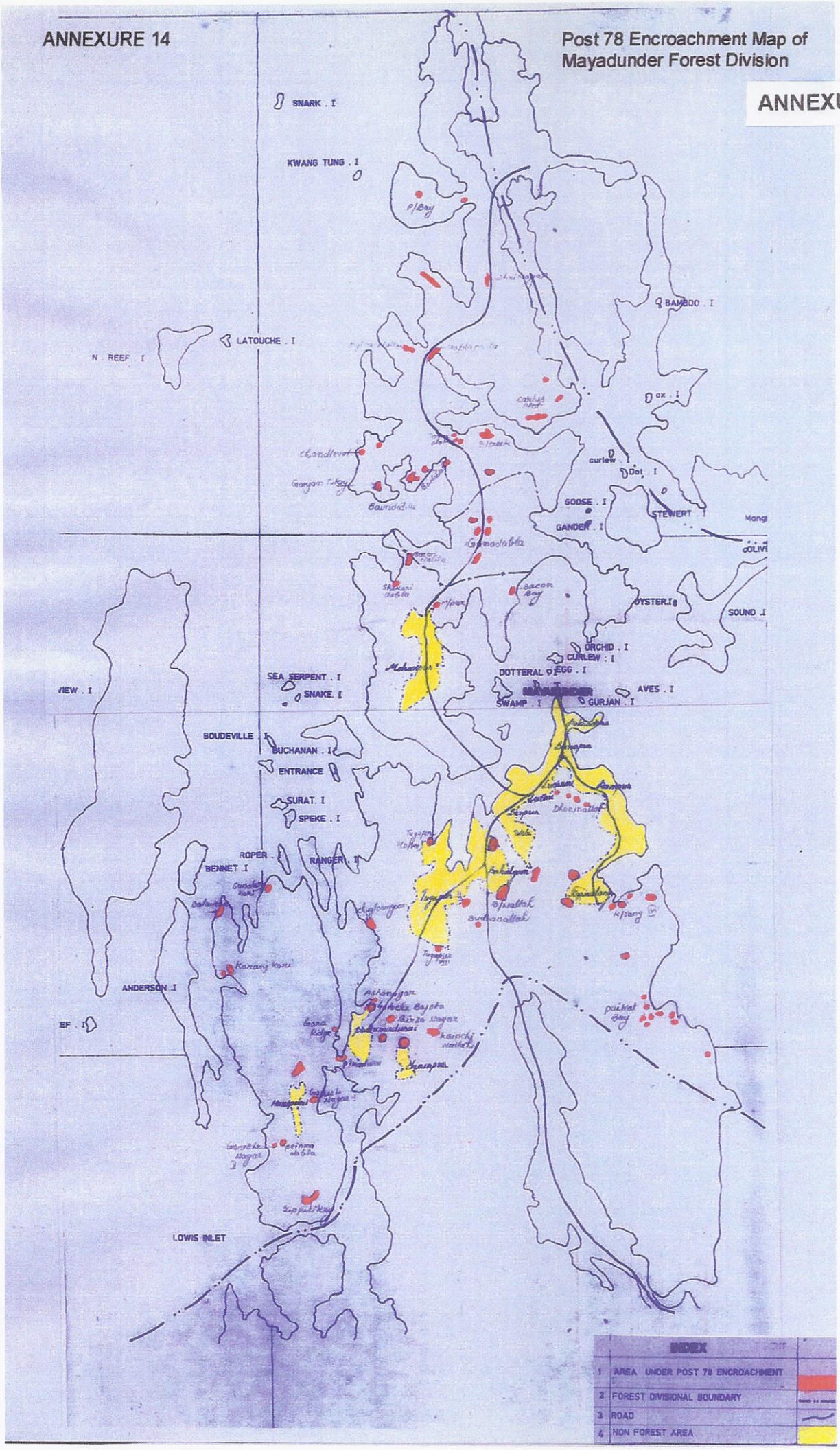
Post 78 Encroachment Map of Diglipur Forest Division



ANNEXURE 14

Post 78 Encroachment Map of
Mayadunder Forest Division

ANNEXURE 14

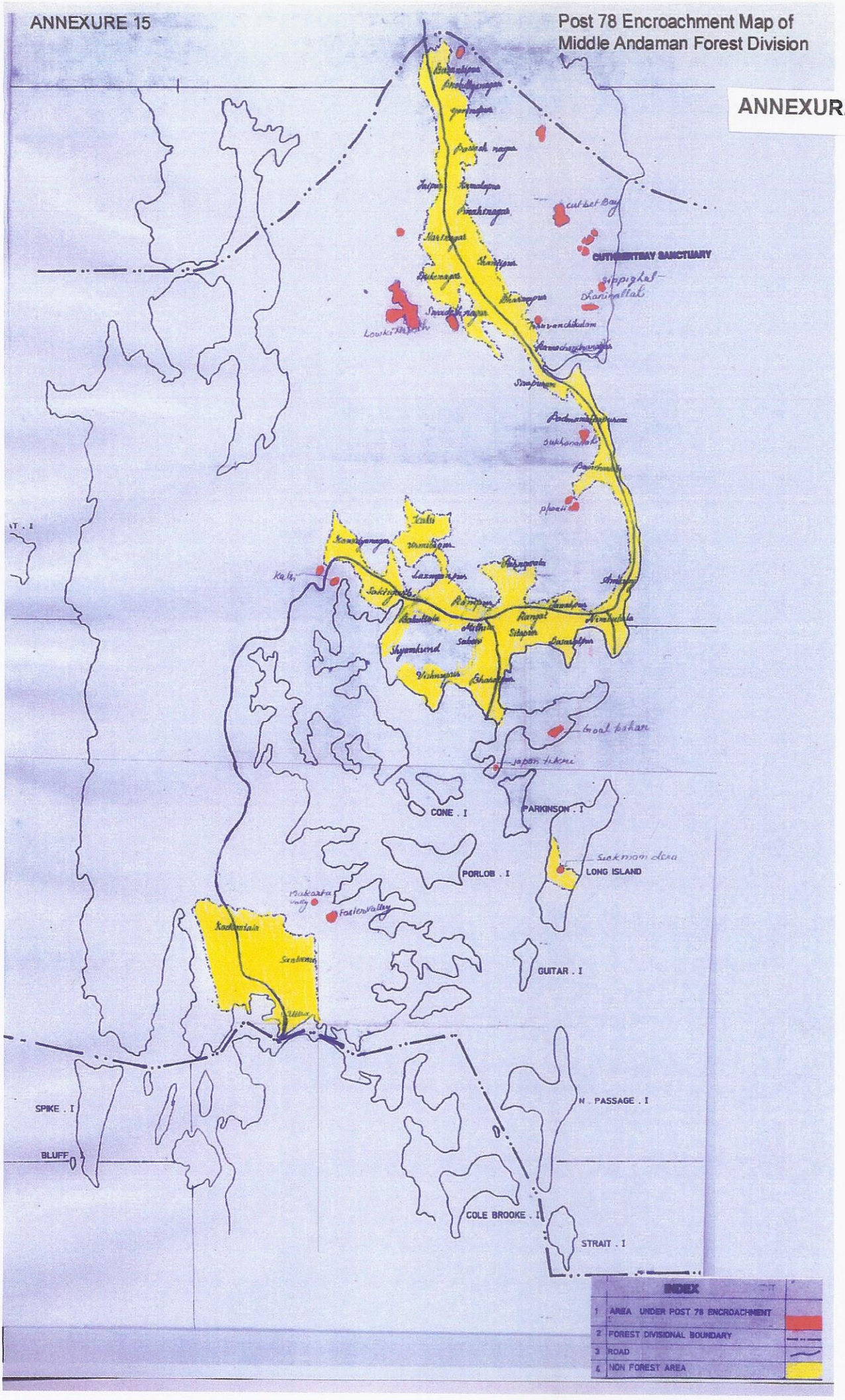


A143

ANNEXURE 15

Post 78 Encroachment Map of
Middle Andaman Forest Division

ANNEXURE 15



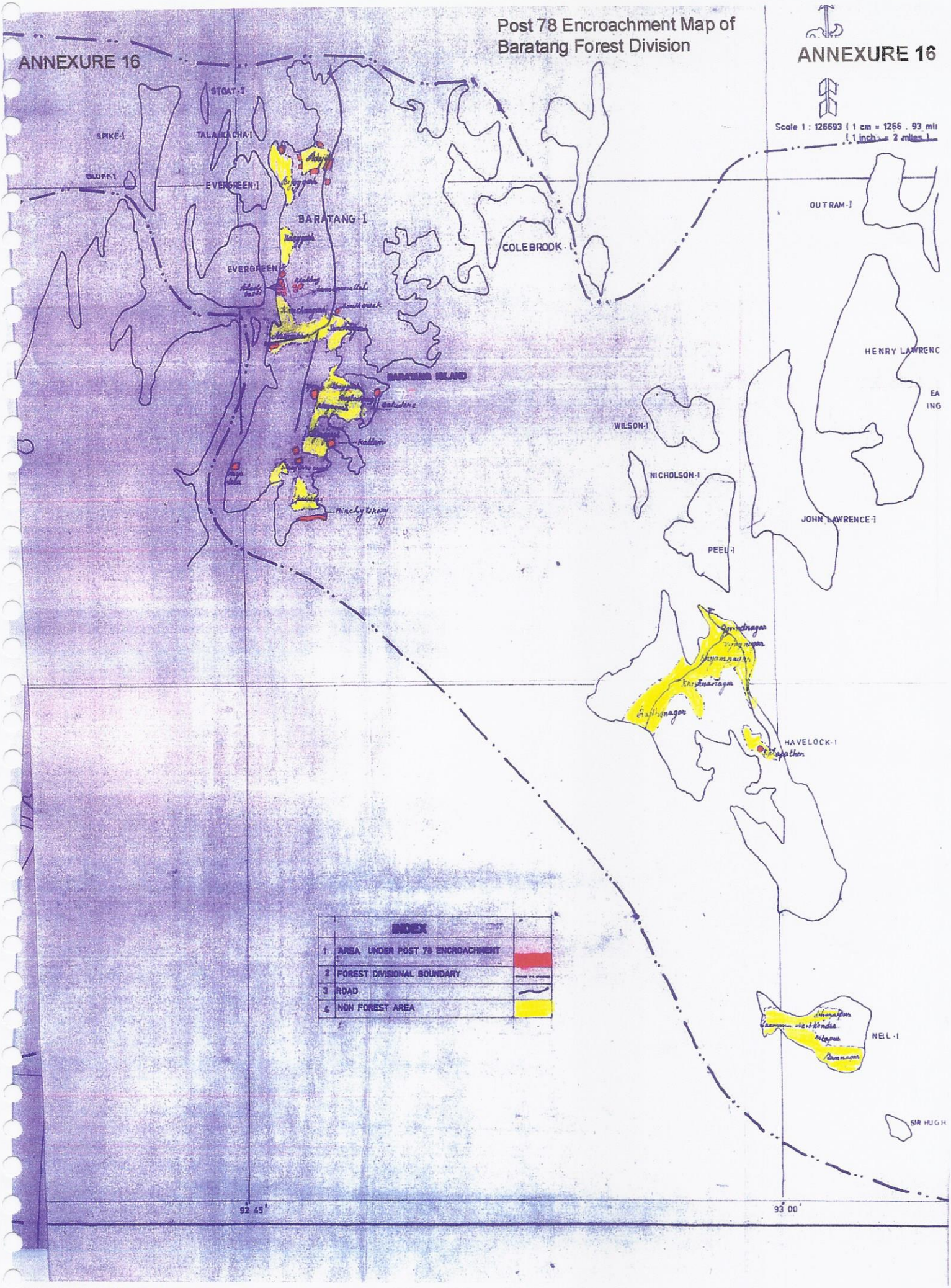
A144

ANNEXURE 16

Post 78 Encroachment Map of Baratang Forest Division

ANNEXURE 16

Scale 1 : 126693 (1 cm = 1266 . 93 mt
(1 inch = 2 miles)



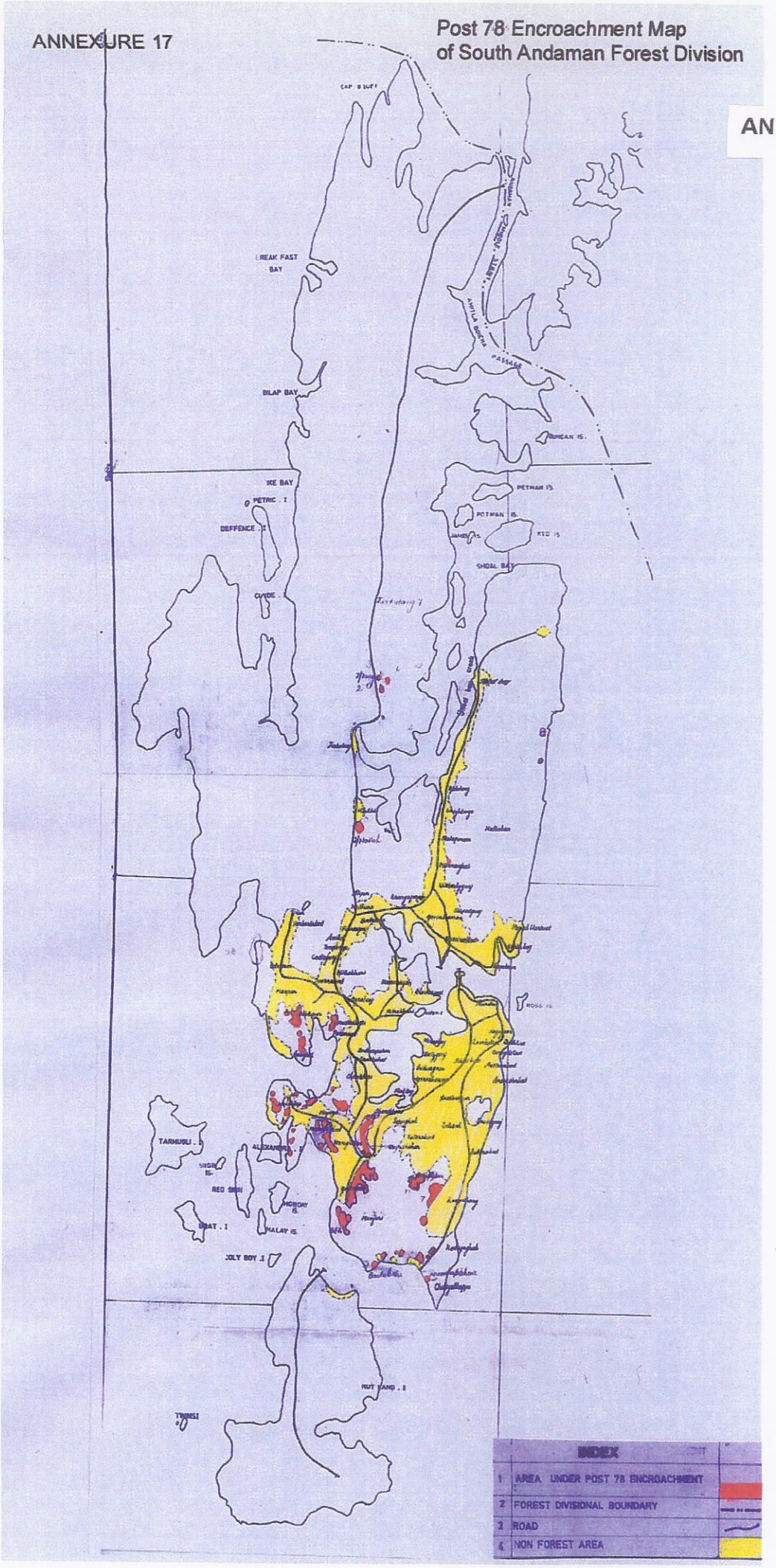
	INDEX	
1	AREA UNDER POST 78 ENCROACHMENT	
2	FOREST DIVISIONAL BOUNDARY	
3	ROAD	
4	NON FOREST AREA	

A145

ANNEXURE 17

Post 78 Encroachment Map of South Andaman Forest Division

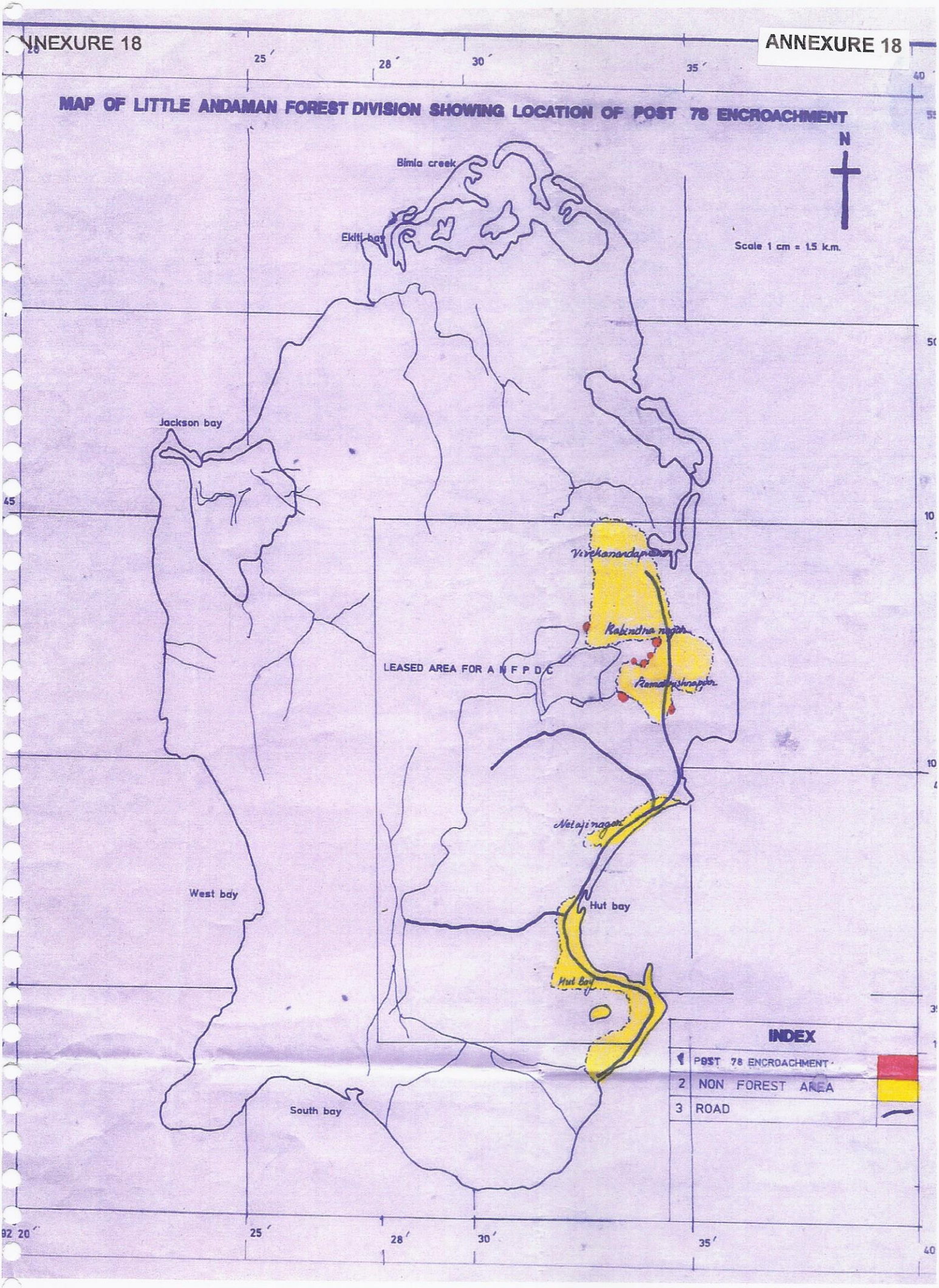
ANNEXURE 17



A146

ANNEXURE 18

MAP OF LITTLE ANDAMAN FOREST DIVISION SHOWING LOCATION OF POST 78 ENCROACHMENT

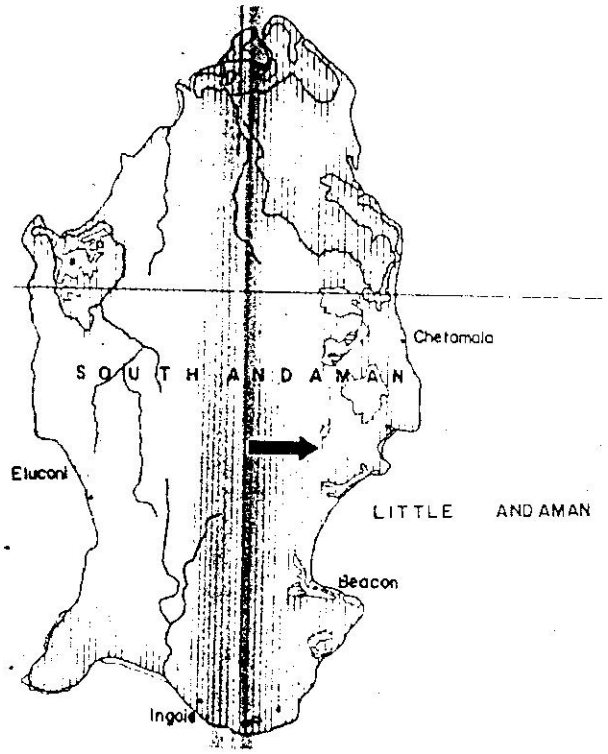


A 1416 (i)

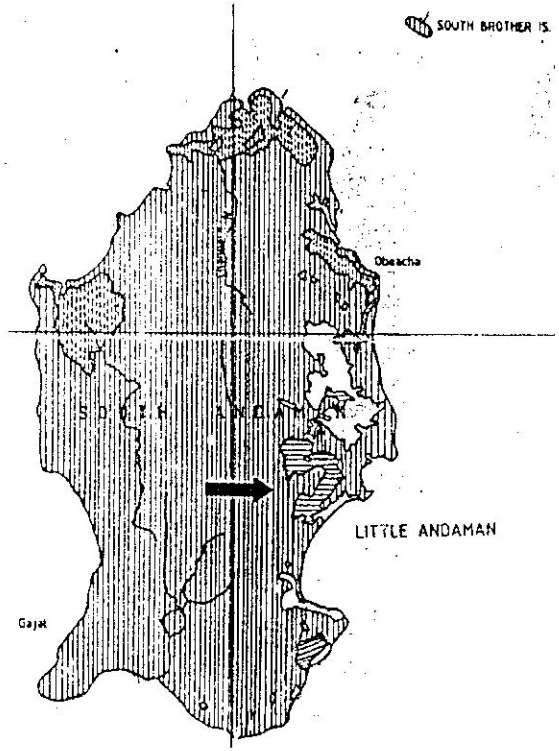
ANNEX 19

ANNEXURE 19

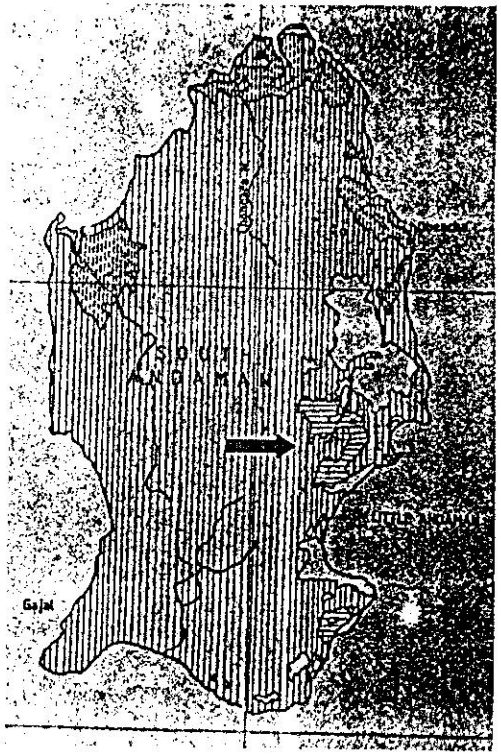
Forest Cover Map of Little Andaman
Forest Survey of India, Third Edition
1987-89



Forest Cover Map of Little Andaman
Forest Survey of India, Sixth Edition
1993-95



Forest Cover Map of Little Andaman
Forest Survey of India, Seventh Edition
1996-98



The bold arrow shows the location of the Red Oil Palm Plantations in Little Andaman. The area planted by Red Oil Palm shows up as degraded forest.

ANNEX 20

ANNEXURE 20

18. Forest based rights and concessions including free royalties:

18.1 The right or concession given

The following Concessions are available

A) As per the provisions of A & N Islands protected Forest Rules 1987(Copy enclosed), the bonafide inhabitants of Villages in the vicinity of forest and the persons residing in Port Blair Municipal area who are in occupation of agricultural land allotted to them by appropriate authorities of the A & N Administration are entitled for timber on Payment of Royalty for their bonafide domestic use.

B) The occupiers of agricultural land including settlers settled under the colonization scheme who reside in villages outside the Port Blair Municipal area and also the religious, Cultural, recreational and educational institutions and village Panchayats can collect timber on free of royalty for their bonafide domestic use.

C) The bonafide agriculturists in possession of agricultural land residing outside Port Blair Municipal area are eligible to extract MFP on free royalty.

D) The Schedule Tribes of A & N Islands shall collect their actual requirement of forest produce from the forest for the bonofide domestic use without any restriction

18.2 The quantum of the right or concession

The following are the limits upto which timber can be removed on payment of royalty and free of royalty: -

A) 15 cum of timber in round form for construction of a new house only once.

B) 6 cum timber in round form for repair to a house once in five years and

C) 1cum timber in round form for construction of Dinghi and manufacturing of agricultural implements once in five years for domestic purpose and not for trade.

For collection of MFP the following limits per family is prescribed: -

Limits of MFP free of royalty : -

a)	Fire wood	2 cords, per year
b)	Bamboo	500 Nos, per year
c)	Ballies	100 Nos, per year
d)	Posts	20 Nos, per year
e)	Thatching leaves	2000 Nos, per year
f)	Canes	200 Nos, per year

18.3 The location, if applicable, of where the right or concession is allowed to operate: -

The Concession is allowed from the Protected Forest. As per the decision of Hon'ble Supreme Court of India in T.N.Godavarman Vs GOI and others (W.P.(c) No. 202 of 1995) in its order dated 12.12.1996 the felling of trees in all forests is to remain suspended except in accordance with working plans in any particular state such as Arunachal Pradesh where the permit system exists, felling under the permit can be done only by the Forest Deptt or the Forest Corporation.

Since separate provision for grant of timber on free of royalty has not been made in the Working Plans of the respective forest division the grant of permit for felling of timber under A & N Island Protected Forest Rules 1987 is suspended for time being.

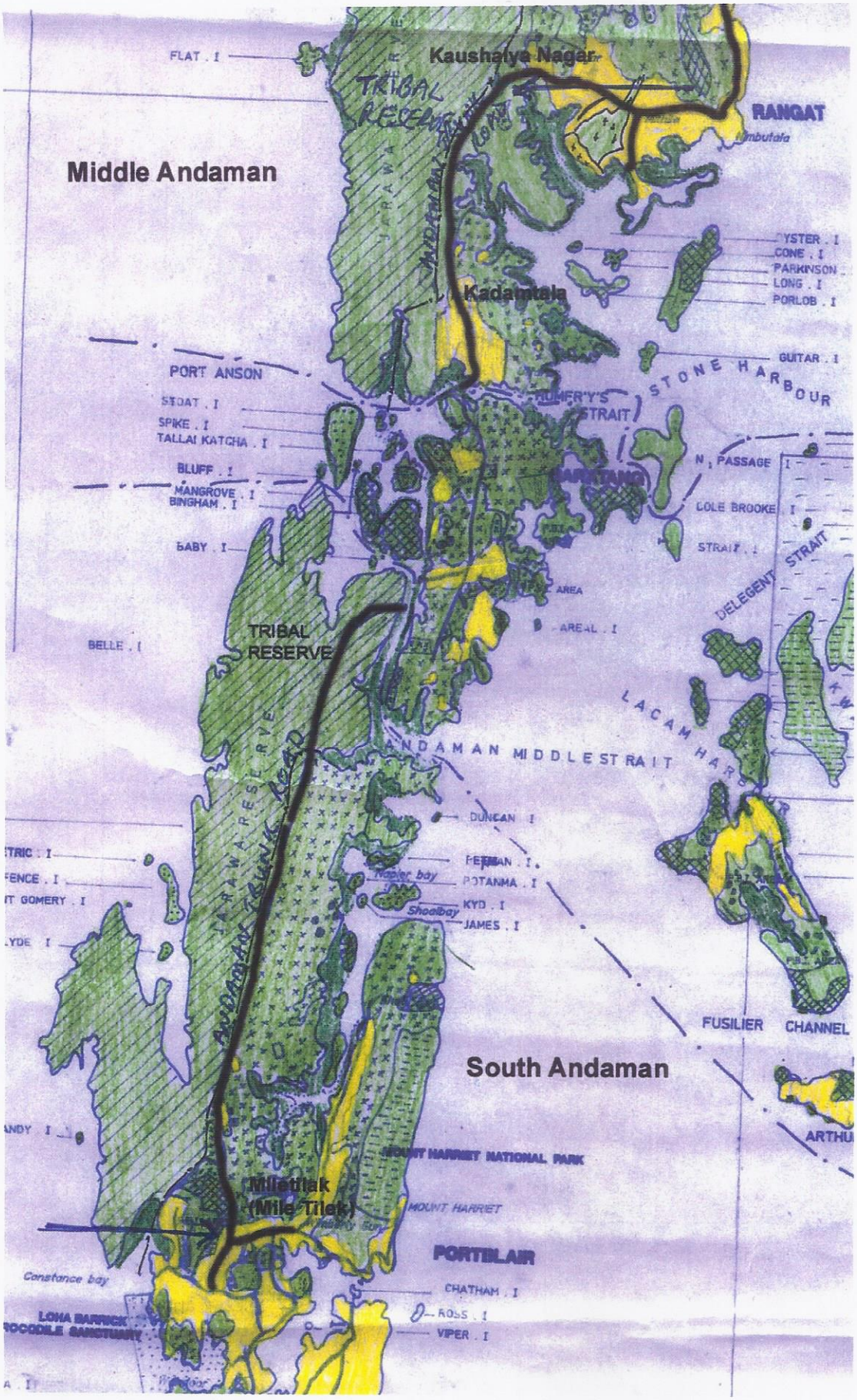
18.4 The category of people to whom it is available and the numbers in each category: -

These facilities are available to bonafied agriculturists, settlers settled under various colonization schemes, Religious, Cultural, Recreational, Educational Institutions and village Panchayats, and Tribals of A & N Islands. However the exact numbers in each category are not readily available in this office.

ANNEX 21

ANNEXURE 21

MAP OF ANDAMAN TRUNK ROAD



A150

ANNEX 22

ANNEXURE 22

I.2 - A LIST OF SAND EXTRACTION BEACHES

SL NO:	DIVISION/SOURCE
	DIGLIPUR DIVN.
1	SAGAR DWEEP
2	RAMNAGAR
3	SHYAM NAGAR
4	PASCHIM SAGAR
	MAYABUNDER DIVN
5	SOUND ISLAND
6	KARMATANG
	MIDDLE ANDAMAN DIVN
7	LALAJI BAY
8	RAMA BANGICHA
9	DANNI NALLAH
10	AMKUNJ
11	BEHAIND G.I.T.I.
	BARATANG DIVN.
12	BALUDERA(BT)
13	PIPAL DERA(HL)
14	MEETAH NALLAH(H/L)
15	KHARA NALLAH(HL)
16	LAXMANPUR(NI)
17	RAGTACHANG(BT)
18	ROGLACHANG(BT)
19	SUKKAKHARI(B/T)
	SOUTH ANDAMAN DIVN.
20	SHOEL BAY-17
21	SHOEL BAY-18
22	SHOEL BAY-19
23	BARSA BAHAD(RUT LAND)
24	BAKRA BLAU(R/L)
25	KOMYO(R/L)
26	PORT MEADOW-1
27	PORT MEADOW-II
28	DHANI NALLAH(R/L)
	LITTLE ANDAMAN DIVN
29	6 TO 6.5 KM PT
30	6.8 TO 7.3 KM PT

A151

31	7.5 TO 7.9 KM PT
32	HARMINDAR BAY
33	BREAK WATER
34	DUGONG CREEK
35	POCKET NO: I (6 TO 6.5KM)
36	POCKET NO: II (6.8 TO 7.3 KM)
37	POCKET NO: III(7.5 TO 7.9 KM)
38	POCKET NO: IV
39	SOUTH BAY
	NICOBAR DIVISION
40	KAKANA BEACH(C/N)
41	ARONG (C/N)
42	JANSIN(KATCHAL
43	ATKONA(KATCHAL)
44	KATCHAL JETTY
45	SAFED BALU(TRINKET)
46	ALHEAT(TRINKET)
47	BENGALI CHUKMACHI
48	LUXI CHUKMACHI
49	LUXI-ALURANG
50	BADA BALU(KATCHAL0
51	AUGCHUNG -ARONG(C/N)
52	SAWAI BEACH(C/N)
53	SAFEED BALU(NANCOWRY-10
54	TRINKET AREA
	GREAT NICOBAR DIVN
55	NAVY DERA
56	7-11 KM PT
57	13-14 KM PT
58	16-18 KM PT
59	18-23 KM PT
60	27-30 KM PT
61	32-35 KM PT
62	TRINKET AREA
63	PATTAR NALLAH
64	MANGRASWAN TO JHAN
65	LAXMAN BEACH
66	B QUARRY AREA
67	FISH COL TO BALUDERA
68	KOPEAN HEAT
69	10-12 KM PT
70	22-24 KM PT
71	30-35 KM PT
72	LAXMAN BEACH AREA

ANNEX 23

ANNEXURE 23

Sailing foreign Yachts desirous of visiting Andaman & Nicobar Islands are to follow the procedure as enumerated below

1. Obtain Clearance/ Permit from the Indian High Commission/ Embassy prior to departure from the last port of call and intimate following particulars to the Indian High Commission/Embassy.

    i. Purpose of Visit
    ii. Port of Registration
    iii. Last Port of Call
    iv. Next Port of Call
    v. Name of Local Agents (if any)
    vi. Itinerary of the Vessel

2. Clearance to be obtained from Port Management Board, Port Blair 48 hours prior to entering Indian territorial Waters.

CALL	PORT BLAIR PORT RADIO	LOCATION L 11 40' 28"N G 92 44'56"E
FREQUENCY	HFRT 2182KHz H 8294KHz HJ 6224KHz HN	
TELEPHONE	(091) 03192- 33683 (091) 03192- 33690 (091) 03192- 33674	
TELEX	0625 -218 PORT IN	
FAX	(091) 03192 - 36069	

3. Immigration clearance will be given at Port Blair on Arrival/ Departure. On arrival Yachts will be inspected by Navy, Customs and Immigration for clearance.
4. Visit permit is issued by the Immigration Officer for a period of thirty days. The conditions laid down in the permit are to be strictly adhered to by the permit holder.
5. No deviation from the pre-drawn itinerary would be permitted.
6. Yachts are to be fitted with HFRT sets for Communication failing which their visit will be restricted to VHF range.
7. Yachts when Indian waters are to inform their location twice a day at 0800 hrs. and 2000hrs. to Port Management Board Control Room at the above given frequencies.
8. No diving equipment is to be carried on board. The vessel can obtain the diving equipments locally from the approved diving agencies.
9. The Yachts will not be permitted to pick up commercial passengers, Indian or Foreigner on board during the permitted cruise. However, Yachts will be allowed carry passengers to and from Port Blair who are cleared by Immigration authorities.
10. Equipment capable of sea bed mapping is not to be carried on board.
11. No arms and ammunition is to be carried on board the yacht, arms if carried for self protection are to

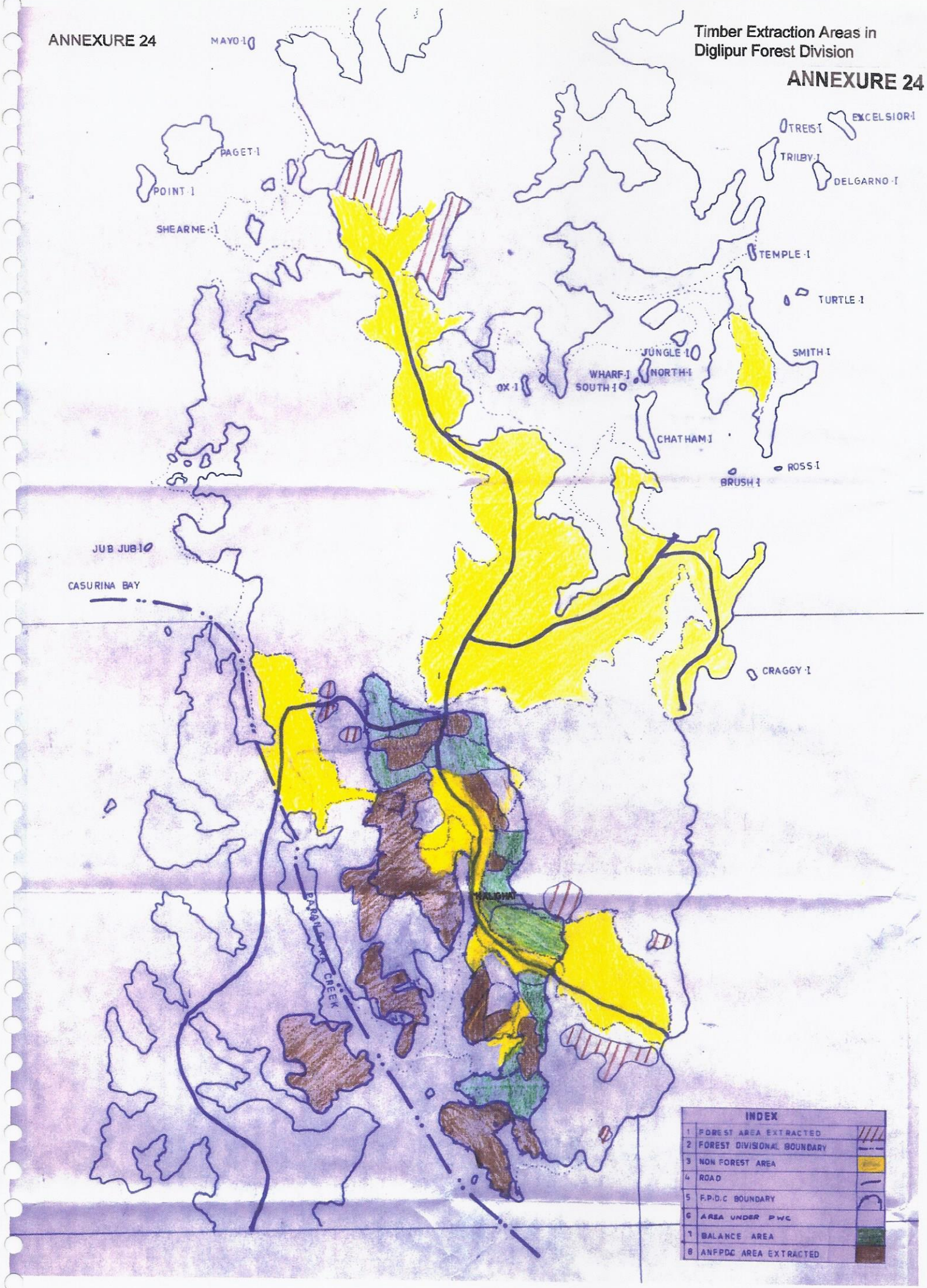
be declared on arrival.

12. Yachts visiting the Island may have an authorised agents at Port Blair.
13. Clearance of customs, Port Management Board and Immigration is necessary before departure.

A154

ANNEX 24-28

ANNEXURE 24

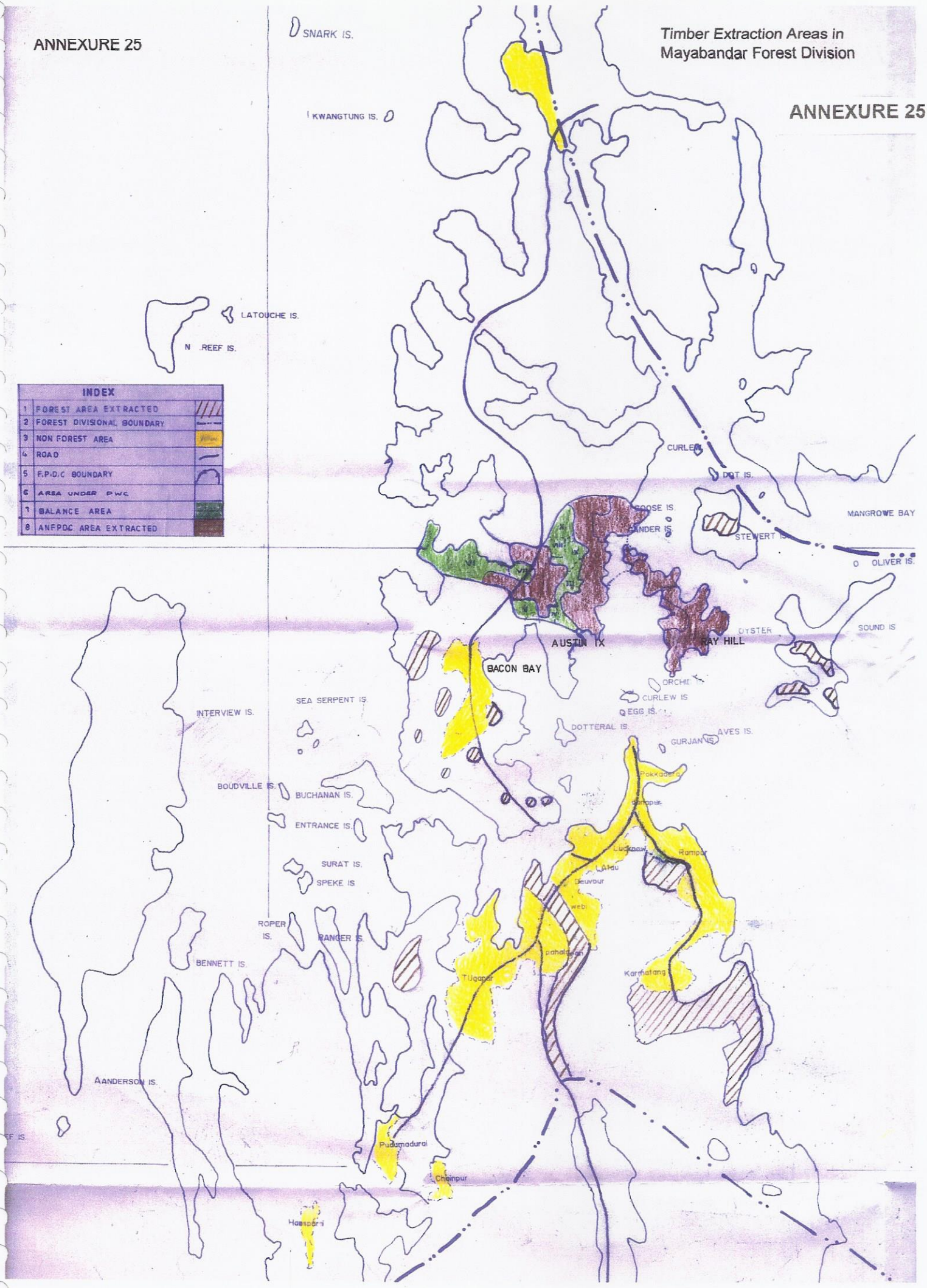


A155

ANNEXURE 25

Timber Extraction Areas in Mayabandar Forest Division

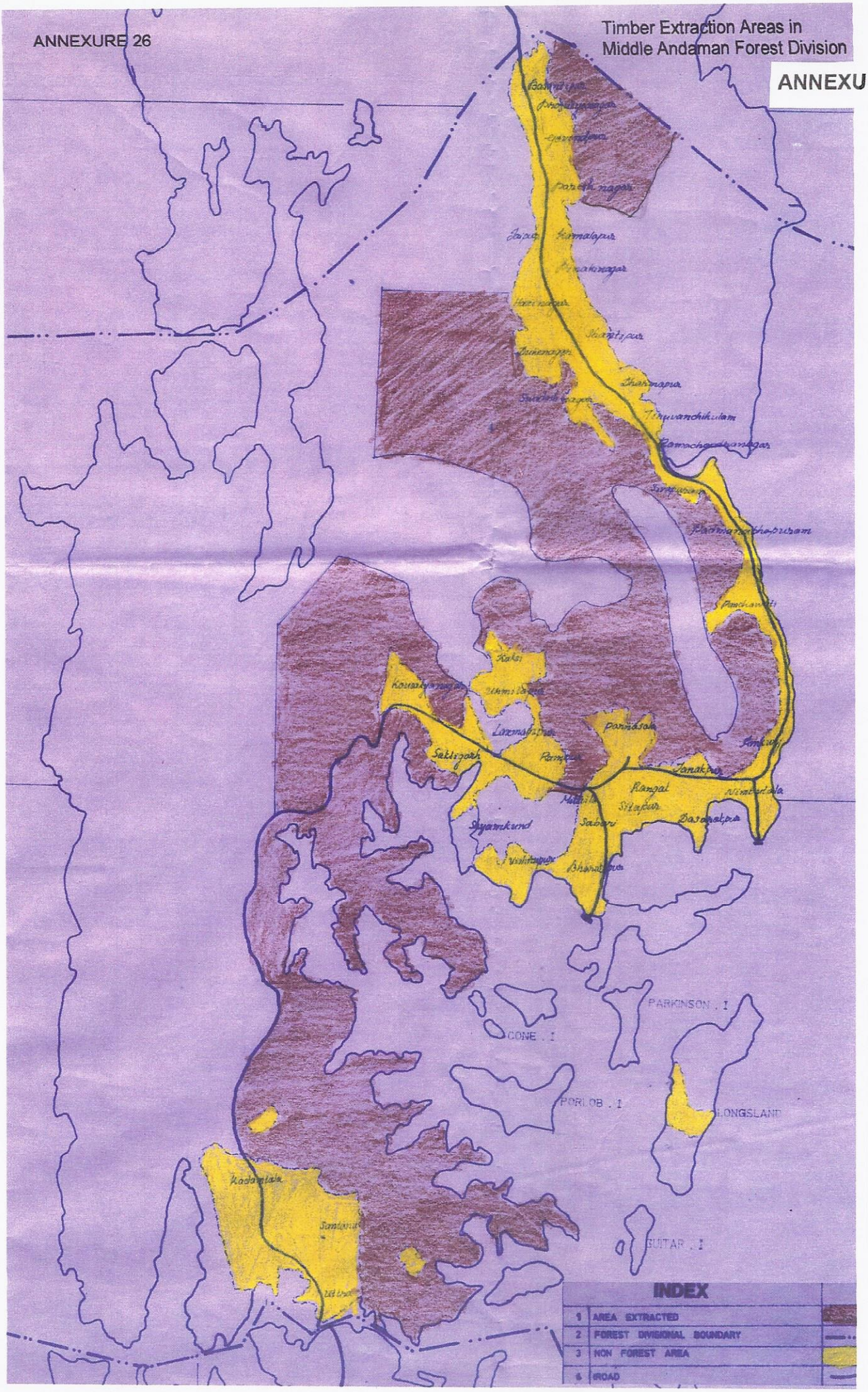
ANNEXURE 25

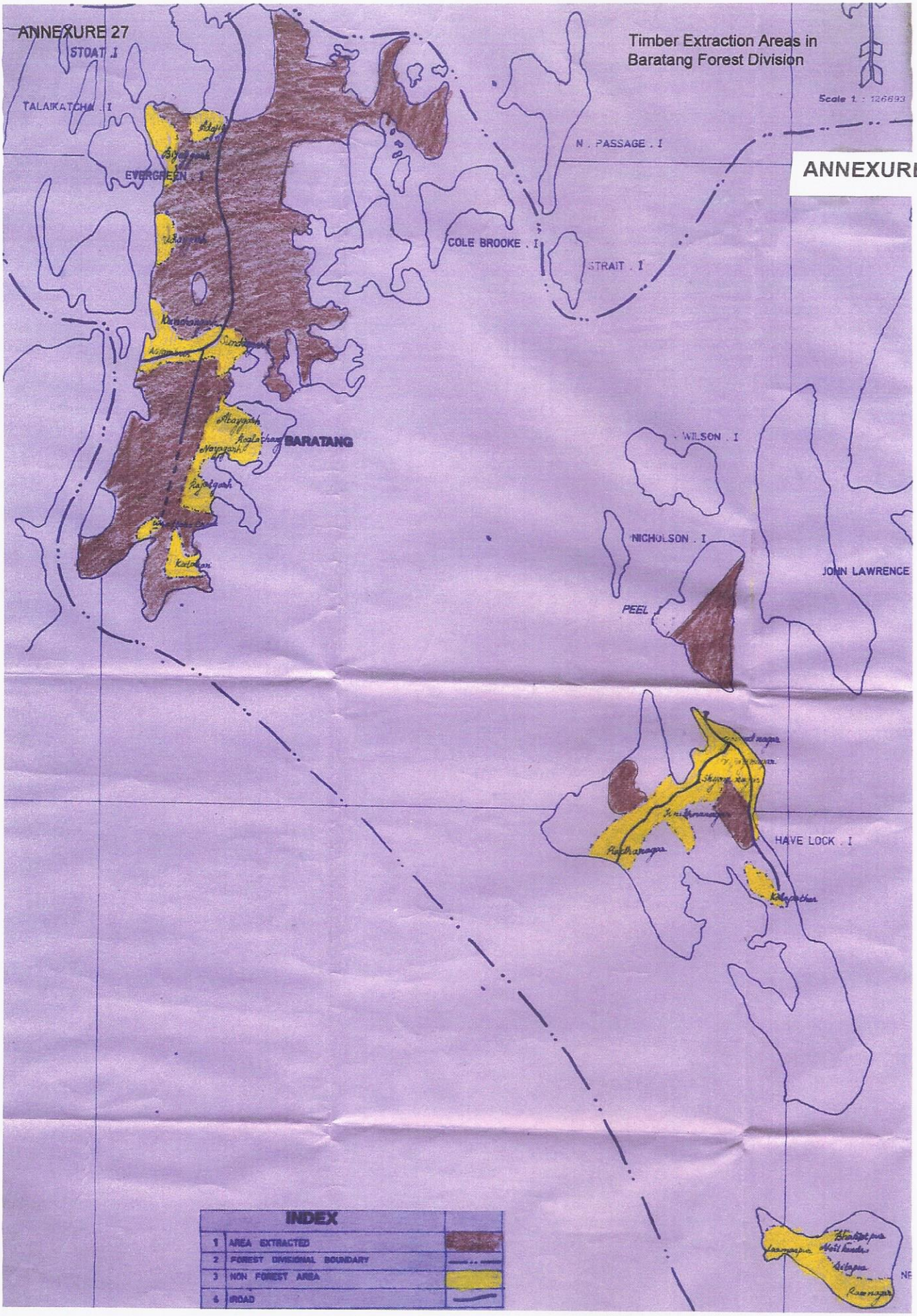


ANNEXURE 26

Timber Extraction Areas in Middle Andaman Forest Division

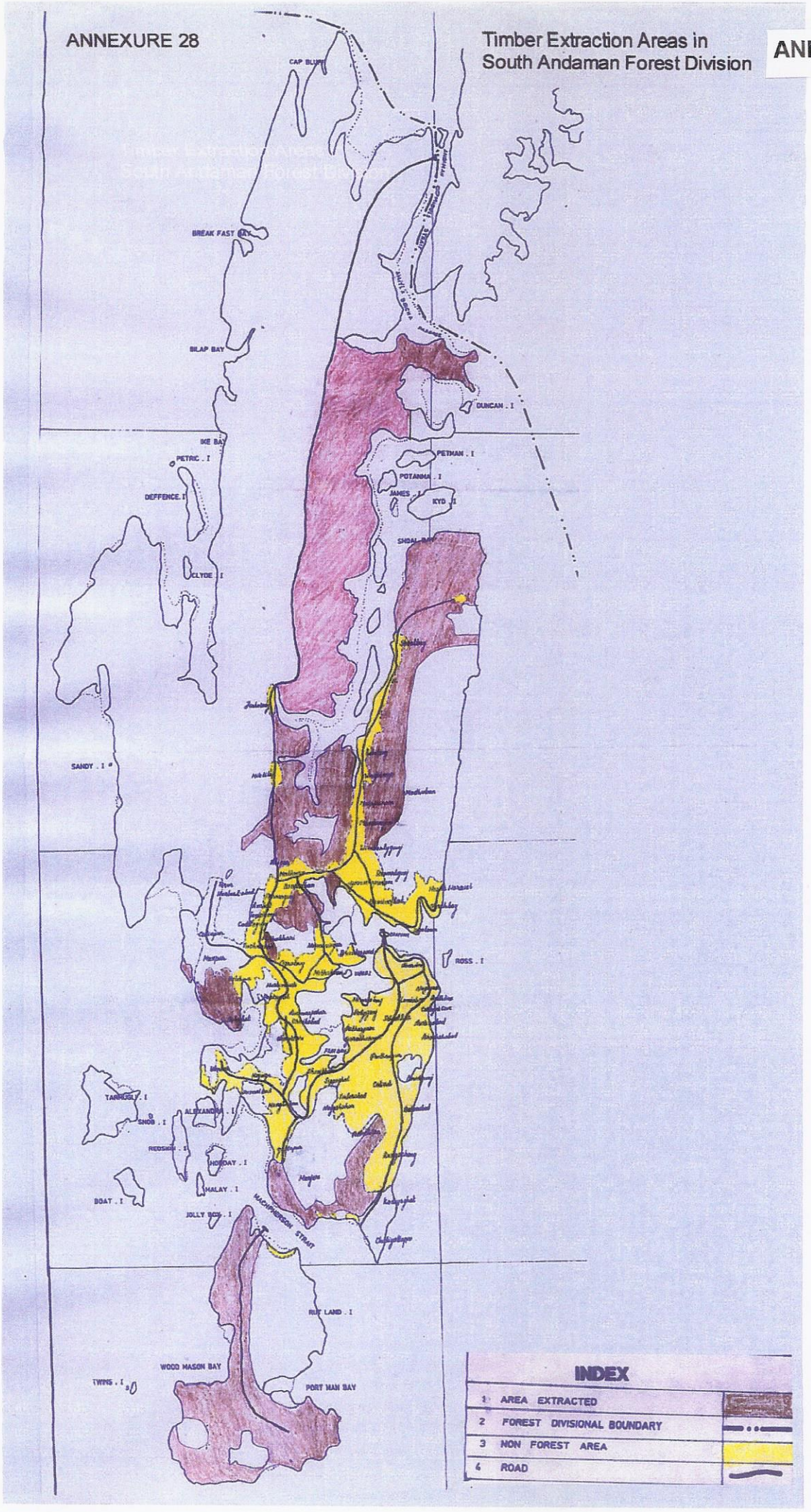
ANNEXURE 26




ANNEXURE 27
Timber Extraction Areas in
Baratang Forest Division
Scale 1 : 126693
STOAT . I
TALAIKATCHA . I
EVERGREEN . I
N . PASSAGE . I
COLE BROOKE . I
STRAIT . I
BARATANG
WILSON . I
NICHOLSON . I
JOHN LAWRENCE
PEEL
HAVE LOCK . I
INDEX
1 AREA EXTRACTED
2 FOREST DIVISIONAL BOUNDARY
3 NON FOREST AREA
4 ROAD

ANNEXURE 27

ANNEXURE 28



ANNEXURE 28

A159