

FIRST DISTRIBUTION RECORDS OF THE EASTERN HOOLOCK GIBBON *HOOLOCK HOOLOCK LEUCONEDYS* FROM INDIA

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ABSTRACT

Hoolock gibbon has two recognized subspecies: western subspecies is known as *Hoolock hoolock hoolock* and eastern subspecies as *Hoolock hoolock leuconedys*. Knowledge so far on the distribution of the western subspecies shows that they are distributed in India, Bangladesh and west of Chindwin river in Myanmar. On the other hand the eastern subspecies is distributed in China and east of Chindwin river in Myanmar. A recent survey confirms the eastern subspecies from Lohit district of Arunachal Pradesh for the first time.

KEYWORDS

Arunachal Pradesh, Eastern Hoolock Gibbon, *Hoolock hoolock leuconedys*, Lohit district, morphological characters, new record

Hoolock Gibbon or White-browed Gibbon *Hoolock hoolock* (Harlan, 1834) is one of the 12 species of lesser apes found in South and Southeast Asia. The genus *Hoolock* is represented by one species. Males have black hair with a pale brow that flicks up at the ends. Female pelage is copper-tan with dark-brown hair on the sides of the face, chest and genital fringe. The female's face ring is wide above the eyes, turns upwards at the ends, and becomes thin as it encircles the muzzle. Shorter hairs on the sides of the neck give this gibbon's face a triangular appearance. The muzzle is larger compared to other gibbon species with a thin tuft of hair on the chin. The chest region is narrow. Ischial callosities are heavily furred. Infants' coats are grey-white with a yellow tinge (McCann, 1933) they eventually turn black. At puberty, females turn pale while males remain black throughout adult life. Hoolock Gibbons produce a belching growl vocalization, the only gibbon species to do so (Mootnick, *et al.*, 1987). This subgenus is characterized by a diploid chromosome number of 38 (Prouty *et al.*, 1983a,b).

Hoolock Gibbon is the only ape species found in India. Besides India, this gibbon is distributed in the neighboring countries - Chittagong Hill Tracts [now in Bangladesh] (Anderson, 1878), British Burma [now Myanmar] (Tickell, 1864), eastern frontier of Yunnan [now China] (Anderson, 1878), and probably in Lao PDR (IUCN, 2000).

Groves (1967) differentiated two subspecies of Hoolock Gibbon and recently Mootnick and Groves (2005) provided a new generic name *Hoolock* to the species, which was originally described as *Hylobates*, later changed to *Bunopithecus*:

1. *Hoolock hoolock hoolock* (Western Hoolock Gibbon) and
2. *Hoolock hoolock leuconedys* (Eastern Hoolock Gibbon).

Groves (1967) documented the racial variation in colour on the opposite banks of the river Chindwin in Myanmar.

Characteristics of the western subspecies *H. h. hoolock*

Adult males on the west side of the river Chindwin (*H. hoolock*

hoolock) are jet black with perputial tuft black or only faintly grizzled; white brow streaks close together, connected by white hairs; a little white on chin or under eyes (Groves, 2001). Adult females of this subspecies have a distinct central part in the head hair. The hair of females' hands and feet are generally the same colour as the body hair (Image 1^w), but there is a black fringe on the fingers, toes, and on the edge of the hands (Groves, 1972).

Characteristics of the eastern subspecies *H. h. leuconedys*

The adult males of the eastern population of the species are black with brown overlay (Marshall & Sugardjito, 1986), perputial tuft white; brow streaks well separated with no white hairs between; chin and suborbital zone often with white hairs. Adult females have lighter hands and feet (Groves, 1972). The females' digits may have a trace of black on them. The females' crown hair grows slightly upwards and toward the nape of the neck and is not parted down the middle (Mootnick's Gibbon Conservation Centre website).

Distribution of *H. h. hoolock*

The eastern limit of the western subspecies is up to the river Chindwin of Myanmar (Groves, 1967, 1972). In the west it is distributed in the forests of Sylhet, Chittagong (Gittins, 1980; Gittins & Akonda, 1982) and in Mymensingh (Khan, 1984, 1985) of Bangladesh and its northern limit is up to the Dibang-Brahmaputra river system of India (Tilson, 1979). The southern limits of the range is uncertain (Groves, 1972). Detailed distribution record in northeastern India was discussed by Das (2002), Das *et al.* (2003; 2005), Molur *et al.* (2003) and Molur *et al.* (2005). As per Groves (1972) the subspecies occurs in altitudes from 152.4 to 1371.6m, but Das *et al.* (2005) reported its altitudinal distribution from 50m to 1400m.

^w see Images on the web at www.zoosprint.org

Distribution of *H. h. leuconedys*

The Eastern Hoolock Gibbon is known to be distributed to the east of the Chindwin river to Salween river in Myanmar and southwestern Yunnan Province in China at an altitude range of 1066.8 to 1219.2m (Groves, 1971).

While conducting survey in Tirap, Changlang and Lohit districts of Arunachal Pradesh for nonhuman primates, we found Hoolock Gibbons with different colouration, particularly in Lohit district. Literature consultation (Groves, 1972, 2001) and personal correspondence with some Gibbon experts (Geissman, Brockelman and Mootnick) led us to report the occurrence of the Eastern Hoolock Gibbon in Lohit district of Arunachal Pradesh in India.

Based on the preliminary survey in Lohit district this paper tries to evaluate: a. the distributional status of the *leuconedys* subspecies in India; b. group size; and c. threats

METHODS

Surveys were conducted from May 2005 to January 2006 in Lohit district of Arunachal Pradesh. For this study existing forest trails, paths and roads were followed by a team of three observers. We slowly walked trails and off trails from 0530 to 1000hr and from 1200 to 1500hr everyday. Whenever a gibbon group was sighted, we recorded the colour patterns, group size, age and sex composition. Approximate location of group on a map, nearest landmark and the latitude-longitude and altitude (using Megallan™ GPS) were recorded for every sighting. A survey procedure was developed to maximize and standardize the information to be gathered within the survey area. Because we were covering a large geographic area with mostly inaccessible terrain in a relatively short period of time, broad survey methods and interviews were used (NRC, 1981; Sussman & Phillips-Conroy, 1995). Broad survey methods have been used in a number of studies and are described in detail in NRC (1981). Broad surveys are useful technique for obtaining information on the presence and relative numbers of a species population in particular areas. Secondary information was collected through interviewing the local villagers.

^w see Images on the web at www.zoosprint.org

RESULTS

Preliminary observations of the individuals of the groups and their distribution are as follows:

Hoolock hoolock leuconedys characteristics

Adult male of the group have: a. black coat, b. white perputial tuft (Image 2^w), and c. brow streaks well separated with no white hairs between (Image 3^w). Adult females of the group have distinctly lighter hands and feet (Image 4^w), which is a distinct character of *leuconedys* subspecies of hoolock.

It was not possible to identify all the morphological characters as the animals are very shy and high in the canopy, and were not trapped. However, the taxon is distinctly different in its colouration from the western subspecies, which were confirmed through binoculars and photographs (Images 1-4^w).

Hoolock hoolock leuconedys, the eastern subspecies of Hoolock Gibbon is reported for the first time from India.

Distribution

The eastern subspecies is found to be distributed between the river Lohit in the north and the high altitude mountains of the Dafa Bum in the south (Fig. 1; Image 5^w). The distribution area lies mostly under the Namsai Forest Division and parts of Miao Forest Division of Arunachal Pradesh. The eastern subspecies was recorded from all the forested areas surveyed under these divisions (Table 1). Namsai Forest Division has eight reserve forests, three anchal reserve forests and one village reserve forest. All the 12 forests constitute an area of 1897.74km². Kamlang Wildlife Sanctuary with an area of 783km² is under Miao Forest Division. So the total forested area under the distribution range of this subspecies in India is estimated to be 2631.79km² excluding one anchal reserve forest and one village reserve forest.

Apart from *H. h. leuconedys*, Capped Langur (*Trachypithecus pileatus*), Stump-tailed Macaque (*Macaca arctoides*), Northern Pig-tailed Macaque (*Macaca leonina*), Assamese Macaque (*Macaca assamensis*), and Rhesus Macaque (*Macaca mulatta*) were also recorded. Indirect evidences suggested the presence of Bengal Slow Loris (*Nycticebus bengalensis*) in this region.

Table 1. Distribution of Hoolock hoolock in Lohit district of Arunachal Pradesh

	Forest Division	Forest	Area (km ²)	Gibbon taxon recorded
1	Miao	Kamlang Wildlife Sanctuary	783.00	<i>H. h. leuconedys</i>
2	Namsai	Turung Reserve Forest	143.47	<i>H. h. leuconedys</i>
3	Namsai	Kamlang Reserve Forest	978.20	<i>H. h. leuconedys</i>
4	Namsai	Manbhum Reserve Forest	136.05	<i>H. h. leuconedys</i>
5	Namsai	Namsai Reserve Forest	23.74	<i>H. h. leuconedys</i>
6	Namsai	Nao Dehing Reserve Forest	11.17	<i>H. h. leuconedys</i>
7	Namsai	Piyeng Reserve Forest	12.26	<i>H. h. leuconedys</i>
8	Namsai	Lohit Reserve Forest	47.58	<i>H. h. leuconedys</i>
9	Namsai	Tengapani Reserve Forest	443.92	<i>H. h. leuconedys</i>
10	Namsai	Kamphai Anchal Reserve Forest	13.50	<i>H. h. leuconedys</i>
11	Namsai	Lai Anchal Reserve Forest	38.9	<i>H. h. leuconedys</i>
12	Namsai	Khamti-Singphoo-Punkar Anchal Reserve Forest	28.2	Not surveyed
13	Namsai	Kharen Village Reserve Forest	20.75	Not surveyed

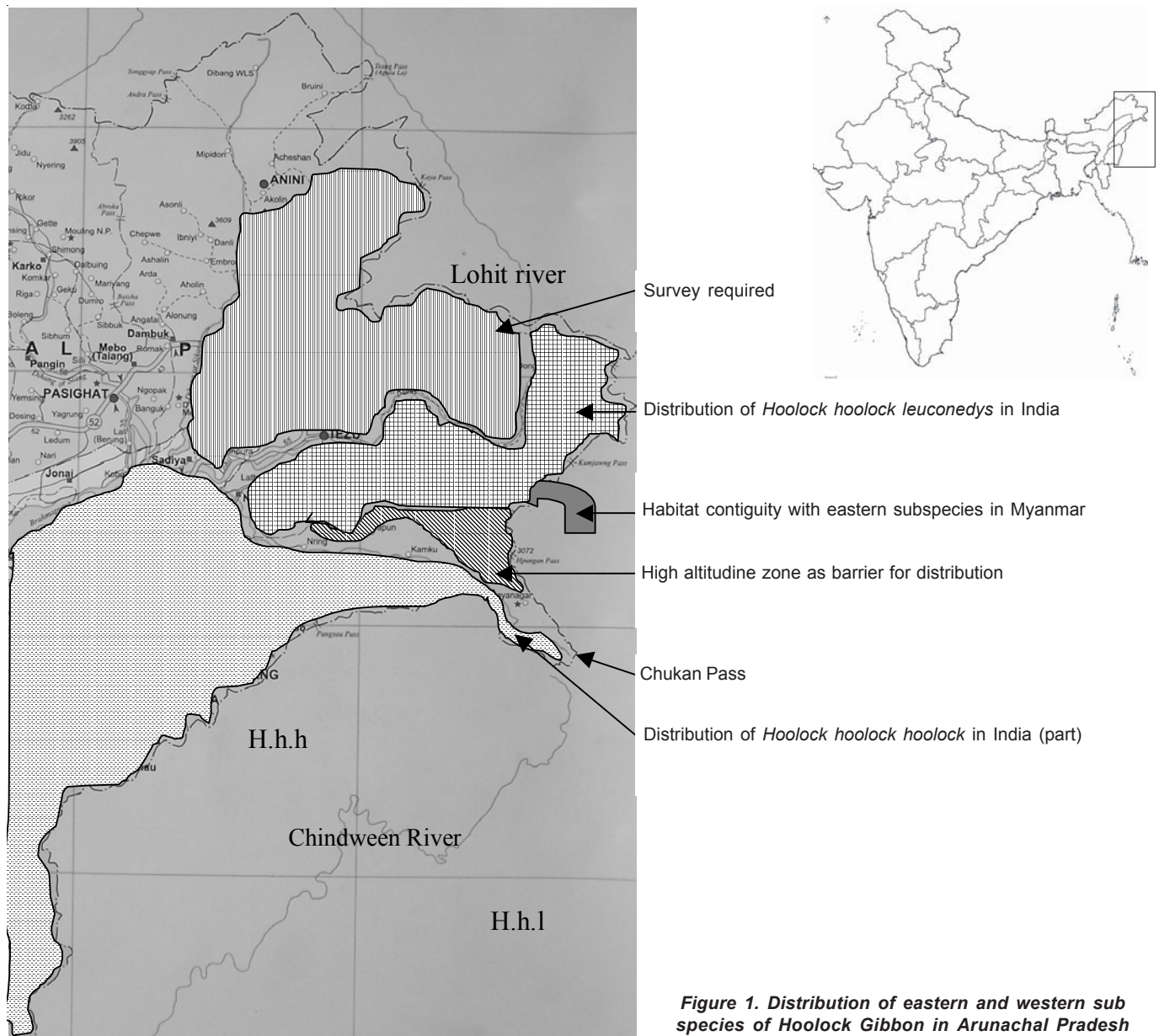


Figure 1. Distribution of eastern and western subspecies of Hoolock Gibbon in Arunachal Pradesh

Group size

A total of 168 individuals were observed. Excluding three lone individuals, 165 individuals were found in 49 groups. Average group size was 3.37. Most of the groups were observed with four individuals (Table 2). Latitude-longitude of some selected groups are shown in Table 2; altitude ranged from 122m to 1075m.

Threats

Hoolock Gibbon is protected by the traditional beliefs of Digaru Mishmi, Idu Mishmi and Khamti tribes in this part of Arunachal Pradesh. Except gibbons they hunt all other nonhuman primates found in the region. The major threats the eastern subspecies of Hoolock Gibbon face in India are:

1. Habitat fragmentation
2. Habitat destruction

3. Change in the land use pattern
4. Jhum (slash and burn) cultivation
5. Conversion of forest areas to tea gardens
6. Expansion of road network
7. High tension electric wires
8. Lack of awareness about conservation
9. Lack of motivation among forest staff

DISCUSSION

Presence of *Hoolock hoolock leuconedys* is reported for the first time from India. From our preliminary survey the distribution between river Lohit in the north and Dafa Bum (>4500m) in the south is continuous with the distribution range of the eastern subspecies in Myanmar (Fig. 1).

Although the existing literature suggests that the Chindwin

Table 2. Details of group size, location of the groups and corresponding altitudes

	Group size	Latitude	Longitude	Altitude (m)
1	4	27°45'N	95°68'E	166
2	2	27°45'N	95°56'E	177
3	4	27°45'N	95°59'E	122
4	5	--	--	--
5	4	27°44'N	95°55'E	157
6	4	27°43'N	96°03'E	165
7	3	27°43'N	96°04'E	172
8	4	--	--	177
9	4	--	--	193
10	4	--	--	204
11	5	27°47'N	96°12'E	216
12	3	27°46'N	96°13'E	233
13	3	27°43'N	96°11'E	242
14	5	27°44'N	96°12'E	240
15	3	27°48'N	96°17'E	282
16	4	27°43'N	96°12'E	292
17	2	--	--	249
18	3	27°46'N	96°16'E	362
19	4	--	--	298
20	4	27°46'N	96°20'E	378
21	4	--	--	337
22	2	27°45'N	96°20'E	382
23	4	--	--	348
24	2	27°46'N	96°21'E	512
25	3	27°45'N	96°20'E	294
26	2	27°44'N	96°19'E	407
27	3	27°43'N	96°19'E	448
28	1	27°45'N	96°21'E	370
29	6	27°41'N	96°19'E	485
30	2	27°41'N	96°20'E	496
31	2	27°43'N	96°25'E	633
32	2	--	--	654
33	1	27°37'N	96°19'E	1043
34	2	27°38'N	96°20'E	1075
35	4	--	--	571
36	3	27°37'N	96°20'E	1035
36	3	27°37'N	96°19'E	577
37	3	--	--	810
38	4	27°36'N	96°19'E	669
39	2	27°37'N	96°19'E	731
40	3	--	--	653
41	3	--	--	724
42	2	--	--	609
43	3	--	--	601
44	2	27°36'N	96°20'E	721
45	4	--	--	683
46	4	27°35'N	96°20'E	681
47	4	--	--	642
48	3	--	--	684
49	3	--	--	753
50	3	27°35'N	96°21'E	708
51	4	27°16'N	96°07'E	545
168				

river divides eastern and western subspecies, there is no record of Hoolock Gibbon in the north of Sumprabum (26°35'N & 97°42'E). Moreover, the Chindwin river starts from the south of the Chukan pass in Changlang district. To the north of Chukan pass, north of the high altitude mountains, there is no physical barrier for *H. h. leuconedys* and the habitat is contiguous with the eastern subspecies' distribution range in Myanmar. Surveys are required to confirm the taxonomic identity of the population between the Dibang River and the Lohit River (Miao Wildlife Sanctuary and other adjoining forested areas).

Earlier all the gibbons in India were considered to be the western

subspecies and based on that Namdapha NP and Kamlang WLS and Kamlang RF were supposed to be the largest continuous forest patch left for conservation of the Western Hoolock Gibbon in India. But after the present findings of the Kamlang population (both RF and WLS) as eastern subspecies, conservation scenario for both the subspecies in India has to be revisited. A detailed study is required to evaluate the population status of the eastern subspecies in India.

A remarkable difference has been observed between the group size of both the subspecies. Average group size is larger (3.37) in eastern subspecies than the western subspecies (2.9) (Das, *et al.*, 2005).

Groves (1971) suggested altitudinal distribution of the eastern subspecies is between 1066.8 and 1219.2m. Eastern subspecies in India were found at much lower elevations from 122 to 1075m. It is expected that the subspecies will be found in higher elevations in India also.

Although the local tribes do not kill gibbons yet there are several problems, *viz.*, rapid habitat loss, fragmentation, alteration of habitat, etc. Most of the areas are protected in Kamlang Wildlife Sanctuary and Kamlang Reserve Forest only because they are not accessible. Sincere efforts for conservation including detailed surveys, population monitoring and behaviour study with long-term vision are required.

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ERRATA

Four bird species erroneously crept into the checklist published along with the short note, 'A Checklist of Birds of the National Institute of Technology Campus, Kozhikode, Kerala' in *Zoos' Print Journal* 21 (6): 2298-2300. The errors mainly happened while mapping bird names across different nomenclature practices followed in India. The errors and corrections are:

1. Black-Nest Swiftlet (*Collocalia fuciphaga*) should read as Common Edible-nest Swiftlet (*Collocalia unicolor*)
2. Grey-capped Woodpecker (*Dendrocopos canicapillus*) should read as Brown-capped Pygmy Woodpecker (*Dendrocopos nanus*).
3. Bengal Bush-lark (*Mirafra assamica*) should read as Jerdon's Bush-lark (*Mirafra affinis*)
4. White-headed Starling (*Sturnus erythropygus*) should read as Blyth's Starling (*Sturnus malabaricus blythi*).

The author apologises for the errors.