Introduction

- The Blue Crane (Anthropoides paradiseus) is nearly endemic to South Africa, with a small breeding population at Etosha National Park in Namibia.
- It is CITES (Appendix II) and IUCN Red Listed (vulnerable).
- The South African Blue Crane population can be divided into three main strongholds (subpopulations): the eastern grasslands, central Karoo, and south-western Cape (Fig. 1).
- Blue Cranes are known to be monogamous but whether they show sex-biased philopatric behaviour (returning to the same nesting sites) is yet unknown.

Aims

1. To determine the patterns of relatedness within the South African population.
2. To determine the gene flow within and between the South African and Namibian populations, including whether this gene flow is sex-biased due to philopatry.

Materials & Methods

- Optimisation of 2 molecular sexing markers
- Optimisation of a 2nd microsatellite panel of 4 loci
- Multiplex PCR of polymorphic microsatellites and sexing locus
- Fragment analysis with labelled dNTPs (GeneScan)
- Fragment analysis with labelled primers (GeneScan)
- Allele scoring using GeneMarker
- Phylogeographic and population genetics data analyses

Results

- 95 individuals sexed (Fig. 2).
- No clustering for the 2 populations in PCoA plot (Fig. 3) or STRUCTURE analysis.
- Genetic distance between male individuals not positively correlated with spatial distance.
- No significant spatial clustering of related individuals within the South African population.
- Significantly lower allelic richness value for the Namibian population.
- Low but significant $F_{st}$ value between the two populations.
- GENELAND shows one cluster for Namibia and one for the South African population (Fig. 4) at K = 2.

Conclusion

- There is a lack of genetic differentiation and sex-biased gene flow between the two populations, as well as within the South African population.
- Indications of subtle population structure were revealed.
- The Namibian population has a significantly lower level of molecular genetic variation.
- Relevance of the study: the two populations can currently be managed together for conservation purposes.

References

3. Van Velden, J., 2016 Cranes and crops: investigating the viability of Blue Cranes in agricultural lands of the Western Cape.

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