

Rainfall in arid zones: possible effects of climate change on the population ecology of blue cranes

Res Altwegg & Mark D. Anderson

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Email Altwegg@sanbi.org

Summary

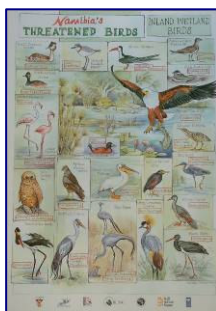
1. Understanding the demographic mechanisms through which climate affects population dynamics is critical for predicting climate change impacts on biodiversity. In arid habitats, rainfall is the most important forcing climatic factor. Rainfall in arid zones is typically variable and unpredictable, and we therefore hypothesise that its seasonality and variability may be as important for the population ecology of arid zone animals as its total amount.
2. Here we examine the effect of these aspects of rainfall on reproduction and age specific survival of blue cranes (*Anthropoides paradiseus* Lichtenstein) in the semi-arid eastern Nama Karoo, South Africa. We then use our results to predict the effect of changes in rainfall at the population level.
3. Using combined capture-mark-resighting and dead-recovery models, we estimated average survival of cranes to be 0.53 in their first year, 0.73 in their second and third year, and 0.96 for older birds.
4. We distinguished between three seasons, based on the blue cranes' breeding phenology: early breeding season, late breeding season and nonbreeding season. Cranes survived better with increasing rainfall during the late but not early breeding season. Based on road counts and success of monitored nests, reproduction was positively associated with rainfall during the early but not late breeding season.
5. A matrix population model predicted that population growth rate would increase with increasing rainfall. A stochastic analysis showed that variation in early breeding season rainfall increased population growth slightly due to the nonlinear relationship between rainfall and reproduction. This effect was opposed by the effect of variation in late breeding season rainfall on survival and overall, variation in rainfall had a negligible effect on population growth.
6. Our results allow predictions to be made for a range of climate-change scenarios. For example, a shift in seasonality with drier springs but wetter summers would likely decrease reproduction but increase survival, with little overall effect on population growth.

Key-words: capture-mark-recapture, climate forcing, environmental stochasticity, Leslie matrix, ring recovery

GENERAL CRANE/WETLAND BIRD NEWS

Poster series on Namibia's threatened bird species

A new set of three posters on Namibia's threatened bird species features the attractive artwork of well-known local artist Christine Marais. The series focuses on 60



species of cranes/inland wetland birds, raptors and coastal/marine birds that are currently Red-Listed according to Simmons R.E. & Brown C.J. 2006 (Birds to watch in Namibia: Red, Rare and Endemic Species. Unpublished report, National Biodiversity Programme, Windhoek). The poster series is funded by the GEF Small Grants Programme and the NACOMA Project. Please contact us at email ecoserve@iway.na for details of where you may collect your copies of these posters – unfortunately too heavy to send by post!

The Namibian Biodiversity Database

(NaBiD; www.biodiversity.org.na)

Dr John Irish, Gobabeb Training and Research Centre - EON Co-ordinator <http://www.gobabebtrc.org>, email jirish@mweb.com.na
& Alice Jarvis, email tr_aj@mweb.com.na

The Namibian Biodiversity Database currently houses 209 000 distribution records for 17 000 Namibian plant and animal species from terrestrial, aquatic and marine habitats. Various sources of information are used, including existing atlases and other databases, the literature, museum specimens and unpublished records. The database includes bird atlas data (quarter degree grids); and raptor road count data (1 km resolution). The resulting database holds a huge amount of data and allows the easy extraction of information. The website represents the first steps towards putting Namibia's bird data into the public domain. The initiative was funded by the Namibia Environmental Fund through DANIDA. Of particular interest is the web version of the Namibian Bird Atlas: <http://www.biodiversity.org.na/birds/birdhome.php>. Here you can see distribution maps for individual species, or generate bird lists for a particular QDS or protected area. Other parts of the site present wetland bird counts, raptor road counts, nest records or museum specimen data (this represents the *status quo* as it was when the Avifaunal Atlas was produced in ca. 2000). Your feedback on the website, comments and suggestions are welcome! (Please contact Alice for the Bird Atlas and other associated bird pages; and John for the rest of the site.)

An investigation of wetland birds using reeds alongside the Okavango River and the impact of reed harvesting on those birds

Josua Ndeliimona, Polytechnic intern in Rundu, email s200641573@students.polytechnic.edu.na



Here is a short report on a project funded by the GEF Small Grants Programme, through the Namibia Crane Working Group and supervised by Shirley Bethune. The research will be done by the end of May and the final report will be submitted by early July 2009. The project has

the following objectives:

1. At each site, map the distribution of endemic, rare, and endangered bird species as given in the list provided by NBCWG, and birds of common interest to be given by the Kavango Bird Club tour guides.
2. Map the distribution of reeds at selected sites, and choose one reedbed at each site for further study.
3. Investigate which species of the wetland birds use the reeds or reedbeds for breeding, perching, hunting, sheltering, and feeding, at regular intervals over the period of three months.
4. Investigate impact of reed harvesting on those birds.

The following outcomes are expected:

1. An annotated list of birds that depend on reeds for breeding, perching, hunting, sheltering and feeding.
2. A distribution map for a list of birds given under the categories in Appendix 1 and for the selected sites.
3. Information on where, when and how reeds are harvested, by whom and their impact on birds.
4. More reed harvesting is expected to be found in the villages than in protected or semi-protected areas.
5. Recommendations on how best to reduce habitat destruction and hopefully possible solutions will be provided.

News from Bushmanland

Dries Alberts, MET Tsumkwe

17/4/09: The water in Nyae Nyae Pans has finally gone and the cranes have left. We had a lot of Wattled Cranes – mostly 60-70, one group of 42; but no Blue Cranes.

White Stork sightings

Marion Klingelhoefter, email namtours@iafrica.com.na

On 1/1/09 we counted 14 White Storks 15 km inside Botswana, after the Ngoma border post, in the area bordering on Chobe. They were right next to the road.

New ICF/EWT Partnership for African Cranes

Debbie Thiart, Grus Grapevine March 2009

Website: www.ewt.org.za email: crane@ewt.org.za,
blog : <http://cranemania.wildlifedirect.org>

From 1 March 2009, the Endangered Wildlife Trust's (EWT) South African Crane Working Group (SACWG) and the International Crane Foundation (ICF) / EWT Partnership's African Cranes, Wetlands and Communities (ACWAC) amalgamated under the "ICF/EWT Partnership for African Cranes". The new structure offers increased opportunities for networking, shared learning and, in general, greater efficiency and involvement in all projects that we support across Africa.

The group will be managed by Kerryn Morrison, assisted by Debbie Thiart and Cynthia Chigangaidze. Osiman Mabhachi will coordinate and support the community based projects that are assisted in Africa. A full-time GIS and Database coordinator position is planned, to assist with projects across Africa. The SA projects based locally in key crane regions will continue in a similar way to now, except with an exciting new strategy in place for each. These projects will operate under the EWT banner in South Africa.

For further details please contact Kerryn on Kerrynm@ewt.org.za or 082 877 5126.

WHITE PELICAN BREEDING AT HARDAP DAM, FEBRUARY 2009

Holger Kolberg, MET Directorate Scientific Services
Email holgerk@mweb.com.na



Pelican breeding at Hardap Dam, February 2009
(photo Holger Kolberg)

Early in February 2009 I had the opportunity to check up on pelican breeding activity at Hardap. There are three islands now because the dam is currently quite low (50%) – the "regular" bird island, then a smaller, rocky one to the dam wall side of that and then a sandbank on the other side of bird island. On the small rocky island about 20 pairs were breeding (we didn't go onto this island). On the main island I guesstimated about 200 nests. There were a few (± 15) small black chicks, the rest all eggs that were just busy hatching so we left the island very quickly but managed to find five colour rings and three metal ones. On the sandbank there are probably another 150 nests, all with eggs still. The problem with this island is that if the water level rises about 50cm then the nests will be flooded, if the water drops much further there will be a shallow connection to the mainland and jackals will have access. So this colony is basically doomed one way or the other. My total pelican count for the dam was 736 plus 9 Pink-backed Pelicans although I'm sure some of the pelicans that I counted as immature White Pelicans may in fact have been Pink-backed ones.

PELICAN AIRLIFT

Dr Hu Berry, email ecoguide@iway.na

(Published in *Flamingo* February 2007; see *Namibia Crane News* No 41, March 2009 p5-6 for Part I of this report)

It was 1971 and the Great White Pelican was determined to breed. Propitious rains fell across many parts of the country, changing the face of Etosha Pan from a desiccated, saline desert into a vast, ephemeral but shallow lagoon. To its north, deluges on the Angolan highlands brought to torrents of water, reverently referred to by the Owambos as *efundja* (meaning flood), coursing through the maze of *oshanas*. These transient water courses converge on Lake Oponono, overflowing into the Ekuma River, which in turn drains into the great Pan. Initially targeting Oponono, about 3 000 pelicans began nesting on islands in June, and before long their eggs dotted the sandbanks. The local fisher folk soon discovered and harvested this rich source of protein, causing the pelicans to abandon their nests. The urge to reproduce remained unsatisfied, sending the pelicans