

## DEVELOPMENT OR DESPOILATION?

The Andaman Islands under colonial and postcolonial regimes

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### Abstract

The last quarter of the 19th Century marked an important watershed in the history of the Andaman Islands. The establishment of a penal settlement and an Imperial forestry service, along with other radical changes in the islands' traditional economy and society, completely transformed the basic pattern of their forest resource use and entire system of forest management. These colonial policies, directly or indirectly, had a drastic impact on the indigenous population and island ecology. This article analyses the sources of environmental change in the Andaman Islands by examining the general ecological impacts of the state initiated development programmes. It also analyses the 'civilising missions' and forestry operations undertaken by British colonial administrators as well as the Indian state's development initiatives under the 'Five Year Plans' that followed Indian independence in 1947.

### Keywords

Andaman Islands, forestry, development, environmental change, Andaman tribes

### Introduction

On December 26th 2004 a tsunami triggered by an earthquake off the south east coast of Sumatra swept across the Indian Ocean swamping many low-lying coastal areas and causing death, destruction of properties and infrastructure and despoilation of crops. Amongst those territories worst affected by the surge were the Andaman and Nicobar Islands. When Indian prime minister Dr Manmohan Singh visited the islands in the immediate aftermath of the flooding he identified that the project to reconstruct and rehabilitate coastal areas of islands provided the opportunity for a 'New Andamans' in which sustainable agriculture and fishery enterprises could exist in harmony with the natural environment. In order to realise this vision the M.S. Swaminathan Research Foundation conducted research in the islands in 2005 and drew up an 'Action Plan' for sustainable redevelopment. Its fourth recommendation was to promote the Andamans as a sustainable ecological environment, identifying that the islands were "uniquely equipped to emerge as the 'Organic Islands' of the world" and asserting that:

*The islands are still free from severe anthropogenic pressures, and over exploitation of the forest and marine resources. The islands can still boast of forest area of over 85% of the land. (2005: 9)*

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The Foundation's 'Recommendation Five' explicitly tied successful sustainable development to engagement with the "traditional wisdom and conservation ethos" of the Islands' indigenous peoples (2005:10). While the aspirations of the Foundation are laudable, the perspectives presented in the post-tsunami era have tended to elide the considerable changes to the ecology of the islands that occurred during the period of their administration as a British colony and their subsequent management by the Indian Government in the post-independence period. This article analyses the policies and practices of those regimes, the changes they wrought on the islands in the pre-tsunami era and, in particular, their effect on the indigenous population. The major impacts derived from the development of village settlements and plantations, the development of Department of Forestry and the introduction of global capitalism to the region. Politically, these islands became free of British colonial rule in 1947, along with India, and were administered as a 'Part D' state (ie an area administered by the national government) for next nine years. This administrative arrangement culminated into the area being constituted as one of the first Union territories on 1st November 1956. At present the economy of the Andaman Islands is primarily determined by the prerogatives of mainland development. Today the Andamans are faced with a number of social, economic, and ecological issues including deforestation and land degradation caused by the intervention of capital-intensive development programmes. Examining the process of the 'civilising missions', forestry operations and other island developmental programmes during the British regime; and the 'colonisation schemes' and associated developmental programmes that occurred during the Indian Government's 2nd-6th Five Year Plans<sup>1</sup>; this paper enquires into the political ecology of these islands from the 1880s to 1980s.

### **The Islands and the Composition of Andamanese Society**

The Andaman archipelago comprises approximately 570 islands in the Bay of Bengal and encompasses an area of about 6340 square miles. Forest survey reports suggest that 92.2% of the total area of the Andaman Islands was under forest cover at the beginning of the colonial period (Department of Environment and Forests. 2005). The climate of the Andaman Islands resembles that of southern Myanmar (Burma), and the temperature throughout the year is very uniform. There are, properly speaking, no level lands; the entire surface of the islands are hilly and the hills are intersected by valleys of varying width and fertility. The original Andaman forests were filled with evergreen trees, usually heavily laden with climbers, although considerable patches of deciduous forest, with occasional glades of bamboo alongside also occurred (Temple, 1909). The majority of ridges were covered with small or stunted trees inextricably tangled with masses of creepers, with the primary forests being confined to the slopes. The group of islands is divided into the Great and Little Andaman island groups, the former being subdivided into the North, Middle, and South Andaman, with the outlying islands of Landfall, Interview, Rutland and North and South Sentinel; and the Archipelago and Labyrinth Groups. The forests played a major role in moulding the basic structure of Andaman culture and society. The economy, religion, social organisation etc. of the indigenous tribal population continue to depend greatly upon these forests.

Before going into details of the impacts of the external interventions in these islands, it is important to understand the composition of the Andaman indigenous society. We do not have much evidence about the indigenous population of these Islands before the arrival of the British colonisers in the 18th Century. In spite of their close proximity to India, and their strategic position on the trade routes of India, Burma and Far East, until the 18th

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Century the inhabitants of the Islands appear not to have been significantly influenced by the civilisations of the East or West.

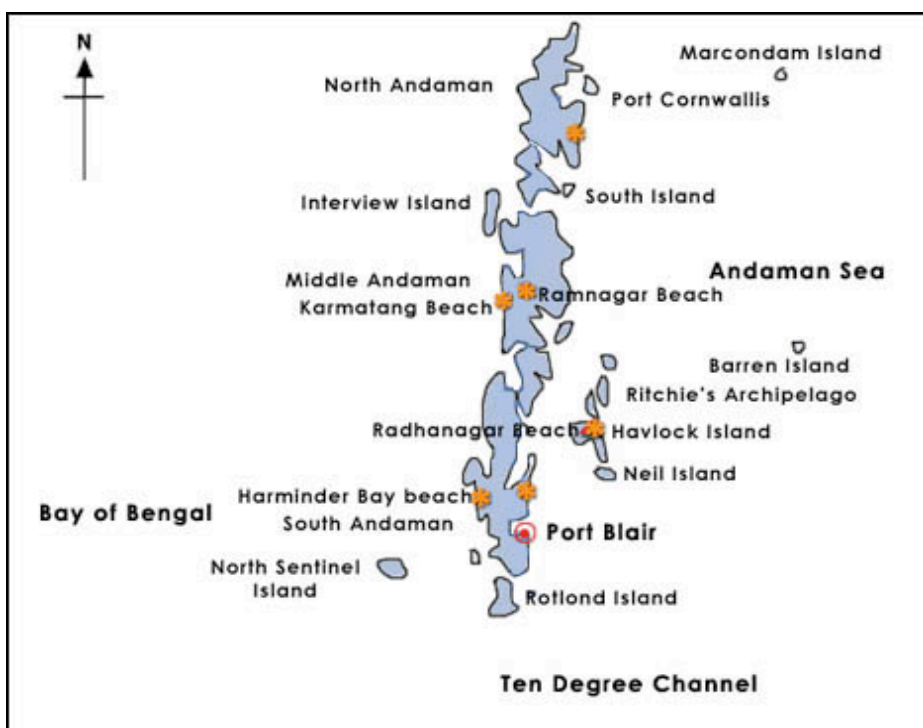


Figure 1: Map of the Andaman and Nicobar Islands  
(reproduced from: <http://www.nicobar.net/>)

The Andamanese are a standing puzzle to ethnologists. Early researchers identified that the various tribes they encountered formed one ethnic group, the Negritos, speaking varieties of a single fundamental language (Portman, 1899; Temple, 1909). Indigenous Andamanese belong to a family that, in turn, belongs to a sept<sup>2</sup>, which belongs to a group of tribes or division of the race. On the basis of the differences of language, customs, and weapons they used, the Andamanese have been divided into three groups, namely, the Yerewa, Bojigngiji (also referred to as Bogigyab) and the Onge-Jarawa groups (Census of India, 1921). The Andamanese are also divided, irrespective of tribal divisions, into the *Ar-yauto* ('Coast-Dwellers') and *Erem-taga* ('Jungle-Dwellers') (Portman, 1899). The habits and capabilities of these two groups differ according to their location and surroundings, irrespective of their tribe (Mathur, 1968). The *Ar-yautos* reside chiefly on the coast and obtain their food from the sea (Portman, 1899; Man, 1883), are experts in swimming, diving, fishing, etc. and possess a considerable knowledge of fish and marine life (ibid). The *Eram-tagas* have great expertise in jungle tracking as well as in pig hunting and possess a considerable knowledge of the fauna and flora of the islands (ibid). Early observers noted that agriculture was unknown to the indigenous population (Hunter, 1885; Andaman and Nicobar Gazette: 1999) and noted that the chief objectives of life appeared to be hunting for food and dancing at night (Temple, 1909). Their

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observations suggested that other activities arise out of the immediate necessities of the people. They make their own weapons, bows and arrows, harpoons and spears, string nets, baskets and mats, unglazed circular cooking pots, bamboo baskets and canoes hollowed out of tree trunks (ibid).

Although there are various tribal groups, the basic pattern of economic activities is common to all groups. The Andaman tribes have what can be characterised as a 'broad spectrum economy' (Kumar et al, 2002) that involves collecting roots, tubers and fruits, and hunting and fishing. This type of exploitation has the advantage of reducing any risk of resource paucity; if one resource fails there are other sources to fall back upon, since the entire economy hinges on the existing distribution of natural resources (ibid). The manner in which the broad spectrum economy of the Andamans functions is largely dependent on the natural distribution of resources and their density (ibid). The resource base of the Andamanese is inclusive of both terrestrial and aquatic resources. Property, including land, is traditionally communal, and individual possessions remain rudimentary, along with an incipient taboo concerning property belonging to the chief (Temple, 1909). A crude barter system existed between the tribes of the same group in regard to articles not locally obtainable or manufactured.<sup>3</sup> According to Man, tribes of the same group set no fixed value on their various properties and rarely made or procured anything with the express object of disposing of it in barter (Man 1883). Apparently they preferred to regard their transactions as gifts and, in reciprocity, believed that no gift should be accepted without an equivalent being rendered (Ibid).

As the above suggests, the indigenous people of the Andaman Islands were intimately attached to their immediate environment in the pre-colonial era but this situation gradually changed with the introduction of the penal settlement in 1858. The clearance of land for settlements and the loss of forests to logging has had a direct impact on indigenous people. They have been driven away from what was their prime and preferred habitat and have been forced to move deeper into the forest. With excessive poaching of their food sources, like the wild pig, survival became progressively more difficult for them. The life of the Andamanese, which involved an intense relationship with the environment, faced successive threats from British colonisers and the Indian state. Although both were fundamentally driven to exploit the islands to accrue capital, the former attempted this through the *commodification* of forests, while the latter framed its enterprise in terms of 'development' policies. Either way, for the indigenous people, these represented a sort of 'external aggression', as both these interventions failed to consider the inherent linkages between the people and the environment and have resulted in the exclusion of indigenous people from their own habitat. The impact of this aggression was apparent in the decline of the indigenous population, whose environmental equilibrium was shattered by the actions of external agencies.

### **Colonising the Andamans and the Establishment of the Imperial Forest Service**

The history of the colonial rule in Andaman Islands began in 1789, when British colonisers from the Indian mainland led by Lord Cornwallis, the then Governor General of India, started a settlement (Portman, 1899). On the basis of the survey reports of Lieutenants Archibald Blair and Colebrook, the first settlement was started at Chatham Island. However, this settlement was abandoned in 1796 because of the unhealthy conditions of the island. Later, in 1857, the British started a new penal settlement at Port

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Blair under the supervision of J.P. Walker (ibid). Early excursions into the islands were primarily concerned to explore their flora, mainly to enrich the botanical knowledge of the British. Gradually, the potential of these islands to facilitate forestry and settlement came to be recognised, leading to the formation of the Forest Department in 1883. Thus, it was only in the late 1800s that any consideration of the exploitation and management of the rich forests of the islands was initiated and implemented. Lieutenant Colonel Michael Lloyd Ferrar was appointed as the first forest officer of the islands. In keeping with colonial policy, the development of the forestry sector was dictated by market imperatives from the very beginning. The colonial state politics behind the forestry in Andamans can be ascertained from the words of Lieutenant H.C Beadon, Chief Commissioner of Andamans, in 1923. According to him “the aim of the forest department in Andamans should be commercial, that is to produce sawn timber and the normal forest operations of regeneration and the like should take a back place” (1923: unpaginated). Echoing a similar view in the same year, Government House commented that, “the chief forest officer here is a timber merchant selling sawn timbers”.

Since mid 19th Century there has been extensive economic activity in the Andaman Islands either for the purpose of local or overseas markets. Until the late 1870s teak was imported from Burma for the construction purposes but afterwards locally available *padauk* replaced it and successfully realised export potential in overseas markets in London and New York through events such as the Calcutta International Exhibition (1883-84) and the Edinburgh International Forestry Exhibition (1884). Scientific management of the forest started with the preparation of a first working plan by F.H. Todd in 1906 but, due to pressure for extra timber, the prescription of this working plan was not adhered to. Subsequent working plans were prepared by C.J Bonington in 1914, H.S Dean in 1935, B.S Chengappa from 1936 to 1939 (etc.) But due to various socio-political reasons, the prescriptions of these working plans were also not implemented. One major factor was that the Home Ministry had issued a note identifying eight key needs, viz. Defence, Health, Education, Government Offices, Residential Quarters, Public Undertakings, Public Works Department and Social Services for the same (Saldanha, 1987) that reflected a very different agenda. Large tracts of primary forests were destroyed in the name of infrastructure development: the construction of air strips, trunk roads, plantations and agricultural enterprises etc.

The increasing requirements of wood and timber both during war and peace-time necessitated the felling of trees in excessive quantities, and large forest areas, particularly in South Andaman, were cleared. During this period villagers lopped and felled trees for fodder and firewood; grazed their herds and flocks in the forests adjacent to the villages and thus caused further destruction to the forest (Lal, 1976). It is evident from the Forest Annual Administration Reports of various years that by 1912, the exploitation of the *padauk* woods alone increased more than six times of what existed in the beginning of 1900. *Padauk* timber was used for many trade purposes, such as for houses, furniture, ships, boats, railway carriages, sleepers, paving blocks, boxes, gun carriages, stocks, pianos, etc. as well as for profitable accessories such as cane for furniture, rattan for walking sticks and *gurjan* oil<sup>5</sup> (Kloss, 1902).

During the First World War, the demand for timber for the war efforts led to increased demand for local wood and logging operations expanded extensively. Since the prevailing selective felling pattern could not fulfil the mounting demand, the colonial state adopted the ‘clear-felling’ method of extraction, which ultimately over-harvested the primary forests (against the prescriptions of the second working plan prepared by C.

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J. Bonington in 1914). Between 1914 and 1918, a number of lesser-known species found substantial access into international markets and the annual harvest rose substantially. In the early stages of the Second World War, timber from the islands contributed considerably to the needs of the Allied forces; and during the Japanese occupation (1942-45) several thousand tons of timber was shipped to Penang and Burma to support Japanese construction projects (Chengappa, 1950).

In the immediate post-War period, extraction and regeneration were more scientifically managed. Large tracts of the South Andaman forests had been destroyed due to wartime bombings by the Allied planes and by the action of Japanese occupying forces. The high demands for timber to redevelop settlements and the broader project of post-War reconstruction led the British to implement new methods and better management practices (based on natural as well as artificial regeneration), giving more importance to modern forestry techniques. But the problems created by the partition of India reversed progress in forestry management, as the islands were once again targeted as a location for settlement, with an emphasis on the clearance of as many large tracts of land as possible, sacrificing scientific management and silviculture. Meanwhile, there was also a phenomenal increase in demand for timber, especially for post-War reconstruction programmes. The focus on extraction increased and consequently efforts at promoting regeneration were put on the back burner. To give an historical perspective: there was a steady increase in the felling of timber trees by the Government agency after 1905. The timber felled from the Andamans roughly doubled between 1800 and the turn of the 20th Century. It nearly doubled again between 1900 and 1910, increased by about eight times between 1900 and 1940 and by almost 20 between 1940 and 1951<sup>6</sup>.

During the colonial period forests had increasingly become a resource for colonial power and the setting up of an Indian rail network had tremendous impact on the forests in Andamans in more than one way. On the one hand, the traditional structure of forest resource use was shattered by the new forest laws; while, on the other, the Andamans became the part of world capitalist economy. The plantation economy and forest reserves initiated a new era in forest resource utilisation. Being a peripheral colony of the British Empire, the colonial foresters started the appropriation of Andaman forest product for their trade with European and American countries. The newly introduced system of forest management aimed to maximise revenue for the producers. The colonial forest department started the intensive exploitation of these forests through the leasing of some of the timber rich islands to the private agencies. The North Andaman group of forests was allocated to Messrs. P.C Ray & Co of Bengal by the 1940s for a minimum royalty of 50,00,000 rupees and this firm was expected to extract 75,00,000 tons of timber every year (Census of India, 1951).

### **The Post-Imperial Scenario**

India's need for timber was intensive to the extent that in the immediate pre-War period the country imported 10,000,000 cubic feet (equivalent to 2,000,000 tons) of timber every year (Chengappa, 1958). In addition, until the 1980s India was industrialising at a high rate and there was a great scarcity of wood - especially for softwoods for her budding match, plywood and packing case industries - and thus demand increased exponentially. India's forests were over-felled during the War and even in more stable times the country has been unable to meet all its demands without relying on imports (ibid). Since the Andaman forest area held a high volume of timber and had a high commercial viability,

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the Indian State resorted to extensive development of this natural reservoir after independence. The Andamans served to meet the timber demands of two distinct sectors: fulfilling the needs of domestic industries well as earning foreign currency through export (ibid). The southern Indian state of Tamil Nadu, for instance, depended on the Andamans for half of its timber needs, for which large timber depots were maintained at the Madras Harbour by the Andaman and Nicobar Forest Department (ibid).

The post-independence period witnessed a series of changes. Initially, the Forest Department had to concentrate on the clearance of land required for 'colonisation schemes'. At the same time, the quantum of timber extracted from the forests gradually increased. In 1956, following the reorganisation of states in the Indian nation, the islands were constituted into a Union Territory and, since then, have been administered through a Chief Commissioner. The first and foremost problem that the government faced was the need for demographic growth, both for utilisation of the available land for agricultural purposes and in order to provide labour for the exploitation of valuable forests (Census of India, 1961). A five year plan for the development and colonisation of the Andamans was approved by the central cabinet in January 1952. It envisaged clearance of 20,000 acres of forest land for the purpose of settlement of 4000 agriculturist families at the rate of 5 acres of cleared paddy land per family, in addition to 5 acres of hilly land for homestead horticulture (ibid). The subsequent five year plan envisaged the clearance of 11,900 acres of forest land and the settlement of 2994 families by the end of the plan period (ibid). Displaced persons, including agriculturists from (what had become) East Pakistan, were readily available for settlement and the idea of colonisation of the islands caught on. In between 1949 and 1961 some 3,000 families from East Pakistan constituted the majority of settlers and 8,000 hectares of forest was cleared for agriculture. In 1964, Indira Gandhi, the then Prime Minister of India, decided that Ministry of Rehabilitation should take up schemes for the development of suitable areas in the island for rehabilitation of displaced persons from East Pakistan<sup>7</sup> and several thousand more hectares were cleared, primarily at Betapur, Neill, and Little Andaman islands, and 792 families were settled on these plots. During the 5th Five Year Plan period the government approved the clearance of 34514 acres of virgin forests for the following purposes:

Heads	Area Cleared (in acres)
Migrants/Repatriates	13,370
Local Landless people	2,866
Plantation and Agriculture	18,278
<b>TOTAL</b>	<b>34514</b>

These massive projects were not conducted with proper environmental impact studies and the clearance of mangroves and the clear-felling of several thousand acres of virgin forest to allow for the construction of jetties, airstrips and roads resulted in numerous downstream effects, obviating the possibility of sustainable future development (Whitaker, 1985). The pattern of the development activities has largely been decided by the immediate economic opportunities.

In 1975, the Prime Minister of India, Indira Gandhi, sent a multidisciplinary team to the islands to report on the impact of deforestation. The report recommended that forest

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areas inhabited by the aboriginals should not be cleared any more (Report of the Multidisciplinary Team, 1975). However, more and more forest regions were cleared for various developmental purposes even after the Committee recommendation came out identifying the negative impacts of the unplanned developmental practices. Subsequent developments of Little Andaman, for instance, included: the clearance of 3,000 hectares of virgin forest for settlement and plantation, the construction of roads from Hut Bay north and west, the construction of jetties at Hut Bay and Dugong Creek, the establishment of a match splint factory, and finally, the relocation of the Onge tribe in one area (ibid). The report of the 1972 techno-economic survey stated that about 7000 hectares of some of the best primary forests were already cleared for developmental activities, and by 1980 another 13,000 hectares of forest land would be cleared for settlement and agriculture (National Council of Applied Economic Research, 1972).

### **Impacts of Development Practices on the Indigenous Population**

The British were initially very eager to establish friendly relations with the Andamanese. The primary motive behind this was to save the mariners of wrecked ships from the massacre at the hands of aborigines; secondly, it was necessary to protect the settlers at Port Blair from attack by the Andamanese; and, thirdly, the British government wanted to bring the Andamanese, who had become British subjects, “from the low scales of civilisation to the comforts and advantages of the civilised life” (Home Department, 1858: unpaginated).

Along with this engagement with colonial agents and agendas, deforestation posed many problems for indigenous people in terms of demography, subsistence, ecology and culture. As colonialism forced the indigenous population to transform from foraging to advance shifting or settled agriculture, some of the foraging communities began to lose their will to survive and now approach extinction (Sekhsaria, 2001). Tribal autonomy disintegrated following outbreaks of pneumonia (1868), syphilis (1876), ophthalmia (1876), measles (1877), mumps (1886), influenza (1890) and gonorrhoea (1892) (Tomas, 1991). Although attempts were sometimes made, as in the case of the 1876 syphilis outbreak, to displace responsibility onto the convict guards, the connection between the ‘Andaman Homes’ (artificial dwellings for indigenous tribal population built by the British) and the spread of infectious disease was acknowledged by administrators (Tomas, 1991). Andamanese children born in the Homes regularly died shortly after their birth, while those born in the jungle generally survived.<sup>9</sup> As a result of their contact with ‘civilisation’ through the Andaman Homes, the population of the friendly tribes (with the exception of the Onges and Jarawas) steadily declined. The Andaman Homes functioned as a principal site for acculturation and ethnographic observation - a profoundly contradictory situation, inasmuch as they were designed to facilitate a transition to a state of civilisation (whereas the strategy behind ethnographic observation was to reconstruct essential pre-contact representations of an isolated island people) (Tomas, 1991). The Andamanese were forced to live in these ‘homes’, in a manner that was completely different from the homes to which they were accustomed. With their new lifestyle, many learned the vices of ‘civilised’ society like smoking tobacco, drinking alcohol, etc., which adversely affected their health.

The Census Report of 1931 showed that the most striking feature of these islands was the huge decrease in the indigenous tribal population during the colonial period. According to the Report, the total indigenous population in the Andaman Islands in 1858 was 4,800. Within a span of 30 years, by 1888, the population decreased to 70% of that



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size. By the 1930s, successive censuses showed severe decreases amounting to a total decrease of over 75% percent since 1901 (Census of India, 1931). By 1951, the total population of the indigenous Negritos declined to 273, an astounding decrease from 4,800 in 1858. The post-colonial period witnessed a slight increase and by the early 1980s, the total population of these tribes reached 410 (T.N Pandit, 1990). The most recent figures show total population of Andaman tribal groups as 418 (Forest Statistics, 2005). However, while the indigenous community shrank in size, the population rate of the settlements of free men and labourers steadily increased, providing another pressure in the former. The sudden exile of thousands of convicts and deployment of authorities to administer these islands in the beginning of the penal settlement led the local (non-indigenous) population to increase from 18,138 in 1901 to 21,316 by 1941 (Statistical Handbook, 1996). It increased to 48,985 in 1961, 93,468 in 1971, 1,58,287 in 1981, 2,41,453 in 1991, and most recent figures indicate a population of 3,56,265 in 2001 (Statistical Handbook, 1996 and Census of India, 2001).

### **Environmental Changes in the Andaman Islands**

Over 130 years colonisation wrought drastic environmental changes in these islands, bringing them to the verge of an environmental catastrophe. As Whitaker (1985) stated, one of the most serious environmental problems that the Andaman Islands face in the contemporary period is soil erosion. Soil erosion increased significantly during the post British period and severe environmental damage was reported around Port Blair, Bakultala, Rangat, Baratang and Neil Island. In 1976, Dr. D.N. McVaen was appointed by the International Union for Conservation of Nature, on the invitation of the Government of India, to consider the environmental problems of the Andamans. McVaen reported that increase in soil erosion had begun with the early settlements and was still on the rise. Research indicates that there are clear warning signs of increasing soil loss; as the changes in the microclimate due to clear-felling are resulting in irreversible changes in the soil structure and water retention.

Over the years the coral reefs around the islands have also come under threat. In 1987, for instance, the Society for Andaman and Nicobar Ecology (SANE) reported the distressing example of the destruction of coral reefs in the Andaman Islands (cited in Pande et al, 1991). SANE revealed that thousands of cubic metres of coral had been destroyed by various state development programmes. To meet the mounting demand for clear lands for settlement, agriculture, and for industrial and domestic fuel, there was large scale felling of forests. This led to the deposition of excessive silt in the shallow waters near the shores that, in turn, clogged the corals. In addition to this, industrial waste draining out in the sea also contributed to the destruction of corals and coral mining and over-fishing in coral areas aggravated the situation. The destruction of corals also affected the wellbeing of broader marine eco-systems and fauna, which were directly or indirectly dependent upon them. A variety of aquatic life, for instance, thrives in the nutrient rich waters around coral formations and suffers serious decline when these formations are destroyed. A further problem is that damage to reefs weakens their structure and thereby limits their effectiveness as buffers against the effects of storm surges and, as in the case of the 2004 tsunami, more calamitous oceanic events (see Sharma, 2005).

Urbanisation arising from the expansion of settlements and other economic activities has gradually encroached into the luxuriant forests and led to the denudation of

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vegetation cover from lands and hill slopes. Approximately 3,000 hectares (30 square kilometres) of the island's total land area of 6408 square kilometres comprises saline marshy land. Fallow land of 10,000 hectares across hilly regions in different parts of Bay Island. In addition, about 10,533 hectares remain barren and fallow in other areas, and the total area that remains fallow is c23,533 hectares.<sup>10</sup>

The nature of the evergreen forest ecosystem has also changed from evergreen to semi-evergreen then to deciduous due to the considerable opening of the canopy. Most of the evergreen forests in the vicinity of the settlements disappeared in the span of hundred years and paved way for the development of a deciduous forest eco-system. Fresh water sources in the settlement areas have also been severely reduced and despite heavy rainfall there is a shortage of fresh water in the islands in the dry months.

Another major problem is that rainforest soils are not suitable for long-term agricultural practices. Rainforests have a poor soil formation and store very few nutrients at a given time. Once exposed, rainforest soils soon dry up and nutrients are liable to be washed away by the force of the rain. The land then becomes barren without forest cover in the rain forest region (Rao, 1999). Despite this, thousands of hectares of forest areas were cleared for agriculture during the colonial period. Development of settlements has also resulted in the loss of most of the lowland evergreen foreshore and small freshwater riverine habitats, which include most of the Andaman teal and crocodile nesting habitats in the islands (Jayraj and Anderson, 2005). These flatlands close to fresh water streams were thought to be most suited for agriculture and were preferentially cleared. There is, currently, very little of the lowland forest type left in the Andamans except in protected areas and in the Jarawa Reserve along the west coast of South and Middle Andaman islands (ibid). A study conducted by the Andaman and Nicobar Environmental Team (ANET) shows that the rice yield in the North Andaman Island has declined from 5.24 tonnes/ha forty years ago to 1.57 tonnes/ha today. This suggests that converted rainforest soils cannot sustain rice farming for long periods (ibid: 14). A study at Wandoor and Manjeri in the South Andaman Islands shows that the yield has dropped from 3.80 tonnes/ha to 1.80 tonnes/ha in the span of 30 years (ibid).

The large influx of human population and other developmental works in the islands has led to increased air movement, wider temperature fluctuations and lower humidity; with profound effect on soil composition, rainfall absorption and all plant and animal life (McVaen, 1976). A Statistical Bureau report shows the maximum temperature of these islands in 1959 was 30.5 degrees centigrade and minimum 23.9 degrees (Statistical Bureau, 1960). Later studies, however, indicate a maximum of 36.1 and minimum of 16.7 by 1986 (Pande). Likewise the level of rainfall also decreased in these islands. Yet another significant change visible in these islands is the appearance of barren lands and loss of fertility of the soil in the high density regions, especially in the South Andamans. Many local plant species and various indigenous animals are also on the verge of extinction due to the unplanned developmental activities in these islands.

### **Conclusion**

The new pattern of resource use and associated development projects in the Andaman Islands seriously affected the pristine environment on which the indigenous Negrito population depended. These policies inflicted great harm to their total way of life, economy, culture, etc. From this perspective we can see that the technological

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knowledge of the colonisers and their market imperative gradually changed the basic pattern of the daily livelihood strategies of the tribes. Here, one can find a sudden shift of a pre-urban region into an urban region based on the capitalist mode of resource use; and the modernising policies of the British gained considerable strength from the introduction of the Forest Department as an institution in 1883. In brief, the root cause of all these changes, the deforestation and the associated pattern of degradation, lies in the emergence of the modern type of colonial state formation in the Andamans.

The M.S. Swaminathan Research Foundation's (2005) Action Plan for fostering a 'New Andamans Movement' in the post-tsunami era presented an optimistic scenario premised on questionable interpretation of the islands' environment. While it identified that 85% of the islands are still forested, a more commonly accepted figure is around 70% and, what's more, much of the forest is highly fragile and degraded with only secondary growth. While the Foundation's Action Plan characterised that the islands are "still free from severe anthropogenic pressures, and over-exploitation of the forest and marine resources" (2005: 9); all the environmental changes discussed above have directly or indirectly derived from human intervention into forest eco-systems. As a result, the Swaminathan Foundation's identification of the area's potential to become the "Organic Islands" of the world in the post-tsunami era is somewhat hollow. The Action Plan, and similar policy documents, suggest that the implications of clearing and extracting timber from these islands are still not considered seriously enough by the Government, either in terms of ecological degradation or human suffering.

I would like to thank Philip Hayward for his detailed comments, suggestions, and criticisms on the earlier drafts of this article and for his editorial help. I would also like to thank Ms. Divya Balan, Mr. Santosh Kumar Malua and Mr. Rajiv George Aricat for reading earlier drafts and for their suggestions and the moral support they have given.

## Endnotes

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<sup>1</sup> The 2nd-6th plans operated in 1956-61, 1961-66, 1969-74, 1980-85 and 1985-89.

<sup>2</sup> 'Sept' is a sub-division of a tribe. The members of a sept intermarry with members of another sept of the same tribe.

<sup>3</sup> This practice has persisted to the present.

<sup>4</sup> The Andaman *padauk* (*Pterocarpus dalbergioides*) is a tough, reddish wood that produces a dye.

<sup>5</sup> A wood oil derived from the *Diptocarpus laevis* tree.

<sup>6</sup> *Yearly Administration Reports of the Forests of Andaman Islands from 1900-1951*, National Archives of India, New Delhi

<sup>7</sup> See Report of the Multidisciplinary team on Andaman and Nicobar Islands: 6.

<sup>8</sup> The British government established Andaman Homes (artificial dwellings) at Port Blair to bring the Andamanese, who had become British subjects from the "low scales of civilisation" to the comforts and advantages of the civilised life. Homes were erected in the vicinity of the harbour, where all who needed could obtain protection, shelter, food,

and medicine. Originating out of a policy of conciliation with the rather truculent coastal tribes, the Homes degenerated into a sort of prison for these (formerly) free nomads whose normal habits were just the opposite of what was foisted on them in this institution.

<sup>9</sup> Home Department, Port Blair A, No. 32, October 1914 NAI, New Delhi.

<sup>10</sup> Jadavpur University, Calcutta and National Afforestation and Eco Development (1996: 32).

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