

THE HOOLOCK GIBBON (*Hoolock hoolock*) IN TINSUKIA AND DIBRUGARH DISTRICTS OF ASSAM, INDIA

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ABSTRACT

The distribution, habitat, status and conservation of the hoolock gibbon *Hoolock hoolock* are described in the Tinsukia and Dibrugarh districts of eastern Assam, India, a stronghold of the species. The habitat is dominated by tropical wet evergreen rainforest. Most of the gibbons are confined to the protected areas and reserved forests. Occurrence in some village woodlands is interesting. At present, Dihing-Patkai Sanctuary and Upper Dihing (west block) reserved forest complex has the largest gibbon habitat in the area. In all, the species occurs in more than 40 fragmented populations. As poaching is insignificant, they are relatively densely distributed in some pockets. There were a minimum of 1,700 gibbons in the area in 1995-1996 with a marginally declining trend. Presently there may be fewer than 1,300 individuals. Destruction of forest by felling of trees, encroachment for agriculture including tea plantation and settlement, oil mining and exploration and open cast coal mining are major threats. Recommendations have been made for new protected areas, extension and adequate protection of existing protected areas, and stopping of new mining in key habitats.

Keywords: Hoolock gibbon, *Hoolock hoolock*, Tinsukia, Dibrugarh, Assam, Dihing-Patkai Sanctuary, Upper Dihing reserved forests.

INTRODUCTION

The hoolock gibbon *Hoolock hoolock* is the only ape of the Indian subcontinent. It occurs only in a small part of the country in the north-east where it is restricted to the south of the Brahmaputra River and east of the Dibang River (Parsons, 1941; Choudhury, 1987). Outside India, it is distributed in a small area of southern China, eastern Bangladesh and Myanmar (Burma) (Corbet & Hill, 1992). Formerly in the genus *Hylobates*, Prouty *et al.* (1983a & 1983b) argued for the placement of the hoolock gibbon in a separate subgenus, *Bunopithecus* Matthew and Granger, 1923, based on its distinct karyotype. Brandon-Jones *et al.* (2004) and Groves (2005) placed it in the genus *Bunopithecus* based on the findings of Roos and Geissmann (2001) and Takacs *et al.* (2005), while doubting the validity of the name. Eventually, Mootnick and Groves (2005) showed that *Bunopithecus* was not applicable to the species (or to gibbons at all), and named instead a new monotypic genus, *Hoolock* Mootnick and Groves, 2005. Taxonomy of gibbons as well as other primates has been reviewed by Groves (2005).

Information on the species in Assam can be found in Tilson (1979), Choudhury (1987, 1989, 1990, 1991 & 2000), Kakati (1997) and Das (2002),

and in some other synoptic works on primates or wildlife in general (Pocock, 1939 & 1941; Prater, 1948; Choudhury, 1988, 1995, 1996b & 1997). Some information on the gibbons of other states of north-east India are found in McCann (1933), Alfred and Sati (1990), Misra *et al.* (1994), and Choudhury (2003 & 2006). In this article, the distribution, habitat, status, and conservation of the hoolock gibbon in the Tinsukia and Dibrugarh districts of eastern Assam, India, a stronghold of the species, are presented.

STUDY AREA AND METHODS

The districts of Tinsukia (3,790 km²) and Dibrugarh (3,381 km²) (27°05'-27°58' N, 94°32'-96°01' E) are located in the eastern part of Assam with Arunachal Pradesh on three sides of the former district. The area is plains with the floodplains of the Lohit and Brahmaputra rivers in the north and west, respectively. The foothills of Patkai Range mark the southern areas. The habitat type ranges from tropical wet evergreen rainforest, moist deciduous to Salix swamp. The climate of the area is tropical monsoon with a hot and wet summer and a cool and usually dry winter. The temperature ranges from less than 7°C to more than 36°C. Annual rainfall ranges from 2,500 to more than 3,500 mm.

Between 1987 and 1996 with brief visits continuing until May 2008, I was able to carry out field studies in the habitats of the hoolock gibbon in Tinsukia and Dibrugarh districts as part of a broader survey of primates and other wildlife. However, intensive studies were performed in 1992-1994 when I camped in Tinsukia District for more than two years. During the field study, the presence of the gibbon was ascertained by direct sighting, its distinctive call and in some areas by interviewing local forest staff and villagers. For direct observation, foot transects along existing and newly cut paths and trails, boat transects along nullahs (gullies) and rivers, and elephant-back transects (using trained elephants) along existing and newly-cut trails were made.

RESULTS AND DISCUSSION

1. Distribution and Habitat

In Tinsukia district, the hoolock gibbon occurs in all regions excluding the wide riverbeds of the Brahmaputra and Lohit (Figure 1) as is evident from the distribution pattern. Tea gardens, roads, railway and large human settlements have resulted in fragmentation. In fact, Tinsukia is an illustrative case of fragmentation (see also Table 1). In Dibrugarh, the species occurs in the north and south-east. Most of the gibbons are confined to reserved forests (RF) while some are also present in unclassified forests. Most interesting, however, is the occurrence in some village woodlands. At present, Upper Dihing (west block) RF is the

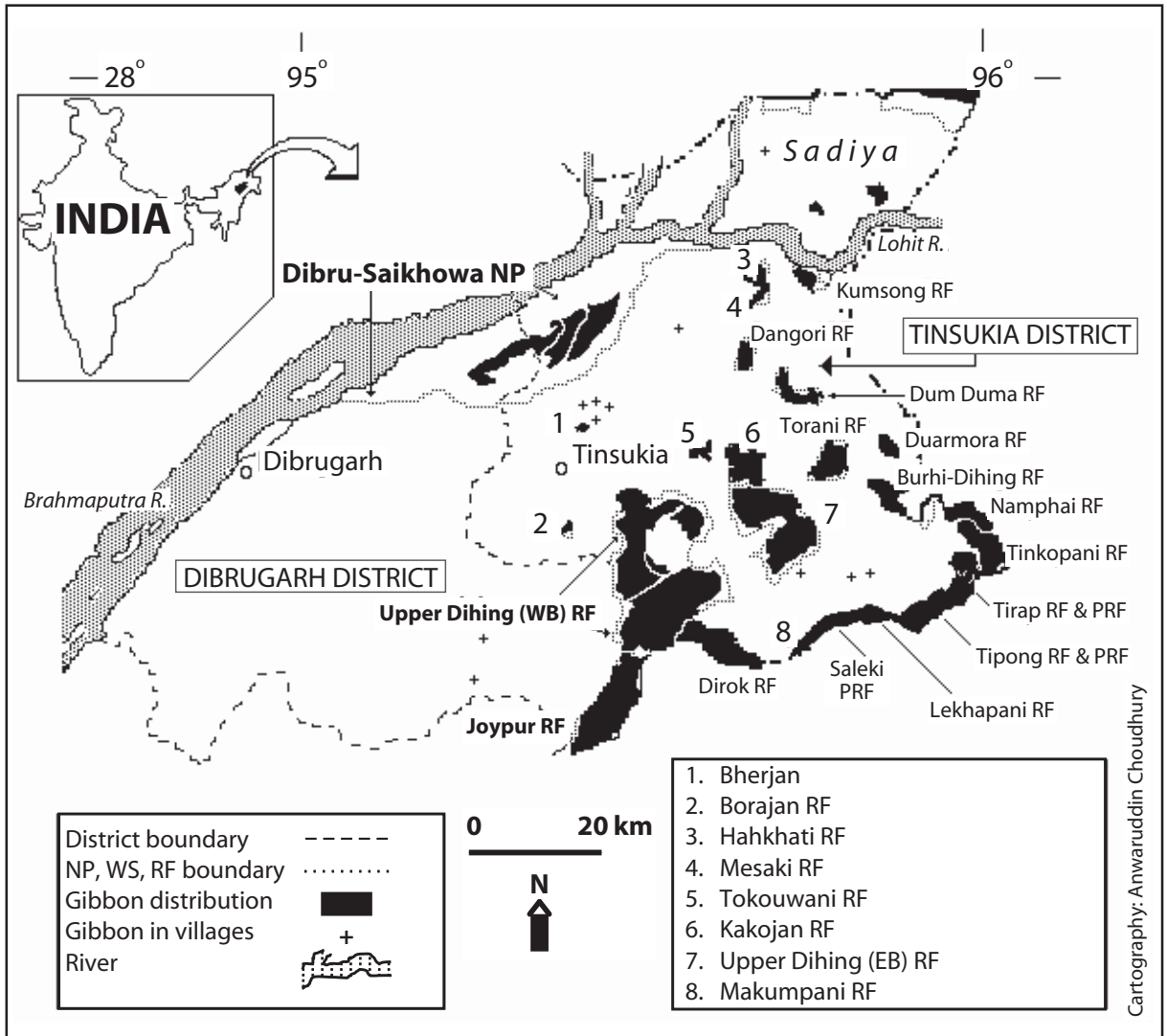


Figure 1. Gibbon distribution in Tinsukia, showing population fragmentation.

Table 1. Hoolock gibbon in Tinsukia and Dibrugarh districts.

Area Name	Area (km ²)	Approx. current suitable habitat for gibbons (km ²)	Population range	Remarks
Dibru-Saikhowa NP	340	50	E	Severely degraded; At least 4 fragmented populations
Tinsukia District				
Bherjan-Borajan-Podumoni WS	7.2	3	F	Three fragmented forests
Burhi-Dihing RFs	22.95	16	D	Two fragmented forests
Digboi (west block) RF	9.2	7	E	Contiguous with Upper Dihing (west block) RF
Digboi (west block) RF	11	4	F	
Dirak RF	30.4	27	D	
Duarmora RF	6.5	4	F	
Dum Duma RF	28.8	20	D	High density gibbon population in pockets
Hahkhathi RF	6.7	3	F	Contiguous with Mesaki RF
Hollogaon RF	3.7	2	F	
Hollonghabi RF	5.2	1	?	Severely degraded
Kakojan RF	23.2	18	D	
Kotha RF	11.3	2	?	Severely degraded
Kumsong	22.5	9	E	Severely degraded
Kukuramora RF	3.65	2	F	Partially degraded
Kundil Kaliya RF	72.8	10	E	Severely degraded
Lekhapani RF	13.96	8	F	
Makumpani RF	4.8	3	F	Contiguous with Dirak RF
Mesaki RF	13.66	5	F	Contiguous with Hahkhathi RF
Naloni RF	3.8	1.5	F	A pair in 1993; current status unknown
Namphai RF	21.2	10	E	Two fragments, one contiguous with Tinkopani RF
Phillobari RF	3.14	1.50	F	3 in 1993; current status unknown
Sadiya Station (north block) RF	23.3	8	F	Degraded
Saleki proposed RF	29.4	15	E	
Tinkopani RF	30.3	21	E	
Tipong RF	4.45	3	F	Contiguous with Tipong (1 st Addn) proposed RF
Tipong (1 st Addn) proposed RF	20	15	E	
Tirap RF	14.5	10	E	Contiguous with Tirap (1 st Addn) proposed RF
Tirap (1 st Addn) proposed RF	29.95	18	E	
Tokowani RF	4.97	3	F	
Torani RF	20.4	13	E	
Upper Dihing (west block) RF	275	179	A	At least 5 fragmented populations; still large gibbon population. A part has been included in Dihing-Patkai WS.
Upper Dihing (east block) RF	132	70	C	At least 3 fragmented populations; still large gibbon population.
Villages in Tinsukia			E	
Dibrugarh District				
Joypur RF	108.7	84	B	At least 2 fragmented populations; still has large gibbon population. A part has been included in Dihing-Patkai WS.
Villages in Dibrugarh			F	

Population size: A => 500; B = 250-500; C = 100-250; D = 50-100; E = 20-50; F =< 20

NP = National Park; **WS** = Wildlife Sanctuary; **RF** = Reserved Forest.

largest gibbon habitat in the district followed by Upper Dihing (east block) RF, Joypur RF, Dibru-Saikhowa National Park, Dum Duma RF, Dirak RF, Tinkopani RF, Kakojan RF, Tirap RF and Namphai RF.

In summary, the hoolock gibbon occurs in three protected areas, 27 reserved forests, three proposed reserved forests, and in some other

areas; totaling at least 40 fragmented populations in Tinsukia, three in Dibrugarh and one falling in both. In Dibrugarh, it occurs only in one reserved forest while the single national park falls partly in both the districts (Table 1). As poaching is insignificant, they are relatively densely distributed compared to many other parts of north-east India.

In Tinsukia district, the species has become extirpated in recent years from Podumoni and Bherjan forests of Bherjan-Borajan-Podumoni Wildlife Sanctuary. In Dibrugarh district, it used to occur also in Namdang and Telpani RFs, but no further records were made in recent decades. Throughout its range in Tinsukia and Dibrugarh, the hoolock gibbon is sympatric with other primates such as the Assamese macaque (*Macaca assamensis*), northern pig-tailed macaque (*M. leonina*), rhesus macaque (*M. mulatta*), capped langur (*Trachypithecus pileatus*) and slow loris (*Nycticebus bengalensis*) and in a few areas with the stump-tailed macaque (*M. arctoides*).

The hoolock gibbon is arboreal and a dweller of dense evergreen and semi-evergreen forest in the plains, foothills and hills. It has been recorded from less than 90 m in Dibru-Saikhowa to above 500 m in Dirok and Joypur RFs. All the recorded sites were in tropical evergreen or semi-evergreen forests except in Dibru-Saikhowa where it has also been recorded in Salix swamps and deciduous woodland. The total potential habitat, i.e., good or dense or nearly dense forest (more than 40% crown density as per Forest Survey of India) is only about 850 km². Of these, the known "area of occupancy" (as per IUCN criteria; IUCN, 2008) is around 650 km² of which at least 220 km² support gibbons at relatively high density.

2. Village Gibbons

The occurrence of hoolock gibbons in some village woodlands is very interesting. The first such case came to light when I heard a gibbon call from Baghjan while surveying for White-winged Wood Ducks *Cairina scutulata* in July 1992. The call came from Motapung and Motapung-Kaesia villages. Then I located further groups in at least eight more village woodlands, namely Joigukhowa-Torajan, Borgaon, Na-Dhulijan, Pasegaon, Kambagaon and Bura-Burithan (Sadiya) in Tinsukia district, and Hukanigaon and Chopatoli in Dibrugarh district. In these 10 village woodlands, about 30 gibbons were present in 1994. A few more were reported from Enthem-Ketetong area of Tinsukia district. Details of these 'village gibbons' will be published later.

3. Status

The hoolock gibbon is a rare primate of the Indian sub-continent. It is protected under Schedule I of Wild Life (Protection) Act and is listed as 'Endangered' by IUCN (IUCN, 2008). However, in some forest pockets of Tinsukia district, it is still common and easily seen. Estimating the population of the hoolock gibbon is relatively easy compared to other primates of the region because it can be located by its call besides by direct sightings. Moreover, in these districts, it is not shy.

The population density (crude but excluding the treeless areas) could be estimated for six sampled areas, Borajan, Dum Duma (Kasijan to straight south up to the boundary), Upper Dihing (west block) between Kheto and Lakkipathar and in Jorajan-Choraipung, Dibru-Saikhowa NP and Dangori RF. The density in 1992-1996 (1992-1994 for Borajan) was 10 gibbons/km² in Borajan (drastically reduced after 1994 due to felling of trees in a relatively small area), 8.58/km² in Dum Duma (Kasijan to straight south up to boundary), 6.05/ km² in Upper Dihing (west block) between Kheto and Lakkipathar, 8.8/km² in Upper Dihing (west block) between Jorajan-Choraipung, 1.46/km² in Dibru-Saikhowa NP, and 4.71/km² in Dangori RF. The very low density in Dibru-Saikhowa was due to a change in habitat type. However, as a precaution, the next-lowest density i.e., 4.71/km² (Dangori RF) may be taken as a guide for estimating overall population in the 220 km² that supports gibbons at a higher density. The figure of 1.46/km² from Dibru-Saikhowa could be used to estimate population in the remaining 480 km².

This indicates that there was a minimum of about 1,700 gibbons in Tinsukia-Dibrugarh forests in 1995-1996 (excluding the few gibbons that live in village woodlands) of which more than one-quarter were in Upper Dihing (west block) RF. In post-1996 period, besides Borajan, there was a noticeable but unknown decline in Dibru-Saikhowa due to shrinkage of potential habitat through erosion, felling of trees and encroachment by 'forest villagers'. The single old female of Bherjan was killed in 2002. In other areas, there was also an apparent decline but

that cannot be quantified unless studies are repeated in the areas. If the loss of habitat is taken as a yardstick (in the absence of poaching for meat), then there might be fewer than 1,300 animals. The largest group observed was six gibbons about 1 km west of Raja-ali Beat office in Upper Dihing (east block) RF on 19 August 1993. It contained an adult pair, another adult male which seemed to be younger than the alpha male, two sub-adults of different age groups and a juvenile.

4. Conservation Problems

A. Habitat destruction

Destruction of forest by tree felling, encroachment for agriculture and settlement, expansion of tea plantations, *jhum* or slash-and-burn shifting cultivation (in Patkai foothills), and monoculture tree plantation are major threat. These lead not only to a reduction but also to fragmentation of habitat. Encroachment is a major problem in the reserved forests and as well as in Dibru-Saikhowa National Park. In the hilly areas along the Arunachal Pradesh border including the Saleki proposed RF, *jhum* cultivation is an important factor in forest destruction. The satellite images taken in of 2007 have shown that the entire southern two-third of Borajan block of Bherjan-Borajan-Podumoni Wildlife Sanctuary has virtually lost all its trees. The ultimate cause of habitat destruction is, however, the very rapid growth in the human population, from 1.4 million in 1971 to 2.3 million in 2001 in these two districts.

B. Poaching and trade

Unlike many other parts of north-east India, poaching negligible in Tinsukia and Dibrugarh. Occasionally, people from Arunachal Pradesh poach in Joypur and other bordering areas including Dirok and Tinkopani, but it is not alarming. There is no known trade, however, young animals are sometimes kept as pets.

C. Drilling and mining

Oil drilling and exploration, and open cast coal mining are major concerns. The largest rainforest patches of the area in Upper Dihing reserved forests have been heavily exploited for oil mining for more than a hundred years.

New wells are also coming up. A large area near Choraipung in Upper Dihing (west block) RF was damaged due to oil exploration by the Premier Oil Company as recently as 2004-2005.

D. Other issues

Pollution from oil fields, refineries and open cast coal mining are also conservation issues to be taken into account. In Dibru-Saikhowa National Park, the dramatic earthquake of 1950 resulted in major geomorphological changes, which included sinking of large parts of the present national park, while huge amounts of silt brought down by the Brahmaputra and the Lohit Rivers have accumulated on the riverbeds. Since then, the area started getting regularly flooded (also water logging) during the monsoon resulting in a change of vegetation type (Choudhury, 2000). Evergreen trees started to be replaced by deciduous species, while the low-lying areas were colonised by *Salix tetrasperma*. Diversion of a major channel of the Lohit river through Ananta *nullah* has resulted in further shrinkage of habitat due to erosion. The two 'forest villages', Laika and Dadhia, have illegally expanded by destroying forest areas, while many villagers are also engaged in illegal logging. This has greatly reduced the potential habitat of the gibbon in the park (only less than a sixth is suitable now). It will not be surprising if the gibbon vanishes from the park within the next 5-6 years (28 groups were confirmed and some more were reported in 1992-1994; Choudhury, 2000). Depredation in the cultivations and orchards by the hoolock gibbon has not been recorded although there were a few instances of the gibbons entering orange orchards, but without causing any damage.

CONSERVATION MEASURES TAKEN

Some of the important gibbon habitats covering parts of Upper Dihing (west block), Dirok and Joypur RFs were declared as Dihing-Patkai Wildlife Sanctuary in 2004 while Bherjan-Borajan-Podumoni Wildlife Sanctuary was notified already in 1999. Both were recommended after the studies reported here (Choudhury, 1989, 1995, & 1996a). However, the protection measures are inadequate and habitat degradation continues.

RECOMMENDATIONS

1. Important habitats for gibbons such as Dum Duma-Dangori should be declared as protected areas. Part of Upper Dihing (west block), especially areas near Choraipung and like Joypur RF should be added to Dihing-Patkai Wildlife Sanctuary and upgraded to a national park as was originally recommended (Choudhury, 1996a).
2. The existing protected areas should be provided with adequate protection.
3. The tea companies should collaborate with Bherjan-Borajan-Podumoni Wildlife Sanctuary and help to fence these small pockets. The oil industry, which has obtained greatest maximum benefit from the rainforests of Upper Dihing should support the protection work of Dihing-Patkai Wildlife Sanctuary.
4. No new oil well should be allowed in protected areas. With modern technology, drilling is also possible from distance.

ACKNOWLEDGMENTS

During the field study, I received tremendous support and assistance from many civil and forest officials, and a large number of villagers, relatives and friends, and I thank them all collectively. I thank late Nagen Sharma and Pradyut Bordoloi, both Forest Ministers of Assam and H. Sonowal, Commissioner of Forest for accepting my proposals for declaring Bherjan-Borajan-Podumoni and Upper Dihing-Joypur (Dihing-Patkai) forests as wildlife sanctuaries. I further wish to acknowledge the partial financial assistance from ASTEC (Assam Science Tech. & Environ. Council) for field studies carried out in the period 1990-1994 and the American Society of Primatologists for 1994.

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