NATIONAL STUDBOOK
Golden Langur (*Trachypithecus geei*)

Published as a part of the Central Zoo Authority sponsored project titled
“Development and maintenance of studbooks for selected endangered species in Indian zoos”

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National Studbook
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For species threatened with extinction in their natural habitats, ex-situ conservation offers an opportunity for ensuring their long-term survival. This can be ensured by scientific management to ensure their long-term genetic viability and demographic stability. Pedigree information contained in studbooks forms the basis for this management.

The Central Zoo Authority (CZA) in collaboration with zoos in India has initiated a conservation breeding program for threatened species in Indian zoos. As a part of this endeavor, a Memorandum of Understanding has been signed with the Wildlife Institute of India for compilation and update of studbooks of identified species in Indian zoos.

As part of the project outcomes, the WII has compiled the studbook for Golden langur (*Trachypithecus geei*) in Indian zoos. The recommendations contained in the studbook will form the basis for the long-term management of the species in captivity. It is hoped that the zoos will adopt the recommendations and keep the WII informed of changes in their populations to enable the timely update of the studbook.

(B.S. Bonal, I.F.S.)
Member Secretary
Central Zoo Authority
ACKNOWLEDGEMENTS

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Alipore Zoological Garden, Kolkata
Assam State Zoo cum Botanical Garden, Guwahati
Bannerghatta National Park, Bangalore
Bokaro Steel Plant Zoo, Bokaro
Kamla Nehru Zoological Garden, Ahmedabad
Kanpur Zoological Park, Kanpur
Lucknow Zoological Garden, Lucknow
Mahendra Chaudhury Zoological Park, Chhatbir
Nandankanan Biological Park, Bhubaneswar
National Zoological Park, New Delhi
Nehru Zoological Park, Hyderabad
Sanjay Gandhi Biological Park, Patna
Sanjay Gandhi National Park, Borivilli, Mumbai
Sepahijala Zoological Park, Tripura
Thiruvananthapuram Zoo, Thiruvananthapuram

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GOLDEN LANGUR (Trachypithecus geei), (Khajuria, 1956)

Species information
Golden langurs get their name from the striking golden-orange colour of their fur. The species was discovered in 1953 by E.P. Gee and was later described by Khajuria in 1956 (Khajuria 1956). It is an endangered primate endemic to north-western Assam, India and southern Bhutan.

Taxonomy
Phylum- Chordata
Sub-phylum- Vertebrata
Class- Mammalia
Order- Primates
Family- Cercopithecidae
Sub- family- Colobinae
Genus- Trachypithecus
Species- Trachypithecus geei

Golden Langurs (Trachypithecus geei) belong to a large group of Old World monkeys called the colobines (subfamily Colobinae). The Colobines are principally leaf eating primates and have a ruminant like multi-chambered stomach. Phylogeny based on anatomical characteristics of the fore-stomach by Caton (1998) suggests that Asian colobines (Trachypithecus, Semnopithecus and Presbytis) have a three-chambered or “tripartite” forestomach. Like other langurs, golden langurs also possess a specialized stomach system with a variety of microflora that helps them ferment and digest nutrients and fibre of leaves.

There has been a disagreement about the phylogenetic position of Trachypithecus geei, whether it is an independent monophyletic species or a subspecies of the capped langur (Trachypithecus pileatus). Based on coat colour differences, Khajuria (1956) designated the golden langur as a separate species. Wangchuk (2005) supports that Trachypithecus geei and Trachypithecus pileatus are well diverged from and reciprocally monophyletic with each other and should be retained as separate species. A study by Karanth (2008) suggested a reticulate evolution of capped and golden langurs through ancient hybridization between Semnopithecus and Trachypithecus. Karanth (2010) tentatively assigned these two closely related species to a separate lineage termed ‘golden-capped lineage’, and suggested separate genera may be assigned for the two.
In Bhutan, where both the species are found, construction of bridges across the Chamkhar River has allowed the langurs to cross the river and interbreed (Wangchuk 2005). Based on differences in coat colour, Wangchuk (2005) differentiated them into two sub-species: the northern subspecies *Trachypithecus geei bhutanensis* (north-Bhutan) and the southern subspecies *Trachypithecus geei geei* (south-Bhutan and India). However, subspecies *Trachypithecus geei bhutanensis* has not been described according to ICZN rules.

**Morphology**

Golden langurs appear uniformly deep cream colored in dull light and bright golden in sunlight. The coat color varies seasonally, becoming white or cream colored in summer and dark golden to chestnut in winter. Newly born young appear pure white but may also be affected by erythrism (reddish pigmentation). They have a hairless black face except for a long pale beard. An ill-defined whorl of hair on the crown protects their eyes and face from glare while long whiskers around the ears protect them from rainwater during the monsoon season (Khajuria 1977).

Golden langurs are sexually dimorphic. Males are larger and more robust than females. The average body mass for adult males is 10.8 kilograms and for adult females it is 9.5 kilograms (Fleagle 1999). The length of the head and body ranges from 50-75 centimeters, while the tail length ranges from 70-100 centimeters (Gurung and Singh 1996). Tassel at the end of tails are slightly larger in males.

**Distribution**

Golden langurs, (*Trachypithecus geei*) have a restricted range in southern Bhutan and a small forest belt in western Assam. They occur in lowland evergreen, semi-evergreen and riparian moist deciduous and sal-dominated, moist deciduous forest (Srivastava et al. 2001a; Biswas 2005; Bezbaruah 2004) in the Brahmaputra river valley of Assam and the foothills of the Black mountains of Bhutan (Srivastava et
In Bhutan, golden langurs occur from subtropical forests in the south to temperate and sub-alpine forests in the north (Wangchuk, 1995; Wangchuk et al., 2001). In Assam, the main population resides in the Kachugaon, Ripu and Manas reserve forests with some major populations in other isolated forests south of the Manas Biosphere Reserve (Horwich et al. 2013). The species occupies forested areas of 900 square kilometer in India (Molur et al. 2003) and 1400 square kilometer in Bhutan (Wangchuk et al. 2003).

**Habitat**

*Trachypithecus geei* occur in subtropical and temperate broadleaf forests in Assam in India and Bhutan. A substantial range in elevation of near sea-level in the south to above 3,000 m in the north has been observed for the species (Wangchuk et al. 2003). The total known suitable habitat of the golden langur in India was found to be less than 500 square kilometer (Srivastava 2006). Hybrids of *Trachypithecus geei* and *Trachypithecus pileatus* occur in subtropical and temperate broadleaf forests between 800 and 2,600 meter in Bhutan (Wangchuk 2005).

**Behavioral ecology**

**Activity patterns**

Golden langurs are diurnal in habit. They are arboreal and come to the ground occasionally to drink water, lick salt earth and for crossing large canopy gaps (Gee 1961; Wangchuk 1995; Biswas 2004; Wangchuk 2005;). However, troops have been reported to exploit village fruit and ground crops in severely disturbed forest fragments (Horwich et al. 2008). The activity budget of the species in Chakrashila Wildlife Sanctuary, Assam, as reported by Chetry et al. (2002) was: resting (54.75%), feeding (29.26%), travelling (8.59%), monitoring (3.93%), playing (2.03%) and grooming (1.45%). Their activities slow down with the progression of the day. Tall trees providing good cover are generally used for roosting during summer while trees exposed to sunlight are preferred during winter (Mukherjee 2000). Social grooming and social play are important mid-day rest activities (Mukherjee 2000). Activity is again resumed in the late afternoon but on cloudy days troops were found to be active even during the regular resting periods (Wangchuk 2005). Troop members move to their sleeping trees in the evening and these trees are often the same as were used for foraging during evening and may be used for activity next morning (Mukherjee and Saha 1974). For a newborn, most of its time is spent in sleeping and sitting (55.05%), followed by, pulling and pushing (21.61%), and suckling (13.76%) (Medhi and Bhattacharjee 2002).

**Feeding ecology**

*Trachypithecus geei* like most langurs, have a predominantly folivorous diet. Their diet consists of young and mature leaves, ripe and unripe fruits, leaf buds, flower buds, seeds, twigs, and flowers. The main proportion of their diet consists of young leaves throughout the year (Gupta and Chivers 2000).
Yellow blossoms and buds of balu tree (*Dillenia pentagyna*) are other preferred food items (Wayre 1968). Drinking water is obtained from water holes during summer while in other seasons it is obtained from the foliage (Khajuria 1977).

Golden langurs prefer foraging in deciduous trees that are budding and have also been seen to forage on leguminous shrubs. Food is often supplemented with exotic plant species (Gupta and Dasgupta, 2004). During summer feeding starts at around 0430 hours while in winter it starts at 0530 hours (Gupta and Chivers 2000). Their activity patterns show two feeding peaks, one in the morning (between 0630 and 0800 hours) and the other in the late afternoon (between 1530 and 1700 hours) just before roosting (Mukherjee and Saha 1974; Biswas 2004; Gupta and Chivers 2000). They feed at an average height of 15 to 21 meters, occasionally coming down to lower branches (Mukherjee and Saha, 1974).

**Social organization and behavior**

Golden langurs live in troops of 3 to 15 individuals, mostly as single male/multi-female or two-male/multi female groups and sometimes in all male groups (Chetry *et al.* 2010). A mean group size of 7.4 and an adult sex ratio of 1:1.53 have been recorded by Chetry *et al.* (2010). Friendly relations are shared between the troop members. Hostile behavior among the group members and between other sympatric species (capped langur and Phayre’s leaf monkey) have not been observed except for issuing mild threats when coming in close contact during foraging or moving (Mukherjee 2000). Srivastava *et al.* (1998) observed that in degraded habitats the species lived in larger groups with higher population density, but with lower birth rates.

The dominant male controls the movement of the group. In case of an alarm, the dominant male allows the other members to retreat first and then follows the group (Mukherjee and Saha 1974). The dominant male may occasionally attempt to frighten away the provoker by making short, sharp repeated sounds and making aggressive gestures. Social play is found to occur in trees only and includes activities like: chasing, wrestling, climbing, running, and jumping and is mainly restricted to juveniles, with infants occasionally joining in (Mukherjee and Saha 1974).

Little is known about the reproduction and breeding patterns of the species. However, their reproduction is believed to be similar to hanuman langurs. Although not much is known, it has been observed that Golden langurs are co-operative breeders and births take place year-round. However, births may be concentrated during certain months of the year, depending on changes in climate and vegetation, as has been observed by Subba (1989) and Subba and Santiapillai (1989) (January-February in Manas National Park, Bhutan). Mounting, solicitation, copulation, chasing, aggression and other socio-sexual activities of the langurs were found to increase during monsoon and retreating monsoon as compared to other seasons (Biswas 2004). The newborn is completely dependent on its mother (Medhi and Bhattacharjee 2002; Mukherjee and Saha 1974). Care for the young is provided by the mother and other females in the group.
Table 1: Life history traits of Golden langur

<table>
<thead>
<tr>
<th>Trait</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inter birth interval</td>
<td>Not known</td>
</tr>
<tr>
<td>Breeding season</td>
<td>Year round</td>
</tr>
<tr>
<td>Average number of offspring</td>
<td>1</td>
</tr>
<tr>
<td>Generation time</td>
<td>6 years (Wangchuk 2005)</td>
</tr>
<tr>
<td>Gestation period</td>
<td>180 days (Subba 1989; Subba and Santiapillai 1989)</td>
</tr>
</tbody>
</table>

Population status in the wild

In 2001 the population in India was estimated to be less than 1,500 langurs (Srivastava 2006). In Bhutan the population was estimated to be 6,637 individuals in 2003 (Wangchuk 2005). He however, noted that the census being carried out in relatively pristine habitats, such high density of golden langurs may not occur in highly populated areas of southern Bhutan. Several studies have indicated a declining population trend of the species in India (Mukherjee and Southwick 1997; Srivastava et al. 2001b; Srivastava 2004, 2006). Further, they occur in very small groups with a higher proportion of adults than juveniles and infants (Mukherjee et al. 1997). Recent censuses conducted under the Golden Langur Conservation Project (GLCP) in India have recorded over 5,600 langurs in 2008–2012 (Horwich et al. 2013). The Golden langur population in India and Bhutan is estimated at over 12,000 individuals (Horwich et al. 2013).

Threats

Loss of habitat and habitat fragmentation are the major threats for the Golden langur in India (Srivastava 2001b; Choudhury 2002). Large scale logging due to political unrest and inter-tribal violence has caused a major reduction of their habitat in India. Forest reserves with varying degrees of disturbance constitute 93% of the entire Golden langur habitat (Srivastava 2006). This has resulted in the actual area being available reduced by 1/3rd of its original in the last ten years (Forest Survey of India, 1997) resulting in severe fragmentation and subsequent degradation of their habitats. Its area is predicted to decline by >20% in the next 10 years due to encroachment and anthropogenic activities (Molur et al. 2003).

Langurs are often killed by people, dogs or due to electrocution when jumping onto power lines in areas of close human proximity (Medhi et al. 2004). High juvenile mortality and inbreeding are other major problems faced by the species (Molur et al. 2003). Moreover, spray of insecticides on rubber plants in Kokrajhar district of Assam has exposed them to life-threatening insecticide poisoning (Pathak 2011).

Conservation status and measures

In the IUCN Red Data Book threatened species (2008), Golden langur is under Endangered (A2c; C2a) category. It is also placed in Appendix-I of CITES. It has the highest legal protection in India, being
placed under Schedule-I of Indian Wildlife Protection Act, 1972 (amended in 1991) which prohibits killing, trapping, capturing, and keeping them as pets. In the year 1998, the Golden Langur Conservation Project (GLCP) was initiated as an extension of the Indo-US Primate Project, with a goal of protecting the golden langur and its habitat in western Assam (Horwich et al. 2010). It is believed that community reforestation and forest protection efforts have led to a major increase in the Golden langur population from an estimated 1,500 langurs in 1997 to currently over 5,600 langurs (Horwich et al. 2013). The Central Zoo Authority (CZA), India, has identified Golden langur as a species for conservation breeding in Indian zoos at Assam State Zoo-cum-Botanical Garden.

**Status in captivity**

In India, Golden langur has been housed in captivity since 1960, with most of the individuals having been housed at the Assam Zoo-cum-Botanical Gardens, and only a few individuals kept sporadically in other zoos. The records indicate a total of 168 captive individuals housed during 1960-2013, with a median of 10.5 individuals per year (10.5\(\pm\) 7.23\(\text{SD}\)). There are no records available of this species housed elsewhere in captivity on Zoological Information Management System (ZIMS). The living population consists of five individuals housed at the Assam State Zoo-cum-Botanical Gardens. The number of Golden langurs housed in different Indian zoos over the 54 year period is shown in Table 2.

**Table 2: Status of Golden langurs in Indian zoos**

<table>
<thead>
<tr>
<th>Location</th>
<th>Total</th>
<th>Living</th>
<th>Years managed</th>
<th>Births</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ahmedabad</td>
<td>2.2.1</td>
<td>0.0.0</td>
<td>26 (1969-94)</td>
<td>0.0.0</td>
<td>1.2.1</td>
</tr>
<tr>
<td>Assam</td>
<td>49.60.0</td>
<td>4.1.0</td>
<td>55 (1960-14)</td>
<td>8.5.0</td>
<td>36.49.0</td>
</tr>
<tr>
<td>Bannerghatta</td>
<td>1.1.0</td>
<td>0.0.0</td>
<td>14 (1988-01)</td>
<td>0.0.0</td>
<td>1.10</td>
</tr>
<tr>
<td>Bokaro</td>
<td>2.2.0</td>
<td>0.0.0</td>
<td>14 (1992-05)</td>
<td>0.0.0</td>
<td>2.2.0</td>
</tr>
<tr>
<td>Borivili</td>
<td>3.1.0</td>
<td>0.0.0</td>
<td>6 (1992-97)</td>
<td>0.0.0</td>
<td>3.1.0</td>
</tr>
<tr>
<td>Calcutta</td>
<td>5.3.0</td>
<td>0.0.0</td>
<td>27 (1971-97)</td>
<td>0.0.0</td>
<td>5.3.0</td>
</tr>
<tr>
<td>Chatbir</td>
<td>4.4.0</td>
<td>0.0.0</td>
<td>9 (1975-83)</td>
<td>0.0.0</td>
<td>4.4.0</td>
</tr>
<tr>
<td>Delhi</td>
<td>1.3.0</td>
<td>0.0.0</td>
<td>4 (1968-71)</td>
<td>0.0.0</td>
<td>0.3.0</td>
</tr>
<tr>
<td>Gangtok</td>
<td>1.1.0</td>
<td>0.0.0</td>
<td>1 (1978)</td>
<td>0.0.0</td>
<td>0.0.0</td>
</tr>
<tr>
<td>Hyderabad</td>
<td>4.5.0</td>
<td>0.0.0</td>
<td>16 (1986-01)</td>
<td>0.0.0</td>
<td>4.5.0</td>
</tr>
<tr>
<td>Kanpur</td>
<td>9.8.0</td>
<td>0.0.0</td>
<td>27 (1975-01)</td>
<td>4.0.0</td>
<td>9.8.0</td>
</tr>
<tr>
<td>Lucknow</td>
<td>0.1.0</td>
<td>0.0.0</td>
<td>1 (1979)</td>
<td>0.0.0</td>
<td>0.0.0</td>
</tr>
<tr>
<td>Nandankanan</td>
<td>3.2.0</td>
<td>0.0.0</td>
<td>26 (1971-96)</td>
<td>0.0.0</td>
<td>3.2.0</td>
</tr>
<tr>
<td>Patna</td>
<td>1.2.0</td>
<td>0.0.0</td>
<td>3 (1992-94)</td>
<td>0.0.0</td>
<td>0.0.0</td>
</tr>
<tr>
<td>Tripura</td>
<td>0.1.0</td>
<td>0.0.0</td>
<td>1 (1989)</td>
<td>0.0.0</td>
<td>0.0.0</td>
</tr>
<tr>
<td>Trivandrum</td>
<td>2.1.1</td>
<td>0.0.0</td>
<td>17 (1972-88)</td>
<td>0.0.0</td>
<td>1.1.1</td>
</tr>
</tbody>
</table>
Methods

Pedigree data was collected by means of mailed questionnaires, zoo visits and from the websites of Central Zoo Authority and Zoological Information Management System (ZIMS). Questionnaires were sent to various institutions housing Golden langur in India, requesting information about each captive specimen. Data was entered in the Single Population Analysis and Records Keeping System (SPARKS v 1.66) (ISIS, 2004) and subsequently exported to population management program PMx v 1.2 (Ballou et al. 2010). Data was exported from SPARKS as Exchange.csv and PMxCensus.csv files which were then used as input files in PMx for further analysis. Further visualization and analysis of pedigree data was performed using the program Lineage v 1.06 (Pollak et al. 2001). The individuals that were released back (4) or were lost to follow up (7) have been excluded from analyses. Since, there is minimal representation of the historical population in the living population, historical population here refers to non-living individuals only.

Results

Data quality

The analysis of studbook data largely depends on availability of accurate demographic data i.e. dates of birth and mortality and parentage records. Large proportion of unknown pedigrees and low numbers of births affect the results generated by PMx (Traylor-Holzer 2011). The captive population of golden langur has a large number of individuals of wild-origin with limited information on birth-dates and parentage. The information obtained was not adequate for construction of life tables and for genetic analysis. Due to non availability of data concerning many of these parameters (Figure 2), demographic analysis was limited only to descriptive accounts of the population trends and no genetic analysis was performed.

Figure 2: Data quality of Golden langur pedigree records
Historical population

The historical population of the species in captivity in Indian zoos consists of 163 individuals (75: 86: 2). It consists predominantly of wild born individuals with limited captive births. The historical population includes 148 (65: 81: 2) wild origin and 15 (10: 5: 0) captive born individuals. The first Golden langur was brought into captivity in the year 1960 at Assam State Zoo cum Botanical Garden, Guwahati; thereafter wild born individuals have been added to the population regularly. A total of 54 individuals had been acquired before the first captive birth occurred at Assam zoo, in 1976. The census trends based on origin of animals and their sex respectively are presented in figures 3 & 4.

The census trends indicate an increase in the total population during 1970 and 1976 and 1985 to 1990, however; Figure 3 shows that this increase in population has been largely due to recruitment of wild
origin individuals. The contribution of captive born individuals has been minimal. The population has been decreasing since 1993, with a slight increase during 2006 and 2011 again due to inclusion of wild origin individuals and a dip again in 2011.

Age specific survivorship
The birth and death dates of 65 individuals in the historical population were known; hence ages of these individuals could be calculated. Figure 5 shows the survivorship of the known age individuals in the historical population. Approximately 49% (32) of the individuals survived to the age group 5 to 10 years with a median age of 6.84 (7.16\text{\text{Mean}±5.29\text{SD}}) years; with a steep decline after the 6\text{th} year of life which continued till the 8\text{th} year of life. Thereafter approximately 10% of the population survived till 13 year of age; the age of optimum reproductive activity. Beyond this age the population again underwent a steep decline and had too few individuals in it to contribute to the growth of the population. Overall the known age individuals in the population survived for a median of 2 (3.68±4.44) years in captivity.

![Age specific survivorship (Lx)](image)

**Figure 5:** Age specific survivorship of known age individuals (n=67) in the historical population

| Age- specific patterns of survivorship (Lx) can indicate the median survivorship (the age where \(Lx = 0.5\)), also called the median life expectancy |

Living population
The living population consists of five individuals (four males, one female). Of these, three (two males and one female) are wild born and two (males) are captive born individuals. The median age of the living population is 9 (10.4\text{\text{Mean}±5.02\text{SD}}) years. The studbook numbers, origin, sex and age of the individuals from the living population are provided in Table 2. The captive born individuals in the living population are derived from only 2 founders, and therefore have a small representation from the historical population (Figure 6).
Table 2: Age distribution of the living population

<table>
<thead>
<tr>
<th>National Studbook No. (NSN)</th>
<th>Origin</th>
<th>Age (years)</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>162</td>
<td>Wild</td>
<td>19</td>
<td>Male</td>
</tr>
<tr>
<td>164</td>
<td>Captive</td>
<td>8</td>
<td>Male</td>
</tr>
<tr>
<td>165</td>
<td>Wild</td>
<td>9</td>
<td>Male</td>
</tr>
<tr>
<td>166</td>
<td>Captive</td>
<td>6</td>
<td>Male</td>
</tr>
<tr>
<td>168</td>
<td>Wild</td>
<td>10</td>
<td>Female</td>
</tr>
</tbody>
</table>

Captures, births and mortality

A total of 151 wild-born individuals have been brought into captivity (figure 3). Estimates of age at capture were available for 56 (37.1%) individuals, and the median age at capture was found to be 3.41 years (3.2±2.25). The median time spent in captivity by all wild born individuals was 2 (3.72±4.39) years.

A total of 17 births have been recorded between 1960 and 2013, of which parentage of 10 births were known. These births were contributed by 10 individuals (five males and five females), of which around 78% was contributed by 4 parents only. The median age of the captive born individuals was 2 years (4.35±4.92).

About 94.1% (16) of the births were recorded in the first generation, while only one birth (NSN. 137) was recorded in the second generation. Breeding has been recorded in two zoos, Assam zoo (13) and Kanpur zoo (4). A total of 153 golden langur deaths have been recorded during 1960 to 2013. Infant mortality of 29.4% (n=5) was observed during the first year of life.

Figure 6 shows the seasonal pattern of captures, births and deaths. Most of the individuals were captured during the summer and pre-monsoon season (March–June). Most number of births was recorded in June and November, while deaths occurred during all the months with pronounced peaks during February, June, August and October.

Figure 6: Seasonal pattern of births, captures and deaths in the captive Golden langur population
**Genetic Analysis**

The analysis of genetic parameters of the captive population was not carried out due to the small number of captive births; a large proportion of which were of unknown parentage. Figure 7 summarizes the lineage of the captive born individuals of the Golden langur population in Indian zoos. The figure includes only those individuals which have reproduced. Reproductive activity was observed in the founder generation only with the exception of one offspring which was a first generation captive born individual. Multiple reproductive events were observed in 2 males and 2 females; all other individuals reproduced only once.

![Figure 7: Lineage of the captive born individuals](image)

**Summary**

Based on the analysis of data received from the holding zoo it is inferred that:

- The living population is maintained in an inappropriate social group at Assam State Zoo cum Botanical Garden.
- A large number of wild origin animals have entered the captive population. However; the contribution by wild origin animals to the gene pool has been limited with skewed founder representation.
- The population is characterized by low population growth rate and limited reproductive activity of captive bred animals as compared to the wild origin animals.
- Limitations of data quality in terms of dates of events (captures, births and deaths) and lineages rendered analysis and subsequent recommendations redundant.
Conclusion

The above observations suggest serious shortcomings in the husbandry practices being followed for maintaining the species in captivity. These may include features such as animal housing and enclosure enrichment, social structure of the animals, visitor induced stress and disease management. However detailed investigations on the above aspects need to be carried out to ensure the long term survival of the species in captivity. Additional animals will have to be brought into captivity to provide the necessary founding population needed to kick start the conservation breeding effort for this species; once the issues underlying the poor reproductive success in captivity have been addressed.

The species lives in troops comprising one to two males and multiple females. The social organization of the species must accordingly be maintained in captivity. It may not be possible to capture entire troops for conservation breeding, however; with appropriate socialization process the troop organization can be recreated in captive environments. This can be achieved by pooling together the single/pairs of animals received by way of rescue or planned captures to form viable social groups with appropriate socialization process.

With appropriate management interventions and modifications in the husbandry practices the species is capable of the rapid growth required to provide a demographically stable captive population. Once the population has achieved demographic stability the genetic diversity can be managed by regulation of mating choices and inclusion of additional founder animals as required. This will require all holding zoos to maintain complete records of all events in each individual’s life history.

REFERENCES


# Historical population of Golden langur (Trachypithecus geei) in captivity in Indian Zoos

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### Living population of Golden langur (*Trachypithecus geei*) in captivity in Indian Zoos

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Appendix III

Pedigree report of Golden langur in Indian zoos

Taxon Name: TRACHYPITHECUS GEEI Studbook Number: 1

WILD
\ /
|       |
|       |
WILD
\ /
|       |
|       |
Sex: Female
Birth Date: ????
Last Location: MANAS

dam   sire
House Name:
Tattoo:
Tag/Band: 1

Taxon Name: TRACHYPITHECUS GEEI Studbook Number: 2

WILD
\ /
|       |
|       |
WILD
\ /
|       |
|       |
Sex: Male
Birth Date: ????
Last Location: ASSAM (dead)

dam   sire
House Name:
Tattoo:
Tag/Band: 2

Taxon Name: TRACHYPITHECUS GEEI Studbook Number: 3

WILD
\ /
|       |
|       |
WILD
\ /
|       |
|       |
Sex: Male
Birth Date: ????
Last Location: ASSAM (dead)

dam   sire
House Name:
Tattoo:
Tag/Band: 3

Taxon Name: TRACHYPITHECUS GEEI Studbook Number: 4

WILD
\ /
|       |
|       |
WILD
\ /
|       |
|       |
Sex: Male
Birth Date: ????
Last Location: ASSAM (dead)

dam   sire
House Name:
Tattoo:
Tag/Band: 4

Taxon Name: TRACHYPITHECUS GEEI Studbook Number: 5

WILD
\ /
|       |
|       |
WILD
\ /
|       |
|       |
Sex: Male
Birth Date: ????
Last Location: ASSAM (dead)

dam   sire
House Name:
Tattoo:
Tag/Band: 5
Taxon Name: TRACHYPITHECUS GEEI
Studbook Number: 6

Sex: Male
Birth Date: ~ 1963
Last Location: AHMEDABAD (dead)

Tattoo:
Tag/Band: 6

---

Taxon Name: TRACHYPITHECUS GEEI
Studbook Number: 7

Sex: Female
Birth Date: ???
Last Location: DELHI (dead)

Tattoo:
Tag/Band: 7

---

Taxon Name: TRACHYPITHECUS GEEI
Studbook Number: 8

Sex: Female
Birth Date: ???
Last Location: DELHI (dead)

Tattoo:
Tag/Band: 8

---

Taxon Name: TRACHYPITHECUS GEEI
Studbook Number: 9

Sex: Female
Birth Date: ???
Last Location: DELHI (dead)

Tattoo:
Tag/Band: 9

---

Taxon Name: TRACHYPITHECUS GEEI
Studbook Number: 10

Sex: Female
Birth Date: ~ 1964
Last Location: ASSAM (dead)

Tattoo:
Tag/Band: 10
Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 16

WILD
\   / Sex: Male
\  / Birth Date: ????
\ / Last Location: ASSAM (dead)
dam  sire House Name:
\   / Tattoo:
\  / Tag/Band:
16

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 17

WILD
\   / Sex: Male
\  / Birth Date: ????
\ / Last Location: ASSAM (dead)
dam  sire House Name:
\   / Tattoo:
\  / Tag/Band:
17

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 18

WILD
\   / Sex: Male
\  / Birth Date: ~ 1962
\ / Last Location: ASSAM (dead)
dam  sire House Name:
\   / Tattoo:
\  / Tag/Band:
18

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 19

WILD
\   / Sex: Female
\  / Birth Date: ~ 1962
\ / Last Location: ASSAM (dead)
dam  sire House Name:
\   / Tattoo:
\  / Tag/Band:
19

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 20

WILD
\   / Sex: Male
\  / Birth Date: ????
\ / Last Location: ASSAM (dead)
dam  sire House Name:
\   / Tattoo:
\  / Tag/Band:
20
Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 21
WILD          WILD
\   /           \
\ /             \
Sex: Male       Birth Date: ????
\ /             \
Last Location: CALCUTTA (dead)
dam / sire House Name: 
\   /             \
\ /             \
Tattoo:         Tag/Band: 21

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 22
WILD          WILD
\   /           \
\ /             \
Sex: Male       Birth Date: ????
\ /             \
Last Location: CALCUTTA (dead)
dam / sire House Name: 
\   /             \
\ /             \
Tattoo:         Tag/Band: 22

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 23
WILD          WILD
\   /           \
\ /             \
Sex: Male       Birth Date: ????
\ /             \
Last Location: CALCUTTA (dead)
dam / sire House Name: 
\   /             \
\ /             \
Tattoo:         Tag/Band: 23

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 24
WILD          WILD
\   /           \
\ /             \
Sex: Female     Birth Date: ????
\ /             \
Last Location: CALCUTTA (dead)
dam / sire House Name: 
\   /             \
\ /             \
Tattoo:         Tag/Band: 24

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 25
WILD          WILD
\   /           \
\ /             \
Sex: Female     Birth Date: ????
\ /             \
Last Location: CALCUTTA (dead)
dam / sire House Name: 
\   /             \
\ /             \
Tattoo:         Tag/Band: 25
Taxon Name: TRACHYPITHECUS GEEI
Studbook Number: 31

Sex: Male
Birth Date: ????
Last Location: CALCUTTA (dead)

WILD

Sex: Male
Birth Date: ????
Last Location: CALCUTTA (dead)

Taxon Name: TRACHYPITHECUS GEEI
Studbook Number: 32

Sex: Unknown
Birth Date: ????
Last Location: TRIVANDRUM (dead)

WILD

Sex: Unknown
Birth Date: ????
Last Location: TRIVANDRUM (dead)

Taxon Name: TRACHYPITHECUS GEEI
Studbook Number: 33

Sex: Female
Birth Date: ~ Dec 1970
Last Location: KANPUR (dead)

WILD

Sex: Female
Birth Date: ~ Dec 1970
Last Location: KANPUR (dead)

Taxon Name: TRACHYPITHECUS GEEI
Studbook Number: 34

Sex: Male
Birth Date: ~ 1969
Last Location: ASSAM (dead)

WILD

Sex: Male
Birth Date: ~ 1969
Last Location: ASSAM (dead)

Taxon Name: TRACHYPITHECUS GEEI
Studbook Number: 35

Sex: Male
Birth Date: ~ 1973
Last Location: CHATBIR (dead)

WILD

Sex: Male
Birth Date: ~ 1973
Last Location: CHATBIR (dead)
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<td>Birth Date: ???</td>
<td></td>
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<tr>
<td>Last Location: ASSAM (dead)</td>
<td></td>
</tr>
<tr>
<td>dam</td>
<td>sire</td>
</tr>
<tr>
<td>House Name:</td>
<td></td>
</tr>
<tr>
<td>Tattoo:</td>
<td></td>
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<td>Tag/Band: 39</td>
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<th>Taxon Name: TRACHYPITHECUS GEEI</th>
<th>Studbook Number: 40</th>
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<td>WILD</td>
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<tr>
<td>Sex: Male</td>
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<tr>
<td>Birth Date: ???</td>
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<tr>
<td>Last Location: ASSAM (dead)</td>
<td></td>
</tr>
<tr>
<td>dam</td>
<td>sire</td>
</tr>
<tr>
<td>House Name:</td>
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<tr>
<td>Tattoo:</td>
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<td>Tag/Band: 40</td>
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Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 41

Sex: Male
Birth Date: ???
Last Location: ASSAM (dead)

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 42

Sex: Female
Birth Date: ???
Last Location: ASSAM (dead)

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 43

Sex: Female
Birth Date: ???
Last Location: ASSAM (dead)

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 44

Sex: Male
Birth Date: ???
Last Location: UNKNOWN

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 45

Sex: Male
Birth Date: ???
Last Location: UNKNOWN
---

**Taxon Name:** TRACHYPITHECUS GEEI  
**Studbook Number:** 54
---

**Wild**

---

**Sex:** Female  
**Birth Date:** ???

**Last Location:** CHATBIR Z (dead)

**Dam**  
**Sire**  
**House Name:**  
**Tattoo:**  
**Tag/Band:** 54

---

**Taxon Name:** TRACHYPITHECUS GEEI  
**Studbook Number:** 55
---

**Wild**

---

**Sex:** Male  
**Birth Date:** 27 Dec 1977

**Last Location:** ASSAM (dead)

**Dam**  
**Sire**  
**House Name:**  
**Tattoo:**  
**Tag/Band:** 55

---

**Wild-caught...**

---

**Taxon Name:** TRACHYPITHECUS GEEI  
**Studbook Number:** 56
---

**Wild**

---

**Sex:** Male  
**Birth Date:** ???

**Last Location:** ASSAM (dead)

**Dam**  
**Sire**  
**House Name:**  
**Tattoo:**  
**Tag/Band:** 56

---

**Taxon Name:** TRACHYPITHECUS GEEI  
**Studbook Number:** 57
---

**Wild**

---

**Sex:** Male  
**Birth Date:** ???

**Last Location:** ASSAM (dead)

**Dam**  
**Sire**  
**House Name:**  
**Tattoo:**  
**Tag/Band:** 57
Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 63

WILD   
\   
  \   
   \   
    Sex: Male
    Birth Date: ???
    Last Location: ASSAM (dead)
    dam/sire House Name:
    Tattoo:
    Tag/Band:
    63

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 64

WILD   
\   
  \   
   \   
    Sex: Female
    Birth Date: ???
    Last Location: ASSAM (dead)
    dam/sire House Name:
    Tattoo:
    Tag/Band:
    64

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 65

WILD   
\   
  \   
   \   
    Sex: Female
    Birth Date: ???
    Last Location: ASSAM (dead)
    dam/sire House Name:
    Tattoo:
    Tag/Band:
    65

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 66

WILD   
\   
  \   
   \   
    Sex: Female
    Birth Date: ???
    Last Location: ASSAM (dead)
    dam/sire House Name:
    Tattoo:
    Tag/Band:
    66

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 67

WILD   
\   
  \   
   \   
    Sex: Female
    Birth Date: ???
    Last Location: ASSAM (dead)
    dam/sire House Name:
    Tattoo:
    Tag/Band:
    67
---

**Taxon Name:** TRACHYPITHECUS GEEI  
**Studbook Number:** 68

---

**Taxon Name:** TRACHYPITHECUS GEEI  
**Studbook Number:** 69

---

**Taxon Name:** TRACHYPITHECUS GEEI  
**Studbook Number:** 70

---

**Taxon Name:** TRACHYPITHECUS GEEI  
**Studbook Number:** 71

---

**Taxon Name:** TRACHYPITHECUS GEEI  
**Studbook Number:** 72

---
Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 73

Sex: Male  
Birth Date:  ????
Last Location: KANPUR (dead)

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 74

Sex: Female
Birth Date:  ????
Last Location: ASSAM (dead)

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 75

Sex: Female
Birth Date: ~ 1981
Last Location: ASSAM (dead)

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 77

Sex: Male
Birth Date:  9 Oct 1982
Last Location: KANPUR (dead)

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 78

Sex: Male
Birth Date:  ????
Last Location: CHATBIR Z (dead)
Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 79

WILD  \\
   \\
   Sex: Female  \\
   Birth Date:  ????  \\
   Last Location: CHATBIR Z (dead)  \\
   dam  sire  House Name:  \\
   Tattoo:  \\
   Tag/Band: 79

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 80

WILD  \\
   \\
   Sex: Female  \\
   Birth Date:  ~ 1985  \\
   Last Location: ASSAM (dead)  \\
   dam  sire  House Name:  \\
   Tattoo:  \\
   Tag/Band: 80

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 81

WILD  \\
   \\
   Sex: Female  \\
   Birth Date:  ????  \\
   Last Location: ASSAM (dead)  \\
   dam  sire  House Name:  \\
   Tattoo:  \\
   Tag/Band: 81

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 82

WILD  \\
   \\
   Sex: Female  \\
   Birth Date:  ~ Jan 1985  \\
   Last Location: ASSAM (dead)  \\
   dam  sire  House Name:  \\
   Tattoo:  \\
   Tag/Band: 82

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 83

WILD  \\
   \\
   Sex: Female  \\
   Birth Date:  ????  \\
   Last Location: ASSAM (dead)  \\
   dam  sire  House Name:  \\
   Tattoo:  \\
   Tag/Band: 83
Taxon Name: TRACHYPITHECUS GEEI Studbook Number: 89

Sex: Male
Birth Date: ???
Last Location: TRIVANDRU

Tattoo:
Tag/Band: 89

Taxon Name: TRACHYPITHECUS GEEI Studbook Number: 90

Sex: Female
Birth Date: ???
Last Location: TRIVANDRU (dead)

Tattoo:
Tag/Band: 90

Taxon Name: TRACHYPITHECUS GEEI Studbook Number: 91

Sex: Male
Birth Date: ???
Last Location: TRIVANDRU (dead)

Tattoo:
Tag/Band: 91

Taxon Name: TRACHYPITHECUS GEEI Studbook Number: 92

Sex: Male
Birth Date: ~ 1981
Last Location: ASSAM (dead)

Tattoo:
Tag/Band: 92

Taxon Name: TRACHYPITHECUS GEEI Studbook Number: 93

Sex: Male
Birth Date: ~ 1981
Last Location: ASSAM (dead)

Tattoo:
Tag/Band: 93
Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 94

WILD  WILD

Sex: Male
Birth Date: ~ 1981
Last Location: ASSAM (dead)

Tattoo:
Tag/Band: 94

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 95

WILD  WILD

Sex: Female
Birth Date: ~ 1981
Last Location: ASSAM (dead)

Tattoo:
Tag/Band: 95

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 96

WILD  WILD

Sex: Female
Birth Date: ~ 1983
Last Location: NANDANKAN (dead)

Tattoo:
Tag/Band: 96

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 97

WILD  WILD

Sex: Female
Birth Date: ~ 1983
Last Location: NANDANKAN (dead)

Tattoo:
Tag/Band: 97

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 98

WILD  WILD

Sex: Female
Birth Date: ????
Last Location: HYDERABAD (dead)

Tattoo:
Tag/Band: 98
Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 99

WILD
  /  
  /   
  /    Sex: Female
  /     Birth Date: ???
  /      Last Location: HYDERABAD (dead)
  /       
  /        dam sire
  /         House Name: RADHA
  /           Tattoo:
  /            Tag/Band: 99

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 100

WILD
  /  
  /   
  /    Sex: Male
  /     Birth Date: ???
  /      Last Location: HYDERABAD (dead)
  /       
  /        dam sire
  /         House Name: VALI
  /           Tattoo:
  /            Tag/Band: 100

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 101

WILD
  /  
  /   
  /    Sex: Female
  /     Birth Date: ~ 1983
  /      Last Location: ASSAM (dead)
  /       
  /        dam sire
  /         House Name: 
  /           Tattoo:
  /            Tag/Band: 101

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 102

WILD
  /  
  /   
  /    Sex: Female
  /     Birth Date: ~ 1983
  /      Last Location: ASSAM (dead)
  /       
  /        dam sire
  /         House Name: 
  /           Tattoo:
  /            Tag/Band: 102

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 103

WILD
  /  
  /   
  /    Sex: Female
  /     Birth Date: ~ 1983
  /      Last Location: ASSAM (dead)
  /       
  /        dam sire
  /         House Name: 
  /           Tattoo:
  /            Tag/Band: 103
Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 109

WILD
\            Sex: Female
/            Birth Date: ??\n\            Last Location: ASSAM (dead)
/  
\         dam  sire
/    House Name: 
\            Tattoo: 
\            Tag/Band:
\  109

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 110

WILD
\            Sex: Female
/            Birth Date: ??\n\            Last Location: ASSAM (dead)
/  
\         dam  sire
/    House Name: 
\            Tattoo: 
\            Tag/Band:
\  110

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 111

WILD
\            Sex: Male
/            Birth Date: ??\n\            Last Location: ASSAM (dead)
/  
\         dam  sire
/    House Name: 
\            Tattoo: 
\            Tag/Band:
\  111

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 112

WILD
\            Sex: Male
/            Birth Date: ??\n\            Last Location: ASSAM (dead)
/  
\         dam  sire
/    House Name: 
\            Tattoo: 
\            Tag/Band:
\  112

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 113

WILD
\            Sex: Male
/            Birth Date: ??\n\            Last Location: ASSAM (dead)
/  
\         dam  sire
/    House Name: 
\            Tattoo: 
\            Tag/Band:
\  113
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<th>Studbook Number: 119</th>
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<td>WILD</td>
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<tr>
<td>Sex: Male</td>
<td></td>
</tr>
<tr>
<td>Birth Date: ~ 1986</td>
<td></td>
</tr>
<tr>
<td>Last Location: NANDANKA (dead)</td>
<td></td>
</tr>
<tr>
<td>dam / sire</td>
<td>House Name:</td>
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<tr>
<td></td>
<td>Tattoo:</td>
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<tr>
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</tr>
<tr>
<td>Birth Date: ~ 1984</td>
<td></td>
</tr>
<tr>
<td>Last Location: ASSAM (dead)</td>
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</tr>
<tr>
<td>dam / sire</td>
<td>House Name:</td>
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<tr>
<td></td>
<td>Tattoo:</td>
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<tr>
<td>Sex: Male</td>
<td></td>
</tr>
<tr>
<td>Birth Date: ~ 1984</td>
<td></td>
</tr>
<tr>
<td>Last Location: ASSAM (dead)</td>
<td></td>
</tr>
<tr>
<td>dam / sire</td>
<td>House Name:</td>
</tr>
<tr>
<td></td>
<td>Tattoo:</td>
</tr>
<tr>
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<td>Tag/Band: 121</td>
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<td>WILD</td>
<td>WILD</td>
</tr>
<tr>
<td>Sex: Female</td>
<td></td>
</tr>
<tr>
<td>Birth Date: ~ 1984</td>
<td></td>
</tr>
<tr>
<td>Last Location: ASSAM (dead)</td>
<td></td>
</tr>
<tr>
<td>dam / sire</td>
<td>House Name:</td>
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<tr>
<td></td>
<td>Tattoo:</td>
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<tr>
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<td>Tag/Band: 122</td>
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<td>WILD</td>
<td>WILD</td>
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<tr>
<td>Sex: Female</td>
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</tr>
<tr>
<td>Birth Date: ~ Jun 1986</td>
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</tr>
<tr>
<td>Last Location: ASSAM (dead)</td>
<td></td>
</tr>
<tr>
<td>dam / sire</td>
<td>House Name:</td>
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<tr>
<td></td>
<td>Tattoo:</td>
</tr>
<tr>
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**Taxon Name:** TRACHYPITHECUS GEEI  
**Studbook Number:** 124
---

- **Sex:** Female  
- **Birth Date:** ????  
- **Last Location:** ASSAM (dead)

---

**Taxon Name:** TRACHYPITHECUS GEEI  
**Studbook Number:** 125
---

- **Sex:** Male  
- **Birth Date:** 21 Jun 1991  
- **Last Location:** ASSAM (dead)

---

**Taxon Name:** TRACHYPITHECUS GEEI  
**Studbook Number:** 126
---

- **Sex:** Male  
- **Birth Date:** ????  
- **Last Location:** HYDERABAD (dead)

---

+ Wild-caught... * Appear more than once...
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<td>SEX: Female</td>
<td>Birth Date: ???</td>
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<tr>
<td>Last Location: HYDERABAD (dead)</td>
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<tr>
<td>Dam: House Name: SITA</td>
<td>Tattoo:</td>
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<td>Tag/Band:</td>
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<tr>
<td>SEX: Female</td>
<td>Birth Date: ~ 1987</td>
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<tr>
<td>Last Location: ASSAM (dead)</td>
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</tr>
<tr>
<td>Dam: House Name:</td>
<td>Tattoo:</td>
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<td>Tag/Band:</td>
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<td>SEX: Female</td>
<td>Birth Date: ~ 1987</td>
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<tr>
<td>Last Location: ASSAM (dead)</td>
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</tr>
<tr>
<td>Dam: House Name:</td>
<td>Tattoo:</td>
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<td>Tag/Band:</td>
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<td>Birth Date: ???</td>
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<tr>
<td>Last Location: HYDERABAD (dead)</td>
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<tr>
<td>Dam: House Name: SHAKUNTALA</td>
<td>Tattoo:</td>
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<td>Birth Date: ???</td>
</tr>
<tr>
<td>Last Location: HYDERABAD (dead)</td>
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</tr>
<tr>
<td>Dam: House Name: SHASI</td>
<td>Tattoo:</td>
</tr>
<tr>
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Taxon Name: TRACHYPITHECUS GEEI Studbook Number: 132

- UNK
- UNK

Sex: Female
Birth Date: ~ 1989
Last Location: KANPUR (dead)

- dam
- sire
House Name: DOLLY
Tattoo:
Tag/Band: 132

Taxon Name: TRACHYPITHECUS GEEI Studbook Number: 133

- UNK
- UNK

Sex: Female
Birth Date: ~ 1991
Last Location: KANPUR (dead)

- dam
- sire
House Name: ROLLY
Tattoo:
Tag/Band: 133

Taxon Name: TRACHYPITHECUS GEEI Studbook Number: 134

- WILD
- WILD

Sex: Male
Birth Date: ~ Jun 1990
Last Location: BOKARO (dead)

- dam
- sire
House Name: WILD
Tattoo:
Tag/Band: 134

Taxon Name: TRACHYPITHECUS GEEI Studbook Number: 135

- WILD
- WILD

Sex: Male
Birth Date: ~ 1986
Last Location: ASSAM (dead)

- dam
- sire
House Name: WILD
Tattoo:
Tag/Band: 135
Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 136

- WILD - WILD - WILD - WILD

   dam / sire \        dam / sire \        dam / sire \        dam / sire \
     \   /              \   /              \   /              \   / \\
    122 +                120 +                 \\

- Sex: Male
- Birth Date: 10 Nov 1993
- Last Location: ASSAM (dead)
- House Name: Tattoo:
- Tag/Band: 136

+ Wild-caught... * Appear more than once...

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 137

- UNK - UNK - UNK - UNK

   dam / sire \        dam / sire \        \\
     \   /              \   / \\
    132 77

- Sex: Male
- Birth Date: 4 Feb 1994
- Last Location: KANPUR (dead)
- House Name: Tattoo:
- Tag/Band: 137

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 138

- UNK - UNK

   dam / sire \        \\
     \   / \\
    138

- Sex: Male
- Birth Date: ???
- Last Location: HYDERABAD (dead)
- House Name: KANAL
- Tattoo:
- Tag/Band: 138
Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 139

UNK                                     UNK
\ /                                    \ /
 dam    sire  House Name:
   \ /                                  \ / 139
    139

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 140

WILD                                    WILD  WILD  WILD
\ /                                    \ /
 dam    sire  House Name:
   \ /                                  \ /
      122   +                                 120   +

  Sex: Female
  Birth Date: 28 Nov 1996
  Last Location: ASSAM (dead)
  Tattoo:
  Tag/Band:
  140

+ Wild-caught... * Appear more than once...

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 141

WILD*                                    WILD*  WILD  WILD
\ /                                    \ /
 dam    sire  House Name:
   \ /                                  \ /
      122   +                                 120   +

  Sex: Female
  Birth Date: 2 Nov 1997
  Last Location: ASSAM (dead)
  Tattoo:
  Tag/Band:
  141

+ Wild-caught... * Appear more than once...
Taxon Name: TRACHYPITHECUS GEEI                  Studbook Number:    142
=========================================================================
WILD                                  WILD
\__________________________/
\                        Sex: Female
\                        Birth Date:    ????
\                        Last Location: BOKARO (dead)
\                        House Name: Tat
\                        Tattoo: Tag/Band: 142
=========================================================================

Taxon Name: TRACHYPITHECUS GEEI                  Studbook Number:    143
========================================================================= WILD                                  WILD
\__________________________/
\                        Sex: Female
\                        Birth Date:    ????
\                        Last Location: BOKARO (dead)
\                        House Name: Tat
\                        Tattoo: Tag/Band: 143
=========================================================================

Taxon Name: TRACHYPITHECUS GEEI                  Studbook Number:    144
========================================================================= WILD                                  WILD
\__________________________/
\                        Sex: Unknown
\                        Birth Date:    ????
\                        Last Location: AHMEDABA (dead)
\                        House Name: Tat
\                        Tattoo: Tag/Band: 144
=========================================================================

Taxon Name: TRACHYPITHECUS GEEI                  Studbook Number:    145
========================================================================= WILD                                  WILD
\__________________________/
\                        Sex: Male
\                        Birth Date:      ~ 1990
\                        Last Location: BORIVILI (dead)
\                        House Name: Tat
\                        Tattoo: Tag/Band: 145
=========================================================================

Taxon Name: TRACHYPITHECUS GEEI                  Studbook Number:    146
========================================================================= WILD                                  WILD
\__________________________/
\                        Sex: Male
\                        Birth Date:      ~ 1990
\                        Last Location: BORIVILI (dead)
\                        House Name: Tat
\                        Tattoo: Tag/Band: 146
Taxon Name: TRACHYPITHECUS GEEI  Studbook Number:  152

WILD                                    WILD
  
  Sex: Female  Birth Date: ???
  
  Last Location: KANPUR (dead)  
  
  dam / sire  House Name:
    
    Tattoo:
    
    Tag/Band:
      152

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number:  153

WILD                                    WILD
  
  Sex: Female  Birth Date: ???
  
  Last Location: KANPUR (dead)  
  
  dam / sire  House Name:
    
    Tattoo:
    
    Tag/Band:
      153

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number:  154

WILD                                    WILD
  
  Sex: Male  Birth Date: ???
  
  Last Location: KANPUR (dead)  
  
  dam / sire  House Name:
    
    Tattoo:
    
    Tag/Band:
      154

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number:  155

WILD                                    WILD
  
  Sex: Female  Birth Date: 25 Feb 1980
  
  Last Location: ASSAM (dead)  
  
  dam / sire  House Name:
    
    Tattoo:
    
    Tag/Band:
      155

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number:  157

WILD                                    WILD
  
  Sex: Female  Birth Date: ???
  
  Last Location: ASSAM (dead)  
  
  dam / sire  House Name:
    
    Tattoo:
    
    Tag/Band:
      157
Taxon Name: TRACHYPITHECUS GEEI                   Studbook Number:    162

WILD                WILD                WILD43                WILD42

\                        \                        \                        \  \\
/                        /                        /                        /
\                        /                        /                        /  \\
158 +                        120 +                        dam\ /sire                  dam\ /sire

Sex: Male
Birth Date:  2 Nov 1997
Last Location: ASSAM   (dead)
Tattoo: 162
Tag/Band:

+ Wild-caught...

=========================================================================  

Taxon Name: TRACHYPITHECUS GEEI                   Studbook Number:    163

WILD                WILD

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/                        /
\                        /
163 +                        161 +

Sex: Female
Birth Date:      ~ 2000
Last Location: ASSAM   (dead)
Tattoo:
Tag/Band: 163

=========================================================================  

Taxon Name: TRACHYPITHECUS GEEI                   Studbook Number:    164

WILD                WILD                WILD                WILD

\                        \                        \                        \  \\
/                        /                        /                        /
\                        /                        /                        /  \\
163 +                        161 +                        dam\ /sire                  dam\ /sire

Sex: Male
Birth Date:  3 Nov 2006
Last Location: ASSAM
Tattoo:
Tag/Band: 164

+ Wild-caught...
Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 165

Sex: Male
Birth Date: ~ 2005
Last Location: ASSAM
House Name: RAMU
Tag/Band: 165

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 166

Sex: Male
Birth Date: 4 Apr 2008
Last Location: ASSAM
House Name: MOON
Tag/Band: 166

Taxon Name: TRACHYPITHECUS GEEI  Studbook Number: 167

Sex: Female
Birth Date: 30 Jun 2010
Last Location: ASSAM (dead)
Tag/Band: 167

+ Wild-caught...
Taxon Name: TRACHYPITHECUS GEEI  Studbook Number:  168

WILD                                    WILD
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