

HUMAN-MONKEY (*Macaca sinica*) CONFLICT IN SRI LANKA

SUMMARY: Human- monkey conflict is often reported due to deforestation and increasing human population with their needs. This study summarises the findings of most of the work done in this regard from the year 2000 to 2016. Largely individual monkeys and/or individual lonely mothers with young ones and secondly the troupes of monkeys cause conflicts within Kandy municipal area. Red faced monkeys prefer human food, home garden produce and insects found in and around houses. In addition to being a menace, these monkeys, carry some potentially zoonotic enteric pathogens. The methods launched to control this conflict were tested such as capturing, sterilizing and translocating or rehabilitating and use of repelling devices to change monkeys' trails. The castration, and ovario hysterectomy on a portion of the troop in reducing their numbers needs debate. A completely monkey proof garbage disposal system is also a must.

INTRODUCTION

With increasing deforestation, human - monkey conflict in Sri Lanka is on the increase. The increasing human population growth and exponential increase in their needs also have contributed to the same (Nahallage, *et al.*, 2008). In the year 2000, after several written requests reaching the Veterinary Teaching Hospital (VTH), University of Peradeniya (UOP), several programs were launched in this regard. The red faced monkeys (toque macaques/*Macaca sinica*) is the culprit animal, making trouble to daily life of several groups of individuals, shops, schools and places of worship. This documentation summarises all efforts of VTH from 2000 to 2016 with regard to human monkey conflict.

EXTENT OF THE CONFLICT

The Veterinary Teaching Hospital (VTH) launched a project through Postgraduate Institute of Science (PGIS) in the year 2000 to study the extent of this problem within Kandy Municipal limits. It showed that there were two types of monkeys involved. Firstly, individual monkeys or individual mothers with kids. Secondly, the troupes. These monkeys had been possibly tamed and later released or had been used in circuses to perform various acrobatic actions by people to make a living (Wijesinghe, *et al.*, 2005).

These monkeys keep repeatedly coming in search of tastier human food which can be found easily and, they stay around and increase their rate of breeding. It is obvious that the monkey threat has got worse during the

past 15 years and that they dislike arecanut trees and certain types of banana trees while they eat or destroy all other home garden produce (Jayalath, 2011). Monkeys eat not only plant material, but also insects that are found in and around human dwellings such as those under the roofs. This is probably why monkeys live in the periphery of the jungles close to humans. Though, it appears that largely red faced monkeys (*Macaca sinica*) are reported to be the problem, the behavior of other species of monkeys could also be disturbing (Binduhewa *et al.*, 2005).

Suddenly within Kandy city limits in 2012, several monkeys were found dead and some of them were found ill. Such ill and dead monkeys were brought and treated at the VTH with the help of the Police in Kandy. The postmortems performed on the dead indicated that they had possibly consumed a poison. Though this purposeful poisoning was reported in daily newspapers, nobody bothered to examine as to why it happened. The monkeys at Udawattakele, a wildlife protected area in Kandy, in 2014 were not well and feeling ill which was possibly a viral condition and a few of them even died. This appears to be an annual occurrence which settles on its own.

COPROLOGIC SURVEY AMONG RED FACED MONKEYS-ENTERIC PATHOGENS WITH ZOONOTIC POTENTIAL

In 2015, a coprologic survey (Mendis, 2016) on enteric parasites, selected bacteria and viruses with zoonotic potential in *Macaca sinica* using 105 samples from Kandy area was performed. In that study, 4 types of protozoan cysts: *Entamoeba coli*, *Entamoeba histolytica*/ *dispar*, *Giardia* spp. and *Balantidium coli*, 4 types of helminth eggs: strongyle type/ *Strongyloides* spp., *Trichuris* spp., *Enterobius* spp., *Bertiella* spp. and one bacterial species: *Shigella* sp. were found. Some parasites were found more often from monkeys from areas with close contact with humans.

CONTROL MEASURES FOR THE CONFLICT

In 2005, all trouble making individual monkeys within municipal limits in Kandy were caught using different methods; trapped and/or sedated (Wijesinghe *et al.*, 2005). These monkeys, after capturing, were surgically castrated or ovario- hysterectomised, vaccinated against rabies and tetanus and introduced into a special cage complex. This cage complex had 8 individual cages into which the monkeys were introduced, and a common corridor. The monkeys caught as above, lived in this cage complex for 6 months. One monkey at a time, was released into the

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common corridor in the cage complex, made contacts with others and established hierarchy. At the end of the period, they were all in one troop together, established the hierarchy and hence were released to the wild (Rupasinghe, 2006). This troop however, was not subsequently monitored.

The medical castration of male monkeys, by injecting formalin into testicles and using human intra uterine loops on female monkeys have also been attempted with some success though the work was inconclusive (Samal *et al.*, 2015). Issues on ethics and pain relief were some problems in that work. However, the impact of performing such techniques only on a proportion of males or/and females in a troop, on reducing their numbers is questionable.

A village in Hali-ela area launched a program to control human-monkey conflict after holding, several meetings with the villagers. All these attempts were not to kill, destroy or to develop hatred towards monkeys but to educate humans to live with the monkeys in harmony. It was pointed out in such meetings that the most feasible among the few temporary solutions was to, capture, surgically sterilize, vaccinate and to release either to the same location or to translocate. The carpenters from the village built community monkey traps. One person was employed to operate the trap (Wijesinghe *et al.*, 2009). The people in the area were also made to understand that the welfare and the genetic make-up of these monkeys must be looked into. This program with the assistance of the Department of Wildlife Conservation subsequently became popular in other areas of the country.

Mahakanda village in Kandy conducted such a capture programme and a substantial proportions of animals from several troupes were caught, surgically operated and were translocated (Jayalath, 2011). However, the monkeys from the surrounding areas infiltrated in about 6-7 months. These new monkeys though initially not destructive, became gradually so (Jayalath and Dangolla, 2011).

In 2014, the University of Peradeniya, imported 5 monkey repelling electrically operated electronic devices from India. These were fitted on pre-determined strategic points within the university premises after a detailed study of troops and their trails in the area. The monkeys however did not change their trails or would not be disturbed by this equipment. In addition, these devices were producing noises that were disturbingly audible for people.

Applying luminous paint on monkeys to make other monkeys scared, making the monkeys eat hot chilies and clipping their hair were studied as remedial measures all of which the responses were temporary and transient. During 2012, it was brought to our knowledge that in Ukuwela, Matale, a certain agricultural land was never attacked by monkeys while all other lands around were inhabited and destroyed by them. The reason indicated was that the construction of the fence of this particular land had been done on an auspicious time according to the fortune of the owner of the land. There is also a belief that hanging a fresh goat skin on the monkey trail would repel monkeys.

It is clear that a complete monkey proof garbage disposal method must be introduced to reduce this

problem. A special monkey proof waste bin has been introduced in Polonnaruwa area as a solution to the conflict. Most inhabitants do not take an extra effort to use the garbage bins properly and throw garbage from a distance into the bin. To use a monkey proof waste bin, people must take an effort to dispose their own waste.

EDUCATIONAL PROGRAMMES AMONG SCHOOL CHILDREN

Several schools sent their children to study on human-monkey conflict resolution to VTH. They were used to make observations in these experiments and were taught that a real life problem needs pooling knowledge from various disciplines; i.e. a multi-disciplinary approach. In addition, this project was also used to examine the use of "hypothesis testing" lesson in the GCE A/L school syllabus in Science curriculum at that time (Rupasinghe and Dangolla, 2005).

An initial island-wide survey with several educational programs was conducted by VTH. The children in the GCE advanced levels Science stream were also used in these programs (Rupasinghe, 2006). These educational programs and subsequent investigations included teachings on potential zoonotic infections that could be transmitted to humans from monkeys. The school children learn these principals quicker than expected (Wijesinghe *et al.*, 2003).

CONCLUSION

A survey on the international literature on the monkey human conflict, show that there is no permanent solution for this problem. Proper and responsible garbage disposal seems to be a must. In agricultural areas in Sri Lanka this recommendation may not work. None of the different approaches adopted in India, Thailand or Malaysia have shown total effectivity. Resolving this problem in cities and agricultural areas, while appreciating the living rights, welfare and genetic issues of both humans and monkeys is urgently needed. It is timely that the Kandy municipality takes lead attempting to solve this problem, examine the potential benefits and losses of the proposed solutions and make decision on mass scale introduction and adoption of a remedy to ensure decent living standard for people within municipal limits.

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