
National Plan of Action for the Conservation of the Cape Vulture (*Gyps coprotheres*) in Namibia

Proceedings of a Technical Workshop

10 November 2010
Windhoek, Namibia



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A. Welcome & introduction

Present: Chris Brown (NISD/NNF), Maria Diekmann (REST), Holger Kolberg (DSS, MET), Liz Komen (NARREC), Lesley Losper (DEA, MET), John Mendelsohn (RAISON), Dominic Moss (Johannesburg Zoo), Louisa Mupetami (DSS, MET), Walter Naser (VulPro), O. Rukoro (DPW, MET), Stephen van der Spy (Johannesburg Zoo), Kenneth /Uiseb (DSS, MET), Kerri Wolter (VulPro).

Apologies: Peter Bridgford (Vultures Namibia), Manie le Roux (DPW, MET), Kaiporo Kandjii (DPW, MET), Mike & Ann Scott (EcoServe), Peter Mundy (University of Zimbabwe).

Chris Brown (facilitator) welcomed all the participants who then introduced themselves. The Agenda (Appendix 1) was adopted.

The **Objectives** of the meeting were:

- To review the current status of the Cape Vulture in Namibia
- To share information on recent conservation actions taken and some results from monitoring
- To share information on the region priorities and actions
- To develop a national conservation Action Plan for the Cape Vulture in Namibia

The opening address was given by Ms Louisa Mupetami, Director of Scientific Services, Ministry of Environment & Tourism (DSS, MET), on behalf of the Permanent Secretary of MET.

B. Presentations (setting the scene)

- 1. What is the current status of the Cape Vulture in Namibia?** (Holger Kolberg DSS, MET): Holger emphasized the lack of up-to-date information on Cape Vultures (CV) in Namibia and the conservation implications of the very low number of remaining birds, including few breeding pairs, possible hybridization with White-backed Vultures (WBV) and reduced foraging efficiency. Based on work by the late Stephen Piper, it is suggested that a minimum viable CV population at one breeding colony would be at least 20 pairs. Most other known (now all extinct) colonies in Namibia, other than the colony at the Waterberg Plateau Park (WPP), were in the south and west, in the escarpment / Pro-Namib regions. Their extinctions were probably due to those areas being predominantly small stock farming areas with lots of poison used. WPP colony problems are probably a combination of poison and bush encroachment. For more information see Appendix 2.
- 2. What conservation actions have been undertaken over the past decade?** (Maria Diekmann REST): Maria focused mainly on the past ten years of conservation work in Namibia. Key points covered were research on anthrax, the Asian vulture crisis and its lessons and possible implications for Namibia, monitoring the Waterberg CV

population by means of weekly feeds, and the reintroduction of 15 CV into the WPP population. This last initiative is believed to be largely successful because released CV's remained in Namibia and returned to the Rare & Endangered Species Trust (REST) where they were released at 7 years old and attempted to breed in two consecutive years (unsuccessfully, because they selected inappropriate site – possibly due to their age and site of release - not imprinting on cliffs).

3. What results have we got from satellite tracking? (John Mendelsohn RAISON): John presented data on the movement patterns and home ranges of CVs fitted with PTT's (satellite transmitters) and the implications for conservation action. The patterns of movement and land use were clearly different for adult and immature birds, the former being confined mainly to a radius of about 80 km around the WPP, but not showing a uniform pattern of land-use, while the latter ranged over large parts of southern Africa. He pointed out a number of recurring patterns, e.g. birds avoid communal areas adjacent to the WPP and national parks. Birds seem to be attracted to specific farms – essentially those farms where poor farming practices are applied. He believes that at least the 3 reintroduced birds with PTT's were proven successful releases (Appendix 3).

4. What are the key aspects of the regional conservation action plan for the Cape Vulture? (Kerri Wolters VulPro): Much of the analyses and plans of action for CVs had been developed in RSA. The CV population is estimated a few years ago as about 2,900 breeding pairs. A new survey has been done on the number of feeding restaurants. There was a decline from S Piper's survey of 2006. She spoke about the Asian vulture crisis and the need to help with international work. The lead and calcium deficiency issues were discussed. South Africa still has calcium deficiency issues. In 2006 194 vultures were electrocuted of which 168 were CV. 36 vulture collisions were reported of which 33 were CV. Not much is known about the traditional use of vultures but it is believed to be a significant problem (Appendix 4).

5. Discussion on Presentations:

Liz Komen reminded the meeting that we need to recognize the role that the Ministry of Agriculture plays in relation to poisons and pesticides, as well as land uses.

Lesley Losper asked about the coverage and relevance of the educational material that is available. NARREC has produced a large amount of relevant material, as have colleagues in SA. Liz pointed out the need for all partners to work together more effectively to update the info, to distribute the materials and to provide coordinated ongoing outreach and education to all the relevant target audiences.

Chris Brown pointed out that, because of the huge areas covered by vultures and the many different land owners and organisations involved, public awareness and education on vulture conservation is a huge challenge and asked Lesley Losper to consider how one should best go about addressing this challenge.

Dominic Moss questioned what new methods of telemetry would be most useful in the future. The two main options seem to be the normal PTT satellite transmitters and the cell phone GIS units. This requires further investigation.

Liz Komen mentioned that in the southern area for the last two years there were reports of small-stock predation.

Kenneth /Uiseb noted that the role vulture restaurants play in the Waterberg area are very important. Kerri Wolter mentioned the threats of unintentionally introducing toxic substances via vulture restaurants such as lead poisoning from bullets or veterinary drugs given to sick animals before they die, could be harmful to vultures.

A discussion followed looking at the advantages and disadvantages in general of vulture restaurants, notwithstanding the possible implications of unsuitable food supply. It became apparent that the situation in Namibia is a bit different to that in SA. Farms in Namibia are generally large, livestock production is extensive and vulture restaurants for tourism are established mainly at a landscape scale, e.g. within conservancies rather than on many neighbouring individual farms.

Chris Brown asked if the threats to CV populations in SA had been rated. Kerri said that not at the national level, because it differs from area to area. In Namibia we believe that poison is currently by far the greatest threat, which also impacts on all other scavenging species, mainly avian (other vultures, some eagle species, Marabou Storks, etc.) because of the large areas they cover, but also mammalian.

Kerri Wolter and colleagues from the Johannesburg Zoo were asked to discuss captive breeding and discussed how many breeding birds were in captivity, what their expected production levels of nestlings are and what the procedures would be for the release of these birds in Namibia.

Colleagues from RSA, Kerri Wolter and Walter Naser (VulPro) and Dominic Moss & Stephen van der Spy (Johannesburg Zoo) undertook to support this programme for a sufficiently long period of time to make it successful, by producing (from captive birds) and providing nestlings and by providing other forms of support as may be agreed between the partners, provided that the indicators of success are positive. It was also agreed that a detailed approach to the release and monitoring would be fleshed out, based on best international experience and practice.

The first priority is to rebuild the Waterberg CV population to a self sustaining and viable population. Thereafter, a second population, perhaps at an historic colony in the Pro-Namib should be considered. At a later stage, and depending on the success of the first few releases, a captive breeding programme could be considered in Namibia, to augment the RSA birds.

In addition, the following principles were noted, based on experiences and best practices developed in cliff-nesting *Gyps* vultures elsewhere:

- Young vultures should be held in a release aviary at the top of the WWP cliffs, to acclimatise and imprint them onto the cliffs
- The young birds should be held in the cliff-top release aviaries for 3-4 months
- The young birds should be released at an age of about (was it 7 months?) – somewhat older than CVs fledglings naturally make their first flight, because the captive-bred birds need to be strong enough to fly back to the area of the release aviary for feeding. (Under natural conditions, parent birds will follow

their young offspring and feed it. The released birds will obviously not have parents to feed them.)

- If possible, we would invite the Israeli researcher, Bill Woodley, who has done much of the work on successful release of young *Gyps* vultures to Namibia to give us on-site advice. He has indicated he has funds for travel.

C. What are the main threats facing Cape Vultures in Namibia?

1. Poison

- 1.1 Mainly used by livestock farmers for predator control (mainly Black-backed Jackals, Lynx, hyaena species, Leopard, Lion, etc) with scavengers being highly vulnerable non-target victims.
- 1.2 To a far lesser extent, vultures are directly targeted for largely unknown reasons, but this could include (a) the muti trade (people may be at risk from secondary poisoning from some poisons), (b) the attempt to eliminate vultures in an area because of their visual signal of possible poaching, and/or (c) farmers are under the erroneous belief that vultures spread disease.

Resettlement initiatives place more pressure on land use and result in very tight financial margins, which exacerbate socio-economic impacts of losses which may lead to increase in poison use.

CV poisoning is mainly at medium to large carcasses (because of the foraging pattern of this sp., but secondary poisoning (e.g. of jackals) from small baits is also possible. Many other scavenging birds and mammals are vulnerable to both carcass and small bait poisoning.

Poisoning is considered to be far and away the most important cause of mortality in all scavenging birds in Namibia.

2. Habitat change / degradation

- 2.1 Bush encroachment – recent research in the Waterberg area has established a significant correlation between bush density and CV selection of carcasses.

2.2 Change in land use / management

Mainly the transition from livestock farming to wildlife ranching, trophy hunting, tourism and the breeding of high-value game species. The latter may be worth in excess of N\$100,000 per animal, while domestic livestock is worth about 1/20th of this value. Predators can thus have significantly greater economic impact on high value species and ranchers are thus far less tolerant of losses.

3. Power line impacts

- 3.1 Collisions – possibly far less of a problem for CVs in Namibia than in SA, but info is currently lacking.
- 3.2 Electrocution – currently limited info, but not considered to be a major problem at present.

4. Drowning in farm reservoirs (water tanks)

- 4.1 The impact is probably under-estimated. Work in the nw Cape showed that this was a significant cause of mortality in scavenging bird species.
- 5 Veterinary drugs
- 5.1 A class of anti-inflammatory drugs used on domestic livestock has proved devastating to vultures. Ongoing surveillance and close contact in this matter needs to be maintained with Vet Council, all Vets, Ministry of Agriculture and drug outlets – as well as in neighbouring countries.
- 5.2 Euthanasia of horses can also be a problem – these animals should not be used to supply food at vulture restaurants, nor placed where vultures can access them – bury them.
- 6 Disturbance
- 6.1 Low flying aircraft in vicinity of nests
- 6.2 Human disturbance in vicinity of nests
- 7 Food accessibility
- 7.1 Difficulty is finding food, difficulty of access to carcasses, difficulty in taking off and increased chances of predation, all because of bush encroachment.
- 7.2 Resettlement resulting in increased numbers of people on land, more intensive animal husbandry and less carrion available to scavenging species.
- 7.3 Satellite tracking data shows CV avoidance of parks such as Etosha and Kalahari Gemsbok. Reasons not known, could be linked to competition (i.e. CVs coming from some distance, while local vultures on site and quick to find and consume food – hypothesis).
- 7.4 Tracking data also shows avoidance of communal areas, e.g. former Hereroland. Reasons not known, could be linked to high human density, more intensive animal husbandry, owners find and consume dead livestock, thus little food for vultures – hypothesis).
- 8 Muti trade
- 8.1 Traditional healers and fortune tellers (Sangomas) may use vulture parts. One paper by Polytech student. More info needed.
- 9 Lack of information and public awareness
- 9.1 People are not aware of the important role (ecological, social and economic) that vultures play in the ecosystem
- 9.2 People are not aware of the impacts of their actions on vultures and other scavenging species
- 9.3 People are not aware of the economic opportunities that vultures can provide in the broader tourism sector
- 9.4 People are not aware of the scientific opportunities that vultures provide for better understanding the role of scavengers in the ecosystem
- 9.5 People are not informed about what they can do to help vultures survive in an increasingly hostile environment.

D. What are the main actions required for a national Cape Vulture Action Plan in Namibia, who are the main actors, and what are their roles?

Consolidated Cape Vulture Action Plan for Namibia			
Vision: To rebuild and maintain a healthy, viable, self-sustaining and free-ranging Cape Vulture population in Namibia			
Objectives	Threats	Actions	By whom?
1. Create a safer environment for vultures in Namibia	1.1 Poison use	1.1.1 Re-establish close working relationships with key organisations, including NAU, NNFU, CANAM, NACSO, local Farmer’s Associations, Ministry of Agriculture, Veterinary Services, Veterinary Council, MET, Agra, & other support organisations, and ensure that they (a) have the right information, and (b) distribute this info to their members / staff / branches / outlets, etc.	L Losper, L Komen, M Diekmann, K Wolter, H Kolberg, P Bridgeford
		1.1.2 Legislate against all use of poisons and pesticides for predator control through the Parks & Wildlife Bill.	C Brown and K Uiseb
		1.1.3 Support appropriate initiatives to address and strengthen Human Wildlife Conflict (HWC) management and mitigation, promote appropriate sustainable farming practices and professionalism in farming sector, and strengthen partnerships with relevant organisations, e.g. LCMAN, NGOs and MET (policy and HWC Forum chaired by PS)	C Brown (link to LCMAN), K /Uiseb (engage with MET HWC Forum)
		1.1.4 Review all relevant material for completeness of coverage, relevance & effectiveness in putting across the required information and messages. Involve inter alia CCF, AfriCat, REST, Vultures Namibia & Raptors Namibia.	L Losper, L Komen, M Diekmann, K Wolter, H Kolberg, P Bridgeford
		1.1.5 Review what information is available on viable alternative farming and stock-protection practices to poison use.	C Brown & K /Uiseb
		1.1.6 Explore the potential of establishing / expanding a “Vulture Friendly Farming” initiative: (a) develop indicators for what constitutes “vulture friendly” farming and what does not, (b) develop a publicity and information package to farmers, (c) develop an assessment process, and (d) develop signage, logos and awards to give recognition, and a database of qualifying farmers. Explore working with MEATCO.	M Diekmann, H Kolberg, P Bridgeford, K /Uiseb, L Komen Discuss with CCF
		1.1.7 Investigate poison and pesticide outlets and ensure that they (a) know and adhere to the laws, (b) are aware of the potential ecological, human health and legal impacts of malpractice, (c) inform all their staff appropriately, and (d) report any suspected misuse of chemicals.	L Komen + support group
		1.1.8 Investigate current veterinary use of drugs potentially harmful to vultures (e.g. anti-inflammatories), and ensure that all Vets,	L Komen, M Jago (briefed by K /Uiseb) and

		through Veterinary Council, are well informed of the vulture-drug situation. Potentially harmful drugs on Vet Council's mailing list.	Veterinary Council
1.2 Food limitations (shortage and quality, also linked to bush encroachment and changing land use)	1.2.1	Carefully promote the establishment of vulture feeding sites (vulture restaurants) in appropriate places, with the correct management, providing the right food and presenting good environmental information and interpretation.	All involved (Vultures Namibia members)
	1.2.2	Review NARREC and EWT vulture restaurant pamphlets and information for correctness, completeness and accessibility to target audiences, and revise as necessary.	K Wolter, L Komen
	1.2.3	Explore the feasibility of promoting lead-free bullets (to prevent lead contamination in scavengers). Talk to NAPHA, gun shops and MET	C Brown (NAPHA)
	1.2.4	Encourage tourism enterprises to set up property managed vulture restaurants to both diversify their tourism activities offered, and at the same time to contribute to vulture conservation, monitoring and education.	C Brown to talk to HAN and FENATA
	1.2.5	Support bush clearing initiatives, certified environmentally friendly charcoal production from invader bush species and work with the bush encroachment and rangelands committee under NAU.	K /Uiseb
	1.2.6	Investigate possible change in food availability when land use changes from livestock to wildlife and game ranching. As a first step, use CV satellite data provided by REST to look at foraging and feeding areas with respect to different land uses.	K Wolter's student
	1.3 Power transmission infrastructure	1.3.1	Quantify the impact of collisions by CVs and other scavenging birds with power lines, and map high risk sites.
1.3.2		Quantify the impacts of electrocutions by CVs and other large bird species on power lines, and map high risk areas.	NNF-NamPower project, M & A Scott
1.3.3		Work with NamPower and REDs to address problems.	NNF-NamPower project, M & A Scott
1.4 Farm reservoirs (water tanks)	1.4.1	Quantify the impacts of drowning in farm reservoirs by CVs and other scavenging species, and map high risk areas.	H Kolberg, as part of a farmer questionnaire project
1.5 Muti trade	1.5.1	Carry out an investigation (research) into the extent of use of vulture parts in the muti trade, covering both medicinal uses by traditional healers and fortune telling by Sangomas.	D Moss to start process and plan next steps
1.6 Lack of appreciation of the environmental and socio-economic role of vultures	1.6.1	Carry out an economic assessment of the value of the ecological role that vultures play and the ecosystem services that they provide in keeping the veld clean of rotting carcasses, the costs that would result from an increase in mammalian scavengers (many of which are also effective predators), an increase in flies, and an associated increase in diseases (including fly-borne, anthrax, etc).	This would be an excellent MSc project for an environmental economist. C Brown to contact UNAM Economics Dept.

2. Rebuild the Cape Vulture population in Namibia	2.1 Cape Vulture population at a critically low level and, without conservation intervention, would be unable to recover	2.1.1	Partner organisations in South Africa (VulPro & JHB Zoo) work to optimize the production of nestling Cape Vultures from captive held birds. This involves drawing in CVs from other facilities in South Africa and also possibly double clutching.	K Wolter, W Nesor, D Moss & S van der Spy
		2.1.2	Provided indicators look promising, a medium to long-term commitment is agreed to provide young birds to Namibia (depending on breeding success) to release into the wild population in the Waterberg area.	K Wolter, W Nesor, D Moss & S van der Spy, REST & MET
		2.1.3	Future initiatives, depending on the success of the above, could involve (a) starting a second population at an historic CV cliff, possibly in the Pro-Namib, and (b) starting a CV captive breeding programme in Namibia.	K Wolter, W Nesor, D Moss & S van der Spy, REST & MET
		2.1.4	Carefully select release site on Waterberg cliff as close to vulture colony as practical, keeping in mind access with aviaries, feeding and watering, and security.	MET, REST, VulPro, Israeli specialist
		2.1.5	Develop all necessary procedures and protocols for importing birds, holding them in country, moving them to release aviaries on Waterberg cliffs, feeding, watering and protecting them, best age for release, etc.	REST, VulPro, Israeli specialist, MET
		2.1.6	Investigate best transmitter platform for released CVs (satellite, cell phone, etc), and fit all birds with agreed best option.	W Nesor, M Diekmann, K Wolter, H Kolberg, J Mendelsohn
		2.1.7	Download data from transmitters on regular basis and make available to all partners via the regional web-based avian scavenger information system (see point 4.2.2 below)	J Mendelsohn & W Nesor
3. Monitor the Cape Vulture population in Namibia as part of a national avian scavenger population monitoring programme	3.1 Cape Vultures and other avian scavengers continue to decline (or their status remains unclear)	3.1.1	Establish an avian scavenger monitoring system, using existing mechanisms were available, and including: <ul style="list-style-type: none"> • Raptor road counts¹ • Event book system in communal conservancies² • Records from vulture restaurants³ • Nest counts⁴ • Ringing events and recoveries⁴ • Satellite / cell phone transmitter data⁵ • Farmer questionnaire surveys⁶ 	¹ C Brown & A Jarvis/T Robertson ² C Brown & NR WGp ³ M Diekmann (data form) ⁴ H Kolberg & P Bridgeford ⁵ J Mendelsohn ⁶ H Kolber & C Brown
4. Provide an effective information, outreach and education service and information-sharing platform for vulture conservation	4.1 Farmers and associated role players are not adequately informed about the situation regarding Cape Vultures and other avian scavengers	4.1.1	Provide information packages and work closely with the media, farmer's unions, farmer's associations, farmer's auctions, agricultural shows, CANAM, NACSO and communal conservancies, MET, MAWF, the general public and schools to create "vulture friends" and influence behavior.	L Losper, L Komen, M Diekmann, K Wolter, H Kolberg, P Bridgeford
		4.1.2	Link with UNAM and Polytech staff to ensure that conservation challenges and approaches are incorporated and addressed in the relevant curriculum materials	??
		4.2.1	Create links with partner organisations in neighbouring countries working on avian	W Nesor (info system – see

<p>and for facilitating collaborative conservation support in Namibia and the region</p>	<p>4.2 There is inadequate regional information and collaboration to support regional conservation efforts for Cape Vultures and other avian scavengers</p>	<p>scavenger conservation, e.g. EWT, Birdlife South Africa, Birdlife Botswana, Zambian Ornithological Society, etc. as well as via the SADC regional environmental education programme.</p>	<p>below), L Losper, L Komen, M Diekmann, K Wolter, H Kolberg, P Bridgeford</p>
		<p>4.2.2 Establish a regional web-based avian scavenger information system and platform that covers <i>inter alia</i>, the following:</p> <ul style="list-style-type: none"> • Satellite tracking info • Register / database of mortalities (spp, age, date, place, cause, etc) • Names and contact details of participating people & institutions • Register / database of re-sightings of marked birds • Register / database of vulture restaurants • Register / database of interesting vulture sightings (general) and field records • Down-loadable copies of data sheets / monitoring forms • Down-loadable copies of conservation information and materials (booklets, posters, brochures), good practice guides (e.g. how to set up a vulture restaurant, how to prevent vultures drowning in farm reservoirs), etc. • Down-loadable info for the media, press releases, etc • Information on topical and pertinent issues, e.g. veterinary drugs, muti trade, electrocutions and collisions with power lines, drowning in farm reservoirs, etc. • Register / database of active researchers and current projects • Recent grey and published literature • Species Conservation Action Plans • Progress on implementing Action Plans • An interactive Forum for exchanging ideas, notifying people about developments, etc. • What else? 	<p>W Nesper (possible links to Namibia's Environmental Information Service – J Mendelsohn, Alice Jarvis & Tony Robertson, and Mike & Ann Scott)</p>
<p>5. Secure sufficient resources (in cash and/or kind) to implement the Action Plan</p>	<p>5.1 Insufficient resources to undertake the necessary actions to protect the Cape Vulture and prevent its extinction in Namibia</p>	<p>5.1.1 Secure financial resources through various grants mechanisms, e.g. Nedbank Go Green, Fame Products Trust Fund, SPAN, GEF Small Grants Fund, USA and UK sources, International Zoos, etc.</p> <p>5.1.2 Secure equipment, e.g. transmitters (VulPro, MET), etc.</p> <p>5.1.3 Work with partners to secure in-kind support, e.g. with VulPro, Johannesburg Zoo and other breeding centres; MAWF, Farmers Associations, AGRA, Veterinary Council, etc.</p> <p>5.1.4 Any other mechanisms to secure resources.</p>	<p>All partners</p>

E. Tracking of next steps

Actions	Progress
1. All participants at the Technical Workshop for the Development of a National Plan of Action for the Conservation of the Cape Vulture in Namibia to review these Proceedings and give comments (all participants).	Done
2. Comments to be incorporated into the revised Proceedings (C Brown)	Done
3. Revised Proceedings to be submitted to MET via Kenneth /Uiseb for review and approval (K /Uiseb).	Done
4. End of each month, starting in February 2011, a short bullet-point report should be submitted by each person named in the Action Plan on the specific actions for which they are responsible, and submitted via the web-based avian scavenger information system (all named; C Brown & K /Uiseb to be whip masters).	
5. Next meeting of team will be in Namibia in March/April 2011 (M Diekmann & H Kolberg to arrange place, date, agenda, etc with partners / stakeholders).	

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Appendix 1

Workshop AGENDA

Development of a National Plan of Action for the Conservation of the Cape Vulture in Namibia

10 November 2010
WWF Boardroom, Windhoek

A. Welcome & introduction (08h30)

1. Welcome & introductions (Facilitator)
2. Purpose of workshop (Facilitator)
3. Opening address (Louisa Mupetami, Director Scientific Services, MET, on behalf of the Permanent Secretary of MET)

B. Presentations (setting the scene)

4. What is the current status of the Cape Vulture in Namibia? (Holger Kolberg MET)
5. What conservation actions have been undertaken over the past decade? (Maria Diekmann REST)
6. What results have we got from satellite tracking? (John Mendelsohn RAISON)
7. What are the key aspects of the regional conservation action plan for the Cape Vulture (Kerri Wolters)

C. Workshop discussions (developing the Action Plan) (Facilitator)

8. What are the main threats facing Cape Vultures in Namibia?
9. What are the main actions required for a national Action Plan in Namibia?
10. Who are the lead / key role players, roles and time frames?
11. Are there any remaining gaps?
12. Funding and resources?
13. Consolidation of the national Cape Vulture Action Plan
14. Closing remarks

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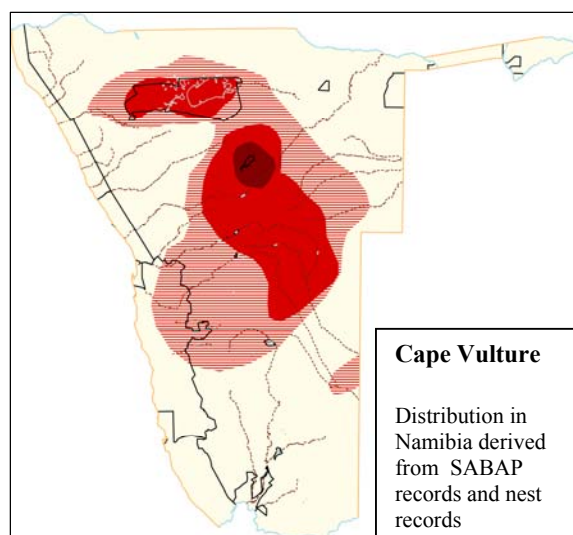
Appendix 2

Background on the Cape Vulture in Namibia

(drawn from Namibia's Red Data Book on birds)

Status: The Cape Vulture *Gyps coprotheres* is classed as **Critically Endangered** in Namibia. It is endemic to southern Africa occurring relatively commonly in two regions: Limpopo Province and the Transkei/Eastern Cape/Lesotho highlands. It is also concentrated in low mountains in s-e Botswana where it breeds in large colonies. Elsewhere it is rare, occurring in small satellite, breeding colonies in southern South Africa, and non-breeding colonies in Zimbabwe and Namibia (Brown 1985, Mundy *et al.* 1992, Mundy *et al.* 1997, Boshoff *et al.* 1997, Simmons & Bridgeford 1997, Anderson 2000, Borello & Borello 2002). This background section is drawn from Namibia's Red Data Book for Birds (Simmons & Brown in press).

Distribution & abundance: In Namibia it is thinly spread throughout central regions with concentrations only in the Waterberg Plateau Park where they once bred and in the Etosha National Park where they forage (Mundy *et al.* 1997). Satellite tagged birds moving 420 km in a day indicate that the Waterberg birds can forage over Etosha but rarely did so (Mendelsohn *et al.* 2005). Historically, birds once occurred in the central Namib Desert where five colonies were known (Brown 1985). In 1964 and 1969 Cape Vultures were common and occurred in a ratio of 1:2 and 1:4 with Lappet-faced Vulture (Sauer 1973); at Hotsas this represented about 25 birds in 1969. By 1985, poisoning and other factors had reduced the ratio of Cape to Lappet-faced to less than 1:100 and none of the colonies were active (Brown 1985). Almost all reporting rates from bird atlas data (Harrison *et al.* 1997) for Namibia remain low at less than 20% (Mundy *et al.* 1997). In its stronghold in the Waterberg mountains (the highest sheer cliffs on the nw side of the plateau), the bird's numbers have plummeted dramatically. In the 1940s local farmers and Windhoek Bird Club members estimated that about 500 birds occurred and bred on the Waterberg cliffs (Brown 1985). By 1970 about 300 remained (Directorate of Nature Conservation ornithological records) followed by a precipitous crash to the early 1980s of about 10 birds. The decline was halted briefly with the establishment of a farmer outreach programme and a supplementary feeding scheme in August 1984 (Brown & Jones 1989) that provided 1-4 carcasses per month to draw birds away from poisons that were rife in the area. The population rose to 13 adult birds and breeding success increased from 0% in 1983 to 75% of 4 nests in 1984. By July 1991 up to 25 adult Cape Vultures were present at the carcasses (Berry 1997). Berry recorded 4 young in that year and five in 1992, 1993, 1994. Thereafter breeding suddenly stopped until, in 1997 only 3 adults and one immature remained (Berry 1997). Presently, with supplementary feeding still continuing by the non-governmental organisation REST (Rare and Endangered Species Trust), 8 - 11 ad, 2 imm and 1 juv (hybrid Cape x White-backed Vulture?) are



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presently associated with the Waterberg (M. Diekmann unpubl data). A helicopter survey of the escarpment cliffs in 2001 suggested that no breeding occurs but roosting was suspected (from fresh white-wash) despite an absence of birds (Simmons 2002). This has since been confirmed by two of the five birds satellite-tracked (Mendelsohn *et al.* 2005). The presence of young birds, however, indicates that pairs still breed and satellite tracking has revealed the first tree-nesting and some possible inter-breeding with White-backed Vultures (Diekmann unpubl data, Mendelsohn *et al.* 2005).

The closest breeding colony to the Waterberg birds is in Botswana about 1,000 km southeast (Borello & Borello 2002) indicating that the Namibian population, like the non-breeding Zimbabwe colony (Mundy *et al.* 1992) is a tiny outlier in a population centered in the southeastern subcontinent. Despite the isolation, young birds move hundreds of kilometres and the furthest movement on record was of a bird ringed in the former Transvaal and poisoned in central Namibia 1,226 km west. Of 631 ringed birds, 6 South African birds have been recovered in Namibia (Oatley *et al.* 1998), indicating that genetic interchange can potentially take place even over large distances.

The global (southern African) population was estimated at 4,400 pairs or about 12,000 birds (Piper 1994) contained within 84 breeding colonies. That number appears to have declined since 1994 to about 8,000 mature individuals by the turn of the millennium (Anderson 2000).

Ecology: Prefers open montane habitat, where strong winds promote soaring, and suitable cliffs provide breeding and roosting sites (Brown & Piper 1988). Small to very large breeding colonies have been recorded on steep fractured cliffs faces in Botswana, South Africa and Namibia (Mundy *et al.* 1982, Borello & Borello 2002, Brown & Cooper 1987, Brown & Jones 1989). It forages over open grassland and open savanna woodland, generally from heights of 250 – 350 m but occasionally up to 1,000 m (Mendelsohn *et al.* 2005). It is excluded from closed (bush-encroached) woodland because of its high wing loading and apparent inability to take off once satiated from within dense tree cover. In Namibia five tagged birds spent most of their time foraging over commercial farmland and little time over communal lands or the protected areas of the Waterberg Plateau or Etosha (Mendelsohn *et al.* 2005). In South Africa, it is also found more often in farmland probably because of high stock losses, and also because vulture restaurants are providing carcasses regularly as part of conservation measures (Anderson 2000).

Searches for large carcasses of hoofed ungulates by soaring over suitable terrain and watching for other vultures descending onto carcasses (Mundy *et al.* 1992). Ranges at least 15 km from its roost, or over 700 km² in the s. Cape (Boshoff *et al.* 1984), but much farther in Namibia. Satellite-tagged birds have recently shown that the home range of five Namibian birds varied from 11,800 km² to 24,500 km², similar in area to the entire Etosha NP (Mendelsohn *et al.* 2005). Wild ungulates have become limiting in South Africa as farmland and crops replace wildlands (Anderson 2000). In Namibia this is unlikely to be the case for the Waterberg birds given (i) the incidence of cattle farms in the vicinity (ii) the large and increasing number of game farms in Namibia and (iii) increasing numbers of other vultures (Whitebacked and Lappet-faced) that occur at the Waterberg's Vulture Restaurant (Mundy & Simmons 1999).

A slow rate of recovery is guaranteed by the small clutch size (c/1), and the delayed maturation of this, the heaviest of southern Africa's vulture guild. In Namibia it breeds at the same time as other large vultures with a peak of egg-laying in June, with records also from

May through August (Simmons & Bridgeford 1997). This is similar to Botswana but in both countries birds breed 1 month later than colonies in the former Transvaal (Mundy *et al.* 1997, Borello & Borello 2002).

The Cape Vulture's highly social nature makes it possible that once the small satellite colonies present in Zimbabwe and Namibia reach a threshold below about 20 adult birds they may stop breeding and move elsewhere, possibly as a unit of known individuals (Vernon 1997). This appears to have happened at both the Waterberg and Zimbabwe colonies (Mundy & Simmons 1999). Alternatively birds that stay may begin to hybridize with White-backed Vultures as suspected in two cases at the Waterberg colony (M Diekmann unpubl).

Threats: The main threats to the Cape Vulture's continued existence in Namibia is a combination of poisoning and the severe bush encroachment that has occurred in the last 100 years around the bird's last breeding site at the Waterberg (Brown 1985, Simmons & Bridgeford 1997, Mundy & Simmons 1999). Poisonings have been recorded throughout Namibia including immediately around the Waterberg Plateau breeding area when 22 Lappet-faced and/or Whitebacked Vultures were poisoned on a farm nearby, 19 of which were rehabilitated (T. Cooper in Bridgeford 2001). A total of 226 vultures of 3 species were recorded to have died of unnatural causes in the 6 yr period between 1995 and 2001, 87% of which were poisoned (Bridgeford 2001, 2002). This represents the tip of the iceberg, as only a small proportion of poisoned birds are found and reported. At a minimum average of 38 vultures killed per year, it is no wonder that many of Namibia's vultures are declining. A few farmers are typically responsible for most of these deaths (Brown 1991, Simmons 1995), although some are probably deliberately killed for the traditional medicine (muti) trade (below). Little direct evidence exists for Cape Vultures as victims except that the Waterberg birds suddenly stopped breeding after 1994 when the population dropped from 25 birds to 3 adults and 1 immature (Berry 1997).

Muti trade in vulture parts is known from South Africa and Lesotho (Cunningham 1990, Beilis 1999) but until recently it was not known from Namibia. A recent report indicates that of 17 traditional healers 47% used vulture brain in their trade, 41% used feathers and 6% used the liver. From the same sample from Windhoek and Okakarara, 29% said they obtained parts from dead vultures, another 29% said they obtained parts from killing vultures, while 3% said they obtained parts from pharmacies or acquaintances. Only one healer claimed he used Cape Vultures (now doubted: M Diekmann pers comm.), and all indicated that vulture nestling were preferred (Hengari 2002, Hengari *et al.* 2004). The continued vulture poisoning around the Waterberg Plateau close to the town of Okakarara (Simmons & Bridgeford, Bridgeford 2001, 2002) can thus be explained (and probably solved - below). Given that 1500 traditional healers have applied to register with Namibia's Ministry of Health and Social Services (Barlow in Hengari *et al.* 2004) means that the threat could be very much greater than suggested here.

Other threats include drowning in farm reservoirs which in South Africa claim more Cape Vultures than any other species of raptor (120 birds in 21 known incidents: Anderson *et al.* 2002). This may be related to their highly developed social behaviour for foraging and breeding. One Cape Vulture was found dead and two were removed (alive) from the canal of the Eastern National Water Carrier near the Waterberg, when it was first constructed, but none were subsequently found in several years of weekly to monthly monitoring (Anon 1992).

The commonest mortality factor of Cape Vultures ringed and recovered in South Africa was electrocution (54 birds: Oatley *et al.* 1998), but there have been no reports from Namibia, but the Namibia Nature Foundation is currently working with NamPower to assist in the monitoring, management and mitigation of bird-power line conflicts, addressing both electrocution and collision.

An additional threat is the mortality factor decimating an estimated 100,000 *Gyps* vultures in India and Pakistan (Anderson & Mundy 2001). This is now known to be caused by Diclofenac used by veterinarians to cure cattle of arthritis, causing kidney failure in vultures when they consume treated cows (Oaks *et al.* 2004). Some diclofenac is used in southern Africa and the risk is unknown.

Conservation status: Cape Vultures are classified as *Critically Endangered* because of a 96% decline from about 500 birds in 1940s to about 11 birds present day; known breeding colonies have also declined from five formerly in the Namib Desert to the one extant colony associated with the Waterberg Plateau Park. It is classified as *Vulnerable* in South Africa, given its larger, healthier populations. However there too, roosting and breeding sites have decreased during the 20th century from 441 to 167 sites, with a suspected 20% decline in numbers in the last 3 generations (Anderson 2000). It is also classed as *Vulnerable* in the global Red list due to continuing rapid decline in southern Africa where it is endemic (Stattersfield & Capper 2000, Birdlife International 2004).

Actions: Lacing carcasses with poisons for the control of carnivores such as jackal has recently been banned in the draft Parks and Wildlife Management Bill of the Ministry of Environment & Tourism. Farmers may, however, apply for permits to control particular animals. The ban of poison use should be rigorously enforced, not just for the Cape Vulture, but also for other Red Data birds of prey and for a number of mammalian species, as scavenging species provide a vital ecological service.

Continuing the supplementary feeding scheme at the Waterberg Plateau Park and the nearby REST headquarters should remain a priority, as well as continuing education vulture conservation. This is being undertaken in the form of explanatory booklets and posters on vultures and predators, as well as talks to farming communities by organizations such as the Vulture Study Group (P. Bridgeford), NARREC (L. Komen) and REST (M. Diekmann). This includes newspaper articles in several languages which are reaching a much wider audience of the Namibian public. This should continue and be expanded and include the targeting of traditional medicinal healers in former Hereroland near the Waterberg Park.

Bush clearing programmes should be promoted for the conservation of not just the Cape Vulture, but also for the Cheetah and other open savanna species. Providing vulture parts from the captive breeding and release programmes of Cape Vultures (REST) or rehabilitation centres (NARREC) to recognised traditional healers, should be considered. This should be carried out with a guarantee that feathers or other parts will be provided only to healers who do not obtain parts from the killing of wild vultures.

All farm reservoirs, but particularly those in the vicinity of the Waterberg Park should either be covered or provided with ladders enabling trapped birds to escape (Anderson *et al.* 2002). An ambitious programme to reintroduce Cape Vultures from South Africa and release them from the Waterberg cliffs should be urgently implemented.

Funding has allowed satellite collars to be fitted to the remaining wild birds to understand their foraging patterns (Diekmann 2005, Mendelsohn *et al.* 2005). All birds released as part of the reintroduction programme should be fitted with appropriate tracking devices.

Taxonomic Note: A recent move by some vulture biologists to re-name the large *Gyps* Vultures, “Griffon” Vultures is based on the idea that they are “super vultures” usually large, pale-eyed, cliff-nesting species, that typically follow large herds of ungulates for their food source (Mundy 2002). Since this splitting is not supported by the best molecular data available (Wink 1995, Seibold & Helbig 1995), and is causing confusion with the existing Griffon Vulture from Europe (Clark 2002), we, nor the new Roberts (Hockey *et al.* 2005) follow, nor recommend this nomenclature here.

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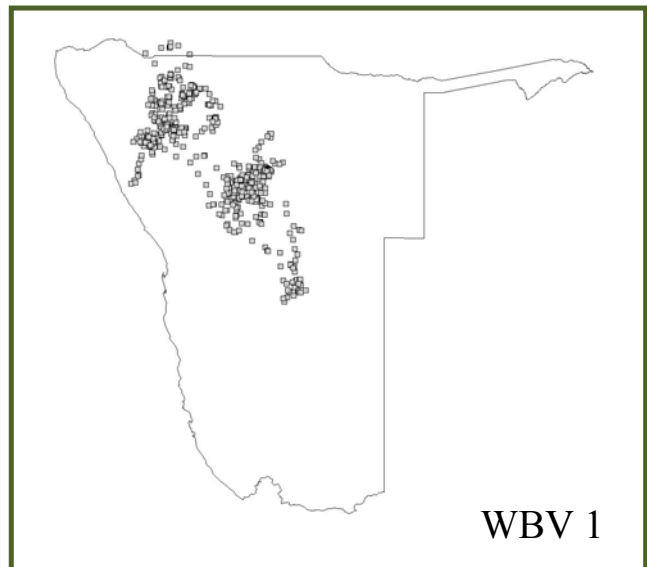
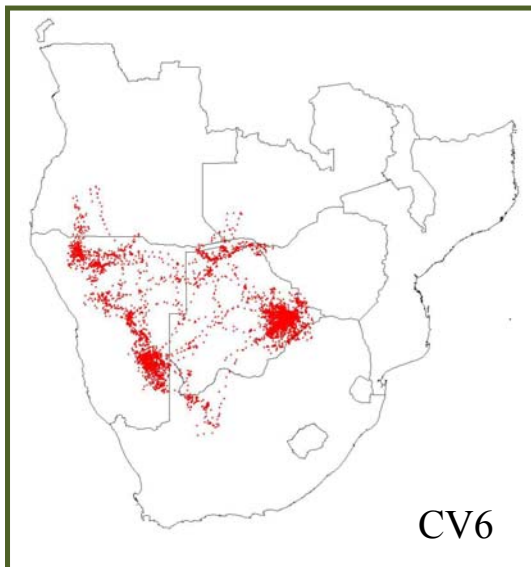
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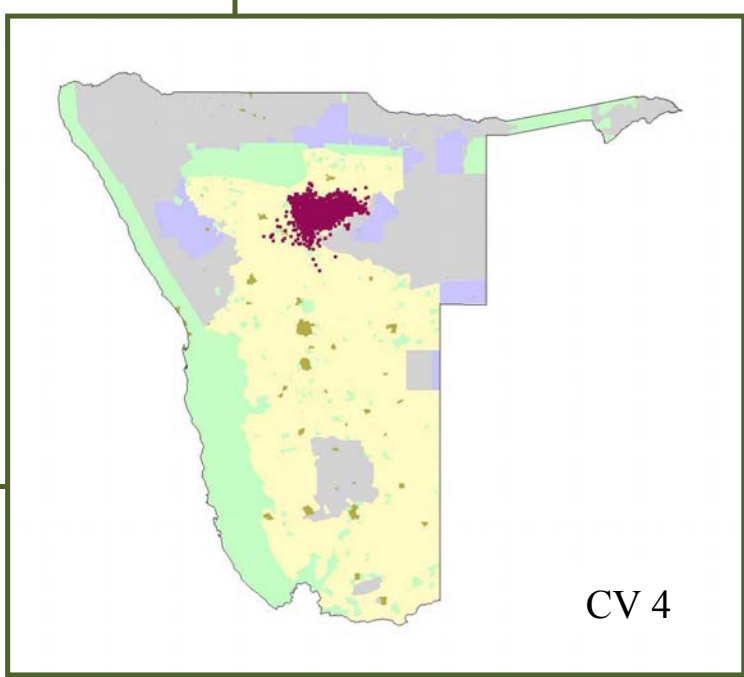
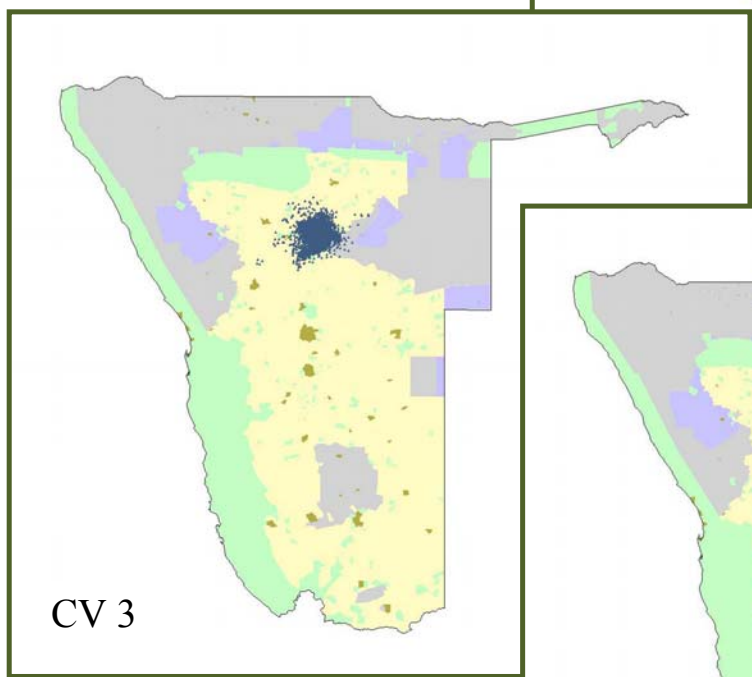
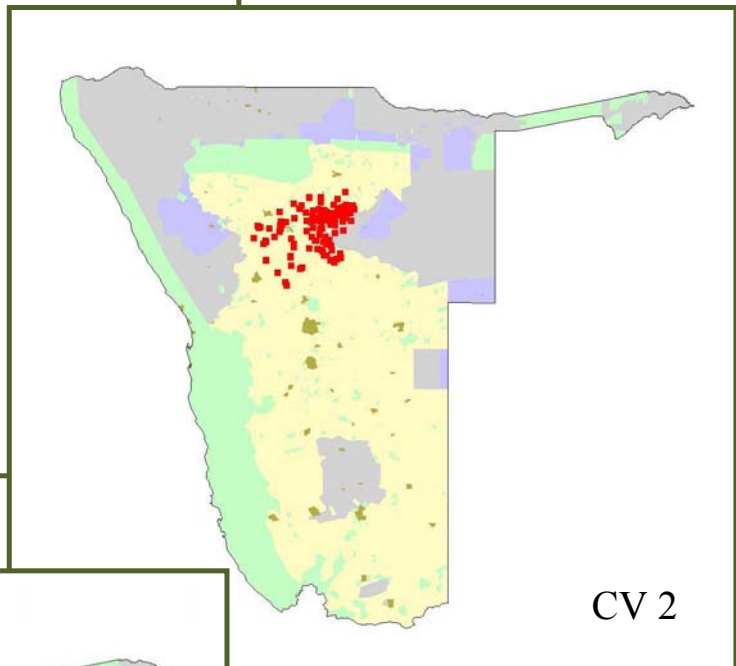
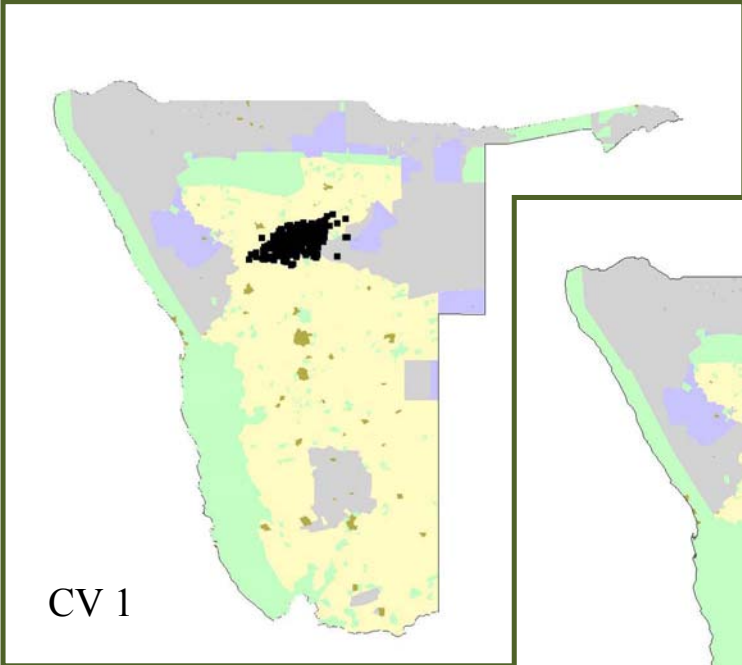
Appendix 3

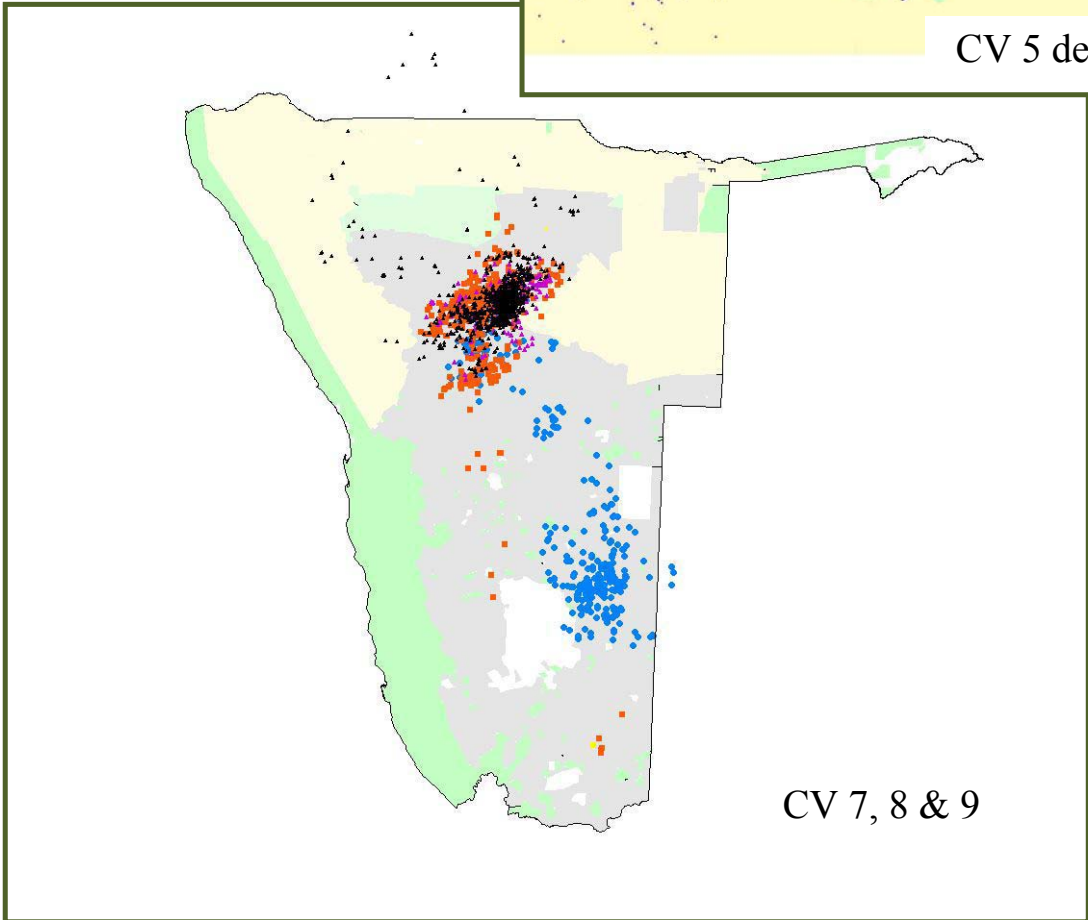
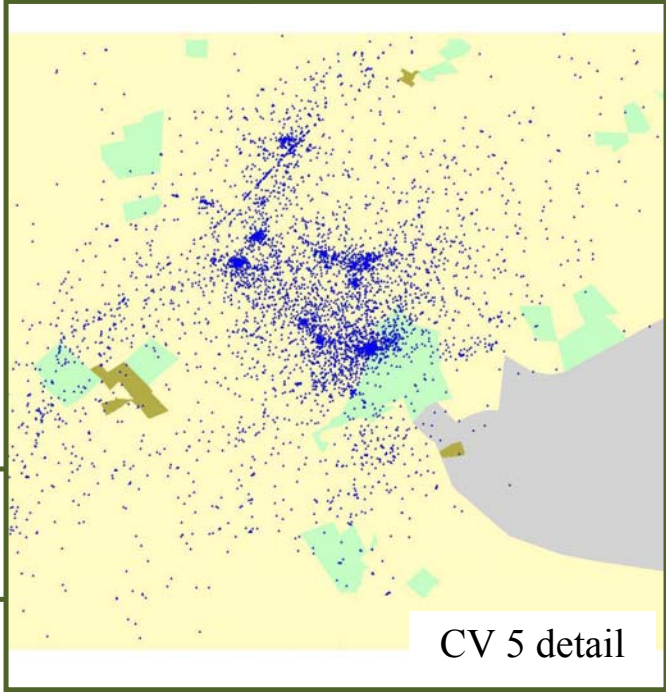
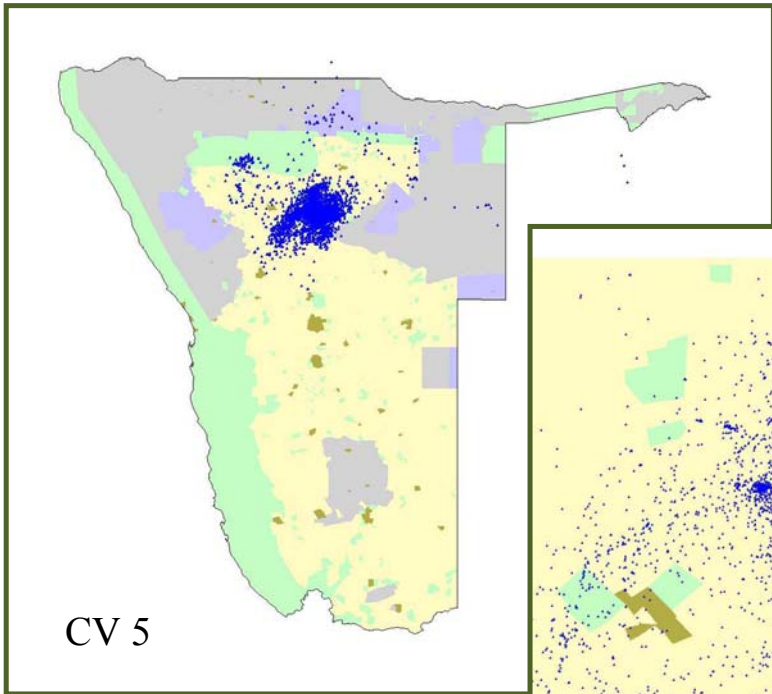
What results have we got from satellite tracking Cape Vultures in Namibia?

John Mendelsohn, RAISON

Bird	Start date	End date	Records	Notes
CV1	Jan 04	Oct 04	2,224	Male, bred once
CV2	Mar 04	May 04	654	Male, bred once
CV3	Nov 04	Nov 09	15,447	Adult male, never bred
CV4	Nov 04	May 08	17,430	Male, bred several times
CV5	Jan 05	Dec 09	19,400	Male, bred several times
CV6	Feb 05	May 10	27,165	Young bird, never bred
CV7	Oct 05	Feb 07	1,630	Captive released
CV8	Aug 06	Feb 07	692	Captive released
CV9	May 08	Jul 09	1,862	Captive released
WBV/CV?	Mar 04	Sep 04	1,600	Found dead
10 vultures tracked for a total of 278 vulture-months with 88,104 GPS positions				







CV 5 nest

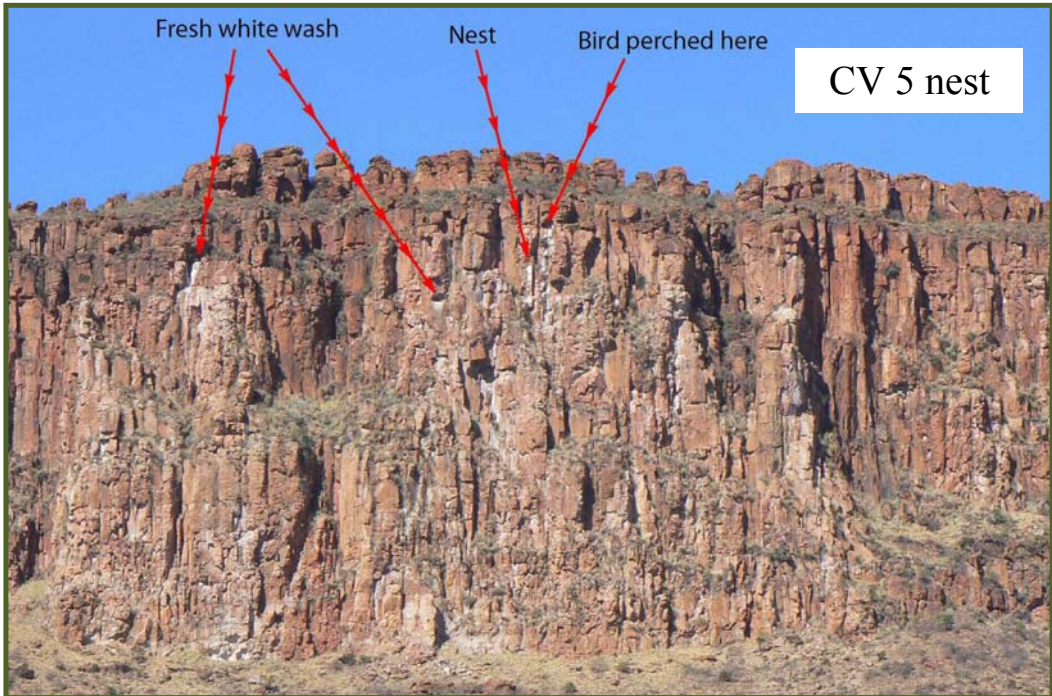


Fresh white wash

Nest

Bird perched here

CV 5 nest



Appendix 4

What are the key aspects of the regional conservation action plan for the Cape Vulture?

Kerri Wolters, Vulture Programme (VulPro)

(see attached file.

Kerri, I can't copy your file into this doc – if anyone knows how to do so, please help)