

Like a moth to a flame, tourists are attracted to areas of high biodiversity, such as wetlands. How are the wetlands and the organisms supported by it affected by the human disturbance, is it a genuine threat to wildlife populations?

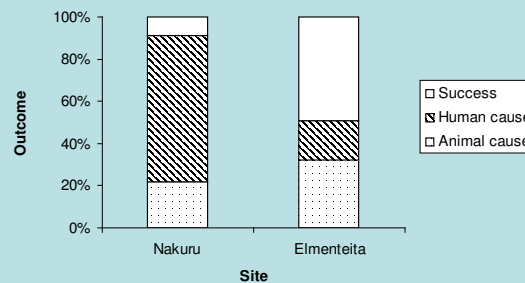
One way of measuring the well being of a habitat is to use birds as indicator species, the reason being that birds are extra vulnerable to environmental change, and therefore can announce an approaching critical situation. The Soda lakes of the Rift Valley in Kenya are popular destinations due to the endangered flocks of Lesser flamingo, *Phoeniconaias minor*. The pink carpet of flamingo entices tourists to venture far out on the mudflat of the lakes, getting close to the shoreline, bringing home the best photographic memory possible. The mudflats are ideal for birds to feed and breed on; does this constant intrusion have an effect on the shorebirds?

A survey of the population was made trying to locate breeding pairs. Artificial nests were used to compare the breeding success of the Kittlitz's Plover, *Charadrius pecuarius*, between two lakes of different human disturbance; Lake Nakuru, with high human disturbance and Lake Elmenteita, with low human disturbance. The Kittlitz's Plover is a common bird in Africa breeding in open habitat often adjacent to water, nests being only a hollow in the ground. The artificial eggs were made of plasticine enabling imprints to reveal the outcome of the eggs. The eggs were placed on the shoreline with certain criteria's and monitored with an interval of four days under a period of 28 days, resembling the incubation time for the Kittlitz's Plover.

Only 9 % of Lake Nakurus artiicial nests survived the whole exposure period. Lake Elmenteita, had higher survival rates of artificial nests – 18 %. Although these are relative survival rates they give an indication to the severity of perturbation.

Statistical tests showed that there is a difference in the probability of survival of artificial nests between the two sites.

This study aims to see the effect of human and animal disturbance, and since the unintentional mishap of flooding took almost 50 % of all nests, these data were excluded from further analysis.



As proven in earlier studies, flooding is a major threat to breeding shorebirds and the situation in The Rift Valley was no different. Flooding was the main cause of failure at both lakes, however at Lake Nakuru 1/3 of the nests were destroyed by vehicles. Although not quantitative, one thing seems clear, that high human disturbance, practically uncontrolled, as it is in Lake Nakuru, is negative for breeding shorebirds. The survey also reveals that the Kittlitz's Plover avoids breeding in areas prone to flooding and where artificial nest destruction by vehicles was high.

Typically loss of artificial eggs exceed those of natural nests, but relative rates still suggest that nests survival at Lake Nakuru is lower than at Lake Elmenteita. A previous study from 1986 revealed that hatching success of Kittlitz's Plover at Lake Nakuru only constituted 19%.

However, human disturbance seems to come with two sides. It is not only negative. Prior to this study, 4 years ago, the Kenyan Wildlife Service concluded that disturbance was intense on the shorelines of Lake Nakuru. Tourist access was partly limited and a stretch of the shoreline was totally restricted, separating the accessible part with a trench. Previously this shoreline was Kittlitz's habitat, but with the change of management the open habitat was encroached by grass, sedge and bushes. After three years, in 2005, all the openness was swallowed by vegetation.

It seems human disturbance is needed to maintain open habitat preferred by many shorebirds. More research is needed to ascertain the most favourable levels of human disturbance.



Brief info


- Wetlands naturally have high biodiversity, thus appealing for recreational activity.
- Birds are especially sensitive to environmental change.
- Other studies in habitats with high human disturbance have indicated that several shorebirds experienced decreased breeding populations or reduced breeding success.
- The Kittlitz's Plover is a common bird in Africa, not threatened and therefore allows more flexibility in researching aspects that could contribute to understanding the effects of human disturbance on waterbird populations in the African tropics.
- Information on wildlife performance in areas of high human disturbance is essential in conservation and management decisions.

Conclusion

- Human disturbance at Lake Nakuru has a negative effect on the Kittlitz's plover.
- Flooding and off road driving caused the highest losses of artificial nests.
- Natural nests and chicks were absent from shorelines where artificial nest loss was highest, and tended to coincide with areas of higher artificial nest survival.
 - Nevertheless, some level of disturbance may be needed to maintain the open habitat preferred by the Kittlitz's Plover.

Wetland biodiversity in danger?

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