

MEGHALAYA



Photo: Anwaruddin Choudhury

Nohkalikai falls near Cherapunjee. The cliffs near the falls are the major breeding sites of the threatened Dark-rumped Swift *Apus acuticauda*.

Meghalaya (25° 02' - 26° 07' N and 89° 49' - 92°50' E) is literally 'the abode of the clouds'. It became an autonomous State on April 2, 1970 and was declared a State of the Indian Union on January 21, 1972. The State has a geographical area of 22,42,900 ha (0.7% of the country's geographical area). Topographically, Meghalaya is a plateau except for narrow strips of plains in the northern, western and southern parts.

Shillong, the capital, is situated in the centre of a high plateau. The elevation ranges from less than 100 m to 1961 m. The highest peak is the Laitkor Peak (1961m). Nokrek is the highest peak in the Garo Hills. As per the Census records, the State is the homeland of three of India's ancient hill communities – the Khasis, the Jaintias and the Garos. Khasi is spoken by the Khasis and Jaintias, while Garo Hills is the homeland of the Garos who prefer to call themselves 'Achik'.

The western part of the State is warmer where temperature ranges between 12 °C to 33 °C. The central upland is relatively cooler where minimum temperature goes down to 2 °C and the maximum temperature is around 24 °C. The average annual rainfall in the State varies from 4,000 mm to 11,436 mm. Cherrapunji (= Cherapunjee) and Mawsynram in Meghalaya are well known as the highest rainfall spots of the world. Cherrapunji had the distinction of recording the highest rainfall in the world, 24,461 mm, in 1860-61 (Choudhury 2003). The major rivers of Meghalaya include the Simsang, the Manda and the Ganol in the Garo Hills and the Jadukata, the Umiam, the Umtrew, the Lubha and the Kopili in the Khasi and the Jaintia Hills.

The total human population of Meghalaya is 2.31 million, which is 0.2% of India's population (2001 Census). Nearly 80% of the population lives in the rural areas. Meghalaya's population is predominantly tribal (85.5%). As per the 2001 Census the population density of the State is 103 persons per sq. km.

Vegetation

As per the Forest Survey of India report of 2001, Meghalaya ranks seventh amongst the Indian states in respect of percentage of geographical area under forest cover. The forests of Meghalaya are rich in biodiversity and endowed with rare species of orchids and medicinal plants. The major forest types in Meghalaya are Subtropical Pine, Subtropical Broadleaf, Tropical Wet Evergreen, Tropical Semi-Evergreen, and Tropical Moist Deciduous Forests. Sacred groves mostly located in the Khasi and the Jaintia hills represent the climax vegetation of the area (Ministry of Environment and Forest 2001). According to Haridasan and Rao (1985), the forest vegetation of Meghalaya consists of Tropical Evergreen Forest in the low-lying areas with high rainfall; Tropical Semi-Evergreen Forest up to the elevation of about 1,200 m

with annual rainfall between 1,500 to 2,000 mm; Tropical Moist Deciduous Forest in areas with less than 1,500 mm rainfall; Grassland on the tops of the Khasi, the Jaintia and the Garo Hills; isolated patches of Temperate Forest along the southern slopes of the Khasi and Jaintia Hills; and Subtropical Pine Forest with pure stands of *Pinus kesiya* confined to the higher reaches of the Shillong Plateau. Bamboos and canes are found in undisturbed forests. Meghalaya has many endemic plant species, the most famous being the carnivorous pitcher plant *Nepenthes khasiana*.

The total recorded forest area in the State is 9,496,00 ha, which is 42.3 % of the geographical area of the State and 1.2% of the country's forest area (Ministry of Environment and Forest 2001). According to legal classification, reserved forests constitute 1,112,00 ha (11.7%), protected forests 12,00 ha (0.1%) and unclassified forests constitute 18,372,00 ha (88.2%) of the total forests of the State. The control of unclassified forests mostly rests with the community, private individuals and the Autonomous District Councils of the Khasi, the Jaintia and the Garo Hills. Dense forest constitutes 5,681,00 ha (25.3%), open forest 8,903,00 ha (44.2%) while non-forest area constitutes 30.5% of the total geographical area of the State (Ministry of Environment and Forest 2001).

Shifting cultivation or *jhumming* is widely prevalent in the State. It is believed that the loss of forest cover in the State is mainly due to shifting cultivation. In a study undertaken by the Forest Survey of India in 1999, it is estimated that about 0.18 million ha area has been affected by this practice during 1987-97. The area currently affected by shifting cultivation is estimated at 0.11 million ha.

IBAs AND PROTECTED AREAS

Meghalaya has two national parks and five wildlife sanctuaries. Not all protected areas of Meghalaya fulfil the IBA criteria. All the seven protected areas are small. The largest is the Balpakram National Park with around 20,000 ha and the smallest is the Baghmara Pitcher Plant Sanctuary of 100 ha. However, several patches of forests are protected as sacred groves. Mawphlang Sacred Grove is considered as an IBA based on the presence of threatened, restricted range and biome species (Lahkar 2002). More than 90% of the land belongs to local communities. There are several community-protected areas in Meghalaya where large scale commercial exploitation of forest produce is not allowed, but local villagers are free to use forest resources.

The Balpakram complex includes the Balpakram National Park, the Siju Wildlife Sanctuary and the Baghmara Reserve Forest. The Nokrek National Park is very small (5,000 ha) but it serves as the core area of the Nokrek Biosphere Reserve (82,000 ha). The area of the National Park has been acquired by outright purchase of land from the local communities by the Government of Meghalaya. The Nongkhylllem Wildlife Sanctuary (2,900 ha) and Nongkhylllem Reserve Forest (9,691 ha) show high avian diversity (Choudhury 1998). There is a proposal by the State Government to acquire a portion of the community forest (c. 2,300 ha), west of the Umtrew River and declare it as a sanctuary. The Saipung Reserve Forest, the oldest and largest notified reserve in the state of Meghalaya, having been gazetted in 1877, is located near the North Cachar Hills district of the neighbouring state of Assam. Saipung is relatively less accessible. The area is rich in wildlife but information on bird life is insufficient so it is treated as Data Deficient. Upper Shillong is another IBA site close to Shillong, the capital of Meghalaya.

Number of IBAs and IBA criteria

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

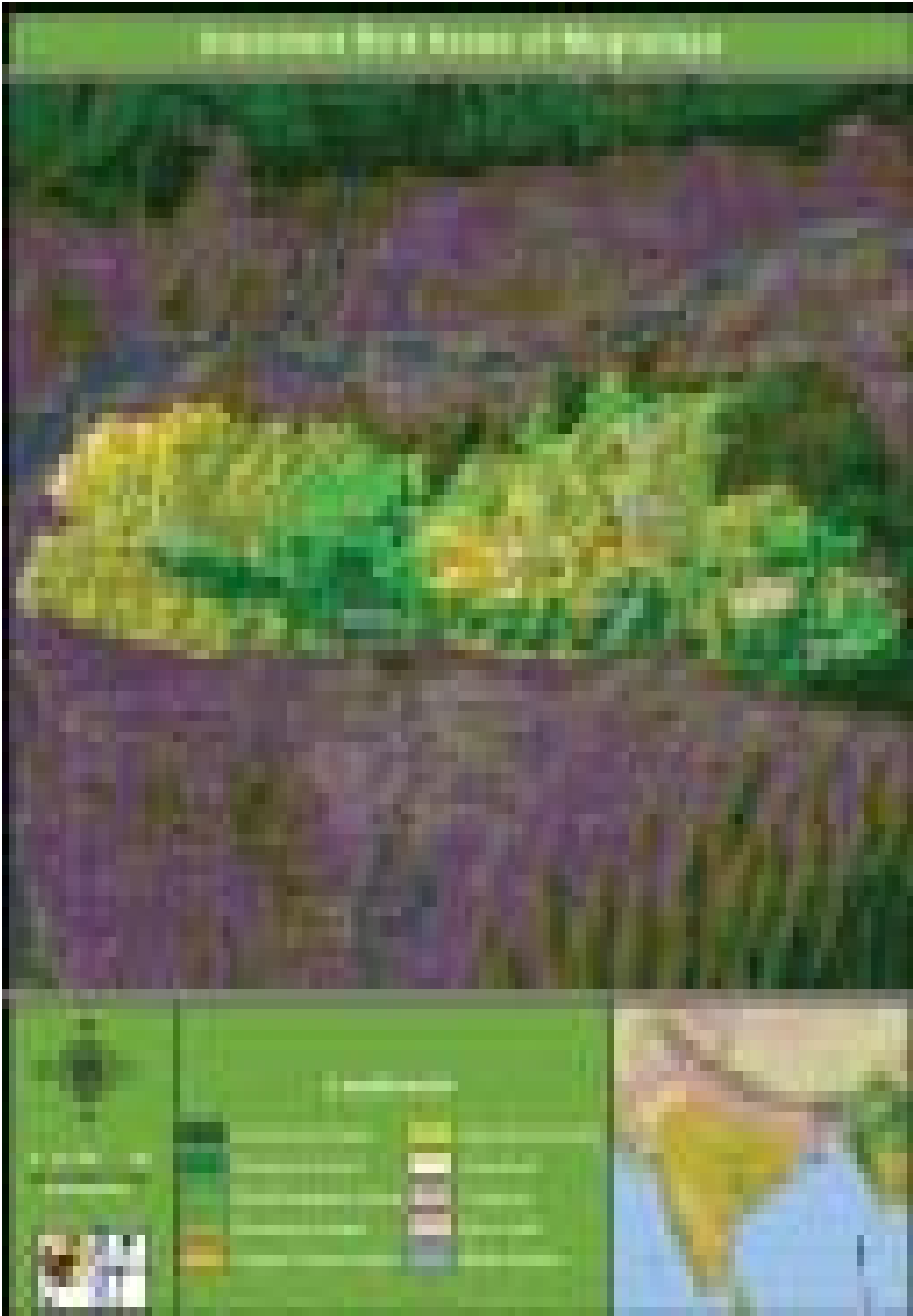
The carnivorous pitcher plant is endemic to Meghalaya and can be seen in IBAs such as Balpakram.



Photo: Anwaruddin Choudhury

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IBAs of Meghalaya

IBA site codes	IBA site names	IBA criteria
IN-ML-01	Balpakram Complex	A1, A2, A4i
IN-ML-02	Mawphlang Sacred Grove	A1, A2
IN-ML-03	Nokrek National Park	A1, A2, A3
IN-ML-04	Nongkhylllem Wildlife Sanctuary	A1
IN-ML-05	Norpuh Reserve Forests	A1, A2
IN-ML-06	Riat Khwan-Umiam	A1, A2
IN-ML-07	Saipung	Data Deficient
IN-ML-08	Upper Shillong	A1, A2
IN-ML-09	Cherapunjee: Cliffs, Gorges And Sacred Groves	A1, A2

IN-ML

AVIFAUNA

Despite its relatively small size, Meghalaya is rich in bird life. Among the Threatened species, the following have been reported from the State: Slender-billed Vulture *Gyps tenuirostris*, Greater Adjutant *Leptoptilos dubius*, White-winged Duck *Cairina scutulata*, Pallas's Fish-Eagle *Haliaeetus leucoryphus*, Greater Spotted Eagle *Aquila clanga*, Lesser Kestrel *Falco naumanni*, Swamp Francolin *Francolinus gularis*, Wood Snipe *Gallinago nemoricola*, Purple Wood-Pigeon *Columba punicea*, Dark-rumped or Khasi Hills Swift *Apus acuticauda*, Rufous-necked Hornbill *Aceros nipalensis*, Fea's Thrush *Turdus feae*, Marsh Babbler *Pellorneum palustre*, Tawny-breasted Wren-Babbler *Spelaornis longicaudatus*, Slender-billed Babbler *Turdoides longirostris*, and Beautiful Nuthatch *Sitta formosa*. Many species have historical records (e.g., Bengal Florican *Houbaropsis bengalensis*). Proper systematic surveys on bird life are required in the State.

List of threatened birds with IBA site codes

Critically Endangered		
Oriental White-backed Vulture	<i>Gyps bengalensis</i>	IN-ML-01, 03, 04
Slender-billed Vulture	<i>Gyps tenuirostris</i>	IN-ML-03, 04
Endangered		
White-winged Duck	<i>Cairina scutulata</i>	IN-ML-01
Vulnerable		
Greater Spotted Eagle	<i>Aquila clanga</i>	IN-ML-06
Wood Snipe	<i>Gallinago nemoricola</i>	IN-ML-04
Dark-rumped Swift	<i>Apus acuticauda</i>	IN-ML-09
Rufous-necked Hornbill	<i>Aceros nipalensis</i>	IN-ML-05
Tawny-breasted Wren-Babbler	<i>Spelaornis longicaudatus</i>	IN-ML-02, 05, 08
Near Threatened		
Darter	<i>Anhinga melanogaster</i>	IN-ML-04, 06
Lesser Grey-headed Fish-Eagle	<i>Ichthyophaga humilis</i>	IN-ML-03, 04
Red-headed Vulture	<i>Sarcogyps calvus</i>	IN-ML-04
White-cheeked Hill-Partridge	<i>Arborophila atrogularis</i>	IN-ML-04, 05
Blyth's Kingfisher	<i>Alcedo hercules</i>	IN-ML-02, 04, 08
Great Pied Hornbill	<i>Buceros bicornis</i>	IN-ML-04, 05
Brown Hornbill	<i>Anorrhinus tickelli</i>	IN-ML-05 (?)

THREATENED BIRDS FOR WHICH MEGHALAYA IS IMPORTANT

Greater Adjutant *Leptoptilos dubius* **Endangered**

Widely but sparsely distributed in the adjacent Brahmaputra Valley of Assam. In Meghalaya, recorded from the Baridua area in the extreme north near Assam's capital, Guwahati (Choudhury 1996a). It is now frequently seen in the area, especially in flight and in garbage dumps. The garbage dumps have grown significantly due to development and increased human settlements in the area.

White-winged Duck *Cairina scutulata* **Endangered**

In Meghalaya, one IBA is important for this Duck: Balpakram Complex (Choudhury 1996b). There is also historical record from this area (Green 1992), which is also the westernmost record of the species so far.

Dark-rumped or Khasi Hills Swift *Apus acuticauda* **Vulnerable**

The Dark-rumped Swift breeds in a few colonies in the Eastern Himalayas of Bhutan, possibly in Nepal, and the hills of Meghalaya, apparently dispersing during the winter (BirdLife International 2001). It is one of the nine threatened members of the 21 bird species that are entirely restricted to the Eastern Himalayas Endemic Bird Areas (EBA 130). In Meghalaya, it is found in the Khasi Hills (Ali and Ripley 1987). Recently, the birds were observed near Cherrapunji, at Lyetkynsew, Khasi hills, about 1,350 m, around the cliffs, and at the Nohkallikai waterfall (Ahmed 2003, BirdLife International 2001).



Restricted Range species

The IBAs of Meghalaya lie in the Eastern Himalayas (Endemic Bird Area 130) (Stattersfield *et al.* 1998). Five restricted range species of this EBA have been reported from the State.

Endemic Bird Area 130: Eastern Himalayas		
Grey Sibia	<i>Heterophasia gracilis</i>	IN-ML-01, 02, 03, 05, 08
Dark-rumped Swift	<i>Apus acuticauda</i>	IN-ML-09
Tawny-breasted Wren Babbler	<i>Spelaeornis longicaudatus</i>	IN-ML-05, 08
White-naped Yuhina	<i>Yuhina bakeri</i>	IN-ML-05, 06, 08
Black-browed Leaf- Warbler	<i>Phylloscopus cantator</i>	IN-ML-05, 06, 08

Biomes

Three biomes are found in Meghalaya, thanks to its habitat and altitudinal diversity. Below c. 1,000 m, Biome-9 (Indo-Chinese Tropical Moist Forest) is found, with its lowland Evergreen Rain Forest, Semi-Evergreen Rain Forests and Moist Deciduous Forests. In this biome, BirdLife International (undated) has listed 19 species that are representative. Many are found in Meghalaya. Above 1,000 and below 2,000 m, Biome-8 (Sino-Himalayan Subtropical Forest) is found, with its 95 bird species. Pine Forest, Hill Evergreen Forest and Lower Montane Rain Forests are found in this biome. The narrow plains in the Garo Hills are a part of the Indo-Gangetic Plains (Biome-12).

THREATS AND CONSERVATION ISSUES

As more than 90% of the land belongs to the local communities, community participation in conservation, otherwise also necessary, is extremely important in Meghalaya. The key threats to the birds of these areas are moderate habitat loss (e.g., due to logging, agriculture, overgrazing) and hunting.

Insurgency

This is one of the major problems in the northeastern states that restrict fieldwork in many areas.

Dam and hydroelectric power projects

There is a proposal for a dam on the Simsang River, while a proposal of a major cement plant near Siju was shelved due to protests from environmental groups. In Nongkhyllem, a hydroelectric power project was set up long before the declaration of the sanctuary but fortunately, no submergence of forest land was necessary.

Tree Cutting for fuel-wood

This problem is very common in Meghalaya and most of the IBAs face it. For example, in Balpakram National Park, there are about 500 inhabitants, mostly Garo tribals, in the six villages within the protected area. While it may not be desirable to evict them from their ancestral home environmental awareness and eco-development programmes should be started to minimize the damage to the forest. Timber smuggling is also a major problem. The Park does not have sufficient staff to patrol the forest.

Shifting Cultivation

Jhum or shifting cultivation is the primary agricultural practice in the hilly ranges. Owing to the growing human population, the periodicity of *jhuming* has decreased to three-five years, not leaving much time for the healing of the vegetation. It has been found that repeated *jhuming* increases the silt load. Shifting cultivation has, for example, heavily disturbed the vegetation on the lower slopes of the Tura Range. There is a need to reduce shifting cultivation, especially on steep slopes and in the areas important for biodiversity conservation.

Hunting

Hunting is still a major problem in Meghalaya. Teenagers are often seen with catapults, killing small birds. Environmental awareness in schools and colleges, backed by strong legislation and community participation would help in reducing this unfortunate loss of bird life.

Coal Mining

Coal mining is a common practice in the Garo and the Jaintia Hills, and this affects the water bodies, especially the south flowing rivers. Both open cast and traditional 'rat hole' mining are seen.

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

The rare Clouded Leopard is the state animal of Meghalaya and occurs in many IBAs of the state.

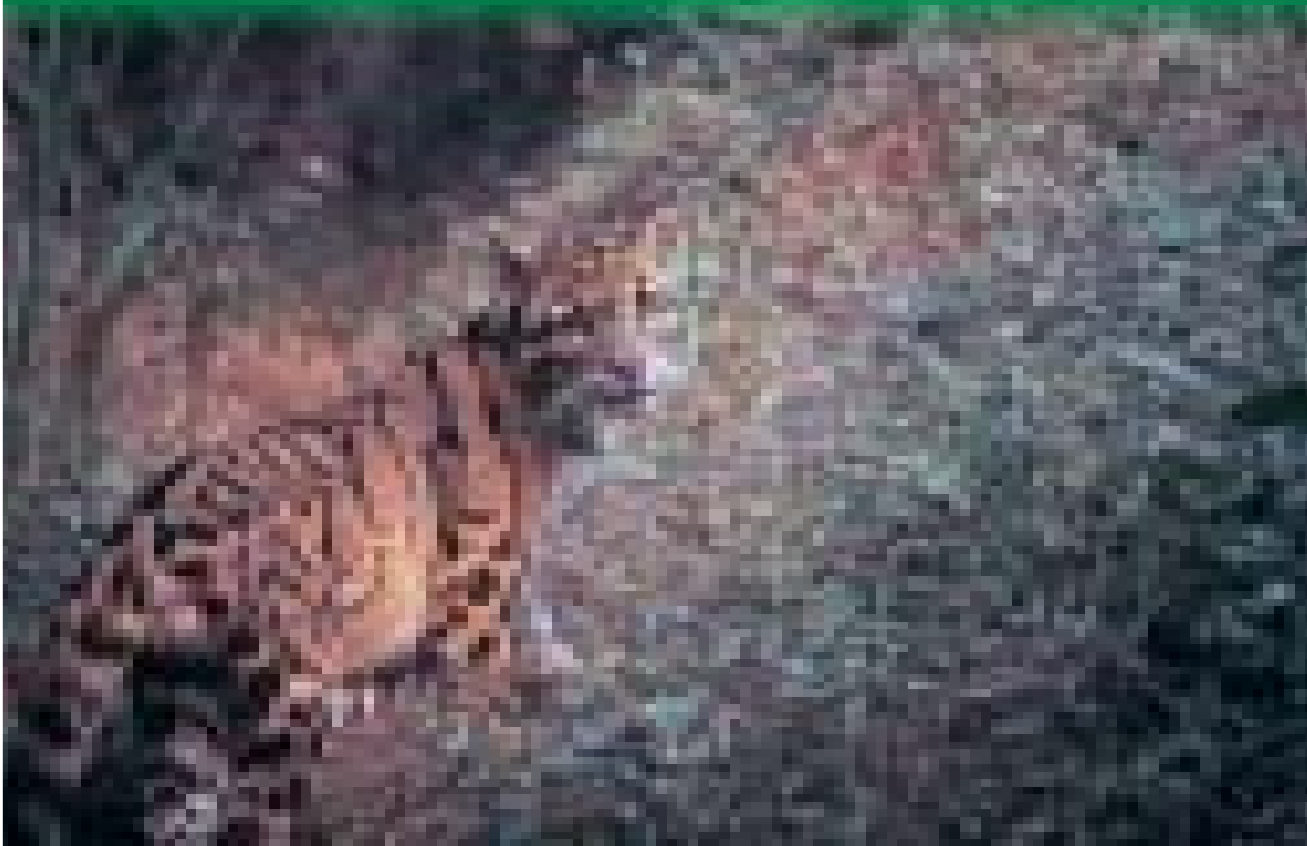


Photo: Anwaruddin Choudhury

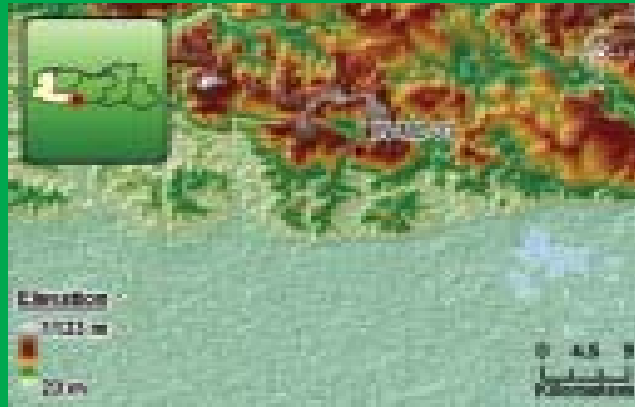
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ML-01

BALPAKRAM COMPLEX



IBA Site Code	: IN-ML-01
State	: Meghalaya
District	: South Garo Hills
Coordinates	: 25° 14' 46" N, 90° 53' 24" E
Ownership	: State
Area	: 26,947 ha
Altitude	: 50 - 1,026 m
Rainfall	: > 5,000 mm
Temperature	: 5 °C to 34 °C
Biogeographic Zone	: North-East
Habitats	: Tropical Wet Evergreen Forest, Tropical moist Deciduous Forest, Tropical Grassland

CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas), A4i (>1% biogeographic population)

PROTECTION STATUS: National Park established in February 1986, and Siju Wildlife Sanctuary established in 1979

GENERAL DESCRIPTION

This site includes two protected areas and a reserve forest in South Garo Hills district in western Meghalaya. The protected areas are Balpakram National Park (22,000 ha) and Siju Wildlife Sanctuary (518 ha), while the reserve forest is Baghmara (4,429 ha). The first two are contiguous, while the reserve forest is linked through unclassified forests. Balpakram literally means “continuous wind blow”. The Garos believe that it is the land of departed souls. The site, well known for its beautiful scenery, contains expansive tracts of relatively undisturbed forest clad hills and gorges. The area supports a large Asian Elephant *Elephas maximus* population (Anon. 2002, Choudhury 1999).

Balpakram is comprised of a plateau of c. 700 ha at 797 m above msl from which originate a number of rivers that have cut deep gorges (up to nearly 800 m) and valleys in various directions. Mahadeo is one such spectacular canyon. The area is rich in minerals, notably coal (with a possible reserve of 107 million tonnes), limestone, mica, feldspar and beryl. Siju WLS is contiguous with Balpakram, and is also hilly with the River Simsang along its western boundary. The famous Siju cave is just outside the boundary of the Sanctuary. Baghmara RF located closeby touches the India-Bangladesh international border. It is a low hilly undulating country with marshy depressions. We have considered all three areas as one IBA.

As the area is relatively remote, the forest cover is still intact. Eight forest types have been identified in this IBA: Tropical Evergreen forest on the gorges and steep slopes; Tropical Semi-evergreen or Mixed Evergreen forest in depressions on the plateau and surrounded by grassland or secondary forest; Riverine forest in areas subject to periodic inundation; grassland and tree savanna confined to Rongcheng and Lumsorjong areas and maintained through browsing and burning; Tropical Deciduous forest, which is a successional type and man-made forest; Bamboo forest, dominated by *Bambusa* sp. and *Melocanna bambusifolia*; and secondary formations in areas of shifting cultivation (Kumar and Rao 1985).

AVIFAUNA

This site is the known westernmost distributional limit of the White-winged Duck *Cairina scutulata* in its global range (Choudhury 1996a, 2002).

The Balpakram Complex is extremely rich in avian diversity, with about 250 species identified till now. It lies in the Eastern Himalayas Endemic Bird Area (EBA-130) and covers at least two biomes: Biome-9 (Indo-Chinese Tropical Moist Forests) and Biome-8 (Sino-Himalayan Temperate Forests). The following are some interesting species of Balpakram Complex: Mountain Bamboo Partridge *Bambusicola fytchii*, White-cheeked Partridge *Arborophila atrogularis*, Grey-peacock Pheasant *Polyplectron bicalcaratum*, Common Hill Partridge *Arborophila torqueola*, Grey-headed Parakeet *Psittacula finschii*, Striated Bulbul *Pycnonotus striatus*, White-throated Bulbul *Alphoixus flaveolus*, Black Bulbul *Hypsipetes leucocephalus*, Blue-throated Barbet *Megalaima asiatica*, Bay Woodpecker *Blythipicus pyrrhotis*, Short-billed Minivet *Pericrocotus brevirostris*, Orange-bellied Leafbird *Chloropsis hardwickii*, Slaty-backed Forktail *Enicurus schistaceus*, Slaty-bellied Tesia *Tesia olivea*, Grey-bellied Tesia *T. cyaniventer*, Streaked Spiderhunter *Arachnothera magna*, Maroon Oriole *Oriolus traillii*, Grey Treepie *Dendrocitta frontalis*, Nepal House Martin *Delichon nipalensis*, Pale-headed Woodpecker *Gecinulus grantia*, Black-backed Forktail *Enicurus immaculatus*, Lesser Necklaced Laughingthrush *Garrulax monileger*, Greater Necklaced Laughingthrush *G. pectoralis* and Sultan Tit *Melanochlora sultanea*.

Critically Endangered

Oriental White-backed Vulture *Gyps bengalensis*

Endangered

White-winged Duck *Cairina scutulata*

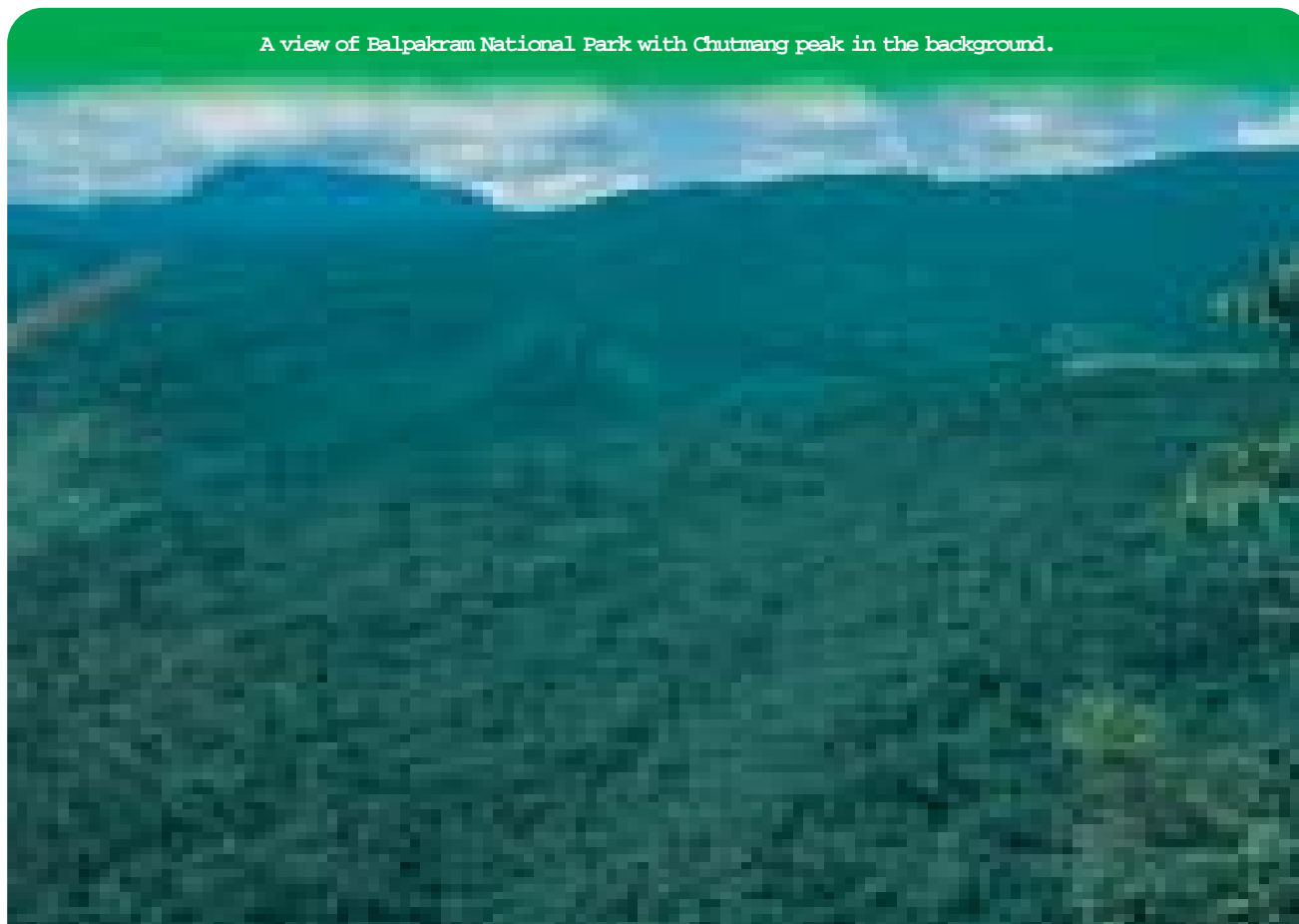
Endemic Bird Area 130: Eastern Himalayas

Grey Sibia *Heterophasia gracilis*

OTHER KEY FAUNA

The area supports a diverse fauna and, is an important refuge for Asian Elephant and the Tiger *Panthera tigris*. Seven species of primates are present, namely Assamese Macaque *Macaca assamensis*, Rhesus Macaque *M. mulatta*, Stump-tailed macaque *M. arctoides*, Pig-tailed macaque *M. nemestrina*, Capped Langur *Trachypithecus pileata* and Hoolock Gibbon *Hylobates hoolock*, and Slow Loris *Nycticebus coucang*. Carnivores include Wild Dog *Cuon alpinus*, Himalayan Black Bear *Ursus thibetanus*, Leopard

A view of Balpakram National Park with Chutrang peak in the background.



ML-01

Photo: Anwaruddin Choudhury

Panthera pardus, Clouded Leopard *Neofelis nebulosa*, Golden Cat *Catopuma temmincki*, Red Panda *Ailurus fulgens* (Choudhury 1996b) and a number of other small felids. Ungulates include Wild Boar *Sus scrofa*, Sambar *Cervus unicolor*, Barking deer *Muntiacus muntjak*, Water Buffalo *Bubalus arnee* (= *bubalis*), Gaur *Bos frontalis*, Goral *Nemorhaedus goral* and Serow *N. sumatraensis*.

LAND USE

- q Forest
- q Nature Conservation

THREATS AND CONSERVATION ISSUES

- q Coal and limestone mining in the nearby areas
- q Plan to a build dam
- q Felling of trees
- q *Jhum* cultivation
- q Disturbance to birds (poaching, trapping)
- q Firewood collection
- q Livestock grazing

Balpakram is often in the news for notoriety rather than fame. There was a controversy about the actual size of the Park, as a lot of money was involved in purchasing land for the Park. Recently, insurgency has become a major issue in the area. Coal mining in the nearby areas is also a major concern. There is a proposal for a dam on the Simsang river, while a proposal of major cement plant near Siju was shelved due to protest from environmental groups. There are about 500 inhabitants, mostly Garo tribals, in the six villages within the protected area. While it may not be desirable

to evict them from their ancestral homes, environmental awareness and eco-development programmes should be started to minimize the damage to the forest.

Balpakram is an important area as it is an elephant habitat. It is suggested that adjacent reserve forests and some forest areas from West Khasi Hills district should be included in the Park to make it more compact and to reduce man-animal conflict.

KEY CONTRIBUTORS

Anwaruddin Choudhury, Kulojyoti Lahkar and Firoz Ahmed

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ML-02

MAWPHLANG SACRED GROVE



IBA Site Code	: IN-ML-02
State	: Meghalaya
District	: East Khasi Hills
Coordinates	: 25° 28' 00" N, 91° 43' 60" E
Ownership	: Community
Area	: >100 ha
Altitude	: c. 1,800 m
Rainfall	: >2,000 mm
Temperature	: 2 °C to 28 °C
Biogeographic Zone	: North-East
Habitats	: Subtropical Broadleaved Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas)

PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

This IBA site is a sacred grove near Mawphlang village in East Khasi Hills district, 25 km from Shillong, the capital city of Meghalaya. The grove is known as 'Law-Lyngdoh'. In Meghalaya, the local communities have protected small areas of primary forest as sacred groves since time immemorial. The villagers believe that departed souls of ancestors abide in these forests. No one collects fruits, flowers, leaves and wood from these forests. The villagers believe that this would offend the sylvan deities. These tiny forests are more or less untouched by man for centuries. The site near Mawphlang is the most well known of the sacred groves. Tourists, researchers as well as picnickers visit the area. Two celebrated British botanists who studied this site were Sir J. D. Hooker in the 19th century and Dr N. L. Bor in the 20th century.

The terrain of the area is undulating, and scenic. The grove is spectacular in spring, with two species of rhododendrons in bloom.

The forest of Law-Lyngdoh Sacred Grove is Subtropical Broadleaf type, although the Khasi Pine *Pinus kesiya* dominates the surrounding areas. The main flowering trees are *Rhododendron formosum*, *R. arboreum* and *Pyrus pashia*. Some other noteworthy shrubs and trees include the oak *Quercus griffithii*, *Daphne cannabina* and *Symplocos cochinchinensis*. There are ferns such as *Lindsaea odorata*, and species of *Botrychium*, *Peraneum*, *Dryopteris* and *Polypodium* (Hajra 1975). The areas surrounding the sacred grove are totally barren.

AVIFAUNA

About 70 species of birds have been reported from this 300 ha site (Lahkar 2002). Robson (2000) has heard the globally threatened Tawny-breasted Wren Babbler *Spelaornis longicaudatus* at Mawphlang in mid April. It appeared to be common, occurring in non-forest habitat (secondary growth, dense fern growth etc.) as well as undergrowth in forest. This is the only known globally threatened bird species found till now on this site but more species are likely to occur here. The site lies in the Eastern Himalayas Endemic Bird Area (EBA), in which Stattersfield *et al.* (1998) have listed 21 Restricted Range species. Besides the Tawny-breasted Wren Babbler, the Grey Sibia *Heterophasia gracilis* has been seen (Lahkar 2002).

BirdLife International (undated) has categorized birds according to biome-restricted assemblages. This site is located in Sino-Himalayan Subtropical Forest (Biome-8). Ninety-five species are listed in this biome, out of which only six have been located at this site till now (Lahkar 2002). They are Blyth's Kingfisher *Alcedo hercules*, Golden-throated Barbet *Megalaima franklinii*, Black-winged Cuckoo-Shrike *Coracina melaschistos*, Short-billed Minivet *Pericrocotus brevirostris*, Maroon Oriole *Oriolus traillii* and Grey Treepie *Dendrocitta formosae*. However, more are likely to be found as the habitat is intact.

Vulnerable	
Tawny-breasted Wren-Babbler	<i>Spelaornis longicaudatus</i>
Near Threatened	
Blyth's Kingfisher	<i>Alcedo hercules</i>
Endemic Bird Area 130: Eastern Himalayas	
Grey Sibia	<i>Heterophasia gracilis</i>

OTHER KEY FAUNA

As the area is very small (100 ha), and the surrounding areas are totally barren, no large mammal is found. Only small mammals such as squirrels, moles and rats are found. So far the following species have been recorded: Himalayan or Short-tailed Mole *Euroscaptor micrura*, Mole-shrew or Szechuan Burrowing Shrew *Anourosorex squamipes*, Savi's Pigmy Shrew *Suncus etruscus* (a specimen was obtained by W. Koelz in 1953) and Grey Shrew *Crocidura attenuata*. A number of bat specimens were obtained at Mawphlang and are now in the Field Museum of Natural History at Chicago. These include the Woolly Horseshoe Bat *Rhinolophus luctus*, *R. subbadius*, Rufous Horseshoe Bat *R. rouxii*, Intermediate Horseshoe Bat *R. affinis*, Hodgson's Bat *Myotis formosus*, Whiskered Bat *M. mystacinus*, Little or Tibetan tube-nosed Bat *Murina aurata*, *M. tubinaris*, and Orange or Round-eared Tube-nosed Bat *Murina cyclotis* (Choudhury 2001).

LAND USE

- ☐ Forest
- ☐ Tourism and recreation

'Law-Lyngdoh' at Mawphalang is the most well known sacred grove in the northeast.



ML-02

Photo: Anwaruddin Choudhury

THREATS AND CONSERVATION ISSUES

- ☐ Road construction
- ☐ Occasional removal of plant materials and Non Timber Forest Produce
- ☐ Poaching

Although this IBA is a sacred grove and is maintained as such to a great extent, it is not completely safe or sacred now. The new generations find it difficult to believe in the traditional sylvan deities. Most of the people of the surrounding areas have converted to Christianity and have lost touch with their traditional faiths (Tiwari *et al.* 1999). The degradation of sacred groves near Cherrapunji should be an eye-opener for environmentalists. It is high time that the State gets involved with the village councils to protect such areas of rich biodiversity. Regardless of belief in deities, such areas are symbols of a vanishing natural and cultural heritage, and their protection would serve to preserve water catchment areas as well. A road has been constructed through the grove, damaging part of it.

KEY CONTRIBUTORS

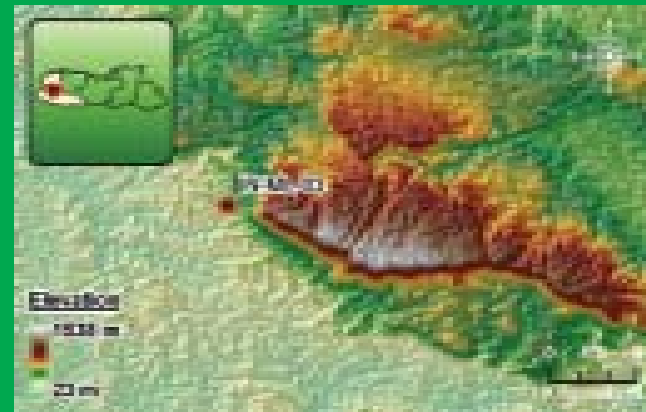
Kulojyoti Lahkar and Anwaruddin Choudhury

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ML-03

NOKREK NATIONAL PARK



IBA Site Code	: IN-ML-03
State	: Meghalaya
District	: East, West and South Garo Hills
Coordinates	: 25° 30' 36" N, 90° 12' 01" E
Ownership	: State
Area	: 4,748 ha
Altitude	: 600 -1,412 m
Rainfall	: >3,000 mm
Temperature	: 3 °C to 30 °C
Biogeographic Zone	: North-East
Habitats	: Tropical Wet Evergreen Forest, Tropical Semi Evergreen Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas), A3 (Biome-8: Sino-Himalayan Subtropical Forest; Biome-9: Indo-Chinese Tropical Moist Forest)

PROTECTION STATUS: National Park, established in November 1985

GENERAL DESCRIPTION

Nokrek National Park is located in the Garo Hills of Meghalaya state, covering parts of three districts, i.e. East Garo Hills, West Garo Hills and South Garo Hills. Nokrek was declared as a National Park in 1986 while the final notification was issued in 1997. The Park is very small, but it serves as the core area of the Nokrek Biosphere Reserve (82,000 ha). The area of the National Park has been acquired by outright purchase of land from the local communities by the Government of Meghalaya.

The entire Park is hilly, the northern aspect has comparatively gentle slopes, while the southern aspect consists of moderate to very steep slopes. Dense clusters of low hills characterize the area, with a central ridge traversing from northwest to northeast. This is known as the Tura Ridge.

The Tura Ridge constitutes the backbone of the Garo Hills, which lie at the western end of the Meghalaya plateau. The range has an elevation of c. 1,200 m. Numerous rivers and streams originate from these hills and flow over narrow, rocky beds to join the Brahmaputra and Meghna rivers. Major rivers are Simsang (the longest in the Garo Hills), Ganol, Dareng, Nitai and Bhugi (Lahkar *et al.* 2002).

The terrain is rocky, and in many places the ridge is devoid of topsoil. Climatic conditions in the Garo Hills are tropical, characterized by high rainfall and humidity during monsoon (April-October).

The forest can be described as Eastern Submontane Semi-Evergreen Forest grouped under Tropical Semi-evergreen Forests of Champion and Seth (1968). The hilltop forests are mostly cloud forest, i.e they are covered in clouds most of the time during the monsoon.

Vegetation on the southern slopes is limited to occasional patches of Moist Deciduous forest, dominated by birch *Betula* sp. at higher altitudes and mixed secondary scrub at lower altitudes. Very little vegetation remains on the gentler northern slopes, and is restricted to a narrow fringe of Evergreen and Semi-evergreen forest along the ridge. Varieties of *Citrus indica*, a wild, primitive relative of cultivated citrus species, are present in large numbers (Gogoi 1981).

AVIFAUNA

About 150 bird species have been recorded from Nokrek NP, in a survey of the avifauna (Lahkar *et al.* 2002). One Restricted Range

species and 36 Biome species were recorded from the Park during the survey. Though local people report the occurrence of Rufous-necked Hornbill *Aceros nipalensis*, Lahkar *et al.* (2002) could not find any bird. Both Oriental White-backed *Gyps bengalensis* and Slender-billed vultures *G tenuirostris* were seen. More detailed surveys are required of this IBA.

As the elevation of this site varies from 600 to 1400 m, it falls into two biomes: Biome-9 (Indo-Chinese Tropical Moist Forest, below c. 1,000 m) and Biome-8 (Sino-Himalayan Subtropical Forests, c. 1000 to 2,000 m). BirdLife International (undated) has identified 95 bird species which represent Biome-8 assemblages, and 19 species of Biome-9. Based on the preliminary investigation of bird life (Lahkar *et al.* 2002), eight species of Biome-8 and three species of Biome-9 have been seen till now at this site. More species are likely to be present. This site is selected as IBA based on presence of threatened species and biome-restricted assemblages.

Critically Endangered	
Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Slender-billed Vulture	<i>Gyps tenuirostris</i>
Near Threatened	
Lesser Grey-headed Fish-Eagle	<i>Ichthyophaga humilis</i>
Endemic Bird Area 130: Eastern Himalayas	
Grey Sibia	<i>Heterophasia gracilis</i>
Biome-8: Sino-Himalayan Subtropical Forest	
Blue-throated Barbet	<i>Megalaima asiatica</i>
Bay Woodpecker	<i>Blythipicus pyrrhotis</i>
Maroon Oriole	<i>Oriolus traillii</i>
Grey Treepie	<i>Dendrocitta formosae</i>
Black-winged Cuckoo-Shrike	<i>Coracina melaschistos</i>
Short-billed Minivet	<i>Pericrocotus brevirostris</i>
White-throated Bulbul	<i>Alophoixus flaveolus</i>
Biome-9: Indo-Chinese Tropical Moist Forest	
Grey Peacock-Pheasant	<i>Polyplectron bicalcaratum</i>
Lesser Necklaced Laughingthrush	<i>Garrulax monileger</i>
Greater Necklaced Laughingthrush	<i>Garrulax pectoralis</i>
Rufous-necked Laughingthrush	<i>Garrulax ruficollis</i>

OTHER KEY FAUNA

The area is an important part of the range of the Indian Elephant *Elephas maximus*. Primates include Hoolock Gibbon *Hylobates hoolock*, Capped Langur *Trachypithecus pileatus*, Rhesus Macaque *Macaca mulatta*, and Stump-tailed macaque *M. arctoides* (Choudhury 2002). Nokrek is famed for its diversity of large and small cats, ranging from Tiger *Panthera tigris*, Leopard *P. pardus*, Clouded Leopard *Neofelis nebulosa*, Golden Cat *Catopuma temmincki* to Leopard cat *Prionailurus bengalensis*. The main Canids are Golden Jackal *Canis aureus* and Wild dog *Cuon alpinus*. The Himalayan Black Bear *Ursus thibetanus* is another large carnivore. Large Indian civet *Viverra zibetha*, Small Indian civet *Viverricula indica*, Himalayan palm civet *Paguma larvata*, and Binturong *Arctictis binturong* are predators on smaller mammals and birds. Wild Boar *Sus scrofa*, Sambar *Cervus unicorn*, Barking deer *Muntiacus muntjak*, Serow *Nemorhaedus sumatraensis* and Gaur *Bos frontalis* are the major ungulates (Gogoi 1981).

LAND USE

- ☐ Nature conservation
- ☐ Forestry

THREATS AND CONSERVATION ISSUES

- ☐ Livestock grazing
- ☐ Disturbance to birds
- ☐ Firewood collection
- ☐ Fire
- ☐ Shifting cultivation
- ☐ Unsustainable exploitation of timber and Non Timber Forest Produce
- ☐ Coal mining

Nokrek NP is the principal watershed for the district. The area is also an important refuge for a variety of threatened mammals and herds of migratory elephants.

The State Government is in the process of acquiring Akhing tribal land. Social forestry schemes are being developed for their benefit.

Jhum or shifting cultivation is the primary agricultural practice in this hill range. Owing to human population pressure, the periodicity of *jhuming* has decreased to 3-5 years, not leaving much time for healing of the vegetation. It has been found that repeated *jhuming* increases the silt load. Vegetation on the lower slopes of the Tura Ridge has been heavily disturbed for shifting cultivation.

Hunting is still a major problem. Teenagers are often seen with catapults, killing small birds. Timber smuggling is also on the increase. The Park does not have sufficient staff to patrol the forest.

Coal mining is a common practice all over the Garo Hills, and this affects Nokrek (mainly the Biosphere Reserve), especially the southern range. Both open cast and traditional 'rat hole' mining were observed.

Inclusion of Tura Peak Reserve Forest in the Protected Area Network would greatly help to save the primary forest of the hills. It is also recommended that the area of the Biosphere Reserve should be increased to link Nokrek with Balpakram National Park (an IBA), and Baghmara Reserve Forest.

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ML-03

Nokrek ridge is not only an important wildlife habitat but also the source of water to the growing township of Tura.

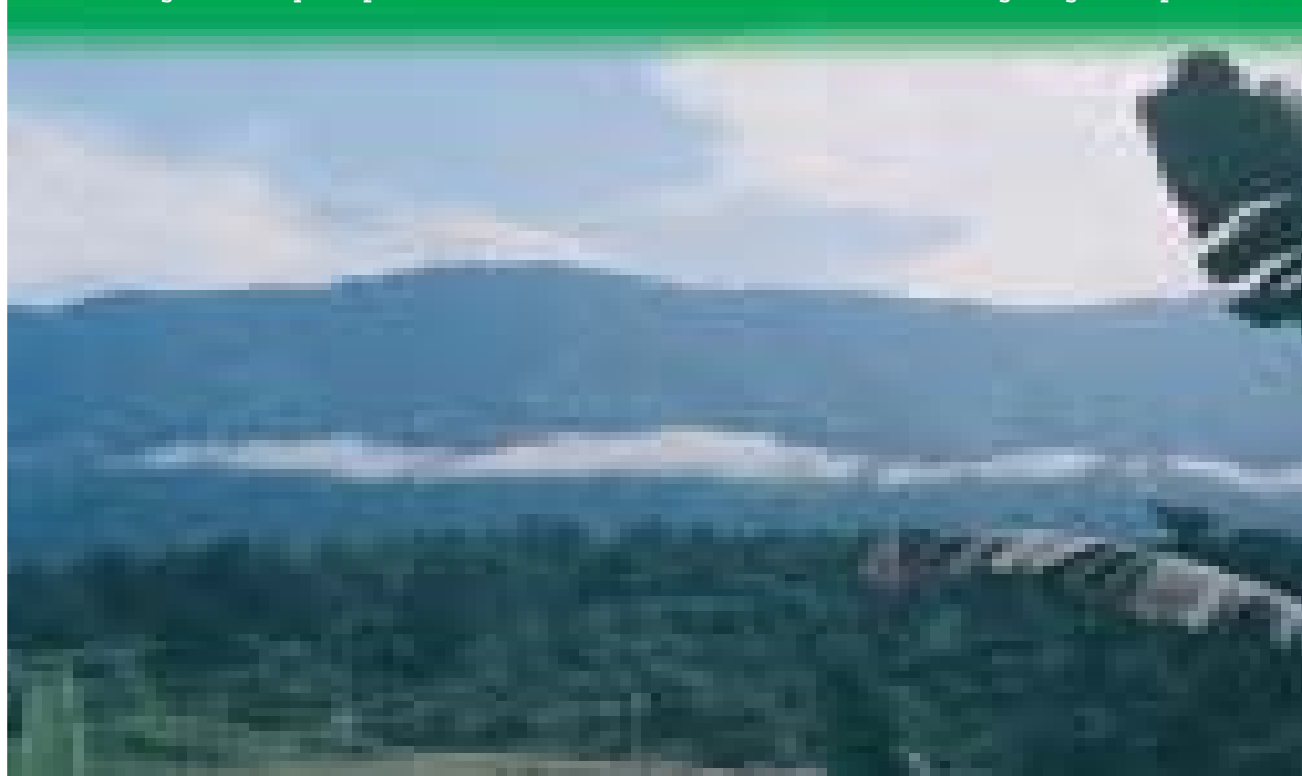
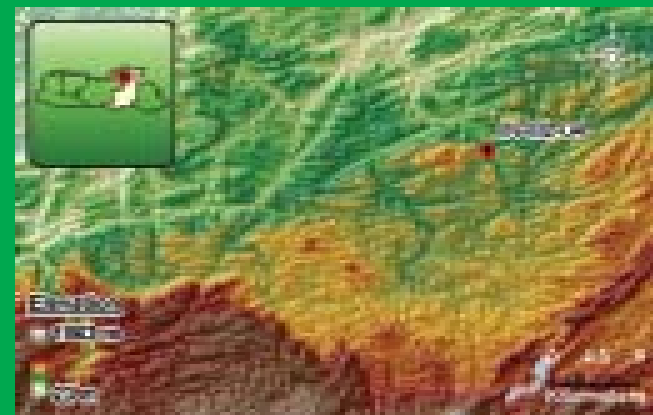


Photo: Anwaruddin Choudhury

ML-04

NONGKHYLLEM



IBA Site Code	: IN-ML-04
State	: Meghalaya
District	: Ri-Bhoi
Coordinates	: 25° 51' 46" N, 91° 50' 23" E
Ownership	: State
Area	: 14,900 ha
Altitude	: 200 - 950 m
Rainfall	: 2,000 - 3,000 mm
Temperature	: 6 °C to 32 °C
Biogeographic Zone	: North-East
Habitats	: Tropical Moist Deciduous Forest, Tropical Semi Evergreen Forest and Montane Grassy land

IBA CRITERIA: A1 (Threatened Species)

PROTECTION STATUS: Wildlife Sanctuary, established in March 1981

GENERAL DESCRIPTION

This site includes Nongkhyllem Wildlife Sanctuary (2,900 ha), Nongkhyllem Reserve Forest (9,691 ha) and a portion of community forest west of the Umtrew river that is being acquired by the State Government (2,300 ha). This area is among the last large tracts of wilderness left in Meghalaya. It is located in the Ri-Bhoi district of Meghalaya. Earlier Ri-Bhoi was a sub-division of East Khasi Hills district.

The area consists of undulating plains to low hills, which are part of the Archaean Meghalaya Plateau. The area has become broken and rugged, especially towards west and north, because of continuous erosion by the rivers Umtrew, Umran, Umling, Umtasor and other smaller streams. The lowest parts of the Sanctuary are about 200 m above msl near Lailad, while the highest are 950 m above msl in the eastern and southern areas.

The Umtrew is the main river of the area and the rest named above are its tributaries. The Umtrew also marks the western boundary of the Reserve Forest and the Sanctuary. There is a natural lake called Birbah in the southern part of the Sanctuary, with an area of about 15 ha of which open area is less than 5 ha the rest being covered with grass and reeds. The elevation of the lake is about 580 m. There are two other small artificial lakes (reservoirs) near Birbah, and two large reservoirs just outside the reserve forests, where a good number of wintering and passage migrants are seen (Choudhury 2002).

The area has a tropical monsoon climate. The summer are hot and wet while the winters are cool and dry. The average annual rainfall is about 2,500 mm. The area is in the relatively low rainfall zone.

The major part of the habitat is Tropical Moist Deciduous forest with patches of Tropical Semi-evergreen forest, especially in the river valleys and stream. The deciduous forests can be classified as 'Khasi hill sal' and 'Kamrup sal' (Champion and Seth 1968). The Sal *Shorea robusta* dominates the vegetation in the entire southern area. Elsewhere, the top forest canopy consists of *Tetrameles nudiflora*, *Pterospermum acerifolium*, *Amoora wallichi*, *Artocarpus chaplasha*, *Michelia champaca*, *Mesua ferrea* and others species.

Abandoned *jhums* (slash-and-burn shifting cultivation of hill tribes) are covered with various grasses and shrubs. Large stretches of Bamboos, especially *Oxytenanthera nigrociliata* and

Dendrocalamus hamiltonii are found, mainly in old *jhum* areas. Plantations of the Forest Department are mostly covered with Sal *Shorea robusta* and Teak *Tectona grandis*.

Small, scattered patches of grassland occur in different areas of the Sanctuary, mainly in the depressions. These bear *Alpinia allughas* herb and *Arundo donax* and *Neyraudia reynaudiana* grasses (Choudhury 1998).

AVIFAUNA

More than 400 bird species were recorded from Nongkhyllem WLS, RF and adjacent areas including Umiam Lake (a separate IBA) (Choudhury 1998). In the Nongkhyllem site alone, the species diversity should be more than 300.

The Swamp Francolin *Francoelinus gularis*, which apparently was found earlier in this area, has disappeared mainly due to destruction of its grassy habitat. In the past, it used to occur in the wet grasslands of Nongpoh Valley, and the valleys of the Umran Rivers near Nunmati area (Choudhury 1998).

Birbah lake is a natural water body deep inside Nongkhyllem WLS and is visited by many birds and mammals.

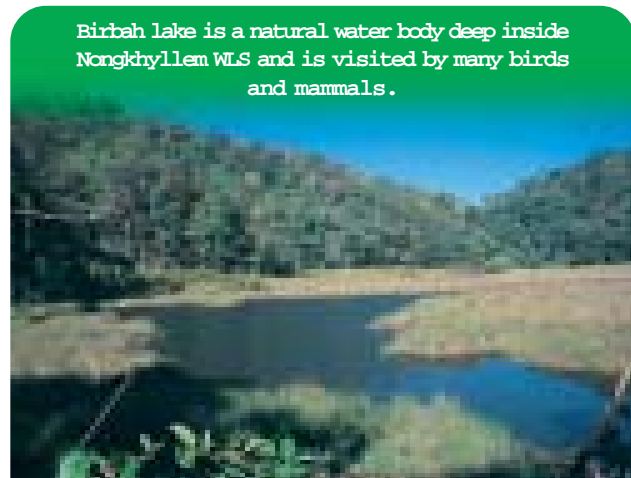


Photo: Anwaruddin Choudhury

Although Nongkhyllem is well within the distribution range of the Manipur Bush-quail *Perdica manipurensis*, Choudhury (1998) could not find any evidence of its presence. The Near Threatened White-cheeked Hill Partridge *Arborophila atrogularis* was once not uncommon but it has apparently declined due to extensive trapping. However, Kaleej Pheasant *Lophura*

leucomelanos, Red Junglefowl *Gallus gallus* and Grey Peacock Pheasant *Polyplectron bicalcaratum* are still relatively common, despite trapping and shooting.

According to Choudhury (1998), this site has potential habitat for the globally threatened Wood Snipe *Gallinago nemoricola*, although none were sighted during his surveys.

The forests of Nongkhylllem have 14 species of green pigeons and doves, 16 species of woodpeckers and piculets, six species of barbets, 11 species of bulbuls, and four species of hornbills (Choudhury 1998). The globally threatened Rufous-necked Hornbill *Aceros nipalensis* is very rare and was not seen by Choudhury (1998) during his surveys. However, there is a specimen record from Khasi Hills (Baker 1907). Another species that has apparently disappeared is the Near Threatened Brown Hornbill *Anorrhinus tickelli*. The extant species of hornbills are Wreathed *Aceros undulatus*, Indian Pied *Anthraceros malabaricus* and Great Pied *Buceros bicornis*.

The Finch-billed Bulbul *Spizixos canifrons*, now called Crested Finchbill, a bird found between 1,400 m to 2,500 m, but descending in winter to 900 m (Ali and Ripley 1987) was collected by Hume (1888) from the neighbourhood of Shillong and nearby areas. Choudhury (1998) could not find any specimen in Nongkhylllem but writes that it 'may be found in the higher areas such as Umiam (Barapani), towards south of Nongkhylllem'.

As the area lies below 1,000 m, it falls in Biome-9 (Indo-Chinese Tropical Moist Forest). BirdLife International (undated) has listed 19 species in this biome, out of which eight species have been found in this IBA by Choudhury (1998): White-cheeked Partridge, Grey Peacock Pheasant, Pale-headed Woodpecker *Gecinulus grantia*, Black-backed Forktail *Enicurus immaculatus*, Lesser Necklaced Laughingthrush *Garrulax monileger*, Greater Necklaced Laughingthrush *Garrulax pectoralis*, Rufous-necked Laughingthrush *Garrulax ruficollis* and Sultan Tit *Melanochlora sultanea*. During winter, many species of Biome-7 (Sino-Himalayan Temperate Forest) and Biome-8 (Sino-Himalayan Subtropical Forest) descend to this site. The noteworthy species are Sapphire Flycatcher *Ficedula sapphira*, Rufous-bellied Niltava *Niltava sundara*, Bay Woodpecker *Blythipicus pyrrhotis*, Rosy Minivet *Rosy Minivet*, Short-billed Minivet *Pericrocotus brevirostris*, Striated Bulbul *Pycnonotus striatus*, White-throated Bulbul *Alophoixus flaveolus*, Slaty-backed Forktail *Enicurus schistaceus*, Orange-bellied Leafbird *Chloropsis hardwickii*, Slaty-bellied Tesia *Tesia olivea*, Streaked Spiderhunter *Arachnothera magna* and Maroon Oriole *Oriolus traillii*.

This site is selected as an IBA on the basis of the presence of globally Threatened species (A1 criteria).

Critically Endangered	
Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Slender-billed Vulture	<i>Gyps tenuirostris</i>
Vulnerable	
Rufous-necked Hornbill?	<i>Aceros nipalensis</i>
Wood Snipe?	<i>Gallinago nemoricola</i>
Near Threatened	
Lesser Grey-headed Fish-Eagle	<i>Ichthyophaga humilis</i>
Red-headed Vulture	<i>Sarcogyps calvus</i>
White-cheeked Hill-Partridge	<i>Arborophila atrogularis</i>
Blyth's Kingfisher	<i>Alcedo hercules</i>
Great Pied Hornbill	<i>Buceros bicornis</i>
Brown Hornbill (?)	<i>Anorrhinus tickelli</i>

OTHER KEY FAUNA

The area is rich in other wildlife with a high density of large

mammals, especially in the northern areas. A sizeable population of wild Asian Elephants *Elephas maximus* occurs in the Sanctuary, Reserved Forest and adjacent areas (Choudhury 1999). Other notable animals are: Tiger *Panthera tigris*, Leopard *P. pardus*, Clouded Leopard *Neofelis nebulosa*, Leopard Cat *Prionailurus bengalensis*, Jungle Cat *F. chaus*, Fishing Cat *F. viverrinus*, Wild Dog *Cuon alpinus*, Himalayan Black Bear *Ursus thibetanus*, Sloth Bear *Merurus ursinus*, Hoolock Gibbon *Hylobates hoolock*, Slow Loris *Nycticebus coucang*, Capped Langur *Trachypithecus pileata*, Rhesus Macaque *Macaca mulatta*, Sambar *Cervus unicolor*, Barking Deer *Muntiacus muntjak*, Gaur *Bos frontalis*, Binturong *Arctictis binturong*, and Malayan Giant Squirrel *Ratufa bicolor*.

Among reptiles, Asian Leaf Turtle *Cyclemis dentata*, Common Monitor Lizard *Varanus bengalensis*, and Water Monitor Lizard *V. salvator* were recorded in the area. The snakes, Indian Rock Python *Python molurus*, King Cobra *Ophiophagus hannah*, Banded Krait *Bungarus fasciatus*, Common Krait *B. caeruleus*, Buffstriped Keelback *Amphiesma stolata* and Vipers such as Green or Bamboo Pit Viper *Trimeresurus gramineus*, have been recorded (Choudhury 1998).

LAND USE

- ☐ Power generation
- ☐ Forest
- ☐ Wetland and grassland

THREATS AND CONSERVATION ISSUES

- ☐ Poaching
- ☐ Encroachment (settlement and agriculture)
- ☐ Illegal felling of trees
- ☐ *Jhum* cultivation

The Nongkhylllem Wildlife Sanctuary area is relatively small (only 29 sq. km) but has rich biodiversity. Already the Forest Department is taking steps to acquire 23 sq. km to the west of the Untrew river. This, along with the Reserve Forest (96 sq. km) will make it a viable conservation unit for long-term protection. A hydroelectric power project was set up close by, but, fortunately, no submergence of forest land was necessary. The eastern boundary of the Reserve Forest touches the National Highway-40 that connects Shillong and Guwahati.

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Anwaruddin Choudhury and Kulojyoti Lahkar

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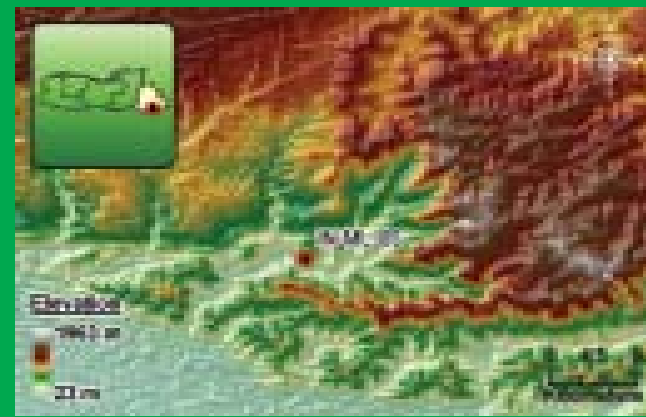
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ML-05

NORPUH /NARPUH RESERVE FORESTS



IBA Site Code	: IN-ML-05
State	: Meghalaya
District	: Jaintia Hills
Coordinates	: 25° 08' 60" N, 92° 27' 30" E
Ownership	: State
Area	: 16,110 ha
Altitude	: 100 - 1,000 m
Rainfall	: 4,000 - 6,000 mm
Temperature	: 5 °C to 35 °C
Biogeographic Zone	: North-East
Habitats	: Tropical Wet Evergreen Forest Tropical Semi-evergreen Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas)

PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

The site includes two reserve forests, Norpuh Blocks I and II in the southern part of Jaintia Hills district. The area has some of the finest primary forests remaining in Meghalaya. Block I, established in June 1909, lies west of Lubha, the main river of the area, while Block II, established in March 1918, is eastward of the river. Both are near the India-Bangladesh international boundary. Block II is also contiguous with Barail IBA site of Assam. The terrain is rugged, with steep slopes, deep gorges and narrow valleys. Other major rivers are Prang (Hari) and Apha. Although these forests are on National Highway-44, and can be reached easily, accessibility to the interior areas is very difficult because of the extremely rugged terrain and steep slopes and lack of roads to the interior.

The climate of Norpuh (also spelled as Narpuh) forests is tropical monsoon type, with a hot and wet summer, and a cool and drier winter. The area often receives very heavy rainfall, may be more than 6,000 mm, from the southwest monsoon.

In the lower warmer areas, Cachar Tropical Evergreen Forest is found, whereas in the higher cooler areas, Khasi Subtropical Hill Forest is seen (Champion and Seth 1968). There are grassy areas in the forest openings and in abandoned *jhums*.

The area is known for its rich biodiversity but no systematic work has been done. The IBA site is likely to yield species new to science, especially among amphibians, reptiles, invertebrates and plants.

AVIFAUNA

More than 140 species of birds have been recorded at this site (Lahkar 2002). Two globally threatened species, Rufous-necked Hornbill *Aceros nipalensis* and Tawny-breasted Wren-babbler *Spelaornis longicaudatus* are found here, perhaps in significant numbers. The Tawny-breasted Wren-babbler, an endemic bird of India, has a very small known range in Meghalaya, Assam and Manipur (Ali and Ripley 1987, BirdLife International 2001).

The site lies in Eastern Himalayas Endemic Bird Area (EBA-130). According to Stattersfield *et al.* (1998), 21 species can be considered as Restricted Range in this EBA. From the available literature (Lahkar 2002), four are found here. Perhaps some more are yet to be identified.

This site lies in Biome-9 (Indo-Chinese Tropical Moist Forest). In this Biome, BirdLife International (undated) has listed 19 species that represent the typical bird assemblage. The following four species of this biome have been seen by Lahkar (2002): White-cheeked Hill Partridge *Arborophila atrogularis*, Grey Peacock Pheasant *Polyplectron bicalcaratum*, Black-backed Forktail *Enicurus immaculatus* and Sultan Tit *Melanochlora sultanea*.

As the site has relatively intact Tropical Evergreen Forest in lower warmer areas and Sub-tropical Evergreen Forest in cooler higher areas, many species of Biome-7 and Biome-8 are found here in winter. Some interesting species of these biomes are: Mountain Bamboo-Partridge *Bambusicola fytchii*, Grey-headed Parakeet *Pittacula finschii*, Blue-throated Barbet *Megalaima asiatica*, Bay Woodpecker *Blythipicus pyrrhotis*, Blyth's Kingfisher *Alcedo hercules*, Black-winged Cuckoo-Shrike *Coracina melaschistos*, Short-billed Minivet *Pericrocotus brevirostris*, White-throated Bulbul *Alophoixus flaveolus*, Orange-bellied Chloropsis *Chloropsis hardwickii*, Slaty-backed Forktail *Enicurus schistaceus*, Nepal Tit-Babbler *Alcippe nipalensis*, Small Niltava *Niltava macgrigoriae*, Streaked Spiderhunter *Arachnothera magna*, Maroon Oriole *Oriolus trailii*, Grey Treepie *Dendrocitta formosae*, Rufous-bellied Niltava *Niltava sundara*, Lesser Necklaced Laughingthrush *Garrulax monileger*, Greater Necklaced Laughingthrush *G. pectoralis* and Yellow-breasted Babbler *Macronous gularis*.

This site is selected as an IBA as it has globally threatened species (A1 criteria) and restricted range species (A2 criteria).

Vulnerable	
Rufous-necked Hornbill	<i>Aceros nipalensis</i>
Tawny-breasted Wren-Babbler	<i>Spelaornis longicaudatus</i>
Near Threatened	
White-cheeked Hill-Partridge	<i>Arborophila atrogularis</i>
Great Pied Hornbill	<i>Buceros bicornis</i>
Endemic Bird Area 130: Eastern Himalayas	
Tawny-breasted Wren-Babbler	<i>Spelaornis longicaudatus</i>
Grey Sibia	<i>Heterophasia gracilis</i>
White-naped Yuhina	<i>Yuhina bakeri</i>
Black-browed Leaf-Warbler	<i>Phylloscopus cantator</i>

OTHER KEY FAUNA

The site is rich in primates with seven species, namely Slow Loris *Nycticebus coucang*, Stump-tailed macaque *Macaca arctoides*, Pigtailed Macaque *M. nemestrina*, Rhesus Macaque *M. mulatta*, Assamese Macaque *M. assamensis*, Capped Langur *Trachypithecus pileata*, and Hoolock gibbon *Hylobates hoolock* (Choudhury 1998). The presence of endangered mammals such as the Tiger *Panthera tigris*, Leopard *P. pardus*, Clouded Leopard *Neofelis nebulosa*, Yellow-throated marten *Mustela strigidorsa*, Dhole or Wild Dog *Cuon alpinus*, Golden Cat *Catopuma temmincki*, Chinese Pangolin *Manis pentadactyla*, Asian Elephant *Elephas maximus*, Serow *Nemorhaedus sumatraensis* and Asiatic Brush-tailed Porcupine *Atherurus macrourus* shows the importance of this IBA. Other notable mammals include the Himalayan Black Bear *Ursus thibetanus*, Large Indian civet *Viverra zibetha*, Small Indian civet *Viverricula indica*, Himalayan Palm Civet *Paguma larvata*, Binturong *Arctictis binturong*, Leopard cat *Prionailurus bengalensis* and Jungle cat *Felis Chaus*. The ungulates present are Sambar *Cervus unicolor*, Barking Deer or Muntjak *Muntiacus muntjak* and Gaur *Bos frontalis* (Choudhury 1999).

LAND USE

- ☐ Forest
- ☐ Agriculture
- ☐ Cash crop (Arecanut)

THREATS AND CONSERVATION ISSUES

- ☐ Encroachment (settlement and agriculture)
- ☐ Hunting, poaching
- ☐ *Jhum* cultivation
- ☐ Illegal felling of trees
- ☐ Speeding vehicles
- ☐ Pollution from motor vehicles

This site, and to some extent Saipung Reserve Forest, are the only areas of some significance in Jaintia Hills where primary forest is still found. There is some primary forest outside the reserve forests also. The National Highway-44 that connects southern Assam, Mizoram and Tripura with the rest of the country is busy and has

made the area accessible, a number of animals are crushed to death by speeding vehicles, while increased accessibility has resulted in encroachment and felling of trees in some areas.

The Narpuh forest Blocks I and II, and some contiguous forests outside, should be brought under the protected area network. The proposal for a Sanctuary is pending for many years (Choudhury 1999). Poaching is still a major problem for hornbills, pheasants and other larger birds and mammals.

Earlier, some forest areas of Narpuh and nearby areas were destroyed mainly due to betelnut plantation, for *jhum* cultivation, orchards (mainly oranges), and firewood collection.

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Kulojyoti Lahkar and Anwaruddin Choudhury

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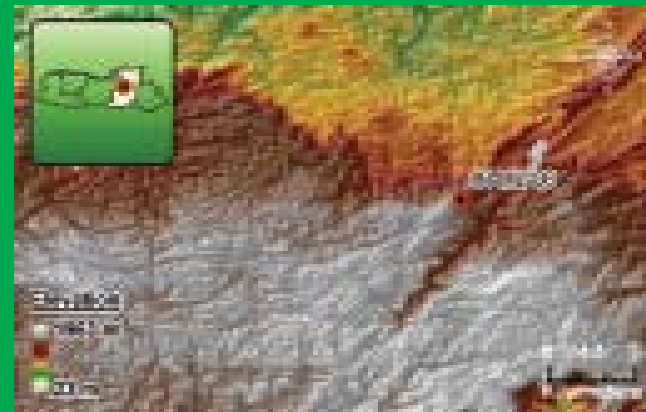
The Lubha river flowing through Narpuh IBA and debouching on to the plains of Bangladesh.



Photo: Anwaruddin Choudhury

ML-06

RIAT KHWAN - UMIAM LAKE



IBA Site Code	: IN-ML-06
State	: Meghalaya
District	: East Khasi Hills and Ri-Bhoi
Coordinates	: 25° 37' 00" N, 91° 49' 00" E
Ownership	: State
Area	: >1,500 ha
Altitude	: 900 - 1,400m
Rainfall	: >2,000 mm
Temperature	: 3 °C to 30 °C
Biogeographic Zone	: North-East
Habitats	: Sub-tropical Pine Forest, Sub-tropical Broad Leaved Hill Forest, Reservoir

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas)

PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

This site includes the Riat Khwan Reserve Forest, Umiyam Lake and the forests near the old Guwahati-Shillong road in the Khasi Hills of Meghalaya. The area spreads into two districts, East Khasi Hills and Ri-Bhoi. The terrain of Riat Khwan is hilly and steep, and forms a part of the catchment area of the River Umiyam. Barapani, as the Umiyam reservoir was and still is popularly known, is a large artificial reservoir of c. 1,000 ha. It is about 16 km from Shillong, the State capital. It was created for the generation of hydroelectric power in the 1960s. This is the second largest reservoir in northeast India after Gumti in Tripura (Choudhury 2002). The area is an important tourist destination and thousands of visitors come to the site every winter. Many of the visitors are picnickers. Since Umiyam is located on the busy National Highway-40 that connects two state capital cities, Guwahati and Shillong, accessibility is excellent and its importance as a tourist centre is increasing.

The area has a subtropical climate. Usually, summer is hot and humid and winter is cool and dry. The site lies in a rain shadow area, so the rainfall is comparatively low.

In the Riat Khwan-Umiyam area, two forest types are seen, namely Pine Forest (Assam Subtropical Pine Forest) and Broadleaf Forest. Riat Khwan RF, is mostly Broadleaf Forest, but the higher parts of the site are dominated by Khasi pine *Pinus kesiya* (Lahkar 2002). In the Lake, there is some emergent vegetation at the western edge.

AVIFAUNA

Umiyam Lake is important for wintering waterfowl. Waterfowl censuses were carried out in the area sporadically throughout the 1990s, and more than 40 species of waterbirds were recorded. The Black Stork *Ciconia nigra* and Ferruginous Duck *Aythya nyroca* (Near Threatened) were recorded during a waterfowl census in 1999. Four species of grebes, the Great Crested *Podiceps cristatus*, Black-necked *P. nigricollis*, Red-necked *P. griseigena* and Little Grebe *Tachybaptus ruficollis*, have been noted. Darter *Anhinga melanogaster* (Near Threatened), Gadwall *Anas strepera*, Wigeon *A. penelope* and Northern Shoveller *A. clypeata* are other noteworthy waterfowl (Choudhury 1998). More than 70 other species of birds have been reported from the site (Lahkar 2002), and the surrounding forests, but many more are likely to occur.

The site lies in Biome-8 (Sino-Himalayan Subtropical Forest). In this biome, BirdLife International (undated) has listed 95 bird species, of which 16 species have been reported from here but more are likely to be present. They are the Golden-throated Barbet *Megalaima franklinii*, Blue-throated Barbet *M. asiatica*, Black-winged Cuckoo-shrike *Coracina melaschistos*, Rosy Minivet *Pericrocotus roseus*, Short-billed Minivet *P. brevirostris*, Striated Bulbul *Pycnonotus striatus*, Flavescent Bulbul *P. flavescens*, Crested Finchbill *Spizixos canifrons*, Mountain Bulbul *Hypsipetes mcclllandii*, Orange-bellied Leafbird *Chloropsis hardwickii*, Blue-winged Minla *Minla cyanouroptera*, Rufous-backed Sibia *Heterophasia annectens*, Small Niltava *Niltava macgrigoriae*, Black-spotted Yellow Tit *Parus spilonotus*, Maroon Oriole *Oriolus traillii* and Grey Treepie *Dendrocitta formosae*.

This site is selected mainly based on A1 (Threatened Species) and A3 (Biome-restricted assemblage) criteria. Two restricted range species have been identified which are common and not much of conservation concern. However, more are likely to be found as the forests is relatively in good condition.

Vulnerable	
Greater Spotted Eagle	<i>Aquila clanga</i>
Near Threatened	
Darter	<i>Anhinga melanogaster</i>
Ferruginous Duck	<i>Aythya nyroca</i>
Endemic Bird Area 130: Eastern Himalayas	
White-naped Yuhina	<i>Yuhina bakeri</i>
Black-browed Leaf-Warbler	<i>Phylloscopus cantator</i>

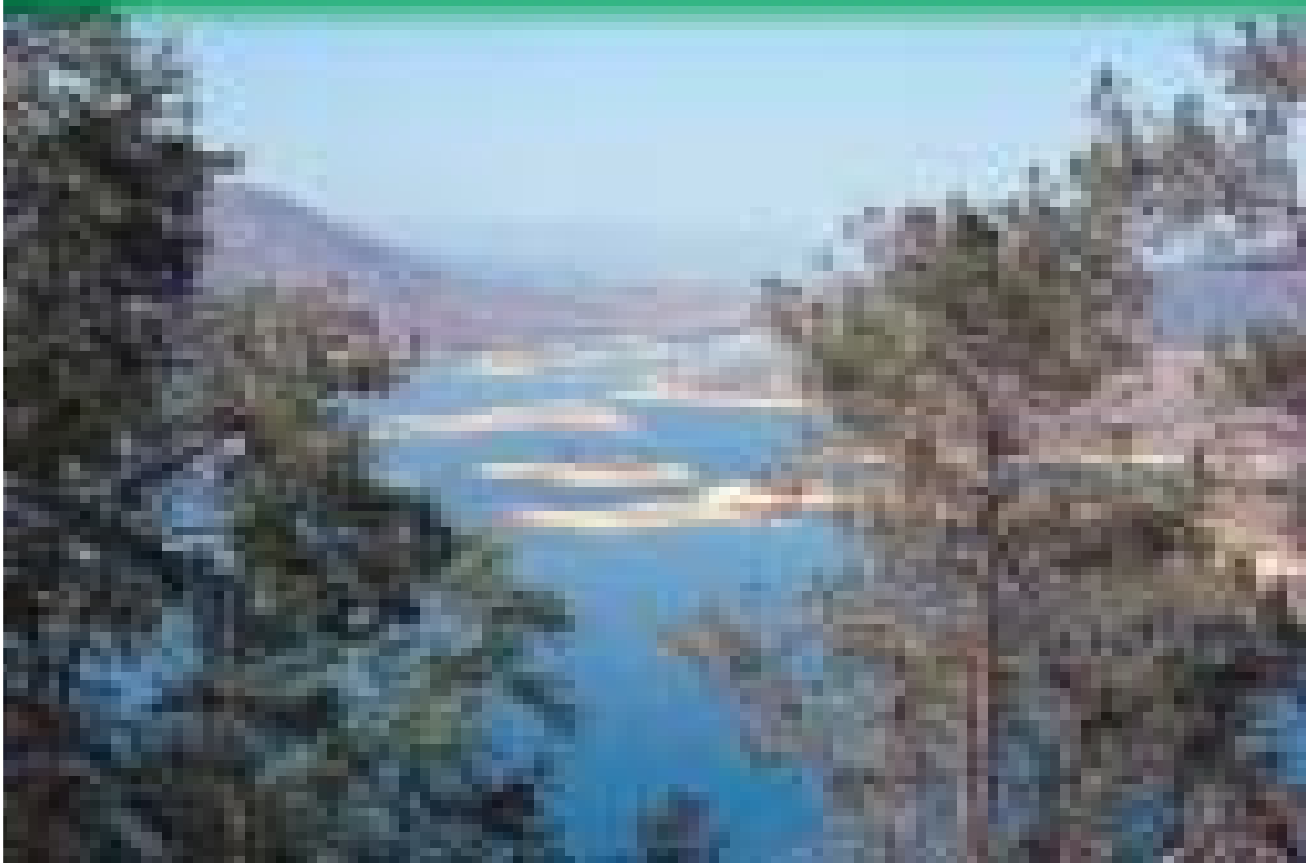
OTHER KEY FAUNA

No particularly significant species occurs, except for the occasional arrival of Flying foxes *Pteropus giganteus*. Bamboo rats *Cannomys badius* have been also reported. There were Barking Deer *Muntiacus muntjak* in Riat Khwan but the current status is unknown. It may have been extirpated due to hunting.

LAND USE

- q Forest
- q Power generation
- q Tourism and recreation

Popularly known as Barapani, the Umiam reservoir is a large wetland near Shillong city.



MI-06

Photo: Anwaruddin Choudhury

THREATS AND CONSERVATION ISSUES

- ❑ Encroachment
- ❑ Hunting and poaching
- ❑ Illegal felling
- ❑ Water pollution and siltation in Umiam

The broadleaf forest favoured by birds and other wildlife is being slowly reduced. The major issue of Umiam Lake is pollution from Shillong city, and siltation due to deforestation in the catchment area. The area should be declared as a bird sanctuary, awareness programmes carried out and steps should be initiated to check pollution from the city effluents.

KEY CONTRIBUTORS

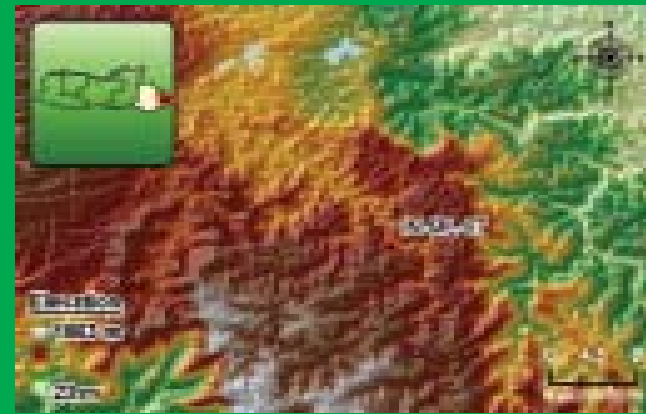
Kulojyoti Lahkar and Anwaruddin Choudhury

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ML-07

SAIPUNG



IBA Site Code	: IN-ML-07
State	: Meghalaya
District	: Jaintia Hills
Coordinates	: 25° 19' 60" N, 92° 45' 00" E
Ownership	: State
Area	: 15,000 ha
Altitude	: Not available
Rainfall	: 2,000-3,000 mm
Temperature	: 6 °C to 32 °C
Biogeographic Zone	: North-East
Habitats	: Tropical Dry Evergreen Forest, Tropical Semi Evergreen Forest, Tropical Moist Deciduous Forest

IBA CRITERIA: A1 (Threatened Species), Data Deficient

PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

The IBA site includes Saipung Reserve Forest, the oldest notified reserve in the state of Meghalaya, having been gazetted in 1877! It is also the largest Reserve Forest in the state and is located near the North Cachar Hills district in neighbouring Assam State. Saipung is relatively inaccessible.

AVIFAUNA

The area is rich in wildlife but information is available only on primates and wild elephants (Choudhury 1999a, 1999b). Adequate data on birds is not available to properly assess the site as an IBA. Hence, it has been named as a Data Deficient site.

The Threatened species that are likely to occur include the White-winged Duck *Cairinia scutulata*, Rufous-necked Hornbill *Aceros nipalensis*, and Beautiful Nuthatch *Sitta formosa*.

THREATS AND CONSERVATION ISSUES

- ☐ Poaching
- ☐ Encroachment
- ☐ Felling of trees

The area is inhabited by the Biate tribe (belonging to Kuki-Chin group) and they have already encroached on a portion of the Reserve Forest. They are expert trappers and hunters, and hence poaching pressure is significant.

There was a proposal to declare Saipung RF as a Sanctuary along with Norpuh Block II RF, and some community area was to be acquired as a link between these two Reserve Forests. Although the proposal did not materialize, the word "link" became associated

with the RF, and it began to be referred to as Saipung Link Sanctuary, creating confusion.

KEY CONTRIBUTOR

Anwaruddin Choudhury

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Species such as the Wreathed Hornbill still survives in good numbers in Saipung forest.



Photo: Anwaruddin Choudhury

UPPER SHILLONG



IBA Site Code	: IN-ML-08
State	: Meghalaya
District	: East Khasi Hills
Coordinates	: 25° 31' 60" N, 91° 49' 60" E
Ownership	: State
Area	: 1,296 ha
Altitude	: 1,800-1,961m
Rainfall	: > 2,000 mm
Temperature	: 2 °C to 28 °C
Biogeographic Zone	: North-East
Habitats	: Sub Tropical Pine Forest and Sub Tropical Broad Leaved Hill

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas)

PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

The Upper Shillong Protected Forest and adjacent areas (Riat Laban Reserve Forest and Laitkor Protected Forest) are located very close to Shillong the capital of Meghalaya, in East Khasi Hills district. These forests have a long history of protection and management, of more than a hundred years. In 1874 the Viceroy of India visited Shillong and directed the authorities to protect certain areas for timber production and for water conservation for Shillong city (Lyngwa 1997).

Tourists and picnickers visit the area especially for the panoramic view of Shillong city. The terrain is undulating plateau, and contains some of the highest reaches of Meghalaya plateau. There are two high peaks in the area, Laitkor, and Shillong which gives its name to the capital city of Meghalaya. The forest around Shillong peak is a traditional sacred grove and was studied by the celebrated British botanist, L. M. Bor in the 20th century.

In Upper Shillong, Riat Laban and Laitkor, two main forests types, Subtropical Pine and Broadleaf are seen. The broadleaf occurs mainly along nullahs and in the eastern side of the Indian Air Force base. The pine forest has only Khasi pine *Pinus kesiya*. In the Broadleaf, a few flowering trees such as *Rhododendron formosum*, *R. arborea* and *Pyrus pashia* still survive. A noteworthy tree species is the Oak *Quercus griffithii*. The fringe areas of the IBA are covered with short grass.

Due to its location very close to a large town and presence of the Air Force base, a lot of modification and degradation has taken place.

AVIFAUNA

Nearly 80 bird species have been recorded so far (Lahkar 2002), but there could be three times as many actually present. Robson (2000) has heard globally threatened Tawny-breasted Wren Babbler *Spelaornis longicaudatus* near Shillong in mid-April. It appeared to be common, occurring in non-forest habitat (secondary growth, dense fern growth, etc.) as well as undergrowth in forest. This poorly known babbler qualifies as Vulnerable because it has a small, declining, severely fragmented population and range owing to clearance and degradation of moist evergreen forest (BirdLife International 2001).

Three restricted range birds of the Eastern Himalaya were found

here but again, this is based on preliminary short surveys. This IBA site is very rich in avifauna and further surveys would record many more restricted range species.

Many species of Sino-Himalayan Temperate Forest (Biome-7) and Sino-Himalayan Subtropical Forest (Biome-8) are found here. A few are listed below: Blyth's Kingfisher *Alcedo hercules*, Golden-throated Barbet *Megalaima franklinii*, Black-winged Cuckoo-Shrike *Coracina melaschistos*, Rufous-bellied Bulbul *Hypsipetes mccllellandii*, Black Bulbul *H. leucocephalus*, Golden Bush-Robin *Tarsiger chrysaesus*, Aberrant Bush-Warbler *Cettia flavolivacea*, Orange-barred Leaf-Warbler *Phylloscopus pulcher*, Grey-faced Leaf-Warbler *P. maculipennis*, Orange-gorgeted Flycatcher *Ficedula strophliata*, Green-backed Tit *Parus monticolus*, Fire-tailed Sunbird *Aethopyga ignicauda*, Short-billed Minivet *Pericrocotus brevirostris*, Crested Finchbill *Spizixos canifrons*, Grey-winged Blackbird *Turdus bouboul*, Oriental Magpie-Robin *Copsychus saularis*, Red-billed Leiothrix *Leiothrix lutea*, Rusty-fronted Barwing *Actinodura egertoni*, Blue-winged Minla *Minla cyanouroptera*, Striated Yuhina *Yuhina castaniceps*, Grey-headed Flycatcher-Warbler *Seicercus xanthoschistos*, Black-spotted Yellow Tit *Parus spilonotus*, Streaked Spiderhunter *Arachnothera magna*.

Vulnerable

Tawny-breasted Wren-Babbler *Spelaornis longicaudatus*

Near Threatened

Blyth's Kingfisher *Alcedo hercules*

Endemic Bird Area 130: Eastern Himalayas

Tawny-breasted Wren-Babbler *Spelaornis longicaudatus*

Grey Sibia *Heterophasia gracilis*

White-naped Yuhina *Yuhina bakeri*

Black-browed Leaf-Warbler *Phylloscopus cantator*

OTHER KEY FAUNA

Larger mammals have become extinct or a few that are surviving are very rare. So far the following species have been recorded: Flying fox *Pteropus giganteus*, Himalayan or Short-tailed mole *Euroscaptor micrura*, Mole-shrew or Szechuan Burrowing Shrew *Anourosorex squamipes*, Savi's Pygmy Shrew *Suncus etruscus*, Grey Shrew *Crocidura attenuata*, Yellow-bellied Weasel *Mustela*

ML-08

A typical landscape of the tableland of Meghalaya plateau, which can be seen from Upper Shillong to Nongstoin in the west and Khiehriat in the east.



Photo: Anwaruddin Choudhury

kathiah and Barking Deer *Muntiacus muntjak*. There was also a record of the Clouded Leopard *Neofelis nebulosa* in the 1960s (A. Munim Mazumdar *in litt.* to A. U. Choudhury).

LAND USE

- q Forest
- q Tourism and recreation
- q Agriculture

THREATS AND CONSERVATION ISSUES

- q Firewood collection
- q General disturbance by trespassers
- q Road development
- q Encroachment

The site is adjacent to the growing township of Shillong, as a result of which biotic pressure is relatively high. This includes firewood collection, use of trails from Upper and Madan Laban to Laitkor and Upper Shillong. Encroachment is a growing problem. Already a road has come up along the northern edge of Riat Laban and illegal settlements are coming up along the road, which will further

increase the biotic pressure. However, the forests still survive to a great extent, and are of vital importance for the capital city as water catchment areas. Hence, for better conservation, the site should be declared a protected area and the importance of the forest area as a source of water should be emphasized in environmental awareness programmes.

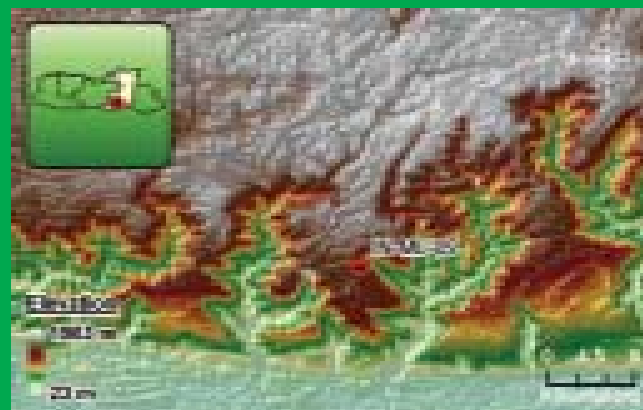
KEY CONTRIBUTORS

Kulojyoti Lahkar and Anwaruddin Choudhury.

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CHERPUNJEE: CLIFFS, GORGES AND SACRED GROVES



IBA Site Code	: IN-ML-09
State	: Meghalaya
District	: East Khasi Hills
Coordinates	: 25° 16.109' N - 91° 44.380' E
Ownership	: Community and state
Area	: c. 10,000 ha
Altitude	: 1,350m
Rainfall	: 12,500 mm
Temperature	: 4 °C - 30 °C
Biogeographic Zone	: North-East
Habitats	: Evergreen Forest, Broadleaf Montane Forest and Grassland Plateau.

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas)

PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Cherrapunjee also known as “abode of cloud” is one of the highest rainfalls areas in the world (24,461 mm in 1860-61 and over 24,000 mm in 1974). Under Sohra Subdivision in East Khasi Hills, Cherrapunjee is traversed by a number of deep gorges that have cliffs like Nohkalikai, Mawiir, Mawpyrkong, Thankarang and Mawiew beside the Shillong-Sohra road near Sohra Bazar. Large smoothly undulating plateaux are found over the cliffside. This site is the home for 30% of the total global known population of the Dark-rumped or Khasi Hills Swift *Apus acuticauda*.

The climate is subtropical monsoon with distinct wet and dry seasons. The long wet monsoons are from May through October and cold dry from November to February with a short spring during March-April. Current average annual rainfall is just above 12,000 mm. The temperature varies from a maximum 25 °C to a minimum of 3 °C. Relative humidity ranges from 47% to 92%. Frosted dew is also observed early morning in different parts of Cherrapunjee during January.

The vegetation of Cherrapunjee is quite peculiar and has a ‘shola’ like appearance. Vast tracts of short as well as tall grassland and patches of ‘crooked’ forest occur on the slopes along the streams and rivulets (Tripathi *et al.* 1995). The local people regard most of the patches as ‘sacred groves’. However, ecologists believe that this landscape of Cherrapunjee has emerged due to deforestation and traditional *jhum* cultivation in the past (Tripathi *et al.* 1995). Broadleaf Evergreen Forest is found on the steep slopes below cliffs and gorges.

Waterfalls and scenic beauty attract many tourists to this area. Cherrapunjee and its surroundings have many small and large-sized sacred groves, which are refuge to a number of species of birds and other fauna. The Mawsmi sacred groove is the largest among them with an area of 600 ha.

AVIFAUNA

About 100 bird species have been recorded till now in this IBA (Ahmed *et al.* 2003), particularly hill birds such as Mountain Bamboo Partridge *Bambusicola fytchii*, Black Eagle *Ictinaetus malayensis*, Black Bulbul *Hypsipetes leucocephalus*, Orange-bellied Leafbird *Chloropsis hardwickii*, Ashy Bulbul *Hemixos flavala*, Striated Prinia *Prinia criniger*, Hill Prinia *Prinia atrogularis* and Grey-hooded Warbler *Seicercus xanthoschistos*.

This site is selected as an IBA on the basis of the presence of Vulnerable Dark-rumped or Khasi Hills Swift. This bird is specialized to live in the crevices present on the perpendicular cliff in this wettest place in India.

Cherapunjee is an important haunt of the Dark-rumped Swift *Apus acuticauda*.



Photo: M. Firoz Ahmed

Vulnerable	
Dark-rumped Swift	<i>Apus acuticauda</i>
Endemic Bird Area 130: Eastern Himalayas	
Dark-rumped Swift	<i>Apus acuticauda</i>

ML-09

Dark-rumped Swift in flight. Nearly 70% of the world's population of this species is believed to be around Cherrapunjee.



Photo: M. Firoz Ahmed

OTHER KEY FAUNA

There are not many larger mammals in this area, only Serow *Nemorhaedus sumatraensis* is reported to be present.

LAND USE

- q Sacred grove
- q Forestry
- q Recreation

THREATS AND CONSERVATION ISSUES

- q Hunting
- q Grazing
- q Habitat Destruction
- q Firewood collection

Extensive deforestation has taken place in Cherrapunjee during the last two decades and now remnants of forest survive in deep gorges and other inaccessible areas. Even the sacred groves are subjected to unsustainable exploitations due to firewood collection.

Conservation education among the locals is likely to improve the current conservation scenario.

Traditional hunting using live decoy and gum is a common practice among the young generation, along with the more traditional catapult. Even small birds are not left alone.

KEY CONTRIBUTORS

M Firoz Ahmed, Bibhuti P Lahkar and Hilloljyoti Singha

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