

## Summary

This study on elephant space and habitat use was carried out in the MER, southern Mozambique. Created in 1932, with an area of 800 km<sup>2</sup>, the MER is a very important wildlife conservation area in southern Mozambique, both for elephants and other animals.

Increased human density in southern Mozambique during the last century has reduced the available habitat for wildlife, especially elephants, which have been compressed in the MER. Elephants occasionally do come into conflict with human populations outside the MER. This may explain the negative attitude of some humans on elephant conservation (de Boer & Baquete 1998).

A minimum of 205 elephants lived in the MER during October 1999.

The range preferred by elephants has not changed since Tello (1973) reported on elephant movements in the MER. However, inside this range, elephants now prefer closed areas to the open areas. 30% of the total available area of the MER and an additional area outside are utilised by elephants. On average, the 70% Adaptive kernel contour included about 10.7% of the annual home range, suggesting a high concentration of activity in a relatively small portion of the home range along the Futi River. This result is consistent with the expected dependence of the elephants on the water and their high plant biomass requirement.

The analyses of vegetation types selected inside each home range showed that forested areas with high biomass and a high plant cover as well as the Futi riverine vegetation were preferred. This suggests that the use of vegetation types can be allocated in proportion to food, water or both and the elephants may adjust the size of home range in response to decreasing habitat resources. Thus, I argue that the food availability was not a single factor determining the use of space and habitat.

The frequency of occurrence of elephants outside the MER (Tello 1973, Osborn 1996, de Boer *et al.* 2000 and de Boer & Ntumi 2001) is likely to be due to insufficient resources. This result is consistent since the forested areas are preferred by elephants and van Aarde & Fairall (2001) pointed out that 12% (97km<sup>2</sup>) of the total area of the MER is covered by sand forest while the Futi Corridor comprises some 25% (168km<sup>2</sup>) of the area.

Game numbers are presently low due to hunting and poaching in the past. These practises will have to be controlled before restocking is considered. Correia (1995) and Mafuca (1996), showed diet overlap between elephant and other big mammals, but no cases of stress due to competition have been reported yet. Past studies reported a high human density in the MER until the 1980's, which has resulted in vegetation changes. Now, the human population settlements around the MER and in the eastern areas (between Lake Munde and the sea) are increasing and new initiatives for the establishment of the Dobela project are also developing. Since elephants and people do not mix well (Leuthold 1977a) the potential for conflict is considerable. I attributed the change of elephants preference in the MER, from open areas (Tello 1973) to forested ones (de Boer *et al.* 2000) to the effect of the human disturbance.

From this and preceding sections, important conclusions for MER management can be formulated:

- The minimum and maximum home range areas required by females were estimated at 169 and 267 km<sup>2</sup>, respectively whilst the male home range was 453 km<sup>2</sup>, but these can overlap.
- Space *per se* is not a constraint on elephant movement in MER and because the home ranges can overlap, there is considerable space for increase of the elephant population size.
- Because of high variability of data, no significant differences between elephant home range sizes were observed during the dry and rainy seasons.
- Forest, Futi riverine vegetation and the hygrophilous grassland are the most preferred elephant vegetation types at the MER.
- Foraging efficiency may play a major role in the distribution of elephant.
- The establishment of the Futi Corridor will increase the area available to elephant, reduce potential conflicts with humans and decrease potential pressure on the most preferred habitats.

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