

THREATS TO THE SNAKES OF ASSAM WITH SPECIAL REFERENCE TO KAMRUP DISTRICT

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Introduction

Snakes are considered the most deadly enemy by many human societies. Despite documentation of their importance (Prakash, 1991) and their intimate association with Indian culture (Deoras, 1990), the present society does not pay much attention to their conservation. The loss of biodiversity has attracted much attention (Wilson, 1988), yet in discussions on Biodiversity Conservation, herpetofauna, and in particular snakes are little mentioned.

Standardised methods for determination of conservation status and development of management strategies for snake populations, in general, have not been developed. Dodd (1987) pointed out that more than 180 snake species of the world required immediate protection measures. In India, the entire snake fauna is covered in the Schedules of the Indian Wildlife Protection Act, 1972 and provided with legal protection, but a very little protection is afforded in practice. Information on the biology of snakes and threats to them in India is largely lacking.

Assam, with its diversified climatic and topographic conditions, has been reported to support 92 species of snakes, which constitute about 40% of the total snake fauna of the country (Barua and Sengupta, In Press). However, no study has been conducted to evaluate the threats and measures of conservation for the snakes of Assam.

Study Area

The Kamrup District (90° 10' - 90° 58' E and 24° 41' - 26° 46' N; 4345 km²) has a diversified topography from low lying swamps to hills. The south of the district is covered by hills of the Meghalaya plateau of Gondwanas origin with mainly granite and gneissic rocks. The hills are cut and denuded by streams and gradually merge with the Brahmaputra. The plains (mean elevation 55m msl) of the district is within the Brahmaputra drainage system and has a gentle east-west slope. Several small to large temporary and permanent water bodies encompassing about 58 km² are present in the Brahmaputra Basin of the District (Project Report 1997).

The district has many Reserve forests and a Wildlife Sanctuary within its limit, covering an area of 1,163 km² (Anon, 1993). The natural vegetation in the hills is mixed deciduous forest, while that of the plains is marshy grasslands and reed beds.

Materials and Methods

The study was carried out during February 1995 to March 1997. A random sample survey was performed in the study area to evaluate the response of humans to snake conservation and other related aspects. Further threats are visualised and evaluated from the available data of the concerned government department.

Results and Discussion

In the present study malicious killing, habitat destruction or alteration, and pollution are found to be the major threats to snake populations in Kamrup District.

The greatest threat to snakes as a group is the destruction or alteration of their habitat. In Assam, specifically in the Kamrup District, most natural habitats are severely altered causing serious threats to survival of snakes. The destruction of forests is directly related to human population increase and the altitude of the people in the area. About 34.77% of the total forest area of Assam is under open forest and the state experiences the greatest destruction of forests in the country (The state forest report 1995; Ministry of Environment and Forests). Assam has suffered a loss of 1.82% forest cover from 1993 to 1995 against an all India average of 0.08%. Further, in Assam population has increased by 53% from 1971 to 1991 (Nanda 1992) and the increase is more pronounced in this district (65.0%). Thus it can be assumed that the loss of forest cover is very high in Assam including the Kamrup District. It is supported by our observations in the forest areas which are noticed to bear scars of violation of human destructive forces. The reduction in crown cover greatly affects the snakes such as *Ophiophagus hannah*, *Python molurus* and *Chrysopalea ornata*. However, it is difficult to quantify the effects of destruction on population of snakes as no data on population of snake is available. Further, alteration of habitats, specially for aquatic snakes, stems from siltation of the aquatic bodies such as oxbow lakes or beels and rivers. In all major aquatic sources of Assam including the mighty river Brahmaputra, the bed has risen to such a level that their water holding capacity is greatly affected. As a consequence, the plains experiences waves of flood creating havoc in the grassland ecosystem of the flood plain (Das 1996). Further, it has been reported that the Kamrup District lost 7 sq. km of wet land during this decade (Project Report 1997).

The loss of habitat also occurs due to residential and agricultural developments. Urbanisation may completely sweep away many species from their range of occurrence. Cogger (1982) reported the decline of *Hoplocephalus bungaroides* due to habitat loss by urbanisation in Sydney. In North America urban sprawl affected adversely a wide variety of reptiles (Campbell 1974). Though no quantitative data on population of snakes is available, fast spreading urbanisation definitely causes much destruction to the serpentine fauna of the state as evident from the low diversity of snakes at urban centres of the states (Sengupta, unpublished data).

The random sample survey reveals that only 7.4% of people feel the necessity of the conservation of snakes to maintain the ecological balance. However 53.09% advocate killing of snakes and consider snakes as the most dreadful enemy of man. Snakes have always excited intense feeling among people and specially in Assam, such feelings have existed to high degree as there are many fairy tales regarding snake bites and people as a whole have less tolerance, to snakes. As such, malicious and cruel killing of snakes in the study area is found to be very high. It is also noted that about 92.59% population possess negative approach towards snakes and their conservation. Therefore, to wipe out the intense antagonism and negative approach, the present study suggests conservation education programmes to disseminate the importance of snakes.

Some well known harmless species in the study area are subjected to hunting. It is noted that *Xenochrophis piscator*, *X. ceresogaster* and *Enhydryn enhydryn* are killed whenever they are found in beels and fisheries ponds, without considering their role in maintaining the ecosystem balance.

The use of biocides is the basic part of modern agriculture, forestry and hygiene. Since 70's scientists became concerned of the use of biocides and their impacts on wildlife. It is already

established that biocides have deleterious effects on the physiology of animals (Sengupta *et al.* 1990). Though no information on effect of different biocides on snakes is available, considering their extensive use in the agricultural fields of Assam (Hazarika and Das, 1996), it is definite that they also act as a strong force in eliminating serpentofauna of the state.

The present study thus suggests that more specific studies on the status of snakes of Assam be performed to evaluate the threats and to develop appropriate measures to conserve them.

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NOTE

BUTTERFLIES OF GUNDLA BRAMESHWARAM WILDLIFE SANCTUARY, ANDHRA PRADESH

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Located on the Gundla Brameshwaram plateau of the Nallamalai hill ranges 30 km off Nandyal town in Kurnool district, the Gundla Brameshwaram Wildlife Sanctuary is about 115 km from Kurnool town. It lies south to the Nagarjuna Sagar-Srisailem Tiger Reserve and forms a continuous stretch of contiguous forest. The vegetation is of mixed type consisting of tracts of moist mixed deciduous forest.

The vegetation of the sanctuary is of southern tropical dry mixed deciduous forest with thorn scrub and riverine and swampy forest present along the Gundlakamma River. Vegetation includes

Terminalia tomentosa, *Adina cordifolia*, *Anogeissus latifolia*, *Pterocarpus marsupium*, *Chloroxylon swietenia*, *Acacia sundra*, *Buchanania lanzan*, *Hardwickia binata*, *Aegle marmelos*, *Erythroxylon monogynum*, *Dalbergia paniculata*, *Dalbergia latifolia*, *Madhuca indica*, *Dyospiros melanoxylon*, *Wrightia tinctoria*, *Boswellia serrata*, *Randia dumetorum*, *Ziziphus oenoplia* and a variety of other herbs and shrubs. Fauna is varied and rich with representatives of a variety of birds, Mugger Crocodile *Crocodylus palustris*, Tiger *Panthera tigris*, Leopard *Panthera pardus*, Jungle Cat *Felis chaus*, Wild Dog *Cuon alpinus*, Striped Hyena *Hyaena hyaena*, Indian Porcupine *Hystrix indica*, Nilgai *Boselaphus tragocamelus*, Chousingha *Tetracerus quadricornis*, Blackbuck *Antelope cervicapra*, Sambar *Cervus unicolor*, Spotted Deer *Axis axis*, Muntjac *Muntiacus muntjak*, Wild Boar *Sus scrofa cristatus* etc.

The study area was visited twice by us during the months of July and November, 1997. Butterflies encountered were recorded and the work of Gay *et al.*, (1992) was referred for identification. A total of 41 species of butterflies was recorded from the Gundla Brameshwaram Wildlife Sanctuary. Most of these butterflies are widely distributed in Andhra Pradesh and are commoner on the Nallamala hill ranges.

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Check List of Butterflies of Gundla Brameshwaram Wildlife Sanctuary, Andhra Pradesh

Papilionidae

- | | |
|------------------------------------|---------------|
| 1. <i>Pachliopta aristolochiae</i> | Common Rose |
| 2. <i>Papilio clytia</i> | Common Mime |
| 3. <i>Papilio polytes</i> | Common Mormon |
| 4. <i>Papilio polymnestor</i> | Blue Mormon |

Pieridae

- | | |
|-----------------------------|----------------------|
| 5. <i>Anaphaeis aurota</i> | Pioneer |
| 6. <i>Cotopsilia pomona</i> | Common Emigrant |
| 7. <i>Delias eucharis</i> | Common Jezebel |
| 8. <i>Ixias marianne</i> | White Orange Tip |
| 9. <i>Pareronia valeria</i> | Common Wanderer |
| 10. <i>Pieris canidia</i> | Indian Cabbage White |

Lycaenidae

- | | |
|---------------------------------|--------------------|
| 11. <i>Abisara echerius</i> | Plum Judy |
| 12. <i>Caleta caleta</i> | Angled Pierrot |
| 13. <i>Castalius rosomon</i> | Common Pierrot |
| 14. <i>Euchrysops cnejus</i> | Gram Blue |
| 15. <i>Leptotes plinius</i> | Zebra Blue |
| 16. <i>Pseudo zizeeria maha</i> | Pale Grass Blue |
| 17. <i>Surendra quercetorum</i> | Common Acacia Blue |
| 18. <i>Talicauda nyseus</i> | Red Pierrot |

Nymphalidae

- | | |
|--------------------------|--------------|
| 19. <i>Acraea violae</i> | Tawny Coster |
|--------------------------|--------------|