



ORIGINAL RESEARCH PAPER

Veterinary Science

SOME REPELLANTS AND DETERRENTS FOR MONKEYS IN CONFLICT WITH HUMANS IN YATINUWARA, SRI LANKA

KEY WORDS: Human - monkey conflict, repellents, deterrent

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ABSTRACT

Human wild life conflict is defined as “when the needs and behavior of wild life impacts negatively on the goals of humans or when the goals of humans negatively impact the needs of wild life”. Human- Monkey Conflict (HMC) has affected some cities including Kandy and its suburbs in Sri Lanka. This study was conducted with the objective of examining the feasibility of using some methods to repel trouble making monkeys within Yatinuwara divisional secretary area (YDS).

In this study, a total of 15 locations within YDS area were identified to examine the effectiveness of three methods, dogs dressed as leopards (n=4), adult men dressed as strange large langurs with masks and long raincoats (n=6), and application of leopard feces on fruit trees (n=5). To test the methods, instructions and record sheets were given to selected people and the study was carried out.

Two locations in which dogs were dressed as leopards (2/4), four locations in which adult men dressed as large langurs (4/6) and two locations in which leopard feces were applied on fruit trees (2/5), the monkeys ran away approximately 150m away and they never returned until the one month of observation period. Only in one location each where dogs were dressed as leopards (1/4) and adult men dressed as large langurs (1/6), and in two locations where leopard feces were applied on fruit trees (2/5), monkeys returned only once during one month of observation period. These methods of repelling monkeys, though could be temporarily used, must be adopted either alternatively or in combination since, monkeys are fast learners while a better and a permanent solution must be found.

INTRODUCTION

Human wild life conflict is “when the needs and behavior of wild life impacts negatively on the goals of humans or when the goals of humans negatively impact the needs of wild life” (Madden, 2008). It is an emerging problem in many Asian countries when food and space are shared between animals and humans (Jolly, 1985; Singh, 2000) and has proven to cause substantial financial loss in Yatinuwara area, in Sri Lanka (Senevirathne et al., 2019). Among animals in conflict, lion, leopard, cheetah, spotted hyena, monkey, asian elephants, african elephant, wolf, golden jackal, wild boar, jaguars and puma are prominent worldwide (Distefano, 2005). Human - elephant conflict (Fernando et al., 2005) and human-monkey conflict (Rupasinghe and Dangolla, 2005; Mendis and Dangolla, 2016) have been serious issues in different areas in Sri Lanka. Human- Monkey Conflict (HMC) which has affected many cities and suburbs (Cabral et al., 2018), has been attributed to deforestation, jungle fragmentation and increased human population and their needs.

From among the three species of monkeys in Sri Lanka, predominantly Torque monkeys (*Macaca sinica*) are in conflict with people (Nahallage et al., 2008). Despite being a possible reservoir for Dengue (De Silva et al., 1999), Leptospirosis (Perolat et al., 1992), Tuberculosis (Min et al., 2013) and some potentially zoonotic protozoans (Mendis and Dangolla, 2016), some monkeys could attack people (Dittus et al., 2019) and disturb daily routine of people. Various attempts have been done in Sri Lanka to educate public on HMC and to reduce monkey population by mass capture and surgical sterilization of both males and females (Rupasinghe and Dangolla, 2005; Wijesinghe et al., 2005; Jayalath and Dangolla, 2011) while

medical castration also have been attempted (Samal et al., 2014).

Introducing a complete monkey proof garbage disposal method, to change the human perception on garbage disposal had showed positive results in Polonnaruwa area in this regard (Dittus., 2012a). Using monkey repellants or deterrents, painting monkeys with various colors to disguise, making them to eat hot chilies and clipping hair also have been attempted with poor long-term results. In addition, throwing stones or using a catapult, shouting or throwing fire crackers, encouraging dogs to chase away monkeys, barriers to prevent monkeys from entering houses such as gaps between roofs and walls, using wire mesh on windows or guarding crops have been adopted with various degrees of success (Distefano, 2005; Dittus, 2012b). We examined feasibility of three methods of monkey repelling within Yatinuwara Divisional Secretariat (YDS) area in which the financial loss to the public due to Human Animal conflict (HAC) has already been documented (Senevirathne et al., 2019).

METHODOLOGY

A total of 15 locations in 9 different villages with HMC were identified from YDS. Affected individuals were educated on the relevant issues and were given a data recording sheets to fill in observations after using respective methods assigned to them. The format consisted of questions on monkey visits to respective home garden, whether the method was successfully applied, whether monkeys ran away and if yes for how long, what did they do thereafter and whether they

returned within 1 month of observation period to the same land. The individuals were strictly advised to collect information in a manner that monkeys could not see them and a fruit bearing season of the year was used for the study.

Treatment I was adopted in 4 locations, one dog in each location was dressed with a costume to disguise as a leopard after taking owner's consent. Treatment II was in 6 different other locations, when needed, one man in each location was dressed as a large langur with a mask and long raincoat. Treatment III was, in 5 different locations with fruit cultivated lands, a considerable amount of deep-frozen leopard feces (about 10g) was handed over to individuals and were advised to mix small amounts of it with water immediately before application on the respective fruit trees. The fecal samples were kept in the refrigerators of the users until being used.

RESULTS

| Village | Location | App. no of monkeys in troupe | App. distance monkeys ran away due to repellant | Return of monkeys to same property within 1 month |
|--|----------|------------------------------|---|---|
| Treatment I. Dogs disguised as leopards | | | | |
| 1 Wathurakumbura | 1 | 100 | - | Did not runaway |
| 2 Dodamwala | 2 | 10-15 | 150m | Never |
| 2 Dodamwala | 3 | 30 | 150m | Never |
| 3 Wathurakumbura | 4 | 25 | > 150m | Once |
| Treatment II. A man wearing masks and rain coats to disguise as large langurs | | | | |
| 4 Nadithalawa | 5 | 30 | 150m | Never |
| 5 Pallemadiththa | 6 | 25 | > 150m | Once |
| 6 Uduwela Pahalagama | 7 | 10 | > 150m | Never |
| 6 Uduwela Pahalagama | 8 | 14 | > 150m | Never |
| 7 Gannoruwa Central | 9 | 30 | 50m | Several times |
| 6 Uduwela Pahalagama | 10 | 12 | > 150m | Never |
| Treatment III. Application of leopard feces on fruit trees | | | | |
| 8 Gannoruwa Central | 11 | 20 | 150m | Once |
| 8 Gannoruwa Central | 12 | 30 | 150m | Once |
| 8 Gannoruwa Central | 13 | 30 | 150m | Never |
| 9 Gannoruwa Western | 14 | 30 | 150m | Never |
| 9 Gannoruwa Western | 15 | 25 | > 150m | Twice |

In 2 (2 & 3 in same village) out of 4 locations in which dogs were disguised as leopards (Treatment I), in 4 (5,7, 8 & 10 two different villages) out of 6 locations in which adult men disguised as large langurs (Treatment II) and in 2 locations (13 & 14, two different villages) out of 5 in which leopard feces was applied on fruit trees (Treatment III), the monkeys never returned within 1 month observation period. The monkeys ran approximately about 150 meters away from the repellant, in all such locations.

Further, during the 1-month period such monkeys returned only once to the respective experimental area, only in one location each, in Treatment I and Treatment II. In 2 locations in Treatment III, they returned only once during the experimental period. The repellant did not work in one location (out of 4) in Treatment I and II.

DISCUSSION

In the instance in which monkeys returned when dogs were disguised as leopards (Treatment I), only a few matured male monkeys had returned to the land and had left immediately and had not destroyed any crop or fruit as they used to do. The monkeys possibly identified the disguised dogs because they had barked. Furthermore, in the location in which Treatment I did not work, the dress had been too small to fit for the dogs selected. Therefore, this must be repeated for better results. In other three places, method was successfully carried out as instructed and may have used better trained or obedient dogs. The best success was observed in the same village for an unknown reason, perhaps dogs had been anyway annoyed with the monkeys in this village.

Locations in which the adult men were disguised as large langurs (Treatment II) after advice, the public were strictly told not to misuse them or to make monkeys learn in anyway. The individuals were also advised not to scare them by noise etc. but to slowly approach the monkeys. Apparently, this method is successful though there are both advantage and disadvantages. Low cost, feasibility and easy applicability are advantages while possible rapid learning by monkeys need more attention. Out of 4 successful locations, 3 successful locations anyway had been from the same village for an unknown reason.

Leopard feces (Treatment III), was stored in the refrigerators of those who used them until it was utilized. It is surprising to note that those monkeys who had possibly never seen a leopard were scared of the leopard fecal matter possibly due to pheromones therein. In three places where monkeys returned to the land, did not stay for long and did not eat or destroy any fruit. The smell, as humans could detect, remains for approximately 2 weeks. Perhaps, this observation needs more attention and an extract from volatile compounds from leopard feces can be prepared as a temporary monkey repellant. It must also be remembered that when it rains, as in most of the fruit bearing seasons, the fecal matter gets washed off and therefore may need repeated applications.

It must always be remembered that these repellants alone are insufficient to solve the problem of monkey menace because monkeys are primates, and will learn to respond to all methods fast. Therefore, these methods, if used, must be used alternatively and combined with a permanent solution. At the same time, it must be stressed that the red-faced monkeys are found only in Sri Lanka and birth control or population control methods must be used under close observations and monitoring and attention on their welfare must not be forgotten.

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