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Certificates of Merit were awarded to NamPower's Pieter Cloete (right) and A.C. van Zyl (centre) at the recent Assessment and Planning Workshop in Windhoek; the awards were presented by Danie Louw (left) of the NamPower SHEW Department (photo Ann Scott)

### ASSESSMENT AND PLANNING WORKSHOP

The NamPower / Namibia Nature Foundation Strategic Partnership was launched in October 2008. An Assessment and Planning Workshop was initiated at Windhoek on 17 March 2011 in order to assess progress with the project over the past two years. A considerable amount of information has already been gathered on wildlife/power line interactions and there is a growing concern about the mortality of birds, and other wildlife, on our power lines. The main groups of birds that are implicated are birds of prey, including eagles and vultures; bustards; and flamingos. At the same time, outages caused by the nesting of weavers on power line structures are an ongoing and expensive problem.



Raptors are being observed more frequently with the increased availability of prey due to the exceptional rain season in 2011, including this juvenile Martial Eagle (Endangered: left) and Black-chested Snake-eagle (right) (photos Ann Scott)

Special attention should therefore be given to planning and implementing mitigation at appropriate sites where there is sufficient information to indicate that there is a problem (e.g. on the Kokerboom-Auas 400 kV; and on the Trekkopje-Wlotzka 132 kV line). Because much of the monitoring has taken place where there are interested and committed people, and in areas where visibility is relatively better due to open habitat, the sampling is biased in a geographic sense. We are not sure whether these areas are in fact the main problem areas, or represent a small part of the problem. More attention should thus be given to surveying power lines across the country.

Some of the proposed mitigation may have to be applied on an experimental basis, in order to establish which methods work best under Namibian conditions. It is essential to have the inputs and support of the relevant NamPower and Regional Electricity Distribution (RED) staff who would be involved on a practical level, and who have the experience to contribute to the discussion.

An Assessment and Planning Workshop was therefore organized at the Heja Game Lodge, near Windhoek, on 17 March 2011. This workshop builds upon a Bustard and Power Lines Workshop held at Keetmanshoop in November 2010, where an action plan was put together to address collisions by bustards and other birds on power lines in Namibia. Points from the latter plan have been merged with those discussed at the Windhoek meeting to form the final Birds and Power Lines Action Plan (March 2011).



### Workshop participants

Pieter Cloete, Hendrik Espag, Kapula Fernandes, Nico Goagoseb, Danie Louw, Hans Peens, AC van Zyl, Karl-Heinz Wagner (NamPower); Stephen Müller (Erongo RED); Chris Brown (Namibia Institute for Sustainable Development; facilitator); Julian Fennessy (Namibia Nature Foundation); Alice Jarvis, Tony Robertson, John Mendelsohn (Consultants: EIS); Andrew Jenkins (Avisense Consulting); John Pallett (SAIEA); Allen Kafene (Kavango Bird Club); Mike & Ann Scott (NP/NNF Strategic Partnership).

### Workshop aims and objectives

The primary aim of the workshop was to assess progress with the project over the past two years (especially in terms of training and awareness, gathering information on wildlife/ power line interactions, and the development of the Environmental Information Service [EIS]); and to plan and prioritise activities for the next year. The objectives were to:

- Provide a progress report on the NamPower/Namibia Nature Foundation Strategic Partnership
- Demonstrate the Environmental Information Service (EIS)
- Assess existing information/records of wildlife/power line interactions in Namibia
- *Acknowledge the main contributions to this information*
- Review current information on mitigation methods
- Review existing mitigation on power lines in Namibia and its effectiveness
- Brain-storm ideas on the way ahead
- Develop a focussed Action Plan for the year(s) ahead

### Workshop programme

- Welcome and introduction (Chris Brown - facilitator)
- Brief report on progress with the NamPower/NNF Partnership over the past two years (Mike & Ann Scott)
- Practical demonstration of the EIS (Alice Jarvis, Tony Robertson & John Mendelsohn)

- Overview of existing information/records of wildlife/power line interactions in Namibia (Tony Robertson, Alice Jarvis & Ann Scott)
- Review of current information on mitigation methods (Andrew Jenkins)
- Short discussion on existing mitigation on power lines in Namibia and its effectiveness
- Brainstorming session/planning for the way ahead (discussion led by Chris Brown)

### Workshop presentations

The power point presentations below are available on the Partnership website (see above):

1. Brief report on progress with the NamPower/Namibia Nature Foundation Strategic Partnership over the past two years (Mike & Ann Scott)
2. Overview of existing information/records of wildlife/power line interactions in Namibia (Tony Robertson, Alice Jarvis & Ann Scott; see also Figure 1 below)
3. *Balls, flashers, flappers & coils ...* Avian collisions with power lines: a global review of causes and mitigation with a South African perspective (Andrew Jenkins, Jon Smallie & Megan Diamond, WEIG)

### Wildlife/power line incidents

The wildlife/power line incidents on record at present (using data from a combined total survey distance of 859 km plus incidental reports; see Figure 1) indicate that the lines most commonly involved in terms of the number of incidents are the 400 kV lines (Kokerboom-Auas; Kokerboom-Namib); the 33 kV reticulations; and the Kokerboom-Nabas 66 kV line. The species most commonly involved are flamingos, bustards, vultures and mammals (e.g. genets).

### Awards for NamPower staff

The NamPower/NNF Strategic Partnership is proud to announce an award of a Certificate of Merit and a bird guidebook prize each to Pieter Cloete and A.C. van Zyl, of NamPower's Southern Region. These awards for exceptional dedication to the objectives of the Partnership in the form of the number of reports of wildlife/power line incidents submitted, were handed over by Danie Louw of the NamPower SHEW Department. Pieter and A.C. are congratulated on this outstanding achievement!

Further nominations for this award are invited, for anyone showing a similar outstanding commitment towards achieving the goals of the Partnership.

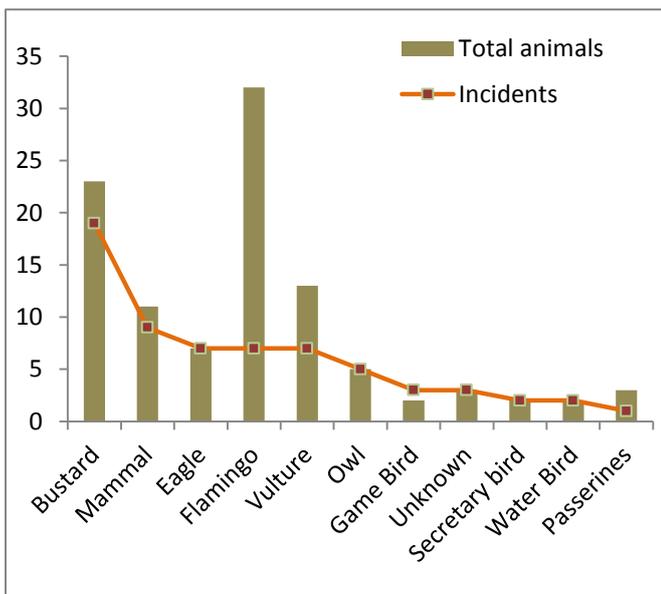
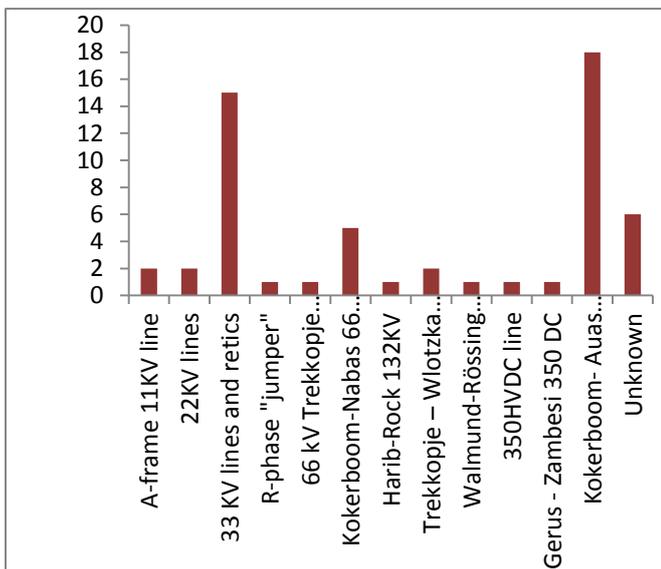


Figure 1. (a) Power line structures and (b) bird species most commonly involved in wildlife/power line interactions in Namibia, according to records on incident (source: EIS).

#### Acknowledgements

Thank you to:

- All our enthusiastic participants, in particular the representatives from NamPower regions/districts, Erongo RED and the NamPower/NNF Working Group!
- Dr Chris Brown for facilitating the workshop and coordinating the action plan.
- Presenters Dr Andrew Jenkins (from RSA); Alice Jarvis and Tony Robertson (from Namibia).
- Alice Jarvis for her assistance with producing the Certificates of Merit, and Dr John Mendelsohn for providing the photograph.
- NamPower staff for their assistance with organization and logistics; in particular Danie Louw and Reginadia Hofnie.
- The Heja Game Lodge for providing the venue and refreshments.

**The European Investment Bank for sponsoring the project.**



Ludwig's Bustard (artwork  
Hermann Cloete)

## BIRD AND POWER LINE ACTION PLAN

The Bird and Power Line Action Plan builds upon and merges with an initial action plan that was put together to address collisions of bustards and other birds on power lines in Namibia, at a Bustard and Power Lines Workshop at Keetmanshoop in November 2010.

### 1. MONITORING/SURVEYS

- **Set up and initiate a sampling methodology for transmission and distribution lines**
  - Geographic coverage and methods; frequency of monitoring
  - Monitor collision mortality: power line coverage – transmission and distribution (including REDs and SWER lines); set up sample lines, taking access into account
  - Conduct comparative monitoring – lines with and without mitigation (e.g. Kokerboom-Namib: new line has markers/flappers; old line has none)
- **Set up and implement bird population monitoring methodologies & practice**
  - Monitor selected species: Kori Bustard and Ludwig's Bustard, Secretarybird, eagles and vultures; korhaans, storks, flamingos; any other medium to large birds
  - Promote compatibility between methodology in RSA and Namibia regarding details of sampling protocol
    - : mortality
    - : relative abundance
    - : real population estimate?
    - : distribution (bird atlas data)
    - : information on breeding and young
- **Set up and coordinate monitoring teams**
  - Initiate monitoring in servitudes with bush growth in the north
  - Expand and build capacity of NamPower SHEW
  - Involve volunteers (e.g. Raleigh International; local communities) for foot surveys
  - Involve Mountain bikers
  - Coordinate with Polytechnic practical work
  - Outsource coordination of administration: planning, permission of landowners, NamPower induction, data collection and feedback
  - Link to EIS for atlasing of ongoing key monitoring

PTO

## 2. DEVELOPMENT & USE OF THE ENVIRONMENTAL INFORMATION SERVICE (EIS; PHASE III)

- Website development to enhance the user experience
- Expanding the contact and user base of the EIS
- Journal articles, reports, books etc.
- Spatial data
- Dynamic data
- Sub sites
- Promote the EIS and build demand

## 3. INFORMATION, AWARENESS, EDUCATION & OUTREACH

- Tools: newsletters; booklets\*, posters, other visuals
- Medium: include Afrikaans & other languages
- Target groups: farmers/landowners/custodians, conservationists/NGOs, educational institutions, general public, EIA practitioners for best practice guides & mines/ developments

\*Review draft 'Birds and power lines' booklet in the light of this action plan

## 4. MITIGATION

- Investigate all possible methods to make earth and optic overhead lines more visible e.g. spiral coils, vibration dampers, illuminators, reflective devices, sound (and ultrasonic) generators, colour/phosphorescent coating on lines
- Compile guidelines for best practice mitigation for wildlife/power lines in Namibia
- Compile a plan of action for mitigation for:
  - Existing lines: refit where necessary (reactive)
    - dependent on results of monitoring
  - New lines - pre-emptive/proactive
- Set minimum standards for lines – mines/farmers, lodges etc.: ECB & MME (& MET); implement EIA checklist
- Experiment with new/different mitigation options for existing (and new) lines
  - Conduct testing on a scientific basis
  - Develop new mitigation methods in an experimental approach (Polytechnic & Unam)
- Obtain commitment from NamPower to apply mitigation (for methods that are guaranteed effective)
- Investigate standard marking as part of line construction
- Roll-out good practices
  - Sociable Weaver dummy poles as mitigation method - highlight cost benefits
  - Economics study: costs of mitigation vs non-mitigation; proactive vs reactive mitigation

## 5. ENHANCEMENT OF COLLABORATION

- Obtain support of NamPower Exco for way forward
- Maintain more regular contact/communication

with NamPower, REDs & private power ccs in all regions; rotate venues for working group meetings

- Involve further partners in Namibia: liaise with Electricity Control Board (ECB), Ministry of Mines & Energy (MME), Ministry of Environment & Tourism (MET)
- Enhance regional collaboration
  - *Endangered Wildlife Trust-Wildlife & Energy Programme (WEP)*
  - *Flamingos (Botswana & RSA)*
  - *Bustards (RSA)*
  - *EIS (RSA)*
  - *Southern African Power Pool (feed in developments)*

## 6. RESEARCH

- Initiate research on the following aspects (focus on development/testing of appropriate mitigation methods)
  - *Sociable Weaver*
  - *Red-billed Buffalo-weaver*
  - *Bustards – collars for tracking; map preferred areas and overlay flyways with power lines; correlate with rainfall*
  - *Flamingos – tracking to determine flight paths*
- Students
  - *Recruit Namibian MSc student(s)*
  - *Link to NamPower bursary scheme*

## 7. PREPARATION FOR WIND ENERGY

- Conduct a desk-top review to determine best practice mitigation (5 years down the line or sooner)
- Determine possible impacts (collisions)
- Collaborate with existing initiatives
- Start preparing: set up mitigation & good practice guides

## 8. FURTHER IMPLEMENTATION OF PROJECTS

- Maintain present project managers/coordinators
- Expand working group; encourage establishment of regional working groups
- Use a more contractual approach – appoint drivers for sub-projects; determine outputs & outcomes; cost & commission activities
- Investigate appointment of field workers for the Partnership

## 9. FUNDING

- Forward a new proposal to EIB (once target product/ booklet has been produced)

**Please let us know if you would like to become involved in any of the above activities, either as an individual or an organisation. We especially need assistance with carrying out an integrated power line survey and monitoring programme (No. 1)**

## AVIAN COLLISIONS WITH POWER LINES: A global review of causes and mitigation with a South African perspective

Summary of a recent paper by Andrew Jenkins, Jon Smallie & Megan Diamond

Many large terrestrial and wetland birds and some smaller, fast-flying species are prone to colliding with overhead wires associated with power infrastructure. A high proportion of these are threatened species and for some, collision with power lines and other man-made structures is a significant and damaging source of anthropogenic mortality. We review the existing literature on the nature, scale and impact of this problem worldwide, with particular emphasis on the South African situation, and focus on the evidence for and against various line configurations and devices proposed to mitigate the negative effects of overhead lines on bird populations. Cranes, bustards, flamingos, waterfowl, shorebirds, gamebirds and falcons are among the most frequently affected avian groups, and collision frequency is thought to be an influential factor in ongoing population declines in several species of cranes, bustards and diurnal raptors. The bulk of the research on this issue has been done in North America, Scandinavia, southern Europe and South Africa. Few comprehensive experimental studies on ways to reduce avian collisions with power lines have been carried out, although most of these have yielded quite clear results. Mitigation options considered include reviewing the placement of proposed new lines, removing the earth-wire which is usually the highest, thinnest and most problematic component in an overhead power line configuration, or else fitting this wire with markers – brightly coloured ‘aviation’ balls, thickened wire coils, luminescent, shiny or hinged flashing or flapping devices. All of these options reduce bird collision frequency overall by at least 50–60%, although the efficacy of line marking may be much lower for certain species (e.g. bustards). There remains considerable uncertainty about the best-performing marking device (perhaps because performance may vary with both local conditions and the species involved in each instance), and a durable, all-purpose device, that is effective both during the day and at night, has not yet been developed. We conclude by outlining a proposed experimental evaluation of the full array of collision mitigation options, to select the best approaches for use under South African conditions.

*Bird Conservation International, 2010*



Some of the mitigation devices discussed above: coil (left) and two flapping devices (source: Andrew Jenkins)

## GO GREEN NAMIBIA FLAMINGO AND POWER LINE PROJECT



Flamingos fly low at times and in groups; their habit of undertaking migratory flights at night renders them prone to collisions on power lines in Namibia (photo Ann Scott)

### Introduction

The Go Green Fund was established by Nedbank and the Namibia Nature Foundation in 2001, in order to provide small seed funding for approved projects. The Namibia Flamingo and Power Line Project has recently been approved by Go Green, with funding of a total of N\$150 000 plus co-finance of N\$57 000 from the NamPower/NNF Strategic Partnership over three years. The primary focus of the project is the tracking of flamingos in order to determine/confirm flight paths, and to investigate possible mitigation methods.

### Project aims, objectives and methods

The aim of the project is to promote the conservation of Greater Flamingos and lesser Flamingos by mitigating collisions with power lines in Namibia. The objectives and methods are outlined below.

#### 1. Determine flamingo flight paths in Namibia

- 1.1 Collaborate with an existing research initiative in Botswana and fit five (cellphone) telemetry devices to Greater Flamingos and Lesser Flamingos; study sites to include Botswana and Etosha.
- 1.2 Track the movements of the flamingos by telemetry, and map data (including flying heights, habitats used when flying, impacts of wind) to determine/confirm flight paths in Namibia on a seasonal and annual basis; compare the habitat requirements and movements of Greater and Lesser flamingos.
- 1.3 Initiate a project at Polytechnic student level to analyse existing bird count data in order to establish seasonal and annual abundance in different localities in Namibia (i.e. on the coast, Etosha and Bushmanland), to support results of satellite telemetry; correlate the results with annual rainfall as a means of predicting movements.

## POWER LINE SURVEYS



Two flamingos collide with the 132 kV Wlotzka-Trekkopje line on 11/11/10 (photo Sandra Muller)

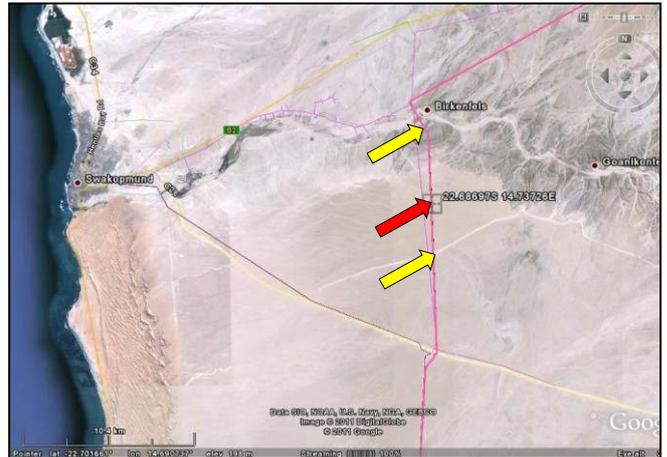
2. **Mitigate flamingo collisions in areas where known flight paths intersect with power lines (this activity is to be co-funded by the NamPower/NNF Strategic Partnership)**
  - 2.1 Once flight paths have been determined, overlay these corridors with both NamPower and Regional Electricity Distributin (RED) lines to determine key areas of potential impacts.
  - 2.2 Monitor potential impact areas during seasonal flamingo migration periods, to investigate rates and severity of impacts.
  - 2.3 Assess existing mitigation measures and apply relevant methods on an experimental basis; also try out innovative methods.
  - 2.4 Monitor the success of mitigation measures, and adapt as necessary.
3. **Publicize results on an ongoing basis in order to promote awareness and raise incident reporting levels, and to promote proactive mitigation**

### Project partners

Dr Graham McCullogh, flamingo researcher in Botswana; Ministry of Environment & Tourism (Etosha Ecological Institute; Directorate of Scientific Services); NamPower and REDs; Polytechnic of Namibia; Namibia Nature Foundation (including Namibia Crane and Wetlands Working Group).

### Acknowledgements

The NamPower/NNF Strategic Partnership would like to thank Dr Julian Fennessy for his interest and support in facilitating this initiative.



### Walmund-Rössing 220 kV line

#### Survey details

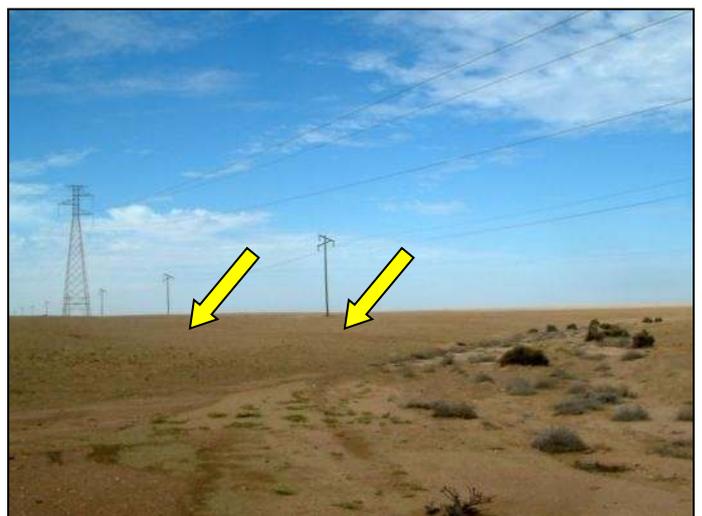
Seven km of the above transmission line (the area between the arrows above, from the Swakop River crossing to the D1991 road) was surveyed on 13 March 2011 by Mike & Ann Scott. A smaller 33 kV line runs parallel to the line. The habitat consists of gravel plains with numerous washes, running roughly north-east to south-west. In the northern part of the survey area the habitat becomes increasingly rugged, with deeply incised gullies, until it reaches the crossing with the Swakop River at Birkenfels, which is characterised by high cliffs.

#### Motivation

To check for signs of bird mortalities, given that the number of records of incidents on the coast is increasing.

#### Findings

The dry bones of what appeared to be at least four flamingos at 22.68697S 14.73726E (yellow arrows; see below and page 7). This indicates that flamingos are indeed using the speculated flightpaths between the coast of Namibia and inland.





The remains of what is believed to be at least four flamingos were found beneath the Walmund-Rössing 220 kV line, which runs parallel with a 33 kV line on 13/3/11 (photos Ann Scott)

## POWER LINE/WILDLIFE INCIDENTS

### Weaver nesting causes extensive damage to Erongo RED transformers

**Stephen Müller, email [smuller@erongored.com](mailto:smuller@erongored.com)**

Nesting by Red-billed Buffalo-weavers in the Omaruru area is causing expensive outages and fires on transformers.



### Verreaux's (Black) Eagle electrocuted in Windhoek area

**John Mendelsohn, email [john@raison.com.na](mailto:john@raison.com.na)**

On 7 February 2011 the remains of a Verreaux's (Black) Eagle were found at Moltekeblick (South: 22.650842 East 17.179394). The bird appears to have been electrocuted on the pole structure.



### Kori Bustard collision near Aranos

**AC van Zyl, email [AC.Van.Zyl@nampower.com.na](mailto:AC.Van.Zyl@nampower.com.na)**

A fresh carcass was found on 22/2/11 on Farm Pretorius, 33KV Ret (5<sup>th</sup> Pole from Recloser). The bird appears to have collided with the power line.





Kori Bustard collision on 33 kV line near Aranos  
- see previous page (photo AC van Zyl)

### Spotted Eagle-owl electrocuted near Aranos

AC van Zyl, email [AC.Van.Zyl@nampower.com.na](mailto:AC.Van.Zyl@nampower.com.na)  
Fresh carcass found on Farm Wandervogel 2<sup>nd</sup>, Nossob  
33KV Ret. Apparently electrocuted on transformer.



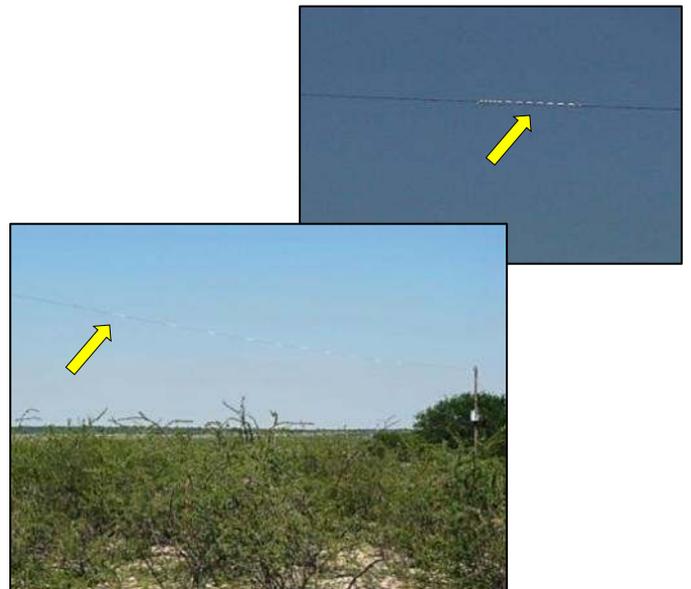
### Genet electrocuted near Aranos

AC van Zyl, email [AC.Van.Zyl@nampower.com.na](mailto:AC.Van.Zyl@nampower.com.na)  
Fresh carcass found on Aminuis 33kv Ret –Farm  
Ootmoed pump on 4/2/11. Apparently electrocuted  
on transformer cradle while trying to get to nests of  
black weavers (Red-billed Buffalo-weavers).



### EFFECTIVE MITIGATION FOR SANDGROUSE COLLISIONS ON "SWER" LINE

AC van Zyl, email [AC.Van.Zyl@nampower.com.na](mailto:AC.Van.Zyl@nampower.com.na)  
Standard white vibration dampers were used effectively  
to make a thin "SWER" line more visible to sandgrouse  
that were drinking on a farm dam at Louis Botha,  
owned by Mr Brand (16/3/2011).



### NEWSLETTERS ON RELATED TOPICS

- **WILDLIFE WATTch**  
Newsletter of the Endangered Wildlife Trust-Wildlife &  
Energy Programme (WEP); contact Marianne Golding,  
Email: [marianneg@ewt.org.za](mailto:marianneg@ewt.org.za), [www.ewt.org.za](http://www.ewt.org.za)
- **Birds & Aircraft Research Namibia Project (BARN-P)**  
Contact Morgan Hauptfleisch, email  
[morgan.hauptfleisch@saiea.com](mailto:morgan.hauptfleisch@saiea.com)
- **Bustard Beat** (2<sup>nd</sup> edition now available)  
E-newsletter of BirdLife South Africa Bustard Working  
Group; contact Dave Allan, email [alland@durban.gov.za](mailto:alland@durban.gov.za)  
[http://www.birdlife.org.za/page/5561/bustard\\_working\\_group](http://www.birdlife.org.za/page/5561/bustard_working_group)