

Position statement on the culling of the Mauritius Fruit Bat *Pteropus niger*

The Species Survival Commission (SSC) of the International Union for Conservation of Nature (IUCN) has been informed that the Government of Mauritius has decided to implement a cull of the Mauritius Fruit Bat *Pteropus niger* due to the alleged damage it causes to commercial fruit crops.

The IUCN SSC Bat Specialist Group (BSG) has closely followed the situation with Mauritian Fruit Bats for several years. In 2010 the ex-Co-Chair of the BSG, Professor Paul Racey, and the former Coordinator of the IUCN SSC Bat Red List Authority Coordinator, Mr Tony Hutson, visited Mauritius to discuss management issues relating to this species. They were able to have discussions with stakeholders, see the problem first hand, and provide advice. The Mauritius Fruit Bat is globally threatened, being listed as Vulnerable on The IUCN Red List of Threatened Species (<http://www.iucnredlist.org/details/18743/0>). The threat status of the species was last assessed in 2013. The Mauritius Fruit Bat has shown substantial range contraction since it once also had populations on the islands of Rodrigues and Réunion. The remaining population on Mauritius is consequently very important and the implementation of a cull will very likely result in an up-listing of the species from Vulnerable to Endangered or Critically Endangered on the IUCN Red List, which will damage the reputation of Mauritius as a world leader on conservation.

Through Prof Paul Racey and the University of Bristol, UK, the BSG has facilitated a post-doctoral research project implemented by the Mauritian Wildlife Foundation, and endorsed by the Ministry of Agro-Industry and Food Security, to look at the impact of fruit bats upon fruit crops, and the movement and feeding ecology of the Mauritius Fruit Bat. The results of these studies, and information from elsewhere, has moved the situation forward with some encouraging findings suggesting there are opportunities for finding a workable solution. The key information is provided below:

Damage to fruit production:

1. The high level of damage to commercial fruit that it is widely claimed to be caused by the fruit bats is not supported by the results of the research. The damage caused by the bats is fairly low and most estimates that have been published in the press are likely compounded with the impacts of other fruit predators such as birds and rats. Preliminary analysis from the post-doctoral project indicates that fruits bats account for around 11% of the damage on big mango trees and 3% on small trees while birds are responsible for 0.8% on big trees and 8% on small trees. The majority of fruits on both big and small trees were lost due to physical (not biological) causes, such as being displaced by high winds, (20% and 13% respectively). It was also found that around 9% of litchi fruits in an orchard were damaged by bats, 16% fell to the ground due to over ripening and another 13% were already over ripe on the tree.
2. The impact of fruit predators other than bats also needs careful consideration, with more focus being given to three potentially damaging introduced bird species: the Common Myna *Acridotheres tristis*, Red-whiskered Bulbul *Pycnonotus jocosus* and the Ring-necked Parakeet *Psittacula krameri*. In addition to these, the impact of the very common Black Rat *Rattus rattus* and Long-tailed Macaque *Macaca fascicularis* also needs evaluating.

3. The claims that the Mauritius Fruit Bat population is increasing exponentially and now numbers over 90,000 individuals are unlikely. The disturbance-based counting method used for estimations is not considered best practice for survey and monitoring of colonial *Pteropus* species as it results in double-counting and inflated estimates. This is in addition to further multiple counting as bats disperse widely across Mauritius and a given individual may use several roosts. Surveys by the Mauritian Wildlife Foundation suggest a population closer to 50,000 that might now be at the maximum level that the current habitat can support.

Issues surrounding the culling of fruit bats:

4. There has been extensive experience of culling fruit bats in Australia, and it has been largely ineffective, since fruit bats are highly mobile and the killed bats are replaced by others from elsewhere.
5. A cull of bats raises welfare and ethical issues since it will inevitably result in injured animals. Moreover, any cull between August and December will coincide with the breeding season when there will be pregnant or lactating female bats. Orphaned young left behind in the colony will starve to death, an inhumane termination.
6. Any cull on a native species needs to be backed by appropriate information on population trends and fluctuations, and data on breeding rates so that the impact of the cull can be accurately predicted. These data on productivity and survival are not available for the Mauritius Fruit Bat. However, other species of *Pteropus* studied in the wild all have very slow rates of reproduction and population growth. Females can at most give birth to one young per year, pregnancy can last up to six months, and mothers nurse their pups for 3-4 months. Sexual maturity is not reached until the second year. These characteristics of large fruit bats, such as the Mauritius Fruit Bat, mean that populations are slow to recover from reductions and are then highly vulnerable to further perturbations such as cyclones. Tropical cyclones result in high levels of starvation and mortality, precipitating population declines of endemic island fruit bats that can exceed 95%. The Mauritius Meteorological Services reports an increase in the number of storms reaching tropical cyclone strength since 1975, and projects further increases in frequency and intensity of cyclones. Stable populations are critical if the Mauritius Fruit Bat is to withstand the mortality caused by cyclones.
7. The Mauritius Fruit Bat plays a critical role in the pollination and seed dispersal of the country's native flora, maintaining plant diversity in the heavily fragmented landscape of Mauritius. Mauritius has already lost two (*Pteropus subniger* and *Pteropus rodricensis*) of the three species of *Pteropus* that once contributed to these ecosystem services; viability of the native landscape now hinges on the persistence of robust populations of *Pteropus niger*.

Mitigation measures:

8. There are more effective means of reducing fruit bat damage to crops than culling. Netting is by far the most effective and we congratulate the Government on the netting initiatives it is implementing. We urge that this approach is refined and extended.

9. We appreciate that the Government has been looking at other mitigation measures and we urge further studies looking at tree size reduction, framed net systems, use of panicle bags, deterrents and break crops which have been successfully implemented elsewhere.
10. We note from the post-doctoral study that there was significant wastage of fruit due to crops not being harvested early enough. This suggests that there may be opportunities for the more effective management of fruit crops.

It is appreciated that there is a conflict between the fruit bats and commercial fruit growing. The evidence we have examined indicates that bats are blamed for losses caused by other fruit predators and other causes. It is probable that the extent of damage caused by bats has been inflated by fruit growers and the popular press. Moreover, we note that in a recent study of attitudes of Mauritians towards fruit bats, over 80% of respondents **did not support hunting or culling of bats**, reflecting the fact that less than 10% of respondents held negative attitudes towards bats.

Mauritius has developed an international reputation for the high quality of its conservation which is based on innovative approaches and sound science. The work is often showcased, and Mauritius has been identified as one of the few countries where the declining trend in so many endangered species has been reversed. The IUCN Species Survival Commission urges the Government of Mauritius to develop the management of the fruit bats upon the same kind of evidence-based approaches that have worked so well for other species in the country. The IUCN SSC encourages the Government to look for non-lethal solutions to the conflict between fruit bats and commercial crops, and is available to advise on this matter – specifically through the expertise of the Bat Specialist Group.