

How do water points influence elephant movements?

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Elephants concentrate their feeding habits around surface water which gives rise to so-called piospheres or zones of impact around waterholes due to increased herbivory. Elephants usually restrict their foraging distance and consequentially their impacts on the vegetation, from between 15km to 17.5km from water. A high density of water points reduces the home range of elephants, causing them to not only use the landscape more intensely but also more evenly which ultimately lowers the reliance of the ecosystem. Were reserves are fenced or compressed by a high density of people on its borders, these effects are exacerbated.

What can you achieve by limiting artificial waterholes?

Closing excess waterholes would have the desired effect of increasing biodiversity at larger scales, creating refugia for vulnerable plant species and could indirectly limit population growth as resources become limited in areas where elephants are forced to congregate. With limited or no artificial waterholes, one can encourage elephant's natural contraction and expansion of their home ranges. Wet season home ranges should be far larger than dry season ranges. In the dry season, when elephants are predominantly browsers, they will restrict their range close to limited water sources. As soon as the summer rains come and surface water is more freely available, they will expand their range and also become primarily grazers, thereby offering a natural reprieve for the heavily utilized browse around water waterholes. Instead of spreading elephant impact evenly, the landscape will be used intensely in patches. You will find elephant tolerant plant species growing close to heavily utilized waterholes with impact intolerant growing in so-called refuge areas far from water. Threatened plant species are often found on uplands where water rarely persists beyond the wet season.

Monitoring the coalescence of piospheres in relation to elephant densities provides an innovative way of monitoring ecosystems for biodiversity. As the rate of expansion of poispheres will occur in direct relationship to climatic conditions and the distribution of elephants, such monitoring programmes will move away from species specific management. The closure of additional water points will allowing certain density dependent factors to naturally reduce the growth rate of elephants in areas where elephants are forced to aggregate, thereby providing a more natural means for the population to control their own numbers.

For these reasons the Kruger National Park in South Africa is closing a number of their artificial waterholes. The human population is expanding at an ever increasing rate and in affect more and more compression of elephants within their range is expected to happen across the continent. 'Human-live-fences' will have the same effect as physical fences as elephants cannot co-inhabit areas where human densities exceed 15 km². Hence it has become important for us to learn how promote natural ecosystems functioning within the limited and often unnatural environments that we have left for elephants to occupy.

