Tribal reserves, IBAs, and bird conservation: The unique case of the Andaman & Nicobar Islands

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Introduction

The Andaman and Nicobar Islands (A&N Islands) are a small group of about 570 islands in the Bay of Bengal spread over an area of roughly 8,200 km (Jayaraj & Andrews 2005)[3]. They occupy only about 0.25% of the total landmass of India but are disproportionately rich in endemism and diversity. Pande *et al*. (2007) have noted, quoting Sankaran & Vijayan (1993), and Vijayan *et al*. (2000) that, "103–105 taxa (37–38.2%) out of 268–270 avian species and races recorded from these islands are endemic—illustrating a high degree of endemism." The islands have also been designated as two of the major 221 'Endemic Bird Areas' (EBAs) of the world—EBA 125 (Andaman Islands) and EBA 126 (Nicobar Islands) where the restricted range species reported from the Andamans and the Nicobars are 13 and nine respectively (Stattersfield *et al*. 1998). Jathar & Rahmani (2007), however, note that 28 endemic bird species (excluding races) are reported from these islands—20 are endemic to the Andamans, and eight to the Nicobars. The two data deficient bird species from India listed in the Red Data book of the IUCN are also found in these islands: the Andaman Crake *Rallina canningi* and the Nicobar Scops-Owl *Otus alius*. It is evident that the islands are important for bird conservation and this is reflected in the fact that they have 19 areas that have been identified as Important Bird Areas (IBAs) by Islam & Rahmani (2004).

IBAs and Tribal Reserves

Of particular significance to the A&N Islands, in this context, are forest areas designated as tribal reserves under the Andaman & Nicobar Protection of Aboriginal Tribes Regulation (ANPATR), 1956 (ANPATR 2004 (1956)). This includes the entire group of the Nicobar Islands (about 1900 km^2) and four tribal reserves in the Andaman islands that cover nearly 1600 kms^2 (ANPATR 2004 (1956)) of some of the most pristine forests that still survive here [**87**]. In the Andamans these tribal reserves are named after the four aboriginal communities that have been living in these islands for at least 40,000 years: the Great Andamanese, the Jarawas, the Onge, and the Sentinelese.

Six of the 19 IBAs in the islands are areas designated as tribal reserves under the ANPATR. These include the islands of Car Nicobar, Great Nicobar [**88**], Little Nicobar, Tillangchong, Camorta, Katchal, Nancowry and Trinkat: all in the Nicobar Islands (they have been together classified into three different IBAs), and the Jarawa Reserve (IN-AN-07), Little Andaman (IN-AN-10), and North and South Sentinel (IN-AN-15) in the Andaman group of islands (Islam & Rahmani 2004), (Table 1).

87. Lush and rich mangrove forest of Constance Bay along the western and southern boundary of the Jarawa Tribal Reserve.

88. Tree ferns, Great Nicobar Biosphere Reserve, Campbell Bay.

Photos: P. Sekhsaria

[1] Paper presented at the International Conference on Indian Ornithology–2011, SACON, Coimbatore India.
[2] This article is an updated and substantially expanded and reworked version of Sekhsaria (2004a).
[3] It is important to bear in mind that these figures are pre-December 2004. Significant tectonic activity during the earthquake of 26 December 2004 that caused the gigantic South and South East Asian tsunami also led to significant submergence and uplift of land in different parts of the Andaman and Nicobar Islands. The Megapode Island Wildlife Sanctuary (Kutty & Kothari 2001; Pande et al. 1991), for instance, does not exist anymore as it has been completely and permanently submerged. Latest official figures for area of the landmass in the islands are not currently available. For a broad overview of the landscape, seascape and ecological changes in A&N in the immediate aftermath of the earthquake and tsunami of 2004, see Sekhsaria (2009).

Table 1: List of IBAs in the Andaman & Nicobar Islands (Islam & Rahmani 2004)

IBA site code	IBA site name
IN-AN-01	Austin Strait
IN-AN-02	Baratang-Rafters Creek
IN-AN-03	Car Nicobar
IN-AN-04	Chaipur and Hanspuri
IN-AN-05	Great Nicobar, Little Nicobar
IN-AN-06	Interview Island Wildlife Sanctuary
IN-AN-07	Jarawa Reserve (Middle Andaman and South Andaman)
IN-AN-08	Kadakachang
IN-AN-09	Landfall Island Wildlife Sanctuary
IN-AN-10	Little Andaman
IN-AN-11	Mahatma Gandhi Marine National Park
IN-AN-12	Mount Diavalo/Cuthbert Bay
IN-AN-13	Mount Harriet National Park
IN-AN-14	Narcondam Island Wildlife Sanctuary
IN-AN-15	North and South Sentinel
IN-AN-16	North Reef Island Wildlife Sanctuary
IN-AN-17	Rani Jhansi Marine National Park
IN-AN-18	Saddle Peak National Park
IN-AN-19	Tillongchang, Camorta, Katchal, Nancowry and Trinkat

Tribal reserves in the Andaman Islands

The tribal reserves in the Andamans are the last remaining large and contiguous areas of the original giant evergreen, Andaman evergreen and the southern tropical evergreen rainforests that these islands are reputed for. The reserves are in fact, more significant and important for biodiversity conservation than wildlife sanctuaries and national parks, (the protected area (PA) network) of the islands (Table 2) (Pande *et al*., 1991; Kutty & Kothari 2001; WLPA 1972 (Amended 2006); Anonymous 2011b). While the terrestrial ecosystem under the PA network in the Andamans is only about 500 km^2, the total forest areas under the tribal reserve cover is more than three times the figure at 1600 km^2.

The Jarawa Tribal Reserve (JTR) alone is spread over an area of a little more than 1000 km^2 of tropical forests (Sekhsaria & Pandya 2010; ANPATR 2004 (1956)), whereas the Onge Tribal Reserve covers 520 km^2 of contiguous forests in Little Andaman Island (Sekhsaria 2004b; ANPATR 2004 (1956)). Studies and satellite imageries have shown that some of the best forests and biological diversity in these islands now survive mainly inside the boundaries of these tribal reserves (Figs. 1A & 1B).

The forests outside

Large areas located outside these Andaman tribal reserves, even if within the present PA network, have experienced logging that has gone on for almost a century. These forests, with the small exception of the PA network, have either become deciduous because of timber extraction that has gone on for almost a century, or have been completely denuded to be converted to agricultural fields, horticultural plantations or settlements of large numbers of immigrants from mainland India (Saldanha 1989; Andrews 2002; Chandi 2002; Singh 2002; IIRS 2003; Sekhsaria 2003; Chandi & Andrews 2010; Sekhsaria & Pandya 2010) (Figs. 1A & 1B).

Table 2: Protection accorded to the forests in the Andaman Islands: Total area of the Andamans: 6,408 km^2

Particulars	Sanctuaries and National Parks	Tribal Reserves
Total number	99 (92 sanctuaries and seven national parks)	Four
Forest areas protected	*c.* 500 km^2	*c.* 1600 km^2
Percentage total forest area	8%	20%
Marine areas protected	*c.* 500 km^2	*c.* 1000 km^2
Largest forest area protected	Interview Island Sanctuary (133 km^2)	Jarawa Reserve (about 1000 km^2)

The case of the Interview Island Wildlife Sanctuary, which is also an IBA, is an illustrative one. This is the largest contiguous forest stretch in the Andamans that is protected under the provisions of the Indian Wildlife (Protection) Act, 1972. The area, however, is only 133 km^2 (Pande *et al*. 1991; Anonymous 2011b) as compared to the little over 1000 km^2 that constitutes the JTR (Table 2). Significantly, the forests of Interview Island were under commercial extraction from the 1950s till about mid-1960s (Pande *et al*. 1991) while a major area of the Jarawa Reserve forests have never seen logging operations.

Conservation implications

The implications for conservation are evident in other ways as well. Not only is the total area protected under tribal reserves much larger, the individual area in a majority of the protected areas is extremely small: 58 of the PAs are less than one km^2 in area and only four have an area of more than 30 km^2 (Davidar *et al*. 1995). Davidar *et al*. (1995) also found a direct relationship between presence of butterfly and bird species and size of the forest area studied, particularly in the case of isolated islands. Many species of birds were not recorded at all on small islands and all forest bird species were only found on islands larger than 30 km^2.

Where avifauna in particular is concerned, it is striking that all but one of the species in the Andaman group islands that are endemic or listed as either data deficient or near threatened in the IBA directory (Islam & Rahmani 2004) can be found in these tribal reserves (Table 3). The only exception is the Narcondam Hornbill *Aceros narcondami* but that is an extraordinary situation in any case. Even other significant species like the Andaman Teal *Anas albogularis* and Beach Thick-knee *Esacus magnirostris* [89]have been reported from the tribal reserves (Vijayan *et al.* 2006; Rahmani 2012). The conservation significance with regard to the Nicobars is that the entire group is a tribal reserve!

A recent preliminary assessment also shows, for instance, that the resource basket of the Jarawas consists of more than a 100 species of plants and animals, a third of which are edible (Kumar *et al*. 2010). This is an important indicator of the knowledge the

Table 3: Red Data Book- and endemic- species (Source: Islam & Rahmani 2004)

VULNERABLE
Nicobar Sparrowhawk *Accipiter butleri*
Nicobar Megapode *Megapodius nicobariensis*
Narcondam Hornbill *Aceros narcondami*
Nicobar Bulbul *Hypsipetes nicobariensis*
DATA DEFICIENT
Andaman Crake *Rallina canningi*
NEAR THREATENED
Nicobar Serpent-Eagle *Spilornis minimus*
Andaman Serpent-Eagle *Spilornis elgini*
Andaman Wood-Pigeon *Columba palumboides*
Andaman Cuckoo-Dove *Macropygia rufipennis*
Nicobar Parakeet *Psittacula caniceps*
Andaman Scops-Owl *Otus balli*
Andaman Hawk-Owl *Ninox affinis*
Andaman Black Woodpecker *Dryocopus hodgei*
Andaman Drongo *Dicrurus andamanensis*
Andaman Treepie *Dendrocitta bayleyi*
OTHER ENDEMIC SPECIES
Andaman Coucal *Centropus andamanensis*
White-headed Starling *Sturnus erythropygius*

Fig. 1a. A&N Islands land usage (Source: Sekhsaria & Pandya 2010).

Fig. 1b. A&N Islands land cover classification (Source: Sekhsaria & Pandya 2010).

Jarawas have as also of the diversity of the Jarawa Reserve forests themselves. It is also extremely significant because this is bound to be a very important knowledge source in a forest landscape that has hardly been explored and studied in the context of modern science.

Photo: P. Sekhsaria

89. Beach Thick-knee *Esacus magnirostris* at South Cinque Island Wildlife Sanctuary.

The historical context of the Andamans

Important also to understand are the changes that have occurred in the recent past in these islands in general, and in the Andamans in particular. The most important indicator of the changes is the population figure. While the estimated population of the four aboriginal communities in the Andamans was about 700 individuals in the census of 1961, it came down to a little more than 400 individuals in 2001. Of these, the Onges and Jarawas were reported to be 96, and 240 individuals respectively, and the Sentinelese population was estimated to be only 39[4].

At the same time, the total population in the Andaman group increased from a little less than 50,000 individuals in 1961 to over 350,000 in 2001 (Pandit 1990; Anonymous 2001). This increase in population was based almost entirely on an official policy of the Government of India to promote immigration from mainland India to 'colonise' these islands (Anonymous1965). Within a period of five decades the total number of non-indigenous persons in the Andamans had gone up from 70 per aboriginal individual to 751 per aboriginal individual (Sekhsaria & Pandya 2010). The demand for resources like land, forests, and water was bound to increase proportionately.

[4] It is important to note that the 1991 population figures for the Sentinelese and the Jarawa were only estimates. In 2001 the Jarawa numbers were based on a head count though there are suggestions that this may have been an underestimate as all the individuals were not counted (Chakraborty 2010). The most recent figure for the Jarawa population is 375 in the year 2010 (Anonymous 2010b).

Denotification of the tribal reserves

Related directly to this influx of people into the islands was the process of the denotification of large areas from under the tribal reserve category, particularly in the 1970s. A series of amendments to the ANPATR in 1972, 1973, 1977, and 1979 resulted in the removal of Rutland Island (103 km^2) from the category of tribal reserve, nearly 200 km^2 from the Onge Tribal Reserve in Little Andaman, and 300 km^2 from the JTR in South Andaman (Anonymous 1976; ANPATR 2004 (1956)).

Large areas of these denotified tribal reserve forests were then clear-felled for the housing, agricultural, and horticultural needs of the settlers. Work was started on the construction of the Andaman Trunk Road (ATR) [**90**] that was to cut through the heart of the JTR as it sought to connect Port Blair in South Andaman Island to Diglipur in North Andaman Island. The denotification of the tribal reserves coupled with the construction of the ATR facilitated intensive logging in these forests as is evident from timber extraction statistics. The 1980s consistently saw an average of 14,000 cu m of timber extraction annually from the Andaman forests [**91**] (Saldanha 1989; Singh 2002; Anonymous 2005) (Table 4). This was at the cost of the rights and integrity of the aboriginal communities as well at the biological diversity of these islands.

Photos: P. Sekhsaria

90. Traffic on the Andaman Trunk Road (ATR).

The impact and implications of this can well be imagined, and this is reflected in the site accounts that we see in the IBA directory (Islam & Rahmani 2004) as well: population increase, habitat fragmentation, encroachments, and poaching have been identified as the main threats and problems in the context of IBAs and avifauna conservation in the islands.

91. Timber extraction.

Supreme Court orders of 2002

Table 4. Timber extraction – Andaman Islands (Sekhsaria & Pandya 2010)

Year	Annual average quantity (cu m.)
1968–1983	118,800
1980–1981	165,726
1981–1982	162,241
1982–1983	147,308
1983–1984	147,309
1984–1985	132,579
1985–1986	145,305
1986–1987	131,888
1987–1988	115,801
1988–1989	123,678
1989–1990	117,746
1990–1991	103,660
1991–1992	105,319
1992–1993	125,670
1993–1994	130,136
1994–1995	135,523
1995–1996	126,579
1996–1997	107,443
1997–1998	77,097
1998–1999	62,623
1999–2000	47,617
2000–2001	40,053
2001–2002	4,711
2002–2003	Nil
2003–2004	Nil

Many of these issues were dealt with in orders passed by the Supreme Court of India in 2002 in response to a public interest litigation (IA-502 2002) filed by non-governmental organisations. The court had asked for the implementation of an inner line area system to prevent the influx of people from mainland India; had stopped commercial timber extraction, removal of encroachments, phasing out of sand mining from the island's beaches, use of appropriate construction materials, closure of the Andaman and Nicobar Forest Plantation and Development Corporation that had been logging the forests of Little and Middle Andaman since the 1970s, and closure of the ATR where it runs through and along the forests in the Jarawa Reserve (Sekhsaria 2003; Singh 2002; IA-502 2002).

More than a decade later, many of these orders are yet to be implemented. The Member of Parliament for the islands has even argued for the denotification of the JTR and to make the land and forests available for development (Anonymous 2010a). More recently, in a meeting held with the Prime Minister of India, Dr Manmohan Singh, members of the Andaman Chamber of Commerce and Industry were reported to have questioned the justification of setting aside the JTR as an area seven times the size of the city of Chennai for only about 300 Jarawas (Anonymous 2012).

The case of Tillongchang Island in the Nicobars

The dilemmas and the challenges faced are starkly highlighted in other recent developments, related this time to the uninhabited Tillongchang Island spread over 17 km^2 in the Nicobars. The island is an important population repository of the Nicobar Megapode *Megapodius nicobariensis nicobariensis* [**92**], the race endemic to the Nancowry subgroup of islands (Sivakumar 2010); *M. n. abbotti* is endemic to the southern Great Nicobar group of islands. The island is a wildlife sanctuary (Pande *et al*. 1991; Kutty & Kothari 2001), a tribal reserve (ANAPTR 2004), an IBA (Islam & Rahmani 2004), and of great customary and ritual importance for the Nicobari tribal community (Chandi 2012). Yet, in November 2011, the Indian Navy thought it right to go ahead and seek permission to construct a temporary missile testing range on this small but culturally and ecologically important island (Chandi 2012; Anonymous 2011a).

It was only in late 2012, after a sustained campaign in the media, particularly by wildlife and environment NGOs, that the Ministry of Environment and Forests of the Government of India issued an order (Khanduri 2012) rejecting the proposal on grounds of the, "high conservation values," of the place. Not only

Photo: P. Sekhsaria

92. Nicobar Megapode *Megapodius n. nicobariensis*.

had the wildlife and biodiversity value of the place been given short shrift in the proposal, the laws and regulations related to tribal rights had also been ignored.

Conclusion

We have, in the A&N Islands, an unique situation and opportunity where the protection of the indigenous peoples, the forests and the biodiversity including its rich avifauna are all intricately linked. Ensuring protection of the tribal reserves will, for instance, not only ensure the survival of the increasingly threatened indigenous communities of these islands like the Jarawas and the Onge but also bring significant other benefits. Protection in these areas can simply not be divorced from the future of the indigenous peoples. Safeguarding the rights, culture and society of the indigenous people might be the best and most effective method of protecting the forests and biodiversity and avifauna as well.

This, as we have seen, is far easier said than done and a number of steps are needed to achieve this:

a) Scientific research: The forests of the tribal reserves in these islands remain unstudied and unexplored from a scientific point of view. A larger and coordinated effort is needed to uncover the biological richness of these forests in an effort to strength the case for their conservation and protection.

b) Working with the settler communities: While the aboriginal communities have the primary right to the forests and the resources, it has to be borne in mind that a much larger number of outsiders now live along and around the forests of the tribal reserves. These comprise the first line of interaction with the forests and the aboriginal communities themselves. A concerted effort needs to be made to engage with and educate them on the rights of the aboriginals and on the richness and importance of these forests alongside benefits such as fresh water and other ecosystem services that they derive from these forests.

c) Implementation of Supreme Court orders: Supreme Court orders of 2002 (Singh 2002; Sekhsaria 2003) need to be implemented in letter and spirit as a step towards respecting the rights and territorial integrity of communities like the Jarawa, and in the larger interest of forest protection and biodiversity conservation in the islands.

d) Additional legal protection for Tribal Reserves: Measures to provide additional legal protection to these tribal reserves—for instance under the provisions of the 2006 law that seeks to correct historical wrongs and gives rights to scheduled tribes and forest dweller (FRA 2006)—need to be explored urgently.

It is only when all, or at least some of these steps, are initiated in these islands that the interests of indigenous communities and those of biodiversity conservation will be achieved.

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Avifaunal diversity of Baisipalli Wildlife Sanctuary, Odisha, India

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Introduction

The Eastern Ghats is a major biodiversity area running parallel to the Bay of Bengal on India's east coast. Comprising a discontinuous range of mountains, they extend from West Bengal in the north to Tamil Nadu in the south, passing through the states of Odisha, Andhra Pradesh, and some parts of Karnataka. In Odisha (=Orissa), the range constitutes the principal mountain system extending over 1.5 lakh km^2, which is merely 4.25% of the total landmass of the state. Fourteen protected areas fall within this percentage, among which the Baisipalli Wildlife Sanctuary (20°31'–20°45'N, 84°43'E–85°05'E), considered the gateway of Eastern Ghats (Sahoo & Das 2010), is a major Protected Area. The sanctuary spreads over Nayagarh and Boudh districts with an area of 163 km^2. It is contiguous with the Satkosia Gorge Wildlife Sanctuary and forms the Satkosia Tiger Reserve. The vegetation here is characteristic of Mahanadian hilly sal forest and falls under the Mahanadian Biogeographic region of Orissa (Sahoo 2010). It largely comprises northern tropical moist deciduous, dry deciduous, and moist peninsular low-level sal forests. The dominant trees are 'sal' *Shorea robusta*, 'bija' *Pterocarpus marsupium*, teak *Tectona grandis*, 'kusum' *Schleichera trijuga*, 'saja' *Terminalia tomentosa*, 'bael' *Aegle marmelos*, 'tendu' *Diospyros melanoxylon*, and 'palas' *Butea monosperma*, with bamboo patches, a number of shrubs, herbs and climber species.

India harbors 1200 species of birds, which is 13% of the total bird species of the world (Ali & Ripley 1983). The avifauna of Odisha is diverse and 473 bird species belonging to 59 families have been recorded here (Mishra *et al.* 1996). The avifauna of the state has been mainly studied by Mukherjee (1952), Ripley (1979), Abdulali (1984), Sahu & Kar (1999), Sahu & Rout (2005), Gopi & Pandav (2007), and Das *et al.* (2010). But the avian diversity of the sanctuary is still unknown, as no scientific studies on birds have so far been conducted, except passing references to common birds, in the sanctuary's management plans. This study was carried out to prepare a checklist with basic information on the species of the sanctuary and frequency of their occurrence with residential status.

Methodology

Observations on the avian diversity of Baisipalli WLS were carried out from January–July 2010. During the study, the presence of different species of birds was ascertained by direct sightings, their calls (for some species), and interviews with local forest staff, villagers and hunters belonging to local communities in and around the PA. Regular surveys were conducted by adopting the line-transect method (Burnham *et al.*1980) throughout the study area. Birds were mostly observed during the active hours of the day; from 0600 to 1000 hrs and from 1600 to 1800