

Present Status of Terai and Duars Region Biodiversity

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Abstract: Biodiversity is a popular issue of present day for world environmental, biological and economic importance. Biodiversity is the distribution of flora and fauna over the surface. The biodiversity totally depend on climate, temperature and natural resources. Terai and Duars region are present in North Bengal, where a huge amount of flora and fauna are present and also A variety of insect species and aquatic life, Which important our environment.in this paper headline the present status of biodiversity of Terai and Duars and in future how to conserve the total area. The world environment totally depend on our biodiversity if our biodiversity lost then the whole ecosystem, animal life and ecological food changed totally damaged.

Keywords: Terai and Duars, Flora, Fauna, Ecosystem, Conserve Area

1. Introduction

India belongs rich biodiversity and geographical area in all over world. In all over India has several types of climates, soil, and rain, temperature and huge amount of flora and fauna. Terai and Duars are present North Bengal a part of west Bengal. In this area totally cover Himalayan weather, climate. Terai means wetland. The river Tista in North Bengal has divided this area in two parts one is Terai and other is Duars.The Dooars or Duars are the alluvial floodplains in northeastern India that lie south of the outer foothills of the Himalayas and north of the Brahmaputra River basin. This region is about 30 km wide and stretches over about 350 km (220 mi) from the Teesta River in West Bengal to the Dhanshiri River in Assam. The region forms the gateway to Bhutan. It is part of the Terai-Duar savanna and grasslands ecoregion. The average rainfall of the area is about 3,500 mm. Monsoon generally starts from the middle of May and continues till the end of September. Winters are cold with foggy mornings and nights. Summer is mild and constitutes a very short period of the year. This area make a huge range of mega flora and fauna.

2. Objectives of the study

The present study highlighted the following objects-

- 1) Know about the present status of Terai and Duars biodiversity.
- 2) Count the flora and fauna.
- 3) How to conserve Terai and Duars biodiversity in future.

Data Source

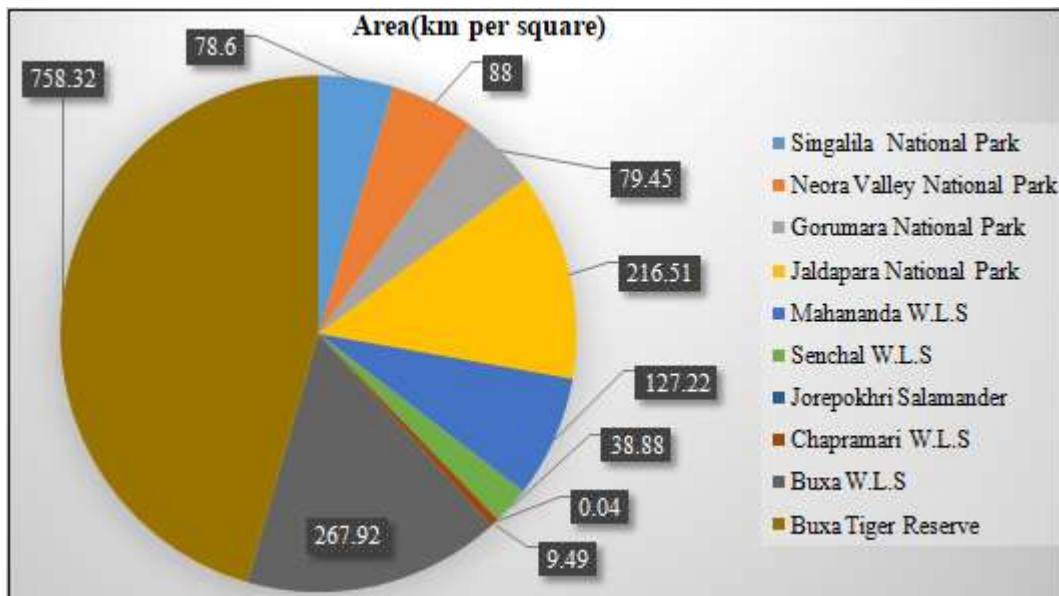
The study is mainly based on primary and secondary data sources. Such as Different Research Paper, journal, Wikipedia, different book, internet access and many repots.

Biodiversity of Terai and Duars

The total area of Terai and Duars are cover by a national park, forest, wild life sanctuaries, tiger reserves, bird sanctuaries. This type of forest helps to conserve the biodiversity. There are several types of animal and plant live in this conservation area which protect our biodiversity and environment. The list of conservation area are---

| Sl.No | Name | Districts | Area (In KM ²) |
|-------|----------------------------------|------------|----------------------------|
| 1. | Singalila National Park | Darjeeling | 78.60 |
| 2. | Neora Valley National Park | Darjeeling | 88.00 |
| 3. | Gorumara National Park | Jalpaiguri | 79.45 |
| 4. | Jaldapara National Park | Jalpaiguri | 216.51 |
| 5. | Mahananda Wild Life Sanctuaries | Darjeeling | 127.22 |
| 6. | Senchal Wild Life Sanctuaries | Darjeeling | 38.88 |
| 7. | Jorepokhri Salamander | Darjeeling | 0.04 |
| 8. | Chapramari Wild Life Sanctuaries | Jalpaiguri | 9.49 |
| 9. | Buxa Wild Life Sanctuaries | Alipurduar | 267.92 |
| 10. | Rasik Beel Bird Sanctuaries | Coochbehar | |
| 11. | Buxa Tiger Reserve | Alipurduar | 758.32 |

3. Graphical Expression of Total Conservative Area



1) **Singalila National Park:** Singalila National Park is a popular parks which are located in Darjeeling District of West Bengal. This park present between sandakhphu and Phalut. This type of park are on the Singalila Ridge at an altitude of more than 7000 feet above sea level. A huge flora and fauna lives in this park. The park was declared a wildlife sanctuary in 1986, and was made an Indian national park in 1992.

- a) Thick bamboo, oak, magnolia and rhododendron forest between 2000 and 3600 m cover the Singalila Ridge. There are two seasons of wildflower bloom - one in spring (March and April) when the rhododendrons bloom, and another in the post-monsoon season (around October), when the lower forests bloom. Sandakhphu is known as the "mountain of poisonous plants" due to the large concentration of Himalayan cobra lilies which grow there.
 - b) **Mammals:** The Park has a number of small mammals including the red panda, leopard cat, barking deer, yellow-throated marten, red panda, wild boar, pangolin and pika. Larger mammals include the Himalayan black bear, leopard, clouded leopard, serow and takin. Tigers occasionally wander into the area, but do not have a large enough prey base to make residence in these forests feasible.
 - c) **Birds:** The park is a birder's delight with over 120 species recorded including many rare and exotic species like the scarlet minivet, kalij pheasant, blood pheasant, satyr tragopan, brown and fulvous parrotbills, rufous-vented tit, and Old World babblers like the fire-tailed myzornis and the golden-breasted fulvetta. The park is also on the flyway of many migratory birds.
 - d) **Reptiles and Amphibians:** The endangered Himalayan newt frequents the region and congregates around the lakes of Jore Pokhri and Sukhiapokhri and nearby lakes to reproduce. Jore Pokhri and Sukhiapokhri are within 20 km of the park boundary and are protected wildlife sanctuaries.
- 2) **Neora Valley National Park:** Neora Valley National Park present in Darjeeling Districts, it is established in

1986. it's cover 88km² area and it is one of the richest biological zones in the entire.

- Eastern India. It is the land of the elegant red panda.
- Neora Valley, one of the last tracts of virgin wilderness in the country, sustains a unique ecosystem where tropical, sub-tropical, sub-temperate, and temperate vegetative system still harbours a wealth of flora and fauna. The forests consists of mixed species like rhododendron, bamboo, oak, ferns, sal, etc. The valley also has numerous species of orchids.
- **Mammals:** Reported from this area are Indian leopard, five species of civet, black bear, sloth bear, golden cat, wild boar, leopard cat, goral, serow, barking deer, sambar, Himalayan flying squirrel and thar. The most exotic of all is Red Panda. Among other endangered mammalian fauna, clouded leopards are present in the park.
- **Birds:** varied genus can be found in the park. Neora Valley National Park thus is known as
- Birders' paradise; some of India's most sought-after birds are found here in winter months as well. The semi-evergreen forests between 1600 m and 2700 m is the home of several rarities like rufous-throated partridge, satyr tragopan, crimson-breasted woodpecker, Darjeeling woodpecker, bay woodpecker, golden-throated barbet, Hodgson's hawk cuckoo, lesser cuckoo, brown wood owl, ashy wood pigeon, mountain imperial pigeon, Jerdon's baza, black eagle, mountain hawk eagle, dark-throated thrush, rufous-gorgeted flycatcher, white-gorgeted flycatcher, white-browed bush robin, white-tailed robin, yellowbrowed tit, striated bulbul, chestnut-headed tesia, chestnut-crowned warbler, black-faced warbler, blackfaced laughingthrush, chestnut-crowned laughingthrush, streak-breasted scimitar babbler, scalybreasted wren-babbler, pygmy wren-babbler, rufous-fronted babbler, black-headed shrike babbler, white-browed shrike babbler, rusty-fronted barwing, rufous-winged fulvetta, brown parrotbill, firebreasted flowerpecker, fire-tailed sunbird, maroon-backed accentor, dark-breasted rose finch, red-

headedbullfinch, gold-naped finch and many other rarities.

Reptilian: fauna also coexists in park's ecosystem; they are King cobra, common krait, green pit viper, blind snake, lizards etc. It is a heaven for Entomologists as well; many colorful insects such as butterflies, moths, beetles, bees, wasps, bugs and cicadas are live in this park.

3) Gorumara National Park: Gorumara National Park Present Between Ganga and Brahmaputra River System. In 1994 this park established and it is present in Jalpaiguri Districts. It is primarily known for its population of Indian rhinoceros. Gorumara was a reserve forest since 1895. The park was declared a Wildlife Sanctuary in 1949, on account of its breeding population of Indian rhinoceros. It was declared an Indian National Park on 31 January 1994.

The park has recorded fifty species of mammals, 194 species of birds, 22 species of reptiles, 7 species of turtles, 27 species of fish, and other macro and micro fauna.

Mammals: The Park is rich in large herbivores including Indian rhinoceros, gaur, Asian elephant, sloth bear, chital, and sambar deer. Small herbivores include barking deer, hog deer and wild boar. There is a comparative lack of large carnivores, with the only big cat being the leopard. The park is not home to any resident population of Bengal tigers, Indian wild dogs, or Indian wolves. Tigers are, however, occasionally spotted here. It does have numerous small carnivores including various civets, mongooses and small cats. The park has a large resident population of wild boar, but the critically endangered pygmy hog has been reported from the park. It also has numerous rodents, including giant squirrels. The rare hispid hare has also been reported from the park.

Birds: Birds at the Gorumara National Park include submontane forest birds like the scarlet minivet, sunbird, Asian paradise flycatchers, spangled drongo, and Indian hornbill. Numerous woodpeckers and pheasants inhabit the park. Peafowls are very common. The park is on the flyway of migratory birds including the rare Brahminy duck.

Reptiles and amphibians: The Park is home to a large number of snakes, venomous and non-venomous, including the Indian python, one of the largest snakes in the world, and the king cobra – the world's largest venomous snake.

4) Jaldapara National Park: Jaldapara National Park is a beautiful place, located in the Jalpaiguri district of the state of West Bengal. Jaldapara National Park also known as Jaldapara Wildlife Sanctuary. Jaldapara National Park was established in the year of 2012. Total area of the park is 216.51 Km². The park is situated at the foothills of the Eastern Himalayas and on the bank of Torsa River. Jaldapara National Park is home to a myriad variety of flora and fauna. The place teems with plants and beautiful flowers, especially after the monsoons. Some of the prominent tree species found in the park include tall Sal and Shishu trees. Other variety of ferns, shrubs and tall grass can also be seen.

The main attraction in Jaldapara is the Indian one horned rhinoceros. The park is home of mammals, birds, reptiles. They are-

Mammals: Asiatic one horned rhino, Elephant, Gaur, Hog Deer, Spotted Deer, Sambar, Barking deer, Tigers, Leopards, Jungle cat, Leopard cat, Fishing cat, Civet, Giant squirrel, Pangolin, Hispid hare, Porcupine etc.

Birds: Crested serpent Eagle, Pallas's Fishing Eagle, Pigeons, Barbets, Parakeets, Woodpeckers, Large Green billed Malkoha, White Rumped Vulture, Pied Harrier, Common Buzzard, Kestrel, Sparrow Hawk, Bee-eaters, Rollers, Hoopoe, Shrikes, Larks, Hill Mynas, Bulbuls, Finches, Red jungle fowl, Black partridge, Shaheen Falcon, Great Pied Hornbills, Forest Eagle Owl, Orioles, Drongos, Babblers, Thrushes, Brahminy ducks, Lesser Adjutant Stork, Green Cuckoos etc.

Reptiles: Rock Python, Python, Monitor lizards, Kraits, Cobras, Geckos etc.

- **Mahananda Wild Life Scantuaries:** Mahananda Wildlife Sanctuary is located on the foothills of the Himalayas, between the Teesta and Mahananda rivers. Situated in the Darjeeling district of West Bengal, India; it comes under Darjeeling Wildlife division. It covers 127.22 km² area and it is opened on 1976. Some Exotic species of mammals such as Clouded Leopard, Indian Bison, Indian Elephants, Spotted Deer, Barking Deer, Sambar, Rhesus Monkey, Jungle Cat, Fishing Cat. Very endangered Bird species like Rufous-necked Hornbill, Oriental Pied Hornbill, and Great Hornbill etc. Among the others swallow, swift, thrush, babbler, warbler, roller, minivet and sunbird found.
- **Senchal Wild Life Scantuaries:** Senchal Wildlife Sanctuary was set up in 1915 in the Darjeeling District of West Bengal, India. It is one of the oldest wildlife sanctuaries of India. It covers an area of 38.6 km² (14.9 sq. mi). The elevation ranges from 1,500 to 2,600 m (4,900 to 8,500 ft.). High-altitude animals such as barking deer, wild pig, Himalayan black bear, leopard, jungle cat, common rhesus monkey, Assam macaque, Himalayan flying squirrel, etc. are found in their natural habitats. The sanctuary is also rich in bird life.
- **Jorepokhri Salamander Wild Life Scantuaries:** Jorepokhri Wildlife Sanctuary is situated in Darjeeling District, West Bengal. It is the habitat of some high-altitude animals like Himalayan Salamander (*Tylototriton verrucosus*), locally known as 'Gora'. It also houses many other local animals such as the rhino, tiger, and many different birds. The forest is artificially decorated and offers some scenic views.
- **Buxa Tiger Reserve:** The Buxa Tiger Reserve is a 760-square-kilometre (290 sq. mi) tiger reserve located inside the Buxa National Park in West Bengal, India, in the Buxa Hills of the southern hilly area of Bhutan. Animals found in the park include, the tiger, civet, elephant, gaur (Indian bison), Indian boar and red jungle fowl. The main species are Asian elephant, tiger, gaur, wild boar, and sambar, Leopard / Black Panther, Civet Cats and Himalayan Goats etc.

| Fauna | No.of Species | Flora | No.of species |
|------------|---------------|------------------|---------------|
| Mammals | 73 | Trees | 450 |
| Reptiles | 76 | Shrubs | 250 |
| Birds | 284 | Hebs | 400 |
| Amphibians | 5 | Climbers | 111 |
| Fishes | 33 | Orchids | 150 |
| | | Grasses | 100 |
| | | Bamboos | 10 |
| | | Medicinal Plants | 112 |

Endengerd Species are Indian tiger, Asian elephant, leopard cat, Bengal florican, regal python, Chinese pangolin, hispid hare, hog deer lesser adjutant (*Leptoptilos javanicus*), white-rumped vulture (*Gyps bengalensis*), slender-billed vulture (*Gyps tenuirostris*), chestnut-breasted partridge (*Arborophila mandellii*), rufous necked hornbill (*Aceros nipalensis*), ferruginous pochard (*Aythya nyroca*) and great hornbill (*Buceros bicornis*).

5) Rasik Beel Bird Sanctuary: Rasikbil or Rasikbeel is a small lake situated in the Cooch Behar district of West Bengal, India. This lake attracts a lot of birds which make nests in the trees around the lake. The bird varieties which live in and around the lake includes cormorants, different varieties of storks, ibis, spoonbill, kingfisher, parrots, owl and many others. There is a deer park and a crocodile rehabilitation center by the side of the lake. There are also a leopard house, a python house, Aviary & a Tortoise rescue centre. This following water birds found in Rasik Beel- Lesser Whistling Teal, Common Teal, White eyed pochard, Red Crested pochard, Shoveler, Pintail, Wigeon duck, Grey headed Lapwing, Northern Lapwing, Pied Kingfisher, Stork billed kingfisher, Small blue kingfisher, Little Cormorant, Large Cormorant, Gadwall etc.

4. Threat

Terai and Duars is a hill area where weather changes, flood, climate changes, temperature and many environmental hazards are present. Due to the environmental problems and other threats causes of biodiversity lost in Terai and Duars. Generally they are-

- Temperature Increasing, Deforestation, Hunting, pollution and population increase are highly damaged the Terai and Duars biodiversity.
- Due to the global warming temperature are highly increase. Increasing temperature is harmful for aquatic animal, mammals.
- Climate change is main factor for biodiversity lost. Climate Change affect to migratory bird.
- Deforestation is one of the cause of Biodiversity lost in Terai and Duars. During deforestation self-sustaining of soil is lost. During Deforestation different types of tree and different type of animal, birds are lost.
- In Terai and Duars several types of species are present. Red panda, deer, different types of migratory bird present for this expensive animal demand is very high. So this type of animal Hunting is increase now a day. For the causes of hunting, Terai and Duars biodiversity lost.

5. Conservation

Terai and Duars is a largest forest of Himalayan area and a heritage site. Where different types of tree, animal present. Living animals and plants of Terai and Duars is necessary for conservation.

- There are many threatened animal present in this area. This type of animal conserve immediately. They are- Red Panda, Barking Deer, Leopard, Horn Bill etc.
- Different types of insect are lost from terai and duars. It is essential for conservation.
- India government also sign to a number of multilateral environmental agreements and conventions, including UNFCCC the Kyoto protocol and the CBD. India is also a party to related conventions, namely the convention on International Trade in Endangered species of wild flora and fauna, the Ramsar Convention on wetlands of international importance and the conservation on migratory.
- For conservation there are several Act are present. Such as i) Environment protection Act 1986. ii) Water pollution control Act 1974. iii) Indian forest Act 1927. iv) Forest conservation Act 1980. v) Wild life protection Act 1972. vi) The biodiversity Act 2002.

6. Conclusion

According to UNESCO Himalayan Foot Hills is a World Heritage site. Terai and Duars is necessary for our environment. Due to the environment problem and other issue Terai and Duars are polluted. There are many conservation rules are formed for protection of Terai and Duars. Protection and conservation of animal ecosystem more develop. Prevent the hunting animal. Protect the Terai and Duars through the Gov. Arm force. New cultivation seed must be put in the Terai and Duars area.

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