ANDAMAN AND NICOBAR

Photo: M. Zafar-ul Islam

More than 80% of Andaman and Nicobar Islands are still under forest cover, but constant vigil is required to prevent illegal logging, unregulated tourism and encroachment.

The Andaman and Nicobar Islands in the Bay of Bengal are peaks of a submerged mountain chain, comprising of more than 572 islands and islets. The total geographical area of the Union Territory of Andaman and Nicobar Islands is 0.82 million ha. The Andaman and Nicobar Islands lie between 6° 45' - 13° 45' N and 92° 00' - 94° 18' E, and extend over 800 km. The islands are the summits of a mountain range atop the great tectonic zone that extends from the Eastern Himalaya along the Arakan Yoma of lower Myanmar in the north, to Sumatran and the Lesser Sundas in the south. They comprise the main island chains of Andaman and Nicobar, Ritchie's archipelago and the two volcanic islands, Barren and Narcondam.

The Andaman group extends over 6,340 sq. km and the Nicobar group consists of a total of 1,953 sq. km (Alfred *et al.* 2002). The Andaman group has 324 islands, of which 25 are inhabited. Great Andaman includes five closely adjoining islands, North Andaman, Middle Andaman, South Andaman, Baratang and Rutland islands, separated by narrow channels, while Little Andaman is separated by a deep channel known as Duncan Passage. Similarly, the Nicobar group is made up of 28 islands, of which 13 are inhabited. The Nicobar group of islands has three main clusters, Car Nicobar, Middle Nicobar and Great Nicobar (Alfred *et al.* 2002).

North Andaman is 285 km from Cape Negaris, south Myanmar which segregates it by a 225 m deep channel known as North Preparis. Great Nicobar, the southern-most island, is just 189 km away from the Acheen Head of Western Sumatra and is separated from it by a 1600 m deep channel known as the Great Channel.

The Andaman and Nicobar islands have an undulating terrain with hills and overriding valleys. The highest peak in Andaman is the Saddle Peak with an altitude of 726 m, while in the Great Nicobar it is Mount Thullier (670 m).

There are two districts, (i) Andaman, which has Port Blair as its headquarters and a human population of 3,14,239 (2001 Census) and (ii) Nicobar, with Car Nicobar as its headquarters with a human population of about 42,026.

The entire Union Territory is divided into four sub divisions and seven *tehsils* (counties) as follows:

Mayabunder consist of three *tehsils* (a) Diglipur (884 sq. km), (b) Mayabunder (1,348 sq. km) and (c) Rangat (1,098 sq. km).

South Andaman has two *tehsils*: (a) Port Blair and (b) Ferrargung (3,010 sq. km).

Car Nicobar itself is a *tehsil* with an area of 129 sq. km.

Nancowry is a *tehsil* and covers an area of 1824 sq. km.

These groups of islands are known to have had human aboriginal settlements for thousands of years, but the first modern settlement was established in the North Andamans in 1789 (Mathew 2003). During India's freedom struggle, so called mainland rebels were sent to Andaman to work as labourers and they were incarcerated in a Cellular Jail, now a National Memorial. After India's Independence in 1947, the Indian Government settled ex-servicemen and refugees of Indo-Pak partition on the islands. The exploitation of local aborigines was banned under the Protection of Aboriginal Tribes Act, 1956. In 1956, these islands became the Union Territory of the India under the control of President of India.

The total population of these islands is 0.36 million of which 67.3% is rural and 32% is urban (2001 Census). About 86% inhabit the Andaman Islands and the rest the Nicobar Islands. The average population density is 43 persons per sq. km. Literacy is 81.18%. Tribes constitute 9.54% of the total population. Four aboriginal tribes viz. Andamanese, Jarwas, Onges and Sentenalese inhabit the Andaman island groups. The Nicobaris and Shampens inhabit the Nicobar group. The livestock density is 0.15 million, too large for such a surface area.

The Andaman Trunk Road has played havoc with the traditional lifestyle of the Jarawas.

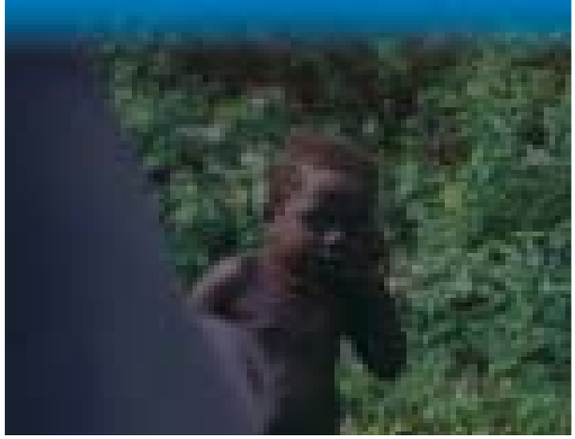


Photo: Sarang Kulkarni.

The climate of these islands is humid tropical. The recorded average annual rainfall varies from 1,400 mm to 3,000 mm and the average annual temperature varies from 24 °C to 28 °C with relative humidity up to 80%.

Vegetation

According to the Forest Survey of India report of 1999, the total recorded forest area of the islands is 0.72 million ha which constitutes 87% of the land area. The Reserved and Protected Forests constitute about 40% and 60% respectively. Encroachment by the settlers in the revenue land has led to the decrease of forest cover in the Little Andamans, Diglipur and Havelock. There are five forest types, namely Tropical Wet Evergreen, Tropical Semi-evergreen, Tropical Moist Deciduous, Littoral and Swamp forests.

From these islands, 2,395 terrestrial plant species and 118 species of marine algae have been reported. The terrestrial flora consists of 2,200 species of angiosperms, 130 species of pterydophytes, 50 species of lichens and 15 species of mosses and hepatics (Alfred *et al*. 2002).

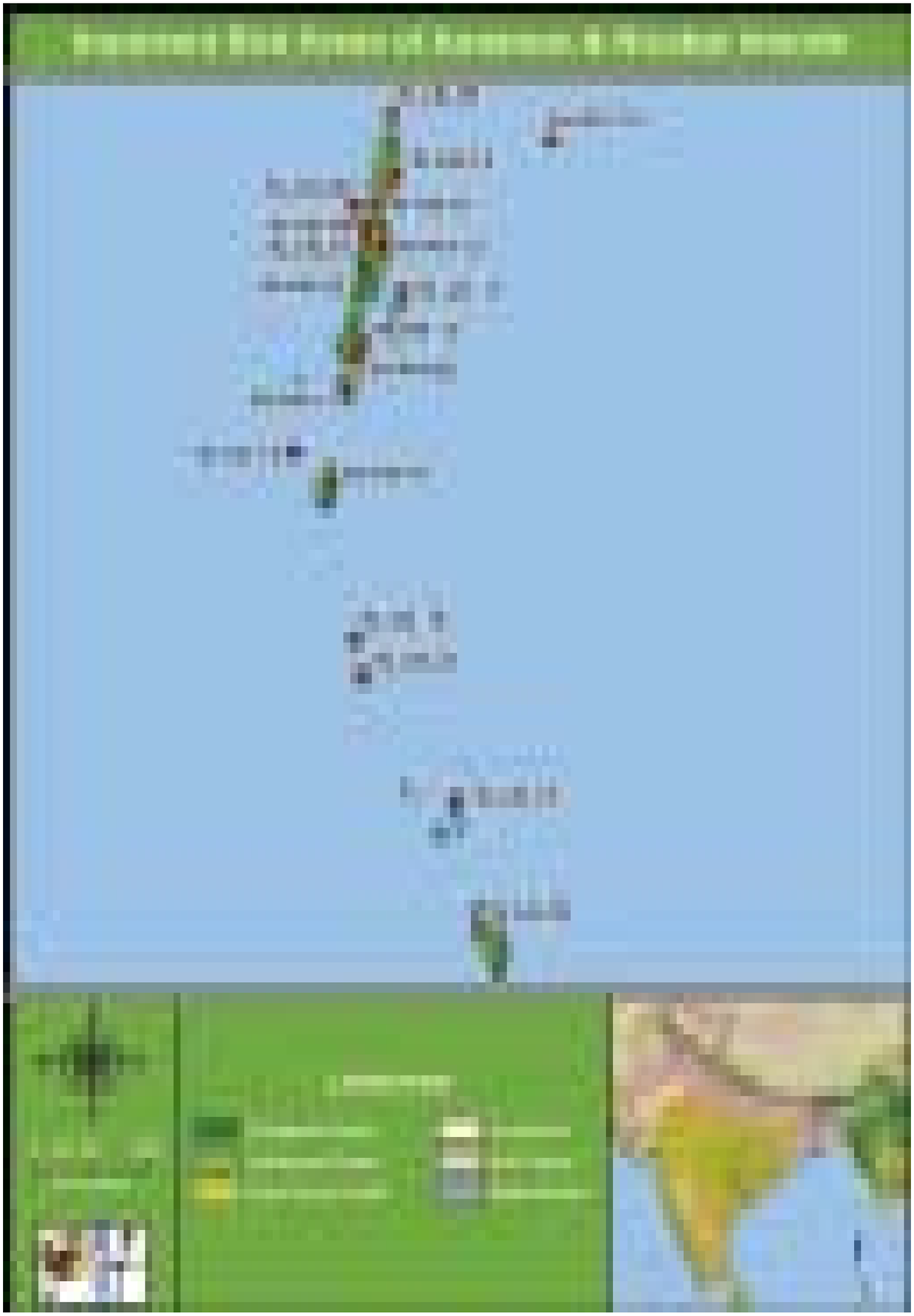
The Tropical Wet Evergreen Forest is seen throughout the islands on higher altitudes and the Moist Deciduous forests are found on the slopes. The Southern Hill-top Evergreen forests are seen on hilltops, steep slopes and are usually exposed to high winds. Some of the species of these forests are *Diptercarpus costatus, Mesua ferrea, Canarium manni, Hopea helferi* and *Cratoxylum formosum*. Semi-evergreen forests also constitute an important part of the vegetation of these islands which includes both deciduous and evergreen species. According to Alfred *et al.* (2002), these are mostly confined to the main valleys on well-drained immature alluvial soil. Some of the species found in these forests are *Terminalia bialata, Terminalia procera, Pterygota alata, Albizzia chinensis* and *Pterocarpus dalbargiodes*. Moist Deciduous forests are found on hilly ground below 100 m. Here the trees can grow up to 40 m with a girth of 3 m. These forests are being exploited mostly for timber. *Pterocarpus dalbargiodes, Diospyros marmorata, Terminalia procera, Sageraea elliptica* and *Albizzia lebbek* are some of the species found in these forest. The Littoral forests are found on alluvial high-level soil beyond the reach of the sea. Some of the common species of these forests are *Mimusops littoralis, Tetrameles nudiflora* and *Terminalia catappa*. Forests of mangroves are found along the tidal creeks. Some of the mangroves found on the outer-fringe seaward are *Rhizophora mucronata* and *Rhizophora apiculata*. On the tidal creeks there is *Bruguiera gymnorrhiza* and *Bruguiera parviflora, Avicennia officinalis, Ceriops tagal, Kandelia candel, Xylocarpus granatum* and *Lamnitzera littorea* are some of the species found in tidal swamps. Near the creeks there is *Acanthus ilicifolius* as undergrowth.

According to the Survey of India report of 1999, the plantation of Teak *Tectona grandis* begun in 1954 after clear-felling patches of Moist Deciduous forests. Other native species such as *Albizzia lebbek, Lagerstroemia hypoleuca, Terminalia procera* and matchwood species (*Bombax insigne, Sterculia companulata*) were planted on a limited scale, but plantation was reduced in the mid-1970s when clear - felling was stopped. Plantation, however, still continues along roadsides and on vacant lands. Until 1985, the Forest Development Corporation planted 1600 ha of Red-oil Palm and 600 ha of Rubber.

Among mammals, the Crab-eating Macaque is found in the Nicobars. Of 58 species of mammals recorded from the islands, there are 31 species of bats and 21 species of rodents (Das 1999b, Aul 2002b, Andrews and Sankaran 2002). Wild Pigs (*Sus scrofa andamanensis* and *S. s. nicobarensis*) are found in Andaman and Nicobar (Rosalind 2002), while the Palm Civet is found only in the Andamans (Alfred *et al.* 2002). Two species of tree-shrews of the genus *Crocidura andamanensis* are known from the Andamans, *Crocidura andamanensis* Miller 1902 and *Crocidura jenkinsi* Chakraborty 1978, both endemic to the Andamans (Chakraborty 1978, Das 1999a). In the Nicobars, two subspecies of tree-shrews occur, *Tupaia nicobarica nicobarica* Zelebor 1869 on the Great Nicobar Island, and *T. nicobarica surda* Miller 1902 on the Little Nicobar Island.

Several varieties of snakes, geckos and lizards are found, including the Andaman and Nicobar Water Monitors, which are now two distinct endemic species. Of the 78 species of reptiles and 18 species of amphibians, 16 species of reptiles and seven species of amphibians are endemic to the Andamans and 15 species of reptiles and two species of amphibians are endemic to the Nicobars (Das 1999a, Andrews 2001).

Four species of endangered marine turtles nest on the sandy beaches of the islands. Sea grasses in shallow coastal waters and sheltered bays (Gandhi 2000) support a highly threatened population of Dugongs *Dugong dugon*, one of the most prominent marine Vulnerable mammals (IUCN 2000). Common Dolphin *Delphinus delphis* can also be seen near the shore or in the open seas beyond, as well as



Blue Whale *Balaenoptera musculus* and Sperm Whale *Physeter catodon* which is Vulnerable (IUCN 2000, Gandhi 2000, Andrews and Sankaran 2002).

Introduced to the islands are large mammals such as Spotted Deer *Axis axis*, Barking Deer or Muntjack *Muntiacus muntjak* and Asian Elephant *Elephas maximus*. The Spotted Deer is now widespread throughout the Andamans, while the Barking Deer is found on Baratang and Middle Andaman Islands. The Elephant became feral after the discontinuation of logging (Ali 2000, Aul and Ali 2001). Eight hundred and twenty marine fish species are recorded, some are in abundance and commercially important viz. Sardines, Anchovies, Perches, Silver Bellies, Carangids, Mackerel, Seer fish, Mullets, Tuna and Pomfret (Tikader and Das 1985).

Among invertebrates, 2514 species have been reported from these islands, which is 86.1% of the total inland animal species (Alfred *et al*. 2002). Among freshwater invertebrates, 51 species of molluscs belonging to gastropods and bivalves have been reported from these islands (Rao *et al.* 1980).

IBAs AND PROTECTED AREAS

There are nine national parks and 94 wildlife sanctuaries covering an area of 0.15 million ha of which only 18.53% is terrestrial. The major part of the Great Nicobar Island has been declared a Biosphere Reserve. The following 19 sites have been identified as IBAs.

Number of IBAs and IBA criteria

A1= Threatened species; A2 = Restricted Range species; A3= Biome species; A4=Congregatory species

IBAs of Andaman and Nicobar

IBA site codes	IBA site name	IBA criteria
IN-AN-01	Austin Strait	A1, A2
IN-AN-02	Barangtang-Rafters Creek	A1, A2
IN-AN-03	Car Nicobar	A1, A2
IN-AN-04	Chainpur and Hanspuri	A1, A2
IN-AN-05	Great Nicobar, Little Nicobar	A1, A2
IN-AN-06	Interview Island Wildlife Sanctuary	A1, A2
IN-AN-07	Jarawa Reserve (Middle Andaman and South Andaman)	A1, A2
IN-AN-08	Kadakachang	A1, A2
IN-AN-09	Landfall Island Wildlife Sanctuary	A1, A2
IN-AN-10	Little Andaman	A1, A2
IN-AN-11	Mahatma Gandhi Marine National Park	A1, A2
IN-AN-12	Mount Diavalo/Cuthbert Bay	A1, A2
IN-AN-13	Mount Harriett National Park	A1, A2
IN-AN-14	Narcondam Island Wildlife Sanctuary	A1, A2
IN-AN-15	North And South Sentinel	A1, A2
IN-AN-16	North Reef Island Wildlife Sanctuary	A1, A2
IN-AN-17	Rani Jhansi Marine National Park	A1, A2
IN-AN-18	Saddle Peak National Park	A1, A2
IN-AN-19	Tilangchong, Camorta, Katchal, Nancowry and Trinkat	A1, A2

AVIFAUNA

The Andaman and Nicobar Islands constitute a globally important biodiversity hotspot. Because they are off the mainland and isolated, endemicity is very high in all taxa, but especially in reptiles, plants, fish and corals. These islands are one of the Endemic Bird Areas (Stattersfield *et al.* 1998). Thirteen bird species are considered Restricted Range in the Andaman group, and nine in the Nicobar islands (Stattersfield *et al.* 1998). The forests on the islands are classified into twelve different types. The coral reefs and marine habitats support an extraordinary faunal diversity (Gandhi 2000). The diversity at the subspecies level is very high, with different subspecies present on different islands on account of their geographical separations (Gandhi 2000). Most of the Restricted Range birds are forest species in the

Andamans and many can be seen near Port Blair (Curson 1989). Most of them can be seen easily in the Middle and South Andaman, and the Great Nicobar group, and many of them are restricted to these islands (Stattersfield *et al.* 1998). For example, Nicobar Parakeet *Psittacula caniceps* is confined to the Great Nicobar group while Nicobar Bulbul *Hypsipetes nicobariensis* is present only in the Nancowry group. Similarly, the Andaman Scops-owl *Otus balli* is found in Narcondam and South Andaman, (Stattersfield *et al*. 1998). An extreme form of endemicity is shown by the Narcondam Hornbill *Aceros narcondami* which is confined to an area of only 7 sq. km of Narcondam island. Among Indian birds, the Narcondam Hornbill haqs the smallest area of occupancy.

List of threatened birds with IBA site codes

Vulnerable		
Nicobar Sparrowhawk	*Accipiter butleri*	IN-AN-03, 05, 19
Nicobar Megapode	*Megapodius nicobariensis*	IN-AN-05, 19
Narcondam Hornbill	*Aceros narcondami*	IN-AN-14
Nicobar Bulbul	*Hypsipetes nicobariensis*	IN-AN-19
Data Deficient		
Andaman Crake	*Rallina canningi*	IN-AN-01, 02, 04, 06, 07, 08, 09, 11, 12, 13, 15, 17, 18
Near Threatened		
Nicobar Serpent-Eagle	*Spilornis minimus*	IN-AN-03, 05, 19
Andaman Serpent-Eagle	*Spilornis elgini*	IN-AN-01, 02, 04, 06, 07, 08, 09, 10, 11, 12, 13, 15, 16, 17, 18
Andaman Wood-Pigeon	*Columba palumboides*	IN-AN-01, 02, 03, 04, 05, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18, 19
Andaman Cuckoo-Dove	*Macropygia rufipennis*	IN-AN-01, 02, 03, 04, 05, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18, 19
Nicobar Parakeet	*Psittacula caniceps*	IN-AN-05
Andaman Scops-Owl	*Otus balli*	IN-AN-02, 07, 08, 10, 11, 12, 13, 14, 15, 17, 18
Andaman Hawk-Owl	*Ninox affinis*	IN-AN-01, 02, 03, 04, 05, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18, 19
Andaman Black Woodpecker	*Dryocopus hodgei*	IN-AN-01, 02, 04, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18
Andaman Drongo	*Dicrurus andamanensis*	IN-AN-01, 02, 04, 06, 07, 08, 09, 10, 11, 12, 13, 15, 16, 17, 18
Andaman Treepie	*Dendrocitta bayleyi*	IN-AN-01, 02, 04, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18

About 270 bird species and subspecies have been reported from these islands (Sankaran and Vijayan 1993), of which 126 were recorded only from the Andamans and 56 were from Nicobar (Andrews and Sankaran 2002). Among the 13 restricted range species, three are globally threatened species, the Nicobar Scrubfowl found in the forest and secondary growth, the Andaman Crake, the bird of marshland in the forested areas, streams and mangrove creeks and the third is the Narcondam Hornbill found on Narcondam island. In the Nicobar group of islands, the Nicobar Scrubfowl and Nicobar Bulbul are found in forested areas, but the Bulbul can also be seen in gardens.

GLOBALLY THREATENED AND RESTRICTED RANGE BIRD SPECIES

Nicobar Scrubfowl (Megapode) *Megapodius nicobariensis* Vulnerable

This megapode comes under the Vulnerable category of IUCN and has a declining population as a result of the destruction of coastal forests (BirdLife International 2001). This Megapode is one of the three bird species entirely restricted to the Nicobar islands (Stattersfield *et al*. 1998). The main threat to this bird are the mainland Indian settlers who hunt for meat and collect egg (Sankaran 1995, BirdLife International 2001, H. Andrews, *per. comm*. 2003). The population of this bird is estimated to be about 625-1,090 breeding pairs (BirdLife International 2001). It has been reported from Batti Malv, Tillanchong, Little Nicobar, and all around the Great Nicobar Island.

The Nicobar Megapode *Megapodius nicobariensis* is still holding on, thanks to extant habitat and low level of exploitation of its eggs.

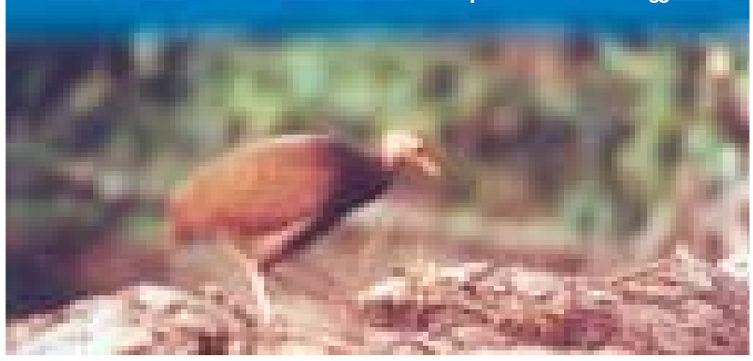


Photo: K. Sivakumar

Andaman Crake *Rallina canningi* Data Deficient

This crake is a rarely encountered endemic of the Andaman islands which is absent from the Nicobars (Ali and Ripley 1987) and is one of the globally threatened species (BirdLife International 2001). It is mainly found in the Middle and South Andaman (Vijayan 1997). It was reported to be common in Mount Harriet National Park, though encountered only twice (BirdLife International 2001). According to Rauf Ali (*pers. comm*. 2003) it is quite common near Wandoor. H. Andrews (*per. comm*. 2003) also considers it to be one of the most common bird species, but is data deficient. It is found from South to North Andamans, including several outlying islands right up to Landfall Island, the northernmost island in the Andamans. Its status needs reassessment. It has been reported from 16 IBA sites such as Landfall Island, Austin Strait, Saddle Peak NP, Jarwa Reserve (Middle Andaman), Mount Harriet, North Sentinel and others.

Andamans Serpent-eagle *Spilornis elgini* Near Threatened

The Serpent eagle is one of the 52 Near Threatened species in India. It is endemic to South Andaman islands where it is common and can be seen easily in inland forest clearings, near hills (BirdLife International 2001) and mostly in the mangrove marshes and mangrove creeks where they nest (H. Andrews *per. comm*. 2003). Recently, it was reported from the Middle Andaman and even on a small island like South Reef (H. Andrews *per. comm*. 2003). The main threat is the rapidly rising human population, the bird habitat is consequently under great pressure from agriculture, grazing and logging.

Andaman Wood Pigeon *Columba palumboides* Near Threatened

This is one of the Near Threatened species, endemic to the Andaman and Nicobar Islands (BirdLife International 2001, Stattersfield *et al*. 1998). It is an uncommon bird in the Andamans, but small parties wander from one island to another. It is potentially threatened by extensive hunting and trapping by settlers, habitat loss and fragmentation, because of the growing human population on the larger islands resulting in pressure from agriculture and grazing (Stattersfield *et al*. 1998, H. Andrews, *pers. comm*. 2003). It has been reported from Mount Diavalo/Cuthbert Bay, Mahatma Gandhi Marine National Park, Interview Island Wildlife Sanctuary, Car Nicobar, Chainpur and Hanspuri, Great Nicobar, Little Nicobar, Little Andaman, and other IBA sites.

Andaman Cuckoo Dove *Macropygia rufipennis* Near Threatened

It is one of the Near Threatened species endemic to the Andaman and Nicobar (Nancowry sub-group and Great Nicobar) archipelagos (BirdLife International 2001, Stattersfield *et al*. 1998). The Andaman Cuckoo Dove is found in dense, broadleaf, primary and secondary evergreen forest. It is reported from Mount Diavalo/Cuthbert Bay, Mahatma Gandhi Marine NP (Wandoor NP), Interview Island WLS, Car Nicobar, Chainpur and Hanspuri, Great Nicobar, Little Nicobar, Little Andaman, and other IBA sites.

Andaman Coucal *Centropus andamanensis* Restricted Range

The Andaman Coucal or Brown Coucal is endemic to these islands and is found in forest-edge gardens, cultivation and mangrove areas. It is mainly reported from the Table and Coco islands, Middle Andaman, South Andaman, and Little Andaman (Stattersfield *et al*. 1998). It is also reported from Mount Diavalo / Cuthbert Bay, Mahatma Gandhi Marine NP, Landfall Island WLS, Little Andaman, Baratang-Rafters Creek, Mount Harriet NP, North and South Sentinel, North Reef Island WLS, and other IBA sites.

Andaman Scops Owl *Otus balli* Near Threatened

It is a Near Threatened species, endemic to the Andaman Islands, where it is common and can be seen in trees in semi-open or cultivated areas and around human settlements (del Hoyo *et al*. 1999). Very few studies have been conducted and its present status is unclear. Though commonly seen, more research is required to know about bird's ecological requirements, population size and trends (Stattersfield *et al*. 1998). This Owl has been reported mainly from Narcondam, South Andamans, Middle Andamans, North Andamans, Baratang Island and from several outlying islands. Some of the IBA sites from where it is reported are Little Andaman, Baratang-Rafters Creek, Mount Harriet NP -Shoal Bay, Narcondam Island WLS, North and South Sentinel and Rani Jhansi Marine NP.

Andaman Hawk Owl *Ninox affinis* Near Threatened

It is a Near Threatened species and endemic to the Andaman and Nicobar archipelagos, where it occurs in the mangrove forest, lightly wooded areas and forest clearings, and is commonly seen hawking insects at dusk (BirdLife International 2001). Its population is also reducing due to habitat degradation on an account the growing human population increase on the larger islands in the Andamans. It is found in North, Middle and South Andaman Islands and is reported from some of the IBAs such as Rani Jhansi Marine NP, Tillanchong, Camorta, Katchal, Nancowry, Trinkat, Saddle Peak NP, Jarawa Reserve, Kadakachang, Austin Strait, Mount Diavalo/Cuthbert Bay, Mahatma Gandhi Marine NP, and other IBA sites.

Narcondam Hornbill *Aceros narcondami* Vulnerable

This Vulnerable hornbill has a very small population on a tiny, island less than seven sq. km in area known as Narcondam Island. Its population is stable since feral goats were culled by the armed forces. It is roughly estimated that about 68-85 breeding pairs are present on the island (BirdLife International 2001), with a population of about 400 hornbills (Yahya and Zarri 2002). The main threat could be the felling of trees for fuel and hunting by policemen posted on the island. Hunting is strictly prohibited now.

Nicobar Bulbul *Hypsipetes nicobariensis* Vulnerable

This bulbul is one of the 78 globally threatened species with a small, declining population as a result of the clearance and degradation of forests for plantation, agriculture and infrastructure projects (BirdLife International 2001). This bird is endemic to the Nancowry group of Islands in the Nicobar islands (Abdulali 1965). It was reported by Humayun Abdulali that there were up to 100 in Tillanchang, but in recent studies by Sankaran (1998), only one was seen on Tillanchang and one on Nanchowry. It shows a sharp decline but it is suspected that a healthy population could be seen on Teressa and Katchall islands.

Nicobar Pigeon *Caloenas nicobarica* Near Threatened

This Pigeon occurs on the Andaman and Nicobar Islands and also recorded from Myanmar, Thailand, Malaysia, Vietnam, Indonesia, Philippines, Papua New Guinea and Solomon Islands, Palau (with endemic race *pelewensis*) in the Caroline Islands in USA (Ali and Ripley 1968–1998, del Hoyo *et al*. 1997, BirdLife International 2001). It breeds, often in dense colonies, on normally extremely small wooded offshore islands, and forages in situ or (at least at times) on adjacent mainland (or larger island) areas. Relentless trapping for food, the pet trade and perhaps still their (certainly once-prized) gizzard-stones seriously suppresses populations, as does clearance of small islands for plantations and almost certainly, the colonisation of such islands by rats, cats and other alien predators (Stattersfield *et al*. 1998).

South Nicobar Serpent-Eagle *Spilornis klossi* Near Threatened

This Eagle which is treated as separate from "Nicobar [or Small] Serpent-eagle *S. minimus*", which is instead provisionally placed with *S. cheela*) is endemic to the islands of Great Nicobar (including Pulo Kunji), Little Nicobar and Menchal in the South Nicobar island group, Nicobar islands (Richmond 1902, Abdulali 1967, 1978, Sankaran 1998, K. Sivakumar verbally 1999). Increased settlement of the islands has led to increased pressure on natural resources, and planned development projects could severely affect the habitat of this species (Stattersfield *et al.* 1998).

Nicobar Parakeet *Psittacula caniceps* Near Threatened

This Parakeet is endemic to the Nicobar archipelago, where it inhabits tall forest on Great Nicobar, Little Nicobar, Menchal and Kondul islands, feeding in small groups in the canopy on the fruit of *Pandanus* palms (Grimmett *et al.* 1998). It is apparently common, but fairly large numbers are trapped for the cagebird trade (del Hoyo *et al.* 1997). Furthermore, increased settlement of the islands has led to increased pressure on natural resources, and planned development projects could severely affect the habitat of this species (Stattersfield *et al.* 1998).

Nicobar Scops-Owl *Otus alius* Data Deficient

The Nicobar Scops-owl is known only from a single locality on Campbell Bay (Rasmussen 1998). The species may occur on other islands in the group, but equally it may be endemic to Great Nicobar, and indeed restricted in range on that island. The most likely other island where it may be found is Little Nicobar which, like Great Nicobar, is relatively poorly explored (Rasmussen 1998).

Andaman Black Woodpecker *Dryocopus hodgei* Near Threatened

This Woodpecker is endemic to the Andaman islands, where it is a common resident in large trees of evergreen forest (Davidar *et al.* 1996, Grimmett *et al.* 1998). Although forest remains fairly extensive on the Andamans, the human population on larger islands is rising rapidly and habitat is consequently under severe pressure from agriculture, grazing and logging (Pande *et al.* 1991, Stattersfield *et al.* 1998).

Andaman Drongo *Dicrurus andamanensis* Near Threatened

This Drongo is endemic to the Andaman archipelago also recorded from Coco Island in Myanmar, where it is a common resident of forests (Davidar *et al.* 1996, Grimmett *et al.* 1998). Although its range is very small, forested habitat is relatively intact on the Andamans and insufficiently disturbed or fragmented to be of immediate concern. However, there are signs that pressure on forests is increasing in the Andamans through increasing human populations and consequent conversion of habitat to cultivation, grazing, increased logging and development (Pande *et al.* 1991, Stattersfield *et al.* 1998, BirdLife International 2001).

Andaman Treepie *Dendrocitta bayleyi* Near Threatened

This Treepie is endemic to the Andaman archipelago, where it is usually found in pairs or parties of up to 20 birds, or in mixed flocks in tall trees in dense broadleaved evergreen forest (Grimmett *et al.* 1998). It is uncommon (Davidar *et al.* 1996) to locally fairly common (Grimmett *et al.* 1998), and although habitat on the Andamans remains relatively intact, there are indications that an increase in human populations and habitat loss is occurring in the archipelago suggesting that the very small range of this species might rapidly shrink and fragment (Pande *et al.* 1991, Stattersfield *et al.* 1998, BirdLife International 2001).

Endemic Bird Areas 125: Andaman Islands		
Andaman Serpent-Eagle	*Spilornis elgini*	IN-AN-01, 02, 04, 06, 07, 08, 09, 10, 11, 12, 13, 15, 16, 17, 18
Andaman Crake	*Rallina canningi*	IN-AN-01, 02, 04, 06, 07, 08, 09, 11, 12, 13, 15, 17, 18
Andaman Wood-Pigeon	*Columba palumboides*	IN-AN-01, 02, 04, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18
Andaman Cuckoo-Dove	*Macropygia rufipennis*	IN-AN-01, 02, 04, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18
Andaman Coucal	*Centropus andamanensis*	IN-AN-02, 07, 08, 09, 10, 11, 12, 13, 15, 16, 17, 18
Andaman Scops-Owl	*Otus balli*	IN-AN-02, 07, 08, 10, 11, 12, 13, 14, 15, 17, 18
Andaman Hawk-Owl	*Ninox affinis*	IN-AN-01, 02, 04, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18
Narcondam Hornbill	*Aceros narcondami*	IN-AN-14
Andaman Black Woodpecker	*Dryocopus hodgei*	IN-AN-01, 02, 04, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18
White-headed Starling	*Sturnus erythropygius*	IN-AN-01, 02, 04, 06, 07, 08, 09, 10, 11, 12, 13, 15, 17, 18
Andaman Drongo	*Dicrurus andamanensis*	IN-AN-01, 02, 04, 06, 07, 08, 09, 10, 11, 12, 13, 15, 16, 17, 18
Andaman Treepie	*Dendrocitta bayleyi*	IN-AN-01, 02, 04, 06, 07, 08, 10, 11, 12, 13, 15, 17, 18

Endemic Bird Areas 126: Nicobar Islands		
Nicobar Serpent-Eagle	*Spilornis minimus*	IN-AN-03, 05, 19
Nicobar Sparrowhawk	*Accipiter butleri*	IN-AN-03, 05, 19
Nicobar Megapode	*Megapodius nicobariensis*	IN-AN-05, 19
Andaman Wood-Pigeon	*Columba palumboides*	IN-AN-03, 05, 19
Andaman Cuckoo-Dove	*Macropygia rufipennis*	IN-AN-03, 05, 19
Nicobar Parakeet	*Psittacula caniceps*	IN-AN-05
Andaman Hawk-Owl	*Ninox affinis*	IN-AN-03, 05, 19
Nicobar Bulbul	*Hypsipetes nicobariensis*	IN-AN-19
White-headed Starling	*Sturnus erythropygius*	IN-AN-03, 05, 19

THREATS AND CONSERVATION ISSUES

On these islands the human population has registered a growth rate of 27% as against the national average of 21% during the decade 1991-2001. This is mainly due to settlers, sometimes with the encouragement of the Government of India, coming from the mainland. This rapid growth in human population has adversely affected the natural ecosystems of the islands. Expansion of agriculture and grazing that leads to habitat loss, and degradation from logging is some key threats to the birds and their habitat (Curson 1989, Andrews and Sankaran 2002). Introduced or invasive species also pose a threat to the native birds, for example goats disturb the habitat of the endemic Narcondam Hornbill (Vijayan and Sankaran 2000), and Spotted deer and Elephants adversely affect forest regeneration and cause serious crop losses (Aul and Ali 2001, Aul 2002). Infrastructure development such as road construction, expanding urban and rural areas, modern agriculture practices, and poaching are some of the factors posing serious threats to the avifauna of these islands.

Threats to IBAs

A=Agriculture intensification/expansion; B=Dams/Dykes; C=Disturbance to Birds; D=Firewood Collection; E=Industrialisation/Urbanisation; F=Unsustainable exploitation; G=Others; H=Natural Events

It is essential to eliminate the invasive species at the earliest to prevent further degradation of the forests. The protected area (PA) network in the Andaman and Nicobar Islands needs to be reassessed as several small PAs were created without proper justification and should be clumped with adjoining larger PAs. The PA network in the marine ecosystem, at present inadequate, needs expansion by declaring them as marine sanctuaries. Any infrastructure development can be allowed only after carrying out EIA studies by reputed organizations/ individuals. Poaching by settlers and foreigners needs to be controlled by strengthening the Forest Department and in collaboration with other departments such as the Coast Guard and the Indian Navy. A conservation awareness programme is also required for local people, especially settlers. A monitoring protocol needs to be prepared for insular birds and all endemic birds should be monitored regularly. There should be strict control in the introduction of non-native species.

The island ecosystem of Andaman and Nicobar are under threat due to one or more of the following reasons: Encroachment on forestland, mining of sand, inappropriate fisheries, inappropriate and excessive forest working, introduction of exotics, extraction of corals, poaching for corals, impact of agriculture and human habitation.

Encroachment: The forested land is a source of useful forest produce that sustain many livelihood patterns. Villagers know this and are aware of the effects of deforestation. In spite of this, encroachment in forest area continuous without much control, as there is a great demand for living space. New Wandoor (Protected forest I &II) has the largest number of forest encroachments. Being widespread and uncontrolled, this constitutes a serious threat to the forest of Andaman Islands.

Coastal erosion due to sand mining: Two of the major threats to marine and coastal biodiversity include sand mining on the sandy beaches and siltation of costal areas. Increasing population and accelerated development have spurred the growth of construction activity. The cement used for construction requires sand to be mixed with it to make concrete and, as the islands do not have large streams from which the sand can be collected, most of the sand is mined from the coastal areas. To facilitate sand extraction from beaches, a temporary CRZ waiver has been authorized by the Central Ministry for Environment and Forest. A Sand Allocation Committee has also been established in Andaman and Nicobar Islands, but surveillance and enforcement are difficult, there is extensive illicit collection, leading to rampant erosion (UNDP 1999).

Impacts due to Forestry Operation: A number of forest management plans were formulated from 1906. Private companies were also given permission to have their own felling coupes. The Forest Department follows the 'Andaman Canopy Lifting Shelterwood System' for regenerating worked forest. However, this system has led to the depletion of forest and biodiversity. One major impetus for extensive working the forests and promoting commercial species has been the imperative to supply raw material to the wood-based industries.

Impacts due to tourism: Tourists activities in the Islands have also led to serious threats to the environment. For one, the infrastructure required to service the growing number of tourist, especially airports, hotels and roads. Besides increase in number of tourist, means an increase in energy consumption, in pollution because of transport in inadequate waste management.

Introduction of alien species: The introduction of alien or exotic species has had adverse impacts through their unchecked proliferation, for example the Spotted

Contacting Jarawas is prohibited, by law but the rule is seldom followed by travellers on the Andaman Trunk Road.

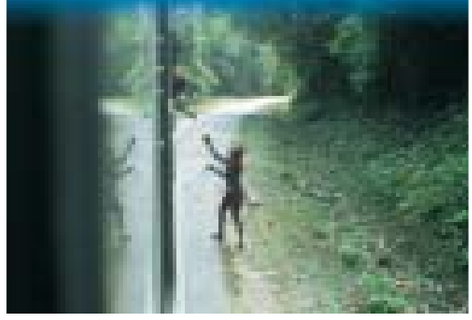


Photo: Pankaj Sekhsaria

Deer, which were originally introduced for sport. In the absence of natural predator, they multiplied extensively. The deer now has become pest as they browse indiscriminately and prevent regeneration in the protected areas. Abondoned after forest operations the feral elephants are also causing damage in some PAs. The introduction of hardy and adaptable birds like common mynah is a threat since they compete more vulnerable indigenous species.

Source: Sustainable Management of Protected Areas in the Andaman and Nicobar Islands – Harry V. Andrews and Vasumathi Sankaran.

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AN-01

AUSTIN STRAIT

IBA Site Name	:	IN-AN-01
Union Territory	:	Andaman and Nicobar Islands
District	:	Andaman
Coordinates	:	12° 55' 00" N, 92° 52' 00" E
Ownership	:	State
Area	:	Not available
Altitude	:	272 m
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Lowland Evergreen and Semi-Evergreen Rain Forest, Mangrove Forest, Shallow Coastline

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Areas 125: Andaman Islands)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Austin Strait is located to the north of Mayabundar, upto Mohanpur. It has extensive creeks, fringed with dense, luxuriant growth of mangroves. The site extends along the Strait, dividing North Andaman from Middle Andaman. The habitat is fairly undisturbed (Gandhi 2000), and is important for its rich mangrove stands, which support a variety of typical mangrove fauna (Andrews and Sankaran 2002).

Proximity to the equator and the sea ensures a hot, humid, and uniform climate. The islands receive rainfall from both the southwest and northeast monsoon. Maximum precipitation is between May and December, the driest period being between January and April (Sankaran 1995).

The IBA is basically a mangrove area, dominated by *Rhizophora apiculata, Bruguiera gymnorrhiza, B. parviflora, Rhizophora mucronata* and *R. conjugata.* Some of the mangrove species grow into tree form.

AVIFAUNA

Of the 12 Restricted Range bird species identified by BirdLife International from the Endemic Bird Area of Andaman Islands (Stattersfield *et al*. 1998), nine species are found in this IBA. Most of them are quite common in suitable habitats. Only the Andaman Crake *Rallina canningi* is listed in the Threatened category, under Data Deficient, while the rest come under the Near Threatened category (BirdLife International 2001). Andaman Teal *Anas gibberifrons albogularis* has also been reported from this area. This is not listed as Threatened at the global level (BirdLife International 2001) but the subspecies is highly endangered and has shown a marked decline during the last 100 years, with a recently estimated population of 500 to 600 individuals only (Vijayan and Sankaran 2000).

Marine life is fabulously rich in the Andaman and Nicobar Islands.

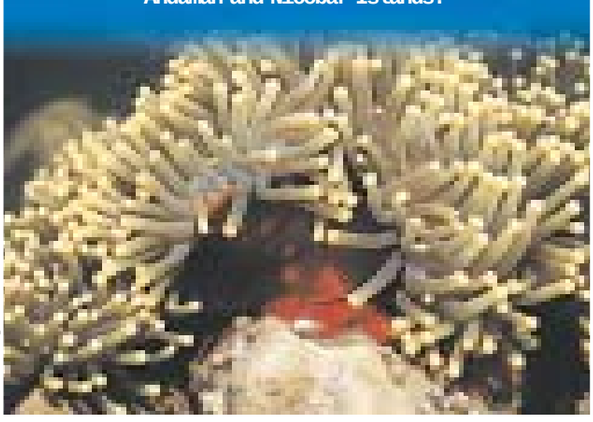

Photo: Pankaj Sekhsaria

Data Deficient	
Andaman Crake	*Rallina canningi*

Near Threatened	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

Endemic Bird Areas 125: Andaman Islands	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Crake	*Rallina canningi*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
White-headed Starling	*Sturnus erythropygius*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

OTHER KEY FAUNA

The habitat is relatively undisturbed and supports a variety of typical mangrove fauna such as the Saltwater Crocodile *Crocodylus porosus* and the typical snakes, crabs, prawns, and fishes of this area. No inventory of the flora and fauna of this IBA has been attempted till now.

LAND USE

- Nature conservation and research
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Illegal fishing
- Crocodile poaching by both Islanders as well as people from neighbouring countries.

The site deserves special conservation attention for its mangrove diversity and associated fauna. Local people collect crabs, fish and honey for their own consumption as well as for sale (Gandhi 2000).

Rodgers and Panwar (1988) have recommended declaration as a mangrove sanctuary from Austin to Kishorinagar.

There are many subspecies of birds in Austin Strait that are of conservation value, especially if they are upgraded to species level in the future.

KEY CONTRIBUTORS

Tara Gandhi and Ravi Sankaran

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AN-02

BARATANG-RAFTERS CREEK

IBA Site Name	:	IN-AN-02
Union Territory	:	Andaman and Nicobar Islands
District	:	Andaman
Coordinates	:	12° 15' 00" N, 92° 45' 00" E
Ownership	:	State
Area	:	Not available
Altitude	:	Not available
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Tropical Semi Evergreen Forest and Littoral Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 125: Andaman Islands)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Baratang-Rafters Creek is located in the Andaman Islands in the Bay of Bengal. The habitat types of this IBA include Lowland Evergreen Rain forest, Semi-Evergreen Rain forest and Mangrove forest. The islands experience humid, tropical coastal climate. Rainfall is received from both the southwest and the northeast monsoon.

Baratang Island lies between the Middle and South Andaman Islands. Baratang has been selectively logged and some areas clear felled since the early 20th century (Yoganand and Davidar 2000).

Based on the classification of Champion and Seth (1968), the forest types of the site are: Evergreen forest of *Dipterocarpus, Canarium manii*, *Artocarpus* and *Pongamia pinnata;* Semi-evergreen forest confined to valleys and slopes containing both semi-evergreen and deciduous trees; Deciduous forest of lower stature growing on hills and in drier areas (Yoganand and Davidar 2000). The island is fringed by mangroves, some growing to tree forms. Despite the removal of commercially exploitable trees, the bird life is more or less intact.

AVIFAUNA

The bird life of this IBA appears to be very rich. All the Restricted Range species of Andaman Islands (except for the Narcondam Hornbill *Aceros narcondami*) are reported from this site. Among the globally threatened species Andaman Crake *Rallina canningi* is present. Not much is known about this bird and it is probably not as rare as generally thought (Vijayan and Sankaran 2000). Further surveys of this species are required in Baratang-Rafter and other suitable areas.

The Andaman Teal *Anas gibberifrons albogularis*, a subspecies of Grey Teal, is endemic to the Andaman Islands. Although *A. gibberifrons* is not considered rare by BirdLife International (2001), as it is widely distributed, the subspecies *albogularis* or Andaman Teal is certainly an uncommon bird. Vijayan and Sankaran (2000) estimate that not more than 600 are left in the world. Rasmussen and Anderton (*in press*) have considered Andaman Teal *Anas albogularis* as a full-fledged species.

Like the Andaman Teal, there are many other subspecies of birds that are restricted to the Andaman and Nicobar Islands. Some species are represented on different islands by different subspecies. Cytotaxonomic studies indicate that some could be considered as full species (Rasmussen and Anderton *in press*). For instance, the subspecies of Pompadour Green Pigeon *Treron pompadora* found in Andaman and Nicobar Islands, i.e. *chloropterus*, has been upgraded to species level (Rasmussen and Anderton *in press*). So it has to be included in the Restricted Range species, as described by Stattersfield *et al*. (1998).

Data Deficient	
Andaman Crake	*Rallina canningi*

Near Threatened	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

The Andaman Teal *Anas gibberifrons albogularis* has been raised to species level, making it one of the most endangered ducks in the world.

Endemic Bird Areas 125: Andaman Islands	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Crake	*Rallina canningi*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Coucal	*Centropus andamanensis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
White-headed Starling	*Sturnus erythropygius*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

OTHER KEY FAUNA

Due to the inaccessibility of these islands there is very little literature on the flora and fauna of this site. Saltwater Crocodile *Crocodylus porosus* is still common in the creeks and rivulets. Wild Pig *Sus scrofa andamanensis* and Andaman Water Monitor Lizard *Varanus salvator andamanensis* are the main native terrestrial animals.

LAND USE

- Nature conservation and research
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Poaching by people from neighbouring countries
- Habitat destruction in coastal areas
- Emphasis on commercial forestry

Baratang-Rafters creek is one of the excellent habitats for Andaman's insular avifauna, but it is being disturbed by modern agriculture and urbanization. According to Andrews and Sankaran (2002), the most important conservation problem for this site is emphasis on conversion forestry. In this system, natural forests are worked, commercial species extracted and the forests deliberately regenerated and managed in such a manner that there is a resultant preponderance of commercial species for future harvesting. This practice is destroying the natural biodiversity of the forests. Nearly 60% of the exploitable forest in some of the protected areas, including Baratang–Rafters creek, has been exploited, which has resulted in the change in natural forest profile.

KEY CONTRIBUTOR

Ravi Sankaran

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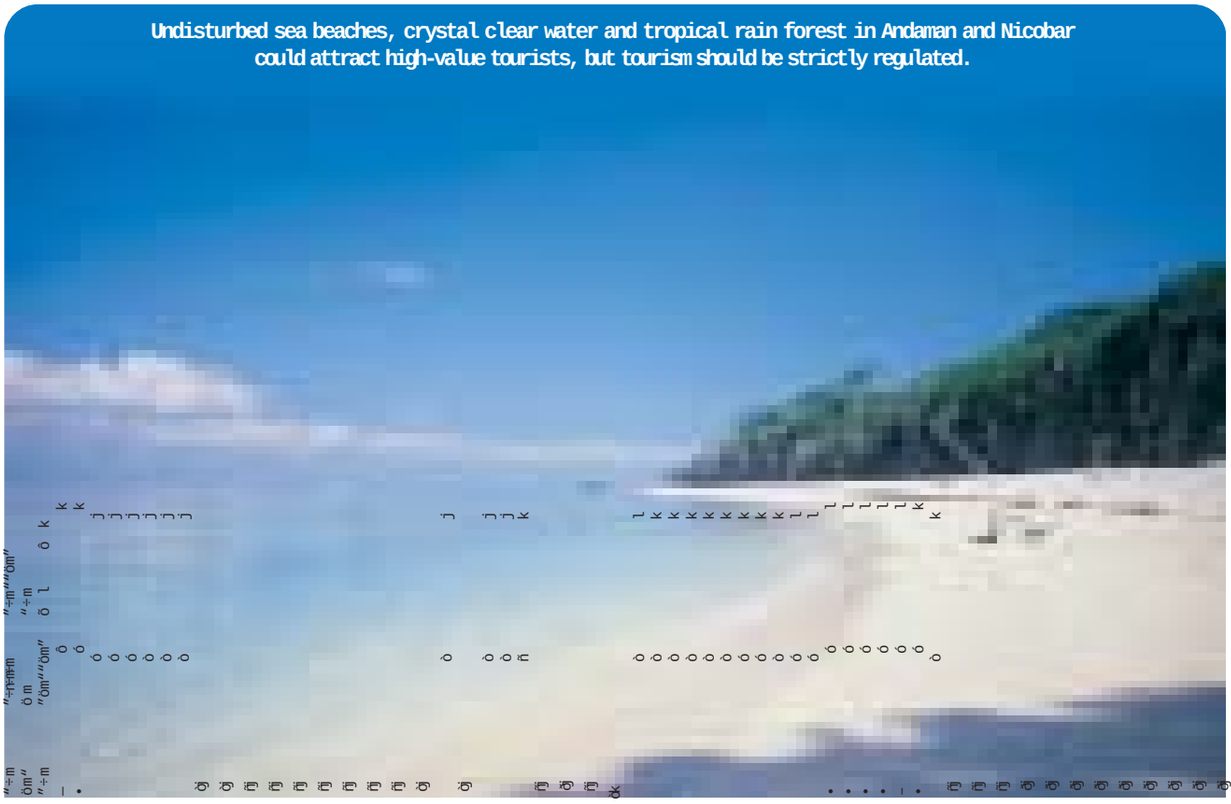

Undisturbed sea beaches, crystal clear water and tropical rain forest in Andaman and Nicobar could attract high-value tourists, but tourism should be strictly regulated.

Photo: M. Zafar-ul Islam

AN-03

CAR NICOBAR

IBA Site Name	:	IN-AN-03
Union Territory	:	Andaman and Nicobar Islands
District	:	Nicobar
Coordinates	:	09° 11' 60" N, 92° 46' 00" E
Ownership	:	State
Area	:	Not available
Altitude	:	Not available
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Lowland evergreen rain Forest, Semi-evergreen rain Forest, Mangrove, Coastal lagoons, Coconut plantations, grasslands, beaches

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 126: Nicobar Islands)
STATUS: Not officially protected

GENERAL DESCRIPTION

The Nicobar Islands in the Bay of Bengal are peaks of a submerged mountain range extending from Myanmar to Sumatra. The Nicobar group comprises of 23 islands covering an area of 1,841 sq km. Of these only 12 are inhabited. The Nicobar group of islands can be divided into three, the Great Nicobar, the Nancowry subgroup and the Car Nicobar subgroup (Sankaran 1998).

Car Nicobar, along with Batti Malv, is part of the northernmost subgroup of the Nicobar Islands. They lie about 88 km north of the Nancowry subgroup. While Car Nicobar is inhabited, Batti Malv is not. The human population of Car Nicobar is over 19,000, of which more than 80% are tribals.

Proximity to the equator and the sea ensures a hot, humid and uniform climate. The Islands receive rainfall from both the southwest and the northeast monsoons. The maximum precipitation is between May and December, the driest period being between January and April (Sankaran 1995).

The forest type of the Nicobar Islands can be classified as tropical evergreen, with inland areas being forested or grasslands and a significant proportion of the coast being mangroves. In the Car Nicobar subgroup, Batti Malv is forested, while most of Car Nicobar bears coconut plantations or forest, with a small area under grassland (Sankaran 1998).

AVIFAUNA

One globally threatened species, which is also a Restricted Range species, Nicobar Sparrowhawk *Accipiter butleri* and one Near Threatened species, Nicobar Serpent-Eagle *Spilornis minimus*, have been reported from this IBA site. Other Restricted Range species include Andaman Wood Pigeon *Columba palumboides*, Andaman Cuckoo-dove *Macropygia rufipennis*, Andaman Hawk-owl *Ninox affinis* and White-headed starling *Sturnus erythropygius*.

The Nicobar Green Imperial Pigeon *Ducula aenea nicobarica* which was historically very common and on some islands ("simply swarming" Butler 1899-1900), has suffered a severe decline in numbers due to hunting by airguns on Car Nicobar (Sankaran 1998). However, on Tillanchong, they were abundant. Recently, Rasmussen and Anderton (*in press*) have recognized *Ducula nicobarica* as a full-fledged species. As the species is confined to the Nicobar group of islands (Ali and Ripley 1987 called it "race peculiar to the Nicobar group of islands south of the Ten Degree Channel"), it has to be added to the list of Restricted Range species of Andaman Islands prepared by Stattersfield *et al*. (1998).

Another notable species here is the Brown Hawk Owl *Ninox scutulata* of which we have four subspecies in mainland India, and *Ninox affinis* of which we have two subspecies: *N. a. affinis* (Andaman Brown Hawk-Owl) and *N. a. isolata* (Nicobar Brown Hawk-Owl) (Ali and Ripley 1987). Grimmett *et al*. (1998) recognize two subspecies of *Ninox scutulata*: *N. s. lugubris* of mainland India, and *N. s. obscura* of Andaman and Nicobar islands. Rasmussen and Anderton (in press) have upgraded *Ninox obscura* to species level (Ali and Ripley 1987 have called it Hume's Brown Hawk-Owl *Ninox scutulata obscura*). If this new classification is accepted, one more species has to be added to the Restricted Range list of the Andaman Islands EBA prepared by Stattersfield *et al*. (1998).

Vulnerable	
Nicobar Sparrowhawk	*Accipiter butleri*
Near Threatened	
Nicobar Serpent-Eagle	*Spilornis minimu*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-dove	*Macropygia rufipennis*
Andaman Hawk-Owl	*Ninox affinis*
Endemic Bird Areas 126: Nicobar Islands	
Nicobar Serpent-Eagle	*Spilornis minimus*
Nicobar Sparrowhawk	*Accipiter butleri*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Hawk-Owl	*Ninox affinis*
White-headed Starling	*Sturnus erythropygius*

BirdLife International (2001) has listed Nicobar Pigeon *Caloenas nicobarica* as Near Threatened as "relentless trapping for food, the pet trade and perhaps still their (certainly once-prized) gizzard stones seriously suppresses populations, as does clearance of small islands for plantations, and, almost certainly, the colonization of such islands by rats, cats and other alien predators". However,

Sankaran (1998) found that this species still nests in very large numbers on Batti Malv.

The Andaman Red-whiskered Bulbul *Pycnonotus jocosus whistleri*, endemic to the Andaman Islands, was introduced by the British in the late 1800s to Camorta Islands, but now it is also found on Car Nicobar (Sankaran 1998), apparently introduced by the Nicobarese from Camorta.

The Car Nicobar group is quite interesting as far as the distribution of bird subspecies is concerned. As many of these subspecies could become full species in future, some of them would have an extremely limited distribution.

OTHER KEY FAUNA

There are very few mammals on Car Nicobar: Wild Pig *Sus scrofa* was introduced long ago. The Nicobar Flying Fox *Pteropus faunulus*, is totally endemic to the Nicobar Islands, and Car Nicobar is one of its type localities (Bates and Harrison 1997). Another species of special concern to India is Blyth's Flying Fox *Pteropus melanotus melanotus* which is a relatively abundant species (Bates and Harrison 1997), but the status of the subspecies needs re-assessment. The Green Sea Turtle *Chelonia mydas*, Dolphin *Delphinus delphis* and Dugong *Dugong dugon* are found in the surrounding seas. The aquatic life is too rich to be described in this short account.

Cantor's Pit Viper *Cryptelytrops (Trimeresurus) cantori*, an endemic snake restricted to about 100 sq. km, is reported only from Car Nicobar and Camorta Islands. Similarly, the Nicobarese Bronze-backed Tree snake *Dendrelaphis humayuni* population is restricted to this IBA (Anon. 2001). The endangered Nicobarese Worm Lizard *Dibamus nicobaricum* is also reported from this site, but nothing is known about its ecology, behaviour and status.

Sustainable harvest of sea food is not a threat to biodiversity.

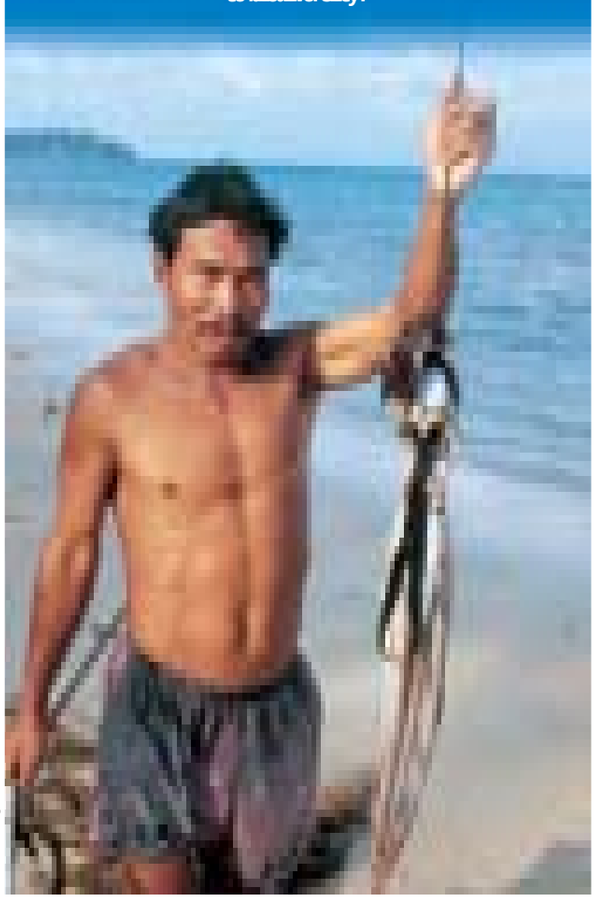

Photo: Pankaj Sekhsaria

LAND USE

- Fisheries
- Tourism and recreation
- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Construction and impact of free port
- Industrialization
- Urbanization
- Indiscriminate fishing in coral habitats
- Habitat alteration by coconut plantations.

Car Nicobar was identified as a priority island for avian conservation by the IBA workshop participants. Several developmental plans are proposed for the Nicobar Islands, particularly the building of a dry dock and refueling base for international shipping in the Galathea Bay and making Great Nicobar a free port. If implemented, these projects will irrevocably damage the island ecosystem and expedite the loss of biodiversity, as the islands are much too small to sustain the impact of such activities. Alteration of the ecosystem would adversely affect and accelerate the extinction of endemic avifauna (Sankaran 1995). Free port construction in Great Nicobar may not in itself affect Car Nicobar, but increased marine traffic may (Tara Gandhi *pers. comm.* 2004). Car Nicobar has the highest human population density and has the largest number of settled Nicobarese. Forest cover on this island is negligible, due to which the erosion rate is high and the coastal ecosystem is under threat (Andrews and Sankaran 2002).

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AN-04

CHAINPUR AND HANSPURI

IBA Code	:	IN-AN-04
Union Territory	:	Andaman and Nicobar Islands
District	:	Andaman
Coordinates	:	12° 46' 00" N, 92° 48' 00" E
Ownership	:	State
Area	:	Not available
Altitude	:	Not available
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Lowland Evergreen and Semi-evergreen Rain Forest, Mangrove Forest.

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 125: Andaman Islands)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Chainpur and Hanspuri are two small islands of the Andaman Islands group in the Bay of Bengal. The two islands lie in Middle Andaman. Proximity to the equator and the sea ensures a hot, humid, and uniform climate. The Andamans receive rainfall from both the southwest and northeast monsoon. Maximum precipitation is between May and December, the driest period being between January and April (Sankaran 1995).

These islands are covered with tropical evergreen forests. The common tree species are *Dipterocarpus griffithii*, *Hopea odorata*, *Rhizophora apiculata*, *Bruguiera gymnorrhiza*, *Ceriops tagal*, *Cerebera odollam*, *Heritiera littoralis*, *Barringtonia racemosa*, *Ficus retusa*, and *Sideroxylon longipetiolatum*. Shrub species are *Pandanus andamanensium* and *P. tectorius*. Among the climbers, *Calamus longisetu* and *Daemonorops manii* are common.

AVIFAUNA

In the Endemic Bird Area of Andaman Islands (Stattersfield *et al*. 1998), 13 restricted range species have been listed, of which 9 have been reported from this IBA. The Andaman Crake *Rallina canningi*, an endemic and Vulnerable species, is also found here, although population figures and status are unknown, as it is highly elusive. The Andaman teal *Anas gibberifrons albogularis*, which is endemic to the Andaman Islands, is also found here. Vijayan and Sankaran (2000) found 12 Andaman Teals in the wetlands of Hanspuri.

The Andaman Teal is not listed as rare by BirdLife International (2001) as it was considered a subspecies of Grey Teal *Anas gibberifrons* (Ali and Ripley 1987, Grimmett *et al.* 1998). The Grey Teal is widely distributed in Southeast Asia, Australia, New Zealand and many islands (del Hoyo *et al*. 1992). Recently, Rasmussen and Anderton (*in press*) have elevated Andaman Teal to species level as *Anas albogularis*. If this is accepted, then the Andaman Teal would be one of the rarest ducks in the world, as Vijayan and Sankaran (2000) have estimated that not more than 600 are left in the Andaman Islands. Therefore, the wetlands of Hanspuri have much greater importance than was thought earlier because 2% of the world's population of this highly endangered and Restricted Range species is found here.

Other Restricted Range species include the Andaman Serpent-Eagle *Spilornis elgini*, Andaman Scops Owl *Otus balli*, Andaman Hawk-owl *Ninox affinis*, Andaman Black Woodpecker *Dryocopus hodgei*, and the Andaman Crake *Rallina canningi*, which is also globally threatened.

Data Deficient	
Andaman Crake	*Rallina canningi*

Near Threatened	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

Endemic Bird Areas 125: Andaman Islands	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Crake	*Rallina canningi*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
White-headed Starling	*Sturnus erythropygius*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

OTHER KEY FAUNA

Originally, there were no large wild mammals on these islands. The Wild Pig *Sus scrofa andamanensis* is supposed to have been introduced by the first human settlers. The Spotted Deer *Axis axis* and Himalayan Palm Civet *Paguma larvata* were brought in by the British in more recent times. Flying Fox *Pteropus giganteus* is perhaps the only indigenous mammal on the islands. Andaman Water Monitor Lizard *Varanus salvator andamanensis* and Saltwater Crocodile *Crocodylus porosus* are native to these islands.

LAND USE

- Nature conservation and research
- Tourism and recreation

Thirteen restricted range bird species are found in the Andaman and nine in the Nicobar group of islands. Not all restricted range species are under threat.

Photo: Asad R. Rahmani

THREATS AND CONSERVATION ISSUES

- Poaching
- Modern agriculture
- Habitat destruction
- Urbanisation

The Andaman Wild Pig population has declined drastically due to poaching by the local people. Hunting of common birds is also reported in this area. The fast growing human population exerts increasing pressure on the biodiversity, which is deteriorating rapidly.

KEY CONTRIBUTORS

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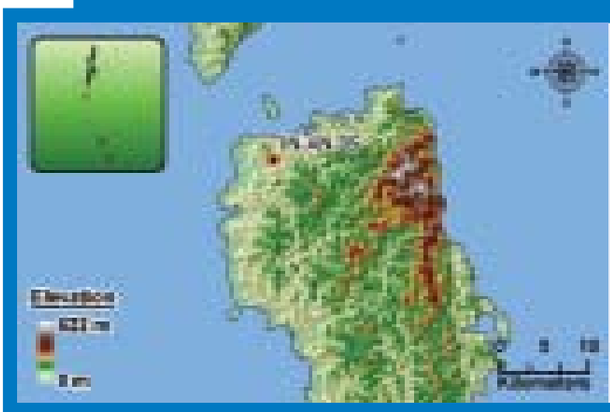
AN-05

GREAT NICOBAR, LITTLE NICOBAR



IBA Site Code	:	IN-AN-05
Union Territory	:	Andaman and Nicobar Islands
District	:	Nicobar
Coordinates	:	7° 10' 00" N, 93° 42' 00" E
Ownership	:	State
Area	:	85,319 ha
Altitude	:	Not available
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Lowland Evergreen rain Forest, Semi-evergreen rain Forest and Mangrove.

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 126: Nicobar Islands)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

The Nicobar Islands are one among 221 Endemic Bird Areas (EBAs) in the world, and the 27 major EBAs in Asia, and thus extremely important for bird conservation. The Nicobar group comprises of 23 islands covering an area of 1,841 sq. km, but only 12 are inhabited. The Nicobar Group of islands comprise three subgroups: the Great Nicobar, the Nancowry and the Car Nicobar subgroups. The Great Nicobar subgroup is the southernmost and comprises 11 islands and smaller islets, of which four are inhabited (Sankaran 1998).

About 80% area of the Nicobar islands is still covered with primary forest, and at least 60% is still relatively undisturbed (Sankaran 1995). About 50% of Great Nicobar is protected as national parks and about 85% comprises the Great Nicobar Biosphere Reserve (88,500 ha), which was designated as a Tribal Reserve for the Shompens and Nicobarese under the Andaman and Nicobar Islands (Protection of Aboriginal Tribes) Regulation, 1956. The core area consists of two national parks, namely, Campbell Bay and Galathea, and one sanctuary, the Galathea Bay Sanctuary. Great Nicobar is the only island in the archipelago with a perennial river, while Megapode Island located off the southwest coast is uninhabited and is a wildlife sanctuary (Sankaran 1995).

The forest type of the Nicobar Islands can be classified as tropical evergreen, with forested or grassland inland areas. All islands in the Great Nicobar subgroup are densely forested (Sankaran 1998). In Great Nicobar, 11% of the vascular flora are endemic to the island, 30 species are rare, endangered and confined to a few locations on the island, and about 30% of the flora are not found on the Indian mainland (Andrew and Sankaran 2002). Characteristic endemics such as the tree-fern *Cyathea albo-setacea* and an ornamental orchid *Phalaenopsis speciosa* are found only on Great Nicobar and adjacent islands (Pande *et al*. 1991 cited in Andrews and Sankaran 2002)

AVIFAUNA

Megapodius nicobariensis abbotti, a subspecies of the Nicobar Megapode occurs on Great and Little Nicobar, Megapode, Meroe, Treis, Trax, Menchal and Kondul Islands. According to BirdLife International (2001), the Nicobar Megapode is a Vulnerable species. In 1988, the Great Nicobar population was estimated to be below 400 birds.

The Nicobar Parakeet *Psittacula caniceps*, although not as rare as the Nicobar Megapode, is endemic to the Great Nicobar subgroup. It is apparently common, but fairly large numbers are trapped for the cage bird trade (del Hoyo *et al*. 1997) thus the species is under pressure. Moreover, its tall forest habitat is also being modified, although the rate has come down in recent years due to a court order on the ban on logging.

Stattersfield *et al*. (1998) have identified 9 Restricted Range species of birds from the Nicobar Endemic Bird Area. In this IBA, eight species are found. Only the Nicobar Bulbul *Hypsipetes nicobariensis*, which is restricted to the Nancowry subgroup, has never been recorded from Great Nicobar and Little Nicobar IBAs. Great Nicobar and Little Nicobar also have many subspecies of birds which are not included in the threatened category by BirdLife International (2001), but they are important as many of them are highly endemic and range restricted. The Nicobar Scops Owl *Otus alius* has been described as a new species (Rasmussen and Anderton, *in press*). With recent advances in taxonomy, it is likely that many subspecies would be elevated to species level in future (as in the case of Nicobar Scops Owl).

Vulnerable	
Nicobar Sparrowhawk	*Accipiter butleri*
Nicobar Megapode	*Megapodius nicobariensis*
Near Threatened	
Nicobar Serpent-Eagle	*Spilornis minimus*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Nicobar Parakeet	*Psittacula caniceps*
Andaman Hawk-Owl	*Ninox affinis*
Endemic Bird Areas 126: Nicobar Islands	
Nicobar Serpent-Eagle	*Spilornis minimus*
Nicobar Sparrowhawk	*Accipiter butleri*
Nicobar Megapode	*Megapodius nicobariensis*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Nicobar Parakeet	*Psittacula caniceps*
Andaman Hawk-Owl	*Ninox affinis*
White-headed Starling	*Sturnus erythropygius*

OTHER KEY FAUNA

There is no large wild terrestrial mammal in the Great and Little Nicobars, except the Wild Pig *Sus scrofa andamanensis*, which was probably brought in by early settlers. The Great Nicobar is practically the last refuge for the endemic and threatened Nicobar Crab-eating Macaque *Macaca fascicularis* and the Giant Robber Crab *Birgus latro*, the largest land crab in the world (Gandhi 2000). The Horseshoe Bat *Rhinolophus cognatus* is a fairly common indigenous mammal.

Protecting this IBA would not only increase the survival chances of Restricted Range birds, but also many endemic and Endangered reptiles such as the Nicobarese Tree Skink *Dasia nicobarensis* and Nicobarese Worm Lizard *Dibamus nicobaricum* (Anon. 2001). A bronze-olive or greenish, occasionally reddish race of the Painted Bronze-back snake, *Dendrelaphis pictus andamanensis* is reported from four locations only, including Campbell Bay and Galathea Wildlife Sanctuaries. It is considered Vulnerable by IUCN (Daniel 2002, Anon. 2001). The other reptiles like Small-eared Island Skink *Lipinia macrotympanum* (Vulnerable) and Tiwari's Wolf Snake *Lycodon tiwarii* (Critical) are also reported from this area. Two Endangered species of amphibians, the Nicobarese Tree Frog *Polypedates insularis* and Shompen Frog *Limnonectes shompenorum* are also reported from this IBA.

Other reptiles are the Nicobar Water Monitor *Varanus salvator nicobariensis* and Saltwater Crocodile *Crocodylus porosus* on land, creeks and lagoons, while Green Turtle *Chelonia mydas*, Leatherback Turtle *Dermochelys coriacea*, Olive Ridley *Lepidochelys olivacea*, and Hawksbill Turtle *Eretmochelys imbricata* inhabit the sea.

LAND USE

- Nature conservation and research
- Agriculture
- Tourism and recreation
- Fisheries

THREATS AND CONSERVATION ISSUES

- Construction and impact of free port
- Immigration of mainlanders
- Roadbuilding
- Urbanisation/ industrialisation and ancillary activites
- Introduced species like dog, cat pose threats to native fauna.
- Coastal habitat disturbed by coconut plantation.
- Hunting and predation

Great Nicobar was identified as a priority island for avian conservation, but the Government of India has several developmental plans for the Nicobar Islands, particularly the building of a dry dock and refueling base for international shipping in Galathea Bay, and making Great Nicobar a free port. If implemented, these projects will irrevocably damage the island ecosystem and expedite loss in the island biodiversity, as it is too fragile to sustain the impact of such activities. Alteration of the ecosystem would adversely affect and accelerate the extinction of endemic avifauna including the Nicobar Megapode. The Nicobar Megapode is also under severe pressure due to hunting by local inhabitants and predation on its eggs by the Monitor Lizard *Varanus salvator*. However, the primary threat to the Nicobar Megapode is habitat loss and demographic changes. A 35 km long strip of forest along the southeastern coast has been depleted in Great Nicobar due to settlement of mainland Indians (Sankaran 1995).

Although over 50% of Great Nicobar has been protected as national parks and about 85% as a biosphere reserve, this is inadequate. The national parks protect only the central portions and less than 15% of the coastal area of Great Nicobar. On islands, the first habitat to be destroyed under biotic pressure is coastal forest. This habitat is crucial to the survival of the Nicobar Megapode. Between the national parks there is a broad strip of primary forest through which the east-west road passes. The

Studies conducted by SACON show that there are many more Nicobar Megapode *Megapodius nicobariensis* individuals than was thought earlier.

Photo: K. Sivakumar

southern tip of Great Nicobar, which is unprotected, has the largest uninhabited flat coastal forest in the Nicobar group and harbours large populations of endemic species such as the Nicobar Serpent-eagle, Nicobar Megapode, Nicobar Parakeet and the Nicobar Pigeon. About 40% of the Great Nicobar coast and most of the southern tip and central portion is uninhabited at present. Any change in policy can result in these areas being destroyed. These areas must be protected by creating a single national park merging the two existing ones and including the southern tip of the island (Sankaran 1995). The designation of Little Nicobar as a biosphere reserve was recommended even by Rodgers and Panwar (1988).

Heavy ship and boat traffic passes south of Great Nicobar, causing threat to the Dugong *Dugong dugon* (Andrews and Sankaran 2002). The study of Andrews and Sankaran (2002) further reveals that the Reserve needs to be redesigned to include the southern tip of Great Nicobar, which has almost the only lowland coastal forest remaining on the east coast of this island, harbouring good populations of endemic fauna. Furthermore, the unique culture and lifestyle of the Shompens of this Reserve is now threatened by a rapid increase in the settlement of mainlanders, along with road building, quarrying and other development activities.

KEY CONTRIBUTORS

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Protection of egg mounds of the Nicobar Megapode *Megapodius nicobariensis* is essential for its survival.

Photo: K. Sivakumar

INTERVIEW ISLAND WILDLIFE SANCTUARY

IBA Site Code	:	IN-AN-06
Union Territory	:	Andaman and Nicobar Islands
District	:	Andaman
Coordinates	:	12° 56' 17" N, 92° 42' 31" E
Ownership	:	State
Area	:	13,387 ha
Altitude	:	0 - 87 m
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Lowland Evergreen and Semi-Evergreen Rain Forest, Mangrove Forest, Shallow Marine waters (Littoral Forests)

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 125: Andaman Islands)
PROTECTION STATUS: Wildlife Sanctuary, established in 1977

GENERAL DESCRIPTION

Interview Island Sanctuary is the largest island sanctuary in the Andaman and Nicobar Islands (Gandhi 2000). It is situated southwest of North Andaman and is separated by c. 20 km of sea from Mayabunder, a township in North Andaman. There is no permanent human habitation on the island, except a police outpost on the West Coast and a forest labour shed on the East Coast.

Near the beach at the south of the island, there is a perennial freshwater stream inside a cave. White-bellied Swiftlets *Collocalia esculenta* have made their nests in the cavern around the pool (Pande *et al.* 1991). The terrain is almost flat, except for steep, rugged hills towards the southeast.

The major vegetation types are Andaman Tropical Evergreen, Andaman Semi-Evergreen, Littoral and Mangrove. Semi-evergreen forest is dominated by *Sterculia campanulata*, *Dipterocarpus alatus*, *Artocarpus lakoocha*, *A. chaplasha* and *Pterocarpus dalbergioides* (Sivaganesan and Kumar 1994). Of the total area of 13,100 ha, only about 7,100 ha is covered by semi-evergreen forest, the remaining area harbours mangroves and littoral forests.

The Pacific Reef Heron *Egretta sacra* is seen in the coastal waters of Andaman and Nicobar.

Photo: Otto Pfister

AVIFAUNA

Interview Island is one of the last refuges for the endemic and endangered Andaman Teal *Anas gibberifrons albogularis*, a subspecies of Grey Teal. Although *A. gibberifrons* is not listed as Threatened by BirdLife International (2001), the subspecies *albogularis* is highly endangered and of great conservation concern in India. Lalitha Vijayan has conducted studies on this bird and estimates a population between 500 to 600 individuals (Vijayan and Sankaran 2000). Sighting of 46 Andaman Teal in Interview Island WLS indicates that this IBA is very important for the survival of this subspecies.

Recently, Rasmussen and Anderton (in press) have upgraded Andaman Teal to species level, and named it *Anas albogularis*. If this classification is accepted, this site becomes much more important for the survival of Andaman Teal than was realized earlier (when it was considered only a subspecies of the widely distributed Grey Teal). Nearly 6-8% of the total global population of *Anas albogularis* is found at this site.

Other species, not of global conservation concern but extremely important from the India's point of view, are the White-bellied Swiftlets *Collocalia esculenta* and the Edible-nest Swiftlets *C. fuciphaga*. Both species nest in the caves complex on Interview Island. Around 2,000 adult birds of the latter species are found. This is the most important cave complex for swiftlet conservation in the Andaman Islands (Sankaran 1998).

Of the 12 extant Restricted Range bird species listed by BirdLife International from the Endemic Bird Area of Andaman Islands (Stattersfield *et al.* 1998), nine species are found in this IBA. Only Andaman Crake *Rallina canningi* is listed in the Threatened category, the other species being Near Threatened (BirdLife International 2001). The Andaman Crake, a marsh bird, has a small population, narrow range of distribution and is extremely difficult to observe. Perhaps it is not so rare as it was thought to be, but its habitat is under tremendous biotic pressures (Vijayan and Sankaran 2000). Nearly, 100 years ago, it was abundant and easily snared. Many specimens were collected from Port Blair, the capital of the Andaman and Nicobar Islands.

The Andaman Hawk Owl *Ninox affinis* is endemic to the Andaman and Nicobar Islands, where it occurs in mangrove forest, light wooded country and forest clearings (Grimmett *et*

al. 1998). Its tolerance of degraded habitats raises the hope that it may not be so uncommon as it is feared to be. Sankaran (1998) frequently sighted it between January and March 1996 at the southern tip of the Great Nicobar (another IBA). He found it to be very parochial, and noted that a pair regularly occupied a particular perch at dusk. A study of its ecology and status is urgently required.

Data Deficient	
Andaman Crake	*Rallina canningi*

Near Threatened	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

Endemic Bird Area 125: Andaman Islands	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Crake	*Rallina canningi*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
White-headed Starling	*Sturnus erythropygius*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

OTHER KEY FAUNA

The island has rich coral formations with associated species such as giant clams and reef dwelling fish. About 70 feral Asian Elephants *Elephas maximus* are reported on Interview Island (Sivaganesan and Kumar 1994). The elephants were brought from the mainland in the early 1960s for timber operations and abandoned when the timber company went bankrupt. At that time there were 40 elephants, which were supposed to have increased to 70, but in a more recent study by Ali and Krishnan (2001), the number is estimated between 30-35. Both these studies have recommended the removal of the feral elephants to save the natural forest. Interestingly, Interview Island Sanctuary was declared in 1985 mainly to protect these very same feral elephants!

Other introduced mammals include the Spotted Deer *Axis axis*, Common Palm Civet *Paradoxurus hermaphroditus*, Domestic Cat *Felis catus*, Dog *Canis familiaris*, Goat *Capra hircus* and Three-striped Palm Squirrel *Funambulus palmarum*. The Andaman Wild Pig *Sus scrofa andamanensis* and Andaman Masked Palm Civet *Paguma larvata tytleri* are also present (Sivaganesan and Kumar 1994).

LAND USE

- Nature conservation and research
- Forestry

THREATS AND CONSERVATION ISSUES

- Consequences of animal introduction
- Poaching and unsustainable exploitation
- Infestation by *Eupatorium* weed
- Destruction of original vegetation by introduced *Lagerstroemia*

One of the most problematic conservation issues on Interview Island is the impact of feral elephants (Sivaganesan and Kumar 1994, Ali and Krishnan 2001). Elephants debark and uproot trees, causing mortality of trees and leading to the formation of gaps in the forest. Understorey species such as *Calamus* sp. and *Areca triandra* have been eaten up and become almost nonexistent in the Sanctuary. This has led to the degradation of the native evergreen closed canopy vegetation, which may ultimately have significant impact on the native fauna.

Another problem is that of cattle, abandoned by settlers when they become unproductive. These cattle often turn feral (Ali and Krishnan 2001) and may have long-term negative impacts on the indigenous ecosystem.

Uncontrolled collection of timber, sea cucumbers, shells, coral and crocodiles by poachers from Myanmar, Thailand and other Southeast Asian countries poses an additional threat to all the islands, including this IBA (Gandhi 2000).

The collection of nests of Edible-nest Swiftlet is unsustainable and rampant, but there has not been an apparent decline as yet because nest collection had begun only recently (Sankaran 1998). However, it needs to be regulated before more damage is done.

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JARAWA RESERVE

IBA Site Code	:	IN-AN-07
Union Territory	:	Andaman and Nicobar Islands
District	:	Andaman
Coordinates	:	12° 40' 00" N, 92° 47' 60" E
Ownership	:	State
Area	:	91,108 ha (Middle and South Andaman)
Altitude	:	7 m
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Tropical Wet Evergreen, Tropical Semi Evergreen, Littoral Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Areas 125: Andaman Islands)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

The Jarawa Reserve area extends in a long strip from Middle to South Andamans along the western coast. The area has been set aside for the *Jarawas*, an aboriginal Negrito tribe of hunter gatherers entirely dependent on the forest and marine resources for their existence (Gandhi 2000). Until recently, they were hostile and isolated from modern civilization, but now there is increasing contact.

Rodgers and Panwar (1988) recommended that the site should be declared as a wildlife sanctuary, to allow the inhabitants to pursue their traditional way of life and to give a strong deterrent to any incompatible land use. The area was designated as the Tribal Reserve for Jarawas under the Andaman and Nicobar Islands (Protection of Aboriginal Tribes) Regulation, 1956.

This area is characterized by the presence of different forest types including Evergreen, Moist Deciduous forests, mangroves, and large perennial freshwater streams, large freshwater marshes and the largest remaining stands of Nypa Palm *Nypa fruticans* (Andrews and Sankaran 2002).

AVIFAUNA

The hostility of the *Jarawas* towards intruders in their territory has made it impossible to carry out detailed surveys of the flora and fauna of the reserve. Ravi Sankaran (*pers. comm*. 2002) estimates the presence of at least 10 Restricted Range species of birds, of which one, the Andaman Crake *Rallina canningi* is globally threatened. It is, however, evident that the reserve area is rich in living resources as it provides sustenance to the Jarawas by way of edible and medicinal plants, meat, fish, wood and material for building their huts, and other requirements (Gandhi 2000). Recent surveys have shown that the forest of Middle Andaman is rich in bird and butterfly diversity (Davidar *et al.* 1995), and a large number of endemic and threatened plants. The population of the endemic Andaman Wild Pig *Sus scrofa* appears to be healthy. A substantial portion of the best forested areas of the Middle and South Andaman is covered by the Reserve, so the Reserve is expected to be exceptionally rich likewise (Gandhi 2000). Except for the Narcondam Hornbill *Aceros narcondami*, which is restricted to Narcondam Island (Ali and Ripley 1987, Grimmett *et al*. 1999), and the Nicobar Megapode *Megapodius nicobariensis* which was earlier distributed in the Andamans and is now extinct in these islands, all the extant endemic species identified by Stattersfield *et al*. (1998) from this Endemic Bird Area are likely to be seen in the Reserve. Moreover, many endemic subspecies of birds (Abdulali 1964, Vijayan and Sankaran 2000) are also found in this IBA. Therefore, the conservation value of this IBA is immense.

Recently, Rasmussen and Anderton (*in press*) have upgraded many subspecies to specie level. For instance, the earlier three subspecies of Pompadour Pigeon *Treron pompadora* have been upgraded to species, and one (new) species, *Treron choloroptera* has been found in Andaman and Nicobar Islands. Andaman Pompadour Pigeon is still common and may not be of much conservation concern, but there are some cases where the 'new' species has very restricted distribution and may be extremely rare. Earlier, as a subspecies, it was not considered of great conservation concern, therefore not listed by BirdLife International (2001), but now it must be reassessed. A good example is the subspecies of the Barn Owl *Tyto alba* found in Andaman, *T. alba deroepstorffi*. Ali and Ripley (1987) named it as Andaman Barn Owl and state 'evidently a very scarce resident in the Andaman Islands…. not recorded from the Nicobars.' Rasmussen and Anderton (*in press*) treat it as a species, which means that it is perhaps one of the endemics and rare species of the Andaman Islands. As the forest is largely intact in the Jarawa Reserve, the Andaman Barn Owl is likely

In order to protect the lifestyle of Jarawas, the Government has declared 91,100 ha as a Reserve, where outsiders are not allowed to settle.

Photo: Bittu Sahgal

to be present in fairly good numbers on this site. Status survey of this bird is urgently required.

Data Deficient	
Andaman Crake	*Rallina canningi*

Near Threatened	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

Endemic Bird Area 125: Andaman Islands	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Crake	*Rallina canningi*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Coucal	*Centropus andamanensis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
White-headed Starling	*Sturnus erythropygius*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

OTHER KEY FAUNA

The Andaman Wild Pig *Sus scrofa andamanensis*, Andaman Masked Palm Civet *Paguma larvata tytleri*, introduced Chital *Axis axis*, and Flying Fox *Pteropus melanotus* are usually seen here. This site also supports a unique diversity of herpetofauna and the rare and endemic species of reptiles such as Anderson's Pit Viper *Cryptelytrops andersoni*, Small-eared Island Skink *Lipinia macrotympanum* and Andaman Water Monitor *Varanus salvator andamanensis* (Anon. 2001).

LAND USE

- Nature conservation and research
- Tribal Reserve

THREATS AND CONSERVATION ISSUES

- Introduced Chital poses a major threat to indigenous flora
- Construction of roads
- Immigration of mainlanders and its ecological impact.
- Traffic on the Andaman Trunk Road
- Encroachment into the Reserve

Andrews and Sankaran (2002) mentioned that the greatest threat to the Reserve is the Andaman trunk road which cuts right through it, causing irreversible damage and disturbance to the forest. The road has brought with it roadside settlements, some of which have now become small townships. There is continuous traffic on the road. People from the settlements encroach on the Reserve area and deplete the food and natural resources of the Jarawas. The settlers are involved in illegal activities such as poaching Andaman Wild Pig, which is an important food resource for the Jarawas, cutting wood from the Reserve and fishing. The Jarawas will not survive if they are denied the land and resources on which they depend for their traditional hunter-gatherer lifestyle. Threats to the Reserve also threaten their culture.

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Ravi Sankaran, K. Sivakumar and Tara Gandhi

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KADAKACHANG OR KATAKATCHANG

IBA Site Code	:	IN-AN-08
Union Territory	:	Andaman and Nicobar Islands
District	:	Andaman
Coordinates	:	11° 43' 46" N, 92° 43' 38" E
Ownership	:	State
Area	:	Not available
Altitude	:	Not available
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Tropical Wet Evergreen and Tropical Semi-evergreen, Littoral Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 125: Andaman Islands)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Kadakachang, also spelt Katakatchang, is situated between Bamboo Flat and Wimberlygunj in South Andaman Island. The area harbours lowland evergreen rain forest, semi-evergreen rain forest and mangrove forest. It also has mangrove swamps and marshes. Coconut plantations have destroyed much of the earlier vegetation (Vijayan and Sankaran 2000). The climate is hot and humid, with heavy rainfall from both the southwest and northeast monsoon. The maximum precipitation is between May and December, the driest period being between January and April (Sankaran 1995).

Despite biotic pressures, the mangroves are fairly intact. Large stands of *Rhizophora apiculata*, *Bruguiera gymnorrhiza*, *Ceriops tagal*, *Cerbera odollam*, *Heritiera littoralis*, *Canarium euphyllum*, *Dipterocarpus griffithii*, *Hopea odorata*, *Barringtonia racemosa*, *Ficus retusa* and *Sideroxylon longipetiolatum* are seen. *Pandanus andamanensium* and *P. tectorius* are common along the creeks. The swamp and marshes are covered with sedges and grasses. Coconut plantation has replaced the native vegetation in many places.

AVIFAUNA

As in all the IBAs in the Andaman and Nicobar Islands, not much work has been done on birds in Kadakachang. The Andaman Crake *Rallina canningi*, a globally Threatened species is found here, but not much is known about its distribution.

The subspecies of Grey Teal known as Andaman Teal *Anas gibberifrons albogularis*, endemic to the Andaman Islands, is found here (Vijayan and Sankaran 2000). This Teal is reported in flocks of tens and believed to breed in the marshes of Kadakachang. Vijayan and Sankaran (2000) estimate that its worldwide population is 500–600, making it one of the rarest taxa of the Anatidae in the world.

Recently, Rasmussen and Anderton (*in press*) have upgraded Andaman Teal to species level and call it *Anas albogularis*. This makes it one of the rarest birds of India and the site extremely important for its survival.

Of the 12 extant Restricted Range species noted by BirdLife International from the Endemic Bird Area of Andaman Islands (Stattersfield *et al*. 1998), 11 are found in this IBA. Most of them are quite common in suitable habitats. Only the Andaman Crake *Rallina canningi* is listed in the Threatened category, under Data Deficient. The remaining species are Near Threatened (BirdLife International 2001).

Except for two species, Nicobar Scrubfowl or Megapode *Megapodius nicobariensis*, which is extinct from this Endemic Bird Area (EBA) and Narcondam Hornbill *Aceros narcondami* which is restricted to Narcondam Island, all other Restricted Range species of this EBA are found in Kadakachang. This shows the important role of this IBA in the conservation of endemic avifauna of Andaman Islands. Moreover, many endemic subspecies of birds (Abdulali 1964, Vijayan and Sankaran 2000) are also found in this IBA.

Data Deficient	
Andaman Crake	*Rallina canningi*

Near Threatened	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

Endemic Bird Area 125: Andaman Islands	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Crake	*Rallina canningi*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Coucal	*Centropus andamanensis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
White-headed Starling	*Sturnus erythropygius*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

The Beach Stone-plover *Esacus recurvirostris*, earlier considered a subspecies of Great Stone Plover *E. magnirostris* (Ali and Ripley 1987) is listed as Near Threatened by BirdLife International (2001). It has a wide distribution from Andaman Islands to Australia, but the range is linear along the narrow coasts. Its total population may be not more than 1,000 birds in Australia (Marchant and Higgins 1993, cited in BirdLife International 2001) but Ali and Ripley (1987) say that it is 'recorded on almost every island…. Not in Nicobar'. It is very rare on and around Sumatra (BirdLife International 2001). This species is likely to be present on the extensive undisturbed beaches in this IBA, but no published record is available.

OTHER KEY FAUNA

Not much is known about the mammalian and reptilian fauna of Kadakachang. The Andaman Water Monitor *Varanus salvator andamanensis* and Saltwater Crocodile *Crocodylus porosus*, widely distributed in the Andaman Islands, are found here, albeit in depleted numbers due to poaching. The Andaman Islands are well known for endemic species and subspecies of reptiles and amphibians, but there is little published information on this aspect of Kadakachang.

LAND USE

- Nature conservation and research
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Indiscriminate fishing, poaching and habitat destruction.
- Coconut plantation.

Suitable habitats for several species of waders, raptors, terns and especially for Andaman Teal are still available. Marsh habitat of this island is an excellent breeding ground for crustaceans and fishes. Sadly, indiscriminate fishing and poaching in recent years is gradually altering these habitats. The situation could be reversed by effective enforcement of the Wildlife Protection Act. Coconut plantation by clear felling primary forest has altered the habitat, but now such activities have been banned by the Supreme Court (Shekhar Singh *pers. comm.* 2003).

KEY CONTRIBUTORS

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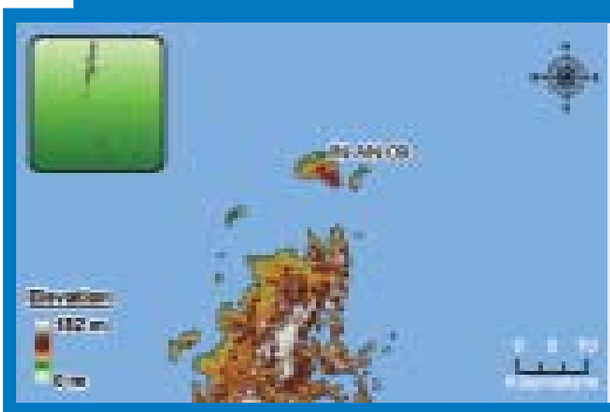
The lowland evergreen, semi-evergreen and mangrove forests of Kadakachang harbour eight Near Threatened species.

Photo: Asad R. Rahmani

AN-09

LAND FALL ISLAND WILDLIFE SANCTUARY



IBA Site Code	:	IN-AN-09
Union Territory	:	Andaman and Nicobar Islands
District	:	Andaman
Coordinates	:	13° 39' 38" N, 92° 00' 15" E.
Ownership	:	State
Area	:	2,948 ha
Altitude	:	Not available
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Tropical Wet Evergreen and Tropical Semi-evergreen Forest, Littoral Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 125: Andaman Islands)
PROTECTION STATUS: Wildlife Sanctuary, established in 1977

GENERAL DESCRIPTION

The Land Fall Island Wildlife Sanctuary lies in the Andaman Islands in the Bay of Bengal. In this IBA, the mangroves are still more or less intact, with medium to large trees, extensive lagoons and creeks. Further inland, tropical rain forest is found. *Pandanus andamanensium* and *P. tectorius* are seen in the creeks and lagoons.

AVIFAUNA

The site is inaccessible and requires proper survey to identify the avifauna. However, the following Restricted Range species are assumed to be present in the Sanctuary (R. Sankaran *pers. comm.* 2003, R. Sivakumar *pers. comm.* 2003). Due to very few studies having been conducted here, it is a Data Deficient site.

Data Deficient	
Andaman Crake	*Rallina canningi*
Near Threatened	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Drongo	*Dicrurus andamanensis*
Endemic Bird Areas 125: Andaman Islands	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Crake	*Rallina canningi*
Andaman Coucal	*Centropus andamanensis*
White-headed Starling	*Sturnus erythropygius*
Andaman Drongo	*Dicrurus andamanensis*

Apart from this tentative list, more Restricted Range species are probably present in this IBA. Moreover, many endemic subspecies, which are not included in the Red Data List but nevertheless vital from the conservation point of view, are also found here.

OTHER KEY FAUNA

There is no large terrestrial wild mammal on this site. The Andaman Water Monitor *Varanus salvator andamanensis*, which can swim between the islands, has colonised this site. Lagoons and the sea around Land Fall Island abound in Green Sea Turtle *Chelonia mydas* and Hawksbill Turtle *Eretmochelys imbricata*. Various corals and fish have been recorded in the seas around this IBA.

LAND USE

- Nature conservation and research
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Poaching
- Indiscriminate fishing
- Habitat destruction

Land Fall is the northernmost island of the Andaman group, thus poachers and fishermen from neighbouring countries frequently come here for the sea turtles.

Interestingly, it also attracts a large number of sea snakes to its coastal areas, which have numerous rocks and niches where these animals can hide.

KEY CONTRIBUTOR

Ravi Sankaran

KEY REFERENCE

None

The Collared Kingfisher *Todiramphus chloris* is seen mainly in coastal wetlands.

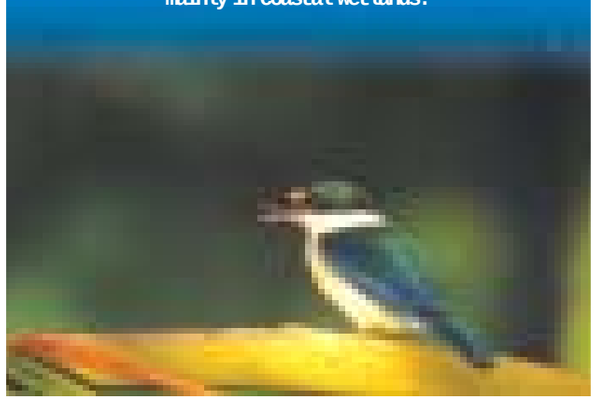


Photo: Otto Pfister

AN-10

LITTLE ANDAMAN

IBA Site Code	:	IN-AN-10
Union Territory	:	Andaman and Nicobar Islands
District	:	Andaman
Coordinates	:	10° 45' 00" N, 92° 30' 00" E
Ownership	:	State
Area	:	52,000 ha
Altitude	:	Not available
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Tropical Wet Evergreen, Tropical Semi-evergreen, Littoral Forest, Lagoons and Beaches

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 125: Andaman Islands)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Little Andaman, the southernmost of the Andaman group of islands, lies in the Andaman archipelago in the Bay of Bengal. The whole of Little Andaman (52,000 ha) was designated as a Tribal Reserve for the Onges under the Andaman and Nicobar Islands (Protection of Aboriginal Tribes) Regulation, 1956.

The major vegetation types in the island are Tropical Evergreen, Semi-evergreen and Littoral and Mangrove forests. Proximity to the equator and the sea ensures a hot, humid and uniform climate. The island receives rainfall from both the southwest and northeast monsoon. Maximum precipitation is between May and December, the driest period being between January to April (Sankaran 1995).

AVIFAUNA

Thirty-four endemic bird taxa, including species and subspecies, are reported from this site (Andrews and Sankaran 2002). The Andaman Teal *Anas albogularis*, earlier considered as an endemic subspecies of the Grey Teal *A. gibberifrons*, is now listed as a full species by Rasmussen and Anderton (*in press*). With as estimated population between 500 to 600 (Vijayan and Sankaran 2000), it could be one of the rarest Anatidae in the world. During the last 150 years, its population has declined drastically. It used to occur in huge flocks throughout the Andaman Islands (Hume 1874, Osmaston 1906) but Vijayan and Sankaran (2000) saw only 14 birds in Little Andaman at three sites.

The Giant Robber Crab *Birgus latro* is a flagship species of the Andaman Islands.

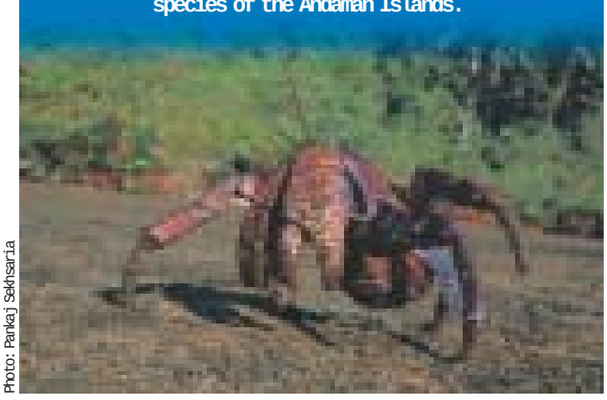


Photo: Pankaj Sekhsaria

In the Endemic Bird Area of Andaman Islands (Stattersfield *et al*. 1998), 13 Restricted Range species have been listed, of which 10 have been reported from this IBA. Besides, this site also has many endemic subspecies of birds, found only in this Endemic Bird Area. Recently, Rasmussen and Anderton (*in press*) have upgraded many subspecies to full species status. For instance, earlier the subspecies of Barn Owl *Tyto alba* occurring in Andaman, which Ali and Ripley (1987) have called Andaman Barn Owl *Tyto alba deroepstorffi* is now considered as a full species, *Tyto deroepstorffi*. This very rare owl of the Andaman group of islands, not found in Nicobar Islands, due to its restricted distribution, has to be listed in the Restricted Range category of Stattersfield *et al*. (1998) and also in the Threatened category. Another example is the subspecies of Pompadour Pigeon *Treron pompadora*. Three subspecies have been upgraded to full species and one species Andaman Pompadour Pigeon *Treron choloroptera* is found in Andaman and Nicobar Islands. Andaman Pompadour Pigeon is still common and may not be of much conservation concern but it has to be listed in the Restricted Range category of Endemic Bird Area.

Another interesting example is the upgradation of the two subspecies of the Great Stone Plover or Thick-knee *Esacus magnirostris* to full species as Great Stone-Plover *E. recurvirostris* and Beach Stone-Plover *E. magnirostris* (Dickinson 2003). Inskipp *et al*. (1996) and Grimmet *et al*. (1998) recognize Beach Stone Curlew or Thick-knee as *Esacus neglectus*. Leaving aside the classification issue, it is important to note that the Beach Stone Curlew is considered as Near Threatened by BirdLife International (2001). It has a wide distribution from Andaman Islands to Australia, but the range is, linear along the narrow coasts. Its total population may be not more than 1,000 birds in Australia (Marchant and Higgins, 1993, referred in BirdLife International 2001) but Ali and Ripley (1987) say that it is 'recorded on almost every island …. Not in Nicobar'. It is very rare on and around Sumatra (BirdLife International 2001). This species is likely to be present on extensive undisturbed beaches, but no published record is available.

The Andaman Hawk Owl *Ninox affinis* is a rare endemic, with two subspecies in the Andaman and Nicobar Islands. The subspecies *N. affinis affinis* has been collected from Little Andaman. It is considered as Near Threatened (BirdLife International 2001). Its tolerance to disturbed habitat gives hope

that it would survive some degradation of its habitat, such as is going on in the islands due to increase in human population.

Near Threatened	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

Endemic Bird Areas 125: Andaman Islands	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Coucal	*Centropus andamanensis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
White-headed Starling	*Sturnus erythropygius*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

OTHER KEY FAUNA

The Giant Robber Crab *Birgus latro*, a flagship species of the invertebrate fauna of Andaman and Nicobar Islands, is reported from the site (Andrews and Sankaran 2002). Other common fauna of Little Andaman Island includes Wild Pig *Sus scrofa andamanensis* and the Andaman Horseshoe Bat *Rhinolophus cognatus*. The bat is totally endemic to the Andaman Islands, listed as threatened in 1996 IUCN Red List. It probably has a small declining population (Baillie and Groombridge 1996). Nothing has been recorded of its ecological requirements or breeding behaviour (Bates and Harrison 1997).

The reptile fauna includes the Andaman Water Monitor *Varanus salvator andamanensis* and Saltwater Crocodile *Crocodylus porosus*, Green Turtle *Chelonia mydas* and Hawksbill Turtle *Eretmochelys imbricata*. The endemic Small-eared Island Skink *Lipinia macrotympanum*, listed as Vulnerable (Anonymous 2001) is found in this IBA.

LAND USE

- Nature conservation and research
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Habitat destruction through modern agricultural practices, tree felling.
- Indiscriminate fishing
- Poaching on both marine and terrestrial fauna
- Illegal collection of coral
- Shipping, which disturbs the habitat of sea grass beds and its associated fauna
- Introduction of exotic species

Due to urbanization and modern agricultural practices, wilderness habitats on this small island are getting converted into cultivated fields. The Forest and Plantation Development Corporation operates 1,591 ha of red oil palm plantations close to Netaji Nagar (Andrews and Sankaran 2002). Much of the plantation covers slopes and soil erosion has been noticed. The run-off from the plantation contains fertilizers that pollute the streams, which were clear till a few years ago. More recently, chemical fertilizers are being replaced by organic manure. But now the farmers complain that large quantities of fruit husk is being dumped into a nearby creek.

The indigenous inhabitants, the Onge, live here and their lifestyle is also changing due to the influence of mainlanders. This is affecting the wildlife conservation in this island.

According to Andrews and Sankaran (2002), the most important conservation issue for Little Andaman is conversion forestry, where natural forests are worked, commercial species extracted and the worked forests regenerated and managed in such a manner that there is a resultant preponderance of commercial species for future harvesting. Due to this process, the site has already suffered loss of its natural profile.

Introduction of exotic species of animals and plants in Little Andaman has posed a negative impact on forest regeneration and on local species (Andrews and Sankaran 2002).

KEY CONTRIBUTORS

Ravi Sankaran, K. Sivakumar and H. V. Andrews

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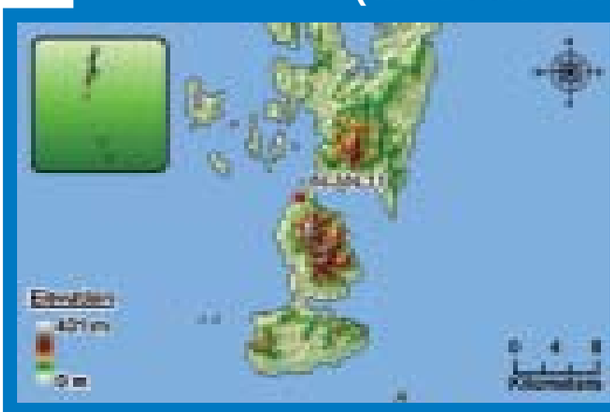
AN-11

MAHATMA GANDHI MARINE NATIONAL PARK (WANDOOR NATIONAL PARK)



IBA Site Code	:	IN-AN-11
Union Territory	:	Andaman and Nicobar Islands
District	:	Andaman
Coordinates	:	11° 29' 30" N, 92° 38' 00" E.
Ownership	:	State
Area	:	28,150 ha
Altitude	:	0 - 85 m
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Tropical Wet Evergreen, Tropical Semi-evergreen, Littoral Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 125: Andaman Islands)
PROTECTION STATUS: National Park, established in 1983

GENERAL DESCRIPTION

The Mahatma Gandhi Marine National Park, earlier called Wandoor National Park, stretches over 15 islands and islets in the Labyrinth Island group. Its boundaries run across the coast as well as inland. The Park encompasses a stretch of marine waters, with lush vegetated islands, vast coral reefs and beaches. Proximity to the equator ensures a hot, humid and uniform climate (Pande *et al.* 1991). The area receives rainfall from both the southwest and northeast monsoon. Maximum precipitation is between May and December, the driest period being between January and April.

The flora is also extremely diverse, including stretches of protected mangrove forest that are among the largest in India (Pande *et al.* 1991).

AVIFAUNA

A scientific checklist of the birds of this National Park is not available, but Restricted Range (endemic) species are present in the Park (K. Sivakumar *pers. comm.* 2003). Stattersfield *et al.* (1998) have identified 13 species from Andaman Endemic Bird Area. Except for the Narcondam Hornbill *Aceros narcondami*, which is confined to Narcondam Island, 11 of these Restricted Range species are found in this IBA. Moreover, most of the endemic subspecies of the Andaman Islands are also reported from here, proving the importance of this site as an IBA. More detailed work is required to assess the full extent of the importance of this site for the over-all protection of birds of Andaman and Nicobar Islands.

Data Deficient	
Andaman Crake	*Rallina canningi*

Near Threatened	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

Endemic Bird Areas 125: Andaman Islands	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Crake	*Rallina canningi*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Coucal	*Centropus andamanensis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
White-headed Starling	*Sturnus erythropygius*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

OTHER KEY FAUNA

There are no large terrestrial native mammals, but the marine fauna is immensely rich and includes four species of sea turtles, namely Olive Ridley *Lepidochelys olivacea*, Green Turtle *Chelonia mydas*, Hawksbill *Eretmochelys imbricata* and Leatherback Turtle *Dermochelys coriacea*. The Dugong *Dugong dugon* and the Saltwater Crocodile *Crocodylus porosus* are also present (Pande *et al.* 1991). There are many other endemic reptiles in Mahatma Gandhi NP which are found in the Andaman Islands, but the following have been specifically recorded from this IBA site: Andamanese Giant Gecko *Gekko verreauxi*, Andaman Bent-toed Gecko *Cyrtodactylus rubidus*, Tytler's Grass Skink *Mabuya tytleri*, Andaman Cobra *Naja sagittifera* and Anderson's Pit Viper *Cryptelytrops andersoni* (Anon. 2001).

LAND USE

- Nature conservation and research
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Infrastructure
- Tourism
- Urbanisation

Proximity to Port Blair and accessibility to both Indian and foreign

There is no large native terrestrial mammal in Wandoor NP, but the marine fauna is immensely rich, including four species of marine turtles, Dugong, and Saltwater Crocodile.

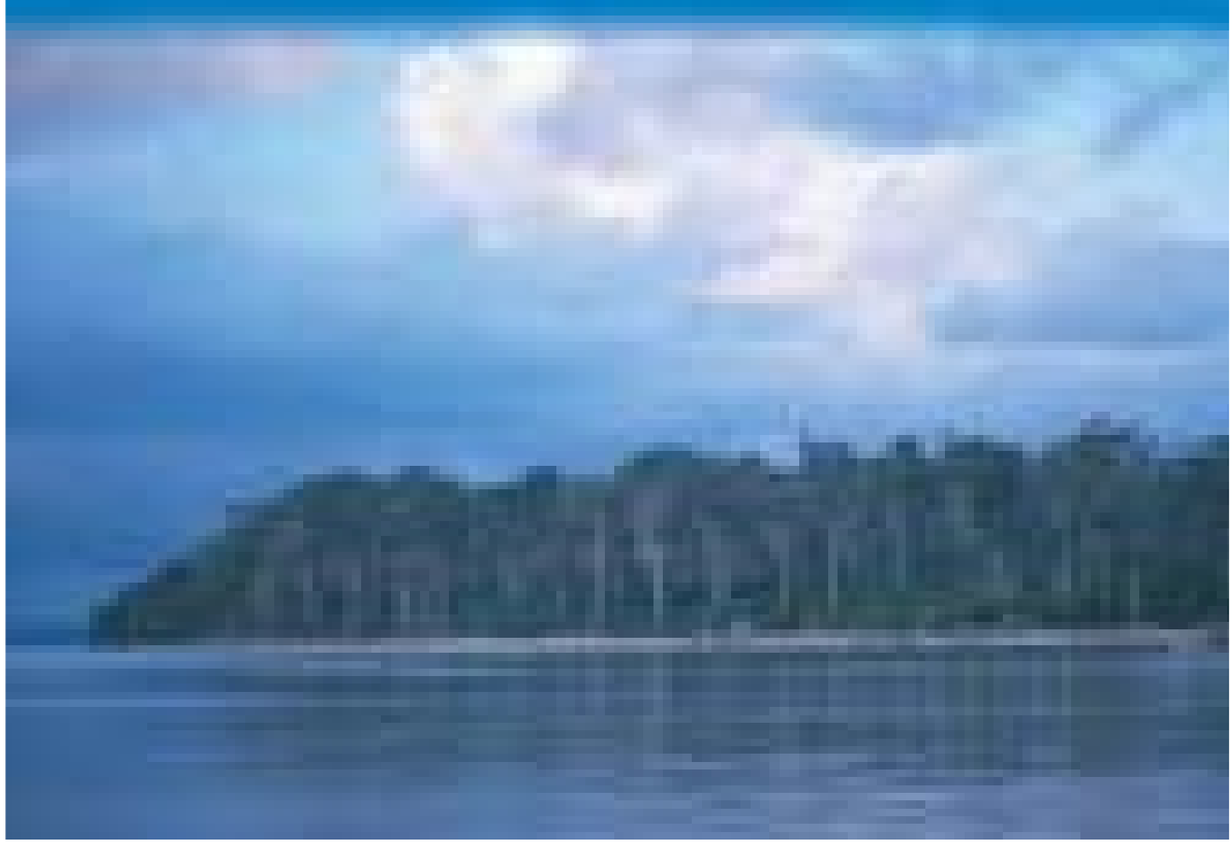


Photo: M. Zafar-ul Islam

tourists and a concentration of settlements along its borders have resulted in considerable recent disturbance (Pande *et al.* 1991). Siltation caused by inland forestry operations in Rutland Island which borders the Park, is affecting the coral reefs (Andrews and Sankaran 2002).

KEY CONTRIBUTORS

K Sivakumar and Tara Gandhi

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AN-12

MOUNT DIAVALO AND CUTHBERT BAY

IBA Site Code	:	IN-AN-12
Union Territory	:	Andaman and Nicobar Islands
District	:	Andaman
Coordinates	:	12° 37' 00" N, 92° 55' 60" E
Ownership	:	State
Area	:	Not available
Altitude	:	272 m
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Tropical Wet Evergreen Forest, Tropical semi-evergreen Forest and Littoral Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 125: Andaman Islands)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Mount Diavalo and Cuthbert Bay lie on the eastern coast of Middle Andaman Islands in the Bay of Bengal. These islands have a humid, tropical coastal climate. The islands receive rainfall from both the southwest and northeast monsoon. Maximum precipitation is between May and December, the driest period being between January and April. This site is covered by tropical evergreen and semi-evergreen forest.

AVIFAUNA

Data Deficient	
Andaman Crake	*Rallina canningi*

Near Threatened	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

Endemic Bird Area 125: Andaman Islands	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Crake	*Rallina canningi*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Coucal	*Centropus andamanensis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
White-headed Starling	*Sturnus erythropygius*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

No work has been done on the avifauna of this site but as most of the forest is intact, it is extremely rich in biodiversity. All the Restricted Range (endemic) species listed by Stattersfield *et al.* (1998) for the Andaman Endemic Bird Area are found here, except for the Narcondam Hornbill *Aceros narcondami*, which has not been reported from any island of the Andaman group, and is restricted to Narcondam Island, and the Nicobar Megapode *Megapodius nicobariensis* which has become extinct in the Andaman Islands. Besides the Restricted Range species, many endemic subspecies of the Andaman Islands are reported from this site.

OTHER KEY FAUNA

Before the introduction of Spotted Deer or Chital *Axis axis*, there was no large terrestrial mammal in this area. Cheetal is now a fully acclimatized and feral species. Wild Pig *Sus scrofa andamanensis* was also supposed to have been introduced by the earliest colonisers, and has evolved to merit subspecies rank. The Himalayan Palm Civet *Paguma larvata* was also brought in by the British in the 19th century, and is now a wild species, doing much damage to native birds. Reticulated Python *Python reticulatus* and Andaman Water Monitor *Varanus salvator andamanensis* are natural inhabitants of this IBA. In the sea around this IBA, Olive Ridley Turtle *Lepidochelys olivacea*, Green Turtle *Chelonia mydas*, Hawksbill Turtle *Eretmochelys imbricata* and Leatherback Turtle *Dermochelys coriacea* are found.

Pie dogs are the biggest menace to the turtle eggs.

Photo: Pankaj Sekhsaria

Extensive beaches of the Andaman and Nicobar Islands attract sea turtles for nesting, but settlers and dogs excavate the eggs. The marks of the adult female turtle often lead predators to the nest.

Photo: Pankaj Sekhsaria

LAND USE

- Nature conservation and research
- Ecotourism

THREATS AND CONSERVATION ISSUES

- Urbanisation
- Road construction
- Introduced species such as Chital
- Poaching

Nesting sea turtles are disturbed and their eggs excavated by settlers as well as by dogs for food. Poaching of birds, Andaman Wild Pig and Chital is common. Complete removal of Chital may not be possible, but its population needs to be curbed to allow natural regeneration of the forest. The forests of Andaman Islands evolved without any large herbivore, therefore the long-term impact of Chital would be very harmful (Rauf Ali *pers. comm.* 2003).

KEY CONTRIBUTORS

K. Sivakumar and Ravi Sankaran

KEY REFERENCE

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AN-13

MOUNT HARRIET NATIONAL PARK- SHOAL BAY

IBA Site Code	:	IN-AN-13
Union Territory	:	Andaman and Nicobar Islands.
District	:	Andaman
Coordinates	:	11° 49' 58" N, 92° 46' 35" E
Ownership	:	State
Area	:	4,662 ha
Altitude	:	0 - 481 m
Rainfall	:	3,300 mm
Temperature	:	19 °C to 33 °C
Biogeographic Zone	:	Islands
Habitats	:	Tropical Wet Evergreen, Tropical Semi-evergreen, Littoral Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 125: Andaman Islands)
PROTECTION STATUS: National Park, established in 1987

GENERAL DESCRIPTION

Mount Harriet National Park is situated in Ferrargunj *tehsil* of Andaman district, about 38 km from Port Blair. The area of the Park is about 4,662 ha and there is a proposal to extend the area by another 1,700 ha to include the adjacent hill ranges to the south to conserve the marine ecosystem along the eastern coast. The Park possesses hill ranges, which generally lie in the north-south direction. From these, numerous spurs and ridges branch out towards east and west. The hills are steeper on the eastern side. The beaches on the eastern coast are generally rocky, with a few sandy patches. The Park also possesses freshwater streams, originating from the hill ranges and draining into the sea on the east coast. Proximity to the equator and the sea ensures a hot, humid, and uniform climate throughout the year. Fortunately, the forest is largely untouched (Pande *et al* 1991).

Mount Harriett National Park is one of the few pristine areas within the Andaman Archipelago, where almost all the major groups of animals characteristic of tropical rain forests are well represented. The composition of terrestrial fauna of the Park shows greater similarities with that of Myanmar and Indo-China (Chandra and Rajan 2002). The avifauna of the Park is very rich and diverse due to dense forests, the presence of many varieties of wild fruit plants, and open seashore on the eastern side. The area was earlier a Reserve Forest, so some sort of protection was given. Now, having become a National Park, the forest is totally protected.

The major forest types in Mt. Harriet National Park include Evergreen Forest, Andaman Tropical Evergreen Forest, Andaman Semi-evergreen Forest, Andaman Moist Deciduous Forest and Littoral Forest. Balachandran (1998) reported 134 plant and tree species, of which 74 are native and 51 introduced. The main tree species are *Albizzia lebbeck*, *A. procera*, *Dipterocarpus grandiflorus*, *Ficus glomerata*, *F. hispida*, *Lagerstroemia hypoleuca*, *Lannea* spp., *Mesua ferrea*, *Terminalia bialata* and *T. procera*.

AVIFAUNA

A total of 214 species and subspecies of birds, including 63 endemics have been recorded earlier from Andaman, but in Harriet NP, only 86 species are known to occur. Of these, 48 species and subspecies are endemic to the Andaman group. Chandra and Rajan (1996) have listed 86 species from this site, but their report is somewhat unreliable, as they have referred to many widely distributed migratory species as endemic. For example, they consider Little Bunting *Emberiza pusilla* as endemic, although it is found in the Himalaya, the northeast India and Bangladesh (Ali and Ripley 1987, Grimmett *et al*. 1998).

The Andaman Crake *Rallina canningi* was supposed to be common in Mount Harriet NP according to Chandra and Rajan (1996), although they had sightings only from two localites (Vijayan and Sankaran 2000). It is globally Threatened as it has a small population and narrow range of distribution (BirdLife International 2001). The Andaman Hawk Owl *Ninox affinis*, a Near Threatened species, is also considered common in this IBA by Chandra and Rajan (1996), but Vijayan (1999) found it to be one of the rarest endemics of Andaman Island.

Data Deficient	
Andaman Crake	*Rallina canningi*

Near Threatened	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

Endemic Bird Area 125: Andaman Islands	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Crake	*Rallina canningi*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Coucal	*Centropus andamanensis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
White-headed Starling	*Sturnus erythropygius*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

OTHER KEY FAUNA

The mammalian fauna of the Park is represented by 12 species, including the Andaman Wild Pig *Sus scrofa andamanensis*, Andaman Masked Palm Civet *Paguma larvata tytleri*, Andaman Rat *Rattus rattus andamanensis* and Flying Fox *Pteropus melanotus*. The Asian Elephant *Elephas maximus* and Chital *Axis axis* were introduced by the British and now feral populations are found. The reptilian fauna of the Park is exceptionally rich, and includes mainly lizards and snakes. In all, 28 species have been recorded from the Park, of which 14 are endemic to Andaman and Nicobar Is. The amphibian fauna comprises of 6 species, of which 2 species Andaman Bull Frog *Kaloula baleata ghoshi* and Andaman Paddyfield Frog *Limnonectes andamanensis* are endemic to Andaman Is. The freshwater fishes present in the streams within the Park area are represented by 16 species, mainly eels, catfish, gobies, sleepers and snakeheads. The land molluscs are not well studied, and only 6 species have been recorded. Among the invertebrates, insects contribute about 70% of the faunal diversity in the Mt. Harriet National Park. So far, 355 species have been reported, which include 79 endemic species (Chandra and Rajan 2002).

LAND USE

- Nature conservation and research
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Poaching
- Human settlements

The easy availability of fresh water and the fertile valleys of the hill range have attracted many settlements around the National Park (Andrews and Sankaran 2002). Settlers also constantly extend the boundaries of their occupied areas, encroaching into forestland and harvesting the reserve forest illegally for timber and other forest produce (Andrews and Sankaran 2002). On the hill slopes bordering the Park, land is being encroached and converted to areca and coconut plantations (Singh 1997 quoted in Andrews and Sankaran 2002). As a result, the National Park has no buffer zone. A number of industries, including quarries, plantations and plywood factories, have sprung up in the immediate surroundings of the Park (Singh 1997).

The population of Andaman Wild Pig has declined in the vicinity of the National Park due to hunting and poaching.

Sea turtles such as the Green Turtle *Chelonia mydas*, Hawksbill *Eretmochelys imbricata* and Olive Ridley Turtle *Lepidochelys olivacea* visit the sandy beaches during the nesting season for egg laying. Their eggs are excavated by human settlers for food. Hunting of birds is also reported. The Andaman Wood-pigeon *Columba palumboides*, Red-turtle Dove *Streptopelia tranquebarica*, Emerald Dove *Chalcophaps indica* and White-breasted Waterhen *Amaurornis phoenicurus* are the main targets of poachers. The sale of rifles in the markets of Andaman Is. should be banned. The strict enforcement of Indian Wildlife (Protection) Act, 1972 for the scheduled species is also of utmost importance to conserve the turtles and Andaman Wild Pig.

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AN-14

NARCONDAM ISLAND WILDLIFE SANCTUARY

IBA Site Code	:	IN-AN-14
Union Territory	:	Andaman and Nicobar Islands
District	:	Andaman
Coordinates	:	13° 27' 53" N, 94° 16' 41" E
Ownership	:	State
Area	:	681 ha
Altitude	:	0 - 40 m
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Tropical Wet Evergreen Forest, Tropical Semi-evergreen Forest, Littoral Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS: Wildlife Sanctuary, established in February 1977

GENERAL DESCRIPTION

Narcondam is a very small (681 ha) island, located about 140 km east of the nearest inhabited island Diglipur in the North Andaman group. The island is of volcanic origin and rises steeply to a central peak of 706 m. It is almost entirely covered with Evergreen and Moist Deciduous forest. Grassy slopes dominate the southern and southeast aspects of the hill (BirdLife International 2001).

The island was notified as a sanctuary to protect the globally Threatened and highly endemic Narcondam Hornbill *Aceros narcondami*, which is restricted to this tiny island.

As Narcondam Island is remote and difficult to reach, there have been only seven to eight visits by ornithologists to date: Osmaston (1905), Baker (1927), Abdulali (1971,1974), Hussain (1984), Vijayan and Sankaran, (2000) and Yahya and Zarri (2000, 2002a).

The island is covered with Tropical Evergreen forest, Semi-evergreen forest, Moist Deciduous forest, Littoral forest and Mangrove forest (Pande *et al.* 1991). The island bears old, dead and decaying trees, interlaced with thorny creepers and luxuriantly flowering tall trees (Yahya and Zarri 2002a). The flora on the higher reaches of the hill is mostly evergreen and consists of *Dipterocarpus*, *Sideroxylon* and *Ficus* trees. However, some deciduous species (*Bombax insigne*) are also present. The vegetation towards the summit is mostly Moist Evergreen with several epiphytes. The lower hills following the shoreline have both deciduous and evergreen trees such as *Terminalia catappa*, *T. bialata* and *Caryota mitis*. The shoreline has some introduced species such as coconut and banana.

Narcondam Hornbill *Aceros narcondami* has one of the smallest distribution ranges of any bird in India.

Photo: Ravi Sankaran

AVIFAUNA

Narcondam Island has the distinction of being the sole area of distribution of the Narcondam Hornbill. This hornbill has one of the smallest natural ranges of any bird species in the world (BirdLife International 2001). Thus it a high priority species for conservation.

Hussain (1984) estimated a population of more than 400 birds, while Ravi Sankaran estimated the total to be around 330-360 birds. However, based on systematic line transect methods, Yahya and Zarri (2002a) estimated 432 birds, with an approximate density of 72 birds/sq. km. Flocks of up to 50 birds have also been reported congregating on fruiting figs on this island (Yahya and Zarri 2002a). Vijayan and Sankaran (2000) found that the hornbills were not distributed evenly. Higher densities were seen along the ridge that bisects the island and low densities were seen in the northern part of the island. This could be due to differences in availability of fruiting trees during the study area. Details of ecology and behaviour are given by Hussain (1984), Vijayan and Sankaran (2000) and Yahya and Zarri (2002a).

The Andaman Scops Owl *Otus balli* is the other globally Threatened and Restricted Range bird species present on the island.

Yahya and Zarri (2000b) recorded 22 species during their one month survey, including a sighting of 11 Fairy Terns *Gygis alba*. A specimen collected over a hundred years ago in the Bay of Bengal is the only record of this bird within Indian limits (Ali and Ripley 1987).

Vulnerable	
Narcondam Hornbill	*Aceros narcondami*
Endemic Bird Area 125: Andaman Islands	
Andaman Scops-Owl	*Otus balli*
Narcondam Hornbill	*Aceros narcondami*

OTHER KEY FAUNA

As Narcondam is a tiny volcanic island, not connected to land mass, terrestrial mammalian fauna is absent. However, Nicobar Flying Fox *Pteropus faunulus* and Narcondam Small Flying Fox *Pteropus hypomelanus* are the most common mammals on this island. Among reptiles, Andaman Dwarf Gecko *Cnemaspis kandiana*, widely distributed in Andaman and Malay Archipelago, is also found on Narcondam Island. The Andaman Day Gecko *Phelsuma andamanense*, is also restricted in distribution to the Andaman group (Daniel 2002). The Common Amphibious Sea Snake *Laticauda laticauda*, confined to the Bay of Bengal and Nicobar Island, is seen here, while the Andaman Water Monitor *Varanus salvator andamanensis* is the only large predator on the island and is a threat to the Narcondam Hornbill, especially its young ones.

LAND USE

- Nature conservation and research
- Police outpost

THREATS AND CONSERVATION ISSUES

- Consequences of introduction of goats
- Unsustainable exploitation
- Natural disasters
- Firewood collection
- Selective logging/ cutting

The Narcondam Hornbill is the one Threatened bird species in India that is entirely restricted to the Andaman Islands Endemic Bird Area. Constrained by the limits of its island home, its range and population size are threats in themselves. The population is constantly susceptible to stochastic events such as natural disasters. Primary threats arise from the establishment of a police outpost on the island in 1969. The police personnel introduced several pairs of goats, which by 1998 had grown to a population of 130–150 in the police camp and over 250 feral goats at large on the island, as a result of which there is very little evidence of natural regeneration of the woodland. About 50 acres of forest have been lost to the police camp and adjacent plantation of fruit trees and vegetable plots, and a little more in the environs has been degraded. At least 10–12 live trees are cut each year for fuel wood for the camp, and over 500 poles were cut to make and repair fences to prevent goats from entering the vegetable plots (Vijayan and Sankaran 2000). Regular cyclones destroy many older trees with suitable nesting cavities, and cutting of large old trees is likely to have a detrimental impact on the island's hornbill population. Until very recently, the police staff hunted Narcondam Hornbills for meat but now this has more or less stopped. There is also a sizeable population of domestic and feral cats on the island, although whether they prey on the hornbills is not known. The complete removal of goats from the island appears to be a high priority.

It has also been suggested that a second population of the Narcondam Hornbill might be established on another suitable island in the Andamans, as a backup measure in case of serious population declines or natural disasters. Before any such action is taken, an ecological appraisal of the recipient island should be undertaken to estimate which species the hornbill would compete with for nesting sites and food (BirdLife International 2001).

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Ravi Sankaran, Ashfaq Ahmed Zarri and H. S. A. Yahya

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AN-15

NORTH AND SOUTH SENTINEL

IBA Site Code	:	IN-AN-15
Union Territory	:	Andaman and Nicobar Islands
District	:	Andaman
Coordinates	:	10° 58' 12" N, 92° 13' 29"E
Ownership	:	State
Area	:	4,861 ha
Altitude	:	0 - 40 m
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Tropical Wet Evergreen Forest, Tropical Semi Evergreen Forest, Littoral Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS: South Sentinel Wildlife Sanctuary, established in February 1977

GENERAL DESCRIPTION

North Sentinel is a 4,700 ha, island that lies west of the Wandoor National Park (Mahatma Gandhi Marine National Park), while South Sentinel is only 161 ha, located further south. The hostile, indigenous Negrito tribe, the *Sentinelese*, inhabit North Sentinel, which is completely isolated from the rest of the world. They are the sole inhabitants of the island and successfully retain and defend their traditional lifestyle and pristine territory. They vigorously repel any attempt made by government teams or others to communicate with them, by aggressively attacking intruders in their territory (Gandhi 2000).

South Sentinel Islands has been visited by many people but there is no permanent habitation, save the light house, as there is no source of fresh water on this small island. It was declared as a Sanctuary in 1997, primarily to protect the Giant Robber Crab *Birgus latrao* for which South Sentinel is the last stronghold in the Andamans. Every year, during March, thousands of Pied Imperial-Pigeon *Ducula aenea* come from the South and Little Andaman Islands to nest in South Sentinel. This IBA is also very important as a nesting habitat of the Green Turtle *Chelonia mydas*. It is surrounded by spectacular inter-tidal coral reefs, reef slopes and shelves, all of which are extensive and need to be assessed, according to Bhaskar (1993), Andrews (1997) (quoted in Andrews and Sankaran 2002).

The forest is more or less intact in North Sentinel as man has not yet reached there, with his chainsaws and concept of "sustainable harvest". As the Sentinelese have successfully deterred outsiders, the biodiversity of this island has not been studied or recorded. The island appears to be covered by dense tropical rain forests. It is evident that the forest and surrounding coast, which the tribals have protected for centuries, provide all their living requirements.

South Sentinel Island is a small flat, coral island, where lagoons mark about half the length of the shore, the rest being rocky or sandy. The whole island, with the exception of a 36 ha swamp, is covered with dense Andaman Tropical Evergreen forest, which extends about 75 ha, consisting mainly of Sea Mohwa *Manilkara littoralis*, with an undergrowth of various smaller trees and shrubs. There is a well-defined sea fence, consisting of screw pine (*Pandanus*) and *Hibiscus* (Littoral Forest 50 ha) along the shore (Osmaston 1908, Seksharia 2000).

AVIFAUNA

Not much is known about the bird life of North Sentinel Island as the tribals resist the entry of outsiders, but South Sentinel has been visited by many naturalists and bird watchers. Osmaston (1908) visited it in 1907 to study the Pied Imperial Pigeon and Nicobar Pigeon *Caloenas nicobarica*. The former still nests in huge numbers all over the island, and the latter in small numbers. It is estimated that South Sentinel has at least ten Restricted Range species, of which one, the Andaman Crake *Rallina canningi* is globally Threatened. The endemic Andaman Teal *Anas gibberifrons* could be present (Ravi Sankaran *pers. comm.* 2002). In South Sentinel, one pair of White-tailed Eagle *Haliaeetus albicilla*, a Near Threatened species, has become an almost permanent feature.

Data Deficient	
Andaman Crake	*Rallina canningi*

Near Threatened	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

Endemic Bird Area 125: Andaman Islands	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Crake	*Rallina canningi*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Coucal	*Centropus andamanensis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
White-headed Starling	*Sturnus erythropygius*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

OTHER KEY FAUNA

As mentioned earlier, North Sentinel has not been explored and we do not have any information on its fauna, but it is supposed to be largely intact, as the tribals sustainably harvest their needs. On South Sentinel, one of the flagship invertebrate species of the Andaman and Nicobar Islands, the Giant Robber Crab, is found in large numbers. It is nocturnal and spends the day time in large hollows of old Sea Mohwa trees, which are the dominant trees of the island.

Green Sea Turtle *Chelonia mydas* breeds on the long sea beach of South Sentinel (Seksharia 2000). Earlier, they used to "swarm round the island, coming on shore in the evening to lay their eggs" but now the population is not so large, at least around South Sentinel, due to extensive poaching by fishing trawlers. The Leatherback Turtle *Dermochelys coriacea* also occurs, but in smaller numbers. Saltwater Crocodile *Crocodylus porosus* and Andaman Water Monitor *Varanus salvator andamanensis*, are supposed to be common on both islands. The Andaman Emerald Gecko *Phelsuma andamanense*, also called Andaman Day Gecko, is active during the day, unlike most other geckos which are nocturnal. It has a peculiar distribution, being found not in mainland Asia but in the oceanic islands of Mauritius, Seychelles, Reunion and Madagascar (Daniel 2002). There is no indigenous terrestrial mammal, except the endemic Andaman Horseshoe Bat *Rhinolophus cognatus*.

The endemic Andaman Day Gecko, is active during daytime, unlike most other geckos which are nocturnal.

Photo: Pankaj Sekhsaria

LAND USE

- Traditional fishing
- Hunting and gathering by tribals

THREATS AND CONSERVATION ISSUES

There have been repeated attempts by the Government to make contact with the Sentinelese to 'civilize them' but till now they have not succeeded. Based on the experiences of other such islands and 'primitive' people, the impact on nature would not be positive, if the Sentinelese are brought into the so-called mainstream. Presently, the Sentinelese manage to subsist on forest produce, harvesting it sustainably mainly because of their small population and by the use of primitive hunting methods and tools.

KEY CONTRIBUTORS

Ravi Sankaran and Tara Gandhi

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AN-16

NORTH REEF ISLAND WILDLIFE SANCTUARY

IBA Site Code	:	IN-AN-16
Union Territory	:	Andaman and Nicobar Islands
District	:	Andaman
Coordinates	:	09° 28' 21" N, 92° 42' 41" E
Ownership	:	State
Area	:	348 ha
Altitude	:	0 - 27 m
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Tropical Wet Evergreen Forest, Tropical Semi-evergreen Forest, Littoral Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS: Wildlife Sanctuary, established in February 1977

GENERAL DESCRIPTION

The North Reef Island Wildlife Sanctuary measures 348 ha and is located in the Andaman archipelago. North Reef Island is among the most beautiful islands in the Andamans and has one of the best beaches, with fine white sand, which stretches far into the sea, with beautiful coral formations (Pande *et al.* 1991). North Reef, along with Interview Island, has one of the richest coral reef formations in the Andaman and Nicobar group, with associated molluses such as, *Trochus* and other shells, and Holothurians (Andrews and Sankaran 2002).

The forest types include Andaman Evergreen, Andaman Semi-Evergreen, Tidal Mangrove and Littoral forests. The major tree species are *Dipterocarpus* sp., *Ficus retusa, Manilkara littoralis, Pongamia pinnata, Terminalia bialata, Mesua* sp. and *Bombax ceiba* (Pande *et al.* 1991). The mangrove forest is dominated by species of *Rhizophora.*

AVIFAUNA

North Reef Island is among the large refugia for the endemic and Endangered Andaman Teal *Anas albogularis*, earlier considered as an endemic subspecies of the Grey Teal *A. gibberifrons*, and now listed as full species by Rasmussen and Anderton (*in press*). With as estimated population between 500 to 600 (Vijayan and Sankaran 2000), it could be one of the rarest Anatidae in the world. It used to occur in huge flocks throughout the Andaman Islands (Hume 1874, Osmaston 1906). But in the last 150 years, its population has drastically declined. In the North Reef Island Wildlife Sanctuary, Vijayan and Sankaran (2000) recorded 33 individuals in 1995-96, but in 1998 only three were seen. The reeds on the edges of the wetland which were preferred for nesting had dried up, probably owing to the breach of a bund and ingress of sea water into the wetland. It is obvious that the current status of Andaman Teal is fragile.

Near Threatened	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Drongo	*Dicrurus andamanensis*
Endemic Bird Area 125: Andaman Islands	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Coucal	*Centropus andamanensis*
Andaman Drongo	*Dicrurus andamanensis*

Stattersfield *et al.* (1998) have identified 12 extant species as endemic to the Andaman Islands Endemic Bird Area. Three of these species have been reported from this IBA but more are likely to be found (K. Sivakumar *pers. comm*. 2003).

OTHER KEY FAUNA

The commonly seen fauna of the site are Andaman Wild Pig *Sus scrofa andamanensis*, Andaman Water Monitor *Varanus salvator andamanensis* and Green Turtle *Chelonia mydas*.

The island has rich coral formations with associated species such as sea cucumbers and mollusean shells. Saltwater crocodile and marine turtles nest on the beaches (Gandhi 2000).

LAND USE

- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Timber collection
- Poaching

The island has no permanent human settlement. Though it is legally protected as a wildlife sanctuary, uncontrolled collection of timber, sea cucumbers, shells and corals is rampant. Crocodiles are being hunted by poachers from Myanmar, Thailand and other Southeast Asian countries, who pose the greatest threat to these islands. Rodgers and Panwar (1988) have proposed that North Reef Island should be upgraded to the status of a national park.

KEY CONTRIBUTORS

Ravi Sankaran and Tara Gandhi

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Uncontrolled collection of sea cucumbers, shells and corals is rampant in the North Reef Island.

Photo: Sarang Kulkarni

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AN-17

RANI JHANSI MARINE NATIONAL PARK

IBA Site Code	:	IN-AN-17
Union Territory	:	Andaman and Nicobar Islands
District	:	Andaman
Coordinates	:	12° 15' 00" N, 93° 04' 60" E
Ownership	:	State
Area	:	25,614 ha
Altitude	:	Not available
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Tropical Wet Evergreen Forest, Tropical Semi-evergreen Forest, Mangrove Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS: National Park, established in 1996

GENERAL DESCRIPTION

The Rani Jhansi Marine National Park lies within Ritchie's Archipelago, 14 km northeast of South Andaman Islands and southeast of Middle Andaman Island. This archipelago includes the islands of North, Middle, and South Button, Outram, Henry Lawrence, Inglis, John Lawrence, Wilson, Nicholson, Peel, Havelock, Neill, and the southernmost, Sir Huge Rose (notified as a Sanctuary in 1987). Of these islands, Outram (1900 ha), Henry Lawrence (6563 ha) and John Lawrence (4200 ha) form the Rani Jhansi Marine National Park. This Park has a total area of 25,614 ha, of which 12,770 ha comprises land and the rest is a marine ecosystem surrounding these three islands (Andrews 2000). The natural habitats of the park include lagoons, coral reefs, beaches, lowland evergreen rain forest, semi-evergreen rain forest and mangrove forests.

Like all other IBA sites, this site also has humid, tropical coastal climate, due to its proximity to the equator and the sea. Rainfall is very heavy, up to 3,800 mm annual average, thanks to the southwest and northeast monsoons. There are only four comparatively dry months, January to April.

This site still has some intact tropical evergreen and semi-evergreen forests, mangrove forests and extensive coastal lagoons. The Park was established to protect the marine life, especially corals, fish and turtles. Full biodiversity inventory of this Park has not been done.

Biodiversity assessment of the Rani Jhansi Marine National Park, as in other PAs should be done.

Photo: Otto Pfister

AVIFAUNA

Detailed studies on the avifauna have not been conducted till now, but based on preliminary work, Das (1998) and Deb (1998), a checklist of 58 birds is available. However, this list is not very reliable and we need proper study on the birds of this IBA. Nevertheless, of the 12 extant Restricted Range species of Andaman Islands (Stattersfield *et al*. 1998), 11 have been reported. The twelfth species, namely Narcondam Hornbill *Aceros narcondami*, is only found on Narcondam Island, and nowhere else in the world. The presence of 11 Restricted Range species in this IBA proves its conservation value. There are also many endemic subspecies for which the Andaman Islands are famous among ornithologists.

The Andaman Teal *Anas albogularis*, earlier considered as an endemic subspecies of the Grey Teal *A. gibberifrons*, is now listed as full species by Rasmussen and Anderton (*in press*). With an estimated population between 500 to 600 (Vijayan and Sankaran 2000), it could be one of the rarest birds of India. In Ritchie's Archipelago, it was observed on three locations: Outram Island in the south creek, Kawangtung Strait between Henry Lawrence and John Lawrence, and Havelock No. 5 (Andrews 2000). More than 100 Andaman Teal were reported on John Lawrence Island during the wet season in a freshwater stream on the northeastern side of this island, where the sea enters the stream during spring tides (Vijayan and Sankaran 1997). This could be the largest flock of this extremely rare bird. However, according to R. Sankaran (pers. comm.), the population of this rare species is underestimated and secondly, during the non-breeding season, the Teal congregate, so sighting more than 100 birds could be incidental.

Data Deficient	
Andaman Crake	*Rallina canningi*
Near Threatened	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

Endemic Bird Areas 125: Andaman Islands	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Crake	*Rallina canningi*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Coucal	*Centropus andamanensis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
White-headed Starling	*Sturnus erythropygius*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

OTHER KEY FAUNA

The Park is considered rich in faunal diversity. Forty-five reptiles, 12 amphibians and 21 mammals species are reported from the Park (Das 1998, quoted in Andrews and Sankaran 2002). Some of the endemic species of reptiles are Daniel's Forest Lizard *Bronchocela danieli* (Endangered) and Andaman Island Grass Skink *Mabuya andamanensis* (Vulnerable) (Anon. 2001). Andaman Water Monitor, *Varanus salvator andamanensis* is quite common in creeks and forest. Four species of sea turtles are found, namely the Olive Ridley *Lepidochelys olivacea*, Green Turtle *Chelonia mydas*, Hawksbill Turtle *Eretmochelys imbricata* and Leatherback Turtle *Dermochelys coriacea*.

Over 80 species of corals are reported from just one part of the Park. The coral reef fauna is extremely rich. Mustafa *et al*. (1987) have described the coral reefs and coral fish and the damage due to siltation, improper fishing methods and logging activities.

LAND USE

- Nature conservation and research
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Fishing
- Poaching
- Tree-felling
- Plantation

Timber extraction was stopped by the order of the Supreme Court in 2002.

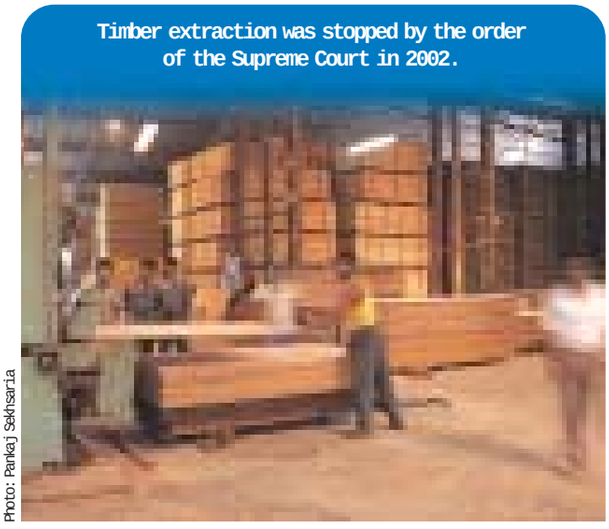

Photo: Pankaj Sekhsaria

This Park is easy to access from Port Blair by both Indian and foreign tourists. Tourism has increased immensely in the last decade. Concentration of settlements along its borders and indiscriminate fishing in this area has resulted in considerable recent disturbance. Some amount of domestic waste is disposed of into this part of the sea that could be harmful to corals and associated fauna.

Wimco (a corporation) and the Andaman Timber Industries carried out timber extraction in the three main islands during the 1960s and 1970s (Andrews 2000). Timber extraction by the Forest Department continued till it was stopped by an order of the Supreme Court in 2002.

Over-fishing of reef fish for export is taking a heavy toll on the reefs, including shell diving and collection of sea cucumbers (Mustafa *et al*. 1987, Andrews 2000).

North, Middle and South Button, Inglis, Wilson and Nicholson island should be included in this Park, prior to the final notification (Andrews 2000). A species monitoring programme for endangered flora and fauna should be initiated and based on research findings, the management plan of the Park should be developed. Islanders of Havelock and Neill could be trained to act as guides and boatman for tourists. Mechanism to provide basic biomass needs to the local people should be incorporated in the management plan.

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Harry V. Andrews and Tara Gandhi

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AN-18

SADDLE PEAK NATIONAL PARK

IBA Site Code	:	IN-AN-18
Union Territory	:	Andaman and Nicobar Islands
District	:	Andaman
Coordinates	:	13° 10' 54" N, 93° 01' 35" E.
Ownership	:	State
Area	:	3,254 ha
Altitude	:	0 - 739 m
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Tropical Wet Evergreen Forest, Tropical Semi -evergreen Forest, Mangrove Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 125: Andaman Islands)

PROTECTION STATUS: National Park, established in 1987

GENERAL DESCRIPTION

The Saddle Peak National Park, with a peak of 737 m above msl has the highest point in the Andaman and Nicobar Islands. The peak is shaped like a double-humped saddle, hence the name. The Park runs north to south along the eastern coast of the North Andaman Island. Most of the eastern boundary of the National Park borders the sea, with a long and rocky beach. The Park also has a freshwater pool, from which water is piped to Diglipur (Pande *et al.* 1991). Though logged in the past, the Park's littoral and evergreen forests are thick and luxuriant. There are 10 perennial streams and 132 seasonal streams inside the Park.

Forest types include Andaman Tropical Evergreen, Andaman Moist Deciduous, Andaman Semi-evergreen, Canebrake, Wet Bamboo and littoral. Main floral species are *Cratoxylum cochinchinense*, *Diospyros marmota*, *Dipterocarpus costatus* and *Euphorbia epiphylloides.*

AVIFAUNA

A detailed checklist of birds is not available, but 11 out of 13 Restricted Range species (identified by Stattersfield *et al.* 1998) are known to occur in this IBA. Andaman Crake *Rallina canningi* is listed by BirdLife International (2001) as Threatened but Data Deficient. Another bird of great conservation concern is the Andaman Teal *Anas albogularis*. Earlier it was considered only a subspecies of Grey Teal *Anas gibberifrons*, therefore it was not listed by BirdLife International in their IUCN Red Data Book. But recently Rasmussen and Anderton (*in press*) have given it full species status. It is an extremely rare species and endemic to the Andaman Islands. The Andaman Teal is found in far flung islands and moves around a lot so it is difficult to estimate its population. Vijayan and Sankaran (2000) estimated population between 500 to 600. However, according to R. Sankaran (*pers. comm.*), the population was underestimated.

Among the remaining ten Restricted Range species, only two species are very common: Brown Coucal *Centropus andamanensis* and White-headed Starling *Sturnus erythropygius*, while the rest of the birds are considered as Near Threatened. Some species such as Andaman Wood-Pigeon *Columba palumboides* and Andaman Cuckoo-Dove *Macropygia rufipennis* are not rare and many even be abundant locally, but looking at their habitat requirement of thick broadleaf primary and secondary evergreen forest and the threats to these forests, these species are listed as Near Threatened (BirdLife International 2001).

Data Deficient	
Andaman Crake	*Rallina canningi*

Near Threatened	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

Endemic Bird Area 125: Andaman Islands	
Andaman Serpent-Eagle	*Spilornis elgini*
Andaman Crake	*Rallina canningi*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Coucal	*Centropus andamanensis*
Andaman Scops-Owl	*Otus balli*
Andaman Hawk-Owl	*Ninox affinis*
Andaman Black Woodpecker	*Dryocopus hodgei*
White-headed Starling	*Sturnus erythropygius*
Andaman Drongo	*Dicrurus andamanensis*
Andaman Treepie	*Dendrocitta bayleyi*

OTHER KEY FAUNA

Mammals of the Park include the endemic Andaman Horseshoe Bat *Rhinolophus cognatus*, included in the List 1 of threatened species in the 1996 IUCN List of Threatened Animals (Baillie and Groombridge 1996). The introduced Himalayan Palm Civet *Paguma larvata* is also found at this IBA site (Pande *et al.* 1991). Saltwater Crocodile *Crocodylus porosus* and Andaman Water Monitor Lizard *Varanus salvator andamanensis* are found but it is difficult to estimate their density.

Large numbers of refugees were settled in Andaman in 1947 despite that evergreen, semi-evergreen and littoral forests still survive in Saddle Peak National Park.

Photo: Asad R. Rahmani

LAND USE

- Nature conservation and research
- Tourism and recreation
- Water management

THREATS AND CONSERVATION ISSUES

- Encroachment
- Livestock grazing
- Agricultural intensification and expansion
- Poaching
- Immigration
- Deforestation
- Firewood collection

There is encroachment on the forest land surrounding the settlements that flourish and grow in the absence of adequate monitoring and enforcement capacities (Andrews and Sankaran 2002). Some patches of forest have been cleared for cultivation. Unsustainable agriculture and tilling on encroached rainforest land, has led to the problem of soil erosion (Andrews and Sankaran 2002). Livestock grazing, hunting, firewood and minor forest produce collection also take place (Pande *et al*. 1991) and put pressure on the Island biodiversity.

Ali (2000) has conducted socio-economic surveys of the villages bordering this Park. During 1958-59, a large number of refugees were settled here after the partition of India in 1947. They depend on forests for fuel wood, timber and house construction.

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Harry Andrew and Rauf Ali

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AN-19

TILLANCHONG WILDLIFE SANCTUARY, CAMORTA, KATCHAL, NANCOWRY AND TRINKAT

IBA Site Code	:	IN-AN-19
Union Territory	:	Andaman and Nicobar Islands
District	:	Nicobar
Coordinates	:	8° 11' 60" N, 93° 31' 00" E
Ownership	:	State
Area	:	1,683 ha (Tillanchong WLS) (others not available)
Altitude	:	0 - 323 m
Rainfall	:	3,800 mm
Temperature	:	20 °C to 32 °C
Biogeographic Zone	:	Islands
Habitats	:	Tropical Wet Evergreen Forest, Tropical Semi-evergreen Forest, Tropical Grassland, Littoral Forest, Mangrove, Lagoons and Beaches

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 126: Nicobar Islands)

PROTECTION STATUS: Tillanchong Wildlife Sanctuary, established in January 1985. Others not officially protected

GENERAL DESCRIPTION

The Nicobar Islands can be divided into three distinct subgroups: the Great Nicobar subgroup, the Nancowry subgroup and the Car Nicobar subgroup. Tillanchong, Camorta, Katchal, Nancowry and Trinkat Islands lie in the Nancowry subgroup of islands, *c.* 58 km north of the Great Nicobar subgroup. This subgroup consists of 10 islands and smaller islets of which one island and two islets are uninhabited (Sankaran 1998). Of these, three islands are larger than 100 sq. km, two are 36 and 67 sq. km and three are less than 17 sq. km. Tillanchong is uninhabited and a wildlife Sanctuary (Sankaran 1995).

The climate of these islands can be defined as humid, tropical coastal. The islands receive rainfall from both the southwest and northeast monsoon, with maximum precipitation between May and December, and the driest period between January and April (Sankaran 1995).

The forest type of the Nicobar Islands can be broadly classified as Andaman Tropical Evergreen, Andaman Semi-Evergreen, Littoral Forest and Tidal Swamp Forest (Mangrove), the inland areas being either forested or grasslands, and a significant proportion of the coast being mangroves.

AVIFAUNA

A total of 128 of birds are known from the Nicobar group of islands (Abdulali 1964, 1967; Das 1971). During his study on the Nicobar Scrubfowl (=Megapode) *Megapodius nicobariensis*, Sankaran (1998) recorded 57 bird species. Later, Sivakumar and Sankaran (2002) added four more species (Lesser Frigatebird *Fregata ariel*, Large Hawk Cuckoo *Hierococcyx sparverioides*, Ashy Drongo *Dicrurus leucophaeus*, and Eyebrowed Thrush *Turdus obscurus*) to the checklist. None of them are presently of much conservation concern, but worth monitoring.

Perhaps the most important bird is the Nicobar Megapode *Megapodius nicobariensis nicobariensis*, a subspecies of the Nicobar megapode occuring on seven islands of the Nancowry group: Camorta, Nancowry, Trinkat, Katchall, Teressa, Bompoka, and Tillangchong. The population of this subspecies is between 600 to 2100 breeding pairs (Sankaran 1998), while the other subspecies *abbotti* is much more common.

The Nicobar Bulbul *Hypsipetes nicobariensis* is exclusive to the Nancowry subgroup. It is facing a threat from the introduced Andaman Red-whiskered Bulbul *Pycnonotus jacosus whistleri*, which is endemic to Andaman Islands, as both species probably occupy the same ecological niche (Sankaran 1998). The British introduced the Andaman Red-whiskered Bulbul to Comorto in the late 1800s. It is now also present on Nancowry, Trinkat, Katchall, Teresa and Car Nicobar (another IBA).

The Nicobar Sparrowhawk *Accipiter butleri* is endemic to the Nicobar Islands. Ali and Ripley (1987) have recognized two subspecies from Nicobar islands: Katchal Shikra *Accipiter badius obsoletus* and Car Nicobar Shikra *A. badius butleri*, while Inskipp *et al*. (1996) and Grimmett e*t al*. (1998) have recognized only Nicobar Sparrowhawk *Accipiter butleri* as valid species. Recently, Rasmussen and Anderton (in press) have also considered *Accipiter butleri* as full species. Sankaran (1998) considers *butleri* to be endangered. BirdLife International (2001) has listed it as Vulnerable and Restricted Range (Endemic) because it is confined to 'Nicobar Islands Endemic Bird Area'. The primary threat to this species appears to be habitat loss.

There are nine Restricted Range species in the Nicobar Islands (Stattersfield *et al*. 1998). Except for the Nicobar Parakeet *Psittacula caniceps*, which has been reported from the islands of Montschall, Kondul and the Great Nicobars (Abdulali 1964), all other species have been reported from this IBA.

Sankaran (1998) has listed 37 bird species from these islands. Recently, Rasmussen and Anderton (*in press*) have upgraded many subspecies to full species. The 'new' species occurring in these islands are the Andaman Pompadour Pigeon *Treron chloroptera*, earlier considered as a subspecies of *Treron pompadora*. It is still a common bird and Sankaran (1998) found it on all the five islands that constitute this IBA. Similarly, the Nicobar Green Imperial Pigeon *Ducula nicobarica*, an earlier subspecies of the widely distributed Green Imperial Pigeon *Ducula aenea* (Ali and Ripley 1987, Grimmett *et al*. 1998) was also found in all the islands of this site. Both species are not immediately threatened but they have to be considered as Restricted Range species because total habitat available to them is much below 50,000 sq. km (the EBA criteria, see Stattersfield *et al*. 1998).

The Nicobar or Hume's Brown Hawk-owl *Ninox scutulata obscura* has become *Ninox obscura*. It could be a very rare species as Abdulali (1967) did not record it in the Nicobars, and Sankaran

(1998) also did not see it in any of the five islands. It could be one of the rarest endemic birds of the Nicobar Islands. More information is required to determine its status.

Vulnerable	
Nicobar Sparrowhawk	*Accipiter butleri*
Nicobar Megapode	*Megapodius nicobariensis*
Nicobar Bulbul	*Hypsipetes nicobariensis*
Near Threatened	
Nicobar Serpent-Eagle	*Spilornis minimus*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Hawk-Owl	*Ninox affinis*

Endemic Bird Areas 126: Nicobar Islands	
Nicobar Serpent-Eagle	*Spilornis minimus*
Nicobar Sparrowhawk	*Accipiter butleri*
Nicobar Megapode	*Megapodius nicobariensis*
Andaman Wood-Pigeon	*Columba palumboides*
Andaman Cuckoo-Dove	*Macropygia rufipennis*
Andaman Hawk-Owl	*Ninox affinis*
Nicobar Bulbul	*Hypsipetes nicobariensis*
White-headed Starling	*Sturnus erythropygius*

OTHER KEY FAUNA

The only large terrestrial native mammal is the Andaman Wild Pig *Sus scrofa andamanensis*. Some people claim that even this was brought in by earlier settlers from wherever they came. Other fauna includes the Nicobar Short-nosed Fruit Bat *Cynopterus sphinx scherzeri*, and the endemic Nicobar Flying Fox *Pteropus faunulus*. The unique herpetofaunal diversity of this region includes Cantor's Pit Viper *Cryptelytrops (Trimeresurus) cantori*, an endemic and rare species of reptile, which is reported only from two localities Camorta Island and Car Nicobar, and is considered as Vulnerable by IUCN. Another endemic and endangered species, Nicobarese Worm Lizard *Dibamus nicobaricum* is also reported from this area (Anon. 2001).

LAND USE

- Plantations
- Nature conservation and research
- Agriculture
- Transport
- Tourism and recreation
- Fisheries

Regular monitoring of the population of Nicobar Megapode *Megapodius nicobariensis* is required to keep track of its conservation status.

Photo: K. Sivakumar

THREATS AND CONSERVATION ISSUES

- Construction and impact of free port
- Immigration of mainlanders
- Plantations
- Infrastructure
- Disturbance to birds
- Hunting and predation
- Urbanisation/ industrialisation

Based on the number of endemics present, the Nancowry group of islands was identified as an IBA of prime importance to avifauna. Katchall, Camorta and Nancowry were identified as priority areas for avian conservation.

Several developmental plans are proposed for the Nicobar Islands, particularly the building of a dry dock and refuelling base for international shipping in the Galathea Bay, and making Great Nicobar a free port. If implemented, these will irrevocably damage the island ecosystem and cause immediate loss in the biodiversity of the islands as they are much too small to sustain the impact of such activities. Alteration of the ecosystem would adversely affect and accelerate the extinction of endemic avifauna including the Nicobar Megapode. This species is also under severe pressure due to hunting and predation of eggs by the Monitor Lizard. But the primary threat to the Nicobar Megapode is habitat loss due to the increasing human population, this being most acute in the Nancowry group of islands. Over 600 ha of primary forest were replaced with rubber plantations on Katchall. Expanding townships, development of new roads, airstrips and infrastructure for defence establishments, are all compounding the problem (Sankaran 1995).

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