

**Effects of refuse on wild animals on Mweya Peninsula:  
Recommendations for all Protected Areas**

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## **Introduction**

This paper<sup>1</sup> will discuss current management oriented issues, raised by our work on the banded mongooses in Queen Elizabeth National Park, that are important to Uganda Wildlife Authority Protected Area (PA) Management, animal welfare, and policy. QEPA is a UNESCO designated Biosphere Reserve, with humans and wildlife living in close proximity. QEPA's human populations are increasing in the periphery and enclave communities, with waste production and disposal similarly increasing. Poor waste disposal has negative effects on habitat, wildlife and tourism. The aim of this study by the Banded Mongoose Research Project was to support UWA in providing research and data that would be of interest and use to Management.

We have studied the effects that access to refuse has on the banded mongooses on and around Mweya Peninsula. This research, its findings and recommendations, are relevant not just to mongooses, or to Queen Elizabeth National Park, but more generally; because the human-mongoose incidents summarised in the concurrent Progress Report (11/02: Jason Gilchrist)<sup>2</sup>, and the effects of refuse-feeding summarised below, all apply to other wildlife species in any area where animals have access to human waste. Indeed, Mweya, as the headquarters of QEPA, and central tourist destination within the QEPA, has more control over waste disposal than most communities.

This paper directly tackles “management research and monitoring needs” identified in the Queen Elizabeth National Park General Management Plan 2000 (3.4.2 Research and Monitoring, page xxii). Our research is relevant to Research Priorities:

1. [Industrial] pollution
2. People and wildlife interactions
7. Problem animals

It is additionally relevant to the management of endangered species (Research Priority 3) e.g. elephants, which can be similarly attracted and affected by human refuse.

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<sup>1</sup> Based upon our presentation at the QECA Research Symposium of 1/11/02.

<sup>2</sup> One mongoose observed knocked by a speeding vehicle, and five animals with serious burn injuries.

### **Effects of refuse feeding**

The study of refuse-feeding conducted by Emily Oтали and Jason Gilchrist<sup>3</sup> found the following effects of refuse sites<sup>4</sup>:

- (1) Access to refuse dumps does not reduce home range size
- (2) Groups with dumps spend most of their time at dumps
- (3) No difference in group size or density between refuse and non refuse-feeding groups
- (4) The 2 refuse-feeding groups that shared the main dump had more fights (at the main dump)
- (5) Refuse-feeding individuals were heavier, and had larger litters
- (6) Increased pup mortality in refuse-feeding groups
- (7) Mongoose 'predators' more common at dumps

We concluded that the presence of poorly controlled human refuse within Parks affects the natural ecosystem. Refuse sites almost certainly have similar effects on other species e.g. marabou storks, warthogs and monitor lizards; that are also seen at much higher densities at refuse sites than elsewhere. Marabou storks and warthogs also appear to display high rates of aggression at refuse sites.

An additional problem of human waste is the presence of tin cans and other metal objects, buveera and other plastics, and glass. These can injure animals or be ingested: warthogs and marabous storks are commonly seen eating buveera; warthogs often get their feet stuck in metal torch rings. A monitor lizard and a mongoose have been found dead with their heads stuck in tin cans. Food waste also represents a health and disease risk to animals (Dr. Ludwig Siefert, WARM, pers comm).

The presence of animals within communities can and does lead to human-wildlife interactions, where animals become a nuisance to people; wildlife (including e.g. mongooses, warthogs, elephants, and baboons) have been known to disturb residents and to attempt to steal food in communities within Queen Elizabeth Protected Area. Baboons are a particularly dangerous nuisance, and have killed children<sup>5</sup>. There is the additional concern of potential disease transfer from animals to humans.

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<sup>3</sup> : Oтали E 1999. The effects of refuse-feeding on the behaviour, reproduction and survival of the banded mongoose, *Mungos mungo* (1788, Gmelin); MSc thesis, MUIENR.

Oтали, E and Gilchrist, JS in press. The effects of refuse feeding on body condition, reproduction and survival of banded mongooses. *Journal of Mammology*.

Gilchrist, JS and Oтали, E in press. The effects of refuse feeding on home range use, group size and inter-group encounters in the banded mongoose. *Canadian Journal of Zoology*

<sup>4</sup> Defined as points where human waste food was dumped, which therefore included Mweya village and the main dump (the gully on the Kazinga Channel side of the peninsula, where lodge waste is dumped).

<sup>5</sup> 'Baboons kill 13 kids in Bushenyi.' Pision Mugizi. *New Vision*, 30/9/02.

### **Current waste disposal management in Mweya, QECA**

Although food waste from the lodge is dumped at the main dump, and all metal and glass taken to Kasese for disposal; all the other waste produced within Mweya is dumped within the village! There are three concrete culverts within the village for disposal (and burning) of burnable waste. But for food waste, tin cans and glass bottles, there are only open 'pits' (which have filled in, and are now simply dumping 'points').

Burnable waste is often contaminated with food products, and is therefore attractive to wildlife. Although the concrete culverts are effective at preventing access by warthogs; marabou storks (that perch on the rim), and mongooses (that jump up onto the rim and can even become trapped within) can still access the waste within. The open dumping points are completely accessible to all wildlife, and offer a highly unattractive sight and smell to visitors (as well as residents!).

### **Recommendations to UWA Management**

The waste disposal system within Mweya village can be improved to minimise wild animals access to waste, and thereby subsequently reduce the density of wild animals within the village (and the problematic human-animal interactions that can result). We make the following practical recommendations for improving waste disposal management within communities in and around Protected Areas:

- For food waste, metal, and glass: deep narrow 'waste-pits' should be dug. Such a pit would need to be covered for safety – a design similar to a pit-latrines would be ideal.
- For burnable waste: concrete culverts should be covered (e.g. with a metal lid; which would be cheap and easy to produce: see Figure 1).

Improving waste disposal in villages will reduce the conflict between people and wildlife, but for Mweya, there is still the problem of the main dump. The main dump attracts all the aforementioned animals which gorge themselves on waste food – this remains undesirable within a PA. Again, a waste disposal system that minimises animals access to waste food is necessary.

### **Will these recommendations succeed?**

To test the prediction of our earlier study; that preventing the mongooses access to waste would result in them using their home range more fully, and move outwith the village; in August 2002 we began removing waste from the UWA Hostel (where the village mongoose group was to be found almost every morning waiting for the waste to be thrown), and dumping the food waste at the main dump. This had the following effects on the village mongoose group:

- They have begun using areas of their home range outside the village that had not been used for over one year!
- They spend more time actively foraging naturally (for insects), than lazing around.

Whilst animals will still use the village (mongooses foraging for insects, warthogs grazing grass), the village will not support such high numbers, and animals will spend less time in the village, if their access to waste food is constrained.

### Conclusion

Sensitive waste management is currently a very relevant issue to public and political concerns. A glance through recent editions of the New Vision includes articles, letters and debate regarding the disposal of waste in Uganda<sup>6</sup>. We hope that this paper, by summarising our earlier work on the effects of refuse on banded mongooses, including additional and recent evidence of harmful human-animal interactions, and recommending practical methods of improving waste disposal, will prove useful to QECA Park Management (for Mweya, and other communities within and around the Park) and UWA (for other protected areas in Uganda). Improving waste disposal management will improve the environment for humans and animals, minimise ecological disturbance, and remove an unsightly eyesore that afflicts areas of human habitation.

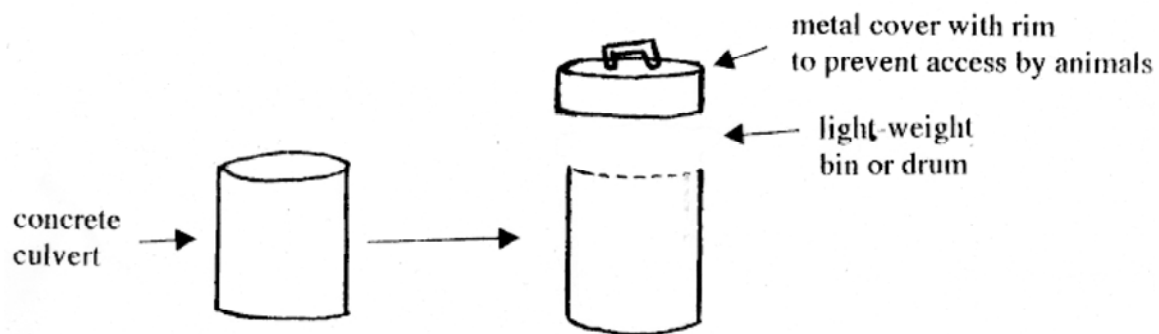


Figure 1.

<sup>6</sup> Including 'Recycle buveera' Jason Gilchrist. New Vision Letters, 27/7/02