CONSERVATION AND MANAGEMENT OF AFRICAN ELEPHANTS

LTSER ZONE ATELIER & HWANGE, ZIMBABWE - LTER-FRANCE

IMPACT SHEET #10

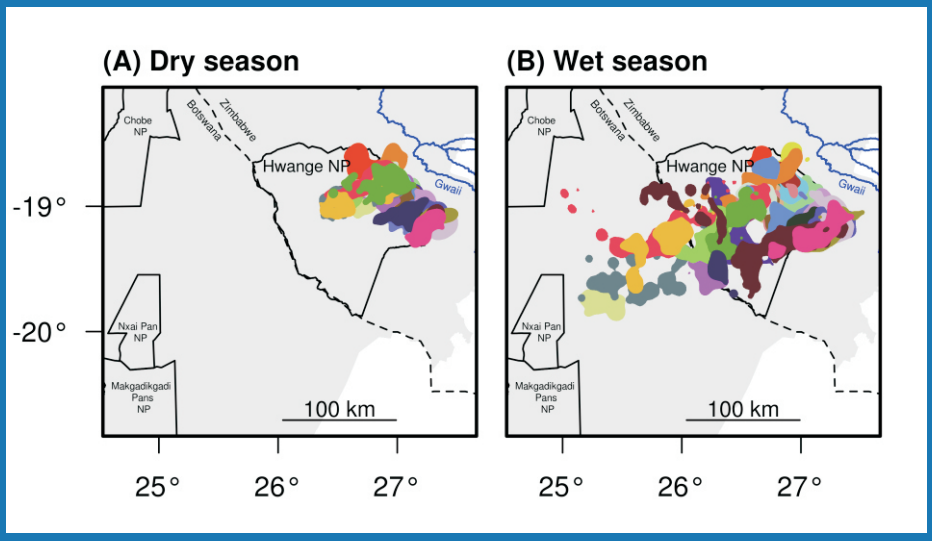
Hwange National Park hosts one of the largest populations of the African elephant (*Loxodonta africana*), an emblematic species of great ecological and cultural value. Few large elephant populations remain, and understanding the functioning of those is thus critical. In particular, one needs to know how climatic fluctuations and human activities affect those populations, as well as how these populations can be connected with others.

AIMS

- To describe and understand the fluctuations in abundance in time and space of the elephant population hosted by Hwange National Park.
- To predict how climate change and human practices (e.g. water development) could affect this population and movements in and outside the Park, including transboundary movements.
- To offer guidelines on how to best manage the population with regard to conservation and socio-economic objectives.

RESEARCH

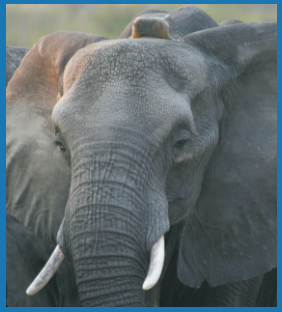
The research revealed that the elephant population is regulated by the availability and distribution of waterholes in the dry season. Elephant families cannot forage further than 15 km from water in the dry season, but try to avoid areas near water that become depleted. Water provision by the Park institution or lodges, through artificial waterholes, strongly buffers the effect of natural climatic variability on the elephant population, and ultimately determines the size and distribution of the elephant population. However, more than 20% of the elephants are migrants spending the wet season in the neighboring country, Botswana, sometimes over 200 km away from the dry season ranges.



Elephant home range distributions in dry and wet season.

OUTCOME - IMPACT

- Clarification of the role of climate, water and artificial water provision in the dynamics of the elephant population;
- Setting the goal of the identification of functional and acceptable corridors in multiple land-use landscapes;
- Highlighted the critical need for a regional elephant management strategy.



Elephant GPS tracking

Camera-trap picture of an elephant with GPS collar

LTSER ZONE ATELIER & HWANGE, ZIMBABWE; LTER FRANCE

COORDINATOR: CENTRE D'ECOLOGIE FONCTIONNELLE ET EVOLUTIVE
CONTACT: SIMON.CHAMAILLE@CEFE.CNRS.FR

(copyright Chloe Guerbois)

Elephants aggregate near artificial waterholes during the dry season when natural pans have dried up. In these artificial waterholes water is pumped (using diesel pump, windmill or solar pumps) from an underground reserve. Water availability in the landscape is thus under human control.

PRIORITY THEMES

BIODIVERSITY

WATER

PRODUCTION

SERVICES

INNOVATION

PLANNING / MANAGEMENT

SOCIETY

RESILIENCE

OTHER?

PRIORITY ECOSYSTEM SERVICES

PROVISIONING

REGULATING

CULTURAL

BEQUEST, INTRINSIC, EXISTENCE; RECREATIONAL, TOURISM & LIFE STYLE

SUPPORTING

AREA OF RELEVANCE, ACCORDING TO SDG

SDG - UN SUSTAINABLE DEVELOPMENT GOALS

FURTHER INFORMATION

Chamaillé Jammes, S., Fritz, H., Valeix, M., Murindagomo, F. & Clobert, J. (2008). Resource variability, aggregation and direct density dependence in an open context: the local regulation of an African elephant population. Journal of Animal Ecology, 77(1), 135-144.

Tshipa, A., Valls-Fox, H., Fritz, H., Collins, K., Sebele, L., Mundy, P. & Chamaillé-Jammes, S. (2017). Partial migration links local surface-water management to large-scale elephant conservation in the world's largest transfrontier conservation area. Biological Conservation, 215, 46-50.

Valls-Fox, H., De Garine-Wichatitsky, M., Fritz, H. & Chamaillé-Jammes, S. (2018). Resource depletion versus landscape complementation: habitat selection by a multiple central place forager. Landscape Ecology, 33(1), 127-140.

PROJECT - EUROPEAN LONG-TERM ECOSYSTEM AND SOCIO-ECOLOGICAL RESEARCH INFRASTRUCTURE
FUNDED BY H2020-INFRAIA-2014-2015 654359