

# Mohammed Ismail M. Rafi

## – Primates and Conservation

Mohammed Ismail M. Rafi is a primatologist who has done his Master of Research in Primatology and Conservation from Oxford Brookes University (Department of Social Sciences). He conducted a seminar on primates and conservation for the students of Ram Hattikudur Advanced Training in Conservation 2022–23 batch on 11 November 2022. The major topics discussed in the seminar were primates, their distribution, threats worldwide and Mohammed's work on Bonnet Macaques in association with Zoo Outreach Organisation.

### Basic information on Primates

Primates are the highest order of mammals and there are around 512 species of primates in the world spread across 90 countries across the world. They are majorly found in tropical environment and can have a very high range of variations, both taxonomical and morphological. The smaller ones can weigh up to 30 g (Mouse lemurs) and the largest can go up to 200

kg (Silverback Gorillas). Primates are social animals and have a large brain compared to their body size, which is found in very few other species. Asia, Madagascar, neotropics and Mainland Africa are places rich in primate diversity and density.

### Taxonomic Overview

In terms of the taxonomic overview, Primates can be broadly divided into Strepsirrhines (or Prosimians) and Haplorrhines (or Anthropoids) which are 'wet nosed primates' and 'dry nosed primates' respectively. Strepsirrhines are divided into Lemuroidea (consisting of Lemuridae, Cheirogalidae, Daubentoniidae, and Indriidae) and Haplorrhines into Ceboidea (with single family Cebidae), Cercopithecoidea (with sub-family Cercopithecidae divided into Colobinae and Cercopithecinae), Hominoidea (with Hylobatidae, Ponginae and Homininae) and Tarsioidea (Tarsiidae).

Although Tarsioidea falls under Haplorrhines, it is considered Prosimian.



## Threats

More than 65% of Primates are on the verge of extinction worldwide, and 75% is a declining population. The major threats to these Primates are 1. Habitat loss (contributing to 58% of the total global threats) 2. Logging, and 3. Hunting and illegal trade. Mining in India and palm oil production in Indonesia are major threats to primates.

The three species of Orangutan – Bornean, Sumatran, and Tapanuli Orangutans (discovered in 2017) face the major impacts of the over production of palm oil in Indonesia to meet the global demand and are all Critically Endangered, whereas Javan and Bengal slow lorises face threat due to pet trade. Also, gorillas and chimps are traded globally to meet the exotic food and pet demands of the wealthy class.

As countries like India, Thailand and Indonesia with major primate populations are a part of Convention on International Trade for Endangered Species (CITES), they export their primates to countries that are not a part of CITES (e.g., Kazakhstan) which can trade very directly and openly by importing from India, Thailand and Indonesia and move it ahead from their airports to some other third country that is not a part of the CITES.

To track these trade patterns, we can visit the 'Trade Database Website' of CITES. It is amazing to see how proficient these traders are with their mammal and primate knowledge in order to still continue the exotic trade illegally. The trade language used by these traders is unique and cannot be usually understood by common people, like using numbers as words and words as numbers to post advertisements on Instagram and other social media apps. Ismail also told us that Russia is selling Woolly Mammoth's partially fossilized tusks under wildlife trade. Vincent Nijman who had done a lot of work on primates is always on the radar of trade mafias, which tells how tough and risky it is to work for the conservation of primates. Other major threats that

these animals face along with all other wild species is cattle farming and ranching due to the increasing global demand for meat and dairy products, climate change, and increasing infrastructure and building of roads, railway tracks, & other development, not just because of deforestation and canopy loss, but also because of road kills.

The world's most threatened primate species are – the Javan Slow Loris, Grove's Titi Monkey, Coquerel's Sifaka, Skywalker Hoolock, Sahafary Sportive Lemur, Blue-eyed Black Lemur, Geoffroy's Spider Monkey, Cat Ba Langur, Buffy-headed Marmoset, and Gray Snub-nosed monkey (all Snub-nosed Monkeys are endemic to China).

## Why Conserve Primates

Primates have various ecological functions like seed dispersal. In Madagascar, only third bird species contribute to seed dispersal. Most of the seed dispersal is done by the 101 primate species that call Madagascar their home. Primates are also 'models' to have an insight into human evolution and understand social and cultural relationships. They also contribute majorly to biomedical research to understand diseases and make vaccines (covid vaccine was first tested on a Rhesus Macaque). Besides this they are also 'surrogate species' and act as flagship species (charismatic species like Lion-tailed Macaque, Gorillas, and Orangutans), umbrella species (by saving one species, we can save other species as well) or keystone species (due to the ecological value that they share like seed dispersal).

## How to Conserve Primates

We discussed many primate conservation methods with Ismail, out of which, some are stated here – Scientific work like minimizing taxonomic and spatial shortfalls, conducting conservation – critical behavioural research, responses to habitat disturbances, and connectivity in degraded / mosaic and fragmented landscapes are really promising and important steps needed for primate conservation.



For example, learning that Lion-tailed Macaque is an arboreal species that lives in wet evergreen forests of Western Ghats can help us understand their behaviour and affects of anthropogenic activities on their population numbers. Road kills are one of the major problems that this species face, hence from understanding their arboreal behaviour, we can make canopy bridges for them over roads and highways in order for them to travel safely. Investigating affects of global warming, trade analysis and IUCN assessments will help us understand the trends of future population of primates. Finally, implementing modern, non-invasive technologies in place of conventional approaches (like bioacoustics, drones and camera traps) can be revolutionary in primate conservation.

**Activity session**

Ismail divided the fellows into two groups and gave each group a unique situation and a common situation to work upon and find solutions. All these situations were either real or inspired from real issues. The common situation discussed about the issue of people getting too close to gorillas in a national park during covid, which could pose a risk of infection towards the primates. To this, most of the answers suggested towards strict covid protocols, setting up education and photobooths for visitors, not allowing selfies with gorillas or even altogether shutting down the national park till there is an ease in the covid situation. The other two unique

situations were focussing on Bonnet Macaques, where the macaques were attacking coconut plantations in a hamlet and getting poisoned in one situation, whereas they were raiding houses in an ecotourism spot and dying while crossing roads near a village while waiting for passers-by to feed them.

In both the cases, understanding the behaviour of the macaques was the key element to find solutions. Growing other fruiting trees near plantations to divert the macaques, fencing, working in collaboration with the locals; proper disposal of garbage and waste management, educating people not to feed the macaques or throw food, creating speed breakers and making canopy bridges were some of the acceptable answers derived from the discussion. At the end, everything comes down to working with the affected communities, government and understanding macaque behaviour to find and implement plausible solutions.



### **Ismail's work**

Ismail is currently working on a project on behaviour of Bonnet Macaques of Thenmala, which aims at:

1. Understanding behavioural changes in female macaques due to motherhood,
2. Determining the variation of maternal care in wild Bonnet Macaque Populations and,
3. Link between maternal behaviour and infant personality.

Bonnet Macaques live in multi-male and multi-female societies, with different group sizes, and follow a hierarchy. Females stay, while males leave the troop after maturity to join some other group. Also, females reach maturity at 2.5–4 years of age, while males reach maturity at 4.5–6 years. Both these factors avoid inbreeding in a troop, and hence increase genetic variability, which is necessary for species survival. Female gestation lasts up to 6 months and the birth season now usually ranges from March–June. Ismail and his team use focal data



as a way to determine and record the behaviour of macaques. What they found was that infants with experienced mothers (multiparity) have a better survival chance as compared to inexperienced or first-time mothers.

They also found that female infants survive better than male infants, and that most infant mortality happens in road kills or electrocution. They also inferred that during the weaning period, when the infants go out themselves in search of food after six months of age, some males of the group and other females who are the friends of the mother of the infant, also look after the child, groom him/her and huddle. Some females even adopt other infants if their mothers are killed or die due to natural causes. Their future research plans are to look into genetic study of relations, parasites found in macaques, stressful life of females in the group and stress of females while finding food for themselves and their infants.

### **Conclusion**

The seminar with Mohammed Ismail M. Rafi was a very informative and interesting session for all the fellows. It was an interactive time, with debates, group discussion, quizzes and presentations. We got to learn a lot about primates, their taxonomy, threats, ecological role, need for conservation, methods to use for conservation and some specifics about Bonnet Macaques. In conclusion, the overall session was very educative, fruitful and fun for all of us.

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