

Our backyard wildlife: Challenges in coexisting with uneasy neighbours

Our society faces some serious challenges and we are primed to think that there are always some administrative solutions to them. A careful analysis shows that socially relevant science can tackle such challenges. We discuss one such issue involving science, society, culture and administration – the challenge of dealing with human–wildlife conflict.

India is a country of mega biodiversity. It has two biodiversity hotspots: the Western Ghats and the Eastern Himalayas. The Centre for Ecological Sciences at the Indian Institute of Science, Bangalore lists fishes, birds and mammals in India amounting to about 7%, 13% and 8% respectively, of the total species in the world. However, of the 20% of the surface area of India (640,000 sq. km) that is claimed to be under forest cover, the ‘Protected Areas’ (PAs) for wildlife amount to less than 5% (157,000 sq. km). And with a human population density exceeding 400 people/km², there is enormous pressure on the forests for resources. Furthermore, a large number of species inhabit areas outside the PAs competing with humans for the same resources, giving rise to serious human–wildlife conflicts. However, an almost divine status has been accorded to many animal species in Indian culture. Whereas western mythology largely describes stories of man conquering nature, the Indian mythological tales largely depict humans coexisting with, and befriending animals. But the increasing human–animal conflicts are also a reality. Thus, wildlife conservation has a strong social and cultural aspect in India, which the administrative strategy should take into account. Although the human–wildlife conflicts have been observed in a large number of animal species, a few such issues involving monkeys, leopards and elephants as examples are discussed here to show how intricate is the relationship between culture, society, science and administration in finding solutions.

One of the most common human–wildlife conflicts in India has been the man–monkey conflict. The two species of macaques: rhesus macaque, *Macaca mulatta* in northern India and bonnet macaque, *Macaca radiata* in southern India are commensal with humans. Apart from forests where they feed primarily on arboreal food resources, large populations of rhesus and bonnet macaques inhabit agricultural lands, roadsides and temples, where they feed on naturally occurring food resources as well as on food

items that humans offer them, or they obtain from leftovers in garbage heaps or procure by raiding crops, houses and shops. These monkeys have been regularly trapped and translocated to areas away from human habitations, and this is mostly done without paying much attention to the ecology and behaviour of these monkeys, many times leading to the death of the translocated individuals as a result of a sudden change in their habitat, or a mere translocation of conflict to another place.

It has been observed that translocation of nearly a hundred bonnet macaques from a human habitation to a rainforest region a few kilometres away, which is not their natural habitat led to the death of many monkeys and others gradually shifted to the nearby colonies of tea estate workers. Behavioural ecologists find several issues with such translocations: (a) random trapping of individuals disrupts the strong kinship bonds among the individuals of a group, (b) commensal individuals can be the potential carriers of diseases to the rainforest habitats, causing serious disease epidemics among the rainforest-dwelling species and (c) commensal individuals can prove to be easy prey for the predators, which they are not used to facing in the human-dominated landscapes. In fact, many scientific solutions such as better food storage and waste management practices have been offered, but neither the public nor the administrators have considered them seriously.

In the Valparai region of the Western Ghats in Tamil Nadu, a plateau area of about 200 sq. km was brought under tea and coffee plantations during the British rule. There are several rainforest fragments inside these estates and many endangered species such as the lion-tailed macaque, *Macaca silenus*; the flying squirrel, *Petaurista philippensis*, etc. cannot disperse among these fragments as they do in their natural habitats of contiguous forests. Scientists from the Nature Conservation Foundation, Mysore working on a rainforest restoration project in this region have identified several fast-growing native tree species to replace exotics in plantations as well as improve natural food resources for animal species such as lion-tailed macaques, squirrels and birds in fragmented rainforests. Such plant species can be grown as these are plantation-friendly and will increase food resource base for animals in the degraded forest fragments. The forest fragments can also be linked by planting such species

along streams and ridges providing at least narrow corridors for migration of animals among fragments.

A less common but more important human–wildlife conflict in India has been the man–leopard, *Panthera pardus* conflict. Over the last decade or so, leopards are increasingly being spotted in or near human-inhabited areas. Although there are occasional reports of leopards preying on domestic animals, rarely have there been attacks on human beings. However, whenever a leopard is spotted, people gather around in hundreds and pelt stones, thereby making the animal feel trapped, which can result in the animal becoming aggressive in defence. Scientists from the Centre for Wildlife Studies, Bangalore studied leopards in Maharashtra regions that were far away from any wildlife reserve and found their density in these human-dominated landscapes to be almost equal to that in the wildlife reserves. They found that these leopards feed on domestic dogs with almost no reported case of any human–leopard conflict. For a long time people had tolerated the coexistence of leopards. Recently, officials from the Forest Department trapped and translocated two leopards elsewhere. Interestingly, several cases of severe human–leopard conflict were reported from the areas (a) where the leopards were trapped, and (b) where the leopards were translocated. The scientists explained this phenomenon as follows: (i) the social organization of leopards was disturbed at the place of trapping and (ii) the leopards came into territorial conflict with the existing leopards at the site of release, both resulting in disturbed behaviour in the animals. This example shows how these social problems require a scientific understanding of the behaviour of animals as well as the attitudes and opinions of people before an administrative action is initiated.

Another major human–wildlife conflict in India has been the man–elephant conflict. It threatens the lives of both people and elephants in the areas of forest–farm–plantation landscapes. The Asian elephant *Elephas maximus*, a highly endangered species, faces elevated threat due to anthropogenic pressures, leading to intense conflicts between people and elephants in the interspersing areas. Nearly 80% of the Asian elephant population lives outside PAs in close proximity to human habitations. Impacts of human–elephant conflict result in loss of life of approximately 400 people and 100 elephants besides damage to crops and property caused by elephants annually. Huge sums of money as compensation to people go out of the government exchequer every year. Typically, most measures dealing with human–elephant conflict are purely symptomatic in nature ignoring the biological and social causes. Translocation is found to be an easy option among others and, therefore, under both public and political pressure, is often adopted as an immediate solution. Scientists in Sri Lanka have shown that translocation of elephants to new sites results in their return to the site of capture and retaliatory killings by people, besides increasing conflicts in new areas. It neither serves conflict resolution nor does it help in elephant conservation.

Coimbatore/Sathyamangalam forest divisions have witnessed a loss of nearly 80 people in accidental encounters with elephants during the last five years. Circumstantial studies have identified that the majority of these deaths resulted from the lack of sanitation facilities, which forces people living in the villages to go to open areas, a serious social issue in human–elephant conflict management. The inevitable dependency of about 100,000 humans for their livelihood and 80–100 elephants for their ranging on the Valparai plateau compels coinhabitation and has led to severe human–elephant conflicts. Loss of life in accidental encounters with elephants, a primary concern, has caused fear and trauma among people. Often people are unable to work in their fields and take part in outdoor social activities, suffering both financially and socially. They are also under constant fear of elephants breaking their houses. The antagonism towards elephants thus developed in the local people forces administrators to adopt undesirable reactive measures, such as using trucks and bursting crackers to chase away the elephants from plantations. An analysis of human–elephant conflict cases between 1994 and 2014 revealed that lack of information about the presence of elephants, absence of basic safety measures at work and at home, and a serious lapse in sanitation facilities resulted in 88% of deaths (36 out of 41). Scientists from the Nature Conservation Foundation have now developed an elephant information network (EIN) that conveys information on the presence of elephants to people via local cable television channel and over SMS to their mobile phones, while simultaneously involving local communities in mobile phone-operated elephant alert indicators in critical elephant movement areas. These measures have helped the Forest Department anti-depredation squads to reach out to conflict-prone areas and avoid damages to property. This resulted in no fatalities and 50% decline in property loss in 2013. It is interesting to note that due to this social awareness and public participation in reducing human–elephant conflict, the tolerance of people towards elephants in the Valparai region is now much more than in many plantation areas in South India, where the intensity of the conflict is actually much lower.

The examples described here illustrate that there is an immediate need to shift from internecine conflict to intelligent coexistence, by integrating scientific approaches with social causes and cultural milieu, and shifting our efforts from one-off or reactive measures to proactive ones.

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