

Tracking flagship wetland bird species in Namibia

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- Tracking flagship wetland birds to identify areas outside protected areas for targetted conservation action

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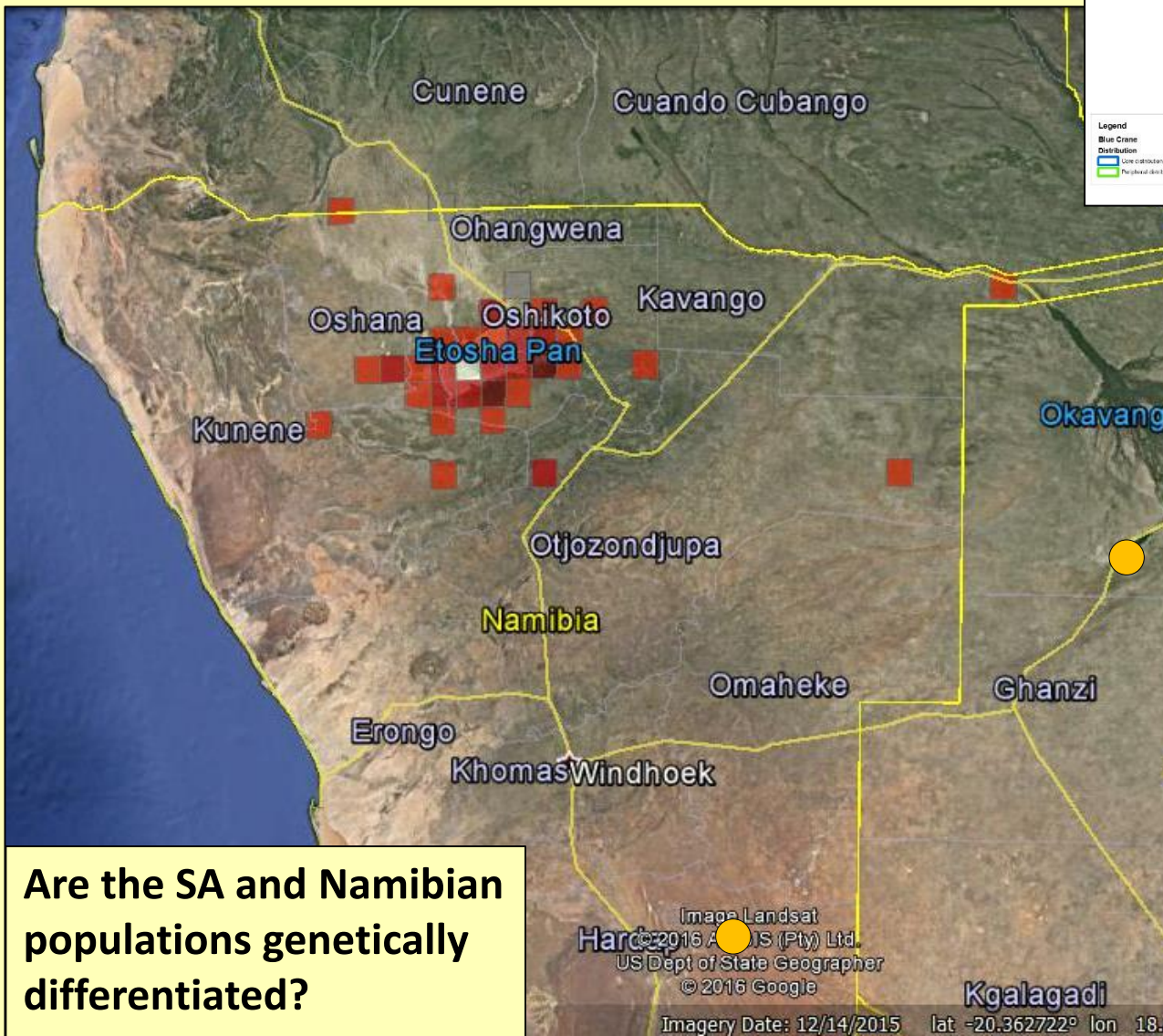
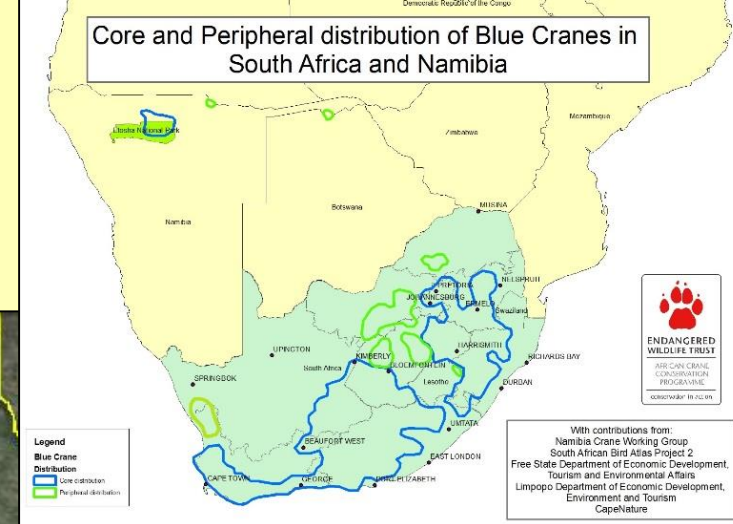


The Namibia Blue Crane Project

Namibia Crane Working Group



Distribution and threats to Blue Cranes



ENDEMIC to s Africa:

- South Africa
- Namibia
- (Botswana)

THREATS IN NAMIBIA:

- **Fragmented and genetically isolated population**
- **Human encroachment**
- **Long-term changes in water availability**

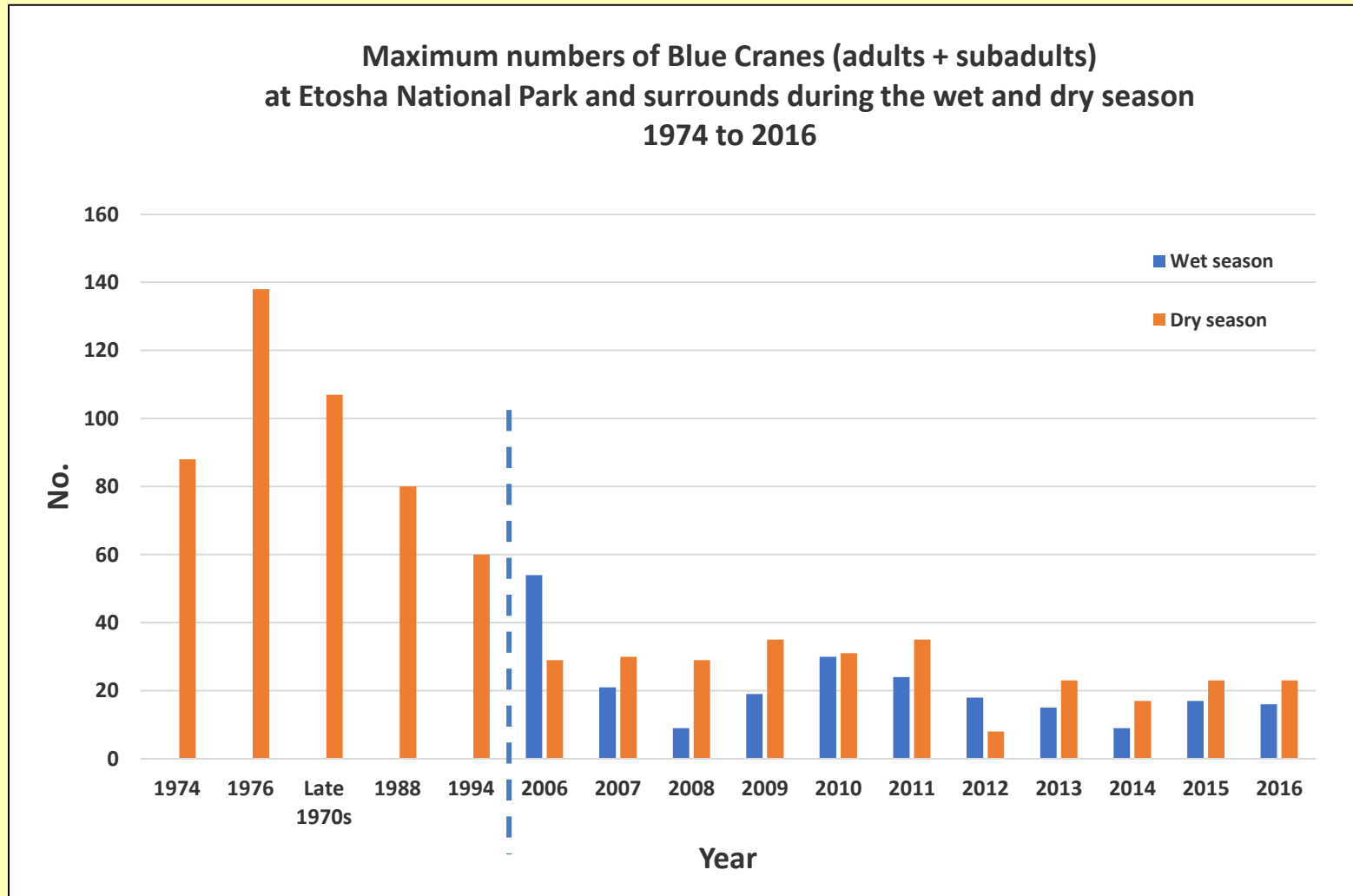
Are the SA and Namibian populations genetically differentiated?

Numbers and conservation status of Blue Cranes

Global population: 25,000

Namibia: **23?** In decline

Critically Endangered in Namibia, Near Threatened in SA, Globally Vulnerable



Known movements of Blue Cranes in South Africa

Colour ringing ($n = 296$) and satellite telemetry ($n = 10$; 1996-1999) in SA showed only **short nomadic movements** (max. 95 km); seasonal altitude-related migration in east (McCann *et al.* 2001).

***No confirmed movements to or from Namibia.**

Recent studies on colour ringing ($n = 649$) in SA still show **short nomadic movements** (average 25 km from natal point); only one movement of 500+ km; high **regional fidelity** (Van Velden *et al.* 2016; 11 satellite trackers fitted (7 still active): **small localised movements** (6-20 km); roost sites (T Smith EWT pers. comm.)

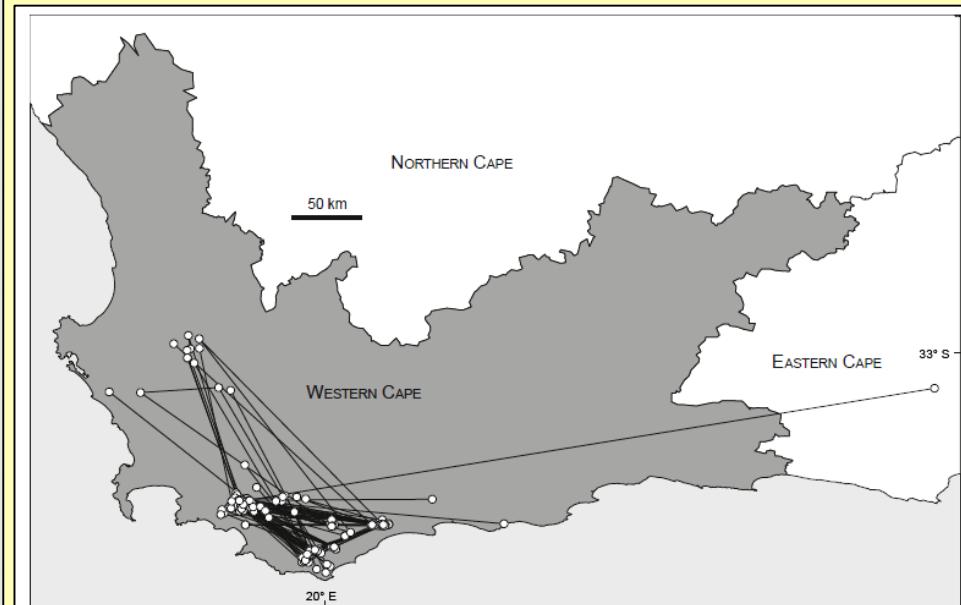
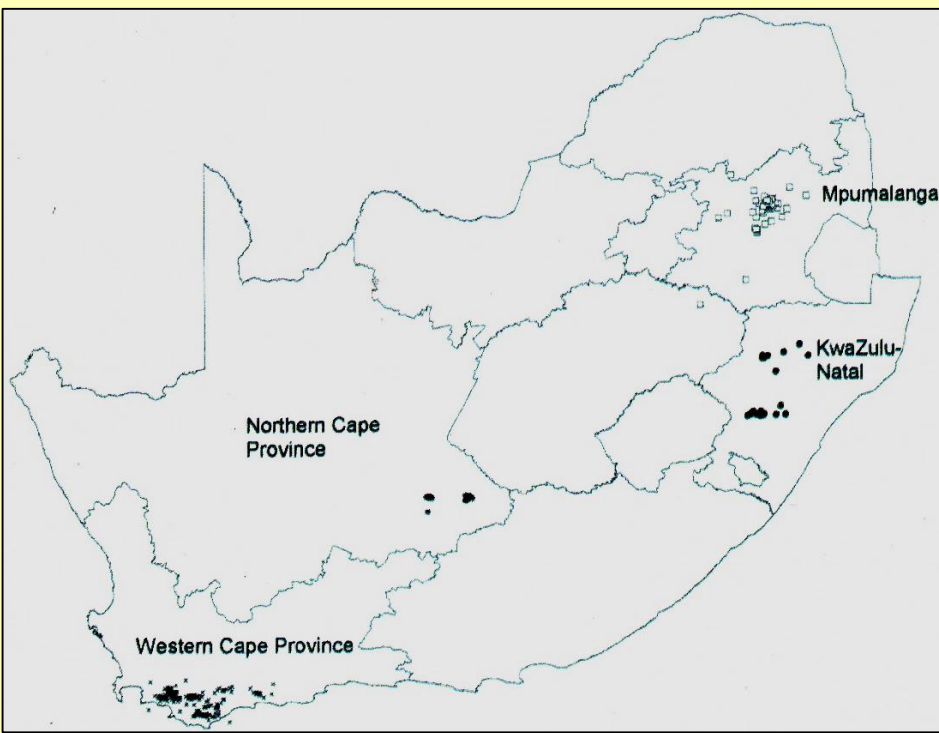


Figure 3: Blue Crane movements >20 km, based on resightings of individuals ringed in the Western Cape ($n = 62$)

Tracking cranes in United States

Tracking of Sandhill Cranes in United States (Dave Brandt)

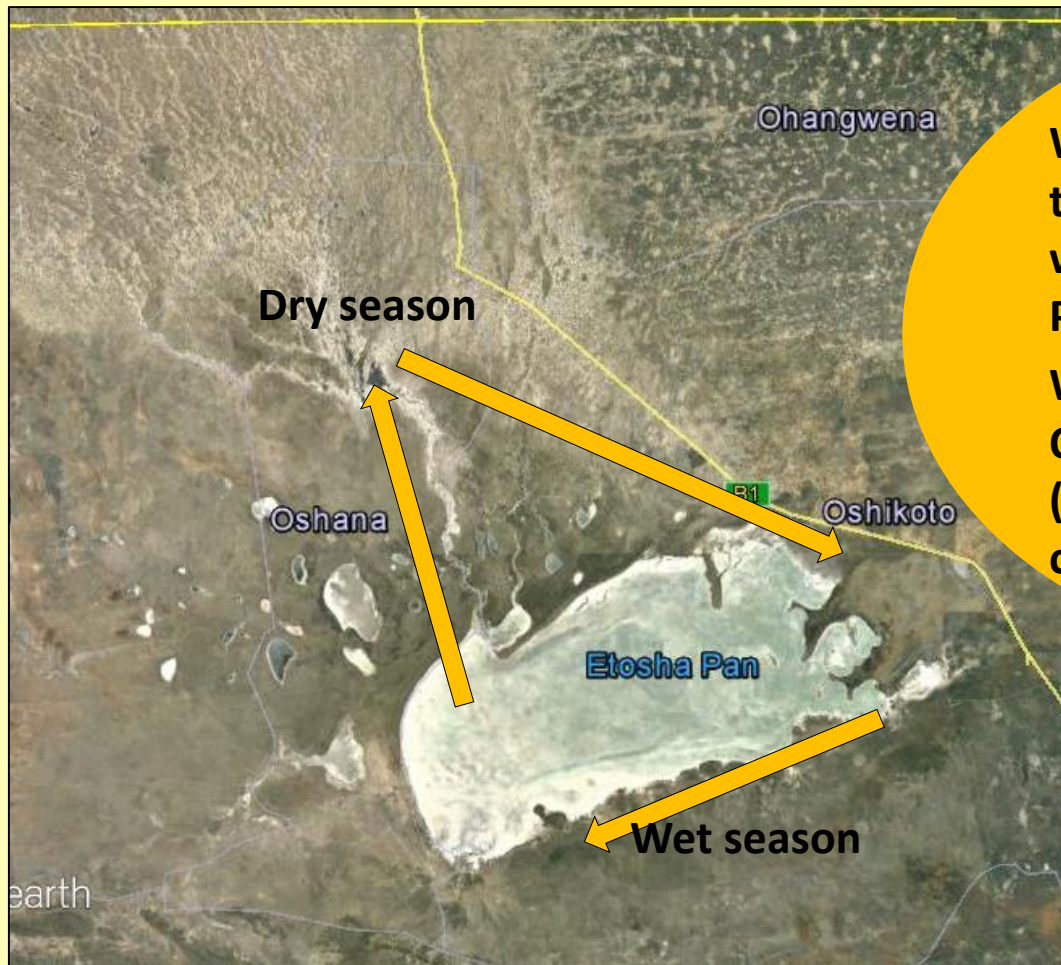
- **>150 standard PTTs on Sandhill Cranes**
- **18 leg-mounts on Sandhill and 45 on Whooping Cranes**

Purpose: to track chronology of use and use of fall staging areas and wintering grounds, in order to target harvest

Movements across US and into Canada and Russia

Known movements of Blue Cranes in the Etosha area

Seasonal cycle at Etosha: breed on Pan edge in **wet season**; after fledging move northwards out of Park, e.g. to Omadhiya lakes (Lake Oponono) in the **dry season**. Return via Andoni before the first rains.

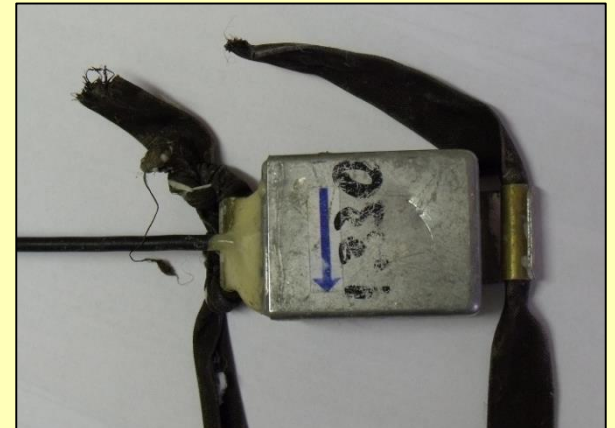


What are the reasons for these seasonal movements - why do the birds leave the Park?

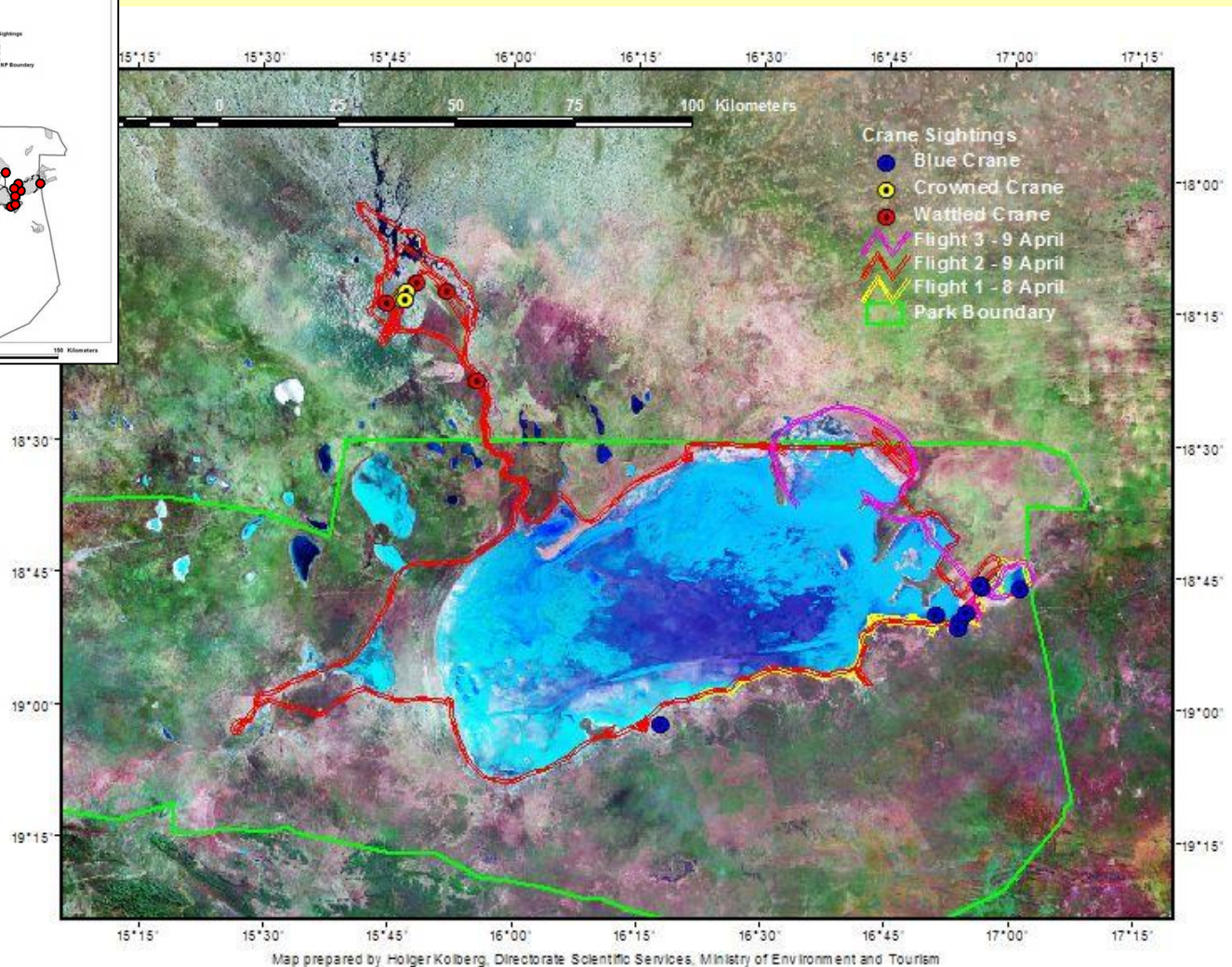
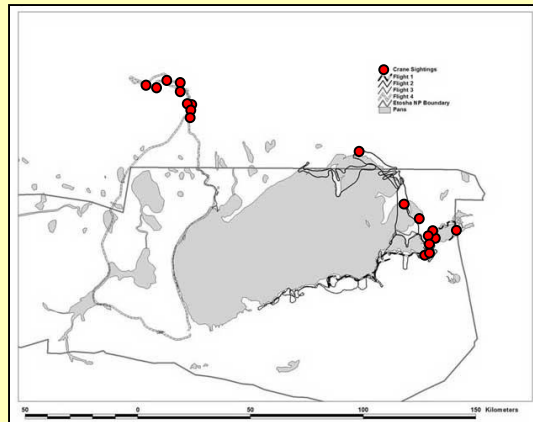
Which areas other than Lake Oponono do the cranes use (so that conservation efforts can be targeted)?

Census/tracking methods for Blue Cranes

- Ground and aerial surveys (1988, 1994; 2006 – 2016)
- 31 birds **ringed** (2006 – 2016; movements up to 120 km)
- 5 birds fitted with **radio/VHF** transmitters (2007 – 2011; movements 50-120 km)
- 4 GPS **satellite** trackers fitted (2008 – 2016)

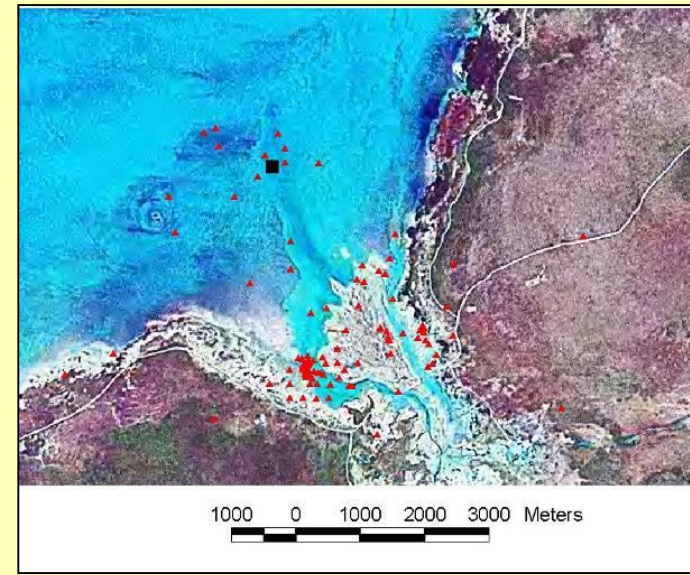
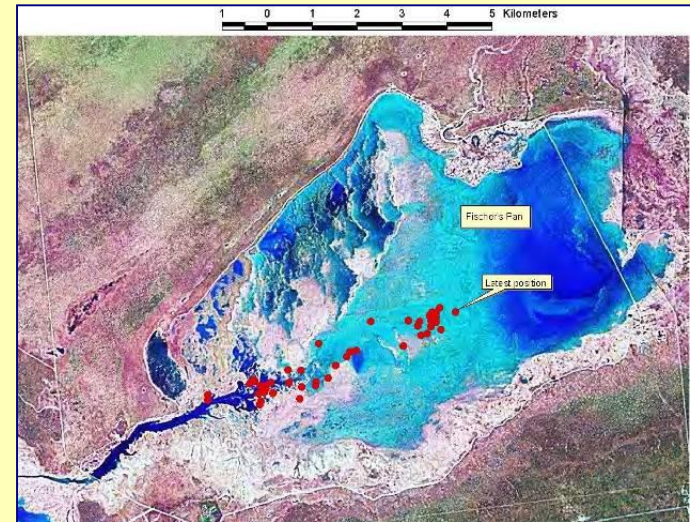


Distribution of Blue Cranes in the Etosha area according to aerial census (wet season)



Satellite tracking results to date

- 8/4/08, large adult at Namutoni. Transmitted until 26/4/08: **device preened into feathers**; bird seen subsequently.
- 22/4/10, large chick at Springbokfontein. Transmitted well for about two weeks, but **chick was preyed upon** before it fledged.
- 7/4/11, large, just-fledging juvenile east of Salvadora. Transmitted until 2/5/11, after which **no further signals** were received. On 29/10/12 the **bird turned up at Kahenge**, 120 km west of Rundu and 300 km north-east of Salvadora. Transmitter was still in place, but not transmitting. Bird unfortunately did not survive.



Satellite tracking results to date

- 5/4/16, large, almost fledging juvenile at Charitsaub. **Solar leg-mount** transmitted well and local movements were recorded. Flew 49 km north-west to the (dry) Ekuma River mouth on 19/5/16; **juvenile was preyed upon**.



Tracking results to date: habitats used

Etosha



Lake Oponono



Is it about food?



The cranes roost in water – predator evasion

Where else do they go? - looking further afield

No cranes recorded at Oponono from September 2007 – August 2010

Suitable habitats in southern **Angola** ground-truthed, flight 2007, further investigations 2014

* A Blue Crane arrived at Kahenge, 300 km east of Salvadora, on 29/10/12



Limitations/challenges of tracking

- Price of GPS trackers and tracking
- Difficulties of capture, especially older birds (easier to capture chicks); narrow window of opportunity
- Birds may be preyed upon (especially young birds)
- Small sample size - too few birds left

The way forward

- **What do Blue Cranes in Namibia need, so that conservation efforts can be directed more effectively?**
- **Why do they leave the Park?**
- **Apart from Lake Oponono, where else do they go?**

Tracking the flight paths of flamingos

NamPower/Namibia Nature Foundation Strategic Partnership



Numbers, conservation status and threats

GREATER FLAMINGO

Phoenicopterus roseus

Global population: 680,000 (max)

Population in Namibia:

41,000 – 51,000 adults

***Vulnerable* in Namibia**

THREATS

Low breeding frequency and success, water abstraction, reduced rainfall, pesticides, hydrogen-sulphide eruptions, **collisions with power lines**, disturbance by aircraft

LESSER FLAMINGO

Phoeniconaias minor

Global population: 3.2 million (max)

Population in Namibia:

40,000 – 55,400 adults

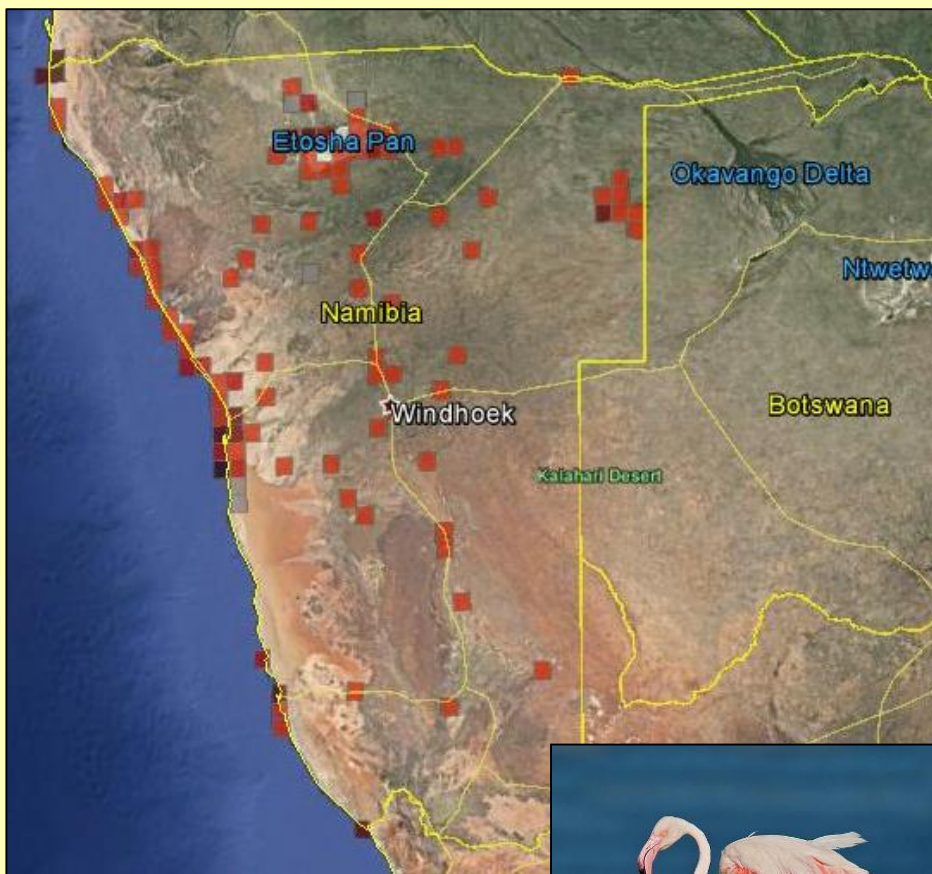
***Vulnerable* in Namibia, Globally**

Near Threatened

THREATS

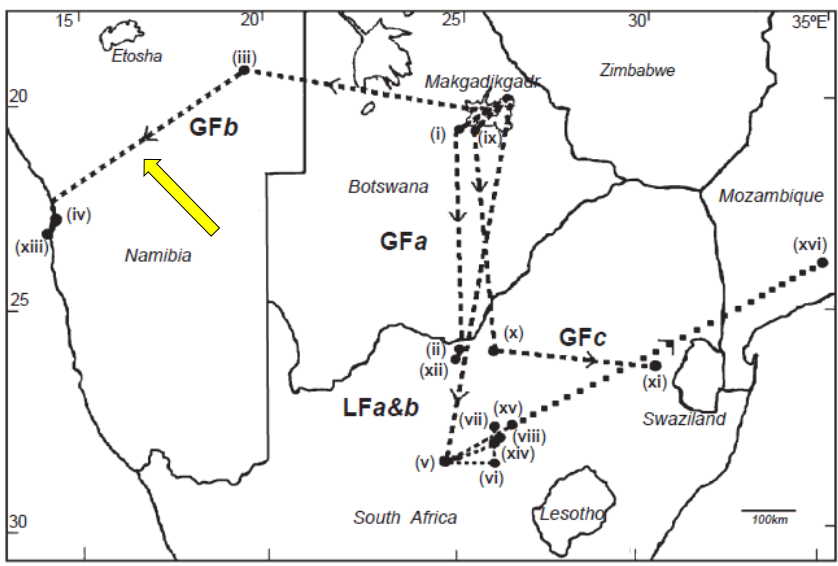
Low breeding frequency and success, water abstraction from breeding sites, toxins, pesticides, hydrogen-sulphide eruptions, **collisions with fences and power lines**, disturbance by aircraft

Distribution of Greater Flamingo and Lesser Flamingo in Namibia



Known movements of flamingos in southern Africa

Nomadic and migratory movements



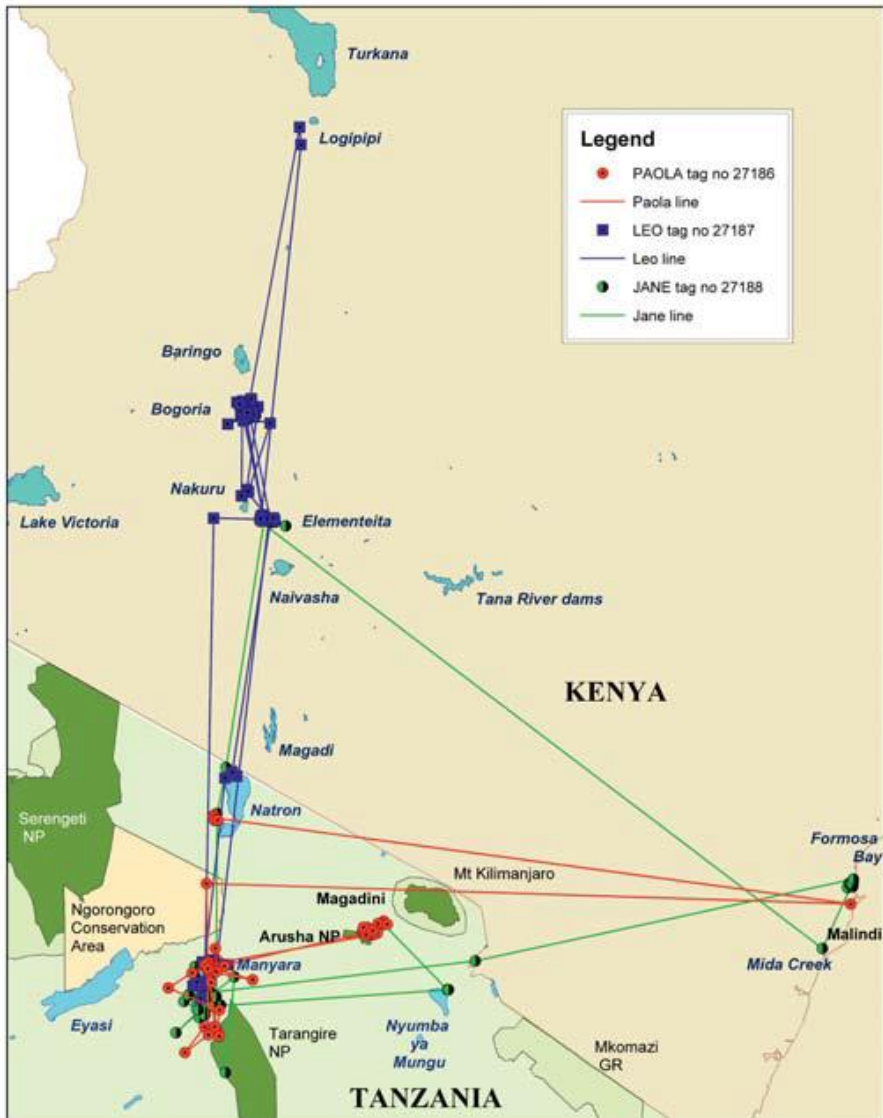
GSM (Ecotone) transmitter tracking of six flamingos at Kamfer's Dam, Northern Cape in June 2016 (M Pretorius *et al.* EWT); four more trackers have been fitted subsequently

GPS PTT satellite tracking of two Greater Flamingos and three Lesser Flamingos from Botswana (G McCulloch *et al.* 2003); showed that one G Flamingo moved from Botswana to the Namibian coast, and other birds to the east

Known movements of flamingos

Study on tracking of three Greater Flamingos in Tanzania and Kenya (Neil Baker) showed **movements** (map on left) and (individual) **habitat selection** – important implications for conservation.

Study in Bolivia on Andean Flamingos and interactions with transmission lines (G Beaulac & H Hausman, Inter-American Development Bank)



Reasons for tracking flamingos in Namibia

- Flamingos are prone to **collisions on power lines**: 137 incidents on record (2006-2015) – 28% of all incidents in Namibia
- Identification of flamingo flight paths can enable **proactive avoidance/mitigation** for new power lines



Tracking methods for flamingos

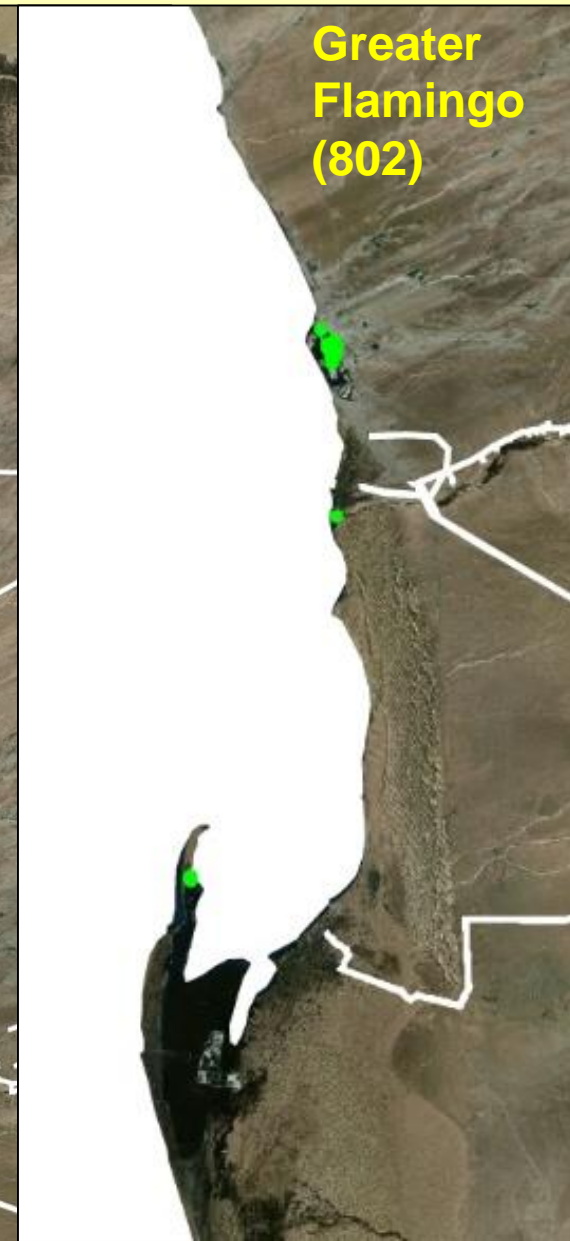
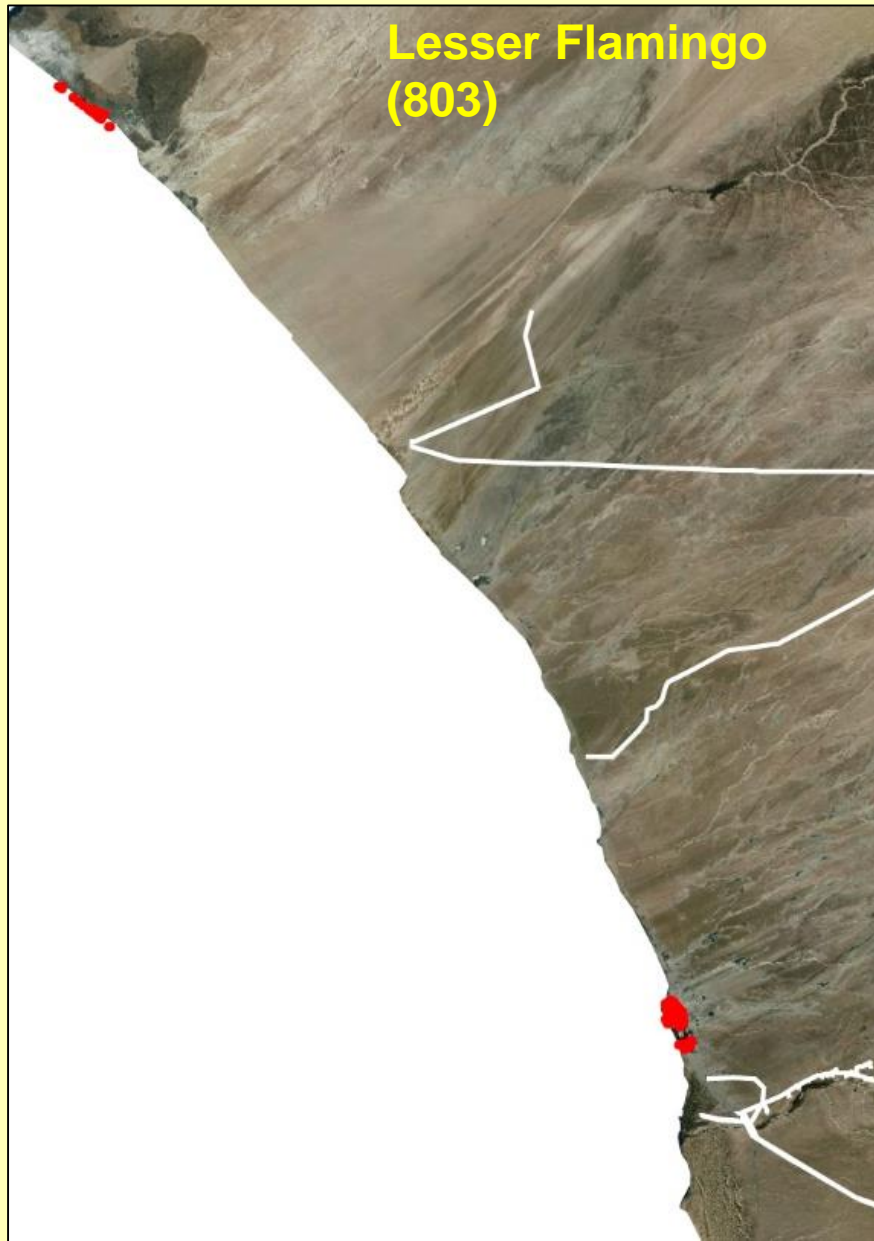
2 solar powered and 1 battery powered GPS satellite tracker, fitted to 5 birds at Mile 4 Saltworks (2013 – 2015):

- 4 Greater Flamingo**
- 1 Lesser Flamingo**

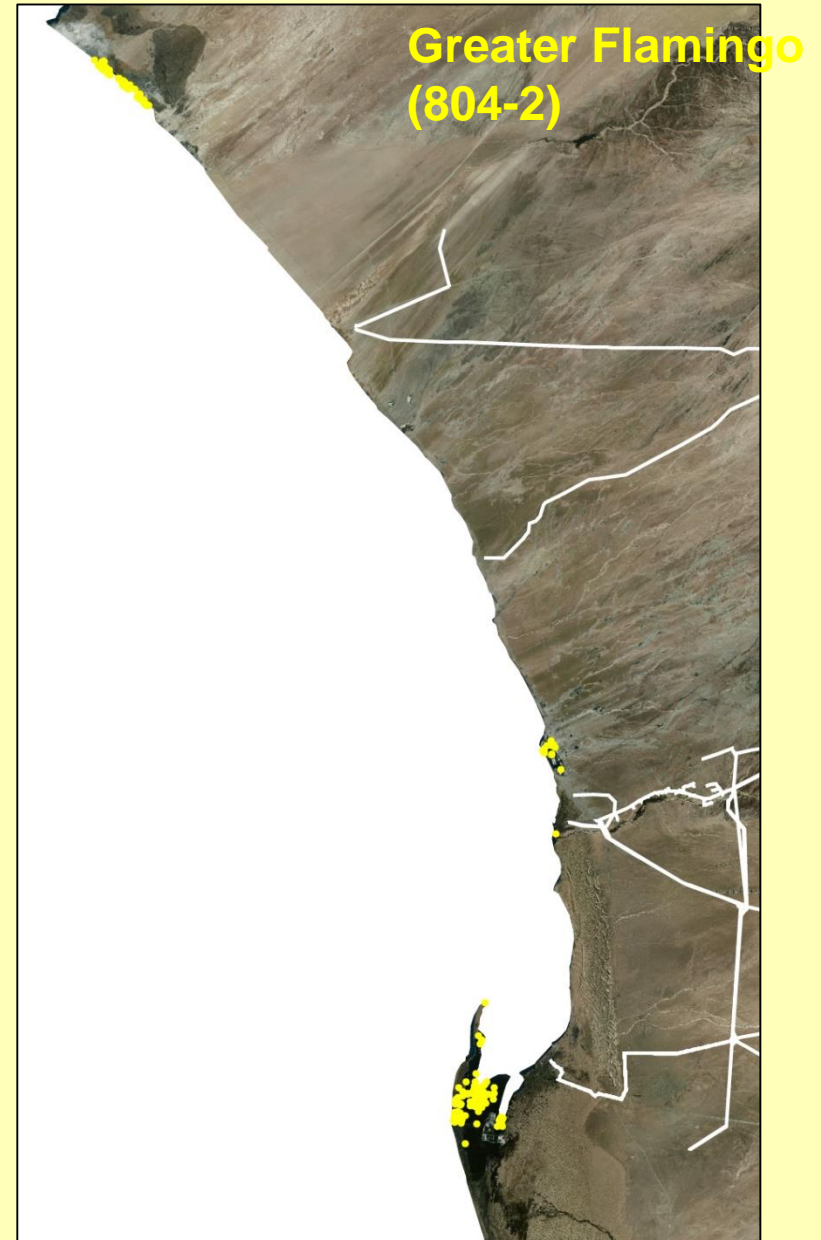


Satellite tracking results to date

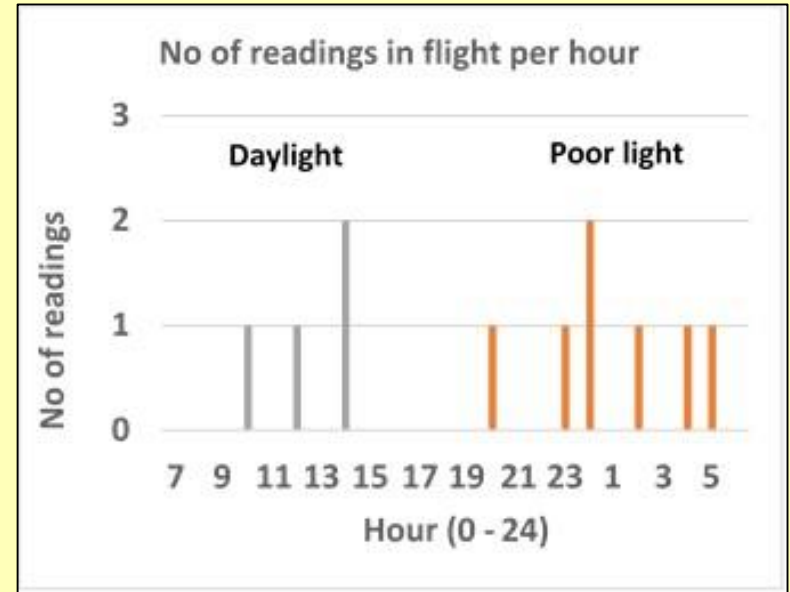
- **No major migratory movements inland** (for breeding) due to dry cycle
- **Movements from Mile 4 Saltworks up coast to Cape Cross (100 km), and from Mile 4 down coast to Walvis Bay (45 km)**



Satellite tracking results to date



Satellite tracking results to date



Much flying under conditions of **poor light**: number of readings per hour in flight (according to flying speed) for a Lesser Flamingo fitted with a GPS PTT at Cape Cross (May-June 2014)

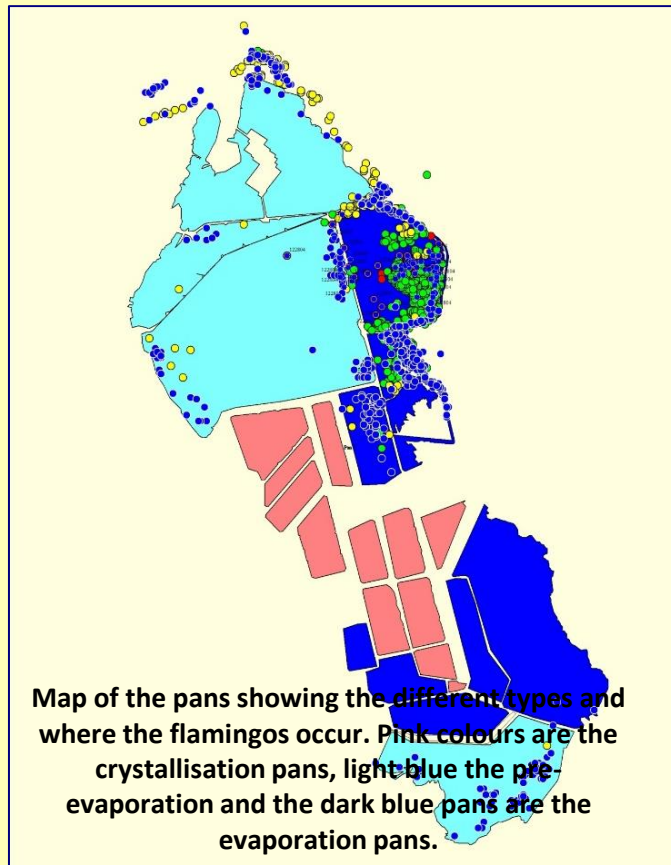
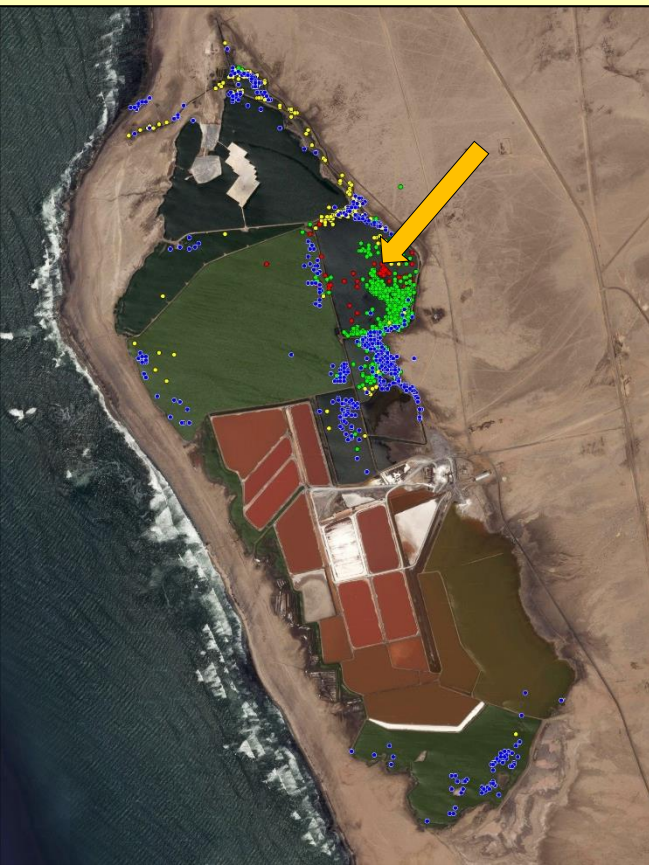
Tracking results to date

Which are the **preferred habitats** within the main sites? Why do the birds move from one site to the other? Do these sites complement one another?



Tracking results to date

At Mile 4 Saltworks, the flamingos showed a **preference** for a shallow pond (18 cm deep) with the lowest salinity/fresh sea water inlet (study by Wendy Gold, Windhoek International School 2015)

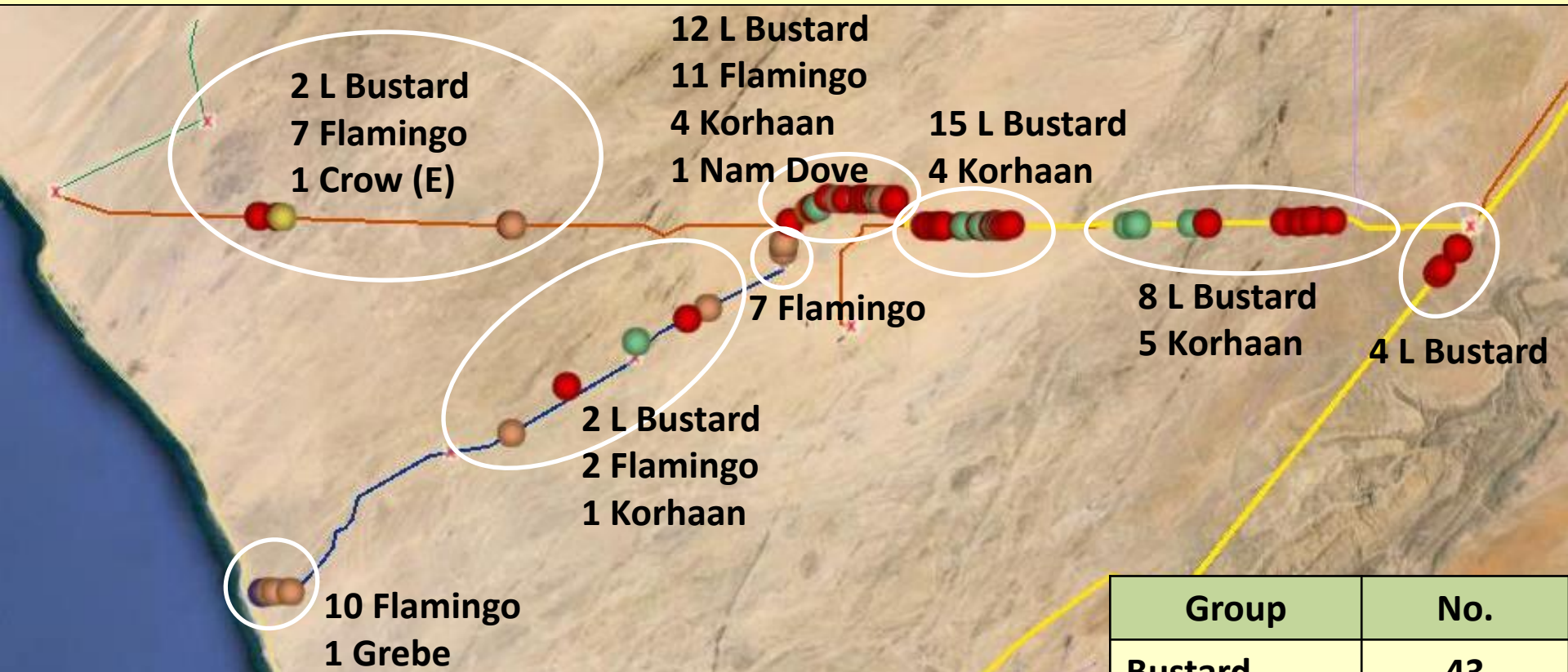


Power line surveys/monitoring – results

Flamingo incidents

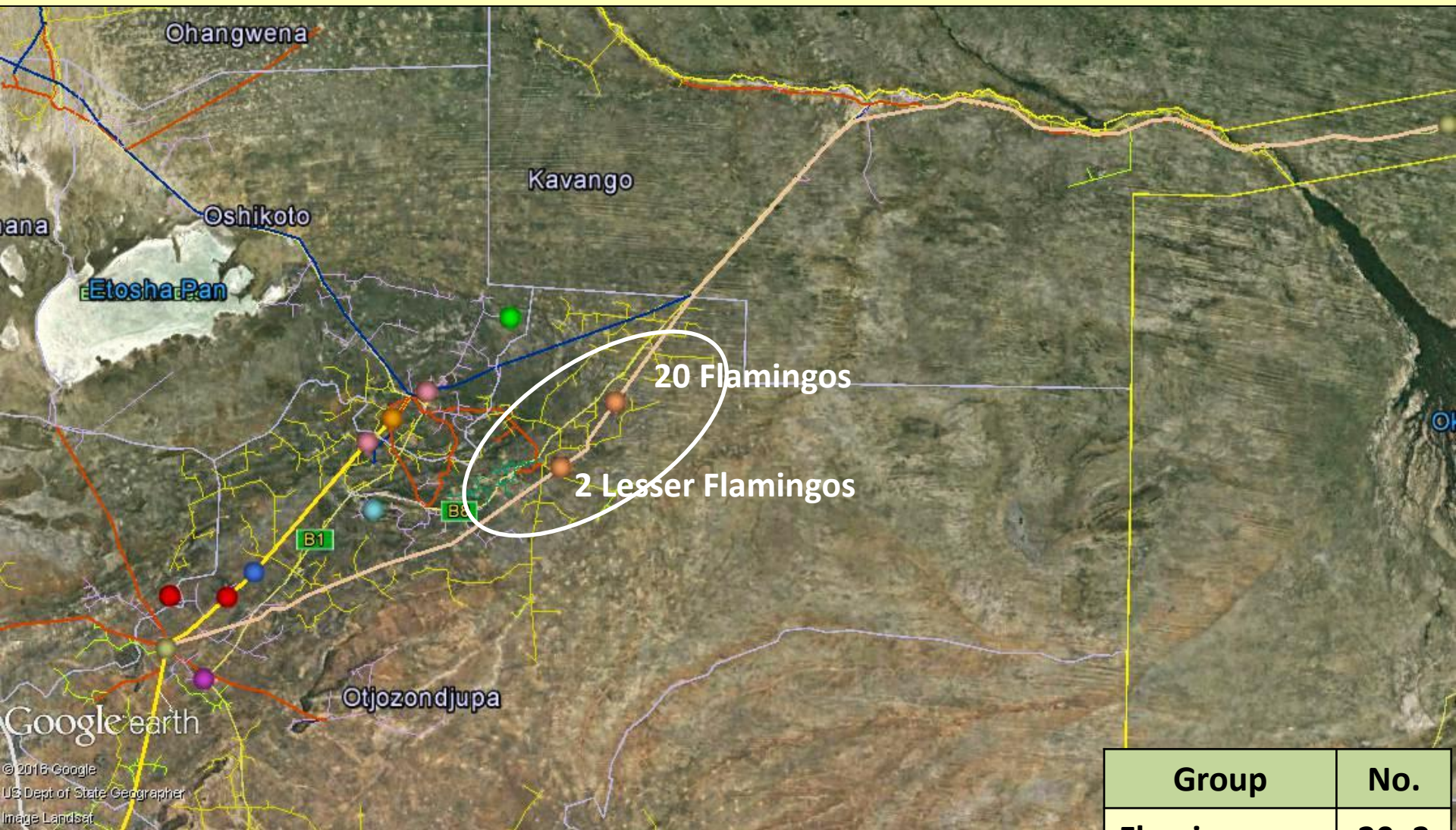


Power line surveys in Erongo: Trekkopje Bypass



Group	No.
Bustard	43
Flamingo	37
Korhaan	15
Waterbird	1
Other	2
TOTAL	98

Gerus – Rundu 350 HVDC



Group	No.
Flamingos	20, 2
TOTAL	22

Pros and cons of tracking

- **Trackers:** high price of GPS PTTs and Argos tracking; GSM transmitters an option
- **Good capture method** with noose traps and suitable capture site
- **Transmission time** short: 5 - 11.5 months – birds disappear or die
- Difficulties of predicting rainfall – sufficient and at right time to **trigger migrations** inland
- At best, present tracking does not give detailed **flight paths**, only shortest line between two sequential points; **altitude data** not highly accurate

The way forward

- **What do these birds need and do, so that conservation efforts can be directed more effectively; where are they flying?**
- **Continue to monitor power lines for flamingo incidents (which indicate where the birds are flying)**
- **Mitigate sections of power line that prove to have high concentrations of incidents**
- **Further analysis of data (e.g. altitude; habitat preferences)**
- **Further tracking – for targetted project?**