

COMMUNITY AND HUMAN IMPACT

Effects of anthropogenic and animal disturbances on the water quality and aquatic macroinvertebrates in Segera Ranch, Laikipia

Abstract

No study has been carried out to assess the impact of anthropogenic or animal disturbances on the aquatic fauna in or around Laikipia, central Kenya. To address this deficiency, aquatic macroinvertebrates were sampled by using kick-net sampling in various water bodies around Segera Ranch as a biomonitoring tool for water quality assessment. The results showed that, at present, disturbance has minimal impact on macroinvertebrate diversity and moreover, water quality. In common with findings from studies of other aquatic systems, the number of families greatly varies according to substrate type and current flow. This preliminary study can be a starting point for further research on the impacts of erosion, water extraction or climate change on streams in Laikipia.

Genika Hulliger, University of Fribourg, Switzerland

Miora F. Ramanakoto, University of Antananarivo, Madagascar

Joshua Tsamba, University of Zimbabwe, Zimbabwe

2013

The impact of human presence on the use of water sites and the distribution of parasites among common African mammals in Segera Ranch, Laikipia – Kenya

Abstract

The aim of this study was to investigate the effect of human presence on wildlife at water sites and at the same time investigate the diversity and abundance of parasites in the faeces of the animals found at those water sites. Three sites were chosen inside Segera Ranch, Laikipia, Kenya. The first site was an abandoned pond, the second and third sites were rivers with rising human presence and all the sites are used by cattle. Dung counts were done and the faecal samples were analysed for Helminth parasites. Results showed that human presence had no impact on the animal's abundance at the water sites. Microscopically six different parasitic egg species were identified in the wild animals, among them *Entamoeba histolytica*, *Giardia lamblia* and *Fasciola hepatica*. The parasite load in the sampled animals did not significantly differ but further work is needed to fully understand the impact of parasites on both wildlife and cattle, especially including other parasites than Helminths.

Cecilia Hermansson, University of Gothenburg, Sweden

Kilian M. A. Egger-Peitler, University of Vienna, Austria

Monika Marxer, ETH University of Zurich, Switzerland

2013

Perceived and real sources of pollution in Lake Naivasha

Abstract

Lake Naivasha, a Ramsar site, is threatened by the recent development of the horticultural industry along its shores, overpopulation, upper catchment activities, and invasive species. We aimed to determine the community's perception of the pollution to the lake, and how this related to real sources of organic pollution. 32% of the residents considered the lake to be polluted, mostly blaming the flower farms (55%) and settlement discharge (21%). Perceptions of pollution varied between occupational sectors and location of interview. Levels of organic pollution estimated by chlorophyll-a concentrations, water parameters and water hyacinth characteristics showed that the studied locations were highly differentiated. Although contrasting information between parameters hampered determining the main source, the flower farm area appeared to harbour high levels of organic pollution. The community's perception is therefore true to some extent, although probably overestimated. As people mostly blamed the causes they were involved in, awareness-raising programs for all stakeholders will be an important step towards lake conservation.

Harriet Edeghonghon Jimoh, University of Benin, Nigeria

Catherine Vogler, University of Göttingen, Switzerland

James J. J. Waters, University of Cambridge, UK

2007

The ecological and cultural importance of the hot springs as a result of geothermal activity in the gorge

Abstract

This pilot study aims to assess the ecological and cultural importance of the gorge and its geothermal activity in Hell's Gate National Park. For the ecological effects we analyzed biodiversity in 6 hot springs and additionally looked at vegetation composition down slope of four geothermal active sites. A negative correlation has been found in species evenness with higher temperature in the pools, indicating for dominance of adapted species (*Cyanobacteria*). The effect of geothermal activity on both abiotic and biotic conditions seems to be very local. Since clean drinking water has been provided by the National Park the cultural value of the gorge for the native Maasai-communities decreased in the last decades. However a harvesting of pumice from the gorge has become an essential source of income as addition to traditional livestock keeping.

Giovanni Chiodi, Aberdeen University, Scotland

Madelon Lohbeck, Wageningen University and Research Centre, The Netherlands

Jan Malkowski, Warsaw University, Poland

2007

Tourists and conservation: a survey of conservation perspectives of tourists at Hell's Gate National Park, Naivasha, Kenya

Abstract

Tourists' knowledge and value of conservation were assessed through questionnaires at Hell's Gate National Park, Kenya. The survey showed that most tourists seemed reasonably concerned about extinction. They expressed their willingness to actively take part in conservation by donating and

paying higher park entry fees rather than actively researching and knowing about conservation activities. Handing out of information leaflets at the park entrance could be a successful way of disseminating conservation education to tourists.

Lena A. Brüstle, The Finnish Museum of Natural History, Finland

Paul G. Macharia, Colobus Trust, Kenya

Tendai N. Nyabadza, African Wildlife Foundation, Zimbabwe

2007

Disturbance by overgrazing facilitates bush encroachment by *Tarcananthus camphoratus*

Abstract

Tarcananthus camphoratus appears to be encroaching into savannah habitats. We addressed whether disturbance facilitates its encroachment. Our results found more *T. camphoratus* recruitment in livestock-grazed areas, indicated by significantly higher mean number of seedlings in comparison to the wildlife-grazed areas. Edaphic factors measured showed no significant trend. Impacts on plant species diversity were also quantified. While significant differences were observed between dense *T. camphoratus* stands and adjacent grassland areas, it is to be expected given the change of habitat structure. The major concern for managers then is not its effects on biodiversity per se, but rather the effect of reducing available graze. Furthermore, dense *T. camphoratus* stands did not affect herbivore habitat selection. We discuss life history characteristics of the plant in context of invasion biology theory to predict its encroaching success. The potential for *T. camphoratus* to be a significant savannah encroacher is evident and we suggest that the long-term monitoring of this plant is crucial.

Bernard Coetzee, University of Pretoria, South Africa

Zelalem Wodu, Addis Ababa University, Ethiopia

Lucrezia Tincani, Cambridge University, Italy/Germany

2006

Do people influence the behaviour of the Common Zebra (*Equus burchelli*) in Hell's Gate National Park?

Abstract

Hell's Gate National Park attracts many tourists through the possibility of cycling and walking in the park in addition to vehicular transport. Using the Common Zebra (*Equus burchelli*) as a model, we studied the impact of tourist disturbance on its vigilance behaviour. Intensive monitoring of 27 groups was carried out with data collected at both individual and group level. There was no overall effect of disturbance on the zebras' vigilance but, when separated into disturbance type, it was found that car and foot tourists had the largest impact. Changes in group vigilance due to a disturbance were found to be highest when 50-100m from the road; a possible factor of cue acknowledgment and interpretation. Further breakdown of vigilant group members showed juvenile individuals did not show the same vigilance responsibilities as mature members of the same group.

Julia Dunnett, University of Edinburgh, United Kingdom

Michaela Ruffner, University of Zurich, Switzerland

Pia Zaunmair, University of Salzburg, Austria

2006

The use of visitors' perceptions and expectations as a tool for improving tourism in Hell's Gate National Park

Abstract

Hell's Gate is one of Kenya's youngest National Parks, established in 1984. The park is well known for its unique topography and landscape. Also specific to the park is the ability of visitors to tour the park by walking and cycling. Both these factors present different challenges for the management of the park. The aim of this study was to profile visitors to the park in terms of nationality, transport used around the park and the distance they travelled to the park. Why visitors chose Hell's Gate rather than any park was investigated as well. Disappointing aspects of the park were examined to offer insight in to how Kenya Wildlife Service can help in improving visitor's experience. Results suggest that Europeans are the most frequent visitors to the park and cycling is the primary method of transport. Proximity to the park seems to have a major influence, with the majority of guests staying within 50 kilometres around the Park. The park is considered to give value for money and based on visitor expectations, it does not appear to be deficient in many areas. As a consequence there are relatively few disappointments and where present are inexpensive to resolve.

Barry O'Toole, Trinity College Dublin, Ireland

Kwaku Aduse-Poku, Kwame Nkrumah University of Science and Technology, Ghana

2004

Tourist disturbance and habituation by three ungulate species in Hell's Gate National Park

Abstract

Three species (Warthog, Grant's Gazelle, and Zebra) were observed in Hell's Gate National Park (Kenya) during the dry season (July) as a baseline study in animal reactions to tourists visiting the park either by car, bicycle or foot. Experiments were conducted that showed differences in the behaviour of these species towards the disturbance source depending on daytime, habitat and group size. There was a significant difference in the reaction that the animals showed in different habitats. Another main result was the variance in the animal behaviour to the distinct disturbance sources. These results can be interpreted and explained by habituation processes and disturbance factors (tourists).

Ruth Sonnweber, University of Vienna, Austria

Elke Küppers, University of Bonn, Germany

2004

Does access to kitchen waste influence the behaviour of the Black and White Colobus monkey (*Colobus guereza*) at Elsamere Conservation Centre?

Abstract

This study was conducted at Elsamere Conservation Centre Kenya to determine the influence of access to kitchen waste on the behaviour pattern of Black and White Colobus monkey (*Colobus guereza*). A group of twelve individuals was observed for nine days the first three of which they had access to kitchen waste, the next three no access and the last three accesses again. Scan sampling technique was used in which the whole troop was observed for five minutes alternatively with ten minutes rest periods for two hours in the morning, midday and evening. Mann-Whitney and

Kruskal Wallis test revealed that the monkey's diet is significantly affected by kitchen waste as they fed more frequently on plants when kitchen waste was inaccessible. It is recommended that the animals be denied access to kitchen waste as this alters their natural foraging behaviour.

Jared Bakuza, University of Dar-es-Salaam, Tanzania

Nickson Erick Otieno, Elsamere Conservation Centre, Kenya

2000

The commonly used plant species by the Maasai in the vicinity of the Hell's Gate National Park

Abstract

A survey was conducted using questionnaire interviews to determine the different uses, identities, and frequency of use and the abundance of the most commonly used plant species by the Maasai living in two communities in the vicinity of the Hell's Gate National Park. The survey covered 93 species belonging to 43 plant families. The uses of the plant species were broadly classified into four categories: Medicinal, Food, Building and Other uses. Medicinal use was determined to be the most frequent plant use. The study further indicated that the number of plants used occasionally was higher than those used regularly. This is probably due to a high proportion of medicinal use plants that are mainly used occasionally. In addition, the more common a species is the more it is used and the intermediate habitat has the most abundant plant species. Finally the shorter the walking distance to the habitat of the plant species the higher the frequency of use.

Ishmael N.A. Dodoo, Ghana Wildlife Society, Accra, Ghana

Monique I. Hunziker, University of Zurich, Switzerland

2000

A study of the visitors to the Hell's Gate National Park

Abstract

Hell's Gate National Park is, for Kenya, an exceptional park. It is the only National Park in which visitors are free to leave their vehicle and walk in the park area. This is possible because the park does not have large variety of wildlife which would endanger the safety of the visitors. In addition the park has lower entrance fees than many other Kenyan parks.

Based on this different image of the park and lower entrance fee the aim of the study was to find out whether the park would be favoured by a certain type of visitor. The study included assessing the general background of the visitors and the reasons affecting their Hell's Gate National Park visit. One aspect of the study was to investigate how much people enjoyed Hell's Gate National Park compared to other parks they have visited. We also wanted to find out whether preferring sportive leisure time activities would lead to a higher ranking of the park. Finally, the study included some aspects proposed by the KWS and those were: to find out how people got information about the park and what improvements people might suggest.

The study indicated that Hell's Gate National Park was, as expected, highly appreciated because of the freedom to walk in the park area but that not only visitors with outdoor interests enjoyed the park. The visits in other parks did not seem to affect the enjoyment of Hell's Gate visit. The freedom to walk was mentioned as one of the most important reasons for visiting the park while the low entrance fee did not have so much importance in general. Overall the study indicated that people visiting Hell's Gate National Park are pleased with their experience and appreciate the park highly.

Katharina Kowalski, University of Vienna, Austria

Marianne Kettunen, University of Turku, Finland

1999

Variability in Segera Ranch savannah plants' defences against fire and herbivores

Abstract

The Segera Ranch ecosystem is composed of savannah vegetation dominated by grasses, emerging acacia trees mainly *A. drepanolobium* and thickets in some parts of the ranch. We sampled seven species of acacia and six thicket species; we used relative branch thickness as a measure of defence against fire and a spinescence index as a defence against herbivore. We found that *Acacia* spp. have relatively thick bark and they are spinier compared to other thicket species. We concluded that fire regime is the best way to eliminate thickets as they have thinner bark compared to acacia species. There was no trade-off between fire and herbivory defences. Thus, we suggest some acacia species such as *A. drepanolobium* can survive where there is both intense herbivore and fire.

Peter Abanyam, University of Calabar, Nigeria

Thomas Sawe, Sokoine University of Agriculture, Tanzania

Kidane Hintsa, Mekelle University, Ethiopia

2013
