



Conservation and Population Status of the Lion Tailed Macaque (*Macaca silenus*) - A Review

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Abstrak

Kera Ekor Singa adalah spesies yang terancam punah. Mereka endemik di Ghats Barat. Selama bertahun-tahun spesies yang terancam punah ini telah menghadapi ancaman seperti perubahan iklim, perburuan liar, pembunuhan di jalan, dan perambahan. Kelangsungan hidup spesies unik ini terkait langsung dengan kerusakan dan kehancuran ekologis. Pemeriksaan fakta mencengangkan yang diungkapkan oleh IUCN menyatakan bahwa ada sekitar 2400-2500 Monyet Ekor Singa di dunia. Menurut sumber terpercaya yang diterbitkan akhir-akhir ini di harian "THE HINDU" Valparai di Tamil Nadu bisa menjadi rumah terakhir yang tersisa untuk kera Ekor Singa. Strategi konservasi yang sesuai, studi demografis, dan kampanye melek huruf pada spesies ini dapat membantu membuat kelangsungan hidup mereka lebih mudah dan lancar.

Abstract

Lion Tailed macaque is an endangered species. They are endemic to Western Ghats. Over the years these endangered species have been facing threats like climate change, poaching, road kills and encroachments. This unique species survival is directly linked to ecological deterioration and destruction. An astonishing fact check revealed by IUCN states that there are about 2400-2500 Lion Tailed Macaque in the world. According to reliable sources published late in the daily "THE HINDU" Valparai in Tamil Nadu could be the last remaining homes for the Lion Tailed macaques. Suitable conservation strategies, demographic studies and literacy campaigns on these species could help make their survival easier and smoother.

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INTRODUCTION

Non-human primates play a very decisive role in forest bio networks and also are highly investigated primates. They are premeditated for their behavioural patterns, transmutative traits, cognitive abilities, conservative studies and threat factors that the species face. Even though an ample expanse of research work is carried out on these craniate species most of the non-human primates are vanishing because of habitat destruction, poaching, the pet trade and the superstitious belief that the macaque species possess medicinal properties (Maria Benchimol et al.,).

It is also believed that human- non-human primate study is not just an emerging field in anthropology or in any biological science study, but it is also an important field where along with conservation biology study, evolutionary history and behavioural similarities amongst both the primate species is highly recorded. It is noted that the non-human and human primate species do not come in contact except for the potential sharing of the parasites. Studies suggest that there is conflict amongst the species over land use which resulted in extinction and also endangered the species which is a high concern for the survival of the species.

There is even less research recorded regarding the interaction between the two species, hence proper investigational study might help in solving the conflict that both primate species face. Of all the nonhuman primate species, it is believed that the macaques successfully exploit human-modified environments be it rural or urban areas. However, ongoing contact with humans has always led to human and wildlife conflict between the two species (Nancy E. C. Priston et al.,).

65% of the primate population are tremendously threatened by annihilation and 43% are classified as censoriously endangered or threatened, of which some of the primate population group comprise dozens of individuals whereas some comprise just a few hundred. (New England primate conservancy). According to Dr Hjalmar Kuhl, it is said that the problem with effective primate conservation is also because of the survival and reproduction strategies of the animal. It is believed that the primates tend to occur at lower densities which are relatively old and have fewer offspring which concludes that generational changes take a lot of time. Petrovan stated that though there are a lot of conservative strategies or changes of action plans choosing or designing a specific strategic plan that actually works on the conservation of particular primate species might not work on another primate which is more of a threat to the species. Hence Dr Hjalmar Kuhl and Petrovan concluded that in order to bring out an

effective conservation strategy long-term studies should be carried out with effective conservation measures that will help the species to survive much longer or that might reduce the rate of extinction. (Halle-Jena-Leipzig).

In India, three core issues need to be addressed in terms of conservation mainly encompasses forest conservancy, hunting pressure and lawful status. The chief risk factor for the declination of primates is the forfeiture of forests. In North-eastern fragments of India, primates are being hunted for a variety of reasons, even though stringent precedents are made for the conservation of the species in remote areas people are not much aware of conservation laws (Arun Srivastava). There are about 15 primate species found in India, of which Gray langur and Rhesus macaque are normally disseminated, whereas other species possess severe threat factors which makes it problematic for the species to subsist. It is furthermore difficult to study conservation as there is no significant data (Sharmila Vaidyanathan).

In India, the Non-human primates inhabit the terrestrial biogeographic zones. The Western Ghats, the Himalayas and the Indo-Burman region are the hotspots of non-Human primates. Most of these Non-human primates are arboreal species, wherein some species are semi-terrestrial. But most of these primate species are adapted to terrestrial life as well since sometimes there is the availability of food on the ground, and most of the time these macaques also come in contact with humans for food resources due to habitat loss (Sayantan Das).

Species and Distribution

Lion Tailed macaque also known as wanderoo macaque is an endangered species of Western Ghats. It is an endemic species of Western Ghats and is found in the states of Kerala, Karnataka and Tamil Nadu (Mewa Singh). Lion Tailed macaques are diurnal species therefore most of their activities are confined between dawn to dusk. *Macaca silenus* are omnivorous species but its diet is mostly comprised of fruits. They feed on leaves, stems, buds, flowers, fungi, insects and small vertebrates. Some researchers in Kerala have reported that the primates have preyed on pigeons' nests (Kumara, H.N).

Classification

KINGDOM: Animalia
 PHYLUM: Chordata
 CLASS: Mammalia
 ORDER: Primates
 SUBORDER: Haplorhini
 INFRAORDER: Simiiformes

FAMILY: Cercopithecidae
 GENUS: *Macaca*
 SPECIES: *M. silenus*

Population Study

Macaca silenus is one of the most endangered macaques in the world. Wanderoo macaques are found in at least 21 protected area. Since the year 1977 to 1980 the focus was to save the endangered primate of the Western Ghats. In the year 1993 14 troops of the wanderoo macaques were observed in Silent Valley National Park, Kerala. The finding suggested that Silent valley National Park has the largest number of Lion-Tailed macaque in the Southern Indian Region (Ramachandran). According to the survey carried out by moulur in the year 2003 they concluded that according to IUCN report it suggests that 3000-5000 of these macaques are scattered in Kerala and Karnataka (Molur S et.al.).

During the year 2007 a population study was carried out and 250 LTM's were recorded in the Theni district of Tamil Nadu. The species were also found in the Papanasam region of the Kalakkad Mundanthurai Tiger Reserve of Tirunelveli of Tamil Nadu (Hosur Subbarao et., al.). A single population of 32 troops of Lion Tailed macaque were recorded in the Sirsi-Honnavaara, in the Karnataka, region (Singh Mewa and Kanumans Werner).

H.N. Kumara and Vijay Ranjan Singh in the year 2008, studied the Lion tail macaque population in Kudremukh Rain Forest Complex (Kudremukh National Park, Someshwara Wildlife Sanctuary, Mookambika Wildlife Sanctuary) Karnataka. The assay was carried in the year in the year 2007 and the total population size was estimated to be 451 individuals in three parks, id Est 20 groups of macaques were noted in Kudremukh park, 4 groups in Someshwara park, 6 groups in Mookambika sanctuary respectively.

Honnavalli N Kumara and Anindya Sinha in the year 2009 examined nine groups of Lion tailed macaques in talakaveri, pushpagiri and sharavathi wildlife sanctuaries. Since the lion tailed macaques are known to be as shy species full demographic data was not recorded. Talakaveri wildlife sanctuary consisted of a single adult lion tailed macaque, two adult male and female macaques. The sharavathi gersoppa population also consisted of a single adult male macaque and the other two larger population groups of macaques comprised of five adult males, two adult females, a subadult male and a juvenile. In the pusphagiri subramanya the macaque population consisted of single isolated macaque, two adult females, a sub adult male and the sex of the juveniles is unknown. The two groups of macaques that were located in pushpagiri region

were lost, one of the single adult male macaques was moved to Mysore Zoo and two macaques (an adult male and female macaque) were hunted and killed in the year 2006.

Honnavalli. N. Kumara, R. Sasi, R. Suganthasakthivel, Gopikrishnan Srinivas in the year 2011 surveyed primate species in highway, mountains in Tamil Nadu. Along with the endangered wandering macaque four other primate species were recorded, including Nilgiri langur, Hanuman langur, bonnet macaque and slender loris. The lazy highways of southern, western ghats are over exploited as farms and estates. The lion tailed macaque troop consisted of multi male and females and the group comprising between 7-55 individuals. Lion tailed macaques were observed in eastern parts of the hills as the tea plantation acted as a barrier for the macaques.

Kumar Santosh, Vijay Mohan Raj and Honnavalli Nagaraj Kumara in the year 2013 aimed to study one of the most threatened primates of the western ghats. The number of lion tailed macaques that were observed during the period of study was estimated to be 638 in 31 groups with group size of 20.6 excluding lone males and by studying the previous literature review, this group is one of the larger population that has been recorded in the wild.

Hosur Subbarao Sushma, Rohini Mann et al., in the year 2014 studied the population status of lion tailed macaque in kalakad- Mudanthurai tiger reserve region. 30 groups of the lion tailed macaques were distinguished based on the data that was collected using cells and based on the secondary data that was collected from researchers working in the reserve. Four other groups of the wanderoo macaques were also recorded along with few solitary adult male macaques.

Srimati Ravicharan and Moorthi Mahaly in the year 2020 studied the population in Annamalai hills of Western Ghats, the five different regions of the Annamalai hills were marked as R1 Puthuthottam Estate (PT), R2 Kavarkal Estate (KE), R3 Wayverlay Estate (WE), R4 WaterFalls Estate (WF), and R5 Attakatti (AK). In R1 range the researchers observed 138 Lion Tailed Macaque species, in R2 Range 126, in R3 Range 103, in R4 Range 95 and in R5 Range 68 Macaque species were observed a total of 529 Adult male, Adult Female, Sub-Adult, Juvenile and Infant macaques were observed. R1, R2, R3 recorded a highest number of macaque population compared to that of R4 and R5.

Threat Factors

Wanderoo macaques are surprisingly rare species as they are facing severe threat factors. only limited habitats are left due to habitat destruction

for various human development activities. Habitat fragmentation and hunting are two main factors for the species survival. Fragmentation of the habitat is mainly due because of timber harvest and planting of exotic plant species like eucalyptus, tea, coffee and cinchona. Establishment of the development projects in the forest fragments also has led to decline in the forest fragments. Hunting is the second main threat factor for the species survival.

These macaque species are hunted as they feed on crops and are even killed for its meat as they believe that wanderoo macaque possess medicinal values (Kaumanns, S.W). Poaching of the species was first recorded in the Madikeri Forest division adjoining Kerala state. The regional tribes believed that the species has aphrodisiacal and medicinal properties and hunting of the very species for the black money was first recorded in the same Madikeri region. But since the wildlife protection act was implemented in the year 1974, there was a decline in poaching of the species (Ullas Karanth, K).

Conservation Strategies

Ananda Kumar in the year 2001 stated that because of human activities (usage of natural resource, tea and coffee plantation, grazing, collection of leaves from the forest for organic compost) in the forests has resulted in destruction of the species habitat. Hence by proper management of the forest habitat and by educating the local people the risk of the human and habitat interaction could be monitored and species re-introduction in the habitat could also be implemented. Kumar et al., in the year 2008 proposed to the forest department that in order to protect the endangered Lion Tailed Macaque the habitats of the species where they dwell should be marked at protected sites, in accordance to it the Government of Karnataka had slightly altered the proposed area as "Aghanashini Lion Tailed Macaque Conservation Reserve".

Honnavalli.N. Kumara in the year 2009 stated that despite of species protected sites there is always decline in the species population. The Wildlife protection and management of the species is not effective because of the lack of insufficient staff and less monitoring of the species. The investigators proposed a long term conservation plan for the endangered macaque species (1) Studying the population of the Lion Tailed Macaques using standard field methods. (2) Long Term studies on the behaviour, ecology, and conservation plans. (3) Assessing threat factors and forest management techniques for the conserved sites. (4) Educating local people about the

importance of species, assessing socio-economic status of the local people.

H.N. Kumara in the year 2011 suggested that until a proper conservation strategy is made for the conservation of the species certain management factors should be taken under consideration like by not cutting monoculture plant species as they act as forest stretches and help in avoidance of construction of the roads and other developmental activities in the forest habitats, several other factors like expansion of farming land, excessive use of natural resources like timber and various other factors that affect the forest and the species habitat should be monitored.

According to the "THE HINDU" newspaper source the local administration of Valparai region have constructed aerial bridges at a common point so that the macaques do not cross the roads and the locals i.e., the tea estate workers have been helping the macaques cross the roads and hold up GO SLOW sign board during night time and presage tourists from feeding them (2022).

DISCUSSION

Lion Tailed Macaque is an Endangered species which possess various threat factors over the years which has resulted in the population decline. Various studies have been carried out over the years like behavioural studies both in wild and in captive environment, evolution of the species food preference in wild milieu, population study, conservation strategy, threat factors, zoo management factors, enrichment programs in zoo for the welfare of the species, and hormonal assays of the species.

The research articles from various published sources like American Journal of primatology, Primate conservation, Bioscience Journal, Ecological and Environmental anthropology, Folia Primatol, International Journal of Primatology, Primate report, India Primate Conservation, Journal of the Bombay Natural History Society, Conservation International, Flora and Fauna International, Int J Primatol, Current Science, JOJ Wildlife and Biodiversity, Environmental Science Biology, and the Newspaper source "THE HINDU".

The species is listed on Appendix-I of CITES, and Schedule-I, Part-I of the Indian Wildlife protection Act 1972 (A.V. Surya Sen). A study suggests that the habitat fragmentation could cause lower birth rate and immature survival of the species (Umapathy. G et.al), it also causes low food availability of the species (Menon. S, et.al). According to the population and habitat assessment workshop assessment that was carried out in Arignar Anna Zoological Park in the year 1993 the

captive husbandry plans should be made in order to monitor the captive species. Eight breeding zoos were marked as breeding centres for the endangered lion tailed macaque species namely Arignar Anna Zoological Park-Tamil Nadu, Nehru Zoological park-Hyderabad, Trivandrum Zoological Gardens- Trivandrum, M.C. Chhatbir Zoo-Chandigarh, National Zoological Park-New Delhi, Allen Forest Zoo- Kanpur, Chamarajendra Zoological Park-Mysore, Nandankanan Biological Park- Bhubaneswar. These centers are breeding centers for species conservation.

Assisted reproductive techniques procedure and assessment were discussed to maintain the genetic diversity of the species, to aid in population growth, to maintain frozen genetic material of the species. Priorities for carrying out the assisted reproductive procedure in LTM were recorded and prior practical work should be carried out in Bonnet and Rhesus macaque before carrying out the ART technique in *Macaca silenus*. Health monitoring of the species and population assessment of the species in the zoos should be regularly monitored. Education awareness programs amongst the local population and students and research work on population studies, behaviour activities, health assessment, habitat management and welfare of the species would benefit the species (Dr.Ajith Kumar et.,al).

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