GENERAL NOTICE

NOTICE 763 OF 2013

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004 (ACT NO. 10 OF 2004)

DRAFT BIODIVERSITY MANAGEMENT PLAN FOR GYPAETUS BARBATUS MERIDIONALIS

I, Bomo Edith Edna Molewa, Minister of Water and Environmental Affairs hereby publish in terms of section 43(3)(a) read with section 100 of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), a draft biodiversity management plan for *Gypaetus Barbatus Meridionalis* in the schedule hereto.

Members of the public are requested to submit written representations on, or objections to the draft plan to the Minister. All such representation or objections must be submitted in writing in the following manner:

Delivered to:	The Director-General Department of Environmental Affairs Attention: Ms Humbulani Mafumo Fedsure Forum Building (North Tower: Office 1305) 315 Pretorius Street **PRETORIA** 0002
By post to:	The Director-General Department of Environmental Affairs Attention: Ms Humbulani Mafumo Private Bag X447 **PRETORIA** 0001
By fax to:	(086) 541 1102; or by e-mail to:
hmafumo@environment.gov.za	

Comments received after 30 days may not be considered.

BOMO EDITH EDNA MOLEWA
MINISTER OF WATER AND ENVIRONMENTAL AFFAIRS

Schedule

Draft Biodiversity Management Plan for the BEARDED VULTURE (*Gypaetus barbatus meridionalis*) for Southern Africa

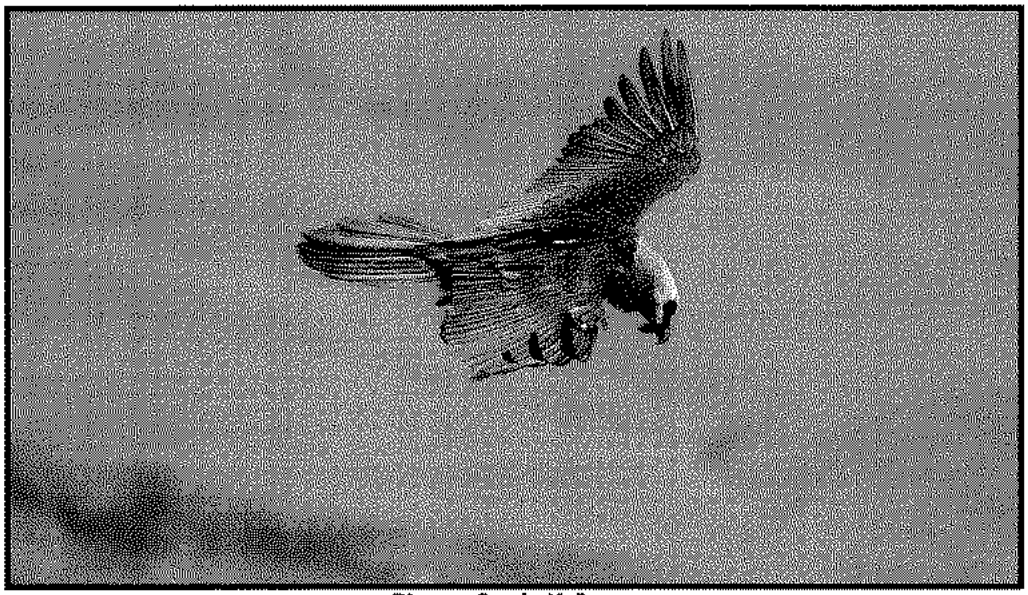

Photo: Sonja Krüger

Date: Final Draft for Publication for Public Participation, 15th April 2012
Edited by: Sonja Krüger

Executive Summary

The Bearded Vulture *Gypaetus barbatus meridionalis* is an endangered species inhabiting the Maluti Drakensberg mountain range of southern Africa including Lesotho and the Free State, KwaZulu-Natal and Eastern Cape provinces of South Africa. The population is an isolated one whose numbers are continually declining as a result of numerous threats to the species.

In recognition of the need for conservation action, South Africa has developed the requisite legal framework that caters for the protection of this important species. The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) and the Threatened or Protected Species (ToPS) Regulations provide for the compilation of Biodiversity Management Plans for Species (BMP-S). The Bearded Vulture Task Force (BVTF) of the Birds of Prey Programme (BoPP) of the Endangered Wildlife Trust (EWT) therefore initiated a workshop to develop a BMP for the species to improve the conservation status of the species. The workshop was initiated as a review of the action plan developed as part of a Population Habitat and Viability Analysis (PHVA) workshop that was undertaken for the species in 2006. The BVTF invited a number of key role-players to the initial workshop to review the PHVA document and develop a draft BMP. This draft document was then taken to targeted stakeholder workshops in both South Africa and Lesotho. The BMP process included key role players and produced a document that included much of the information generated in the PHVA workshop held in 2006 and proceedings of targeted role player engagements. The BMP was subjected to a number of iterations and review processes. The BMP follows the structure provided for by the National Department of Environmental Affairs and Tourism in their Norms and Standards for BMP-S (March 2009) with the crux of the BMP being a series of very specific actions that are nested in a management planning hierarchy of an aim, objectives and operational goals. Although the BMP follows the structure provided for within the South African legal framework, the aims objectives and operational goals have been developed for the southern African population as a whole, which includes South Africa and Lesotho.

The aim of the BMP for the Bearded Vulture is to provide a mechanism to ensure the long term survival of the species through halting the population decline and stabilizing the population at the current population size (approximately 100 breeding pairs) over the next ten years and to start growing the population to a realistic carrying capacity (150 breeding pairs) in the future.

The objectives that are required to be met in order to achieve the aims are as follows:

- Determine the causes of mortality and how mortality varies in space and time.
- Determine the survival rate of the species to understand whether age specific survival or breeding success is inhibiting population growth structure.
- Examine changes in breeding population size and range.
- Determine the spatial and temporal foraging range use of non-breeding individuals and the environmental influences on the use of home range.
- Supplement natural carcass availability through an intensive feeding programme, *i.e.* feeding sites which are well located and managed and provide a safe food source.
- Promote Bearded Vulture conservation planning into existing land-use planning systems, Environmental Impact Assessment (EIA) processes and Stewardship Programmes to mitigate the impacts of infrastructural developments and tourism activities on the population.

- Address the threat of poisoning.
- Determine the impacts of global climate change and global warming on the Bearded Vulture.
- Address the use of vultures in illegal trade and traditional medicine.
- Address the lack of partnerships between the various stakeholders, role-players, and interested and affected parties to obtain support for the BMP and its implementation.
- Address legal discrepancies regarding Bearded Vulture conservation.
- Create awareness around the species and its conservation status.
- Address the lack of knowledge of outcomes of previous interventions.
- Address the lack of adequate protection for the species.

The specificity of the operational goals and actions that are captured under the above objectives is such that progress with implementation of the BMP can be tracked and those, to whom responsibilities have been allocated, can hold each other accountable for delivery. Preceding the above is a list of overarching principles that are key to governing implementation and for the interpretation of the operational goals and actions. They have been formulated in recognition of the extremely sensitive, complex and dynamic nature of the circumstances that surround this species.

It is recognised that this BMP is the first in a series of plans that will be produced for the species within an iterative management planning process and that implementation will provide the lessons necessary to ensure that subsequent plans are adjusted to be more realistic and relevant to the prevailing management dynamics. Considering the latter may change in between planning iterations, it is important that those responsible for implementation of this BMP recognise the need for and apply active adaptive management when necessary.

Definitions

Biological diversity or biodiversity means the variability among living organisms from all sources including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part and also includes diversity within species, between species, and of ecosystems.

IUCN Red Data List means a global or national list providing information on a species' risk of extinction (usually by taxonomic group), and prepared under the auspices of the International Union for the Conservation of Nature.

Role player means a natural or juristic person(s) who have a direct role to play in the implementation of the Biodiversity Management Plan for the species and whose role is captured in this Biodiversity Management Plan.

Species a kind of animal, plant or other organism that does not normally interbreed with individuals of another kind, and includes any sub-species, cultivar, variety, geographic race, strain, hybrid or geographically separate population.

Stakeholder means a natural or juristic person(s) that has an interest in, or may be affected by, a particular obligation or decision or activity, relating to or resulting from a management plan, either as individuals or representatives of a group and includes land owners where applicable.

Threat means any action that causes a decline in populations and compromises the future survival of a species or anything that has a detrimental effect on a species.

Viable in relation to a species or a population means the ability to survive or persist and develop or multiply over multiple generations or a long time period.

Vulture feeding site is a site where carcasses of animals are placed to provide supplementary food for scavengers, particularly vultures. Vulture feeding sites are often referred to as vulture restaurants.

Abbreviations

BCC: Bilateral Coordination Committee
BMP: Biodiversity Management Plan
BoPP: Birds of Prey Programme (Endangered Wildlife Trust)
BVTF: Bearded Vulture Task Force
CD: Compact Disk
CEPF: Critical Ecosystems Partnership Fund
CLP: Conservation Leadership Programme (Endangered Wildlife Trust)
DEA: Department of Environmental Affairs
DEDEAT: Department of Economic Development Environmental Affairs and Tourism
DNSM: Durban Natural Science Museum
ECPTA: Eastern Cape Parks and Tourism
EIA: Environmental Impact Assessment
EWT: Endangered Wildlife Trust
Ezemvelo: Ezemvelo KwaZulu-Natal Wildlife
FSDETEA: Free State Department of Tourism, Environment and Economic Affairs
GIS: Geographic Information System
GPS: Global Positioning System
IAIASA: International Association of Impact Assessment for South Africa
IBA: Important Bird Area
IT4C: Information Technology for Conservation (Endangered Wildlife Trust)
KZN: KwaZulu-Natal
LEC: Lesotho Electricity Corporation
LPP: Law and Policy Programme (Endangered Wildlife Trust)
MDTP: Maloti Drakensberg Transfrontier Programme
MSc: Master of Science
MTEC: Ministry of Tourism, Environment and Culture (Lesotho)
NEMBA: The National Environmental Management: Biodiversity Act No. 10 of 2004
NRF: National Research Foundation
OVI: Onderstepoort Veterinary Institute
PhD: Doctor of Philosophy
SACWG: South African Crane Working Group (Endangered Wildlife Trust)
SAVM: South African Veterinary Medicine
ToPS: Threatened or Protected Species
TMP: Traditional Medicine Practitioners
UCT: University of Cape Town
UDP WHS: uKhahlamba Drakensberg Park World Heritage Site
VULPro: Vulture Programme (Non Profit Organisation)
WCMP: Wildlife Conflict Management Programme (Endangered Wildlife Trust)
WEP: Wildlife and Energy Programme (Endangered Wildlife Trust)
WESSA: Wildlife and Environment Society of South Africa

Acknowledgements

The following individuals (listed alphabetically) are acknowledged for their participation in the initial workshop to draft the BMP: André Botha, Arjun Amar, Dean Ricketts, Dhiraj Nariandas, Ian Rushworth, Jon Smallie, Joyce Loza, Karabo Malakalaka, Martin Taylor, Matseliso Moremoloholo, Mpiti Letsie, Oscar Mthimkhulu, Rabson Dhlodhlo, Samuel Zwakala, Shobana Makhubu, Timothy Snow, Thabathani Tshaka, Tlotla Selialia, Vongani Maringa, and Zethembiso Mkhize.

Steven Piper is acknowledged for collating the background information of the species for the Briefing document for Bearded Vulture *Gypaetus barbatus* Population and Habitat Viability Analysis (Piper 2006), which was synthesised for this Biodiversity Management Plan.

Humbu Mafumo, Sharon Thompson, Nicky McLeod and John Crowson provided comments on the first and final drafts of the document and Pamela Kershaw provided advice on the process.

Joyce Loza is thanked for making the necessary arrangements for the four public meetings, as are the individuals from Ezemvelo, Mehloding, MDTP and MTEC that assisted with logistics.

All participants in the public process (listed in Appendix 1) are thanked for their valuable contribution to the document through discussions at the meetings and additional comments via email after the meetings.

Table of Contents

1 Introduction

1.1 Why the Bearded Vulture requires a Biodiversity Management Plan

The Bearded Vulture is an Endangered Species in southern Africa due to its small and declining population size, restricted range, range contraction, and susceptibility to several threats in Lesotho and South Africa (Anderson 2000). Its conservation status has led to it being a protected species in both countries.

The Bearded Vulture is a symbol of our Natural Heritage and it is an iconic symbol for the Maloti Drakensberg Transfrontier Programme (MDTP). Both countries are committed to its protection and have identified the need for a Biodiversity Management Plan (BMP). Central to the MDTP's conservation targets is natural heritage management, which in the MDTP "20 Year Management Plan" is detailed in Strategic Output 4.1 as *"Coordinated biodiversity management plans and strategies for the conservation of specific ecosystems and species are developed and implemented"*. The above Strategic Output appeals to the recognition of the need to define spatially quantifiable targets for conserving specific species and ecosystems. Related tasks are to determine the patterns/gaps, the extent of current transformation and future threats to these species and ecosystems of importance towards planning and prioritisation and deriving management strategies for conserving them. Since the Bearded Vulture inhabits the Maloti Drakensberg Transfrontier Conservation Area, coordinated efforts in the conservation of the species through the implementation of a BMP will full-fill the requirement of the MDTP Five Year Action Plan Strategic Output 4.1.

The BMP is essentially a mandate obtained through an approval process which provides a coordinated framework to ensure commitment from both countries in implementing the actions required to benefit the species and its habitat. Since the species cannot be solely conserved *in situ*, the BMP will capture the linkages between the role players and their various roles and responsibilities that will work together to secure the future of the Bearded Vulture *ex situ*.

1.2 The Aim of the Biodiversity Management Plan

It must be noted from the outset that in order for a management plan to be effective it must be seen as a product of an iterative management planning process. The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) specifies that all BMPs are to be revised after five years of approval. As such, this plan will be the first in a series of five year iterations where the success of the previous five years is measured and adaptations are made to ensure that the plan for the next five years is appropriate to changing circumstances.

The overall aim of this BMP is to provide a mechanism to achieve the species conservation objectives.

1.3 Species Conservation Objectives

The conservation objectives for the species are to;

i) Ensure its long term survival through halting the population decline and stabilizing the population at the current population size (approximately 100 breeding pairs) over the next ten years, and

ii) start growing the population to a realistic carrying capacity (150 breeding pairs) in the future.

Breeding success must be at a minimal level to support population growth.

In order to achieve the primary conservation objective, it will be necessary to achieve the following related objectives:

- Determine the causes of mortality and how mortality varies in space and time.
- Determine the survival rate of the species to understand whether age specific survival or breeding success is inhibiting population growth structure.
- Examine changes in breeding population size and range.
- Determine the spatial and temporal foraging range use of non-breeding individuals and the environmental influences on the use of home range.
- Supplement natural carcass availability through an intensive feeding programme, *i.e.* feeding sites which are well located and managed and providing a safe food source.
- Promote Bearded Vulture conservation planning into existing land-use planning systems, Environmental Impact Assessment (EIA) processes and stewardship programmes to mitigate the impacts of infrastructural developments and tourism activities on the population.
- Address the threat of poisoning.
- Determine the impacts of global climate change and global warming on Bearded Vulture.
- Address the use of vultures in illegal trade and traditional medicine.
- To address the lack of partnerships between the various stakeholders, role-players, and interested and affected parties to obtain support for the BMP and its implementation.
- Address legal discrepancies regarding Bearded Vulture conservation.
- Create an awareness around the species and its conservation status.
- Address the lack of knowledge of outcomes of previous interventions.
- Address the lack of adequate protection for the species.

1.4 Biodiversity Justification

The Bearded Vulture is an integral component of the environment, performing an essential ecological role as a scavenger. They are an economical way of disposing of carcasses and in doing so they limit the spread of disease. The Bearded Vulture is a spectacular sight in its own right and plays a role in generating tourism revenue. Apart from its aesthetic value, the Bearded Vulture also has spiritual and cultural values in that they have played a role in many cultures over the centuries (*e.g.* ancient Egyptians, Buddhists). Bearded Vultures are an important part of the natural ecosystem and national heritage that need to be protected for future generations.

The southern African population is classified as Endangered (Anderson 2000). Although the species is not threatened globally (BirdLife International 2000), the

southern African population is an isolated population of the subspecies *G. b. meridionalis* of which the closest viable population is in Ethiopia. The geographic isolation of this population, from its nearest conspecific population, emphasises the need to secure the conservation status of this regional population.

The population is not well represented or conserved in protected areas or in important bird areas (IBAs) therefore conservation measures need to be implemented throughout its range. Since the species' range of the southern African population extends over both Lesotho and South Africa, the aims, objectives and operation goals of this BMP will include the populations in both countries. The stakeholder involvement and approval process for the BMP, however, will differ by country.

1.5 Benefits of the Biodiversity Management Plan

The 2006 PHVA workshop produced a report with detailed recommendations for the conservation of the species. Although many of these have been implemented, there are a number that require further attention and increased interaction with a number of stakeholders and role-players. The BMP development process incorporated those 2006 recommendations that were still relevant and added additional ones to ensure that first iteration of the BMP was as current as possible.

The BMP process will ensure stakeholders participation in developing the actions and will hold the stakeholders accountable for achieving them. The BMP will add more weight to the recommendations if it is gazetted.

1.6 Anticipated Outcomes

The anticipated outcomes of this planning process are as follows:

- An updated database of role players and stakeholders.
- A renewed understanding of the urgency for action amongst the role players.
- An agreed structure responsible for monitoring implementation.
- Clarity and acceptance of roles, responsibilities and accountability amongst role players.
- Acceptance and support for the plan amongst stakeholders.
- The re-evaluation of the regional status of the species.
- A plan that comprehensively and concisely covers all aspects related to the conservation requirements of the species and provides realistic targets for the five year life of this iteration.
- Actions identified in the 2006 PHVA workshop that are updated and included where relevant.
- Achieving the conservation targets set for the species.
- Access to funding opportunities as a result of a more formally accepted BMP through it being gazetted.

2 Background

2.1 Conservation Status and Legislative Context

Bearded Vultures are not threatened globally (BirdLife International 2000). It is, however, thought that the population is declining worldwide but not at a sufficiently fast rate to list its status as anything higher than "*Least Concern*" (BirdLife International 2004). However, in southern Africa it is classified as *Endangered* (Anderson 2000) with about 38% of the population lost in recent times.

In South Africa, the Bearded Vulture is listed as a Threatened or Protected Species (ToPS) in NEMBA. In Lesotho, the Bearded Vulture is listed as a Threatened Species in the Lesotho Environment Act, 2008 (Act No. 10 of 2008).

The BMP will provide for the Bearded Vulture Task Force (BVTF) of the Birds of Prey Programme (BoPP) of the Endangered Wildlife Trust (EWT) to monitor and report on progress with implementation of the plan. The BMP must be consistent with:

- The relevant acts.
- The national environmental management principles.
- The national biodiversity framework.
- Any applicable bioregional plan.
- Any plans issued in terms of Chapter 3 of the NEMBA.
- Any municipal integrated development plans.
- Any other plans prepared in terms of national or provincial legislation that is affected.
- Any relevant international agreements binding on the Republic.

2.2 Information Pertinent to the Management of the Bearded Vulture

2.2.1 Taxonomic Description

Geographical Variation: Two distinct subspecies of *Gypaetus barbatus* are recognized (Mundy *et al.* 1992). The subspecies *G. b. barbatus* occurs north of the Tropic of Cancer in Africa, Europe and Asia while the subspecies *G. b. meridionalis* only occurs south of Tropic of Cancer in Ethiopia, East Africa and southern Africa.

Identification: 110 cm, 5.7 kg, wingspan 2.6 m. Sexes alike, though females may be slightly larger. The ***adult*** appears as a dark bird with a blonde head. Head fully feathered, eye and beard prominent, no supra-orbital ridge. Facial mask is black around the eye, extends downwards over nostrils and cere to end in a bristly beard. Colour varies from almost white to bright orange depending on soil. The rufus or orange stain on the feathers of the underbelly is from an accumulation of iron oxide on the feather barbs, acquired from a passive and incidental contact. Entire under-body, feathered leggings and long under-tail coverts usually orange to rufus. Upper-body is dark slate-grey coming up to the base of the neck. Remiges (*i.e.* wing flight feathers) are blackish and the rectrices (*i.e.* tail flight feathers) plain dark brown with contrasting white quills which create a streaky appearance which is only apparent close-up. In flight, wings long and pointed, appear to have a slightly darker trailing edge, tail long and wedge-shaped when fanned. Eyes with pale yellow iris are surrounded by broad scarlet sclerotic ring. ***Sub-adult*** (45-60 months) is like 2nd immature, but head paler, clearly separated from more rufus chest and belly by dark

chestnut neck ring. Eye-ring is deep red, not opaque, as in adult. ***Immature's*** (24-45 months) eyes change to clear yellow by 36 months, though still darker than adults, eye-ring deep red and slightly opaque though becoming less so with age. Transition to complete adult plumage takes six years with pale feathers first appearing on the upper wing coverts and under-body and only later on the head so highlighting the black facial mask. After the first moult flight feathers are rounded and greyer. **Juvenile** (3-24 months) is very dark brown all over, feathered mane blackish. Eyes slightly opaque pale yellow-brown, eye-ring changes from opaque brown-red at eight months to opaque dull red. Rectrices and remiges are plain dark brown, paler along shafts and tipped buff. In flight the tail is more wedge-shaped and longer than that of adults, the wings are more pointed. Upper wing coverts and contour feathers not as conspicuously streaked as in adults, making upper wing appear dappled.

2.2.2 Distribution and Population Status

In Africa south of the Sahara, there are two isolated populations, one in Ethiopia (*ca.* 1430 pairs) and Kenya, Uganda and Tanzania (*ca.* 50 pairs), another in southern Africa (< 200 pairs). In southern Africa, the population suffered a decline of nearly 40% in its distribution range from the 1700s until 1969 (Boshoff *et al.* 1978, 1983; Brooke 1984) and was described as "rare and threatened" in a review of the status of threatened South African birds (Siegfried *et al.* 1976). The historic breeding distribution was estimated at 56 000 km^2 by Brown (1991) and extended into the south western Cape. By 1940 the Bearded Vulture had disappeared from the southern and south-western Cape. The population continued to decline in the 1970s and 1980s although the distribution remained constant (Brown 1991). The breeding range of the Bearded Vulture in southern Africa was estimated to cover an area of 35 000 km^2 between 1980 and 1983, a reduction of 21 000 km^2 from the historic estimate (Brown 1991). The breeding population was estimated at 204 pairs (122 in Lesotho and 82 in South Africa) (Brown 1990). In the 1990s, Colahan and Esterhuizen (1997) observed no breeding pairs in the Free State, and Maphisa (1997) noted that sightings in the lowlands of Lesotho were rare and some nesting sites were abandoned. In 2000, the Bearded Vulture was classified as "endangered", in the red data book of birds of South Africa, Lesotho and Swaziland, as a result of its small and continuously declining population size, restricted range, range contraction, and the susceptibility to several threats in Lesotho and South Africa (Anderson 2000). This deme is restricted to the high mountain ranges of the Kingdom of Lesotho and to the mountainous regions of South Africa in three provinces: the Free State, KwaZulu-Natal and the Eastern Cape, with almost all sightings at altitudes greater than 1500m (Brown 1997). Annual surveys undertaken since 2000, suggest that the population currently comprises about 100 breeding pairs.

2.2.3 Life History

Breeding: Monogamous and solitary (Mundy *et al.* 1992) although polyandrous trios have been recorded (Krüger 2007). Average inter-pair distances were estimated at 6.3 km and average breeding density is estimated at pair/167.5 km^2 (Mundy *et al.* 1992).

Nest: They always nest on cliffs, usually in potholes or small caves, sometimes on ledges (Mundy *et al.* 1992). In southern Africa nest sites on basalt cliffs average 2 814 m above sea level while those on sandstone average 1 935 m above sea level (Mundy *et al.* 1992). Pairs may have from one to eight alternative nests ranging from 2 m to 2 km apart, average = 230 m (Mundy *et al.* 1992). Often use an alternative nest site each year, usually refurbishing an existing nest, possibly to starve out

ectoparasites from the nest fabric (Simmons and Mendelsohn 1993). Most nests receive no direct sunlight and are on the leeward side so that the parents can approach upwind (Mundy *et al.* 1992). They construct a large nest of many twigs and branches (up to 1 m), average 1 m in diameter and 500 mm deep. Cup, with an internal diameter of ca. 400 mm is copiously lined with wool, hair and skin (Mundy *et al.* 1992).

Laying dates: Clearly autumn and early winter (between May and August) with pairs in the west (*i.e.* Maluti Mountains) laying nearly a month earlier than those in the east (*i.e.* Drakensberg mountains) (Mundy *et al.* 1992). Breeding is timed to synchronize the maximum food availability in September and October with the time of maximum food demand, when the nestling is growing fast and only one adult can leave the nest to forage (Mundy *et al.* 1992).

Eggs: Between one and three are laid (Maclean 1993, RD Jeffery unpublished data), second egg laid 3-5 days after first but interval can be up to 10 days (Mundy *et al.* 1992). The egg is broadly oval in shape and rufus-orange in colour with a mottling of purple or reddish brown. Second egg in clutch is smaller (Mundy *et al.* 1992). Pairs breed at most once a year and replacement clutches are unrecorded Mundy *et al.*1992).

Incubation: Starts with first-laid egg for a period is 56-58 days; by both sexes (Mundy *et al.* 1992). A change-over occurs approximately once every 2.5 hours (Mundy *et al.*1992). Adults may depart to drink water once or twice a day and may retrieve and eat a bone from a nearby cache (Mundy *et al.* 1992: 216). Predation on eggs is unrecorded and adults drive off other Bearded Vultures, White-necked Raven and Verreaux's Eagles (Mundy *et al.* 1992: 216). In the European reintroduction breeding programme, a sex ratio of newly hatched Bearded Vultures was observed to be close to 1:1.

Development and care of young: Eggs take two days to hatch, hatchlings are well covered in grey-white down all over except for black down on face and around nostrils; cere is downy, not naked and eyes are open (Mundy *et al.* 1992*).* Nestling(s) is/are constantly guarded by both adults up to 40 days and thereafter decreases to 90 days when it is left completely alone. Both adults bring food to the nest, may visit up to once every two hours, though not always with food. Initially nestlings are fed small pieces of meat. Bone fragments are fed from one week on; as the nestling grows so the proportion of bone in the diet increases, mostly limbs and long-bones from sheep and goats, often young animals. At six weeks the nestling has a mixture of down and feathers and can presumably self-thermoregulate (Mundy *et al.* 1992). At this age, both adults still bring food. By 11 weeks the nestling is dorsally well covered in feathers, except for downy head and neck and it can take bones of up to 15 cm. From *ca.* 13 weeks the nestling snatches food from adults and can feed itself, food is brought *ca.* 3-4 times per day, adults no longer stay with nestling (Mundy *et al.* 1992). The nestling period is 120–130 days (Mundy *et al.* 1992). A nestling requires 40 kg of food to fledge (Mundy *et al.* 1992: 218). The fledgling is like the juvenile except for underdeveloped lanceolate feathers of head and neck. For first two weeks seldom flies more than 200 m from nest. Roosts at night at nest where it is fed. At four weeks flies up to 3 km from nest, practices carrying bones in its feet and visits local ossuary to practice bone dropping; at two months flight is still clumsy. From 2-6 months flies about with its parents, increases its range (up to 170 km^2) and flight lengths and then gains independence (Mundy *et al.* 1992). Last fed by adults at *ca.* 12-14 weeks, this is presumably the post fledging dependence period, never returns to nest once the next breeding cycle has begun (Mundy *et al.* 1992).

Breeding success and fecundity: At most one fledgling is produced per successful breeding attempt, irrespective of the number of eggs laid; the older nestling usually out-competes the younger which then starves to death (Mundy *et al.* 1992). Breeding success is 0.89 fledglings per pair per annum. There are few records of predation on nestlings (Mundy *et al.* 1992).

Recruitment: Assuming 204 breeding pairs in the early 1980s an estimated 181 fledglings would have recruited to the population each year (Mundy *et al.* 1992).

Age first breeding: Probably *ca.* 7 years (Mundy *et al.* 1992).

Breeding senescence: The oldest known-age pair breeding in the wild is 18 years and >40 years old in captivity (H. Frey, *pers. comm.*).

Survival: Survival of fledglings up to age 4 years was 12% (i.e. an average annual survival rate of 59%) while adult survival was 95% p.a. and mean life span of individuals reaching adult plumage was 22 years (Mundy *et al.* 1992). There is no evidence to suggest that the survival rates of males and females are different.

Longevity: There are no published records of maximum age in the wild of African Bearded Vultures. In the European Alps reintroduction programme known longevity was at least 19 years old (Frey *et al.* 2004). In captivity, the oldest living male was >45 years old and the oldest living female was > 43 years old (Frey *et al.* 2004). It is possible to estimate approximate longevities from empirical formulae (Newton 1979, quoting Lindstedt and Calder 1976). Using these formulae, the longevity of wild birds should be between 22 and 23 years and captive birds between 38 and 40 years, the latter figure coming close to the European experience. If we assume that longevity means that 1 in 100 survive to this age then the annual survival rate of adult Bearded Vultures would be 0.81, and if we assume that it means that 1 in 1000 would survive to this age then the annual survival rate would be 0.73- both of these figures seem very low.

Population age structure: Young birds (juvenile and immature) made up 27% of population, sub-adults 2.6% and adults 70% (Mundy *et al.* 1992).

Foraging and home range: The home range used by an individual in a year is 4 000 km^2 (*i.e.* equivalent to a circle of radius 36 km) to 7 500 km^2 (*i.e.* equivalent to a circle of radius 49 km) (Brown 1997; Mundy *et al.* 1992).

Movements: Breeding adults are resident throughout the breeding season but may wander short distances to lower altitudes during the summer when not breeding. Throughout its restricted range in southern Africa the bird is considered sedentary. Young birds wander widely but concentrate in areas of low adult densities, *i.e.* nursery areas (Brown 1997; Mundy *et al.* 1992).

General Habits: Adults are more likely to be seen alone than in pairs, occasionally in pairs and sometimes up to four birds seen together, seldom form social aggregations, as in other species of vulture (Mundy *et al.* 1992). Couples flying together during the breeding season are often two males or two females from nearby breeding territories but outside the breeding season partners may forage together (Mundy *et al.* 1992). Immature birds forage singly, in pairs, triplets and even with Cape Vultures. Larger groups, up to eight, sometimes 12-18, may assemble at food sources, *e.g.* vulture feeding sites (Mundy *et al.* 1992). They regularly bathe in shallow rock pools and mountain streams after first drinking (Mundy *et al.* 1992). Roost and sleep on cliff ledges, in potholes and small caves or at one of their nest

sites, never on trees or on the ground in southern Africa (Mundy *et al.* 1992). They sleep resting on their bellies with their feet covered by feathers and head and with their neck hunched, and the body temperature is not lowered at night (Siegfried and Frost 1973).

Foraging and Food: Forage exclusively from the air spending up to 80% of daylight hours on the wing, using mountain winds, slope drafts and declivity winds in order to search hillsides (Mundy *et al.* 1992). They frequently forage in pairs or small groups so able to search a greater area (Mundy *et al.* 1992). The birds rise between dawn and sunrise moving to a sunny spot and flying off if the wind and topography permit (Mundy *et al.* 1992). Occasionally a bird will fly directly to a known food source at first light (Mundy *et al.* 1992). Once airborne, almost all progress is by gliding and soaring. Where the slope or declivity winds permit, birds glide *ca.* 2-4 m above the ground in a sweeping, quartering or zigzag fashion at *ca.* 40 km/hr (Mundy *et al.* 1992). They can also search for food by flying along ridges at a greater height (20–70 m) and a greater speed (50–77 km/hr) (Mundy *et al.* 1992). In summer they may spend up to 20% of their time searching for food at heights of up to 1 000 m (Mundy *et al.* 1992). There are no observations of predation by the Bearded Vulture in southern Africa, and all food is scavenged from commercial and communal farms, and from protected areas. Adults avoid human habitation, but immature birds visit vulture feeding sites more frequently than adults (Mundy *et al.* 1992). When an individual is the first to detect a food source, especially a large carcass, it behaves as if it is very nervous, circling around, landing afar, taking off and circling again; this behaviour often attracts other vultures and eagles (Mundy *et al.* 1992). An adult, if disturbed at this stage, is much more likely to fly off; an immature that is more dependent on large carcasses, is more likely to stay and in turn be joined by other immature birds (Mundy *et al.* 1992).

The diet consists mainly bones from both fresh and old carcasses and given a choice they prefer bone to fresh meat (Mundy *et al.* 1992) but they require red meat to feed nestlings (Brown 1997). They are well-adapted to handle and process bones, including a wide gape of *ca.* 70 mm which allows bones of up to 250 mm long by 35 mm in diameter to be swallowed, and digestion can proceed with part of the bone sitting in the throat or even still protruding from the mouth (Mundy *et al.* 1992). Digestive juices are very acidic, probably with a pH of ca. 1.0-1.5 (Mundy *et al.* 1992). They are able to disarticulate bones from skeletons by tearing or cutting tendons and ligaments using the bill, and thus able to utilize completely dried-out carcasses (Mundy *et al.* 1992). They are able to fly with large bones held parallel to the body, and process it at its leisure elsewhere. The most famous adaptation, earning the name Ossifrage, is their ability to carry a bone aloft and drop it on an ossuary or 'rock' anvil. Breaking large bones reduces them to more manageable pieces and exposes the marrow. The long producible tongue, which is grooved but smooth along the edges, is presumably used to scoop out marrow from bones and brains from skulls. The average diet is 70% bone, 25% fresh meat and 5% skin (Mundy *et al.* 1992). The most identifiable food items brought to the nest in southern Africa are from domestic stock, especially sheep and goats but also from cattle (Mundy *et al.* 1992). Afterbirths from sheep are also eaten (Mundy *et al.* 1992). Estimated food consumption 465 g food per day, *ca.* 8% of body mass, which they try to consume every day, avoiding the feast and famine strategy of vultures (*Gyps* species) (Mundy *et al.* 1992). Breeding adults form caches of food items, especially bones in potholes near their nests (Brown 1997b; Mundy *et al.* 1992). Competition with other birds for food is rare and competition with scavenging mammals exists. Foraging range during the breeding season varies between 300-750 km^2 though the home range during a year could be between 4 000 and 7 500 km^2 (Brown 1997b; Mundy *et al.* 1992).

2.2.4 Population Genetics

Phylogenetic analysis by Godoy *et al.* (2004) revealed the existence of two divergent mitochondrial lineages, lineage A occurring mainly in Western European populations and lineage B in African, Eastern European and Central Asian populations. The phylogeographic pattern suggests allopatric differentiation of the two lineages in separate Mediterranean and African or Asian glacial refugia, followed by range expansion from the latter leading to two secondary contact suture zones in Central Europe and North Africa. High levels of among population differentiation were observed, although these were not correlated with geographical distance. Due to the marked genetic structure, extinction of Central European populations in the last century resulted in the loss of a major portion of the genetic diversity for the species. Godoy *et al.* (2004) suggest the management of the species as a single population, given the apparent ecological exchangeability of extant stocks although the sample size of the sub species *meridionalis* was only three (n=3).

2.2.5 Habitat Requirements

In southern Africa, currently restricted to Alpine, Sour and Mixed Grasslands on rugged mountains and escarpments, all >1 500 m, though this was not the case in the past (Brown 1997). They forage along ridges and valleys in protected areas but range out over communal and commercial lands with adult birds more frequently avoiding human habitation, while birds of all ages can visit vulture feeding sites (Brown 1997).

2.2.6 Threats

The threats to the species and causes of decline are as follows:

i) Food supply: The loss of natural ungulates, superior animal husbandry practices and improved animal hygiene has lead to a reduction in the food supply and is considered by some (*e.g.* Boshoff *et al.* 1983) to be the most serious cause of population decline and range contraction.

ii) Poisons: An opposing view (*e.g.* Brown 1991) is that outside of the Western Cape there is an adequate food supply but that the species is limited by the injudicious use of poisons. It has been suggested that up to 70% of all Bearded Vulture mortalities are due to poisoning (Brown 1997).

iii) Electrocution and collision with powerlines: Collisions are a major threat to the species with approximately six known deaths resulting from collisions. Since it is very difficult to detect collision carcasses in mountainous and remote terrain, the threat is assumed to be far greater than is recorded. If there was a massive increase in the electrification of the Lesotho highlands and if the electrification of the lowlands in South Africa continues then collisions could increase however,

iv) Collisions with wind turbines
This is a potential threat to the birds. There are proposals to develop two windfarms in the Lesotho Highlands which have been modeled to have a high impact on the population, since the turbines will be placed on mountain ridges which are used for slope soaring by the birds.

v) 'Coyote Getters'/Gin traps: Two Bearded Vultures were recorded killed in the Free State Province (Colahan 1991; Colahan and Esterhuizen 1997) by Coyote

Getters. Gin traps have been used to capture and kill a Bearded Vulture in the Free State Province (Ambrose 1983; Colahan 1991; Colahan and Esterhuizen 1997) and in Lesotho (Ambrose 1983; Blair and Blair 1983).

vi) Disturbance at the nest: Breeding birds may be disturbed in the vicinity of the nest (Guy 1974; Kopij 2001) and disturbed off the nest by recreational climbers, photographers (known to be a cause of low nest productivity in Europe, Brown 1997a) and as a result of livestock farming activities (Vernon and Boshoff 1997). Eggs and nestlings have been stolen and young birds have been attacked by vandals (Brown 1991). The intensity of disturbance may increase as a consequence of the opening up of the interior of Lesotho for the Lesotho Highlands Development Project, there are many new roads in the vicinity of the Katse and Mohale Dams and this is likely to allow people and development to 'bleed' into much of the highlands (Maphisa 1997).

vii) Shooting and direct persecution: This may increase as the number of firearms increases in Lesotho (Maphisa 1997). The threat does not seem to be a current one in South Africa.

viii) Collection for traditional medicine: Vultures are important components in prognostication, *e.g.* predicting the outcomes of horse race and political elections in traditional medicine (Mundy *et al.* 1992; Maphisa 1997; Beilis and Esterhuizen 2005; Mander *et al.* 2007).

ix) Collection for skins and plumage: These are used for ceremonial purposes in southern Africa. It is not known if any specimens are removed for taxidermy purposes (Mundy *et al.* 1992; Maphisa 1997).

x) Collection for food: They are reputed to be used as food within Lesotho (Mundy *et al.* 1992).

xi) Fires: Fires below the nesting cliffs, especially if extensive, intensive and of long duration may impact breeding (Krüger 2005 and 2007). This has been documented for the Cape Griffon Vulture (Mundy and Ledger 1975).

2.2.7 Utilisation

See collection for traditional medicine above. There is no known illegal trade in the species. Egg collecting does not appear to be activity practiced currently.

2.2.8 Past Conservation Measures

Christopher Brown instituted an awareness programme in the 1980s, primarily in South Africa. The success of this programme is evident in that direct persecution no longer appears to be a threat to the species in South Africa.

See also Krüger (2011) for an update on progress on actions detailed in 2006.

2.2.9 Research Inventory and Summary

The following peer reviewed papers concern the southern African Bearded Vulture population:

Anderson M.D. 2000. Bearded Vulture In: Barnes KN. (ed). The Eskom Red Data book of birds of South Africa, Lesotho and Swaziland. BirdLife South Africa, Johannesburg. Pp 39-41.

Boshoff, A.F.; Brooke, R.K. and Crowe, T.M. 1978. Computerized distribution mapping scheme for vertebrates in southern Africa. *South African Journal of Wildlife Research* **8**(4): 145-149.

Boshoff, A.F.; Vernon, C.J. and Brooke, R.K. 1983. Historical atlas of the diurnal raptors of the Cape Province (Aves: Falconiformes). *Annals of the Cape Provincial Museums (Natural History Series)* **14**(7): 173-297.

Boshoff A.F.; Anderson, M.D. and Borello, W. (eds). 1998. Vultures in the 21st century. Vulture Study Group, Johannesburg.

Brown, C.J. 1988. A study of the Bearded Vulture *Gypaetus barbatus* in southern Africa. Unpubl. PhD Thesis, University of Natal, Pietermaritzburg.

Brown, C.J. 1990. Breeding biology of the Bearded Vulture in southern Africa, Parts I – III. *Ostrich* 61: 24 - 49.

Brown, C.J. 1991. An investigation into the decline of the Bearded Vulture *Gypaetus barbatus* in southern Africa. *Biological Conservation* **57**(3): 315 -337.

Brown, C.J. 1992. Distribution and status of the Bearded Vulture *Gypaetus barbatus* in southern Africa. *Ostrich* **63**(1): 1-9.

Brown, C.J. 1997. Population dynamics of the Bearded Vulture *Gypaetus barbatus* in southern Africa. *African Journal of Ecology* **35**(1): 53 - 63.

Brown, L.H. 1977. The status, population structure and breeding dates of the African Lammergeier *Gypaetus barbatus meridionalis*. *Raptor Research* 11: 49-58.

Colahan, B.D. and Esterhuizen, J.R. 1997. The status and conservation of vultures in the Free State Province, South Africa. In: Boshoff, A.F. *et. al.* (eds). Vultures in the 21st Century: Proceedings of a Workshop on Vulture Research and Conservation in Southern Africa. Johannesburg: Vulture Study Group, pp. 46-49.

Godoy, J. A.; Negro, J.J.; Hiraldo, F. and Donázar, J.A. 2004. Phylogeography, genetic structure and diversity in the endangered Bearded Vulture (*Gypaetus barbatus, L.*) as revealed by mitochondrial DNA. *Molecular Ecology* 13: 371-390.

Hiltunen, T.A. 2008. Farmers and the Bearded Vulture *Gypaetus barbatus meridionalis.* MPhil dissertation. University of Pretoria.

Krüger, S.; Piper, S.; Rushworth, I.; Botha, A.; Daly, B.; Allan, D.; Jenkins, A.; Burden, D. and Friedmann, Y. (eds). 2006. Bearded Vulture (*Gypaetus barbatus meridionalis*) Population and Habitat Viability Assessment Workshop Report. Conservation Breeding Specialist Group (SSC / IUCN) / CBSG Southern Africa. Endangered Wildlife Trust, Johannesburg.

Mander, M.; Diederichs, N.; Ntuli, L.; Khulile, M.; Williams, V. and McKean, S. 2007. Survey of the Trade in Vultures for the Traditional Health Industry in South Africa. Futureworks, unpublished report, 30pp.

Ngwenya, M.P. 2001. Implications of the medicinal animal trade for Nature Conservation in KwaZulu-Natal. Ezemvelo KZN Wildlife Internal Report. 76pp.

Simmons, R.E. and Jenkins. A. R. 2007. Is climatic change influencing the decline of the Cape and Bearded Vultures in Southern Africa? *Vulture News* (27 October 2006).

Urios, V.; López-López, P.; Limiñana, R. and Godino, A. 2010. Ranging behaviour of a juvenile Bearded Vulture (*Gypaetus barbatus meridionalis*) in South Africa revealed by GPS satellite telemetry. *Ornis Fennica* 87: 1-5.

2.3 The Role Players

Role-players are those who have the legal mandate and responsibility to carry out the conservation actions necessary to ensure the persistence of the species in nature through the implementation of this BMP. In addition to this group, there are those who are in a position to contribute either directly or indirectly in the conservation of the species (*e.g.* landowners with nests or feeding sites on their property, veterinarians and educators). This group is not legally mandated to conserve the species but they may be willing and committed to be involved, and through the management planning process and the implementation of the BMP they will be positively engaged by those role-players who have the legal mandate.

Table 1 includes a list of the two major role-players in the BMP process namely;

i) members of the BVTF - these individuals will oversee the management planning process and provide and coordinate technical input into implementation and subsequent planning iterations, and

ii) members of DEA – these individuals will oversee the management planning process and will facilitate DEA process of obtaining public comment and ministerial approval.

See also Appendix 2 for the full stakeholder list.

Table 1: The major role players in the Biodiversity Management Plan process and their primary responsibilities.

Name	Organisation	Roles/Responsibility
BVTF members		
Sonja Krüger	Ezemvelo	Coordinate implementation of the BMP
André Botha	EWT-BoPP	Coordinate implementation of the BMP
Dhiraj Narlandas	SANParks	Monitoring and awareness in Free State, feeding site management
David Allan	Durban Museum	Monitoring and scientific advice
Mpiti Letsie	QWDT	Monitoring and awareness in Quthing District
Matseliso Tšehlo	LEC	Environmental awareness regarding energy structures and mitigation
Ian Rushworth	Ezemvelo	Coordinate implementation of the BMP, scientific advice
John Crowson	Ezemvelo	Coordination of monitoring in Ezemvelo protected areas
Makhubu Shobana	Bird Club	Monitoring and awareness in Lesotho
Dean Rickets	ECPTA	Monitoring and awareness in Eastern Cape
Thabathani Tshaka	Mount Fletcher Tourism	Monitoring and awareness in Eastern Cape
Samuel Zwakala	Ministry of Tourism, Environment and Culture, Lesotho	Monitoring and Conservation of the birds in Mokhotlong District
Joyce Loza	MDTP	Coordinate Transfrontier collaboration
Lesotho MDTP representative	Ministry of Tourism, Environment and Culture, Lesotho	Coordination of Monitoring and Conservation of the birds in Lesotho
Ben Hoffman	African Birds of Prey Sanctuary	Captive Breeding Programme
DEA members		
Pamela Kershaw	DEA	Oversee planning process and facilitate approval process
Humbu Mafumo	DEA	Oversee planning process and facilitate approval process
Zethembiso Mkhize	DEA	Assist with implementation with transfrontier related actions
Vongani Maringa	DEA	Assist with implementation with transfrontier related actions

2.4 Planning Methodology

In the Norms and Standards for BMP-S published by DEA in March 2009, the planning process is stipulated as requiring the following steps:

- Appropriate stakeholders should be invited in the development of the BMP.
- Stakeholders may be identified according to the group to which they belong or their interests and mission.
- Background information on the species may be compiled and circulated to all appropriate stakeholders prior to the development of the BMP.
- The background information should contain;
    - criteria used to select the species,
    - information on the current status of the species,
    - information on known threats, and
    - their impacts on the species.
- Compilation of the first draft of a BMP can be done by either;
    - a consultant,
    - an expert on the species,
    - a panel of experts on the species, or
    - during a stakeholder workshop.
- The first draft of the BMP should be made available to stakeholders for comment;
    - the comment period should be at least 30 working days,
    - relevant comments received should be included in a final draft of the BMP.
- The final draft of the BMP should be sent to all implementers of identified actions for validation within 60 days of the date of notice.

The final draft of the plan should be compiled and submitted, within 90 days of receipt of comments, to the minister for approval.

In the case of the process that has been followed by this management plan, a number of key stakeholders and role-players participated in a PHVA workshop that was held in 2006. The PHVA report (Krüger *et al.* 2006) captures the proceedings of the workshop and the review of this document in 2011 (Krüger 2011) captures the progress on the actions undertaken since the 2006 workshop. Many of the recommendations identified in 2006 have been captured in this BMP for continued action. The BMP must be signed off by the relevant conservation authorities and be agreed to by the forum established after the PHVA process (the BVTF). It must address the following issues:

- The current status of Bearded Vulture and its continuing decline.
- Achieving the identified target of number of breeding pairs.
- Monitoring, evaluating and reporting on the status of the population.

The process agreed to in the BMP workshop was as follows:

- The BVTF chairman to complete a draft of the BMP (by 31 August 2011).
- The first draft is to be circulated to the key stakeholders who participated in the BMP workshop for comment by 31 October 2011.
- Stakeholder workshops to be held between February and March 2012 with assistance from DEA (see Appendix 1 for list of participants).
- Comments from stakeholder workshops to be incorporated in the BMP.
- A final draft of the BMP to be circulated.
- BVTF chairman to submit the final draft to DEA.

- DEA to advertise for and assimilate public comment in collaboration with BVTF.
- DEA to facilitate ministerial approval for the management plan.
- DEDEA to inform stakeholders and role-players of the plans approval and to set the process in place for implementation.

It was agreed at the stakeholder workshops that the final approved document would be translated into various languages to make it more accessible for implementation by all role-players and stakeholders. The executive summary of the final draft submitted to DEA would be translated into Zulu, Xhosa and Sesotho.

3 Legislative Framework

The southern African deme of the Bearded Vulture is found in just two countries: Lesotho and South Africa. However, within South Africa, it is found in three provinces, each of which has separate legislation covering this species.

Lesotho:
The Bearded Vulture is specifically protected under the Environment Act (Act No. 10 of 2008) and under the Historical Monuments, Relics, Fauna and Flora Act (Act No. 41 of 1967). In terms of the former, the Bearded Vulture is specifically listed in the category "Protected Fauna" (section 8, clause d) and in terms of the latter, see Legal notice No. 36 of 1969 "Proclamation of monuments, relics, fauna and flora", "Protected fauna – 10; All Bearded Vultures Seoli/Lammergeyer" as amended by legal notice no. 93 of 2004 and no. 38 of 2006.

A new act is currently before the Kingdom's parliament (Nature Conservation Bill 2005) in which (clause 64) the conservation of threatened or protected species is prescribed. In this new act the Minister must list these species but "The species of fauna and flora proclaimed in terms of section 8 (of the previous act) as protected fauna or flora are deemed to be protected in terms of this act". While Lesotho has signed the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) this has not been ratified because of the high cost of implementation (Kopij 2004). The following comment is offered on the effectiveness of the above legislation (Kopij 2004): "This proclamation is written in English and unfortunately has not been translated into Sesotho (the mother tongue of almost all Basotho which (*sic*) constitute 98% of Lesotho population). Furthermore, it is now out of print and only a few legal scholars know it today. If an ordinary villager knows about this proclamation, it may be because (of an) unwitting infringement and consequent punishment. ... Resentment is understandable in such circumstances and may prevent its implementation."

South Africa: In general terms, environmental conservation as a whole in South Africa is governed by the "Environment Conservation Act No. 73 of 1989" and subsequent amending legislation and proclamations. The following acts also impinge upon nature conservation:

- *National Environmental Management Act, No. 107 of 1998*
- *National Environmental Management: Biodiversity Act, No. 10 of 2004* of which Chapter 4, Part 2 covers "Protection of threatened or protected species" while Part covers "trade in listed threatened or protected species".
- *National Environmental Management: Protected Areas Act, No. 57 of 2003.*

The Threatened or Protected Species (ToPS) Regulations were published in 2007 in terms of which the Bearded Vulture is listed as an endangered species.

KwaZulu-Natal Province: The protection of wild birds in the province is governed by the provisions of the Nature Conservation Ordinance No. 15 of 1974. This ordinance governs the killing or capture of wild birds (section 114), the sale and purchase of wild birds (section 115), the keeping of wild birds in aviaries (section 118), the exhibition or display of wild birds (section 121), the export of wild birds (section 125) and a number of other minor items. In Schedule 9 the Bearded Vulture (*Gypaetus barbatus*) is specifically listed among the "Specially protected birds".

Eastern Cape Province: The protection of wild birds in the province is governed by the provisions set out in Chapter IV of the Eastern Cape Nature Conservation Ordinance No. 19 of 1974. The ordinance governs the Hunting of protected wild animals (section 27), the Prohibition on keeping of wild animals in captivity (section 31), Prohibition on laying of poison (section 32), the Donation or sale of wild animal or carcass thereof (section 41), the Possession of wild animal or carcass thereof (section 42) and Miscellaneous offences in relation to certain wild animals *e.g.* the exhibition or display of wild birds, and the export of wild birds (section 44).

Free State Province: In terms of Chapter II of the e Free State Nature Conservation Ordinance No. 8 of 1969, Bearded Vultures are considered protected game and no person shall hunt protected game, except under authority of a permit which may issued by the Administrator. The act also covers the Prohibition of sale or purchase of wild animals (section 11), the Conveyance of wild animal (section 12), the Prohibited acts in respect of wild and exotic animals (section 14), the Export of animals (section 15) and the Importation of animals (Section 16).

3.1 Role Players Responsible for Implementation of the BMP

Section 2.3 lists the key role players but is not conclusive. Some of the listed people will delegate responsibilities but they will ultimately remain accountable for implementation of the aspects of the BMP allocated to their particular organisation or designation. A list of stakeholders is included as Appendix 2 which contains a more comprehensive list from the action plan section (see section 6).

3.2 Assigning Priority for the Development and Implementation of this BMP

During the review process of the 2006 PHVA workshop document, the BVTF recognised the need for a BMP to be developed for the species to ensure that the identified actions are implemented by gazetting the document.

The Bearded Vulture has been identified as a high priority group in the ToPS regulations and its one of Southern Africa's endangered birds. Since the reasons for listing the bird as endangered, the threats to the species, have not been addressed it is necessary to ensure the persistence of the species as a viable population in the wild. It is important that the process to develop a BMP be afforded a high priority. Thereafter, implementation of the BMP must also be afforded a high priority.

4 Summary of Planning Methodology

Section 2.4 provides a detailed account of the planning process as specified in NEMBA, the terms of reference for the compilation of this plan and an outline of the process that has been followed. A key list of stakeholders is provided in Appendix 2.

4.1 Agreements Required for Implementation

In taking this BMP forward, the key role players have all accepted their various roles and responsibilities and see the plan as a document binding them to these. DEA will facilitate the achievement of provincial level actions.

A number of additional agreements may be identified during implementation that will be required to ensure successful implementation of the BMP. These will be listed in future iterations of this BMP.

It will be necessary to monitor implementation very carefully and introduce relevant agreements as and when these may be deemed necessary, whether additional role players are brought on board and who these may be.

4.2 Relevant Documents, Agreements and Policies

In addition to the literature listed in section 10 below, the following are relevant:

- CITES Appendix 1
- NEMBA (Act No. 10 of 2004)
- ToPS (February 2007)
- Norms and Standards for BMP
- MoU between EWT and Ezemvelo
- MoU between EWT and Eskom
- MDTP Strategy 2008-2028

4.3 Verification of the Integrity of the Content of the BMP

The BMP has been compiled by BVTF members including relevant specialists in the field. The process has been overseen by DEA.

5 Threats Identified

The threats facing the species have been discussed in section 2.2.6. They are listed here in order of priority in order to emphasise their importance and the need to address them.

- Poisoning (indirect poisoning for predator control, direct poisoning for traditional medicine).
- Collisions with powerlines.
- Habitat degradation and competition (food shortage).
- Persecution and cisturbance ('Coyote Getters'/gin traps, disturbance at the nest, shooting and direct persecution for food and collection for skins and plumage).
- Fires (affects breeding success).

6 Action Plan

Aim and objectives have been presented in section 1.2. Discussion with role players confirmed that these are both relevant and serve as the point of departure for the identification of further components necessary to complete the BMP. In recognition of the need for planning statements which increase in their level of specificity, each of the objectives are broken down into a series of operational goals which have been articulated according to the 'SMART' rule, *i.e.* specific, measurable, attainable, realistic and time-bound. Each of these is then broken down into the actions which specify the nature of the action, responsibilities, resource requirements, time-frames and indicators of achievement. The latter will be used for monitoring and evaluation and to track implementation. Challenges that may be experienced in realising the goals are also listed.

6.1 Over-arching Principles

There are several over-arching principles that will be used to govern implementation of the BMP and provide the context within which the planning components will be derived. The principles listed below have been subjected to review by role players and all have accepted that they are relevant and provide an important framework for implementation.

- MORTALITY VARIES IN SPACE AND TIME AND WITH AGE AND IS NOT UNDERSTOOD.
- THE UNDERSTANDING OF BEARDED VULTURE POPULATION DEMOGRAPHY AND FECUNDITY IS INADEQUATE.
- THERE IS A NEED TO DETERMINE THE SIZE AND DISTRIBUTION OF THE BREEDING POPULATION (WILL PROVIDE INFORMATION ON THE BREEDING RANGE) AND NON-BREEDING POPULATION (WILL PROVIDE INFORMATION ON THE FORAGING RANGE), SPATIALLY AND TEMPORALLY.
- THE GENETICS OF THE POPULATION ARE NOT UNDERSTOOD.
- HABITAT LOSS, STOCK-THEFT, IMPROVEMENTS IN LIVESTOCK HUSBANDRY AND COMPETITION FOR CARCASSES ARE THE PRIMARY REASONS FOR THE REDUCTION IN NATURAL FOOD AVAILABILITY.
- THE PLACEMENT OF CARCASSES THAT HAVE BEEN TREATED WITH VARIOUS DETRIMENTAL VETERINARY PRODUCTS AT A FEEDING SITE CAN RESULT IN ACCIDENTAL MORTALITIES OR REDUCED FITNESS.
- PESTICIDES ARE EASILY ACCESSIBLE AND OFTEN INDISCRIMINATELY USED TO POISON DAMAGE CAUSING ANIMALS. ILLEGAL AND IRRESPONSIBLE ACTIVITIES ARE SELDOM REPORTED OR PROSECUTED. POISONING BY VETERINARY MEDICINE IN CARCASSES IS A POTENTIAL THREAT WHICH HAS NOT BEEN CONFIRMED IN THE BEARDED VULTURE.
- DIRECT PERSECUTION OCCURS BECAUSE FARMERS PERCEIVE THE BEARDED VULTURE AS A THREAT TO LIVESTOCK. DIRECT PERSECUTION OCCURS BY SHOOTING AND TRAPPING.
- INCORRECT SITING AND MANAGEMENT OF FEEDING SITES CAN LEAD TO NON-USE BY BEARDED VULTURES OR CAN INCREASE THE THREATS TO THE BIRDS (DELIBERATE POISONINGS AND COLLISIONS).
- CLIMATE CHANGE AND GLOBAL WARMING MAY AMPLIFY THE EFFECTS OF HABITAT LOSS BY FURTHER CHANGING THE REMAINING INTACT HABITAT AND REDUCING AVAILABILITY OF CARCASSES. THERE MAY ALSO BE IMPACTS THROUGH SHIFTING OF CLIMATE ENVELOPES THAT FORCE THE BIRDS TO VACATE THE BIOREGION OR RESTRICT IT WITHIN THE REGION.
- MORTALITIES IN BEARDED VULTURE HAVE BEEN CAUSED BY COLLISION WITH POWERLINES AND OTHER STRUCTURES, *E.G.* CELL PHONE TOWERS, FENCES *ETC.*
- HUMAN ACTIVITIES SUCH AS TOURISM, RECREATION AND THE DEVELOPMENT OF MAJOR INFRASTRUCTURE (SUCH AS THE LHDA) CAN

LEAD TO FAILURE OF BREEDING ATTEMPTS AS WELL AS CONTRACTION OF FORAGING RANGE.
- THE EXTENT OF USE OF VULTURES IN ILLEGAL TRADE/TRADITIONAL USE IS UNKNOWN.
- LACK OF PARTNERSHIPS WITH SIGNIFICANT ROLE PLAYERS THREATENS THE UNDERSTANDING OF THE PLIGHT OF THE SPECIES AND THE IMPLEMENTATION OF THE BMP.
- LACK OF COORDINATED EDUCATION AND AWARENESS ATTEMPTS AND DISSEMINATION OF INFORMATION RESULTS IN INDIFFERENCE AND APATHY
- LEGAL STATUS OF BEARDED VULTURE NOT UNIFORM ACROSS ITS RANGE.
- LACK OF KNOWLEDGE OF OUTCOMES OF PREVIOUS INTERVENTIONS.

All action steps are listed separately in Appendix 3.

6.2 Objective 1

Determine the causes of mortality and how mortality varies in space and time.

6.2.1 Operational Goal 1.1

A rapid more reliable assessment of mortality is needed.

Action Step 1: Undertake the project to mark and track individuals- fit six satellite transmitters in 2012, ideally all adults	
Responsibillty	Sonja Krüger
Timeline	December 2012
Resources needed	Time
Collaborators	BirdLife South Africa, MDTP, EWT-BoPP, Ezemevlo, UCT
Deliverables	6 adult birds fitted with transmitters
Measurable outcomes	Improved mortality estimates and causes of mortality

6.2.2 Operational Goal 1.2

Increase and improve awareness and reporting of all mortalities and undertake proactive/direct methods to monitor and record the causes of mortality.

Action Step 2: Record all reported mortalities	
Responsibility	All to report mortalities, Sonja Krüger to capture into database
Timeline	Ongoing
Resources needed	Database
Collaborators	All
Deliverables	A record of mortalities and the causes thereof
Measurable outcomes	An up-to-date database

Action Step 3: Encourage the reporting of all poison-related mortalities to the EWT-WCMP in South Africa and Lesotho	
Responsibility	All collaborators, including local champions
Timeline	Ongoing
Resources needed	Communication network
Collaborators	EWT-WCMP, public
Deliverables	Annual activity report
Measurable outcomes	Increased reporting of number of poisoning events per year

Action Step 4: Increase awareness, detection and reporting of vulture powerline (and other infrastructure) incidents to the EWT-WEP	
Responsibility	All collaborators, including local champions

Timeline	Ongoing
Resources needed	Communication network
Collaborators	EWT-WEP, Eskom, LEC, public, landowners
Deliverables	Annual activity report
Measurable outcomes	Increased reporting of number of collision events per year
Challenges	Achievement of this action is not sufficient- there is a need to identify the risks up front

Action Step 5: Consider an incentive or rewards programme for reporting mortalities to determine cause of death. This may prevent individuals using dead birds without knowing the cause of death because it could dangerous to human health	
Responsibility	BVTF
Timeline	December 2012
Resources needed:	None
Collaborators	None
Deliverables	Decision on whether incentives are realistic
Measurable outcomes	Increased reporting of mortalities

Action Step 6: Develop a system to report mortalities through Environmental Officers (South Africa) or local police (Lesotho) who can direct the reports to EWT/BVTF	
Responsibility	BVTF
Timeline	2013
Resources needed	Champions per province/district
Collaborators	Environmental departments, police force
Deliverables	Reporting mechanism
Measurable outcomes	Efficient reporting

Action Step 7: Ongoing awareness of the general public to ensure that people know who to report mortalities to	
Responsibility	BVTF, police, environmental officers
Timeline	Ongoing
Resources needed	Awareness materials
Collaborators	All
Deliverables	Public aware of reporting structure
Measurable outcomes	Efficient reporting

6.3 Objective 2

Determine the survival rate of the species to understand whether age specific survival or breeding success is inhibiting population growth structure.

6.3.1 Operational Goal 2.1

Obtain survival estimates of the species (survival is estimated at 17 years from European studies).

Action Step 8: Funding proposal to fund training and employment of capture team	
Responsibility	BirdLife (Martin Taylor)
Timeline	September 2011
Resources needed	Time
Collaborators	NRF (capacity building), Arab fund
Deliverables	The proposal for submission to funders
Measurable outcomes	Funding granted

Action Step 9: Patagial tag 10% of the population (about 40 birds) using the European method of patagial tagging	
Responsibility	Sonja Krüger
Timeline	ASAP
Resources needed	Funds to employ a dedicated team (trapper and assistant) Training of team
Collaborators	Spanish, funders, EWT (training), African Birds of Prey Sanctuary Malcolm Wilson, BirdLife South Africa
Deliverables	40 birds to be tagged
Measurable outcomes	See Action Steps 11 and 12: Age specific survival estimates
Challenges	The project may have a negative reaction from photographers particularly at Giants Castle

Action Step 10: Implement re-sightings programme -Vulture Count Day to be used as primary re-sighting. One re-sighting of a marked bird per year is sufficient for 4-5 years	
Responsibility	BirdLife (Martin Taylor) and Sonja Krüger (Vulture Count Day)
Timeline	September 2012, 2013, 2014, 2015
Resources needed	Presentation to KZN Bird forum, Observers, feeding site database
Collaborators	KZN Bird forum (6 main clubs and 4 satellite clubs), grazing associations in Lesotho, Lesotho feeding sites, photographic clubs
Deliverables	Sightings database of uniquely identifiable tagged Bearded Vultures which feeds into the EWT tagging database
Measurable outcomes	Age specific survival estimates

Action Step 11: Develop a system to report sightings through Environmental Officers (South Africa and Lesotho) or local police (in Lesotho) who can direct the reports to EWT/BVTF	
Responsibility	BVTF
Timeline	2013
Resources needed	Champions per province/district
Collaborators	Environmental departments, police force
Deliverables	Reporting mechanism
Measurable outcomes	Improved survival estimates

Action Step 12: Develop incentives for obtaining re-sightings, particularly in Lesotho while being aware of false reporting	
Responsibility	Samuel Zwakala
Timeline	December 2012
Resources needed	Funding
Collaborators	EWT, MDTP
Deliverables	Re-sightings received
Measurable outcomes	Improved survival estimates

Action Step 13: Use photographers to report sightings of birds	
Responsibility	Sonja Krüger
Timeline	2013
Resources needed	Database of feeding site owners
Collaborators	Photography clubs, bird clubs, feeding site managers
Deliverables	Increased reporting rate
Measurable outcomes	Improved survival estimates

Action Step 14: Undertake continuous awareness so people know who to report sightings too	
Responsibility	BVTF, police, environmental officers
Timeline	Ongoing
Resources needed	Awareness materials
Collaborators	All
Deliverables	Public aware of reporting structure
Measurable outcomes	Efficient reporting

6.3.2 Operational Goal 2.2

Determine the breeding success of the population, *i.e.* the number of young fledged per territorial pair.

Action Step 15: Monitor a representative sample of nest sites 3 times per year during the incubating, hatching and fledging period to determine at which stage in the breeding cycle failure occurs (if any)	
Responsibility	Sonja Krüger
Timeline	Annually
Resources needed	Trained observers
Collaborators	BVTF members and Ezemvelo, volunteers
Deliverables	Number of nests where breeding was successful
Measurable outcomes	An indication of breeding success

6.3.3 Operational Goal 2.3

Determine the proportion of females that are breeding.

Action Step 16: Conduct road counts on specific routes used in past (Brown, 1988) in Lesotho and Eastern Cape	
Responsibility	Sonja Krüger
Timeline	2012
Resources needed	Vehicles, observers, funds for mileage
Collaborators	BVTF members and Ezemvelo, volunteers
Deliverables	Ratio of breeding to non-breeding females
Measurable outcomes	An indication of breeding success

6.3.4 Operational Goal 2.4

Determine the age structure of the population and whether this has changed over time.

Action Step 17: Conduct road counts on specific routes used in past (Brown, 1988) in Lesotho and Eastern Cape	
Responsibility	Sonja Krüger
Timeline	2012 breeding season
Resources needed	Vehicles, observers, funds for mileage
Collaborators	Bird clubs, David Allan
Deliverables	Replicated road count data
Measurable outcomes	Age structure of the population
Challenges	Obtaining original routes from Chris Brown

Action Step 18: Conduct regular counts at feeding sites throughout the foraging range of the species	
Responsibility	Sonja Krüger to identify sites

Timeline	ASAP
Resources needed	Trained observers
Collaborators	Feeding site managers, bird clubs, David Allan, Martin Taylor
Deliverables	Monthly age structure data
Measurable outcomes	Age related survival estimate data (for intermediate age classes)

6.4 Objective 3

Examine changes in breeding population size and range.

6.4.1 Operational Goal 3.1

Determine size and distribution of the breeding population on a regular basis.

Action Step 19: Develop a Bearded Vulture database hosted within the larger raptor database to record all the data of the species throughout its range	
Responsibility	BVTF and EWT-IT4C Programme
Timeline	December 2012
Resources needed	Web enablement
Collaborators	EWT (Brenda Daly), Ezemvelo (Sonja Krüger and Ian Rushworth), Consultant (Rose Hamilton)
Deliverables	Database
Measurable outcomes	Secure location for data input and storage

Action Step 20: Analyse changes in breeding numbers and range change and publish results in a peer reviewed paper	
Responsibility	Sonja Krüger, Arjun Amar, David Allan
Timeline	October 2012
Resources needed	Time
Collaborators	Ezemvelo, UCT, DNSM
Deliverables	Paper submitted
Measurable outcomes	Understanding actual levels of current breeding population size, population decline and range change

Action Step 21: Ensure full baseline survey for Lesotho is completed (suitable cliffs to be modelled and checked)	
Responsibility	Samuel Zwakala, David Allan
Timeline	2012 breeding season
Resources needed	Funds
Collaborators	GIS experts
Deliverables	Survey gaps filled
Measurable outcomes	Completed baseline survey

Action Step 22: Submit proposal for funding to train Field Rangers, Volunteers, District Environment Officers, herdboys, farmers, schools (see awareness/education section) to increase monitoring capacity	
Responsibility	BirdLife (Martin Taylor) and Samuel Zwakala (use same proposal)
Timeline	September 2011
Resources needed	Time
Collaborators	CEPF, MDTP Lesotho
Deliverables	Submitted proposal
Measurable outcomes	Funding granted

Action Step 23: Submit proposal for funding for equipment for monitoring	
Responsibility	BirdLife (Martin Taylor) and Samuel Zwakala (use same proposal)
Timeline	September 2011 and October 2011
Resources needed	Time
Collaborators	CEPF, MDTP Lesotho
Deliverables	Submitted proposal
Measurable outcomes	Funding granted

Action Step 24: Monitor a sample of nest sites for occupancy annually for the next 3 years then on a 2-3 year cycle	
Responsibility	BVTF (Sonja Krüger)
Timeline	Annually – currently September but possibly later in season
Resources needed	Monitors, funds, one GPS for Lesotho
Collaborators	BVTF
Deliverables	Number of occupied sites
Measurable outcomes	Annual measure of occupancy

Action Step 25: Develop a nest site champion programme so that available associations who are interested in the programme in Lesotho within each district take responsibility of monitoring the nest sites in their area	
Responsibility	Sonja Krüger and Samuel Zwakala
Timeline	2013
Resources needed	Time, contacts within each breeding territory
Collaborators	MDTP
Deliverables	Network of nest site champions
Measurable outcomes	Improved monitoring of nest site status

Action Step 26: Ensure involvement of Eastern Cape officials in monitoring	
Responsibility	Sonja Krüger, André Botha
Timeline	August 2011
Resources needed	None (letter to ECPTA)
Collaborators	Dean Ricketts
Deliverables	Letter sent to Dean Rickett's supervisor
Measurable outcomes	Improved monitoring in Eastern Cape

6.5 Objective 4

Determine the spatial and temporal foraging range use of non-breeding individuals and the environmental influences on the use of home range.

6.5.1 Operational Goal 4.1

Obtain movement data from individuals marked with satellite tags.

Action Step 27: Analyse tracking data of 15 non-breeding individuals marked to date (juveniles, immatures and sub-adults)	
Responsibility	Sonja Krüger
Timeline	December 2012
Resources needed	Time
Collaborators	Ezemvelo, UCT
Deliverables	Data on home range use of non-breeding birds
Measurable outcomes	An indication of which environmental variables influence home range use to aid conservation action

6.6 Objective 5

Determine whether the southern African Population is genetically similar to the East African population for conservation purposes, *i.e.* for reintroductions from the latter population to be considered as a conservation option.

6.6.1 Operational Goal 5.1

Analyse genetic samples from populations of the species in Lesotho, South Africa, Ethiopia, Kenya, Uganda and Tanzania.

Action Step 28: Obtain genetic samples from populations of the species in Lesotho, South Africa, Ethiopia, Kenya, Uganda and Tanzania	
Responsibility	Sonja Krüger
Timeline	2011-2013
Resources needed	Feathers and tissue samples, permits for transporting samples
Collaborators	East African conservation agencies
Deliverables	A minimum sample size of both populations
Measurable outcomes	See below

Action Step 29: Analyse genetic samples from southern and East Africa	
Responsibility	Sonja Krüger
Timeline	2011
Resources needed	Genetic laboratory, funds for analysis
Collaborators	Geneticists (Antoinette Kotze, Bettine van Vuuren)
Deliverables	Samples analysed
Measurable outcomes	An indication of genetic similarity
Challenges	Work overload of geneticists

6.7 Objective 6

Supplement natural carcass availability through an intensive feeding programme, *i.e.* feeding sites which are well located and managed and providing a safe food source.

6.7.1 Operational Goal 6.1

Increase the amount of food that is naturally available to vultures.

Action Step 30: Investigate the feasibility of the re-introduction of antelope into the suitable parts of the UDP WHS as a long term project to provide a natural food source for the birds	
Responsibility	BVTF/Student
Timeline	2013
Resources needed	Database of animal population numbers
Collaborators	Ezemvelo
Deliverables	Report with management recommendations
Measurable outcomes	Increased food availability pending outcome of report

6.7.2 Operational Goal 6.2

Establish approximately 80 feeding sites strategically spread across the foraging range (5 in Lesotho).

Action Step 31: Assess the availability of food at a landscape scale (MSc research project). Using the inventory of sites and carcass-availability data in GIS, conduct a strategic review of all sites in the bioregion, identifying gaps and areas of redundancy. Focus must be on those areas where juvenile birds congregate, in an effort to improve juvenile survivorship. Need to determine what percentage of the available food is supplied by feeding sites	
Responsibility	Sonja Krüger to write project brief to take to universities
Timeline	December 2011
Resources needed	None for proposal, R50 000.00
Collaborators	Ian Rushworth, MDTP for funding (Joyce Loza)
Deliverables	MSc quantifying food availability and trend
Measurable outcomes	MSc thesis

Action Step 32: Use tracking data to determine key foraging areas for juveniles and where feeding sites need to be located	
Responsibility	Sonja Krüger (PhD)
Timeline	First draft end 2012
Resources needed	Ongoing satellite data download funds
Collaborators	UCT (Arjun Amar), MDTP (Joyce Loza)
Deliverables	Map of habitat use
Measurable outcomes	Map available for analyses

Action Step 33: Investigate stock pounds as a source of carcasses for vulture restaurants	
Responsibility	Thabathani Tshaka and Samuel Zwakala
Timeline	2012
Resources needed	None
Collaborators	Environmental, health and agricultural department officials
Deliverables	Agreements with pounds to provide carcasses
Measurable outcomes	Increased food availability/regular provisioning of local feeding sites

Action Step 34: Identify feeding sites that are ideally located and make these know so that people know where to take the carcasses	
Responsibility	BVTF
Timeline	2013
Resources needed	Results of MSc research project (see above)
Collaborators	Environmental departments, MDTP
Deliverables	List of the location of feeding sites
Measurable outcomes	Improved provisioning of feeding sites

6.7.3 Operational Goal 6.3

Ensure the appropriate management of feeding sites.

Action Step 35: Continually update the database of feeding sites, including a measure of carcass availability (annual phone survey)	
Responsibility	Sonja Krüger
Timeline	Ongoing (database by 30 September 2011)
Resources needed	In progress
Collaborators	Ian Rushworth, André Botha
Deliverables	Updated database
Measurable outcomes	Database functional, information is current

Action Step 36: Ensure that the Management Plan for each protected area has a goal associated with the conservation of vultures through the establishment and management of a vulture feeding site. Operational guidelines must be associated with this.	
Responsibility	Joyce Loza (MDTP) to write to each agency, EWT (André Botha) letter of endorsement, to provide operational guidelines
Timeline	2014
Resources needed	None
Collaborators	André Botha, Ian Rushworth, Dean Pienkie (one representative per agency)
Deliverables	Management Plan has section on vulture feeding site, including operational plan
Measurable outcomes	Efficient feeding site management

Action Step 37: Maintain livestock exchange system in Lesotho (Quthing and Letseng), and explore the establishment of this system at other sites, as well as cash payments where possible (*e.g.* Tsehlanyane National Park)	
Responsibility	Tlotla Selialia
Timeline	Functional feeding site at Sehlabathebe National Park by July 2013 and at Tsehlanyane National Park by December 2011
Resources needed	Funds and source of animals
Collaborators	EWT (André Botha), MDTP (Joyce Loza), Director of Parks, Maliba Lodge
Deliverables	Functional feeding site at Sehlabathebe NP and Tsehlanyane NP
Measurable outcomes	Increased food availability

Action Step 38: Ensure operational freezer containers for Mokhotlong (funded already), Witsieshoek, Sterkfontein; Ongeluksnek (Matatiele)	
Responsibility	Sonja Krüger
Timeline	2013
Resources needed	R120 000 (Mokhotlong funded already)
Collaborators	MDTP (Joyce Loza)
Deliverables	Supplementary feeding achieved
Measurable outcomes	3 new freezer rooms

Action Step 39: Identify those feeding sites that need to be fenced off to prevent scavenger and dog access where this is a problem	
Responsibility	Site managers
Timeline	As and when
Resources needed	Acquire resources to assist individuals on an ad hoc basis
Collaborators	BVTF, Environmental Officers, EWT
Deliverables	Fencing specifications to be incorporated into vulture feeding site booklet
Measurable outcomes	List of sites that need fencing

6.7.4 Operational Goal 6.4

Ensure that information on responsible feeding site management is collated and disseminated.

Action Step 40: Update Vulture Feeding Site booklet (add checklist of criteria into booklet)	
Responsibility	André Botha (EWT)
Timeline	March 2012
Resources needed	Funding is available
Collaborators	IR, Sonja Krüger, Kerri Wolter, André Boshoff

Deliverables	Updated Vulture Feeding Site booklet (electronic and hard copy)
Measurable outcomes	Vulture Feeding Site booklet

Action Step 41: Collate all information on vulture–harming veterinary medicines including alternatives, and include into vulture feeding site booklet, on posters, flyers and vet magazines *etc.*	
Responsibility	André Botha to obtain information from OVI
Timeline	December 2011
Resources needed	Printing R5000
Collaborators	OVI, EWT-BoPP, agencies, VULPro
Deliverables	Completed list with alternatives
Measurable outcomes	Informed public

Action Step 42: Distribute the information on responsible feeing site management to all feeding site managers and suppliers on the feeding site database	
Responsibility	Sonja Krüger
Timeline	July 2012
Resources needed	None
Collaborators	EWT-BoPP, EWT-WCMP
Deliverables	Information distributed
Measurable outcomes	Feeding site managers and suppliers better informed

Action Step 43: Send a letter to the Veterinary Department in Maseru alerting them to problematic products	
Responsibility	Tlotla Selialia and André Botha (EWT-BoPP) to draft
Timeline	December 2011
Resources needed	None
Collaborators	EWT-BoPP, OVI
Deliverables	Letter
Measurable outcomes	Copy of letter provided

Action Step 44: Distribute letter to all extension staff in the conservation sector and Department of Agriculture in South Africa and Lesotho	
Responsibility	Tlotla Selialia and André Botha (EWT-BoPP)
Timeline	July 2012
Resources needed	None
Collaborators	EWT-BoPP, OVI
Deliverables	Letter
Measurable outcomes	Copy of letter provided

Action Step 45: Place an article from OVI in SAVA Veterinary News 'Vetmed'- announcing problematic products and appropriate use thereof	
Responsibility	André Botha
Timeline	January 2012
Resources needed	None
Collaborators	EWT-BoPP, OVI
Deliverables	Publication
Measurable outcomes	Copy of publication provided

Action Step 46: Evaluate safer alternatives for known problematic products, continue to support OVI/VULPro project to evaluate additional products	
Responsibility	OVI (Vinnie Naidoo)
Timeline	Report at January 2012 meeting

Resources needed	Assist in raising funding if there is a need
Collaborators	VULPro, PoPP, OVI
Deliverables	Assess additional 10 substances by 2015 (check with Vinnie Naidoo)
Measurable outcomes	Number of products assessed

Action Step 47: Request pharmaceutical companies to put warnings on product brochures of problematic compounds	
Responsibility	Tim Snow
Timeline	July 2013
Resources needed	None
Collaborators	EWT-BoPP
Deliverables	Request in writing
Measurable outcomes	Submission document, changes to product information documents

Action Step 48: Produce one page flyer to make landowners aware of the need to supply carcasses and about carcass safety (for co-ops, farmers' associations, other outlets frequented by livestock owners); supply through extension officers	
Responsibility	André Botha to produce generic flyer Agencies to edit/translate and distribute
Timeline	31 December 2011
Resources needed	Each agency to print, laminate and distribute using operational budgets; electronic version too
Collaborators	Agencies
Deliverables	Increased awareness of livestock owners
Measurable outcomes	Document made available at relevant locations

6.8 Objective 7

Promote Bearded Vulture conservation planning into existing land-use planning systems, EIA processes and stewardship programmes to mitigate the impacts of infrastructural developments and tourism activities on the population.

6.8.1 Operational Goal 7.1

Take cognisance of potential threats of proposed developments to Bearded Vultures.

Action Step 49: Ensure that Bearded Vultures are considered in the development of all new rural electricity networks, overhead cables, wind farms, cable cars, tourism activities, roads *etc.* within their range in both South Africa and Lesotho. EWT-WEP to seek legal advice on whether the BMP can be used to ensure that Bearded Vultures are taken into account during the scoping/EIA process (look at EIA regulations)	
Responsibility	BVTF coordinator to alert EWT-WEP and vice-versa of projects and obtain technical input. EWT-WEP to seek legal advice
Timeline	Ongoing, as developments arise
Resources needed	Only if field inspection required, GIS mapping and printing facilities, funding. Observation hours
Collaborators	BVTF, all agencies, EWT-WEP, Eskom, LEC, provincial and national environmental departments, public, consultants
Deliverables	Integral part of EIA policies of South Africa and Lesotho. Annual activity report DEA
Measurable outcomes	Number of Bearded Vulture sensitive developments accepted or rejected. Safe infrastructure built within the Bearded Vulture range. Number of projects that considered Bearded Vulture

Action Step 50: Develop an information pack for environmental consultants providing Information and data on the species to substantiate the EIA processes	
Responsibility	BVTF
Timeline	2012
Resources needed	None
Collaborators	IAIASA
Deliverables	Information pack
Measurable outcomes	Consultants that are better informed

Action Step 51: Provide developers and municipalities with the information they need on species. Municipal meetings can be used to report on the vulture programme so that counselors can take this knowledge back to their communities	
Responsibility	BVTF
Timeline	Ongoing
Resources needed	Time, personnel
Collaborators	All agencies
Deliverables	Information pack to present to developers and at municipal meetings
Measurable outcomes	Informed developers and officials

Action Step 52: Non debateable areas for development will be established based on breeding and foraging range information. Buffer zones allowing only low impact development will be identified and managed close to breeding sites	
Responsibility	BVTF
Timeline	*Ad hoc* (pro actively use tracking and nest site data)
Resources needed	GIS data base, site maps, participation funding
Collaborators	Consultants, BVTF, DEA
Deliverables	Annual activity report
Measurable outcomes	Number of areas threatened versus number of areas protected

Action Step 53: Define tourism activities that negatively impact on vulture survival and disseminate information to affected parties, including trails, mountaineering, hang gliding and other intrusive activities. Review mountaineering in the UDP WHS with respect to zonation	
Responsibility	BVTF (Sonja Krüger)
Timeline	2012
Resources needed	Time and publication costs
Collaborators	BVTF, Conservation management planners, Civil Aviation, Mountain Club of South Africa
Deliverables	Leaflet and pamphlets,
Measurable outcomes	List of recipients of material

Action Step 54: Review and record known abandonment of breeding territories as a result of construction and development	
Responsibility	Sonja Krüger (South Africa) and David Allan (Lesotho)
Timeline	2012
Resources needed	Database of territories
Collaborators	None
Deliverables	List of abandoned sites
Measurable outcomes	Awareness amongst developers

Action Step 55: Provide Eskom with a nest and feeding site distribution map for them to determine where powerline structures are in relation to vultures and identify which ones need to be mitigated. Also provide information on how many vultures have been killed by powerlines and by which particular powerline	
Responsibility	EWT-WEP
Timeline	2012
Resources needed	Database of nest and feeding sites
Collaborators	Eskom, LEC, Ezemvelo
Deliverables	Map of nest and feeding site locations and incident register
Measurable outcomes	Improved planning of proposed structures and existing structures mitigated

Action Step 56: Investigate the potential threat posed by two proposed windfarms in Lesotho	
Responsibility	Ian Rushworth and Sonja Krüger
Timeline	October 2012
Resources needed	Tracking and nest site data
Collaborators	UCT, Ezemvelo, consultants
Deliverables	Paper describing potential impacts of wind farms
Measurable outcomes	Increased awareness on potential threats of windfarms

8.8.2 Operational Goal 7.2

Undertake proactive measures to ensure that the threats that specific infrastructure (such as powerlines) or actions (poisoning) pose to Bearded Vulture are adequately mitigated.

Action Step 57: Ensure that priority unsafe existing infrastructure (power lines, wind farms, telephone lines, fences, towers, stay wires *etc.)* are identified and mitigated (made safe)	
Responsibility	BVTF coordinator alerts EWT-WEP of necessary action and then WEP takes it further. EWT to ensure Eskom and LEC have document outlining 'safe' structures
Timeline	Ongoing
Resources needed	Covered by responsible company
Collaborators	EWT-WEP, Eskom, LEC
Deliverables	Annual activity report at BVTF meeting
Measurable outcomes	Percentage of safe infrastructure in Bearded Vulture range, measured by length in the case of lines, and number of structures in non linear cases

Action Step 56: Undertake research and monitoring to assess and address collision risks since current mitigation measures are not effective in eliminating mortalities	
Responsibility	EWT-WEP
Timeline	Ongoing
Resources needed	Funds, students
Collaborators	Universities, Eskom, LEC
Deliverables	Solution to mitigating collisions
Measurable outcomes	No more mortalities from collisions

Action Step 59: Undertake a research project on how Bearded Vulture fly/scavenge in the landscape to determine problematic infrastructure and identify how birds come into contact with this infrastructure	
Responsibility	Ian Rushworth to develop research proposal for dissemination to Universities

Timeline	2013
Resources needed	None
Collaborators	Universities
Deliverables	Project report
Measurable outcomes	Improved understanding of foraging behaviour

Action Step 60: Undertake a research project on jackal ecology- specifically the effects of jackal on populations of small antelope in order to effectively manage jackal to avoid the secondary poisoning of vultures	
Responsibility	Ian Rushworth to develop research proposal for dissemination to Universities
Timeline	2013
Resources needed	None
Collaborators	Universities
Deliverables	Project report
Measurable outcomes	Improved understanding of jackal behaviour

Action Step 61: Develop an incentives programme *e.g.* stewardship programme, to provide incentives like tax rebates to landowners that are managing their land to the benefit of vultures	
Responsibility	BVTF (Ian Rushworth)
Timeline	1 April 2013
Resources needed	Human and financial resources
Collaborators	EWT
Deliverables	Incentive programme plan
Measurable outcomes	Increasing number of 'vulture friendly' farms due to incentives that landowners receive

6.9 Objective 8

Address the threat of poisoning.

6.9.1 Operational Goal 8.1

Step up law enforcement to ensure that poison users (farmers, those supplying the traditional medicine markets *etc.*) comply with legislation.

Action Step 62: Establish a network of local informed champions to liaise with police and magistrates and distribute awareness materials	
Responsibility	BVTF Coordinator
Timeline	November 2012
Resources needed	Awareness materials including posters, brochures. Funding for champions and materials R 5 000.00
Collaborators	Relevant champions employers or organisations, EWT-LPP, prosecutors and police
Deliverables	Annual activity report for champion network
Measurable outcomes	Number of posters, visits *etc.* per year. Number of successful prosecutions

Action Step 63: To remain abreast of current pesticide policy and legislation	
Rssponsibility	BVTF
Timeline	Ongoing
Resources needsd	Existing
Collaborators	EWT-WCMP

Deliverables	Annual report to BVTF
Measurable outcomes	Report

Action Step 64: Develop an information awareness pack (possibly in CD format) for general public	
Responsibility	EWT-WCMP
Timeline	BVTF 2012
Resources needed	Limited funding
Collaborators	EWT-WCMP, EWT-LPP
Deliverables	Talk pack / Information CD
Measurable outcomes	Delivery

Action Step 65: Conduct Human Wildlife Conflict Management training and awareness workshops to empower stakeholders and incorporate this information into farmer's day meetings together with vulture related talks	
Responsibility	EWT-WCMP
Timeline	BVTF 2012
Resources needed	Funding, venues, transport for stakeholders
Collaborators	Ezemvelo training, farmer's associations, MDTP
Deliverables	Annual activity report
Measurable outcomes	2 workshops per year

6.9.2 Operational Goal 8.2

Implement interventions to ensure commercial farmers do not persecute (directly or indirectly) vultures.

Action Step 66: Offer Human Wildlife Conflict Management Courses to provide commercial farmers with alternative solutions to predator control and increase awareness of farmers by incorporating this information into farmer's day meetings	
Responsibility	BVTF
Timeline	Ongoing
Resources needed	Training courses, awareness materials
Collaborators	Farmer's Associations
Deliverables	A range of alternative solutions
Measurable outcomes	Reduction in vulture mortalities because farmers are better informed

Action Step 67: Attend NAMPO and the Elliot Show to raise awareness amongst farmers. Have live/stuffed bird on display for added effect	
Responsibility	BVTF members
Timeline	Annual
Resources needed	Resources to attend the shows
Collaborators	EWT, farmers' associations, environmental departments
Deliverables	Number of vulture related presentations given
Measurable outcomes	Reduction in vulture mortalities because farmers are better informed

Action Step 68: Publish articles regularly in local newspapers about the project. Sensationalise (*e.g.* Special Assignment) when a satellite tagged bird is found poisoned in order to raise awareness around this issue	
Responsibility	Sonja Krüger
Timeline	Ongoing (when mortalities are found)
Resources needed	Contacts of relevant individuals/agencies

Collaborators	Journalists, EWT
Deliverables	Documentary on threats to vultures
Measurable outcomes	Increased awareness of public

6.10 Objective 9

Determine the impacts of global climate change and global warming on Bearded Vulture.

6.10.1 Operational Goal 9.1

Design into the monitoring programme indicators that will reveal impacts of global climate change and global warming on vulture populations.

Action Step 69: Undertake research on the impacts of climate change on the species	
Responsibility	Sonja Krüger to advertise project for a student
Timeline	2013
Resources needed	Database of nest and environmental variables
Collaborators	Rob Simmons, Universities
Deliverables	Project proposal and research report
Measurable outcomes	Understanding of impacts of climate change to the species

Action Step 70: *A priori* hypothesis developed on response of Bearded Vulture to climate change scenarios; monitoring programme designed to reveal impacts of global climate change on vulture populations	
Responsibility	Sonja Krüger
Timeline	Ongoing
Resources needed	As per monitoring programme
Collaborators	All
Deliverables	Hypothesis, monitoring programme
Measurable outcomes	Documents

6.11 Objective 10

Address the use of vultures in illegal trade and traditional medicine

6.11.1 Operational Goal 10.1

Obtain and disseminate information on the trade in Bearded Vulture.

Action Step 71: Engage with senior authorities within conservation agencies to ensure a top-down approach to address illegal trade	
Responsibility	BVTF
Timeline	2013
Resources needed	Contacts of relevant agencies
Collaborators	All conservation agencies
Deliverables	A strategy to address illegal trade
Measurable outcomes	Reduction in illegal use of vulture parts

Action Step 72: Verify that Bearded Vulture are used in traditional medicine and illegal trade by interviews and information gathering in Muthi markets and conducting research on indigenous knowledge on the use of the species and what is driving this use. Engage traditional healers in research done on the subject of the use of vulture parts in traditional medicine	
Responsibility	BVTF (Ian Rushworth, Sonja Krüger, Samuel Zwakala and

	Makhubu Shobana) to analyse and publish Lesotho survey
Timeline	1 April 2013
Resources needed	Time and culturally aligned manpower (Lesotho information applicable)
Collaborators	Conservation entities, volunteers and academic institutions in both countries, Traditional Healers
Deliverables	Survey sheets, feedback, research paper with findings and recommendations
Measurable outcomes	Number of reports submitted, research paper

Action Step 73: Review the "guidelines for interventions to address the threat of traditional use to vultures" involving representative from each traditional healer association and develop and prioritize conservation actions and solutions from the document	
Responsibility	BVTF, Steve McKean
Timeline	Ongoing, within 12 months
Resources needed	Printing materials, funding for workshop
Collaborators	Guideline document authors
Deliverables	Annual activity report
Measurable outcomes	Number of materials distributed, reduction in Muthi use as measured at markets

Action Step 74: Support the initiative by national government for traditional healers to be given permits to use in healing practices	
Responsibility	BVTF
Timeline	2013
Resources needed	Communication network
Collaborators	Government Departments
Deliverables	Letter of support
Measurable outcomes	No illegal trade in vulture parts

Action Step 75: Investigate the option of making 'doomed' material or feathers available to Traditional Healers	
Responsibility	BVTF
Timeline	2013
Resources needed	Guidelines for interventions to address the threat of traditional use to vultures
Collaborators	Steve McKean
Deliverables	Policy on use of doomed material
Measurable outcomes	Reduction in the illegal use of vulture parts

Action Step 76: Work with THPs to change the mindset regarding traditional medicinal use and support the use of alternative animal parts since they are not dependant on using vultures. Influence the THP training programme	
Responsibility	BVTF
Timeline	2014
Resources needed	Guidelines for interventions to address the threat of traditional use to vultures
Collaborators	Steve McKean
Deliverables	Strategy documenting actions required
Measurable outcomes	Reduction in the illegal use of vulture parts

Action Step 77: Educate the population to use traditional healers that are trained	
Responsibility	BVTF

Timeline	2014
Resources needed	Reliant on actions above being achieved (changing mindset of THP)
Collaborators	Steve McKean
Deliverables	Awareness materials for distribution
Measurable outcomes	Reduction in the illegal use of vulture parts

Action Step 78: Educate suppliers on the animal species that are permitted to be sold to ensure they do not sell anything which is not permitted. Target the market selling vultures illegally to deal with the issue of over harvesting.	
Responsibility	BVTF
Timeline	2014
Resources needed	Time, personnel, outcomes of proposed research projects
Collaborators	Steve McKean
Deliverables	Informed suppliers
Measurable outcomes	Reduction in the illegal use of vulture parts

6.12 Objective 11

To address the lack of partnerships between the various stakeholders, role-players, and interested and affected parties to obtain support for the BMP and its implementation.

6.12.1 Operational Goal 11.1

Identify relevant associations and establish contact and develop a working relationship with them.

Action Step 79: Identify TMPs and relevant national and provincial stakeholders and establish a working committee consisting of representatives from three provinces of South Africa and Lesotho	
Responsibility	BVTF
Timeline	01 April 2012
Resources needed	Meeting logistics, awareness material and transport.
Collaborators	Implementing agencies (SANParks, Ezemvelo, EWT, Free State Nature Conservation, MTEC, ECPTA, DEDEAT, FSDETEA, Department of Range Management- Lesotho) relevant Traditional Healers associations.
Deliverables	Contact established with TMPs and relevant stakeholders. Terms of reference for Working Committee developed and adopted. Working Committee established
Measurable outcomes	List of contacts, and minutes of initial Working Committee meeting

Action Step 80: Strengthen the relationships between the police in South Africa and Lesotho by establishing communication channels across the border where they can raise challenges they are encountering	
Responsibility	MDTP
Timeline	2013
Resources needed	None
Collaborators	Security Working Group
Deliverables	Formal agreement between both parties
Measurable outcomes	Efficient communication between the countries

Action Step 81: Develop partnerships with conservancies to assist in conducting research and empower them to educate local communities on vulture conservation matters	
Responsibility	Environmental/District Officers
Timeline	2013
Resources needed	Communication network, resources to address the conservancies
Collaborators	Conservation agencies
Deliverables	Formal agreement/support for BMP actions
Measurable outcomes	Effective partnership to implement BMP actions

Action Step 82: Individuals in the Extended Public Works Programme (EPWP) can be utilised to increase awareness around vulture issues. The focus of the EPWP is farming community and this is where they can have an impact	
Responsibility	Environmental/District Officers
Timeline	2013
Resources needed	Communication network, resources to address the programme
Collaborators	EPWP
Deliverables	Formal agreement/support for BMP actions
Measurable outcomes	Effective partnership to implement BMP actions

Action Step 83: Involve the communities surrounding Golden Gate in Bearded Vulture conservation initiatives	
Responsibility	SANParks People and Conservation
Timeline	2012
Resources needed	Personnel
Collaborators	Phutaditjaba wards
Deliverables	Partnership
Measurable outcomes	Increased awareness on vulture conservation issues

Action Step 84: Involve the community members of the Amazizi in Bearded Vulture conservation initiatives	
Responsibility	Community Conservation Officials
Timeline	2012
Resources needed	Personnel
Collaborators	Ezemvelo, Amazizi Tribal Authority
Deliverables	Partnership
Measurable outcomes	Increased awareness on vulture conservation issues

6.12.2 Operational Goal 11.2

Ensure agreement on and adoption of BMP actions between the five relevant conservation authorities (Ezemvelo, Free State Nature Conservation, Eastern Cape Nature Conservation, SANParks and Lesotho).

Action Step 85: MDTP BCC to ensure that Implementing agencies improve communication and ensure active participation of role players across the region in the development and implementation of this BMP	
Responsibility	BVTF (Sonja Krüger and Joyce Loza) to communicate the BMP development and implementation to BCC
Timeline	Bi-annually
Resources needed	Transport and other logistics
Collaborators	BVTF members
Deliverables	Presentation to BCC bi-annually
Measurable outcomes	Minutes of BCC meetings reflecting BVTF BMP implementation progress

Action Step 86: The Eastern Cape needs to allocate personnel from the Aliwal North office that can get involved in the vulture project	
Responsibility	Joyce Loza through NCC/BCC
Timeline	2012
Resources needed	None
Collaborators	Dean Ricketts
Deliverables	A representative on BVTF from Aliwal North
Measurable outcomes	Improved monitoring and reporting in Eastern Cape

6.13 Objective 12

Address legal discrepancies regarding Bearded Vulture conservation.

6.13.1 Operational Goal 12.1

Identify the legal discrepancies regarding Bearded Vulture conservation.

Action Step 87: Identify the legal discrepancies regarding Bearded Vulture conservation across the three provinces and Lesotho	
Responsibility	EWT-LPP, EWT-BoPP
Timeline	1 April 2012
Resources needed	Human and financial resources
Collaborators	Relevant conservation authorities in both countries
Deliverables	Discrepancies identified
Measurable outcomes	Report on discrepancies produced. Recommendation report

Action Step 88: Undertake a comparative analysis of relevant South African and Lesotho legislation, leading to drafting of guidelines for justice and enforcement officials in both countries	
Responsibility	André Botha, EWT-LPP
Timeline	To be agreed with them
Resources needed	Funding
Collaborators	EWT-WEP/ EWT-WCMP to take this forward
Deliverables	Report and guideline document
Measurable outcomes	Enhanced enforcement

Action Step 89: Enforce the law once legal discrepancies have been addressed and the public have been made aware of the legislation	
Responsibility	André Botha, EWT-LPP
Timeline	To be agreed with them
Resources needed	Funding
Collaborators	EWT-WEP/ EWT-WCMP to take this forward
Deliverables	Report and guideline document
Measurable outcomes	Enhanced enforcement

Action Step 90: Engage traditional healers when environmental legislation is developed/ revised. Their input will be crucial to future implementation of these conservation policies	
Responsibility	André Botha, EWT-LPP
Timeline	To be agreed with them
Resources needed	Resources for workshop
Collaborators	EWT-WEP/ EWT-WCMP to take this forward
Deliverables	Policy with input from THP
Measurable outcomes	Enhanced enforcement

6.14 Objective 13

Create and Awareness around the species and its conservation status.

Note: There is a need to put the message across to communities in a way that is simple and will be easily understood. The value of Bearded Vultures to society must be clear in all education and awareness initiatives to encourage people to protect them if they can see the benefits of doing so.

6.14.1 Operational Goal 13.1

Disseminate information on threats to the species and solutions through a formal documentation process.

Action Step 91: Publish a series of articles in popular literature (aimed at farmers' association's newsletters, Wildside, Grassroots, newspapers, Farmer's Weekly, Landbou Weekblad, conservancy lists.) on problematic products	
Responsibility	Sonja Krüger
Timeline	Continuous
Resources needed	None
Collaborators	André Botha, OVI
Deliverables	Publications
Measurable outcomes	Extent of coverage (number of articles)

Action Step 92: Establish a contacts database of all people who need to know about new developments and issues relating to Bearded Vulture conservation, for example new problem medicines and chemicals	
Responsibility	Sonja Krüger
Timeline	Ongoing, bring to January 2012 meeting (develop list of information required and hand out to members)
Resources needed	None
Collaborators	All members of BVTF
Deliverables	Database
Measurable outcomes	Database

Action Step 93: Encourage people to report incidents involving Bearded Vulture, by utilizing appropriate hotlines (poison helpline 0800 333 444; Griffon pesticides information centre 082 4468946; powerline hotline 0860 111 535)	
Responsibility	BVTF
Timeline	As and when incidents occur
Resources needed	Human resources
Collaborators	Media, EWT member base, BirdLife member base *etc.*
Deliverables	Incident report submitted to BVFT
Measurable outcomes	Incident report

Action Step 94: Package information for distribution in order to have a uniform message: plight of Bearded Vulture; impact of nest disturbance regarding nestling mortality; positive image for vultures. Translate all information into isiXhosa, isiZulu, Sesotho and Afrikaans	
Responsibility	BVTF and MDTP tourism specialist to use flight magazine
Timeline	On-going
Resources needed	Development, printing and distribution costs. Human resources and translators
Collaborators	MDTP and EWT
Deliverables	Translated media in various languages
Measurable outcomes	Stakeholders are better informed

Action Step 95: Ensure the general public and officials are aware of the legislation	
Responsibility	André Botha, EWT-LPP
Timeline	To be agreed with them
Resources needed	Funding
Collaborators	EWT-WEP/ EWT-WCMP to take this forward
Deliverables	Report and guideline document
Measurable outcomes	Enhanced enforcement

Action Step 96: Identify and collaborate with existing relevant media programmes and negotiate new ones locally and internationally for enhancing Bearded Vulture awareness	
Responsibility	Vulture Media Working Group (Ian Rushworth)
Timeline	On-going
Resources needed	Development, printing and distribution costs. Buy a slot on both television and radio media
Collaborators	EWT-BoPP and EWT-SACWG
Deliverables	Inserts on television and radio aired
Measurable outcomes	Published reports and articles

Action Step 97: Assist traditional healers when they engage in education and awareness on vulture issues in terms of background information and provide support to them	
Responsibility	BVTF
Timeline	Ongoing
Resources needed	Awareness materials/presentations (on hand)
Collaborators	Traditional healers, community conservation officials
Deliverables	Awareness material
Measurable outcomes	Increased awareness amongst community members

Action Step 98: Arrange education and awareness for both South African and international (Swaziland and Lesotho) traditional healers prior to implementing the law	
Responsibility	BVTF
Timeline	2012
Resources needed	Personnel, communication network, funds for training
Collaborators	THOs
Deliverables	Awareness workshops
Measurable outcomes	Increased awareness amongst healers

Action Step 99: Capacitate tour guides through training since this may be useful in them raising awareness amongst their clients around vulture conservation issues	
Responsibility	BVTF
Timeline	2012
Resources needed	Personnel, communication network, funds for training
Collaborators	Tourism association
Deliverables	Awareness workshops
Measurable outcomes	Increased awareness amongst public

Action Step 100: Inform relevant NGOs of the outcomes the Bearded Vulture BMP and future projects. Encourage future participation in projects	
Responsibility	BVTF
Timeline	On-going
Resources needed	Development, printing and distribution costs. Human resources
Collaborators	MDTP agencies, EWT-CLP
Deliverables	Information disseminated to NGOs
Measurable outcomes	Published reports and articles

6.14.2 Operational Goal 13.2

Approach EWT-CLP/ WESSA to develop a formal programme and request assistance in running the programme (possible collaboration with the N3 Gateway Tourism Association).

Action Step 101: Formulate materials to promote Bearded Vulture conservation using the Bearded Vulture BMP	
Responsibility	Vulture Media Working Group (Ian Rushworth)
Timeline	On-going
Resources needed	Development, printing and distribution costs. Human resources
Collaborators	BVTF
Deliverables	Communication materials (brochures, pamphlets *etc.*)
Measurable outcomes	Disseminated communication materials

6.14.3 Operational Goal 13.3

Include schools in the education and awareness programme.

Action Step 102: Involving scholars (particularly lower grades) in Bearded Vulture conservation may be critical for species sustainability and continuity	
Responsibility	BVTF
Timeline	2014
Resources needed	Communication network
Collaborators	EWT, Department of Education
Deliverables	Vulture conservation incorporated into curriculum
Measurable outcomes	Scholars well informed on vulture issues

Action Step 103: Investigate the feasibility of establishing a Citizen Scientist project together with the Department of Science and Technology and the Department of Education aimed at vulture conservation at school level	
Responsibility	BVTF
Timeline	2014
Resources needed	Champions in schools and Department of Education
Collaborators	EWT, Department of Education, Department of Science and Technology
Deliverables	Reports from champions
Measurable outcomes	Increased reporting on vulture conservation issues

6.15 Objective 14

Address the lack of knowledge of outcomes of previous interventions.

6.15.1 Operational Goal 14.1

Inclusion of monitoring protocol around initiatives.

Action Step 104: Draw up the monitoring protocol around awareness campaigns and their success or failure and constantly review awareness campaigns	
Responsibility	BVTF
Timeline	1 April 2013
Resources needed	Human and financial resources
Collaborators	EWT
Deliverables	Monitoring protocol and evaluation report on the awareness campaigns
Measurable outcomes	Monitoring protocol and evaluation report

6.16 Objective 15

Address the lack of adequate protection for the species.

6.16.1 Operational Goal 15.1

Update the red data listing for the species to improve its protection status.

Action Step 105: Up-list the conservation status of the species	
Responsibility	Sonja Krüger and Martin Taylor
Timeline	1 April 2012
Resources needed	Human resources
Collaborators	BirdLife SA
Deliverables	Updated red listing for the species
Measurable outcomes	Improved protection of the species

Action Step 106: Submit an amendment to the ToPS regulations if the species is uplisted to critically endangered	
Responsibility	Martin Taylor
Timeline	2013
Resources needed	Red data book listing
Collaborators	Sonja Krüger and David Allan
Deliverables	Motivation to amend regulations
Measurable outcomes	Amended ToPS regulations

6.17 Objective 16

Initiate a captive breeding programme

6.17.1 Operational Goal 16.1

Investigate the feasibility of a captive breeding programme

Action Step 107: Develop a proposal to implement a captive breeding programme	
Responsibility	Birds of Prey Sanctuary (Ben and Shannon Hoffman)
Timeline	July 2012
Resources needed	Life history and captive breeding information
Collaborators	Foundation for Conservation of the Bearded Vulture (Europe)
Deliverables	Proposal
Measurable outcomes	Implementation of programme

Action Step 108: Obtain funding to implement a captive breeding programme if deemed feasible and necessary	
Responsibility	Birds of prey Sanctuary (Ben and Shannon Hoffman)
Timeline	2013
Resources needed	Funding
Collaborators	EWT, BirdLife SA, Foundation for Conservation of the Bearded Vulture (Europe)
Deliverables	Captive breeding programme
Measurable outcomes	Increase in population size in wild and increase in range

7 Monitoring and Reporting

The actions captured in section 6 above clearly indicate applicable and measurable outcomes where relevant. From these it will be possible to derive an overall

understanding of performance as will be determined by the BVTF who is responsible for implementation and monitoring of this BMP.

The BVTF will assess the implementation of the BMP at least once a year and progress will be reported on in the annual report of the BVTF prepared by the chairman for the Director: Biodiversity of the DEDEA. The BMP will be reviewed after five years. An update on the achievement of the targets will be provided annually through the State of Biodiversity Report (Provincial and National).

All conservation agencies and NGOs will report on the implementation of the BMP through their annual reports. Various stakeholders (*e.g.* Eskom) will be required to report annually to the BVTF. Funders will be sent annual reports. In addition, regular reporting will be done to the BCC (MDTP).

A monitoring document has been developed for the species (Krüger 2013).

8 Research

Research questions currently being addressed include:

- What the breeding distribution and status of the species is in southern Africa.
- Which environmental variables account for the abandonment of breeding territories.
- Whether there are age specific differences in the spatial and temporal use of home range that places the birds at risk.
- Whether a predictive model of habitat use can inform conservation planning.
- Whether the population has enough genetic variation and is genetically similar to other populations in sub-Saharan Africa.
- What the primary factors affecting survival and breeding success of the population are.
- What the future growth rate of the population is likely to be and what the conservation interventions are that can effectively influence this trend.

The above research may highlight future research questions or the need for additional supporting research to be undertaken.

9 Legal Provisions

The following are the legal (permit) requirements for activities involving the species:

- Capture and handling (including samples) (ToPS permit, ringing permit from AFRING and provincial conservation bodies).
- Captive breeding (ToPS permit).
- Import and export for population augmentation (ToPS permit, import and export permits either provincial or national).
- Future trade (ToPS permit and CITES permit).
- Museum/display specimens (ToPS permit).

9.1 Restricted activities involving wild specimens of Bearded Vulture for which permits may be issued

Bearded Vultures are currently being caught and handled for research and monitoring purposes only. There is no legal trade in the species. One captive

individual exists in southern Africa. No second egg or bird collection from the wild is currently allowed.

10 References

Ambrose, D. (1983). Lesotho's heritage in jeopardy. Maseru, Protection and preservation commission.

Anderson M.D. (2000). Bearded Vulture In: Barnes KN. (ed). The Eskom Red Dafa book of birds of South Africa, Lesotho and Swaziland. BirdLife South Africa, Johannesburg. Pp 39-41.

BirdLife International (2000). Threatened birds of the world. Barcelona and Cambridge, Lynx Edicions and BirdLife International.

BirdLife International (2004). Threatened birds of the world, 2004. CD-ROM. Cambridge, BirdLife International.

Blair, A. and V. Blair (1983). The lammergeier incident. Roma, Lesotho, Roma University: 2.

Boshoff, A. F., R. K. Brooke and T. M. Crowe (1978). Computerized distribution mapping scheme for vertebrates in southern Africa. South African Journal of Wildlife Research 8(4): 145-149.

Boshoff, A. F., C. J. Vernon and R. K. Brooke (1983). Historical atlas of the diurnal raptors of the Cape Province (Aves: Falconiformes). Annals of the Cape Provincial Museums (Natural History Series) 14(7): 173-297.

Brooke, R. K. (1984). South African Red Data Book: Birds. Pretoria, C.S.I.R.

Brown, C.J. (1990). Breeding biology of the Bearded Vulfure in soufhern Africa, Parts I – III. Ostrich 61: 24 - 49.

Brown, C. J. (1991). An investigation into the decline of the Bearded Vulfure Gypaetus barbatus in southern Africa. Biological Conservation 57(3): 315-338.

Brown, C. J. (1992). Distribution and sfafus of fhe Bearded Vulture Gypaetus barbatus in southern Africa. Ostrich 63(1): 1-9.

Brown, C. J. (1997). Population dynamics of the Bearded Vulture Gypaetus barbatus in southern Africa. African Journal of Ecology 35(1): 53 - 63.

Colahan, B. D. (1991). Bearded vultures killed with Coyote Getters® in the eastern Orange Free State, South Africa. Vulture News 25: 13-14.

Colahan, B. D. and J. R. Esterhuizen (1997). The Status and Conservation of Vultures in the Free State Province, South Africa. Vultures in the 21st Century: Proceedings of a workshop on vulture research and conservation in southern Africa. A. F. Boshoff, M. D.

Frey, H., G. Schaden and M. Bijleveld van Lexmond (2004). Bearded Vulture: Reintroduction into the Alps. Annual report 2004. Wassenaar, The Netherlands, Foundation for fhe Conservation of the Bearded Vulture: 128.

Godoy, J. A.; Negro, J.J.; Hiraldo, F. and Donàzar, J.A. (2004). Phylogeography, genetic strucfure and diversity in the endangered Bearded Vulture (Gypaetus barbatus, L.) as revealed by mitochondrial DNA. Molecular Ecology 13: 371-390.

Guy, J. J. (1974). The lammergeyer (seoli) in Lesotho. Linyonana tsa Lesotho 1(2): 4.

Kopij, G. (2001). Birds of Roma Valley, Lesotho. Bearded Vulture Annual Report 2004. H. Frey. Roma, Lesotho, Department of Biology, National University of Lesotho: 1-40.

Krüger, S.C. (2005). The Bearded Vulture *Gypaetus barbatus meridionalis* ground survey, South Africa. Ezemvelo KZN Wildlife unpublished report.

Krüger, S.C. (2007). Polyandrous trios in the southern African Bearded Vulture *Gypaetus barbatus meridionalis*? Vulture News 57: 60-61.

Krüger, S.C. (2011). BEARDED VULTURE (Gypaetus barbatus meridionalis): Review of the 2006 POPULATION AND HABITAT VIABILITY ASSESSMENT IN SOUTHERN AFRICA 20-22 July 2011, uKhahlamba Drakensberg Park World Heritage Site.

Krüger, S. (2013). Ezemvelo KZN Wildlife Monitoring Plan: Bearded Vulture, *Gypaetus barbatus meridionalis*. Ezemvelo KZN Wildlife unpublished report.

Krüger, S.; Piper, S.; Rushworth, I.; Botha, A.; Daly, B.; Allan, D.; Jenkins, A.; Burden, D. and Friedmann, Y. (editors). (2006). Bearded Vulture (*Gypaetus barbatus meridionalis*) Population and Habitat Viability Assessment Workshop Report. Conservation Breeding Specialist Group (SSC / IUCN) / CBSG Southern Atrica. Endangered Wildlife Trust, Johannesburg.

Maclean, G. L. (1993). Roberts' birds ot southern Africa. Cape Town, The John Voelcker Bird Book Fund.

Mander, M.; Diederichs, N.; Ntuli, L.; Khulile, M.; Williams, V. and McKean, S. (2007). Survey of the Trade in Vultures for the Traditional Health Industry in South Africa. Futureworks, unpublished report, 30pp.

Maphisa, D. H. (1997). Vultures in Lesotho: Past, Present and Future. Vultures in the 21st Century: Proceeding of a workshop on vulture research and conservation in southern Africa. A. F. Boshoff, M. D. Anderson and W. D. Borello (eds). Johannesburg, Vulture Study Group, Endangered Wildlife Trust: 90-96.

Maphisa, D. H. (2001). British Schools Exploration Society's (BSES) survey of vultures at selected sites in Lesotho-July to August 1998. Vulture News 45: 11-19.

Mundy, P. J., D. Butchart, J. A. Ledger and S. E. Piper (1992). The Vultures of Africa. Randburg and Halfway House, Acorn Books & Russel Friedman Books.

Mundy, P. J. and J. A. Ledger (1975). The effects of fire on a Cape Vulture colony. South African Journal ot Science 71: 217.

Newton, I. (1979). Population ecology of raptors. Berkhamsted, T and AD Poyser. Osborne, P. E. and B. J. Tigar (1990). Distribution and status ot rare birds in Lesotho. British Ecological Society Bulletin 21: 121-128.

Siegfried, W. R. and P. G. H. Frost (1973). Body temperature of the Lammergeyer Gypaetus barbatus (Aves: Accipitridae). Bonner Zoologische Beitraege 24: 387-393.

Simmons, R. E. and J. M. Mendelsohn (1993). A critical review of cart wheeling flights of raptors. Ostrich 64(1): 13 - 24.

Vernon, C. J. and A. F. Boshoff (1997). A Review of the Status of Vultures in the Eastern Cape Province, South Africa. Vultures in the 21st Century: Proceeding of a workshop on vulture research and conservation in southern Africa. A. F. Boshoff, M. D. Anderson and W. D. Borello (eds). Johannesburg, Vulture Study Group, Endangered Wildlife Trust: 50-56.

11 Appendices

11.1 Appendix 1

List of participants at the Public Participation Processes between 4 and 9 May 2012

Attendees	Affiliation
4th May 2012, Howick	
Joyce Loza	MDTP
Sonja Krüger	Ezemvelo
Ntombenhle Mtetwa	Ezemvelo
Rickert van der Westhuizen	Ezemvelo
Siphamandla Nhlabathi	
Mondli Mkhize	
Rabson Dhlodhlo	MDTP
Sbonelo Mkhize	iNkosi
Santhuri Naidoo	DEAT
Pamela Kershaw	DEAT
Mxolisi Fulumente	Wildlands Conservation Trust
M. Hmunaxo	
Richard Hadebe	
Zephried Mpembe	uThukela
Thembisile Mayaba	
Jabulani Silezi	
Nthabeleng Maraki	
7 May 2012, Barkly East	
Joyce Loza	MDTP
Sonja Krüger	Ezemvelo
Thabathani Tshaka	Mt Fletcher Tourism
Dave Walker	Rhodes Tourism
8 May 2012, Swartberg	
Joyce Loza	MDTP
Sonja Krüger	Ezemvelo
Ms. M. Lerotholi	Principal Chiefs: PC-Thabang
Mr. M. Sekonyela	Principal Chiefs :PC-Malingoaneng
Mr. H. Kutoane	Traditional Health Practitioners
Ms. M. Ts'ita	District Administrator
Mr.M. Mohlauli	District Council Secretary
Mr.T. Maqalaka	District Council Chairperson
Ms. M. Sekhesa	Veterinarians
Mr. T. Adonts'i	Farmers Associations
Ms M. Nkone	Grazing Associations
Mr. R. Ramatsoku	Department of Range Management
Mr. P. Mabele	Department of Education
Mr.T.Matekase	Herders Associations
Mr. R. Selebalo	Department of Agric (Extension office)
Mr. T. Ts'ephe	LMPS
Mr. S. Zwakala	Department of Environment
Mr. R. Majara	LENA
Ms Nokuphiwa Phindela	Ongeluksnek
Mr Makgotso Lesa	Ongeluksnek
Mr. M. Xingwana	Ongeluksnek
Mr. V. Petrose	Ongeluksnek
Ms SA Kakole	Ongeluksnek
Ms M Lebenya	Ongeluksnek
Mr S Nkopane	Ongeluksnek

Mr K lebenya	Ongeluksnek
Mr Y Mpama	Ongeluksnek
Ms N Thibeli	Ongeluksnek
Mr R Lentoa	Ongeluksnek
Ms Mercy Mnika	Ongeluksnek
Ms Nozulu Tolo	Ongeluksnek
9 May 2012, Golden Gate	
Joyce Loza	MDTP
Sonja Krüger	Ezemvelo
Elijah H Mbonane	Tourist Guide KZN
Henry Munro	Farmer
Sekoele Mabonya	Secreatry Ward 27 Conservancy
Linah Nthoateng Mnisi	QQNP land Claims Commission
Malejoetsa Mothiane	Ward 26 Conservancy
Rick Dillon	Van Reenen Farmers Association
Dhiraj Nariandas	SANParks Golden Gate
Zandile Mntambo	Ezemvelo
Mxolisi Fulumente	Wildlands Conservation Trust
Sithembile Shezi	SANParks Golden Gate
Zungu Nqobile	Ezemvelo
Inkosi Hlongwane	Amangwane Community
Mondli Hlongwane	Amangwane
Mathibela Khetsi	DAFF
Thapuo Motebo	DEA
Mphadeni Nthungani	SANParks Golden Gate
Thulani Mdlalose	SANParks Golden Gate
SE Mokoense	Driver
Puleng Mokoena	Ward 21 Conservancy
Disebo Tsotesi	Ward 20 Conservancy
Moloi Seloti	Ward 31 Conservancy
Maria Maranye	Ward 33 Conservancy
Mthabiseng Makateng	Ward 24 Conservancy
Seun Rakhale	Ward 34 Conservancy
Masoa Romeo Sariki	Ward 24 Conservancy
Mohari Mokoena	Ward 33 Conservancy
Tjopo Ncala	IZP
Abraham Mbece	IZP
Solly Mpeko	DETEA
Relebohile Leokaoke	Sethuwamajoe Conservancy
Suping Lebohang	Ward 26 Conservancy
Olifant Wususam	Ward 26 Conservancy

11.2 Appendix 2

List of Stakeholders

Task force members
Vulture feeding site owners
Veterinarians
Pharmaceutical companies
Energy companies (Eskom, LEC, SAWEA)
SANBI
DEA (Conservation Management, TFCAs)
Local Municipalities (*e.g.* Matatiele)
Farmers unions, farmers' associations and grazing associations
Traditional Healer associations
Traditional authorities (*e.g.* councillor/leader or chief)
Civil Aviation Authority
Educators (Department of Education, those that develop the curriculum, teachers at implementation level)
Resorts/tourism associations
BirdLife South Africa regional Bird Clubs
MDTP and BCC
EWT, BoPP and WCMP and WEP and IT4C and CLP
Ezemevlo KZN Wildlife
UCT
Landowners
NRF (capacity building)
Arab fund
Volunteers, observers, monitors
African Birds of Prey Sanctuary
Database developer (Rose Hamilton)
DNSM
DEA EC
Geneticists (Antoinette Kotze, Bettine Janse van Vuuren)
Sehlabathebe National Park and Tsehlanyane National Park management teams
Veterinary Department
VULPro
OVI
AIASA
SANParks
Free State Nature Conservation (FSDETEA)
MTEC
ECPTA
DEDEAT
Department of Range Management- Lesotho)
SAC

11.3 Appendix 3

A list of the actions that require implementation to achieve the objectives of the Action Plan.

Action Step 1: Undertake the project to mark and track individuals- fit six satellite transmitters in 2012, ideally all adults
Action Step 2: Record all reported mortalities
Action Step 3: Encourage the reporting of all poison-related mortalities to the EWT-WCMP in South Africa and Lesotho
Action Step 4: Increase awareness, detection and reporting of vulture powerline (and other infrastructure) incidents to the EWT-WEP
Action Step 5: Consider an incentive or rewards programme for reporting mortalities to determine cause of death. This may prevent individuals using dead birds without knowing the cause of death because it could dangerous to human health.
Action Step 6: Develop a system to report mortalities through Environmental Officers (South Africa) or local police (Lesotho) who can direct the reports to EWT/BVTF
Action Step 7: On-going awareness of the general public to ensure that people know who to report mortalities to
Action Step 8: Funding proposal to fund training and employment of capture team
Action Step 9: Patagial tag 10% of the population (about 40 birds) using the European method of patagial tagging
Action Step 10: Implement re-sightings programme- Vulture Count Day to be used as primary re-sighting. One re-sighting of a marked bird per year is sufficient for 4-5 years
Action Step 11: Develop a system to report sightings through Environmental Officers (South Africa and Lesotho) or local police (in Lesotho) who can direct the reports to EWT/BVTF
Action Step 12: Develop incentives for obtaining re-sightings, particularly in Lesotho while being aware of false reporting
Action Step 13: Use photographers to report sightings of birds
Action Step 14: Undertake continuous awareness so people know who to report sightings too
Action Step 15: Monitor a representative sample of nest sites 3 times per year during the incubating, hatching and fledging period to determine at which stage in the breeding cycle failure occurs (if any)
Action Step 16: Conduct road counts on specific routes used in past (Brown, 1988) in Lesotho and Eastern Cape (to determine non-breeding adults)
Action Step 17: Conduct road counts on specific routes used in past (Brown, 1988) in Lesotho and Eastern Cape (to determine age structure)
Action Step 18: Conduct regular counts at feeding sites throughout the foraging range of the species
Action Step 19: Develop a Bearded Vulture database hosted within the larger raptor database to record all the data of the species throughout its range
Action Step 20: Analyse changes in breeding numbers and range change and publish results in a peer reviewed paper
Action Step 21: Ensure full baseline survey for Lesotho is completed (suitable cliffs to be modelled and checked)
Action Step 22: Submit proposal for funding to train Field Rangers, Volunteers, District Environment Officers, herdboys, farmers, schools (see awareness/education section) to increase monitoring capacity
Action Step 23: Submit proposal for funding for equipment for monitoring
Action Step 24: Monitor a sample of nest sites for occupancy annually for the next 3 years

then on a 2-3 year cycle
Action Step 25: Develop a nest site champion programme so that available associations who are interested in the programme in Lesotho within each district take responsibility of monitoring the nest sites in their area
Action Step 26: Ensure involvement of Eastern Cape officials in monitoring
Action Step 27: Analyse tracking data of 15 non-breeding individuals marked to date (juveniles, immatures and sub-adults)
Action Step 26: Obtain genetic samples from populations of the species in Lesotho, South Africa, Ethiopia, Kenya, Uganda and Tanzania
Action Step 29: Analyse genetic samples from southern and East Africa
Action Step 30: Investigate the feasibility of the re-introduction of antelope into the suitable parts of the UDP WHS as a long term project to provide a natural food source for the birds
Action Step 31: Assess the availability of food at a landscape scale (MSc research project). Using the inventory of sites and carcass-availability data in GIS, conduct a strategic review of all sites in the bioregion, identifying gaps and areas of redundancy. Focus must be on those areas where juvenile birds congregate, in an effort to improve juvenile survivorship. Need to determine what percentage of the available food is supplied by feeding sites
Action Step 32: Use tracking data to determine key foraging areas for juveniles and where feeding sites need to be located
Action Step 33: Investigate stock pounds as a source of carcasses for vulture restaurants
Action Step 34: Identify feeding sites that are ideally located and make these know so that people know where to take the carcasses
Action Step 35: Continually update the database of feeding sites, including a measure of carcass availability (annual phone survey)
Action Step 36: Ensure that the Management Plan for each protected area has a goal associated with the conservation of vultures through the establishment and management of a vulture feeding site. Operational guidelines must be associated with this.
Action Step 37: Maintain livestock exchange system in Lesotho (Outhing and Letseng), and explore the establishment of this system at other sites, as well as cash payments where possible (*e.g.* Tsehlanyane National Park)
Action Step 38: Ensure operational freezer containers for Mokhotlong (funded already), Witsieshoek, Sterkfontein; Ongeluksnek (Matatiele)
Action Step 39: Identify those feeding sites that need to be fenced off to prevent scavenger and dog access where this is a problem
Action Step 40: Update Vulture Feeding Site booklet (add checklist of criteria into booklet)
Action Step 41: Collate all information on vulture–harming veterinary medicines including alternatives, and include into vulture feeding site booklet, on posters, flyers and vet magazines *etc.*
Action Step 42: Distribute the information on responsible feeing site management to all feeding site managers and suppliers on the feeding site database
Action Step 43: Send a letter to the Veterinary Department in Maseru alerting them to problematic products
Action Step 44: Distribute letter to all extension staff in the conservation sector and Department of Agriculture in South Africa and Lesotho
Action Step 45: Place an article from OVI in SAVA Veterinary News 'Vetmed'- announcing problematic products and appropriate use thereof
Action Step 46: Evaluate safer alternatives for known problematic products, continue to support OVI/VULPro project to evaluate additional products
Action Step 47: Request pharmaceutical companies to put warnings on product brochures of problematic compounds
Action Step 48: Produce one page flyer to make landowners aware of the need to supply carcasses and about carcass safety (for co-ops, farmers' associations, other outlets frequented by livestock owners); supply through extension officers
Action Step 49: Ensure that Bearded Vultures are considered in the development of all new

rural electricity networks, overhead cables, wind farms, cable cars, tourism activities, roads *etc.* within their range in both South Africa and Lesotho. EWT-WEP to seek legal advice on whether the BMP can be used to ensure that Bearded Vultures are taken into account during the scoping/EIA process (look at EIA regulations)
Action Step 50: Develop an information pack for environmental consultants providing information and data on the species to substantiate the EIA processes
Action Step 51: Provide developers and municipalities with the information they need on species. Municipal meetings can be used to report on the vulture programme so that counselors can take this knowledge back to their communities
Action Step 52: Non debateable areas for development will be established based on breeding and foraging range information. Buffer zones allowing only low impact development will be identified and managed close to breeding sites
Action Step 53: Define tourism activities that negatively impact on vulture survival and disseminate information to affected parties, including trails, mountaineering, hang gliding and other intrusive activities. Review mountaineering in the UDP WHS with respect to zonation
Action Step 54: Review and record known abandonment of breeding territories as a result of construction and development
Action Step 55: Provide Eskom with a nest and feeding site distribution map for them to determine where powerline structures are in relation to vultures and identify which ones need to be mitigated. Also provide information on how many vultures have been killed by powerlines and by which particular powerline
Action Step 56: Investigate the potential threat posed by two proposed windfarms in Lesotho
Action Step 57: Ensure that priority unsafe existing infrastructure (power lines, wind farms, telephone lines, fences, towers, stay wires *etc.)* are identified and mitigated (made safe)
Action Step 58: Undertake research and monitoring to assess and address collision risks since current mitigation measures are not effective in eliminating mortalities
Action Step 59: Undertake a research project on how Bearded Vulture fly/scavenge in the landscape to determine problematic infrastructure and identify how birds come into contact with this infrastructure
Action Step 60: Undertake a research project on jackal ecology- specifically the effects of jackal on populations of small antelope in order to effectively manage jackal to avoid the secondary poisoning of vultures
Action Step 61: Develop an incentives programme *e.g.* stewardship programme, to provide incentives like tax rebates to landowners that are managing their land to the benefit of vultures
Action Step 62: Establish a network of local informed champions to liaise with police and magistrates and distribute awareness materials
Action Step 63: To remain abreast of current pesticide policy and legislation
Action Step 64: Develop an information awareness pack (possibly in CD format) for general public
Action Step 65: Conduct Human Wildlife Conflict Management training and awareness workshops to empower stakeholders and incorporate this information into farmer's day meetings together with vulture related talks
Action Step 66: Offer Human Wildlife Conflict Management Courses to provide commercial farmers with alternative solutions to predator control and increase awareness of farmers by incorporating this information into farmer's day meetings
Action Step 67: Attend NAMPO and the Elliot Show to raise awareness amongst farmers. Have live/stuffed bird on display for added effect
Action Step 88: Publish articles regularly in local newspapers about the project. Sensationalise (*e.g.* Special Assignment) when a satellite tagged bird is found poisoned in order to raise awareness around this issue
Action Step 69: Undertake research on the impacts of climate change on the species
Action Step 70: *A priori* hypothesis developed on response of Bearded Vulture to climate

change scenarios; monitoring programme designed to reveal impacts of global climate change on vulture populations
Action Step 71: Engage with senior authorities within conservation agencies to ensure a top-down approach to address illegal trade
Action Step 72: Verify that Bearded Vulture are used in traditional medicine and illegal trade by interviews and information gathering in Muthi markets and conducting research on indigenous knowledge on the use of the species and what is driving this use. Engage traditional healers in research done on the subject of the use of vulture parts in traditional medicine
Action Step 73: Review the "guidelines for interventions to address the threat of traditional use to vultures" involving representative from each traditional healer association and develop and prioritize conservation actions and solutions from the document
Action Step 74: Support the initiative by national government for traditional healers to be given permits to use in healing practices
Action Step 75: Investigate the option of making 'doomed' material or feathers available to Traditional healers
Action Step 76: Work with THPs to change the mindset regarding traditional medicinal use and support the use of alternative animal parts since they are not dependant on using vultures. Influence the THP training programme
Action Step 77: Educate the population to use traditional healers that are trained
Action Step 78: Educate suppliers on the animal species that are permitted to be sold to ensure they do not sell anything which is not permitted. Target the market selling vultures illegally to deal with the issue of over harvesting.
Action Step 79: Identify TMPs and relevant national and provincial stakeholders and establish a working committee consisting of representatives from three provinces of South Africa and Lesotho
Action Step 80: Strengthen the relationships between the police in South Africa and Lesotho by establishing communication channels across the border where they can raise challenges they are encountering
Action Step 81: Develop partnerships with conservancies to assist in conducting research and empower them to educate local communities on vulture conservation matters
Action Step 82: Individuals in the Extended Public Works Programme (EPWP) can be utilised to increase awareness around vulture issues. The focus of the EPWP is farming community and this is where they can have an impact
Action Step 83: Involve the communities surrounding Golden Gate in Bearded Vulture conservation initiatives
Action Step 84: Involve the community members of the Amazizi in Bearded Vulture conservation initiatives
Action Step 85: MDTP BCC to ensure that Implementing agencies improve communication and ensure active participation of role players across the region in the development and implementation of this BMP
Action Step 86: The Eastern Cape needs to allocate personnel from the Aliwal North office that can get involved in the vulture project
Action Step 87: Identify the legal discrepancies regarding Bearded Vulture conservation across the 3 provinces and Lesotho
Action Step 88: Undertake a comparative analysis of relevant South African and Lesotho legislation, leading to drafting of guidelines for justice and enforcement officials in both countries
Action Step 89: Enforce the law once legal discrepancies have been addressed and the public have been made aware of the legislation
Action Step 90: Engage traditional healers when environmental legislation is developed/ revised. Their input will be crucial to future implementation of these conservation policies
Action Step 91: Publish a series of articles in popular literature (aimed at farmer association's newsletters, Wildside, Grassroots, newspapers, Farmer's Weekly, Landbou

Action Step 92 Establish a contacts database of all people who need to know about new developments and issues relating to Bearded Vulture conservation, for example new problem medicines and chemicals
Action Step 93 Encourage people to report incidents involving Bearded Vultures, by utilizing appropriate hotlines (poison helpline 0800 333 444; Griffon pesticides information centre 082 4468946; powerline hotline 0860 111 535)
Action Step 94 Package information for distribution in order to have a uniform message: plight of Bearded Vulture; impact of nest disturbance regarding nestling mortality; positive image for vultures. Translate all information into isiXhosa, isiZulu, Sesotho and Afrikaans
Action Step 95: Ensure the general public and officials are aware of the legislation
Action Step 96: Identify and collaborate with existing relevant media programmes and negotiate new ones locally and internationally for enhancing Bearded Vulture awareness
Action Step 97: Assist Traditional healers when they engage in education and awareness on vulture issues in terms of background information and provide support to them.
Action Step 98: Arrange Education and awareness for both South African and international (Swaziland and Lesotho) traditional healers prior to implementing the law
Action Step 99: Capacitate tour guides through training since this may be useful in them raising awareness amongst their client around vulture conservation issues
Action Step 100: Inform relevant NGOs of the outcomes the Bearded Vulture BMP and future projects. Encourage future participation in projects
Action Step 101: Formulate materials to promote Bearded Vulture conservation using the Bearded Vulture BMP
Action Step 102: Involving scholars (particularly lower grades) in Bearded Vulture conservation may be critical for species sustainability and continuity
Action Step 103: Investigate the feasibility of establishing a Citizen Scientist project together with the Department of Science and Technology and the Department of Education aimed at vulture conservation at school level
Action Step 104: Draw up the monitoring protocol around awareness campaigns and their success or failure and constantly review awareness campaigns
Action Step 105: Up-list the conservation status of the species
Action Step 106: Submit an amendment to the ToPS regulations if the species is uplisted to critically endangered
Action Step 107: Develop a proposal to implement a captive breeding programme
Action Step 108: Obtain funding to implement a captive breeding programme if deemed feasible and necessary