Botswana
Wattled Crane
Bugeranus carunculatus
Action Plan

Final report from the stakeholder workshop held in August 2003, Maun, Botswana.

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Botswana Wattled Crane *(Bugeranus crunculatus)* Action Plan
Botswana Wattled Crane Action Plan Stakeholder Workshop

06 – 08 August 2003, Maun, Botswana.

Workshop Report

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Motsumi, S., Hawker, R., Hancock, P., Motsumi, S., Kholi, A., Nkape, K., Borello, W. & Tyler, S., De Smidt, A, and Evans, S.W. (eds.). 2003. *Botswana Wattled Crane (Bugeranus carunculatus) Action Plan. Final Workshop Report.* BirdLife South Africa, Johannesburg, South Africa.

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Foreword

Birds are part of the global ecosystem and studying them tells us about the natural environment on which we all depend and its biodiversity. Humankind values birds for educational, economic, recreational, cultural, ethical and spiritual reasons. Because birds are important, 105 organisations worldwide are working together through the BirdLife International Partnership to conserve the world's birds and their habitats.

The Africa BirdLife International Partnership, currently represented in 18 African countries, has so far documented 1,230 Important Bird Areas (IBAs), sites that are internationally important for the conservation of birds and biodiversity in Africa. Unfortunately, 43% of these have no legal designation, leaving a fifth of the continent's globally threatened bird species at greater risk of extinction.

Africa has a total of 349 globally threatened bird species. Some of these are residents of more than one country, others are migratory or widely dispersed. The conservation of cross-border, migratory or widely dispersed species requires concerted strategic species-based approaches such as Species Action Plans, to complement long-term site-based strategies such as national parks and other protected area systems. Species Action Plans are scientifically authoritative documents that, with wide consultation and agreement with the major stakeholders, provide the relevant agencies with specific and time-bound actions for conserving priority species. Species Action Plans therefore provide a framework for action at local, national and international levels, in addition to being used as fundraising and advocacy tools.

With funding from the UK Department for Environment, Food and Rural Affairs under the Darwin Initiative for the Survival of Species and with financial and technical support from the Royal Society for the Protection of Birds (RSPB, the BirdLife International Partner in the UK), the Africa BirdLife International Partnership has developed a format and process of species action planning involving the participation of representatives from governments, species experts and interest groups, conservation NGOs and local communities. This Species Action Plan is one of 7 international and 15 national plans for priority bird species in Africa which were produced as a pilot to test the new approach. It is hoped that the format and process used in the production of these plans will act as a model for the production of other plans for the conservation of priority threatened fauna and flora in different countries of Africa and beyond.

The production of action plans is just the beginning of the process, because it is important to translate the plans into action. The involvement and agreement of national government representatives in the production of these plans will help stimulate the inclusion of the plans into existing and proposed national conservation strategies. In addition, members interested in the conservation of individual species will evaluate the successes and failures of the implementation process.

It is hoped that all those interested in the wise use of Africa's natural resources and the conservation of her breathtaking bird diversity will make effective use of these plans.

Executive Summary and Recommendations.

The BirdLife Botswana Crane Working Group, in conjunction with BirdLife South Africa and with support from the Global Environment Facility/ Small Grants Programme, Endangered Wildlife Trust of South Africa and the International Crane Foundation, hosted the Botswana Wattled Crane Species Action Plan workshop. The workshop was held in Maun from 6th to 8th August 2003. The workshop was attended by delegates from most of the Wattled Crane range states such as Botswana, Ethiopia, Malawi, Mozambique, Namibia, South Africa, Zambia and Zimbabwe and representatives from the International Crane Foundation and Endangered Wildlife Trust (South Africa). The major local stakeholders were Safari Operators, local professional guides, media representatives, and personnel from the Botswana Department of Wildlife and National Parks and the Harry Oppenheimer Okavango Research Centre (University of Botswana). The Wattled Crane Species Action Plan has been developed with input from stakeholders who are affected and benefit from wetland and crane conservation. The main objective of the workshop was to develop a comprehensive action plan for the conservation of Wattled Cranes and their habitat in Botswana. The action plan for Wattled Cranes was considered necessary because the species is globally endangered and the population is declining in other parts of the range. The action plan that was developed in 1993 during the African Crane and Wetland Training workshop has been overtaken by events and as such needed revision. The other shortfall in the plan was that it was not developed by stakeholders and it was not inclusive enough. The major achievement of the workshop was the input provided by interested stakeholders both local and international, during the proceedings of the workshop. This led to the production of a species action plan which is comprehensive and inclusive. It is the intention of BirdLife Botswana through the Crane Working Group to implement the plan to ensure the conservation of the globally endangered Wattled Cranes. The implementation of the Botswana Wattled Crane SAP will commence on 1st January 2004 and will run until 2009. The SAP outlines a comprehensive effort to conserve Botswana's Wattled Crane population for the benefit of people and biodiversity.

KEY ELEMENTS OF THE ACTION PLAN

AIM

To maintain the size of Botswana's Wattled Crane population within natural cycles, between January 2004, and January 2009.

ACTIONS REQUIRED

The aim will be achieved through the following:

- **Obtain knowledge of factors affecting the biology and ecological requirements of Wattled Cranes**
- **Ensure better implementation and enforcement of laws, regulations and plans by the responsible agencies**
- **Improve awareness and knowledge of wetland dynamics, and the role of the Wattled Crane, amongst planners, developers, communities, the tourism sector and policy makers so that Wattled Crane habitat requirements are maintained in the long term.**
- **Secure funds and human resources to implement the Wattled Crane Species Action Plan**

Acronyms/Definitions

AWAC: African Wattled Crane Programme
BLB: BirdLife Botswana
BLBCWG: BirdLife Botswana Crane Working Group
BLI: BirdLife International
BLSA: BirdLife South Africa
CBD: Convention on Biological Diversity.
CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora.
DFID: Department for International Development (United Kingdom).
DRC: Democratic Republic of Congo
EE: Environmental Education
EIA: Environmental Impact Assessment.
EWT: Endangered Wildlife Trust
GPS: Global Positioning System
HOORC: Harry Oppenheimer Okavango Research Centre
IBA: Important Bird Area.
IDP: Integrated Development Plan
IUCN: The World Conservation Union.
IRN: International Rivers Network
KCS: Kalahari Conservation Society – Every River Project
NGO: Non-Governmental Organisation.
NIBACS: National Important Bird Area Conservation Strategies.
ODMP: Okavango Delta Management Plan
OKACOM: Permanent Commission on the Okavango River Basin
SACWG: South African Crane Working Group.
SAG: Species Action Group
SAP: Species Action Plan.
SIG: Species Interest Group.
SWG: Species Working Group.
UB: University of Botswana
WC: Wattled Crane

Chapter 1.

What is the Botswana Wattled Crane Action Plan?

An Action Plan to conserve the Wattled Crane in Botswana is a flexible working strategy that identifies and prioritises the problems, and proposes practical solutions (objectives) and specifies certain actions and responsibilities within agreed timeframes, based on specific objectives which are regularly monitored and revised.

Why an action plan for the Wattled Crane?

The Wattled Crane *Bugeranus carunculatus* is considered globally Vulnerable with fewer than 13,000 individuals remaining in suitable wetland habitats in South Africa, Botswana, Zambia, Zimbabwe, Mozambique, Angola, Democratic Republic of Congo, Tanzania, Namibia, Malawi and Ethiopia. The Botswana Wattled Crane population is only known from the Okavango Delta, with irregular sightings from the Makgadikgadi Pans during summer months. A conservation plan compiled by all relevant stakeholders outlining the priority actions needed to conserve this species is therefore urgently needed in Botswana and throughout the remainder of the species African distribution range.

Geographic Scope.

This Wattled Crane Action Plan is applicable to Botswana. Consultation with colleagues in the African Wattled Crane Programme (AWAC) indicated that threats to this species and its habitats and especially the solutions to these are likely to be quite different for each of the other countries. It was therefore decided to do an action plan for the Wattled Crane population in Botswana; one for the South African population having already been completed. This plan therefore takes into account all present factors affecting each of the known Wattled Crane sites in Botswana and solutions to these, as well as research work that is urgently needed.

Chapter 2.

Background information for the Wattled Crane Action Plan Workshop

Factfile

Family:	Gruidae
English name:	Wattled Crane
Setswana name:	Mogolori
Size:	The largest African crane - mean mass of 7 – 8kg Height about 150 cm, sexes are similar in size
Plumage:	Dark face with long, white-feathered wattles. Grey 'cap' extending from base of bill to top of head (in first year birds, this is absent). White neck and breast. Black underparts. Grey wings with long tertials extending backwards beyond tail.
Voice:	Far-carrying, musical, bugle call, but usually silent.
Distribution:	The Wattled Crane is primarily a bird of the major river basins of south-central Africa, with the bulk of the population currently found in the major wetlands of Zambia, and in the Okavango Delta in Botswana. It occurs in lesser numbers in a further nine countries in the region, with relict populations in Ethiopia and South Africa at the extremes of the range.
Habitat:	Wetlands – prefers large seasonally inundated open floodplains, but also found in pristine or semi-pristine upland dambos and vleis in some countries.
Breeding:	Monogamous, pairs for life on reaching sexual maturity at about seven years of age. Peak breeding in winter, with egg-laying during August in Botswana, as floodwaters recede, chicks hatch in September and fledge during December. May produce a second clutch of eggs if first clutch or chick lost early in season.
Nests:	'Typical' nest is a large mound of plant material (reeds and sedges) 1 metre in diameter and protruding 20 centimetres above the water surface, usually with a 'moat' of open water a metre or so around it. However, a significant portion of the nests in the Okavango Delta are on small mud islands 2 or 3 metres in diameter exposed by 20 to 30 centimetres as floodwaters recede. In these cases, the eggs are laid on a few pieces of reed or sedge stems.
Eggs:	Clutch of one (68% of nests) or two (32% of nests) eggs in Botswana; incubation period 33 - 36 days; chicks are nidifugous and the first-hatched chick leaves the nest during the first day, so that the second egg either does not hatch, or the chick dies unattended; fledging period 135 days, but immature bird usually stays with parents for first year.
Diet:	Mainly vegetarian – rhizomes, roots, bulbs of sedges, primarily *Eleocharis* spp. Chicks apparently eat insects.

Introduction

The Wattled Crane *Bugeranus carunculatus* occurs in south-central Africa, with populations in Angola, Botswana, Democratic Republic of Congo, Ethiopia, Malawi, Mozambique, Namibia, South Africa, Tanzania, Zambia and Zimbabwe.

It is the largest, rarest, and most wetland-dependent of the African cranes, and is classified as a globally threatened species by BirdLife International (2000).

Subcontinent-wide aerial surveys of Wattled Cranes during 2001 and 2002, co-ordinated by the International Crane Foundation (ICF) and the Endangered Wildlife Trust (EWT), showed that the overall numbers of this bird are probably between 6,000 and 8,000 individuals in total – considerably less than the 13,000 - 15,000 estimated by Urban (1996). The Botswana population was found to be approximately 1,300 (compared with 1,400 to 3,500 previously estimated for the country by Urban *op. cit*.). Nevertheless, it is now clear that the Okavango Delta supports the largest single population of Wattled Cranes, due to the marked decline in the Kafue and Bangweulu crane populations in Zambia. In light of the above, the Botswana Wattled Crane population now assumes greater importance in the conservation of the species.

Taxonomic notes.

Class	Aves
Order	Gruiformes
Family	Gruidae
Genus	*Bugeranus*
Species	*B. carunculatus*

Distribution and population status.

Most Wattled Cranes occur in the extensive floodplains of southern Africa's large river basins (most notably the Zambezi and Okavango basins) in Angola, Botswana, Democratic Republic of Congo, Mozambique, Namibia, Tanzania and Zambia. Smaller numbers are also found in isolated dambos in Ethiopia, Malawi, South Africa and Zimbabwe (see Figure 1 overleaf). The populations in Ethiopia and South Africa at the northern and southern extremes of the range appear to be genetically isolated.

The number of Wattled Cranes in each of the 11 range states is shown in Table 1 overleaf. Preliminary results of a research programme co-ordinated by the ICF and EWT suggest that the global population of Wattled Cranes may be only half of what was reported in the past, with lower numbers in between 6 and 9 of the 11 range countries. The substantial reduction in estimated Wattled Crane numbers since 1996 reflects a real decrease in Wattled Cranes at individual sites and regions, although the 2002 estimate may be influenced by an improvement in accuracy relative to previous estimates.

Table 1. Estimated country-by-country population of Wattled Cranes in southern Africa. 1993

figures are from Urban (1996) Status of Cranes in Africa, pp. 53-59 in R. Beilfuss *et al*.). 2002 figures are taken from recent estimates by the ICF and EWT.

Country	1993	2002
Angola	500?	500??
Botswana	1,400-3,500	1,300
D.R. Congo	100s?	500??
Ethiopia	100s	200
Malawi	50	40
Mozambique	2,500-2,800	300
Namibia	200-300	250
South Africa	250-300	235
Tanzania	100s	200
Zambia	7,000-8,000	4,500
Zimbabwe	250	200
Total	13,000-15,000	~8,000

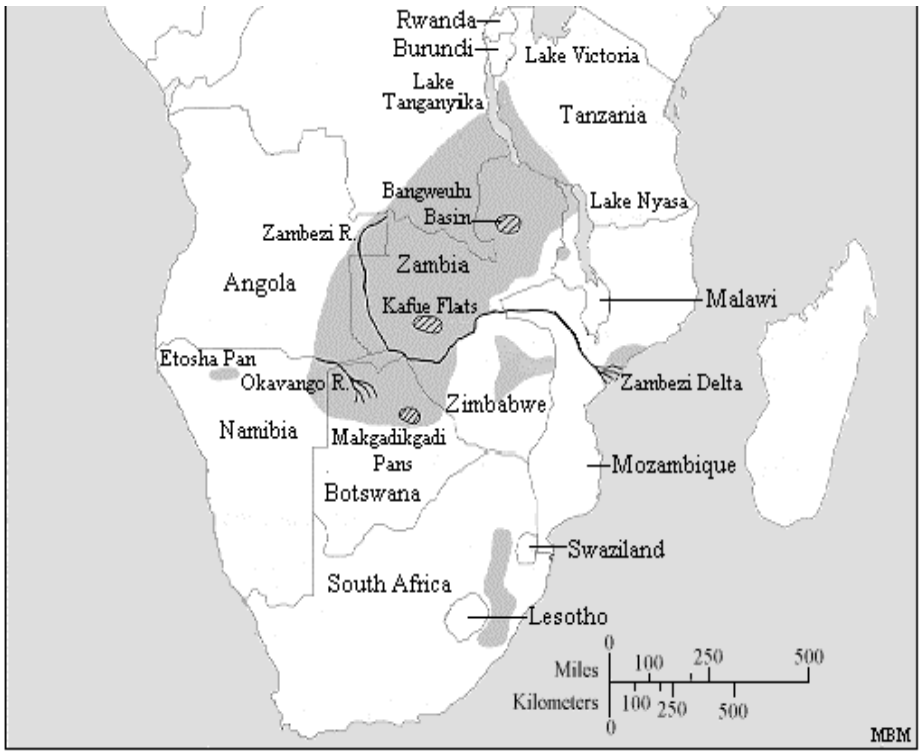


Figure 1. Distribution of Wattled Cranes (shaded area) in southern Africa, showing core concentration in the floodplains of Zambia and northern Botswana extending to southeastern Angola, southeastern DRC, western Tanzania, central Mozambique, and northeastern Namibia, with more isolated populations in the highland dambos of Zimbabwe, Malawi, and South Africa. (Source: Beilfuss *et al*. 1996. *Proceedings of the 1993 African Crane and Wetland Training Workshop.* International Crane Foundation, Baraboo, Wisconsin).

In Botswana specifically, random observations were made of Wattled Cranes and their distribution during the Bird Atlas project (between 1980 and 1990) – these were partially systematised by being incorporated into the Bird Atlas of Botswana (Penry, 1994).

According to the Atlas, the Wattled Crane is a sparse to locally very common resident of the Okavango and Makgadikgadi regions. It occurs in marshes, floodplains, moist pans and open grassland.

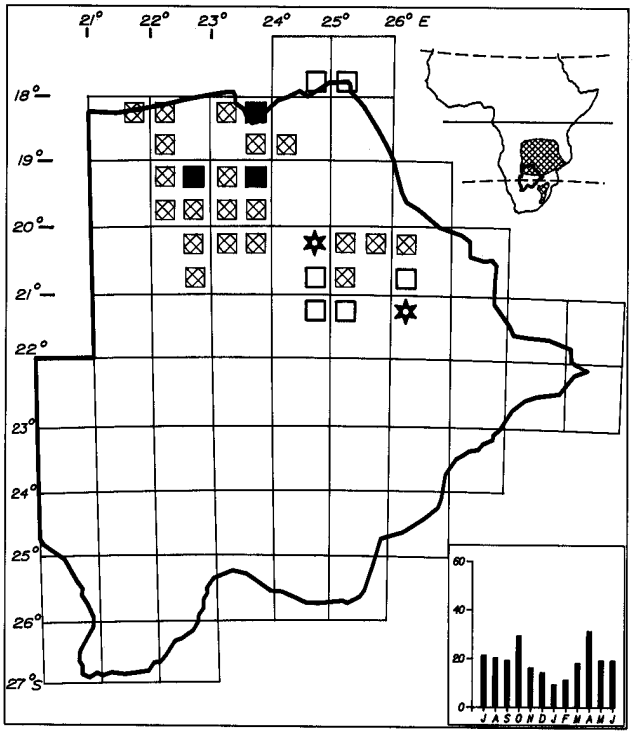


Figure 2. Distribution of Wattled Cranes in Botswana, according to the Bird Atlas of Botswana (Penry, 1994).

All recent breeding records (post 1970) are from Northwest District, mainly from the Okavango Delta, but also from Linyanti and Chobe; the Makgadikgadi pans are used by non-breeding birds during the summer months, although this species apparently bred there in earlier times (pre-1960) (Bousfield, pers. comm.). A non-breeding courting flock occurred at Ngwaku Pan in March 2003.

The first documented aerial survey of the Botswana Wattled Crane population is that done in 1986 by Patterson (1987) as part of the Southern Okavango Integrated Water Development Project. This survey (during August) covered the Okavango Delta at a low sampling intensity, and 159 birds were counted - the Wattled Crane population size was extrapolated to 800 ± 113%.

In August 1993, following the African Crane and Wetlands Training Workshop in Maun, Archibald and Garba undertook an 11-hour aerial survey of Wattled Cranes in the Okavango Delta and estimated the population to be 778 (Mangubuli and Motalaote, 1996). This survey highlighted the fact that the Jao/Boro distributary to the west of Chiefs Island is the main Wattled Crane habitat – most of the birds seen were outside of Moremi Game Reserve.
In September, 2000, Wattled Cranes in the Okavango Delta were counted during the Department of Wildlife and National Park's aerial survey. The whole Okavango Delta was

covered at a sampling intensity of approximately 6%. Ninety-four birds were seen, and this extrapolates to a total population estimate of 1508. Most (70%) cranes were seen in pairs, with a maximum group size of eight birds. Interestingly, the Boro floodplain again proved to be of particular importance for the cranes (Gibson, 2001).

According to Herremans *et al*. (2000), based on experience with a short stratified aerial survey of cranes in the Okavango during 1995, " a stratified approach and extrapolation will not result in satisfactory estimates for the total population; more comprehensive coverage and a total count seem necessary". For this reason, the BirdLife Botswana Crane Working Group undertook a more comprehensive systematic aerial survey in August, 2001. The Jao/Boro and Khwai River systems, as the main crane areas, were divided into three survey blocks in which a total count of all birds seen was conducted. The remainder of the Delta was divided into nine blocks which were sampled at an overall intensity of 10.5% using systematic transect sampling. Two aircraft (Cessna 206/210) were used simultaneously for the survey which took a total of 60 hours. Technical aspects of the survey are described in detail in Craig and Gibson (2001).

This survey was repeated in August, 2002. Based on experience from the 2001 survey, the precision of the 2002 survey was improved even though it was completed in 50.7 hours (as opposed to 60 hours during 2001); this was achieved by concentrating more effort on areas where cranes occurred in variable flocks as opposed to evenly-distributed breeding pairs. Apart from this change, the survey methodology was very similar to that from 2001 *i.e*. two aircraft were used simultaneously, one to conduct a total count of the survey blocks with the highest densities, while the other was used to sample the remaining blocks. In total, 8,830.6 km^2 was surveyed at an average sampling intensity of 30.9%. A survey of Wattled Cranes was again carried out in August 2003. The design of the 2003 survey was similar to that of the 2002 survey. A total of 8,812.7 km^2 was surveyed at an average sampling intensity of 26.4%. A comprehensive description of the methods used can be found in Craig (2002).

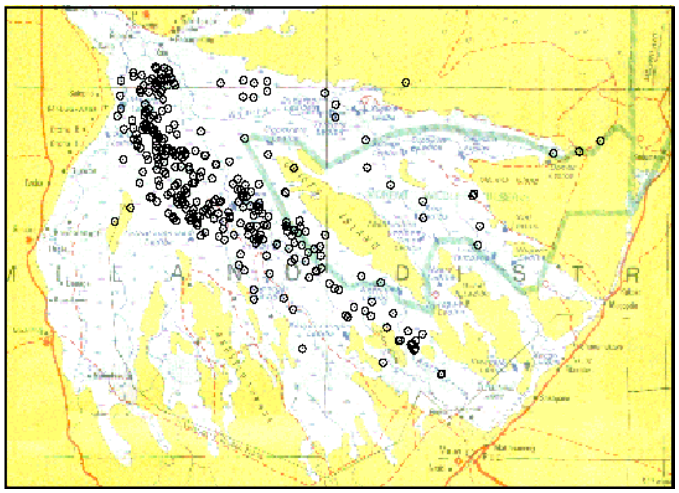
The numbers and distribution of Wattled Cranes and their nests during the three consecutive years was very similar even though the 2003 estimate is higher, but not statistically different. Table 2 overleaf provides a comparison between the population estimates.

Table 2. A comparison between the 2001, 2002 and 2003 Wattled Crane numbers in the Okavango.

	Estimated number	Actual number seen	95% range	Density No./km^2
Wattled Cranes 2001	1219	511	879 – 1561	0.12
Wattled Crane nests 2001	111	42	60 – 163	0.01
Wattled Cranes 2002	1205	659	970 – 1439	0.14
Wattled Crane nests 2002	76	40	43 – 110	0.01
Wattled Cranes 2003	1450	693		0.16
Wattled Crane nests 2003	77	37		0.01

The distribution of cranes during the 2001 and 2002 surveys is depicted in Figure 3 below – the distribution between the two successive years is very similar. The Jao/Boro floodplain remains as the most important crane habitat.

(a)



(b)

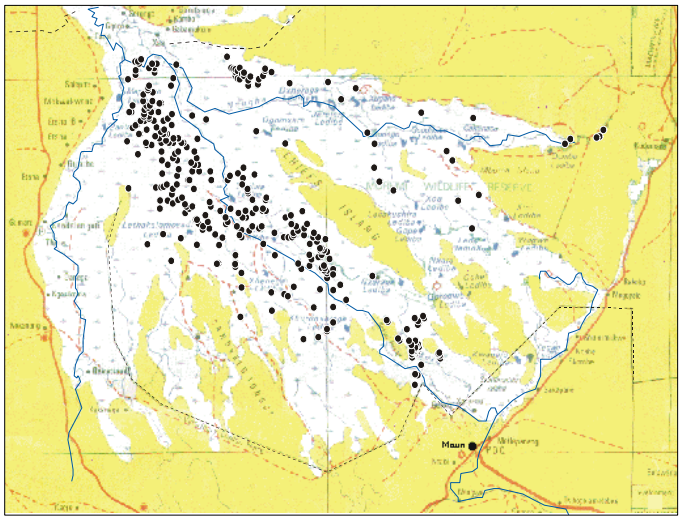


Figure 3. Sightings of Wattled Cranes in August, 2001 (a) and August, 2002 (b)

The population estimates for 2001 and 2002 were remarkably similar, and did not differ statistically. Merging (Norton-Griffiths, 1978) the two results gave a new best estimate for cranes in the Delta of 1209 ± 190. This is sufficiently precise to demonstrate that the estimate is significantly greater ($t_{338} = 2.16$) than the estimate of 1,000 made by Herremans *et al.* (2000). It also appears that the numbers and distribution of Wattled Cranes in the Okavango Delta are relatively stable.

The situation in the Makgadikgadi is however quite different. As pointed out by Herremans *et al*. (2000), the large numbers seen there in the past during the late wet season are no longer a regular feature. During February, 2002, a three hour aerial survey of a substantial portion of the Makgadikgadi Pans was undertaken by the BirdLife Botswana Crane Working Group. Only 20 Wattled Cranes were seen, all in a confined area on the north-east side of Ntwetwe Pan, some 35 kilometres south of Gweta.

A relatively small but unknown number of Wattled Cranes occur and breed in the Linyanti Swamps along the northern Botswana border and in the adjacent Caprivi Strip of Namibia.

Movements.

Regional movements:
Generally, concentrations of Wattled Cranes in Botswana have been considered migrants, usually linked with the population in Zambia (Konrad, 1981; Urban, 1988; Mangubuli & Motalaote, 1996). Randall (1988), Allsopp & Perlstein (1998) and Cantle (2000) all observed exceptionally large flocks (close on 1,000 birds in each of the two latter cases) in the Okavango and since these exceeded the 1993 population estimate for the whole Okavango Delta, it has been assumed that Wattled Cranes from elsewhere in the region flock to the Delta when conditions are optimal, similarly with large aggregations seen in the Makgadikgadi. However, Herremans *et al*. (2000), are of the view that the occurrence of thousands of birds in the Makgadikgadi may be exceptional (since in recent years this has not been the case), and feel that the perpetuation of these records as regular events indicating large-scale migratory movements is misleading.

Consequently it is not clear to what extent the Botswana Wattled Crane population may be linked to other populations. The disjunct Ethiopian and South African sub-populations at the northern and southern extremities of the range appear to be genetically distinct (Jones *et al*., unpublished report) and do not mix with the south-central African core population.

A plausible hypothesis, which requires verification, is as follows:
The large concentration of Wattled Cranes seen in the Makgadikgadi during the 1980s, and the single sighting of 2,570 Wattled Cranes in the Zambezi Delta in Moçambique in 1990 (Goodman, 1992) represent birds displaced from other areas (probably Zambia where the greatest declines have taken place due to habitat changes and increased human disturbance). The large aggregations seen in the Okavango Delta are a regular occurrence and are consistently seen at the front edge of the incoming floodwaters (a large flock seen by Randall was in 1987/88, that recorded by Allsopp and Perlstein was in April, 1998 and the Cantle sighting was in April, 1999). Where new floodwaters inundate recently burned floodplains, conditions are particularly attractive for feeding cranes, and exceptional flocks can form. Based on current knowledge of the size of the Okavango population (estimated at

approximately 1,300 birds), it is entirely feasible that flocks of 850 – 1,000 birds could be constituted from the Okavango population alone.

Movements within Botswana:
It has been observed that Wattled Cranes follow the incoming floodwaters from Angola, with flocks being seen at the base of the 'Panhandle' region as floodwaters peak there during May. As the flood progresses southwards, so too do the flocks, with pairs remaining behind on the inundated floodplains to establish breeding territories. Nest-building occurs as floodwaters recede, which has led to the hypothesis that egg-laying starts earlier in the northern part of the Delta. However, this is not borne out by field observations (see breeding biology below).

Flocks have been seen following the front of the floodwaters, until the lower Boro is inundated by late June/early July. Where new floodwaters meet with burnt floodplains, flocks in excess of 100 birds may form – it is not yet clear what the attraction of burnt areas is, but flocks have even been seen as far as a kilometre away from water apparently feeding on these burnt areas (R. Clark pers. comm.).

At the end of the breeding season, when the chick has fledged, trios of cranes may be seen over a wider area, with family groups frequently being seen along the Boteti, and at Mosu in the Nxharaga Valley. During wet summers, occasional birds are seen at Ngwaku Pan (a dancing flock in March 2000) and on the wet grasslands to the north-east of Ntwetwe Pan. There have been no documented sightings of Wattled Cranes at Lake Ngami in recent years.

Protection status.

All crane species have been protected by legislation in Botswana for an extended period of time. The Wattled Crane has been protected since 1976 (under the Fauna Conservation Act) (Spinage, 1991). Currently it is designated as a Protected Game Animal under the Wildlife Conservation and National Parks Act that was passed in 1992. According to this Act, the penalty for killing any crane is a fine of up to P10,000.00 and seven years imprisonment.

Relationship with other SAPs and biodiversity strategies.

The Species Action Plan for the Wattled Crane in Botswana is comparable to the Population and Habitat Viability Assessments (PHVAs) undertaken by the South African Crane Working Group. These initiatives will need to be expanded and co-ordinated by the African Wattled Crane Programme to form a comprehensive plan for conserving the species throughout its range.

Habitat requirements of the species.

The Wattled Crane is the most wetland-dependent of Africa's cranes. In Botswana, it is never found away from seasonally inundated floodplains. These habitats are characterised by the presence of the sedges *Schoenoplectus corymbosus* and *Cyperus articulatus* (Smith, 1976). The Wattled Crane's diet is composed primarily of aquatic vegetation found on these

floodplains, including tubers and rhizomes of submerged sedges (*Cyperus* and *Eleocharis* spp.). The floodplains are also used as breeding habitat, when floodwaters are receding.

Breeding biology.
As Okavango floodwaters recede throughout the Delta, pairs remain behind to establish nesting territories. At this stage, the chick from the preceding year is usually chased away by the adults, and apparently joins up with other immature birds to form larger flocks.

During the August, 2001 aerial survey, the majority of birds were in pairs, as indicated in Table 3 below.

Table 3. Wattled Crane group sizes during August, 2001

Group size	**1**	**2**	**3**	**4**	**5**	**6**	**8**	**9**	**11**	**12**	**16**	**17**	**56**
Number of groups	115	161	13	4	3	1	1	1	1	1	1	1	1
% of total population *	17.9	50.1	6.1	2.5	2.3	0.9	1.2	1.4	1.7	1.9	2.5	2.6	8.7

* All birds seen (642), whether in or outside the transects

Single birds were presumed to have mates sitting on a nest nearby.

There is circumstantial evidence to indicate that pairs return to the same area, and nests are sometimes constructed very close to the previous year's nest site. In one case, three nests were seen within an area 10m square, and these were presumed to have been built by the same pair (although an egg was laid in one of the nests, no chick was raised). Nests are variably spaced, with the closest distance recorded between neighbouring nests being 700m.

During the aerial surveys of 2001 and 2002, all crane nests seen were recorded and their position noted on a GPS. The number and distribution of nests in each year was very similar (Craig & Gibson, 2001; Craig, 2002).

Table 4. A comparison between the number of Wattled Crane nests in 2001, 2002 and 2003.

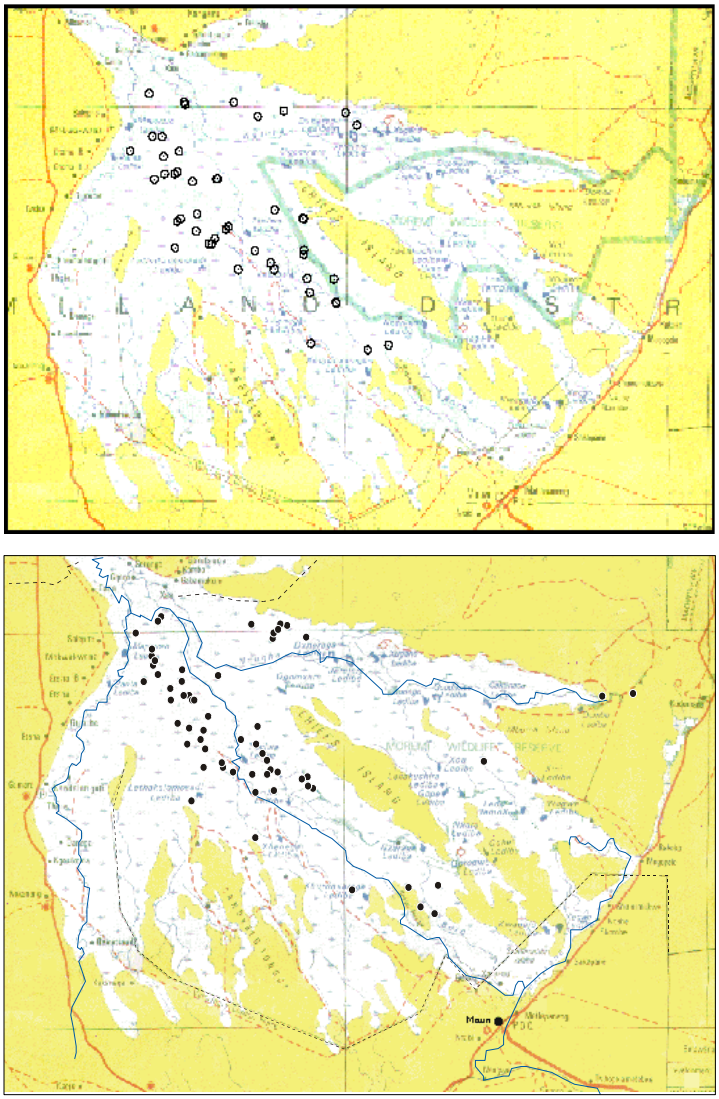
	Estimated number	Actual number seen	95% range	Density No./km^2
Wattled Crane nests 2001	111	42	60 – 163	0.01
Wattled Crane nests 2002	76	40	43 – 110	0.01
Wattled Crane nests 2003	77	37		0.01

Approximately 16% of the population bred in 2001, 6% in 2002 and 10% in 2003. In 2001 and 2002, the floods were relatively small, inundating 8,900km^2 and 6,800km^2 respectively. 2003 was a low flood year as well, with floods lower than the previous years. During high flood years, between 12,000 and 15,000km^2 may be inundated, possibly creating more suitable breeding habitat. Douthwaite (1974), working in the Kafue Flats in Zambia observed

that whereas 40% of Wattled Crane pairs attempt to breed in a year of normal flooding conditions, only 3% of all pairs breed in a year of negligible flooding conditions due to drought. It is highly likely therefore that the number of breeding birds could vary with the extent of flooding of the Okavango Delta.

The distribution of nests observed during the aerial surveys is shown in Figure 4 below:

(a)



(b)

Figure 4. Sightings of Wattled Crane nests in August, 2001 (top) and August, 2002 (bottom).

It appears that the main egg-laying time in Botswana is late July. Hancock (2003) compared the hatching dates of a small sample of eggs from nests at Vumbura in the northern Okavango Delta with those of eggs from Stanley's Camp in the southern delta, and found that they were

all projected to hatch within the period of a few days at the end of August/beginning of September. This means that they were all laid at approximately the same time (end of July) even though the floodwaters would have long since started receding at Vumbura, while floodwaters at Stanley's Camp area would have just started receding.

The clutch size in Botswana is one or two eggs. According to Hancock (*op. cit*.) out of a sample of eight nests, two had one egg and six had two eggs. However, a larger sample size was obtained during the 2001 and 2002 aerial surveys, when 21 single egg clutches and 6 two egg clutches were counted (n = 27).

In cases where the eggs or chicks were lost early in the season, pairs created new nests (approximately 400 metres away, and four weeks later in one documented case (Manga, pers comm.)) and had a second attempt at breeding. Re-laying/re-nesting probably accounts for nests with eggs that have been found during October and November 2001 and 2002, although there were no data to show that some of these late nests are not from first attempts by some pairs.

A chick:adult ratio of 5.8% during January, 2003 before chicks had fledged (Hancock, 2003) indicates that chick survival in the Okavango Delta is low (n = 207) (Hancock 2003). This low breeding success is in line with tentative figures obtained during the 2001 crane-monitoring programme in the Okavango Delta. Mundy *et al*. (2001) note a figure of 6.11% for Zimbabwe (15 pairs monitored for the period 1986 to 1991 inclusive, produced only 11 chicks), while Bento (2002) has recorded 6.33%, 6.19% and 5.42% in 1999, 2000 and 2001 respectively in the Zambezi Delta in Mozambique. Wattled Cranes are long-lived birds, and each pair only needs to produce two chicks (that survive to adulthood) during their lifetime for the population to remain stable.

Threats and potential threats.

Generally, the destruction, alteration and degradation of wetland habitats constitute the most significant threats to the Wattled Crane (Burke, 1996), and this certainly pertains to the Botswana population. Recurring proposals for alternative uses of the waters of the Okavango Delta could have serious impacts on this species. Burke (*op. cit*.) also lists disturbance due to human activity at or near breeding sites as a major threat to Wattled Cranes, as well as mass aerial spraying associated with the tsetse fly eradication programme in the Okavango. In addition, "Among natural threats, fires, hail, flooding, desiccation of floodplains, and extended droughts are probably the most significant throughout the species' range."

BirdLife International (2000) reiterates that "the primary threat is loss and degradation of wetlands" (as a result of intensified agriculture, drainage, rice cultivation, and flooding by dam construction). "Other problems include hydroelectric schemes, nest disturbance, grass-burning regimes, poisoning, collision with utility lines, persecution, and traditional medicine."

Clearly not all these threats pertain to Botswana. Hancock (2003) concludes that "only **extensive** threats that affect a major portion of the Delta will impact seriously on the cranes." This is because the cranes are widely distributed throughout a large, inaccessible area – localised threats will only affect a small portion of the population. Recent potential threats that could extensively affect a large portion of the Okavango Delta include the proposed hydro-electric scheme at Popa Falls in Namibia, papyrus cutting and channel modification by

the Department of Water Affairs, and the extensive aerial spraying of pesticide to eradicate the tsetse fly from the Delta.

Targets recommended in Threatened Birds of the World (BirdLife International)

The targets recommended by BirdLife International (2000) to enhance the status of this species appear in full in Appendix 2. Many of the recommendations are range-wide interventions; while some are not applicable to the Botswana Wattled Crane population; others are still relevant.

Stakeholder Analysis

Government

Department of Wildlife and National Parks – responsible for research and conservation of this protected species both within and outside national parks and game reserves.

National Conservation Strategy (Co-ordination) Agency – responsible for the Wetlands Policy and Strategy (contact point for RAMSAR in Botswana) and Biodiversity conservation. Currently developing an integrated management plan for the Okavango Delta that should take account of the requirements of Wattled Cranes.

Department of Water Affairs – responsible for monitoring hydrological conditions in the Okavango Delta. Also involved in activities (unblocking of channels) that could potentially affect the Wattled Crane

Local communities

Local experts – a wide range of local people have extensive knowledge of Wattled Cranes in Botswana *e.g.* P Perlstein of Okavango Helicopters, among others. Community Based organisations and local communities that are informally organised and have a strong influence on the delta are also important role players (*e.g.* fishermen, reed cutters, livestock farmers, *etc*).

Scientific experts

Regional crane workers, who are participating in the African Wattled Crane Programme facilitated by the International Crane Foundation (R Beilfuss) and Endangered Wildlife Trust (L Rodwell) have technical information on Wattled Crane biology and conservation. Such people include C Bento and K McCann, among others.

The Harry Oppenheimer Okavango Research Centre has a wide range of expertise relating to the functioning of the Okavango Delta including P Wolski on hydrology, C van der Post on GIS among others.

NGOs

Conservation International has its Okavango Programme based in Maun, and has staff members working on biodiversity conservation, as well as a community outreach programme aimed at involving local communities in conserving the resources of the Okavango.

Kalahari Conservation Society has the Every River Project focusing on communities living along the Okavango River in Angola, Namibia and Botswana.

Donors

Global Environmental Facility (Small Grants Programme) has funded crane research and conservation in Botswana to date.

Media

Ngami Times is the only Maun-based newspaper. However there are several national newspapers, and Botswana has its own television station.

Tourism operators

There is a very good network of professional guides (mainly citizens) who operate throughout the Okavango and submit regular Wattled Crane observations to the BirdLife Botswana Crane Working Group. They are mainly from two safari companies – Gametrackers and Okavango Wilderness Safaris.

Opportunities and risks of the species action plan implementation

Opportunities

The Okavango Delta is still fairly pristine and has large areas of suitable, inaccessible Wattled Crane habitat. Despite a lack of active protection for the species in past years, a relatively large and apparently stable population has survived.

There is widespread interest in Wattled Cranes among members of the safari industry, particularly professional guides.

The Wattled Crane is a protected bird in Botswana, with a substantial penalty for killing one.

Risks

In Botswana, most of the Wattled Crane population occurs outside of Moremi Game Reserve. The core breeding area is similarly outside any protected area.

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APPENDIX 1

1993 BOTSWANA CRANE AND WETLAND ACTION PLAN

Botswana holds the second largest population of Wattled Cranes (*Bugeranus carunculatus*) after Zambia. It was estimated that 2,000 – 3,000 birds, of which 700 – 1,000 were breeding pairs, live in the Okavango Delta and flock in the adjacent Makgadikgadi Pans and Lake Ngami in the wet years. Elsewhere in its range the Wattled Crane is endangered (Konrad 1981, Collar & Stewart 1985, Urban 1989), leading to regional and international concern about the status of the species.

Very limited research has been conducted on the ecology of the Wattled Crane in Botswana. However there are speculations that the population status and breeding success of this species as well as that of the Slaty Egret (*Egretta vinaceigula*) could be used to indicate the ecological health of the Okavango Delta. In view of this, the ecology of the Wattled Crane is the focus of the Crane Action Plan of Botswana.

The Action Plan seeks to undertake the following activities in order to develop an effective conservation policy for the Wattled Crane and the management of its habitats in Botswana.

1. Determine the exact number of resident breeding pairs in Botswana of Wattled Crane. This knowledge would be an important pre-requisition for drafting the effective conservation plans for the species in the country.

2. Determine the numbers and distribution of breeding and non-breeding populations and their trends in Botswana. This would reveal the status of the Wattled Crane in the country, an important pre-requisite to effective management of Wattled Cranes.

3. Identify the prime breeding and roosting areas the Wattled Crane occupies in Botswana. This effort will facilitate mapping important habitats to effect survival and reproductive success of the species.

4. Study and understand the population dynamics and breeding biology and success of Wattled Cranes. Knowledge of the factors that influence the survival and reproductive success of this species would help to develop effective policies and management treatment to conserve the species in the country.

5. Understand the life history and adaptive strategy of the Wattled Crane. Knowledge of feeding requirements, seasonal variations in food availability (quality and quantity), consumption and the impact of these on the energy budgets of the species would promote human understanding of the ecological needs for the survival and reproduction of Wattled Cranes in Botswana.

6. Understand nomadic movements and migration patterns of Wattled Cranes. Research on the origin of non-breeding birds utilizing the Okavango Delta and factors attracting the species to the Delta would facilitate efforts to secure the population of Wattled Cranes in its range.

SPECIES ACCOUNT

Wattled Cranes occur in the Okavango Delta in two socially distinct categories: (1) pairs and family flocks; and (2) larger flocks (up to 200 or more birds). The origin of the larger flocks is not certain, but could be either: (1) non-breeding adults, the breeding sites of which are (temporarily) unsuitable; (2) sub-adult birds; and (3) migrants, either within the Okavango system or from abroad (*e.g*. Namibia, Zambia, Angola).

The Okavango Delta is identified as the core area for this Action Plan because it is the main habitat where Wattled Cranes are found in the country. Understanding the ecology of Wattled Cranes in the Okavango Delta would help to develop an effective conservation policy for this species in Botswana and also would guide the formulation of appropriate policy and management programs for the species and its key habitats.

There seems to be no comprehensive study reports available from research on Wattled Cranes in the Okavango Delta. Most people interested in cranes in the area, however, have a certain (sometimes strong) opinion on the number of Wattled Cranes in the Delta (and other aspects of its biology), but even though several of these views are congruent within certain limits, most are based on limited and generally opportunistically collected field evidence. It is therefore, very well possible that even the most widely accepted rough estimate of the number of Wattled Cranes in the Delta (1,500-3,000 birds), as the most basic aspect of the crane knowledge, is quite wrong.

CRITICAL WETLAND ACCOUNT

The Okavango Delta, the world's largest inland delta, is the most important wetland system in Botswana. It consists of a mosaic of wetlands, drylands, and intermittently flooded lands. It has a diversity of habitats in the form of perennial swamps (4,887 km^2), seasonal swamps (3,855km^2), intermittently flooded land (2,502 km^2) and dry land (1,842 km^2) (Scudder *et al.*, 1992). Apart from enhancing human life, the 15,846 km^2 Okavango Delta is home to a myriad of aquatic and terrestrial species including the Wattled Crane.

PRINCIPAL THREATS TO CRANES AND THEIR HABITATS

The Wattled Crane is a protected species in Botswana. Principal threats are as discussed in Meine & Archibald (1996).

RECOMMENDED PROJECTS AT THE NATIONAL LEVEL

Four research priorities of Wattled Cranes in the Okavango are ordered below by increasing importance/increasing complexity.

Project: Wattled Crane breeding ecology

Determine: (1) the size of the Wattled Crane breeding population; (2) the number of breeding pairs; and (3) the location of their breeding territories in relation to yearly variation and longer term changes in flood levels. Discussions during the African Crane and Wetland Training Workshop suggested that an extrapolation of inventory data, whether from strip counts by boat or from the air, would be inappropriate to make a population estimate (either total or only breeding) because of the extreme heterogeneity and complex mosaic of habitats in the Delta. The only reasonably accurate approach for an inventory of the breeding population seems therefore to be an aerial survey of the "full count" type (or anything that comes close). Information on the location of breeding territories can also be compiled from incidental observations by the general public, and a

questionnaire addressing the collection of such information is to be organized by the Botswana Department of Wildlife and National Parks (DWNP).

Project: Wattled Crane population dynamics

Determine aspects of Wattled Crane population dynamics, including: (1) breeding success; (2) age at first breeding and recruitment into the breeding population; and (3) self-sustainability of the population. Information pertinent to population dynamics can be collected once a sufficient number of accessible breeding sites have been located. A colour-ringing scheme for chicks could also contribute to this study and could reveal aspects of movements.

Project: Wattled Crane movements

Determine Wattled Crane movements, including (1) regular migratory movements within the system related to arrival or recession of the floods; and (2) migratory movements between wetlands in southern Africa. For the study of seasonal movements, the possibility of using satellite tracking should be investigated and appropriate funding should be secured.

Project: Wattled Crane population size and trends

Determine the overall Wattled Crane population size and its longer-term trends. This would involve understanding of the flocking process.

Implementation of projects

All the aforementioned prioritized projects could best become a full time effort for a sufficiently qualified person. Since it is impossible at the moment to provide such a person from the other assignments (with higher overall priority for the county) within the ornithology research unit in DWNP, it is advisable to have such a project and position sponsored externally.

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APPENDIX 2
TARGETS RECOMMENDED IN BIRDLIFE INTERNATIONAL (2000)

1. Develop a co-ordinated range-wide action plan.
2. Co-ordinate range-wide surveys and long-term monitoring, partly in order to understand population movements between sites and countries,
3. Continue and expand ecological research,
4. Strengthen key protected areas, especially in the Kafue Flats and Bangweulu Swamps (Zambia),
5. Increase educational campaigns, targeting landowners with breeding cranes,
6. Assess viability of artificial nest platforms,
7. Transfer species to CITES Appendix 1.

APPENDIX 3
BOTSWANA CRANE BIBLIOGRAPHY

This selected bibliography has been made available to the Crane Working Group by courtesy of Wendy and Remi Borello, authors of "Bibliography of Botswana Birds". The references listed below will be available during the Species Action Plan Workshop for participants to refer to:

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Keywords: Lake Ngami, Makgadikgadi, Okavango Delta, Wattled Crane, cranes, flamingos, breeding, census, conservation, distribution.

Includes an account of aerial surveys of Wattled Crane conducted in 1986. Random flights were flown over suitable habitat. Resulting data has been lumped (*e.g.* "The total number of Wattled Cranes counted in the Okavango in 64 hours flying during 1986 was 852"), therefore introducing a strong element of ambiguity and reducing the value of the hard data. Of the 55 nests discovered, although the period in which these were discovered is documented, there are no indications of locality (*i.e.* Okavango and/or Makgadikgadi). The author found that egg-laying ranges from July through to October with a peak in September. Forty percent of the eggs appeared to be laid during September 1986.

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Keywords: Okavango Delta, Cape Vulture, Slaty Egret, Wattled Crane, cranes, vultures, waterbirds, abundance, breeding, distribution, conservation.
Short discussion summarizing status in the Botswana context of three species included in recent "Red Data Book" publications.

PLOWES, D.C.H. 1987. Annexe F. Birdlife. Southern Okavango Integrated Water Development – Phase 1 study. Typescript. Pp. 67 (including appendices). *In* Final Report. Environmental Impact Study. Volume II. Annexes C–F. Previously restricted report. Cooma NSW: Snowy Mountains Engineering Corporation. Pp. 275 (including appendices).

Keywords: Botletle River, Lake Ngami, Makgadikgadi, Ngamiland, Okavango Delta, Black-faced Babbler, Bradfield's Hornbill, Cape Vulture, Crowned Crane, Dabchick, Great White Egret, Great Crested Grebe, Marabou Stork, Ostrich, Pel's Fishing Owl, Red-billed Teal, Rufous-bellied Heron, Secretarybird, Slaty Egret, Wattled Crane, Wattled Starling, White-crowned Night Heron, Woolly-necked Stork, Yellow-billed Stork, babblers, cranes, firefinches, flamingos, gamebirds, godwits, honeyguides, hornbills, larks, non-passerines, owls, oxpeckers, passerines, pelicans, pratincoles, quelea, raptors, rollers, shrikes, storks, sunbirds, vultures, warblers, waterbirds, weavers, widowfinches, abundance, behaviour, breeding, conservation, disease, distribution, food, habitat, movement, species list, utilization.

Environmental impact study background report on ornithological investigations carried out in May—July 1986 to assess possible impacts on bird life by water resources development. References to published literature on selected species' status and abundance in Botswana. Appendices include descriptive list of ornithological habitats and checklist of birds recorded from Okavango Delta and Lake Ngami area.

RANDALL, R. 1988. A flock of over 200 Wattled Cranes near the Boro River.
Babbler 16: 18-19.

Keywords: Okavango Delta, Xaxaba, Wattled Crane, cranes, abundance, census, distribution.

Note on two aggregations of Wattled Cranes in April and May 1988, and reference to a large aggregation in 1987.

URBAN, E.K. 1985. Monitoring cranes in Botswana. *Babbler* 10: 6-7.

Keywords: Africa, Botletle River, Chobe National Park, Chobe River, Gaborone, Kalahari, Kgoro Pan, Lake Ngami, Lake Dow, Linyanti River, Makgadikgadi, Nata, Savute, southeastern Botswana, Blue Crane, Crowned Crane, Wattled Crane, cranes, abundance, breeding, distribution.

Notes population status of cranes in Botswana, some of which are unverified data.

URBAN, E.K. & DAVENPORT Jr, L.B. 1993. Time of nesting in wild and captive Wattled Cranes *Bugeran**us carunculatus.*** *IN Wilson, R.T. (ed.) Birds and the African Environment: Proceedings of the Eighth Pan-African Ornithological Congress. ANNALES MUSÉE ROYAL DE L'AFRIQUE CENTRALE (ZOOLOGIE) 268:* 405-409.

Keywords: Africa, southern Africa, Makgadikgadi, Okavango Delta, Wattled Crane, cranes, breeding, habitat.

Current knowledge of the time of nesting of the Wattled Crane *Bugeranus carunculatus* in Africa and in zoological parks in the northern hemisphere is summarized. Most Wattled Cranes in central and southern Africa nest in the cooler dry months of May–September as flood waters start to recede. Wattled Cranes in Ethiopia nest in the main rainy season of June–August. Captive birds in the northern hemisphere nest mainly from mid-winter to early spring (January–June) with a peak in February–April. Factors that appear to stimulate nesting in wild populations include increasing day length (at least in central and southern Africa) and water deep enough to provide protection of the nest but sufficiently shallow to allow cranes to forage for key foods. Most captive Wattled Cranes in the northern hemisphere, with origins in central and southern Africa, nest (as do their wild counterparts) as day length increases.

WOODROW, G. 2003. Wattled Cranes eating termites? *Babbler* 42: 43.

Chapter 3.

Action Plan.

Action Plan Life Span:
5 Year life-span, Starts: January 2004, Ends: January 2009

Aim	**Indicator**
Size of Botswana's Wattled Crane population maintained within natural cycles between January 2004 and January 2009.	• A genetically viable Wattled Crane population in the Okavango Delta

Objectives	**Indicator**
Objective 1: Knowledge of factors affecting biology and ecological requirements of the Wattled Cranes (WC) obtained	• Studies on WC biology commissioned and results of those studies documented and published
Objective 2: Laws, regulations and plans better implemented and enforced by responsible agencies	• No contraventions of laws and regulations pertaining to Wattled Cranes • Successful prosecution of any contraventions • Relevant aspects of land use and management plans implemented to the benefit of Wattled Cranes
Objective 3: The awareness and knowledge of wetland dynamics, and the role of Wattled Cranes, improved amongst planners, developers, communities, the tourism sector and policy makers so that Wattled Crane habitat requirements are maintained in the long term.	• Inclusion of WC habitat requirements in the planning and management of the Okavango Delta
Objective 4: Funds and human resources for the Wattled Crane Species Action Plan are secured	• Funds available for targeted projects as per the agreed schedule

Projects Table.

Table 1. Objectives and activities.

LEGEND:		
0 – 10 000 Pula = *	**BirdLife Botswana Crane Working Group - BLBCWG**	**South African Crane Working Group - SACWG**
10 001 – 25 000 Pula = **	**Harry Oppenheimer Okavango Research Centre – HOORC**	**African Wattled Crane Programme - AWAC**
25 001 – 49 999 Pula = ***	**Department of Wildlife & National Parks - DWNP**	**Department of Water Affairs - DWA**
49 999 – 50 000 Pula = ******	**BirdLife Botswana - BLB**	**BirdLife International: - BLI**
******=essential, ***=high, **=medium, *=low**	**Okavango Development Management Plan: - ODMP**	**University of Botswana: - UB**

Objective 1: Knowledge of factors affecting biology and ecological requirements of the Wattled Cranes (WC) obtained						
Activity	**Priority**	**Agency responsible**	**Time Table**	**Cost**	**Indicators**	**Risks and opportunities**
Collate & analyse existing information	*	BLBCWG	1-3/2004	*	Summary report published	(i) Background project document already prepared
Identify & address research needs/additional research needs	*	BLBCWG	1/2004 - 12/2009	*	Research needs list updated	
Analyse spatial & temporal distribution (incl. nests) of Wattled Cranes in relation to land uses & activities (*e.g*. fires)	**	BLBCWG / HOORC / DWNP	5/2004 – 12/2009	**	Thematic maps produced	(i) HOORC has comprehensive GIS (ii) Baseline information will be produced for the Okavango Delta Management Plan
Analyse spatial and temporal distribution of WC in relation to long term hydrological flooding patterns/predictions	**	BLBCWG / HOORC / DWNP	5/2004 – 12/2009	**	Thematic maps produced	(i) HOORC has satellite images (ii) Baseline information will be produced for the Okavango Delta Management Plan
Aerial survey population analysis at different times of the year (different hydrological conditions) within the entire population range in Botswana	***	BLBCWG DWNP	2-3/2005 2-32006	****	Survey reports published	(i) DWNP has funds & equipment
Analyse spatial & temporal distribution of Wattled Cranes in	***	BLBCWG HOORC	1/2005-1/2009	****	Report on habitat & dietary requirements produced	(i) DWNP ornithologist in place involved in related study

relation to vegetation & habitat types & determine habitat requirements						(ii) Risk - funding.
Annually monitor breeding productivity of Wattled Crane population & assess influencing factors	****	BLBCWG, tourism industry, DWNP, UB	Ongoing 08 – 12 all years	***	Results documented	(i) Risk funding. (ii) Opportunity to find interested student. (iii) Involvement of BLBCWG members
Determine local & regional movement of the Wattled Crane population (with neighbouring countries)	**	BLBCWG SACWG AWAC	1/2005 - 1/2009	****	Crane movements documented	(i) AWAC co-operation (funding). (ii) Difficulty capturing cranes.
Incorporate research needs & results into overall management plans	****	BLBCWG ODMP – management group	1/2004 - 1/2009	*	Research results reflected in management decisions	(i) Dialogue with ODMP management group already ongoing. (ii) Botswana, Nambia signatories of RAMSAR convention (iii) Angola about to sign RAMSAR convention
Participate actively in the setting up and implementation of the ODMP	****	BLBCWG	8/2003 until 1/2009	*	Attendance at meetings, conflicts addressed in ODMP	
Lobby against potential projects that may impact adversely on Wattled Crane habitats	****	BLBCWG NCSA OKACOM NGOs e.g. KCS, AWAC, IRN *etc*.	ongoing	*	Damaging projects revised	(i) Risk – advice not taken
Integrate knowledge into EIAs of development planning	***	BLBCWG	ongoing	*	EIAs take account of Wattled Crane requirements	(i) EIAs mandatory on large development projects
Ensure continued removal of alien plants (*Salvinia*)	*	DWA – (BLBCWG)	ongoing	*	*Salvinia* reduction in extent in line with DWA targets	(i) *Salvinia* control ongoing

Objective 2: Laws, regulations and plans better implemented and enforced by responsible agencies						
Activities	**Overall Priority**	**Agency responsible**	**Time Table**	**Cost**	**Indicators**	**Risks and opportunities**
Attention brought to the relevant authorities about transgressions affecting the Wattled Crane populations	***	- BLBCWG - Safari Operators - Dept. of Wildlife & National Parks - Police - Tribal Leaders - General public - Water Affairs - Animal Health - Wildlife Research - Research Bodies - Botswana Defence Force - Escort guides	2004 - 2009	*	(i) Successful prosecution (ii) Cases reported	(i) Bureaucratic bottlenecks (ii) Lack of political will (iii) Logistical problems (iv) Funds & resources committed to antipoaching (v) Laws in place
BLBCWG to encourage the lodges to take & accept responsibility & report violations to the authorities	***		2004 - 2009	*	(i) Successful prosecution (ii) Cases reported	i) Bureaucratic bottlenecks (ii) Lack of political will (iii) Logistical problems (iv) Funds & resources committed to antipoaching (v) Laws in place

Objective 3: The awareness and knowledge of wetland dynamics, and the role of Wattled Cranes, improved amongst planners, developers, communities, the tourism sector and policy makers so that Wattled Crane habitat requirements are maintained in the long term.						
Activities	**Overall Priority**	**Agency responsible**	**Time Table**	**Cost**	**Indicators**	**Risks and opportunities**
BLBCWG as a stakeholder should be involved in any Environmental Impact Assessment affecting the Delta	****	(i) BLBCWG	2004 – 2009	*	(i) Information About Wattled Cranes is incorporated into the document	(i) Unless BLBCWG has a higher profile, it may not be consulted.
BLBCWG initiates a community outreach programme & links with other NGOs	***	(i) BLBCWG (ii) NGOs (iii) Institutions (iv) DWNP (v) Community institutions (vi) National Conservation Strategy Agency (vii) BLB Education Officer	2004 – 2009	***	(i) Number of communities visited (ii) Materials produced to highlight cranes & wetlands	(i) Lack of commitment by local communities (ii) Logistical problems (iii) Co-operation with other bodies
BLBCWG develops a schools programme & teacher training	***	(i) BLBCWG (ii) Dept. of Education (iii) Dept. of Wildlife (iv) Colleges of Education	2004 – 2009	***	(i) No. of schools visited nationwide (ii) Educational materials produced	(i) Logistical problems (ii) Bureaucratic hold-ups (iii) Education Policies towards environmental education (iv) Links with Kalahari Conservation Society (v) BLB has well-developed Education programme
Regular advocacy work that targets policy makers is carried out by the BLBCWG	****	(i) BLBCWG (ii) Dept. of Wildlife (iii) NGOs (iv) Water Affairs (v) Animal Health (vi) National Conservation Strategy	2004 – 2009	**	(i) Policies, laws & regulations incorporate elements of crane & wetlands conservation	(i) Risk - our advocacies could be ignored (ii) Botswana's Okavango Delta Management Plan is being written during this period (iii) It is a high profile species

		Agency (vii) University of Botswana (viii) Dept. of Education (ix) Politicians (x) Dept. of Tourism				(iv) Tourism is increasingly seem as vital for Botswana's economic future

Objective 4: Funds and human resources for the implementation of the Wattled Crane Species Action Plan are secured						
Activities	**Overall Priority**	**Agency responsible**	**Time Table**	**Cost**	**Indicators**	**Risks and opportunities**
A long-term funding strategy is developed	****	(i) BLBCWG (ii) Fund-raising (iii) BLI	Jan to July 2004	*	(i) Strategy written	(i) Suitable consultant available Possible assistance from EWT and BLI (iii) Manpower constraints
BLBCWG encourages voluntary participation of interested parties	****	(i) General public (ii) Safari Operators (iii) Dept. of Wildlife (iv) Botswana Wildlife Training Institute	2004 - 2009	*	(i) People working voluntarily	(i) Lack of interest, commitment and time (ii) Potential participants could be found

Monitoring and Evaluation Plan Why is this heading smaller than the ones beneath it?

What? & Why? The monitoring and evaluation plan is needed to determine whether activities are progressing according to schedule. Obtaining information on the progress made with regards to the completion of the activities, and using this information in conjunction with the indicators, it is possible to assess how far we have proceeded with implementing the action plan and achieving the aim and objectives outlined in it. Monitoring and evaluating progress made on a regular basis means that priorities can be assessed and adjusted when required. It serves as a basis for keeping everyone informed as to what is happening.

Who? It was agreed that this is the task of the BirdLife Botswana Crane Working Group. The task involves co-ordinating the monitoring and evaluation, which includes financial reporting.

How & How often? Annually every April. The BirdLife Botswana Crane Working Group would circulate the table for monitoring and evaluating the implementation of the Wattled Crane Action Plan to the agencies responsible for the different components. Each agency would fill in updated information based on their progress and return the table to the BirdLife Botswana Crane Working Group. The BirdLife Botswana Crane Working Group would then collate the information into one table for distribution to all members and stakeholders in the conservation of the Wattled Crane and other interested organisations and individuals in Botswana.

Table 2. Monitoring and evaluating implementation of the Botswana Wattled Crane Action Plan.

Objective 1: Knowledge of factors affecting biology and ecological requirements of the Wattled Cranes (WC) obtained							
Activity	**Priority**	**Agency responsible**	**Time Scale**	**Completion date**	**Cost**	**Indicators**	**Remarks**
Collate & analyse existing information	*	BLBCWG	1-3/2004		*	Summary report published	
Identify & address research needs/additional research needs	*	BLBCWG	1/2004 - 12/2009		*	Research needs list updated	
Analyse spatial & temporal distribution (incl. nests) of Wattled Cranes in relation to land uses & activities (*e.g*. fires)	**	BLBCWG / HOORC / DWNP	5/2004 – 12/2009		**	Thematic maps produced	
Analyse spatial and temporal distribution of WC in relation to long term hydrological flooding patterns/predictions	**	BLBCWG / HOORC / DWNP	5/2004 – 12/2009		**	Thematic maps produced	
Aerial survey population analysis at different times of the year (different hydrological conditions) within the entire population range in Botswana	***	BLBCWG DWNP	2 - 3/2005 2 - 32006		****	Survey reports published	
Analyse spatial & temporal distribution of Wattled Cranes in relation to vegetation & habitat types & determine habitat requirements	***	BLBCWG HOORC	1/2005- 1/2009		****	Report on habitat & dietary requirements produced	
Annually monitor breeding productivity of Wattled Crane population & assess influencing factors	****	BLBCWG, tourism industry, DWNP, UB	Ongoing 08 – 12 all years		***	Results documented	
Determine local & regional movement of the Wattled Crane population (with neighbouring countries)	**	BLBCWG SACWG AWAC	1/2005 - 1/2009		****	Crane movements documented	
Incorporate research needs & results into overall management	****	BLBCWG ODMP –	1/2004 - 1/2009		*	Research results reflected in	

plans		management group				management decisions	
Participate actively in the setting up and implementation of the ODMP	****	BLBCWG	8/2003 until 1/2009		*	Attendance at meetings, conflicts addressed in ODMP	
Lobby against potential projects that may impact adversely on Wattled Crane habitats	****	BLBCWG NCSA OKACOM NGOs e.g. KCS, AWAC, IRN *etc*.	ongoing		*	Damaging projects revised	
Integrate knowledge into EIAs of development planning	***	BLBCWG	ongoing		*	EIAs take account of Wattled Crane requirements	
Ensure continued removal of alien plants (*Salvinia*)	*	DWA – (BLBCWG)	ongoing		*	*Salvinia* reduction in extent in line with DWA targets	

Objective 2: Laws, regulations and plans better implemented and enforced by responsible agencies							
Activity	**Priority**	**Agency responsible**	**Time Scale**	**Completion date**	**Cost**	**Indicators**	**Remarks**
Attention brought to the relevant authorities about transgressions affecting the Wattled Crane populations	***	- BLBCWG - Safari Operators - Dept. of Wildlife & National Parks	2004 - 2009		*	(i) Successful prosecution (ii) Cases reported	
BLBCWG to encourage the tourist lodges to take & accept responsibility & report violations to the authorities	***	- Police - Tribal Leaders - General public - Water Affairs - Animal Health - Wildlife Research - Research Bodies - Botswana Defence Force - Escort guides	2004 - 2009		*	(i) Successful prosecution (ii) Cases reported	

Objective 3: The awareness and knowledge of wetland dynamics, and the role of Wattled Cranes, improved amongst planners, developers, communities, the tourism sector and policy makers so that Wattled Crane habitat requirements are maintained in the long term.							
Activities	**Priority**	**Agency responsible**	**Time Table**	**Completion date**	**Cost**	**Indicators**	**Remarks**
BLBCWG as a stakeholder should be involved in any Environmental Impact Assessment affecting the Delta	****	(i) BLBCWG	2004 – 2009		*	(i) Information about Wattled Cranes is incorporated into the document	
BLBCWG initiates a community outreach programme & links with other NGOs	***	(i) BLBCWG (ii) NGOs (iii) Institutions (iv) DWNP (v) Community institutions (vi) National Conservation Strategy Agency (vii) BLB Education Officer	2004 – 2009		***	(i) Number of communities visited (ii) Materials produced to highlight cranes & wetlands	
BLBCWG develops a schools programme & teacher training	***	(i) BLBCWG (ii) Dept. of Education (iii) Dept. of Wildlife (iv) Colleges of Education	2004 - 2009		***	(i) No. of schools visited nationwide (ii) Educational materials produced	
Regular advocacy work that targets policy makers is carried out by the BLBCWG	****	(i) BLBCWG (ii) Dept. of Wildlife (iii) NGOs (iv) Water Affairs (v) Animal Health (vi) National	2004 – 2009		**	(i) Policies, laws & regulations incorporate elements of crane & wetlands conservation	

		Conservation Strategy Agency (vii) University of Botswana (viii) Dept. of Education (ix) Politicians (x) Dept of Tourism					

Objective 4: Funds and human resources for the implementation of the Wattled Crane Species Action Plan are secured							
Activities	**Overall Priority**	**Agency responsible**	**Time Table**	**Completion date**	**Cost**	**Indicators**	**Remarks**
A long-term funding strategy is developed	****	(i) BLBCWG (iii) BLI	Jan to July 2004		*	(i) Strategy written	
BLBCWG encourages voluntary participation of interested parties	****	(i) General public (ii) Safari Operators (iii) Dept. of Wildlife (iv) Botswana Wildlife Training Institute	2004 - 2009		*	(i) People working voluntarily	

Acknowledgements.
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Thank-you to Alison de Smidt and Ntombi Stungu for assisting by typing the large amount of information collected onto cards and flipcharts during the workshop.
The group is grateful for the support given by the following organizations and individuals; Global Environment Facility - Small Grants Programme, International Crane Foundation, Endangered Wildlife Trust and Department of Wildlife and National Parks supported the SAP workshop and African Wattled Crane steering committee meeting. Special thanks go to Steven Evans who facilitated the workshop, Pete Hancock for the production of the background document, Roger Hawker, Adrian Kholi, Sekgowa Motsumi, Rhondda and Noel Strugnell, for logistical support. To all those who participated in the workshop - it would not have been a success without your input.

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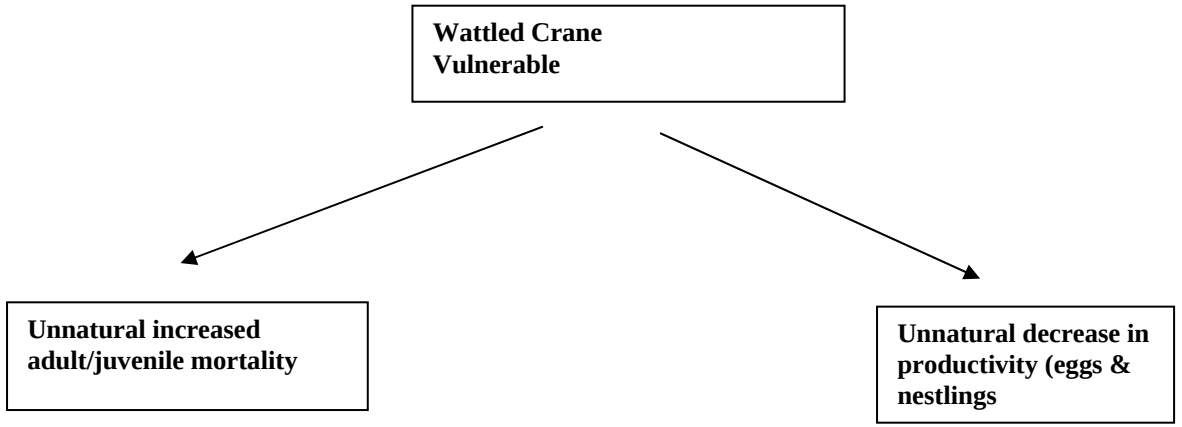
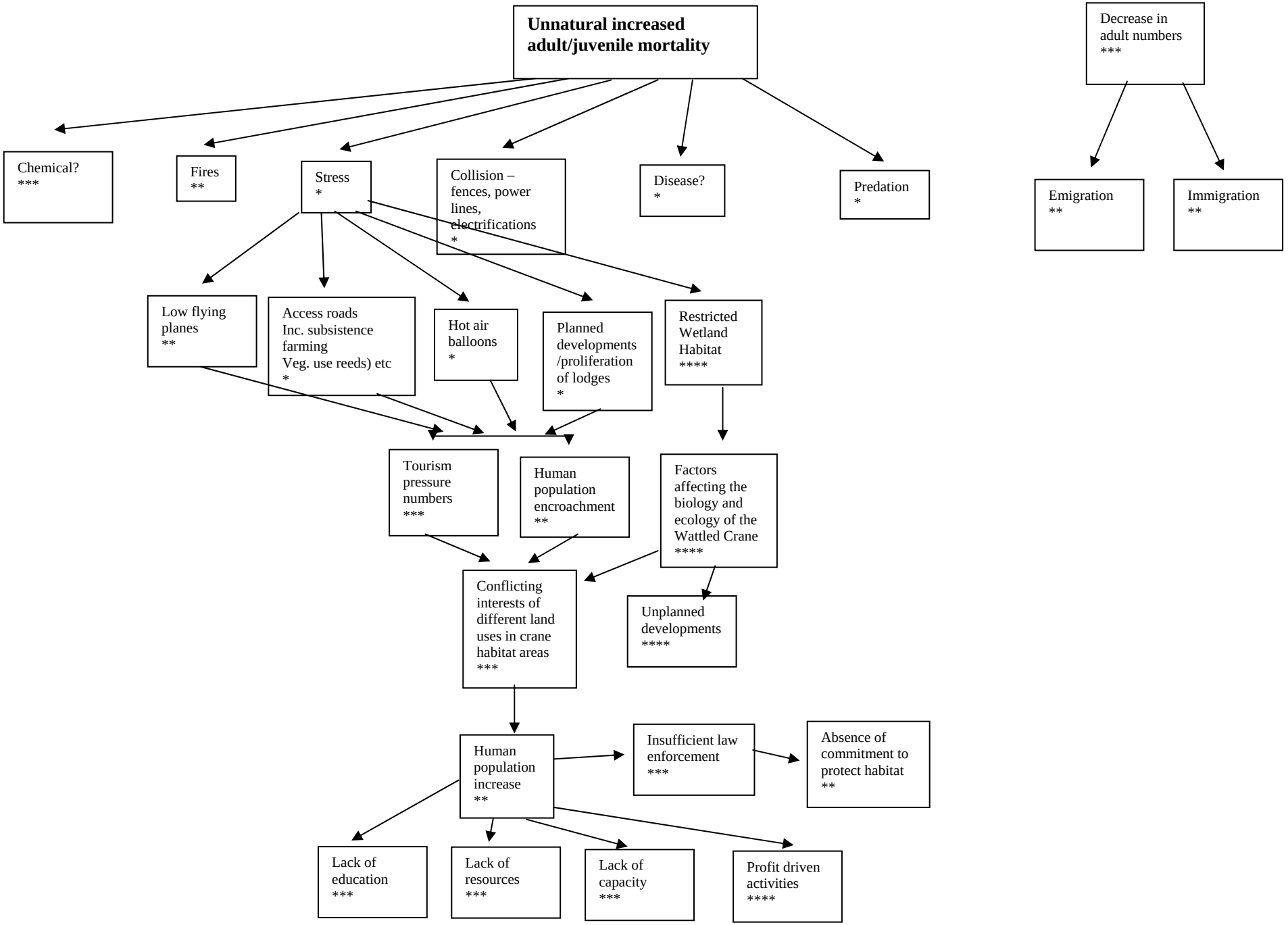
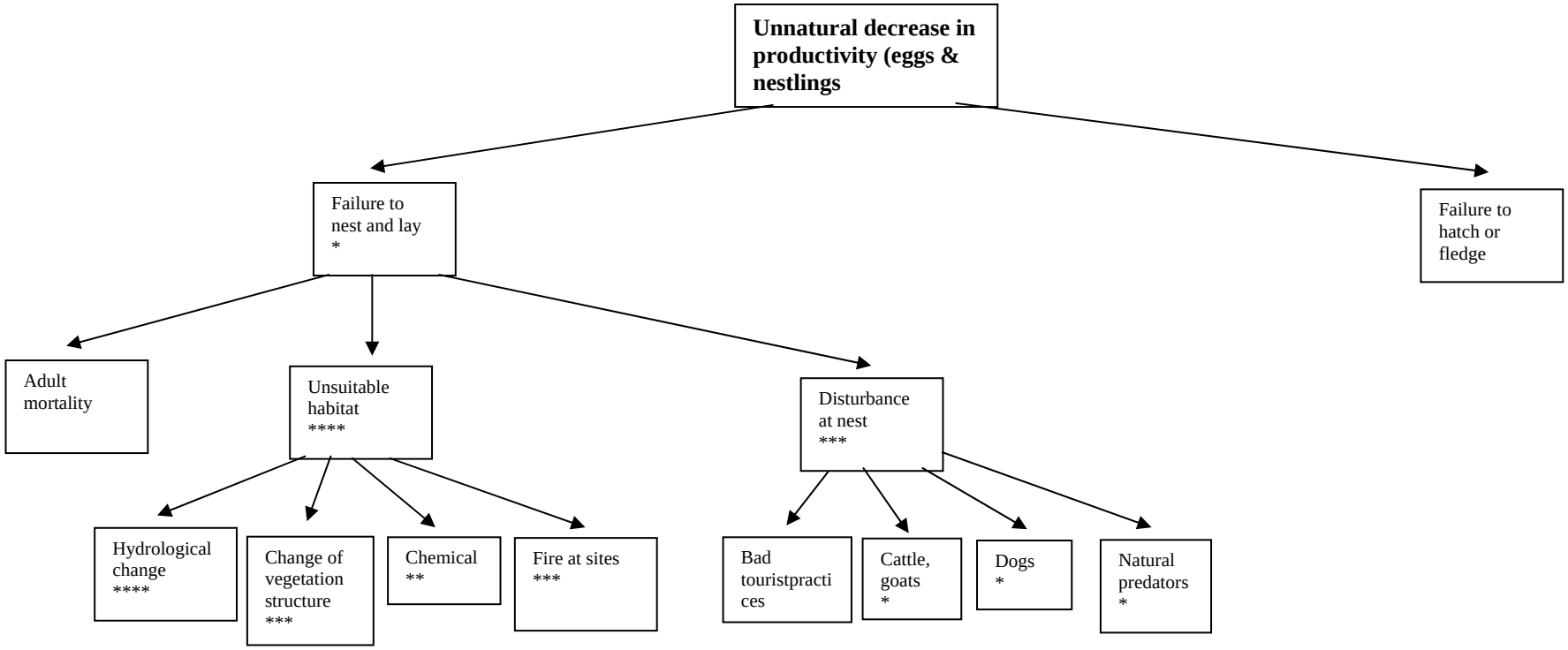
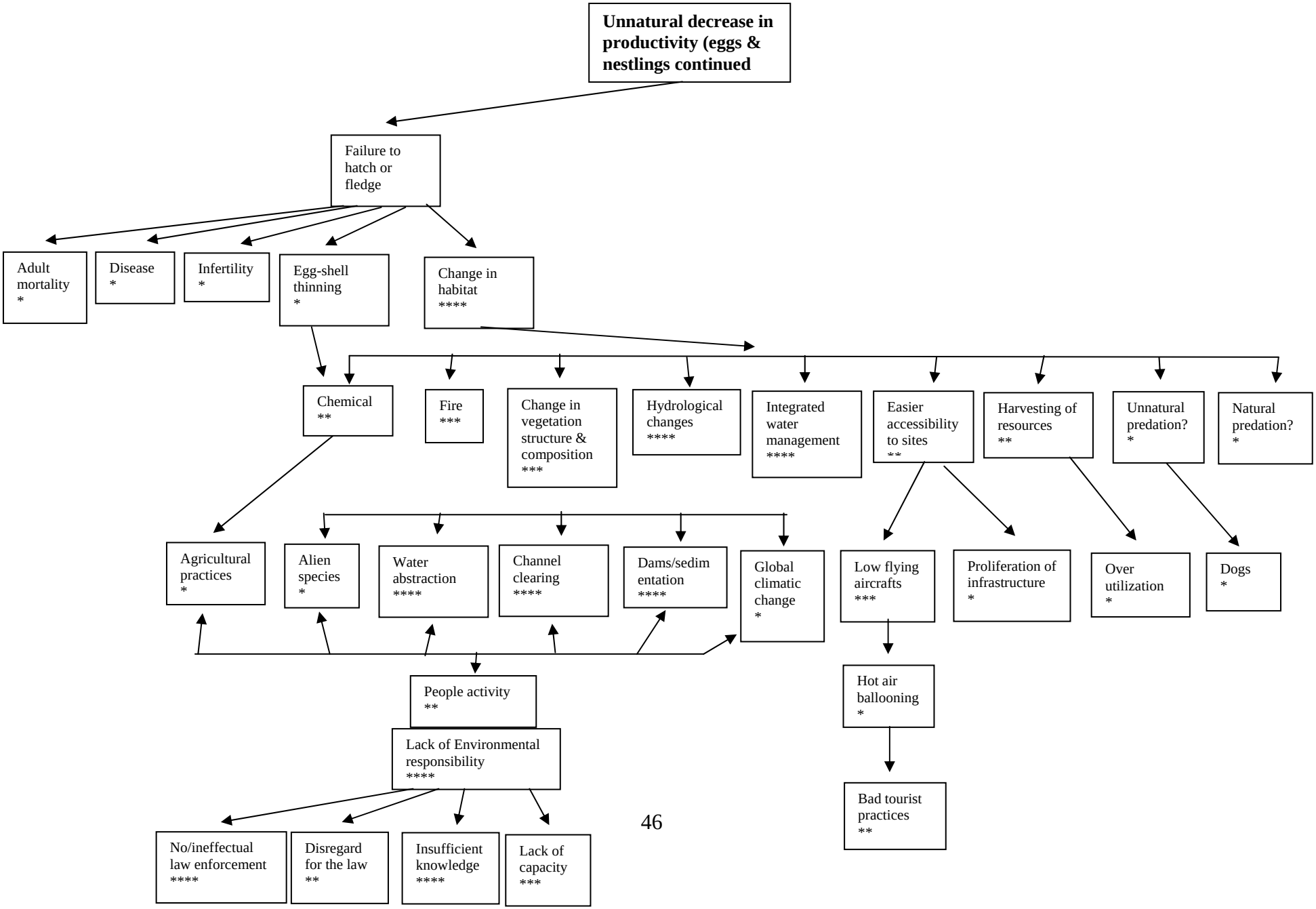
Chapter 4.

Problem tree




Unnatural increased adult/juvenile mortality
Chemical? ***
Fires **
Stress *
Collision – fences, power lines, electrifications *
Disease? *
Predation *
Low flying planes **
Access roads Inc. subsistence farming Veg. use reeds) etc *
Hot air balloons *
Planned developments /proliferation of lodges *
Restricted Wetland Habitat ****
Tourism pressure numbers ***
Human population encroachment **
Factors affecting the biology and ecology of the Wattled Crane ****
Conflicting interests of different land uses in crane habitat areas ***
Unplanned developments ****
Human population increase **
Insufficient law enforcement ***
Absence of commitment to protect habitat **
Lack of education ***
Lack of resources ***
Lack of capacity ***
Profit driven activities ****
Decrease in adult numbers ***
Emigration **
Immigration **


Unnatural decrease in productivity (eggs & nestlings
Failure to nest and lay *
Failure to hatch or fledge
Adult mortality
Unsuitable habitat ****
Disturbance at nest ***
Hydrological change ****
Change of vegetation structure ***
Chemical **
Fire at sites ***
Bad touristpracti ces
Cattle, goats *
Dogs *
Natural predators *


Unnatural decrease in productivity (eggs & nestlings continued
Failure to hatch or fledge
Adult mortality *
Disease *
Infertility *
Egg-shell thinning *
Change in habitat ****
Chemical **
Fire ***
Change in vegetation structure & composition ***
Hydrological changes ****
Integrated water management ****
Easier accessibility to sites **
Harvesting of resources **
Unnatural predation? *
Natural predation? *
Agricultural practices *
Alien species *
Water abstraction ****
Channel clearing ****
Dams/sedimentation ****
Global climatic change *
Low flying aircrafts ***
Proliferation of infrastructure *
Over utilization *
Dogs *
Hot air ballooning *
Bad tourist practices **
People activity **
Lack of Environmental responsibility ****
No/ineffectual law enforcement ****
Disregard for the law **
Insufficient knowledge ****
Lack of capacity ***

Chapter 5.

Issues affecting successful implementation of the Botswana Wattled Crane Action Plan.

Opportunities		Risks	
1.	Good management plans exist for areas where cranes are found	1.	Large scale water reticulation and diversion projects come up at regular intervals (in years of drought)
2.	Research ongoing and good progress made to date	2.	Still lack some basic information on Wattled Crane needs & threats.
3. 3.1 3.2 3.3 3.4 3.5	 Staff employed BLBCWG – increasingly effective local champion for implementing a realistic plan Existence of good working relationship between BLBCWG and other stakeholders Commitment from BirdLife Botswana BLB is developing into a professional conservation organisation	3. 3.1 3.2 3.3	 Non-recognition of validity of input Lack of political will Despite availability of good management plans, compliance and constant monitoring do not occur
4.	Cultural significance of cranes		
5. 5.1 5.2 5.3 5.4 5.5 5.6 5.7	 The high profile (as tourist attraction) of the Delta The international status of the Delta i.e largest Ramsar site Wattled Crane is a high profile species with strong tourism appeal International/regional emphasis on Wattled Cranes may help raise political interest/will Growing interest in bird safaris leads to increased income generation. The Wattled Crane is a protected species Economic significance of Wattled Cranes (tourism, photography *etc.*)	5. 5.1 5.2 5.3 5.4 5.5 5.6	 Incompatible stake holders interests Potential land use conflict - "livestock versus conservation" Eradication of Tsetse fly in the Delta Fishing activities could disturb cranes Increasing demand of veldt productsetc. leads to increased access to crane habitats Negative attitudes by stakeholders whose interests will be negatively affected by imposition of any restrictive law relating to cranes
6. 6.1 6.2	 BLBCWG communicates with funding agencies to secure resources for crane conservation work Funds for WC conservation could be sourced from tourism activities	6. 6.1 6.2	 Climate models suggest local water issues will become more dire – pressure will mount on Wattled Cranes' needs Destruction to the habitat by natural changes e.g climate (drought), seismicity

7.		7.	
7.1	Support for SAP from DWNP	7.1	There are limits to cross border co operation, which lead to conflicting agendas within (without) Botswana
7.2	Small human population in Botswana, particularly Wattled Crane range	7.2	Factors outside immediate control of local stakeholders – etc. Angola, Namibia water control and off-take
7.3	No major incompatible land use to crane conservation		
7.4	Wider coverage of the Delta by people with vested interest in crane conservation		
7.5	Goodwill and awareness of camp managers, professional guides and other tourist personnels		
7.6	Stakeholder involvement in crane conservation such as the tourist industry/lodges and communities		
7.7	BLBCWG can bring all stakeholders together to preserve Wattled Crane habitat		
7.8	Some enthusiastic people in the field with own resources		
8.		8.	
8.1	The planned ecotourism policy could enhance crane conservation	8.1	Logistics
8.2	Strong legislation & planning for Delta is	8.2	Inadequate resources (human/funds)
8.3	available	8.3	Lack of sustainability
8.4	National Conservation Strategy in place.	8.4	Lack of capacity
8.5	Strong wildlife and environmental protection legislation in place	8.5	Limited capacity to implement actions
	The ongoing planning process for the development of the delta management plan is closing gaps and harmonising government	8.6	Insufficient funding
8.6	policies	8.7	
8.7	Botswana & Namibia have signed the RAMSAR Convention, and Angola is about to sign. Management plans are a requirement under the RAMSAR Convention	8.8	
8.8	Species Action Plan will fit in with the research strategic plan for DWNP	8.9	
8.9	BLBCWG has good communication with Government and NGOs about threats to cranes	8.10	
8.10	The management plan for the Okavango Delta may include some issues raised in the Wattled Crane Species Action Plan		
		9.	
		9.1	Participation by all stakeholders difficult to achieve at all levels
		9.2	Lack of commitment from key players
		9.3	Lack of contribution from people in the Delta
		9.4	Lack of buy-in from stakeholders
		9.5	Insufficient citizen involvement – will result in marginalisation of SAP
		9.6	Momentum will decline and no action will be taken by BLBCWG
		9.7	Limited interest and commitment in the Botswana population for cranes
		9.8	Stakeholder apathy
		9.9	Lack of community stakeholder involvement

Chapter 6.

Workshop Participants.

Name	Organization	e-mail address	Country
Wendy Borello	BirdLife Botswana/Vulture Study Group	borello@sharps.co.bw	Botswana
Stephanie Tyler	BirdLife Botswana	Steph_tyler2001@hotmail.com	Botswana/United Kingdom
Roger Hawker	BirdLife Botswana Crane Working Group	birdlifetours@dynabyte.bw	Botswana
Kevin McCann	South African Crane Working Group & Endangered Wildlife Trust	mccrane@iafrica.com	South Africa
Kerryn Morrison	South African Crane Working Group & Endangered Wildlife Trust	kerryn@ewt.org.za	South Africa
Carlos Bento	Museum of Natural History	bento@natural.uem.mz	Mozambique
Ryan Clark	Orient Express Safaris		Botswana
Osiman Mabachi	BirdLife Zimbabwe		Zimbabwe
Ben Kamweneshe	Zambia Crane Project	crane@zamtel.zm	Zambia
Potiphar Kaliba	Museums of Malawi		Malawi
Richard Beilfuss	International Crane Foundation	rich@savingcranes.org	United States of America
Onx Manga	Orient Express Safaris		Botswana
Adrian Kholi	BirdLife Botswana Crane Working Group		Botswana
Pete Hancock	BirdLife Botswana Crane Working Group	pete@info.bw	Botswana
Hannelore Bendsen	Harry Oppenheimer Okavango Research Center	hbendsen@orc.ub.bw	Botswana
Yilma D Abebe	Ethiopian Wildlife and Natural History Society		Ethiopia
Daniel Mughogho	Department of Wildlife and National Parks	mughogho@yahoo.co.uk	Botswana
George Archibald	International Crane Foundation	george@savingcranes.org	United states of America
Darrell Leidigh	International Crane Foundation		United states of America
Ann Scott	Overberg Conservation Services		Namibia/ South Africa
Mike Scott	Overberg Conservation Services		Namibia/ South Africa
Sekgowa Motsumi	BirdLife Botswana Crane Working Group	cranegroup@dynabyte.bw	Botswana
Bright Kholi	The Ngami Times	tnt@info.bw	Botswana

Apologies

Name	Organization	e-mail address	Country
Harold Hester	BirdLife Botswana	haroldh@info.bw	Botswana
Sakhile Koketso	National Conservation Strategy Agency		Botswana
Innocent Magole	Matope Enterprises	matope@info.bw	Botswana
Map Ives	Okavango Wilderness Safaris	mapi@ows.bw	Botswana
Kabelo Senyatso	BirdLife Botswana	skhebos@botzoo.uct.ac.za	Botswana

Chapter 7.

Participant Goals and Hopes.

Name	Organisation	Position	Where based?	Expectations
Steven Evans	BirdLife S.A	Species &Sites Programme Manager	Johannesburg	• A practical Botswana Wattled Crane Action plan developed & implemented • Meet new friends • To see at least one more "lifer"
Hannelore Bendsen	Harry Oppenheimer Okavango Research Centre - HOORC	Participatory Land Use planner	Maun Botswana	• Links between crane action plan & Okavango Delta Management plan • Activity input of HOORC into WCAP
Carlos Bento	Museum of Natural History	Researcher	Mozambique Maputo	• Have an action plan for Botwana • Have ideas on how to make good action plan • See the major aspects for action plan
Ryan Clark	Orient Express Safaris	Environmentalist	Xaxaba Botswana	• Understanding • Whos Who • Actioning
Osiman Mabachi	BirdLife Zimbabwe	Crane Conservation Officer	Harare Zimbabwe	• An action plan with attainable goals and objectives • Improve skills on developing and action plan for all • Strengthening ties between conservationist & organisations
Ben Kamweneshe	Zambia Crane Project	Manager / researcher	Lusaka Zambia	• New information from participants • Learn about new issues concerning cranes in Botswana & elsewhere • An action plan that will be useful for cranes & wetlands in Botswana
Potiphar Kaliba	Museums of Malawi	Senior Ornithologist	Blantyre Malawi	• Contribute to development of Botswana crane action plan • Share experiences with other country partners in development of action plan • Encourage networking
Richard Beilfuss	International Crane Foundation	Africa Program Director	Wisconsin USA	• Learn useful techniques for creating national action plans for different WC range states

				• Good brainstorming about status & threats to Wattled Cranes in Botswana • Learn techniques for action plan implementation
Onx Manga	Orient Express Safaris	Ass. Environmental Manager	Khwai	• Understand better
Adrian Kholi	Botswana Wildlife Training Institute	Lecturer I	Maun	• Action in place • Make friends
Daniel Mughogho	Department of Wildlife and National Parks	Assistant Principal Wildlife Biologist	Gaborone	• Draft plan that is feasible & implementable • Develop strategy for implementing the plan • Learn from experiences elsewhere
Stephanie Tyler	BirdLife Botswana	Committee member Editor – Babbler Co-ordinator Waterbird counts	Wales / Botswana	• Learning how to prepare a SAP • Involvement in process & learning from others • Clarifying priorities for future work
Roger Hawker	BirdLife Botswana	Chair Crane Group	Maun	• Develop a species action plan for the Wattled Crane • Find out more about Wattled Cranes • Decide the way forward for conservation
Yilma Abebe	Ethiopian Wildlife & Natural History Society	Wetland advisory project development	Addis Ababa	• Share & learn experiences about WC conservation • Learn how to develop species action plan
George Archibald	International Crane Foundation	Board member and staff member	USA Wisconsin	• Develop plan for wattled crane conservation in Botswana • Learn how to do BL Species Action plan • How ICF can help
Wendy Borello	BirdLife Botswana Vulture Study Group	Member (BLB) Bots. Rep for VSG. Assistant editor - Vulture News	Gaborone	• Learn about action plan preparation & other aspects • Make friends communication channels • Participation in process • Priorities on WC conservation / research / how to implement it

Pete Hancock	BLBCWG	Member	Maun	• Learn more about BL system • SAP with broad buy in
Sekgowa Motsumi	BirdLife Botswana	Co-ordinator BLBCWG	Maun Botswana	• Best SAP produced • Learn process of SAP formulation • Learn from colleagues & exchange ideas
Darrell Leidigh	International Crane Foundation		USA Florida	• Learn about cranes • Meet people • Learn what I can do to help • Learn more about wetlands
Ann Scott	Private & Overberg Conservation Services Overberg Crane Group	Observer / Supporter and member	Namibia & South Africa	• Botswana WC action plan process • Greater understanding of Wattled Cranes & wetlands • Networking with other crane conservationists
Mike Scott	SA Crane working group	National Research Manager	Mooi River, South Africa	• Develop a detailed prioritised plan for Wattled Crane conservation in Botswana • Identify key organisations & groups that need to be integrated into BLBCWG • Achievable objectives • Implementable plan
Kerryn Morrison	SACWG (EWT)	National Operations Manager	South Africa Dullstroom	• To assess needs for the project • To get buy-in for the projects required

Chapter 8.

APPENDIX 1: Botswana Wattled Crane Action Planning workshop programmes.

Species Action Plan Stakeholder Workshop, Wattled Crane *Bugeranus carunculatus*..
Botswana, Maun, 06 – 08 August 2003.

	06 August	07 August	08 August
8:30 – 13:00	Welcome (BB / PH). Introductions & Expectations (SE). Explanation of workshop techniques (SE) What is a Species Action Plan? (SE) Overview of the workshop programme (SE) Presentation of background information (PH)	Recap of day 1 (SE) Group work: Problem tree analyses. **Group presentations and discussions:** - Report back on problem tree. - Review brainstorm of issues. - Prioritise issues at highest level.	Recap of day 3. Agree the Vision and Aim of the Action Plan. (SE) Group work: Formulation of Project Concepts. Group presentations and discussions: - Report back on Project Concepts.
13:00 – 14:00	**LUNCH**		
14:00 – 18:00	Response to presentation (PH/SE) - any gaps? - questions & answers? Identify main issues affecting implementation of a Botswana Wattled Crane Action Plan? (SE) What are the main issues (threats) affecting the Wattled Crane in Botswana? (SE) Evaluation (ALL).	**Group work:** Draft the Objectives. - Consider the life-span of the Action Plan (3 – 5 years). **Group presentations and discussions:** - Report back on Objectives. - Prioritise the Objectives. Evaluation (ALL).	**Group work:** Completion of Projects Table. Group presentations and discussions: - Report back on completed Projects Table. Monitoring & Evaluation Plan. - Why? / How? / Who? / When? Adoption of the Botswana Wattled Crane Action Plan. Evaluation (All).

BB = BirdLife Botswana, **PH** = Pete Hancock, **SE** = Steven W. Evans, **ALL** = everyone.

Wattled Crane Action Plan stakeholder workshop, 06 – 08 August 2003.

Date & Time.	Time (min)	Activity	Description	Person responsible
Wednesday 6th August 2003: Day 1.				
08:30 – 08:45	15	Welcome	Plenary. Brief welcome to everyone by a member of BirdLife Botswana. Introduction of the facilitator.	BirdLife Botswana
08:45 – 09:45	60	Introductions & Expectations?	Plenary – Cards. Name, Organisation, Position, Where based?, Spp. conservation experience & Expectations of this workshop (X 3). - Put cards with headings up on the wall.	Steven W. Evans
09:45 – 10:00	15	Explanation of workshop techniques.	Plenary – Cards & Over-heads. Explain rational behind: - Brainstorm first; only then open discussion. - Use of Cards & flipchart.	Steven W. Evans
10:00 – 10:30	**30**	**Tea/Coffee Break**		
10:30 – 11:15	45	What is a Species Action Plan?	Plenary - Flipchart. Compile a definition.	Steven W. Evans
11:15 – 11:30	15	Workshop programme.	Brief overview of the entire workshop programme.	Steven W. Evans
11:30 – 12:30	60	Presentation of background information.	Plenary – Over-heads/Slides. Presentation of the information contained in the background document prepared for the workshop.	Deon Coetzee
12:30 – 14:00	**90**	**LUNCH**		
14:00 – 15:00	60	Response to presentation.	Plenary – Flipchart. Questions and answers session. Identify any gaps in knowledge. Not done for threats. This will be covered by the problem tree analyses.	Steven W. Evans
15:00 – 16:00	60	What are the main issues that will affect successful implementation of the Botswana Wattled Crane Action Plan?	Plenary – Cards (Over-heads). Brainstorm the risks & opportunities (include ongoing projects). Group and discus.	Steven W. Evans
16:00 – 16:30	**30**	**Tea/Coffee Break**		
16:30 – 18:00	90	What are the main issues (threats) affecting the Wattled Crane in Botswana?	Plenary – Cards. Brainstorm, group and discuss cards.	Steven W. Evans
18:00 – 18:05		Evaluation	Happy, medium, sad face.	Steven W. Evans
19:00 -		**DINNER**		

Thursday 07th August 2003: Day 2.				
08:30 – 09:00	30	Recap of day 1.		
09:30 – 11:30	120	Problem tree analyses.	Groups – Cards. Group 1: Decreased breeding success and increased adult mortality. Group 2: Decrease in habitat quantity and quality. Use IUCN criteria as the starting point. Tea/Coffee available at 10:30.	Steven W. Evans
11:30 – 12:30	60	Report back on problem trees. Review brainstorm on threats cards – are they all captured in the problem tree.	Plenary – Cards. Each group presents their problem tree. Discussion refinement and agreement.	Steven W. Evans
12:30 – 13:00	30	Prioritise issues (threats)	Rating of 1 (most important) to 4 (least important).	Steven W. Evans
13:00 – 14:00	**60**	**LUNCH**		
14:00 – 15:30	90	Draft Objectives Consider the life-span of the Action Plan (3 – 5 years).	Group – Cards. Each group drafts Objectives. Discusses the life-span of the Action Plan.	Steven W. Evans
15:30 – 16:00	**30**	**Teal/Coffee**		
16:00 – 17:30	90	Report back to plenary on Objectives.	Plenary. Each group presents their Objectives. Should be 4 – 8 Objectives in total. Discussion & refinement.	Steven W. Evans
17:30 – 18:00	30	Prioritise the Objectives.	Plenary. Rating of 1 (most important) to 4 (least important).	Steven W. Evans
18:00 – 18:05		Evaluation	Happy, medium, sad face.	Steven W. Evans
19:00 -		**DINNER**		

Friday 08th August 2003: Day 3.				
08:30 – 09:00	30	Recap of day 2.		
09:00 – 10:00	60	Agree the Vision and Aim of the Action Plan.	Plenary – Flipchart. Use a change in the threat status of the species as a measurable outcome.	Steven W. Evans
10:00 – 11:30	90	Formulation of Project Concepts.	Groups – Cards. Project Concepts must be directed at achievement of each Objective. Should be 4 – 8 Project Concepts per Objective. Tea/Coffee available at 10:30.	Steven W. Evans
11:30 – 12:30	60	Report back to plenary on Project Concepts.	Plenary – Cards. Each group presents their Project Concepts.	Steven W. Evans
12:30 – 13:30	**60**	**LUNCH**		
14:00 – 15:00	60	Completion of Projects Table	Groups – Cards Headings: Policy & Legislation, Species & Habitat, Monitoring & Research, Public Awareness & Training, Community Involvement. Tea/Coffee available at 15:30.	Steven W. Evans
15:00 – 16:00	60	Report back to plenary on completed Projects Table.	Plenary – Cards. Each group presents their Project Table.	Steven W. Evans
16:00 – 17:00	60	Action Plan Monitoring & Evaluation Plan.	Plenary. Participants consider who & how and how often the Action Plan implementation will be monitored and evaluated.	Steven W. Evans
17:00 – 17:30	30	Adoption of the Action Plan.	The entire plan is reviewed. Any changes needed are discussed and made. A participant proposes the plan be adopted and seconded by another participant.	Steven W. Evans
17:30 – 17:45	**15**	**Workshop close.**	**Votes of thanks.**	**Deon Coetzee / Malcolm Drummond / Steven W. Evans**
17:45 – 18:00	**15**	**Final Evaluation**	**Happy, medium, sad face**	**Steven W. Evans**

APPENDIX 2: Considerations when describing objectives.

Botswana Wattled Crane Action Plan Stakeholder Workshop, 06 – 08 August 2003.

OBJECTIVES:

The objectives that are determined appropriate for the Wattled Crane Action Plan must be **SMART**.

Specific – it must be clear to everyone what needs to be done, avoid any vagueness or ambiguity.

Measurable – what you measure what you get. If you cannot measure whether you have achieved an objective how will you know that you have achieved it or be able to tell others that it has been achieved?

Agreed – consensus should be reached on each objective.

Realistic – can the objective be achieved in the available time, are the resources needed available or can they needed be secured in the available time?

Timely – a definite end time for when achievement of the objective is expected must be specified.

APPENDIX 3: Considerations when describing project concepts.

PROJECT CONCEPTS.

The following filters should be considered when developing project concepts for the Wattled Crane Action Plan.

- Is the project relevant?
- Does it contribute to achieving the overall aim of the Wattled Crane Action Plan?
- Does it contribute to finding a solution to a priority problem(s)?
- Does it fall within the core competencies of those responsible for implementation?
- Does it fall within the mandate of those being considered responsible for its implementation?
- Is the capacity available to do it?
- Will the project have the desired impact?
- Can funding be obtained to complete the project?
- Is the project scientifically sound?
- Are all the appropriate role players (stakeholders) involved?

Each project concept contributes to achieving an objective. Each objective contributes to achieving the aim of the Wattled Crane Action Plan. The Action Plan contributes to conserving Wattled Crane.

APPENDIX 4: Profile of BirdLife Botswana

BirdLife Botswana was originally a branch of the Botswana Society and was known as the Botswana Bird Club from 1980 when it started. In 2000, the name was changed to BirdLife Botswana to reflect the shift in focus from a broadly social club with interests in bird conservation, to a more formal science and research based organisation. BirdLife Botswana has its own head office in Gaborone, and an established branch office in Maun. In 2000 BirdLife Botswana became the official BirdLife International representative for Botswana. BirdLife Botswana has a membership of 200.

Mission of organisation:

BirdLife Botswana aims to promote the conservation of birds and their habitats in Botswana.

Major programmes/areas of work: 12 Important Bird Areas (IBAs) within Botswana have been identified and their details published. A particularly significant and successful BirdLife Botswana programme, undertaken by the BirdLife Botswana Crane Working Group based in Maun, has been to monitor the population and breeding success of Wattled Cranes *Bugeranus carunculatus* in the Okavango Delta. A Species Action Plan for Wattled Cranes in Botswana was recently compiled following a workshop held in Maun. Monitoring of most IBAs is ongoing with detailed monitoring of the two Cape Vulture *Gyps coprotheres* (Vulnerable) colonies and of smaller wetland IBAs. Bi-annual waterbird counts have taken place since 1991, and have been published in association with Wetlands International.

Since 1980, the journal "Babbler" has been published biannually, and a quarterly newsletter, "The Familiar Chat" has been published since 1990. Both publications have been produced by the dedicated efforts of a succession of volunteer editors.

Small-scale research is underway, investigating breeding patterns of Southern Ground Hornbill *Bucorvus leadbeateri* and comparing data from Maun area with those from a protected area, Moremi Game Reserve. Breeding records of Botswana`s birds have been compiled for many years and these are currently being computerised as are records of scarce or endangered species.

BirdLife Botswana is also heavily involved in education and outreach , and voluntary staff working closely with governmental agencies and schools have undertaken considerable education work. Materials have been produced to encourage greater awareness of birds and the environment. BirdLife Botswana's website is www.birdlifebotswana.org.bw

BLB is carrying out an active localisation policy and is currently sponsoring a local post graduate student to undertake an MSc in Conservation Biology at the University of Cape Town, Percy Fitzpatrick Institute in South Africa. The aim is to raise sponsorship to employ the graduate student to secure the future of this relevant and necessary organisation. Currently BLB has one full-time member of staff. During 2004, BirdLife Botswana intends to employ a second full-time member of staff.

Future plans: Wattled Crane aerial surveys will continue, alongside a community outreach programme aimed at conserving the birds' habitat. There are plans to monitor the most important IBA, the Okavango Delta, focusing on the Slaty Egret *Egretta vinaceigula* (Vulnerable), one of Botswana's most threatened species.

A Tour Division is being established to organise and operate birdwatching tours to Botswana. The proceeds will help BirdLife Botswana's conservation efforts.

APPENDIX 5: Profile of BirdLife South Africa.

Description and Mission

BirdLife South Africa (BLSA) is an 8000-member, nationwide, conservation and birding non-government organisation with 27 branches and 18 affiliates around South Africa. Founded in 1930 as the Southern African Ornithological Society, the name was changed to BirdLife South Africa in 1996.

The mission of BirdLife South Africa is to promote the enjoyment, conservation, study and understanding of wild birds and their habitats. Increasingly, the context of BirdLife South Africa is about taking action for birds through people at all levels of South African society.

History and development

Founded as a scientific society for the study of ornithology, the membership grew in the 1970s and 1980s to include a significant component of recreational birders, organized through local branches. In 1995, the Council of the Society determined a new direction to develop education and conservation action programmes, to be given effect through the appointment of a professional executive. A full-time director was appointed from 1 January 1996. The impetus and funding for action programmes increased with links to the BirdLife International partnership that began in 1996.

The Society has developed rapidly. Since 1996, annual budgets have grown from about R300 000 to over R8 million in 2003, and from 2 part-time staff members in 1995 to the current 36 full-time and part-time staff. Programmes have increased from none to nineteen. The Society now plays a significant role in training, education, conservation, guide training, skills upliftment, job creation and avitourism. The Society owns its own headquarters (the Lewis House, donated by the Tony and Lisette Lewis Foundation) in Johannesburg, has the Wakkerstroom guide training and avitourism centre, and programme staff in Cape Town and Richards Bay. In 2004, a field officer will be located in the Eastern Cape.

BirdLife International

BirdLife South Africa is the Partner in South Africa of BirdLife International, which is the world's largest voluntary coalition of nationally based conservation organisations, represented by 2.5 million members in 106 countries. A secretariat based in Cambridge, England, provides the central administration for regional partnerships within BirdLife International. The African Partnership, in which BirdLife South Africa plays a vital role, includes 18 African countries and is supported by a secretariat in Nairobi, Kenya..

BirdLife South Africa subscribes to the mission and values of BirdLife International, encapsulated through the themes of "Species, Sites, Habitats and People". BirdLife South Africa is represented by its Director on the African Regional Committee and he represents Africa on the Global Council of BirdLife International. These links allow BLSA to influence international conservation action through the collective strength of the coalition.

BirdLife South Africa takes part in several international programmes, We play a major role in the African Species working group of BirdLife International, and the seabird programme in Cape Town is part of the international programme to reduce seabird mortality as a bycatch of the longlining industry. The Richards Bay Rio Tinto programme is global and coordinated by BirdLife International. International programmes may expand significantly in the future, with four applications under development at present.

The RSPB (Royal Society for the Protection of Birds - the United Kingdom Partner of BirdLife International) has played a vital role with an in-country support programme for BirdLife South Africa, conducted within the context of the BirdLife International Partnership.

Publications and media

BirdLife South Africa publishes its own quarterly, national newsletter for its 8 000 members. This is a well-read, 40-page, word-heavy newsletter with advertising, which updates members on all our activities. Eight pages are published for the Society in each issue of *Africa – Birds & Birding*, which is renowned for its superb photographs and excellent text. It has a current circulation of
19 000 with a readership of about 120 000, and received the PICA award for best magazine in 1999 and 2000. Since 1930, BirdLife South Africa has published *Ostrich*, the premier scientific journal of ornithology in Africa. *Ostrich* has been the medium of choice for the publication of the proceedings of the four-yearly Pan-African Ornithological Congresses.

BirdLife South Africa has a website at www.birdlife.org.za, funded by Sasol, that contains much information about the Society, its activities, birds and birding. The site contains many useful facilities, such as a southern Africa bird finder and links to other complementary websites. It is currently receiving in excess of 1 000 visits a day.

In conjunction with the Avian Demography Unit at the University of Cape Town, we have published the *Atlas of Southern African Birds*, *The Important Bird Areas in Southern Africa* and the *Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland*. There have also been a number of other publications such as the *Nature and Value of Birding in South Africa*.

Structure

BirdLife South Africa's constitution defines a governing Council, which meets a minimum of twice annually and includes member representatives and designated members. Certain responsibilities and financial management have been delegated to the Board of Management, which meets six times a year.

Essentially, branches run recreational birding programmes with central elements of outings, indoor meetings and a newsletter. Many branches have conservation and education programmes.

The secretariat provides administration for membership and national programmes, fundraising, public relations and management of publications and formal meetings.

Programmes

The Sites and Species Programme, formerly the Important Bird Areas programme funded by the Global Environmental Facility, is funded by multiple sources. The programme centres on the conservation of a network of 121 sites in South Africa that are critical for the long-term survival of threatened species and focuses on threatened birds defined in a global Red list. It is run by Steven Evans.

The Learning for Sustainable Living Programme was started in 1998 and was funded by the British National Lottery, sourced by and managed in partnership with the RSPB. The programme has created a resource for all South African 9-13 year-olds using the environment to deliver various learning areas in the context of Outcomes-based education. As well as providing workbooks, teachers and subject advisers are trained through participation in workshops to use the resource in schools throughout South Africa. In June 2003, this project won the Green Trust Award for best environmental education programme. From 2004 this programme will be funded by South African sources.

The Wakkerstroom Programme began in 1998 with a grant of R1 million from Sappi. It is a multi-functional conservation, education and awareness facility situated on a farm adjacent to the Wakkerstroom wetland in Mpumalanga, in the heart of the proposed 1 500 000 hectare Ekangal Conservation Area. The centre promotes ecotourism and offers accommodation and camping, and is the home of the Guide Training programme. The facility is also available for hire for fully catered training courses, meetings and conferences. BirdLife South Africa has established a permanent bird-ringing site at the facility. David Nkhosi is a world-famous guide oerating from these premises. Nigel Anderson manages the programme.

The Guide Training Programme was initiated through funding from Sasol in 1999 and has since trained 120 persons from previously disadvantaged communities as bird guides. The programme is evolving rapidly in

association with the government-driven initiative to regulate the guiding industry in South Africa. Ecotourism, and bird-guiding in particular, is a core focus of sustainable development programmes in South Africa. We are seeking to involve the broader South African community in bird conservation by creating ownership and economic development relating to birds through birding tourism. Andre Botha and John Isom run this programme.

The Seabird programme, founded in 1997, focuses on the conservation of seabirds by reduction of longlining mortality through the introduction of mitigation measures and awareness in South Africa waters. The programme officer is Samantha Petersen.

The Building on Experience Programme is funded by the British High Commission and began in 2002. A tried and tested BirdLife International and RSPB framework is used to train selected representatives in governance, administration and management. The programme will run for the second year in 2004, and will eventually provide assistance to 40 conservation NGOs from the previously disadvantaged sectors in organisational development. Andre Botha manages this programme.

The Richards Bay Rio Tinto Programme. Funded by Rio Tinto and Richards Bay Minerals, it began in 2002 and aims to promote the awareness and conservation of birds through avitourism. Through the creation of a partnership with Richards Bay Minerals and a range of local stakeholders, the programme will expand and enhance the operation of the Zululand Birding Route and create a network of birding sites with trained guides from local communities, and market this resource nationally and internationally. The programme aims to ensure the long-term survival of birds in Richards Bay and greater Zululand area through awareness, job creation and input into long-term planning, and thus also promote the value of birds and natural habitats in a far wider area. Duncan Pritchard is the programme coordinator with Sakhamuzi Mhlongo, the development officer / community liaison officer.

The Oppenheimer De Beers Programme is funded by the Oppenheimer Family and De Beers and began in 2003. It is a broad-based initiative using skills development and will use education, research and monitoring, and development of birding tourism to create an array of opportunities at some of the sites owned by the Oppenheimer Trust and De Beers in southern Africa. This programme is part of the much larger Kopanang initiative led by the Oppenheimer businesses and the Department of Environmental Affairs and Tourism. The objective is to integrate a range of NGOs and organisations in a synergistic programme to empower communities to create a sustainable environment. It will initially concentrate on the Oppenheimer and De Beers properties and their surrounding communities. Soza Simango is the Programme Manager.

The Braamhoek programme is a result of the mitigation process for the building of a new pumped storage scheme on the Drakensberg escarpment. A partnership between Eskom, BirdLife South Africa and Middelpunt Wetland Trust has been established to deliver important bird and habitat conservation results on a regional, national and international scale. Several farms will be consolidated into a single unit, the Bedford Wetland Park, which will be managed for effective conservation. Fairly extensive gully and sheet erosion and damage to the wetland will be rehabilitated.

Northern Cape Birding and Eco-Guide Development Initiative. R 200 000 has been provided by the National Lotteries Board to train bird guides for Important Bird Areas in the Northern Cape. One component of this project is the establishment of BirdLife's first branch in this Province. The programme builds on a process developed at the Blue Swallow Natural Heritage Site IBA in Kaapschehoop. It is managed by Steven Evans and implemented by Duan Biggs.

Rudd's Lark Study. David Maphisa is undertaking an MSc on Rudd's Lark in a three-way partnership between the Percy Fitzpatrick Institute of African Ornithology, the RSPB and BirdLife South Africa, funded by the RSPB. Rudd's Lark is the only South African species listed as Critically Endangered in the Threatened Birds of the World. This project will help develop our species programme and produce an experienced black researcher.

Tourism Programmes. BirdLife South Africa is developing avitourism through the implementation of community-based BirdLife Birding Routes. The birding routes will combine existing resources into exciting avitourism destinations that will conform to standards agreed with the Department of Environmental Affairs and Tourism. These will ensure not only high standards of service and product quality, but also the mechanisms to drive community participation and transformation. The Richards Bay Rio Tinto initiative forms part of the foundation of this programme. Funding has been received for three birding routes. Soutpansberg Birding route has been funded by the Jensen Foundation, and seeks to support the creation of a Soutpansberg birding route.

Staff members involved are Steven Evans and John Isom. Overberg Birding Route has received funding in 2004 to create a birding route in the south-western Cape, centred in the Overberg area, and is managed by Anton Odendal. The development of the Mpumalanga Birding Route centred on Nelspruit is supported by funding from Germany, and is managed by John Isom.

BirdLife Travel seeks to promote Birding tourism in South Africa, channelling birders through birding routes and seeking to support conservation of birds through adding value in terms of sustainable and responsible tourism.

Cape Parrot Working Group. This became a working group of BirdLife South Africa in 2003 with a full-time officer to be situated in the Eastern Cape in 2004. The programme focuses on field action for the highly endangered Cape Parrot.

Clear Channel Bird Sanctuary. This is an urban bird sanctuary in Sandton area funded by Clear Channel Independent.

The National Trust of BirdLife South Africa funds tertiary research and other educational activities. Expenditure is financed by income from the trust's capital.

Partnerships

BirdLife South Africa seeks to build long-term partnerships with partners such as corporates, aid agencies and NGOs. Such partnerships should be mutually beneficial, addressing the needs of all parties. BirdLife South Africa believes that it represents quality branding and seeks to involve appropriate institutions to further its aims. A Corporate Policy governs partnerships with companies. Some partnership details, not previously described, are itemised below.

Avian Demography Unit (ADU) at the University of Cape Town. There are a number of monitoring programmes, including CAR (Coordinated Avifaunal Road Counts), BIRP (Birds in Reserves Project), CWAC (Coordinated Wetland Counts) and SAFRING (the South African Bird Ringing Unit), managed by the ADU, participated in through data collection by BirdLife South Africa members and supported financially by the Society.

The Percy Fitzpatrick Institute of African Ornithology houses BirdLife South Africa's extensive book and journal holdings in the Niven Library at the University of Cape Town and provides an office for the seabird programme.

Endangered Wildlife Trust (EWT). Steven Evans, IBA officer at BirdLife South Africa, is also manager of the Blue Swallow Working Group of the Endangered Wildlife Trust. We are developing closer ties with the South African Crane Working Group of the EWT.

Worldwide Fund for Nature South Africa. BirdLife South Africa has close ties with WWF-SA established primarily through the Sappi-WWF-SA Wakkerstroom centre, and which now also includes the education, Richards Bay Avitourism and seabird conservation programmes, for which WWF-SA has provided funding.

Middelpunt Wetland Trust. The Middelpunt wetland Trust was founded to research and take action for the White-winged Flufttail in South Africa and Ethiopia has achieved significant successes over the years. Through the Braamhoek programme, BirdLife South Africa has established a formal working partnership with the trust.

Corporates. BirdLife South Africa has current or past major programmes or donations with several corporates, including Sasol (Guide-training programme and many smaller programmes), Sappi (Sappi-WWF-SA Wakkerstroom centre), E. Oppenheimer & Son and De Beers (Oppenheimer De Beers programme), Richards Bay Minerals and Rio Tinto (Richards Bay Avitourism programme), Anglo American (Education and Wakkerstroom facilities), Mazda Wildlife Fund (Sites and Species programme and Wakkerstroom) and Eskom (Braamhoek programme and Red Data for Birds).

International Conferences

In 1998, BirdLife South Africa hosted the very successful 22nd International Ornithological Congress (IOC) in Durban with 1 100 delegates, combining it with a National Festival of Birds and Exhibition. This was the first IOC to be held on the African continent. In October 2001, BirdLife South Africa managed the launch of the Directory of Important Bird Areas for Africa. We will host the four-yearly World Congress of BirdLife International in February 2004 in Durban, with an anticipated 600 delegates from 115 countries – also a first for Africa.

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