

BONIC – capacity building and research for wildlife management in Botswana

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BONIC was a five year (1998-2002) collaborative research and post-graduate educational project between Botswana's Department of Wildlife and National Parks (DWNP), the Department of International Environment and Development Studies (NORAGRIC) at the Norwegian University of Life Sciences, and the Norwegian Institute for Nature Research (NINA) together with Norwegian University of Science and Technology, which provided formal education (MSc and PhD degrees) for DWNP staff, as well as essential scientific knowledge for the management of Chobe National Park and its elephant population.

Project aim

The main aim of the project has been development of Botswana's competence and capacity regarding the effects of the increasing elephant population on other components of the ecosystem in the Chobe National Park. Important themes were, e.g., soil and nutrient cycling, vegetation dynamics, interactions between large herbivores and vegetation, abundance and distribution of mammals and gallinaceous birds, and aspects of the ecology of impala, buffalo and lions in the area.



The main aim of the BONIC project has been to study the effects of the increasing elephant population on other components of the ecosystem in the Chobe National Park in Botswana.

Photo: Christina Skarpe



Research output for management

Profound changes have occurred in the ecosystems of northern Chobe during the last ca. 100 years. There is written evidence that the area close to the Chobe River were open flats in the end of the 1800s. After the ivory hunt had driven elephants virtually to extinction, and many of the other herbivores had been reduced by the cattle disease "rinderpest" in the early 1900's, woodlands of different types developed along the river.

When the populations of elephants and other herbivores started to recover some decades into the last century, the woodlands were again reduced, and the dead and dying trees caused concern in Botswana. It was feared that the elephants were about to destroy the habitat, both for themselves and for other species.

However, the BONIC project has found little evidence for this. The heavily impacted vegetation close to the river is the habitat with the highest densities of animals, not only of species aggregating there in the dry season in search for water, but also in the wet season and including highly mobile species like gallinaceous birds. The woody riverine vegetation is rich in palatable browse species and the floodplains in nutritious grasses. There is little evidence of reduced carrying capacity for large herbivores in the area, rather the dominating species of browsers, grazers and mixed feeders have increased in numbers concurrently with the elephants.

Competence and capacity

The most important contribution by the BONIC project to a scientifically based management of the Chobe National Park is probably the formal and informal training of DWNP staff. Currently two former BONIC PhD students have positions as Head of Research in DWNP, one at the headquarters in Gaborone and another at Kasane with responsibility for Chobe National Park. The project has also contributed research results of high significance for the management of the park and its elephant population. One such finding is that the famous riparian woodlands along the river, allegedly destroyed by the elephants, were an artefact, established when herbivore populations were artificially low approximately 100 years ago. Although elephants later killed many of the old trees, regeneration is hampered primarily by small browsers, such as impalas. This means that a reduction of the elephant population would not help to re-establish the woodlands, unless the populations of smaller browsers were also strongly reduced.

Further, BONIC studies have found that, contrary to the general belief, many large herbivores, including buffalo, impala and the rare puku, increase in numbers concurrently with the elephants. A reason for this is that elephants at least in some cases facilitate smaller browsers and grazers more than they compete with or reduce the habitat for them. In this sense the Chobe ecosystem is different from many other areas in southern Africa with increasing elephant populations.

BONIC output

Botswanan MSc theses: 8 (6 funded by BONIC, 2 from other sources),

Other MSc theses: 3 (1 completed, 2 in progress; funded from other sources)

Botswanan PhD theses: 4 (3 completed, 1 with dissertation late 2006; 2 of the PhDs are presently in leading research positions in DWNP, 1 has a leading research position in the Ministry of Agriculture)

Other PhD theses: 2 (1 fully and 1 partly attached to the project; funded from other sources)

Number of international scientific publications (as of Aug. 2006): 17

Number of other publications: 32 (29 conference contributions, 3 popular articles)

Important scientific basis provided for the management of Chobe National Park:

- PhD educated DWNP staff in leading research positions
- Other formally and informally trained DWNP staff at different levels
- Knowledge on the historic development of the Chobe ecosystem following decline and recovery of the populations of elephants and other large herbivores.
- Improved understanding of how elephants and smaller browsers interact to control the riverine woodland vegetation
- Improved understanding of how elephants under some conditions directly and indirectly facilitate other grazing and browsing herbivores more than they compete with or reduce habitat for them.

For more information see:

Skarpe, C. et al. 2004. The return of the giants; Ecological effects of an increasing elephant population. - *Ambio* 33: 276-282