



Current status of Western Hoolock Gibbon *Hoolock hoolock* Harlan in West Garo Hills, Meghalaya, India

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Abstract: A rapid status survey of Hoolock Gibbon was carried out in 28 localities of West Garo Hills, Meghalaya in March-April 2007. These 28 were among the 32 localities surveyed previously during 1985-1987 by Alfred & Sati (1990). Gibbons were found in only 15 of the 28 localities. Only 25 groups of gibbon totaling 82 individuals were observed, compared to 36 groups with 111 individuals recorded at the same sites 20 years ago. Adults comprised nearly 61% of the total individuals, followed by infants 16%, juveniles 13% and sub-adults 10%. While the proportion in the adult age class had decreased from 67% in 1985-87, the proportion of individuals in all other age classes showed slight increase. The sex ratio of males: females was 1:1 for adults as well as sub-adults, which was the same as in 1985-87 survey. The modal group size was three (44% of groups) as before. However, the next frequent group size was four (28% of groups), whereas previously the second most frequent group size was two (30% of groups). Twenty percent of groups had two individuals and 8% of groups comprised of five individuals. The Hoolock Gibbon population in the West Garo Hills showed a decreasing trend of 26.2% (82 individuals out of 111 individuals) in 28 localities, when compared with the previously documented numbers. The major reasons of their decline are anthropogenic disturbances such as tree felling for domestic and commercial uses; intermittent cutting of new forest patches for fresh jhum cultivation, often resulting into canopy gaps as well as habitat loss; livestock grazing and poaching.

Keywords: Current population, decreasing trend, group size, Hoolock Gibbon, status survey, West Garo Hills.

INTRODUCTION

The Western Hoolock Gibbon *Hoolock hoolock* Harlan, used to be widely distributed in its range in India, Bangladesh and Myanmar in the recent past (Groves 1972). On the basis of available habitat of 16,250km² in three states of northeastern India, their population was estimated as 78,700 individuals in 24,640 groups. Tilson (1979) estimated 24,500 individuals of Hoolock in 7,650 groups in 3,480km² of available tropical evergreen forest habitat in Meghalaya. Since then, the total population of Western Hoolock Gibbon in South Asia has drastically dwindled to a meager 3,000 estimated individuals (Walker & Molur 2007). Alfred & Sati (1990) reported a population of 130 individuals in 42 groups from West Garo Hills, Meghalaya. Recently, Gupta & Sharma (2005) recorded 67 individuals in 39 groups from some parts of West Garo Hills, Meghalaya.

In recent decades their population has thus decreased sharply primarily due to destruction of their forest habitat. It has been listed as Endangered (EN) by the IUCN (IUCN Red List of Threatened Species 2003) and

Abbreviations: EN - Endangered; IUCN - International Union for Conservation of Nature; CITES - Convention on International Trade in Endangered Species

continues to occupy the same threat category at present (Brockelman et al. 2008). It is also on the CITES Appendix I and it is protected under Schedule I of The Wildlife (Protection) Act 1972 (Amended up to 2003) of the Government of India.

A status survey of Hoolock Gibbons was undertaken in those localities of West Garo Hills, Meghalaya, where a survey and census was carried out in 1985-1987 by Alfred & Sati (1990). The purpose of this survey was to observe the population trend of this species in those localities after a gap of nearly 20 years.

STUDY AREA AND METHODS

The present survey was carried out in the West Garo Hills District of Meghalaya covering a total area of 812km². It is the western most district of the state which links Bangladesh on the south and Assam on the west and north, while the eastern portion connects with east Garo Hills and west Khasi Hills Districts of Meghalaya. It lies between latitude 25-26°N & 90°E at an elevation of 165-1170 m.

The following 28 localities, namely, 1. Jenjalagri, 2. Anogri, 3. Rengsangri, 4. Selbalgri, 5. Gandrak, 6. Misimagri, 7. Bibragri, 8. Rombhagri, 9. Chidekgri, 10. Arbella, 11. Khanthragri, 12. Rombagri, 13. Nakatgri -E, 14. Agoragri, 15. Megapgri, 16. Manchigri, 17. Chenangpara, 18. Bugonggri, 19. Rongdat, 20. Rongmachuk, 21. Janangpara, 22. Dadenggri, 23. Tura peak, 24. Balpakram National Park, 25. Baghmara Reserve Forest, 26. Siju Wildlife Sanctuary, 27. Mahadeo and 28. Ampatgri were surveyed. The size of the National Park, Wildlife Sanctuary and the Reserve Forest ranged from 61 to 415 km² while other non protected areas (private lands) ranged from 3.2 to 8.8 km² (Table 1). Alfred & Sati (1990) have provided detailed information about the study area.

The survey was carried out for 14 days in the months of March-April 2007. Two to three localities were covered in a day. The observer would arrive near one of the localities before the territorial call of gibbons began in the morning hours. After locating the group, its size and composition were recorded in the data sheet. The observer would then approach a neighbouring group if its territorial call was heard. The frequency of call duration ranged from 4-32 minutes

with an average of 15 minutes a day which is enough to approach the calling group for its population count. Usually the singing is heard in the morning hours and occasionally in the afternoon. At localities where gibbons have disappeared, the possible factors causing their disappearance were assessed through interviews with local villagers and forest officials. Group size and composition were recorded at the time of territorial call of the gibbons or during their movement towards a food tree. The age and sex of the individuals was determined by using the body size, body coat colour, eyebrows and other external characters (Alfred & Sati 1990). The following four age categories were used: (i) infant (0-2 years of age), (ii) juvenile (2-4 years), (iii) sub-adult (4-7 years old) and (iv) adult (>7 years), as established by Alfred & Sati (1990).

Due to the time constraints, only 28 of the 32 localities previously surveyed could be covered during this rapid survey. During the present survey, about 8-10 hours were spent using the same trails, tracks, village sacreds and conservation reserves localities.

RESULTS

Twenty-five gibbon groups with a total of 82 individuals were found in 15 of the 28 localities surveyed (Table 1, Fig. 1). Their observed absence in the remaining 13 localities (46.4%) (marked with solid triangle in Table 1) was later confirmed by local residents. A solitary individual, a sub-adult female, was encountered only once during the survey. Only six localities had two or more family groups, while the remaining nine localities had one group of gibbons each.

Adult males and females (Images 1 & 2) accounted for nearly 61% of the total groups counted, while sub-adults 10%, juveniles 13% and infants 16% (Image 3) comprised the other age classes. The sex ratio of males: females was 1:1 for adults as well as sub-adults. The infants appeared to be between 3 to 5 months and 1.5 years of age. The mean group size of the current population was observed to be 3.28 (n = 25; range 2-5).

Two groups with five individuals, seven groups with four individuals, 11 groups with three individuals and five groups with two individuals were sighted. Nearly 44% of the groups had three individuals, followed by

Table1. Current status (2007) of Hoolock Gibbon in Garo Hills, Meghalaya compared with 1985-87 study by Alfred & Sati (1990).

Locality	Area (km ²)	Group(s)		AM		AF		SM		SF		J		I		Total	
		1985-87	2007	1985-87	2007	1985-87	2007	1985-87	2007	1985-87	2007	1985-87	2007	1985-87	2007	1985-87	2007
1. Jenjalagri #	▲4.2	1	-	1	-	1	-	-	-	-	-	-	-	1	-	3	-
2. Anogri #	▲3.5	1	-	1	-	1	-	-	-	-	-	1	-	-	-	3	-
3. Rengsangri	4.8	1	1	1	1	1	1	-	-	-	-	-	1	-	-	2	3
4. Selbalgri	4.5	2	2	2	2	3*	2	1	1	1*	-	1	1	1	1	9	7
5. Gandrak #	▲3.2	1	-	1	-	1	-	1	-	-	-	-	-	1	-	4	-
6. Misimagri #	▲3.5	1	-	1	-	1	-	-	-	-	-	-	-	1	-	3	-
7. Bibragri #	▲4.3	1	-	1	-	1	-	-	-	1	-	1	-	-	-	4	-
8. Rombhagri	4.8	1	1	1	1	1	1	-	-	-	-	-	-	-	-	2	2
9. Chidekgri #	▲4.4	1	-	1	-	1	-	-	-	-	-	1	-	1	-	4	-
10. Arbella	3.3	1	2	1	2	1	2	-	-	-	1*	-	1	-	1	2	7
11. Khanthragri	4.2	1	1	1	1	1	1	-	-	-	1	1	-	-	-	3	3
12. Rombagri	4.3	1	1	1	1	1	1	-	-	-	-	-	-	-	1	2	3
13. Nakatgri –E #	▲4.8	1	-	1	-	1	-	-	-	-	-	1	-	-	-	3	-
14. Agoragri #	▲3.6	1	-	1	-	1	-	-	-	1	-	-	-	1	-	4	-
15. Megapagri #	▲4.6	1	-	1	-	1	-	-	-	-	-	-	-	1	-	3	-
16. Manchigri	3.8	1	1	1	1	1	1	-	-	-	-	-	1	-	-	2	3
17. Chenangpara #	▲4.3	1	-	1	-	1	-	-	-	-	-	-	-	-	-	2	-
18. Bugonggri	3.7	1	1	1	1	1	1	-	-	-	-	-	-	-	-	2	2
19. Rongdat #	▲4.6	1	-	1	-	1	-	1*	-	-	-	1	-	-	-	4	-
20. Rongmachuk	4.7	1	1	1	1	1	1	-	-	-	-	-	-	-	1	2	3
21. Janangpara #	▲4.8	1	-	1	-	1	-	1	-	-	-	-	-	1	-	3	-
22. Dadenggri #	▲7.9	1	-	1	-	1	-	-	-	-	-	-	-	-	-	2	-
23. Tura peak	8.5	1	2	1	2	1	2	-	1	-	-	1	1	-	1	3	7
? Chokpot	16.3	2	-	2	-	2	-	-	-	-	-	2	-	2	-	8	-
24. BalpakramNP	180	5	6	5	6	5	6	2	1	2	2	1	3	3	5	18	23
25. Baghmara RF	415	3	2	3	2	3	2	1	-	-	-	2	2	2	1	11	7
26. Siju WLS	61	2	1	2	1	2	1	-	-	-	-	-	-	1	1	5	3
27. Mahadeo	8.8	1	2	1	2	1	2	-	1	-	-	-	1	1	1	3	7
? Kharapara	4.7	1	-	1	-	1	-	-	-	-	-	-	-	1	-	3	-
? Nokatgri –W	4.6	1	-	1	-	1	-	-	-	-	-	-	-	-	-	2	-
28. Ampatgri	4.3	1	1	1	1	1	1	-	-	-	-	1	-	-	-	3	2
? Dimapara	13	2	-	2	-	2	-	-	-	1	-	-	-	1	-	6	-
Total	812	42	25	42	25	42	25	7	4	6	4	14	11	19	13	130-19 = 111	82
%				32.3	30.5	32.3	30.5	5.4	4.8	4.6	4.8	10.8	13.6	14.6	15.8		

AM - Adult Male; AF - Adult female; SM - Sub-adult male; SF - Sub-adult female; J - Juvenile; I - Infant; * - Solitary individuals; 1985-87 - Alfred & Sati (1990); 2007 - Present survey; ? - Localities could not be surveyed; # - Localities where the gibbons have disappeared; ▲ - Habitat currently degraded.

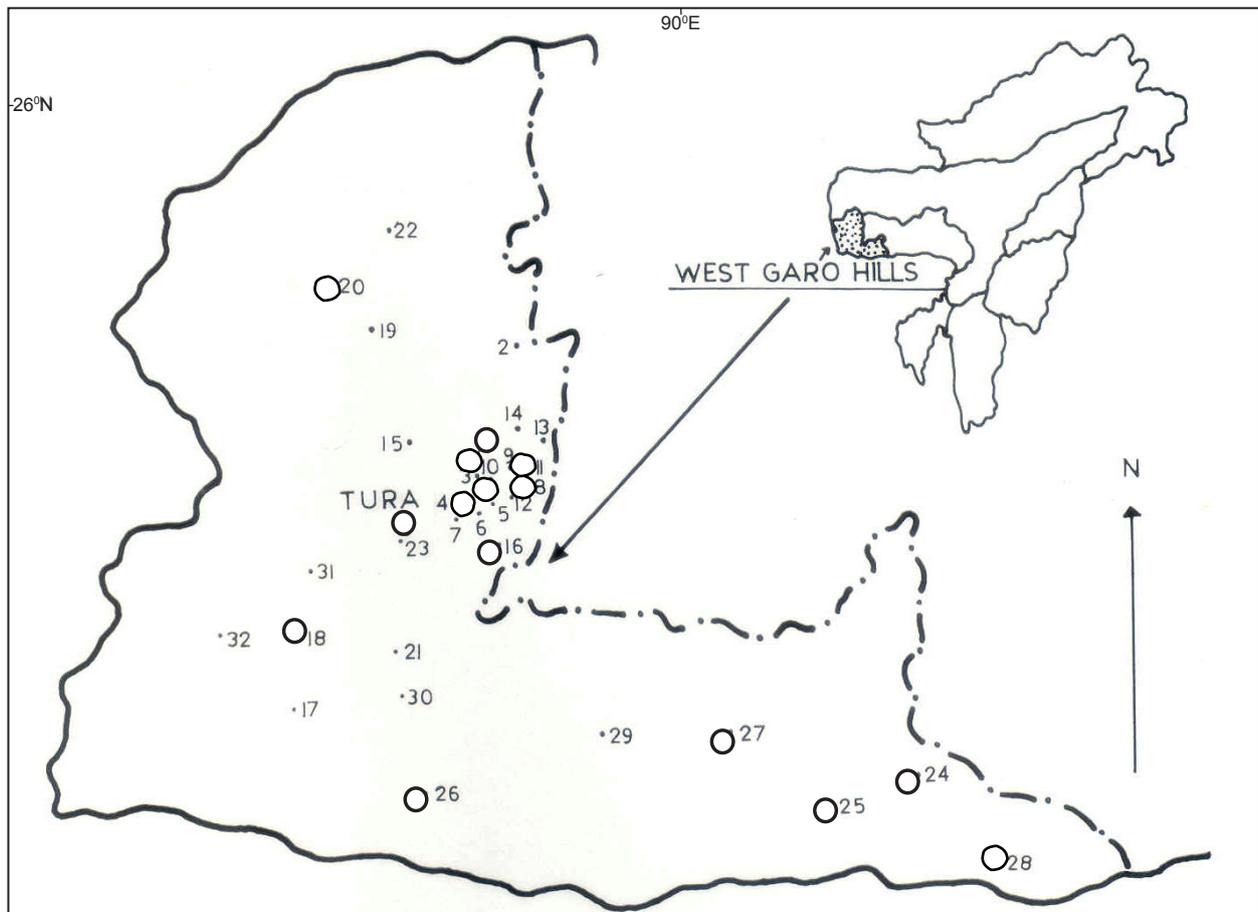


Figure 1. The present sightings of Hoolock Gibbon in West Garo Hills, Meghalaya marked by (○) in the locality map plotted by Alfred & Sati (1990).

28% with four individuals, 20% with two individuals and 8% with five individuals (Table 2).

The results of the present survey indicate that there was an over all decreasing trend in all the age categories of Hoolock Gibbon between 1985-1987 and 2007 (Fig. 2). When the percentage of these populations was compared with Alfred & Sati (1990), an interesting trend was observed. Whereas the proportion of adults has decreased, the proportion of juveniles and infants has increased. It indicates that the breeding rate of these gibbons has not been affected but the rate of survival and formation of new colonies may have been severely affected.

DISCUSSION

While analyzing the population trend of the present survey with the previous study, it was found that out of eleven groups with two individuals at that time (1985-

87), now five were seen with increased group size either with three individuals or more; two were stable; and three groups have disappeared.

An over all decreasing trend was observed when the population of present survey was compared with that of 1985-87 (Alfred & Sati 1990). During the present survey, an increase in the population was observed at protected areas like Balphakram National Park, Tura Peak Reserve Forest and Arbella Reserve which was further supported by the records maintained by the State Forest Department Govt. of Meghalaya. The maximum decrease was reported from the localities with smaller forest patches, ranging from 3.2 to 4.8 km² (either due to habitat degradation or loss of habitat) which was ascertained by local people too (Table 1) (Fig. 2).

The comparison of percent population of juveniles and infants with earlier study brought out an increasing trend in their population (Fig. 3). It shows that the breeding rate of the existing population has been

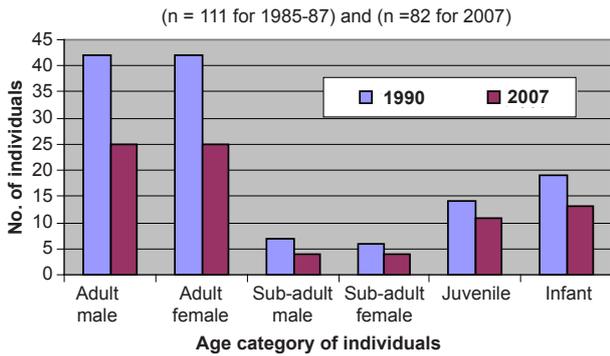


Figure 2. Showing population trend of different age classes of Hoolock Gibbon during 1985-87 and 2007

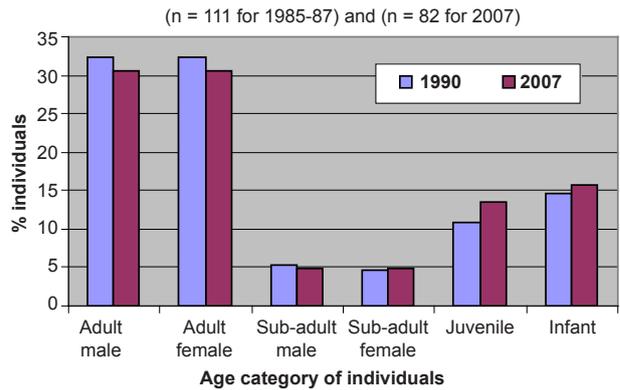


Figure 3. Showing population trend in percentage of different age classes of Hoolock Gibbon during 1985-87 and 2007

Table 2. Comparison of Hoolock Gibbon group counts in Garo Hills during the 1985-87 study and the present survey.

Group size	Frequency		No. of individuals	
	*1985-87	**2007	1985-87	2007
6	01	Nil	06	Nil
5	03	02	15	10
4	04	07	16	28
3	21	11	63	33
2	13	05	26	10
Total	42	25	126	81

* - 1985-87 study by Alfred & Sati (1990); ** - Present Survey (2007)

affected positively, but the groups with two individuals have gone down (Table 1). It seems that the new groups are not being established, probably due to habitat destruction and consequent lack of suitable territories. At the localities (13 numbers), where the gibbons have disappeared, the habitat degradation was very high (15-45% approximately). In these areas the habitat has either been converted to orchards or it is severely degraded. The slash and burn agriculture practice, practiced throughout most of the northeastern India, is also one of the main reasons for habitat loss that directly impacts survival of gibbons. Being arboreal, gibbons are also especially susceptible to predation (by dogs and big cats) and poaching during their long over ground journeys between forest patches (distance between two forest fragments is more than a kilometer or so). This is likely to be an important factor in the decline in their numbers. The major reasons of their depletion are anthropogenic disturbances, habitat loss, hunting and poaching, canopy gaps, livelihood issues, livestock grazing, etc. Molur et al. (2003) point out that gibbons are losing 3-4% of their habitat every year and their population is declining by 1-2% in a year in their distributional range. Mukherjee et al. (2008)

Table 3. Status of forest cover in Meghalaya.

Geographical Area	Forest cover (km ²) in the years			
	1989	1991	1999	2005
22,429 km ²	15,875	15,920	15,633	16,988

Source: State of Forest Report, 1991, 1999 and 2005, Forest Survey of India, Dehra Dun.

reported that in Garo Hills of Meghalaya, gibbons are localized in small fragmented and discontinuous forests. If these factors continue, the time is not far, when the gibbons will vanish from these 15 localities also. Though the forest cover reports of Forest Survey of India (1991, 1999 and 2005) (Table 3) indicate that there is an over all increase in the forest cover (but not the gibbon habitat), during the recent observations it was found that forest habitat where gibbons live has been destroyed in most areas of the West Garo Hills. Unplanned developmental activities are also a threat to their survival in the wild. In one of the localities (at Misimagri) two young gibbons were reported to have died due to electric shock because of over head electric lines (Sati 2009).

A comparison of the observations made during this rapid survey with that of the results of 1985-87 study, it was found that out of 28 localities which were re-surveyed, the gibbons were observed only in 15 localities (53.5%). This indicates that the gibbons have disappeared from remaining 13 localities (46.5%). Among all the gibbon's habitat, the smaller fragments (ranging from 3.2 to 4.8 km²) were found to be more degraded/disappeared due to upcoming of new tea-gardens, orchards of citreous, betel-nut, cashew-nut, and slash-and-burn/jhum cultivations as compared to the remaining larger sized forests (7.9 to 16.3 and more



Image 1. Adult female Hoolock Gibbon

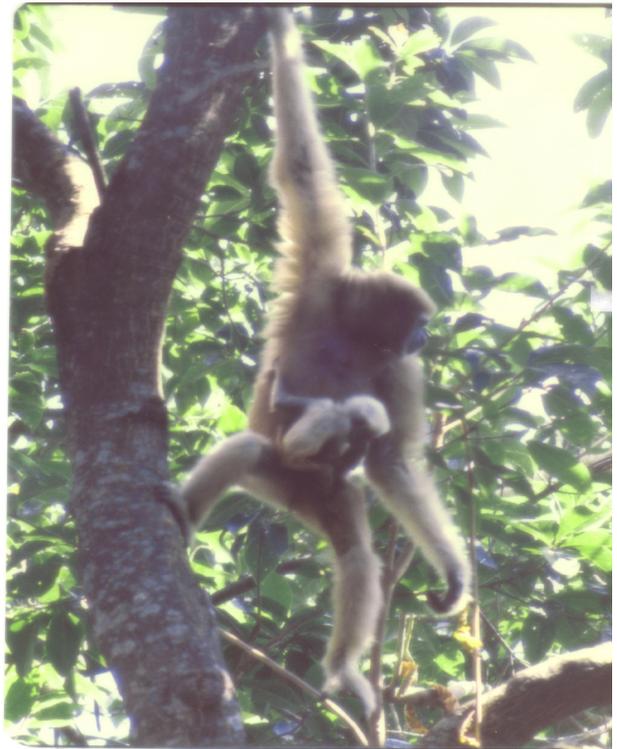


Image 3. Mother Hoolock Gibbon with newly born infant



Image 2. Adult male Hoolock Gibbon



Image 4. A mounting posture in Hoolock Gibbon

than 60km²). Molur et al. (2005) also stated that the isolated forest fragments holding the families of about 2–4 individuals are insufficient for long-term survival of the western Hoolock Gibbon.

To save this species in nature, their habitat must be protected from further degradation and loss. For reviving their population and establishment of new

groups in particular, the corridors between the existing forest patches should be developed by planting tropical semi-deciduous and tropical deciduous tree species such as *Grewia desperma*, *Dalbergia pinnata*, *Dalbergia assamica*, *Bauhinia purpurea*, *Vitex glabata*, *Artocarpus lakoocha*, *Ficus benjamina*, *F. bengalensis*, *F. concinna*, *F. pomifera*, *F. nervosa*,

F. globella, *F. geniculata*, *Dendrobium bicaneratum*, *Cephalostachyum latifolium*, *Dendrocalamus hookerii*, etc.

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