

Fences-Understanding the Effects Caused by an Impermeable Barrier

By Robin Cook

Nature reserve fences serve both positively and negatively to conservation purposes. On the one hand they protect wildlife by keeping animals away from human settlements, but on the other hand they serve as impermeable barriers to animal movement. This movement restriction becomes increasingly problematic when ecological engineers such as elephants are 'trapped' within a small reserve, as is often the case with small reserves in South Africa.



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If elephants are habituated to the effects of electric fences, they will tend to stay away from these fences by aggregating in the interior of the reserve. However, if elephants are not habituated to the effects of the electric fences, they may feel more inclined to move along the fences, often using the service roads provided. These two behavioural responses to the presence of fences result in a spatially non-uniform degree of impact of elephants on the environment. Areas may become over-utilised or degraded because of the presence of fences, similar to what has been observed in reserves with artificial water points. In South Africa's Pilanesberg National Park, researcher Abi Vanak and his colleagues found that elephants avoided the fences of the Park, possibly due to the human activity around these fences. The elephants appeared to increase their foraging pressure towards the interior of the Park, in what is known as a bunched-effect. A bunched-effect can place great pressure on resources, which is a forever present worry for conservation managers.

Therefore, it is the responsibility of conservation managers to understand the effects that fences can have on their elephants and to take into account the edge-to-area ratio when implementing fences. If a reserve has too large an edge-to-area ratio, then edge effects (such as those described above) will become more problematic over time. This is one of the many reasons why trans-border parks such as the Great Limpopo Transfrontier Park or the Associated Private Nature Reserves are implemented, as the edge-to-area ratio is decreased when more area becomes available, and therefore the edge effects created by the fences have less of an impact on the elephant movements and the available resources.

What we have learnt is that it is always important to research and understand the effects that artificial infrastructure (in or around a reserve) can have in order to provide the best tools for managing these effects and understanding why they are occurring in the first place.