Golden Langur: Note on Mysterious Death in Chirang Reserved Forest, Assam

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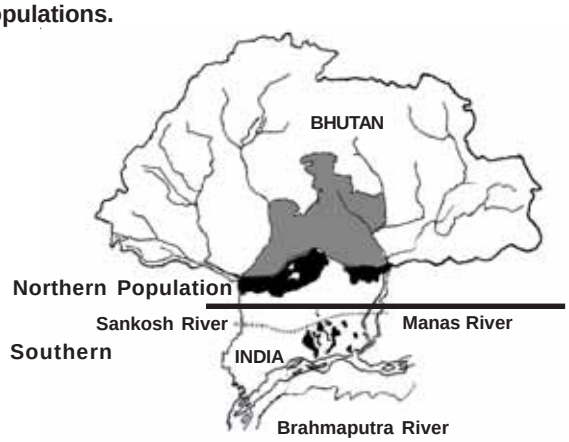
Introduction

Golden Langur, *Trachypithecus geei* (Ali & Santapau, 1956) inhabits sub-tropical monsoon fed semi-evergreen and moist deciduous forests of South Asia. Due to its profound leaf eating habit, it is also known as Golden leaf monkey. Known only since 1950s, it is considered to be one of the most endangered but the least attended primate species of South Aisa.

This species is endemic to the border of northwestern Assam, India and south central Bhutan. The distribution of Golden langur is bounded by the rivers, the Sankosh on the west, the Manas on the east and the Brahmaputra on the south, occupying a forest area of 900 sq km (Biswas, 2002; 2004b; Choudhury, 1996; Choudhury, 2002; Mohnot *et al*., 1998; Molur *et al*., 2003) and in the foothills of the Himalaya up to 2300m altitude occupying a forest area of 1400 sq km in south central Bhutan (Subba, 1989; Wangchuk *et. al*., 2001; 2003) and considered to be one of the restricted range species in South Asia (Fig. 1). The population of Golden langur in Bhutan appears to be doing well in the protected areas, but in India, except for a part of Manas National Park and Chakrashilla Wildlife Sanctuary, 90% of the population live in reserve forests, proposed reserve forest and unclassified state forests with less or no protection coverage.

Over the past few decades political unrest in Assam has lead to unprecedented forest destruction, resulting in severe degradation and loss of primary habitat of the species. Recent estimates revealed that the forest within the distribution range of Golden langur was reduced by 30% during 1988 to 1998 resulting in severe fragmentation of Golden langur's habitat (Srivastava *et al.,* 2001) and this trend is still continuing (Table-1). Hence, IUCN Red Data Book (2003) placed the species globally as Endangered and Appendix-I of CITES. According to recent CBSG/SSC/ PSG/CAMP (Conservation Assessment and Management Plan) assessment, the species was assessed as Critically Endangered in India (Molur, *et al*., 2003). Indian Wildlife Protection Act, 1972 (amended in 2002) has placed the species under Schedule-I category.

Fig. 1: Golden langur distribution range showing the two distinct sub-population, Northern and Southern Populations.



Dead body of adult female (2nd incidence)

Table – 1: Forest cover of Golden langur habitat as on 2003 (Based on Interpretation of IRS-ID LISS Satellite Image of 22nd November 2003; courtesy ARSEC)

Dense Forest (km^2)	Mixed decid./ degraded forest (km^2)	Secondary Forest (km^2)	Regenerating Forest (km^2)	Agricultural land within forest (km^2)
891.65	1105.18	331.92	63.10	837.85

The breakage of canopy continuity and scarcity of food and roosting trees due to selective logging compels them to come down to the ground for subsistence, getting exposed to predators. These behavioural abnormalities have serious implication, since cattle graze in these areas and there is every possibility of disease spread from cattle to langur and *vice versa.* On the other hand population studies on southern range suggest that the habitats are severely fragmented and the populations are divided in to many sub-populations ranging from 30 to 450 individuals. Important troop structure i.e. multi-male bisexual and all male bands are absent in most of the sub-populations except Chakrashilla WLS (Biswas, 2004a; Biswas *et. al*., 2006).

In the month of January, 2006 some Golden langurs died suddenly in Chirang RF and in this paper we outline the episode.

The mysterious death: chronology of crisis

Between 8-10 January 2006, one cowboy from Saralpara Forest Village while searching for his cattle found the dead body of 8 individuals of Golden langur, scattered just below

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two roosting trees (26º48'36"N latitude and 90º16'54"E longitude) in Naharani Block of Ultapani Range of Chirrang Reserve Forest. After finding the carcass he rushed back to the village and called upon other villagers. After a gap of 20 days one person informed the DFO at Kokrajhar on 31 January 2006. Immediately, the DFO sent his man along with one veterinary doctor to examine the area and collect the samples. They collected the samples of bones and hairs from the spot and sent it to Veterinary College at Guwahati as well as the Forensic Lab for examination of cause of death of the individuals.

After the news came out on Assam Tribune on 2 February, 2006 one primate field biologist from Primate Research Centre NE India rushed to the spot on 3 February, 2006 accompanied by DFO, Chirrang Division. To identify the cause of death and monitor the adjoining populations of Golden langur, in a subsequent attempt, with the prior intimation to CCF (WL), Assam, a team comprising of primate field biologists from Primate Research Centre NE India, Wildlife Areas Development and Welfare Trust, Assam, Wildlife Trust of India and researcher from Department of Zoology, Gauhati University visited Ultapani on 7 February 2006.

The area was heavily encroached by the local villagers for mustard cultivation. Though they do not cut the trees for cultivation, they utilize abandoned areas of the evicted encroachers. The forest habitat is in jeopardy due is to its discrete patchy formation and small size but the langurs are somehow surviving.

In the preliminary observation we anticipated that the troop might have died suddenly and instantaneously in a day since all the carcasses were found under two roosting tree of 7 - 8 meter distance and, since Golden langur troop never spend successive nights in the same roosting site or tree (Biswas, 2002).

We found one Rhesus macaque group feeding just 50m away from the site, and one Golden langur troop was located 100m away. The troop was incomplete in structure, as it consisted of one adult male, one adult female, one sub-adult male and one juvenile male. Since the troop was close to the site, we followed the troop to observe the behavioural profile. We found one Assamese macaque group using the same tree for feeding without any visible hostility with Golden langur. The incomplete troop structure of Golden langur compelled us to believe that the troop might belong to the affected troop, that possibly had 12 individuals, (might be) a multi-male bisexual troop. In our subsequent observation on 8 February 2006, we found that the sub-adult male of the troop was very lazy and spent most of his time in resting on a small Lali poma (*Disoxylum procerum*) tree without any normal activity. The sluggish nature of the individual and the rough hair on its body, black wound on its glans penis, showed the sign of sickness, while other three individuals were feeding and found involved in the daily activities.

On 10 February 2006, one dead body of sub-adult male Golden langur was recovered and sent to the Veterinary College, Guwahati. Since the dead body was already autolysed, the pathologist could not find anything from the carcass although some lesion on the palm and mouth and swelling in the glans penis was observed. The lesion might have been due to ant or insect infestation since these are the only exposed body parts of Golden langur.

On subsequent search with the help of forest villagers on 11 February 2006, we recovered two more dead bodies, one adult female and one adult male. From this new finding we presumed that the dead individuals belonged to the suspected incomplete group since their dead bodies were recovered from the same area. We suspected that the whole troop was wiped out although we did not find the fourth individual. Immediately after recovering the dead body the local forest official was informed and an expert team comprising of pathologist, tranquilizing experts from Assam Veterinary College and others were invited by the Forest Department to take the blood sample of nearby Golden langur troop suspected to be affected. Similar to the earlier one, the death occurred suddenly to these individuals also, within a day or two despite being found apparently healthy.

With the second episode the total death toll was 12 individuals, which led us to closely monitor other troops in the vicinity of the affected site. We also visited Bumba Block under Ripu Reserved forest in search of reported dead body but except for some hair we could not find any carcass or skeleton. We were of the opinion that the hair might be part of feacal matter of any carnivore species, which might have consumed a Golden langur. The hairs on the faeces also confirm that Golden langur is one of the prey species of carnivores.

On 16 February we recovered one dead body of sub-adult male Rhesus macaque in the 11grid in Naharani Block. The forest was also surrounded by areas with mustard cultivation, and the circumstantial evidence indicated that similar pattern of death might have occurred to Rhesus macaque.

On 20 February 2006, the veterinary experts were successful in tranquilizing one adult female from 13 individual multi-male bisexual troop from the nearby area. Unfortunately the animal died due to internal haemorrhage, from falling from the tree. The blood as well as other samples was collected. On spot detection, the pathologist found some lesions in the gastrointestinal track and suspected gastroenteritis disease and whip worm infection in the alimentary canal, which might have been transmitted from the cattle.

Observations

In our interaction with villagers, we found that the villagers never use any artificial/chemical manure or pesticide for mustard cultivation. The villagers also very fond of Golden langurs and the poisoning of individual are remote. Moreover, in the wild, Golden langur never take any provisioned food (Biswas, 2002) so the possibility of taking any poisonous material is very less. The only available water source in the vicinity of the affected area is a man made water canal, which supplies water from Saralbhanga river to Ultapani village both for irrigation as well as drinking. So, the possibility of using poison in the canal is also ruled out and there is hardly any fish hunt in the canal

by using poison as reported by some organizations. On the other hand any pathological disorder hardly could take lives of 8 individual langur instantaneously in a single day or two and any mal-functioning of physiological system also hardly causes death of this nature.

In long-term studies it has been observed that Golden langurs generally drink water from tree holes, where rainwater usually stored for a long time (Biswas, 2002). If one individual drink then the whole troop drinks the same water one by one. There is every possibility that this water might have get toxicated either due to fungi or some microbial infestation. In the present investigation, we also observed Golden langurs drinking water from small water-logged potholes in the road.

The consecutive death of Golden langur exactly after one month in the same manner and site and death of Rhesus macaque, forced us to consider the following possibilities of death:

• Drinking toxic contaminated water from tree holes or potholes
• Toxic / contaminated food intake
• Disease outbreak.

The samples from the tranquilized individual of Golden langur were examined by veterinary experts from Assam Veterinary College and sent to different national labs. Experts are still working on this to find out possible clues regarding their death. The results from the samples were not available till the preparation of this report in May 2006.

Our apprehension

If the samples are found to be positive for any disease outbreak then we have to be very cautious about further spread of the disease. Other primates, which might be affected is the Capped langur, which is genetically close to Golden langur. The death of the Rhesus macaque, which is entirely a different group of primate, leads us to think in a broader perspective, for the long term conservation of other threatened taxa, throughout the region.

Population status of Chirrang RF & Ripu RF

We did preliminary surveys to find out any abnormalities in the individuals of Golden langur troops in neighbouring areas within the same reserved forest. We found a total of 8 troops comprising 95 individuals from Ultapani Range under Chirrang RF and 9 troops from Bumba Block under Athiabari Range of Ripu RF. The average troop size in Chirrang RF is 11.25 individuals while in Ripu RF is 9.8 individuals with some troops having newborn baby and pregnant females. This observation suggests that the troops are healthy, reproducing and surviving successfully in other areas in Chirrang RF and not affected by the unknown disease. But in our observations we found that compared to our previous census during 1997, most of the troops came to the ground to feed on the herbaceous plants near the road, which is quite unusual behaviour in Golden langur society. Since cattle are heavily grazed in this roadside herbaceous plants it is obvious that these Golden langur individuals are also suffering some similar diseases and worm infestation.

Conclusions

• Golden langur troops were apparently healthy, including affected site at 11 grid of Naharani Block. The reported death occurred suddenly and instantly which indicates some serious incidence. The occurrence of carcass under two roosting trees also support this contention.
• No such type of death was found at Bumba Block under Ripu RF except the hair in the faecal matter. This suggested that Golden langur is also one of the prey for carnivore species.
• Reported death of Rhesus macaque might be an indicator of possibilities of increased death toll due to similar cause.
• Other troops are still healthy without showing any abnormalities with regular birth and pregnancy.
• The possibility of poisoning is nil since villagers do not use any chemical manure or pesticide for mustard cultivation. Villagers respect Golden langur as symbol of well-being and possibility of intentional poisoning is also ruled out.
• Since the only available perennial water source in the vicinity of the affected site is a man made water canal and used by the villagers for drinking and irrigation, the possibility of poisoning of water for fishing is also ruled out.
• Food scarcity during this dry season and intake of un-preferable food might result in some physiological disorder coupled with worm infection that might have affected a few individuals of the troop.
• Due to selective logging of important food and roosting species and due to the discrete patch shape the langurs are compelled to come down to the ground and subsist on ground vegetation, hence more vulnerable to predators.
• Cattle are grazed inside the RF and this might be one of the major factors for transmission of disease like worm infection.
• Death might have occurred due to drinking of toxic contaminated water from tree holes or from potholes where rainwater is stored or feeding some contaminated food material.
• Death might have occurred due to fatal disease out break of bacterial or other viral origin. Possibility of disease can not be ignored and samples are still under laboratory examination awaiting results.

Immediate requirements

• Immediate survey of the present population status and demography of Golden langur.
• Water quality testing in tree holes in the affected areas.
• The food plants which are being eaten by the troops should be analyzed for any form of toxic deposition, heavy metal etc.
• Massive awareness campaign for reporting the death of Golden langur or any primate species.
• Monitoring of the Golden langur troops in the areas of incidence.
• Habitat mapping of the existing Golden langur habitat.
• Parasitological and pathological studies.
• Vaccination of the cattle population in the fringe villages.

Long-term Needs

• Long-term population monitoring to record the changes in the group, understand the dynamics of population in changed habitat conditions.

• Long-term comparative behavioural study to identify behavioural abnormalities and food plant analysis.
• Large-scale plantation of food and roosting tree species.
• Halt in further destruction of habitat and bring some areas under new PA network coverage.
• Conduct a PHVA for Golden langur to develop a multifaceted long-term conservation plan for these populations involving all stakeholders.
• Discourage cattle grazing in forested areas.

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