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PROBLEMS WITH PEST MONKEYS: MYTHS AND SOLUTIONS

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There has been a growing disturbance from monkeys raiding properties and crops in towns and villages. The problem is not confined to Sri Lanka, but it is common to all countries that have primates. The purpose of this article is to outline the nature of the problem, to evaluate the solutions that have been tried here and abroad, and to present an effective strategy that would help to protect people from monkeys. Issues in dealing with commensal primates in South Asia have been reviewed by group of South Asian primatologists that includes the present author (Singh et al. 2005).

The primates of Sri Lanka: For its size, Sri Lanka has the highest diversity of primates in Asia, with 12 subspecies among 5 species. Three species are endemics: the Toque Macaque (*Macaca sinica*) with 3 subspecies, Purple-faced Langur (*Trachipithecus vetulus* formerly *Presbytis senex*) with 4 subspecies, and one of the two Loris species (*Loris tradigradus*). The second Loris species (*Loris lydekkerianus*), having 3 Sri Lankan subspecies, and the Gray or Hanuman Langur (*Semnopithecus priam* formerly *Presbytis entellus*) occur also on the Indian subcontinent. Of the local subspecies, the Western Purple-faced Langur race (*T. v. nestor*) is critically endangered by IUCN standards. The hill-zone race of Toque Macaque (*M. s. opisthomelas*) too is endangered but this fact is less well publicized.



The endemic hill-zone Toque Macaque is an endangered subspecies having no legal protection and is officially condemned as a "pest"

A condemned endemic. The IUCN, WWF and similar organizations aim to conserve global biodiversity. Given the enormity of the task, and frequent scarcity of data, the focus for most organisms is for action at the species level. Primates, however, are an exception to this: the desired focus is on subspecies, particularly in places like Sri Lanka where subspecific differences among taxa are well developed and have a remarkable biological history. It is of grave concern, therefore, that the three endemic subspecies of Toque

Macaques, regardless of their threatened status, have no legal protection. Even worse: recent legislation has declared them as pest, and the public is invited to deal with them as they may.

What is a "monkey pest" ? The Sri Lankan press has several times referred to the burgeoning "monkey menace" on the island. Farmers in the dry zone complain of monkeys raiding their crops (mostly Gray Langurs), or damaging their coconut plantations [mostly Toque Macaques, but also Giant Squirrels (*Ratufa macroura*)], and damaging their properties, food stores, home garden produce (mostly macaques) and their roofs (mostly Gray and Purple-faced Langurs).

A relatively new development in Sri Lanka concerns macaques attacking and biting people. Such incidents have been reported from popular tourist spots like Yala National Park (Rodrigo, 2011), Dambulla and elsewhere. Many more such attacks go unpublicized. This situation is common also in India, where, for example, Hanuman (Gray) Langurs are known to jump onto people, bite and rob them of their hand-carried possessions. The problem of harassment from the large-sized Gray Langurs is starting also in Sri Lanka, especially at some sites where people purposely entice these langurs with food. The frequency of such incidents will only increase unless some countermeasures are implemented.



The leaf-eating Hanuman or Gray Langur (Photo: David Barron).

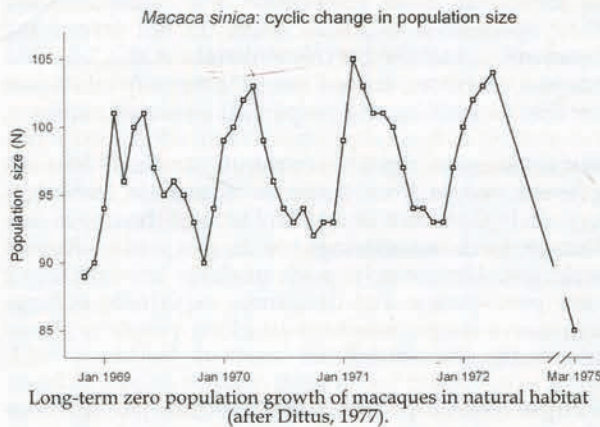
HEEDING THE WORDS OF THE BUDDHA

In addressing human-monkey conflicts it is wise to follow the words of the Buddha who advised that *to solve any problem, you need to understand the reasons for it, and then deal with the cause.* Fortunately, the challenge of the monkey menace is fairly simple and can be solved if we heed some basic established biological principles. Unfortunately, the willy-nilly politically inspired approaches tried so far in dealing with human-monkey conflict issues defy all common sense, not to speak of

wildlife management practices, and has done more harm than good to people as well as monkeys.

UNDERSTANDING THE CAUSE

Limits to primate population size. From the point of view of wildlife management, the most important fact to keep in mind is that the number of monkeys that are able to live in any one area is limited, and proportional to the amount and quality of food (and water) that is available. In their native forest homes, the number of monkeys normally does not increase; their numbers are kept in check by a limited supply of natural forest foods and water. Fluctuations in monkey numbers do occur with annual and seasonal differences in the natural supply of forest food, and occasionally in relation to predators and disease. But zero population growth, over a long term, is the rule for most primate species in their undisturbed natural forest habitats. Rates of death are high among wild primates, up to 80% dying before adulthood, offsetting birthrates (Dittus, 1980).



No vacancies in the parks. National Parks like Yala, Wilpattu, Maduru Oya, Uda Wallawe, and Gal Oya, are large in extent, but the forests there are dry or arid and offer very little food or water for monkeys of any species. For that reason, only a few monkeys survive in the limited space near perennial streams or villus (Eisenberg and Lockhart, 1972; McKay 1973, Dittus, 1977). The Gray Langur is somewhat more tolerant of dry conditions and therefore it is more visible away from permanent water sources, than are the other primate species, but its numbers too are limited. These natural areas, with their already existing low density resident populations of primates, cannot support greater numbers of them. This is also true of smaller remnants of forests in sanctuaries and reserves in all climatic zones of Sri Lanka. In terms of wildlife management practices therefore, these areas are not suitable refugia for trans-located pest monkeys.

A recent history of obliterating primates and creating pests. The clearing of forests deprives monkeys of their home and supply of natural foods that has sustained their kinds for eons. Their fate depends on how easily a primate species can adapt to

the drastic changes, and on how humans develop the cleared forest land. Two scenarios are common. The planting of tea, rubber, or other inedible crops deprives the monkeys of food and they simply die out. Primates of all species have been wiped out over vast areas of the hill and low countries where tea (also rubber, oil palm, teak, pine) plantations have replaced natural forest over the last 200 years. Land owners have also destroyed monkeys. Only a few small pockets of primates cling to life in remnant patches of remaining forest. The second scenario occurs where the natural forest has been replaced by home gardens, wells, garbage dumps, rice fields, and vegetable plots or plantations with foods edible by primates (e.g. coconut). Under these conditions, humans have developed a buffet, or a "dansala" of water and food sources that attracts and supports primates. In short, human actions either have killed monkeys or transformed them into pests in areas where natural forest had been converted for human use. But in recent years the pest problem has gotten worse.

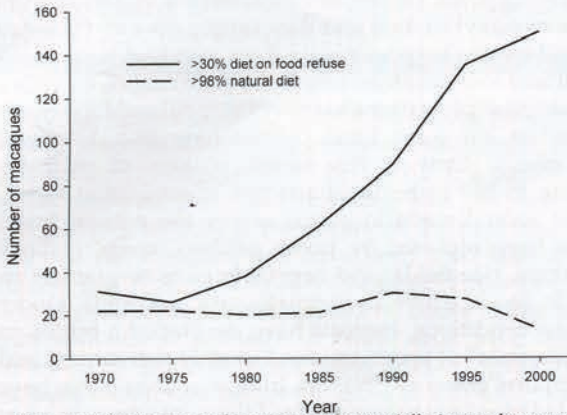


A cause for pest monkeys: a common "dansala" for Toque Macaques (Photo: Wolfgang Dittus)

Why is there a worsening conflict between humans and monkeys? At Polonnaruwa, Kandy (and elsewhere) merely 30 years ago the conflict between humans and monkeys was minimal. There appeared to be a status quo carried over from ancient times. So what has changed? The biggest change has been the growth of the supply of food and water made available to monkeys by: (a) increasing numbers of local tourists who litter rice packets and other edibles, (b) open vegetable markets and garbage bins that are accessible to monkeys, (c) tour guides, pilgrims and temples purposely feeding monkeys, (d) concession stands that cater to tourists, and (e) private households, vendors, bakeries, rice mills and hotels dumping their surplus foods into the environment where monkeys can easily access it. Leaky water taps, wells, and open drains attract monkeys during the dry season. Our studies (Dittus, 1977, 2012) have shown that monkeys that have access to human foods have increased exponentially in number, whereas those deprived of such resources have not increased at all.

Some Sri Lankan towns and villages, by way of their excess of food litter, have turned into public monkey breeding farms (not to speak of the ubiquitous crow

Number of toque macaques in relation to their diet



Macaques feeding on garbage grew exponentially in numbers over a 30 year period while those feeding on forest foods maintained zero population growth (after Dittus, 2012).

rookeries). And this ecological imbalance is spreading into the countryside. Think about the last time that you have seen a macaque monkey (or crow)? Chances are that it was near some heap of human food on a roadside.

Leaf-eating primates. Of the primates, the omnivorous Toque Macaque is most likely to be affected by human foods. The Gray and Purple-faced Langurs are typical leaf-eaters and less susceptible. The Gray Langur, inhabits mostly the dry zone forest where langur raids of home gardens is beginning to be a problem. In the wet-zone forest areas of the south-west, on the other hand, progressively more tress have been felled making way for more people and their houses. The Purple-faced Langurs, which inhabit these wet zone forests, are less prone to feed on human garbage or crops, but they may damage the many new roofs that now serve as transit bridges between the reduced numbers of trees (Dela, 1998; Rudran 2007).

How monkeys develop into pests. The Toque Macaque's natural food supply consists of much ripe fruit, which is highly seasonal, often unpredictable and widely spaced in the forest habitat.



The dry zone subspecies of Purple-faced Langur (Photo: Barney Wilczak).

The macaque's survival rests on brainy skills where curiosity, risk-taking, assertiveness and a good memory are everyday tools for success in food-finding and social competition. Macaques quickly discover new food and water sources in their environment, and they learn new strategies for exploiting them, including those introduced into their environment by humans in the form of new homes,

concession stands, temple grounds, garbage dumps and general food litter.



Macaques learn new skills quickly when challenged by environmental change (Photo: Barney Wilczak).

In contrast, the leafy food supply of the langur species is somewhat more predictable and constant. Also, their specialized digestive tracts do not favour the omnivorous human diet (Amerasinghe et al., 1971). The langurs, therefore, are less suited to develop into a pest for human gardens and property than are macaques.

But the langurs' reticence to eat human food, does not prevent people from trying to win these leaf-eaters over to in their own image, and to urge them to accept human foods as offerings, or as gestures of human kindness. Unwittingly, such gestures are creating a new pest species. The dangerous experience of large aggressive langur monkeys attacking people is all too real, but can be avoided.

People develop aggressive monkeys. Monkeys do not appreciate human sentiments of food offerings. Instead, the human act of giving food sends entirely the wrong message to a monkey; unfortunately to the detriment of the human donor (and ultimately to the monkey as well). In their own societies, monkeys do not give food to one another. Yes, of course, monkey mothers nurse their young, tolerate them in sharing food, and a group of monkey often feed in common from a large food source, such as a tree. However, any semblance to food donation that these behaviors might have stops there. Quite the opposite occurs in monkey life: they compete aggressively for food (and this is not necessarily obvious to the casual human observer). Monkey society is built on a strong hierarchy of dominance relations where the highest ranking is free to exploit all subordinates, and so on down the line of the hierarchy. The subordinates have no recourse but to accept their lowly lot. These hierarchical behaviors of rivalry and exploitation over food and water are the main mediators of deprivation and death among monkeys. The assertion of social rank translates into survival.

Therefore, when a human donates food to a monkey, the person signals his/her social inferiority to it. Having clearly established the human donor's lower

rank, the monkey now has the opinion that it is free to take food from the human loser any time! That is the rule of conduct in monkey society. When the naive human refuses to give more food, hides it in a pocket, or worse, teases the monkey by showing and withholding food, the monkey has no option but to teach the uppity-human subordinate a lesson in monkey manners: the monkey becomes aggressive in order to assert and maintain its right to take food from the human loser.

The scene is all too common: the serious bite wound inflicted by a macaque on a tourist in Yala NP (Rodrigo, 2011) was owed to the naiveté of visitors and local guides in dealing with monkeys. People do not deserve to be bitten and it could be prevented so easily. Rural hospitals occasionally treat patients bitten by monkeys - the prevailing opinion being that these biting monkeys were "mad" with rabies; it's a medical precaution. But in more than 5,000 monkeys studied we have yet to see a rabid monkey. Most likely, human bite victims behaved inappropriately in the presence of a healthy monkey.

Sri Lanka's tarnished reputation. Repeated incidents of tourists having been bitten by Sri Lankan monkeys in places like Yala National Park have been publicized in the international press and on the internet (Lonely Planet, 2012) with warnings for tourist not to visit Yala NP and other sites, lest they be bitten by monkeys and die from rabies infection. Exaggerated or not, the message is clear for authorities to implement procedures to prevent people from creating pest monkeys.

The curse of human food offering. From the monkey's point of view, there is no "thank you" for the food offering, and the inappropriate human sentiment does the monkey no favor by turning it into a pest - that ultimately might be killed for its absence of fear of humans and raiding habit.



Pilgrims create a new pest species with food offerings (Photo: Chameera Pathirathne)

WHAT DOES AND DOES NOT WORK IN REDUCING PEST MONKEYS

Attempts in dealing with monkey pest, in Sri Lanka and in other primate habitat countries, have included: Culling, chasing, translocation, sterilization, and preventing monkeys access to food. The success of these attempts has varied.

Killing Monkeys is generally not accepted as a public policy, especially in countries with strong Buddhist and Hindu ethics. Nor is it effective in the long-term (see translocation). Chasing monkeys can be effective if it is done in a correct manner.

Translocating monkeys. Translocation involves, trapping monkeys in a community where they are perceived as a problem (usually an economically empowered one), transporting them to a rural place, or to a protected area, and releasing them far away from their troublesome origin. Translocation of pest monkeys is often thought of as the best and quickest means of relieving a community of its monkey scourge. On the surface it seems like a simple and benign solution. People are relieved of pest monkeys (at least temporarily) and those promoting this activity (for a profit) mis-represent their service as conservation-friendly, giving the pest monkeys a new home in a better more natural area away from town. The authorities are happy to have a solution with which to assuage their constituents' complaints. But it's an illusion and a scam!

Experience in other countries as well as in Sri Lanka, has demonstrated repeatedly that translocation is totally ineffective and harmful to people and monkeys, and has been banned in most countries for the following reasons.

1. Shifting monkeys from one place to another, does not prevent the development of new pest monkeys, nor does it address or remove the cause of monkey overpopulation (surplus human food in the environment), or habitat fragmentation.
2. Therefore, it is only a temporary measure of relief because the void left by trans-located (or killed) monkeys is soon filled by other monkeys from surrounding areas. Monkeys are territorial; they monitor their neighbors' movements daily and soon discover that a choice predictable food source, like garbage, crop or home garden, is left undefended by their former (now absent) rival monkey neighbors. New monkeys fill the void, feed on human foods, breed, and their numbers soon swell to match the original pest populations. Wildlife managers are back to square one!
3. For people the biggest downside of translocation is the negative impact that it has on other (usually economically poor) human communities. Street-wise aggressive town monkeys that have fed on human food scraps and home gardens are expert raiders of human property. They have, to a large extent, also lost their culture of foraging for natural foods in their natural (non-existent) habitat. Capturing, transporting and releasing such street-wise monkeys into National Parks or rural environments has a drastic effect on the human communities located closest to the sites of monkey release. Translocated monkeys do not thrive in the freedom of their new forest home - as is falsely

advertised. Instead, they immediately seek out what they know best - human habitation with its familiar garbage and other easy to find foods and water. While rural communities in Sri Lanka have lived "forever" in the presence of monkeys in their surroundings and have, for the most part, established a mutual respect of avoidance between humans and monkeys, they are not prepared to deal with fearless monkey raiders. In Sri Lanka, for example, hardship has been imposed on local villagers by translocations from Badulla to Maduru Oya, from Peradeniya to Kirthibandrapura, from Kandy to Teldeniya, and to Matibokka, from Hakgala Botanical Gardens to Uda Welawe, from Hambantota to Yala, and others. In India, parties who have translocated monkeys have been sued. In other countries the practice is banned.

4. Capturing and transporting monkeys often is done in a haphazard and cruel manner that results in monkey injuries and deaths.
5. Monkeys are territorial, normally filling their occupied habitats to capacity. When translocated monkeys are released they come into conflict with resident monkeys and both parties risk injury or death.
6. The random translocation of monkeys between different subspecies habitats is detrimental to the preservation of genetic population diversity because it undermines locality-specific evolutionary adaptations.

In summary, translocation is ineffective, harmful to people and monkeys alike. It is a failed simplistic attempt at a political solution to a biological problem.

Stemming population growth. The sterilization of monkeys is a long-term measure to reduce population growth. Female monkeys mate with many different males, and one intact male is capable of inseminating many females. Castrating males therefore is not a useful exercise. Instead, sterilization needs to target reproducing females. It is done either surgically or by the administration of anti-fertility drugs. Either procedure is costly, impractical to carry out on a large scale, and it is not an immediate cure to rid a community of pest monkeys. It has been used successfully only in a small manageable population in Hong Kong.

Preventing monkey access to food. This is the best way forward, especially for the Toque Macaques (and partly the Gray Langurs), because it deals with the cause of too many monkeys near human habitation. It has two very important advantages: first, macaques immediately stop visiting areas where food and water are absent; secondly, a reduction in their food and water supply will, over the long-term, reduce their population numbers. This method has been successful at trials at Polonnaruwa and elsewhere.

Why Garbage is important. In nature, monkeys wander far and wide every day to find fruit trees or

other edibles in the forest. Feeding is hard work, takes many hours, nutrition may be poor, and any one feeding site is temporary in space and time.

Garbage, on the other hand, provides a predictable and constant supply of quality food (rice, bread, vegetables, coconut scrapings and husks). In a short time, with very little effort, monkeys can find enough to eat on garbage at a dump, in a market, in a home garden, hotel, or vendor. Being so richly rewarded they return to the same place(s) often, and they will not ignore crops or other foods found on route. Most crops are seasonal and monkeys cannot survive on them alone. But being enticed and supplemented daily by garbage gives them repeated opportunities to raid whatever else they find in transit to the garbage. All house raiding and half the problem of crop raiding can be prevented by getting rid of the perennial garbage littering homes, towns and villages.

The Purple-faced Langur, being an arboreal leaf-eater, is less susceptible to garbage, but home-garden produce sustains them, and a modified approach is recommended.

New science: guarding crops from monkeys. Scientists in the UK have developed a potent extract of lion dung that is effective in repelling English deer. Agriculturalists in Nuwara Eliya swear that cow dung spread on garden produce repels monkeys. These considerations suggest a potential for leopard feces or urin extract and other products to be developed as repellents for primates and perhaps other crop damagers such as porcupines, wild boars and squirrels. The Dehiwela zoo might serve as a leopard perfumery? The topic is wide open for productive research and potential low cost benign solutions with new technology.

ELEMENTS OF A WORKABLE STRATEGY

Any attempt to control monkey-human conflict, especially with macaques, must address the various ways in which they gain access to garbage, food stores, or crops as outlined above.

The anti-Dengue model for education. The public should be made aware of the consequences of feeding monkeys and of littering food. At present, the government has in place an active campaign to reduce the environmental conditions that lead to the spread of dengue fever. A similar dedication of funds and intensity of effort would be required to reverse the monkey pest problem.

Empowering people to prevent littering. Households, shrines and temples, hotels and vendors should be encouraged to use monkey-proof disposal containers. Composting bins are available from local suppliers. Open garbage bins and pits are totally counterproductive as they offer monkeys (and stray domestic animals) concentrated buffets. Normal bins are useless because monkeys easily tip them or otherwise open them.

Sealed municipal garbage vats. Most towns have a garbage collection system in place and refuse is dumped in the outskirts. The system of garbage collection and disposal can be revamped to prevent animals from accessing such food. Incinerators or large animal-proof garbage holding enclosures is a way forward. If edible garbage can be sealed only long enough for it to decompose, animals will not eat rot.

Fines for littering: Persons who litter food create monkey conflict problems for other citizens. For this very reason other countries fine persons who feed monkeys or litter (e.g., India, Singapore, Hong Kong, Thailand, Malaysia, Gibraltar, Indonesia, South Africa, Costa Rica, Columbia and the USA). Fines range up to S\$50,000 and 6 months imprisonment in Asia, and up to US\$ 1,000 in the USA.

Chicken wire instead of guns. Households can protect their property by disposing of edible waste in monkey-proof bins. Chicken wire over open windows prevents monkeys from entering a house. Drains can be covered and leaky taps and tanks repaired. Financial support to poor communities to enable protective measure would be far more effective, and safe for children, than supplying guns. Animals which are not rewarded with food or water for their raiding efforts stop raiding. But even a gun will not dissuade a hungry monkey if food is available.

Chasing monkeys. Dawn to dusk watchers are effective in defending a plot of crops (e.g., coconut estates), or hotel premises, against raiding monkeys. It is a simple matter of training the guards. Once monkeys have learned that no food can be gained from raiding, they seek their diet elsewhere. Unfortunately, some populations, like the endangered western Purple-faced Langur, have no natural habitat left as a retreat when chased from home gardens.

Community effort. In order for any plan of this kind to be effective, it needs all households in a community to act in concert. One deviant household or vendor with accessible garbage, food, or unguarded crops will definitely attract monkeys and cause problems for their neighbors. Therefore, a combination of education and fines for transgressors is desirable for successful implementation. The recent heightened effort by the traffic police to crack down on offending drivers is a good example of how this combination can work for the public good.

Added benefits: Preventing food litter in the environment has the additional benefit of reducing the large populations of stray dogs and other domestic animals, and large flocks of crows that prey on Sri Lanka's other bird species, some being endemics.

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REFERENCES

Amerasinghe FP, Van Cuylenberg BWB, and Hladik CM (1971). Comparative histology of the alimentary tract of Ceylon primates in correlation with the diet. *Ceylon Journal of Sciences (Biological Sciences)* 9: 75-87.

Dela JDS. (1998). The Ecology and Social Biology of a Selected Population of the Western Purplefaced Leaf Monkey (*Trachypithecus vetulus nestor*=*Presbytis senex nestor*). Ph.D. thesis. University of Peradeniya, Peradeniya.

Dittus WPJ. 1977. The socioecological basis for the conservation of the toque monkey (*Macaca sinica*) of Sri Lanka (Ceylon). In: *Primate Conservation*, HSHP. Rainier and GH.Bourne, eds., Academic Press: New York. Pp. 237-265.

Dittus WPJ. (1980). The social regulation of primate populations: a synthesis. In: *The Macaques: Studies in Ecology, Behavior and Evolution*, DG. Lindburg, ed., Van Nostrand Reinhold Co.: New York. Pp. 263-286.

Dittus WPJ. (2012). An online forum for exchanging ideas for dealing with issues of pest Monkeys. *J Primatol* 1:2

Eisenberg JF and Lockhard M. (1972). An ecological reconnaissance of Wilpattu National Park, Ceylon. *Smithsonian Contributions to Zoology* 101: 1-118.

Lonely Planet. (2012). <http://www.lonelyplanet.com/thorntree/thread.jspta?threadID=2228209>

McKay G (1973). Behavior and ecology of the Asiatic elephant in Southeastern Ceylon. *Smithsonian Contributions to Zoology* 125: 1-113

Rodrigo M. (2011). Biting the hand that feeds. *Sunday Times*, Aug 28, 2011.

Rudran R. (2007). A survey of Sri Lanka's endangered and endemic Western Purple-faced Langur (*Trachypithecus vetulus nestor*). *Prim Conserv* 22: 139 - 144

Singh M, Iqbal M, Dittus W, Sinha A, Belsare A, Walker S, Wright M, Lenin J, Chaudhuri S. (2005). Action Plan for the Control of Commensal, Non-Human Primates in Public Places. Paper.