BOTSWANA’S
Important Bird Areas

Status and Trends Report
2011

Compiled by

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Disclaimer:
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FOREWORD

Over the years there have been several challenges to biodiversity conservation and establishment of protected areas. These challenges have mainly come from pressures due to increasing human population and infrastructure development. Presently, direct human impacts on biodiversity are felt in even the most remote areas.

Management decisions that are not based on scientific information could result in further loss of pristine areas that could otherwise function as ‘source’ areas for many wildlife resources. It is therefore crucial that research and monitoring of activities in and around conservation areas be conducted, to assure that conservation areas are sustainably used. Such monitoring would allow for any major changes to the environment that could be threatening to the biodiversity to be quickly realized and dealt with. The Important Bird Areas (IBAs) monitoring programme came at a time when authorities of wildlife resources had not been paying sufficient attention to other important components of biodiversity, such as birds. The project “Instituting effective monitoring of Protected Areas (Important Bird Areas) as a contribution to reducing the rate of biodiversity loss in Africa” funded by European Commision (EU), has therefore been a positive contribution to the monitoring exercise that the Department of Wildlife and National Parks have been undertaking in its management activities of Botswana’s protected areas. This has provided a platform to quickly detect and address environmental changes in these critical biodiversity areas.

The Department of Wildlife and National Parks and BirdLife Botswana would like to sincerely thank the European Commission and Global Environment Facility/United Nations Development Programme (GEF/UNDP) for their generous financial support towards the Important Bird Area (IBA) monitoring exercise. Much appreciation also goes to DWNP park managers who showed tremendous support and availed enthusiastic staff members for training; these staff members subsequently contributed immensely to data collection in protected Important Bird Areas. We thank all members of staff of BirdLife Botswana for their input and support. We would also like to thank members of community groups for their co-operation and keen interest in biodiversity conservation. Other contributors include individual researchers, guides and tourists.

We are grateful to BirdLife International and the Royal Society for the Protection of Birds for their technical support. Once again, we would like to thank all those who compiled the report, we hope it provides much needed information of the different IBAs, and proper feed back to the data collectors and the managers of the IBAs.

Signed:

Charles Mojalemotho
Director, DWNP

Harold Hester
Chairman, BLB
## ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>BLAPS</td>
<td>BirdLife International Africa Partnership Secretariat</td>
</tr>
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<td>BLB</td>
<td>BirdLife Botswana</td>
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<td>BLI</td>
<td>BirdLife International</td>
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<tr>
<td>CBD</td>
<td>Convention on Biological Diversity</td>
</tr>
<tr>
<td>CBO</td>
<td>Community Based Organisation</td>
</tr>
<tr>
<td>CKGR</td>
<td>Central Kalahari Game Reserve</td>
</tr>
<tr>
<td>DEA</td>
<td>Department of Environmental Affairs</td>
</tr>
<tr>
<td>DFRR</td>
<td>Department of Forestry and Range Resources</td>
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<tr>
<td>DWNP</td>
<td>Department of Wildlife and National Parks</td>
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<tr>
<td>EIS</td>
<td>Environmental Information System</td>
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<tr>
<td>EU</td>
<td>European Commission</td>
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<td>GEF</td>
<td>Global Environment Facility</td>
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<td>IBA</td>
<td>Important Bird Area</td>
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<tr>
<td>IUCN</td>
<td>International Union for the Conservation of Nature</td>
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<tr>
<td>KTP</td>
<td>Kgalagadi Transfrontier Park</td>
</tr>
<tr>
<td>PA</td>
<td>Protected Area</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
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<tr>
<td>RSPB</td>
<td>Royal Society For the Protection of Birds</td>
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<td>WBDB</td>
<td>World Biodiversity Database</td>
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EXECUTIVE SUMMARY

The Important Bird Area (IBA) Programme was established by BirdLife International as a global initiative to identify, protect and manage a network of sites that are important for the long term viability of naturally occurring bird populations, across the geographical range of those species for which a site based approach is appropriate. In Africa, one of the recent initiatives of the programme is a project **Instituting effective monitoring of Protected Areas (Important Bird Areas) as a contribution to reducing the rate of biodiversity loss in Africa**. Funded by the European Union, this project was implemented from 2007 to 2011, in eight African countries (Botswana, Burkina Faso, Burundi, Kenya, Tunisia, Uganda, Zambia and Zimbabwe). It adopted the methodology of using birds as environmental indicator species. The methodology used is the State–Pressure–Response model.

In 2009 and 2008, there were gaps in information collected while at some sites, no data was collected at all. This was mainly due to staff turnover in protected area management and low participation by some community based organisations. There were good rains in 2010 and 2011, and the highest numbers of trigger species were found in the Okavango and Makgadikgadi (Wattled Crane and Slaty Egret), while flamingos bred successfully in the Makgadikgadi (McCulloch *et al* 2010). In 2011, Lake Ngami provided excellent breeding opportunities for most of waterbirds as it flooded to its greatest extent (250 km²). Over the period 2008 to 2011, most of the IBAs enjoyed some form of legal protection hence the better state of the environment. However, the state of biodiversity at Phakalane Sewage Ponds has been highly threatened by continual water and land pollution, disturbance and direct persecution of birds and their eggs and overexploitation of fish. BirdLife Botswana's efforts to restore the area have not succeeded.

As this is the fourth status and trend report for Botswana’s IBAs/PAs, the status of biodiversity has been stable with minimal increase over the years. Key threats identified include fires, direct and indirect persecution of species, and unregulated hunting. From 2008 to 2011, conservation measures are increasing as there are more interventions at sites as well as improvements in environmental policies and legislations.

For the programme to become even more useful there is need for more training sessions and wider range of recorders. The collaborating partners (DWNP and DEA) need to mainstream biodiversity monitoring in virtually all sectors and provide necessary support to recorders in their organisations. Community Based Organisations and the private sectors on the other hand should relate biodiversity monitoring to livelihood improvements and business development. BirdLife Botswana, the coordinating agency should also source more funding to continue with technical support.
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1.0 INTRODUCTION

Botswana’s main biogeographic zones comprise of three types of systems: (1) the relatively wetter conditions in the northern part of the country (which is part of one of the five high biodiversity areas in the world, the Miombo-Mopane woodlands of southern Africa, (Mittermeier et al. 2003), (2) the semi arid conditions of the Kalahari desert which comprises about 80% of the surface area of the country and (3) hardveld in the eastern side of Botswana.

The Department of Wildlife and National Parks is tasked with the responsibility of conserving and managing the country’s wildlife resources and their habitats. About 40% of the Botswana’s land area has been devoted to protected areas, with 17% being national parks and game reserves, where wildlife off-take is prohibited and about 22% earmarked for wildlife management areas and forest reserves which allow some form of utilization by the communities and concessioners.

It is thus evident that wildlife is a major land-use. However, the country’s wildlife faces several challenges ranging from increased demands for more land for agricultural activities, infrastructure development, and use/access of/to veldt products from protected areas. These challenges can come at the cost of the integrity of wildlife resources, which hold great potential for economic diversification of the country’s economy. The Government of Botswana is therefore faced with a mammoth task of ensuring sustainable conservation and at the same time improving economic benefits from wildlife resources through both consumptive and non-consumptive uses. Management of wildlife resources in Botswana has for a long time attracted contributions from several stakeholders, and one stakeholder that has made immense contribution to conservation in Botswana is BirdLife Botswana.

1.1 THE ROLE OF BIRDLIFE BOTSWANA IN CONSERVATION

BirdLife Botswana was established in 1980, as a social bird-watching club, Botswana Bird Club. In 2000, the club became an affiliate of BirdLife International (a global Partnership of conservation organisations that strives to conserve birds, their habitats and global biodiversity by working with people towards sustainability in the use of natural resources, see www.birdlife.org). This affiliation stemmed the birth of BirdLife Botswana (BLB). The name change also signalled a shift from a predominantly bird-watching club to conservation Non Governmental Organisation. BirdLife Botswana is a membership-based organization, consisting of corporate, individual, professional and environmental clubs’ members. BirdLife Botswana is the only organisation in the country that carries out research and monitoring of bird distributions and populations, results of which are made publicly available in their journal, Babbler, and popular newsletters, Familiar Chat and Birds & People, as well as their website, www.birdlifebotswana.org.bw.

MISSION

BirdLife Botswana aims to conserve birds, their habitats and global biodiversity, working with people towards sustainability in the use of natural resources.

PURPOSE

BirdLife aims to conserve species, sites and habitats so as to:

- Prevent the extinction of any bird species in the wild;
- Maintain and where possible improve the conservation status of all bird species;
- Conserve and where possible improve and enlarge sites and habitats important for birds;
- Help, through birds, to conserve biodiversity and to improve the quality of people’s lives; and,
- Integrate bird conservation into sustaining people’s livelihood.
The birth of BirdLife Botswana saw the organization being more involved in conservation issues and has resulted in the running and implementation of several conservation initiatives. BirdLife Botswana has been involved in the following conservation and monitoring programmes throughout the country:

2. Waterfowl Monitoring.
3. Important Bird Area Monitoring.
4. Species-specific Monitoring.

One programme that BirdLife Botswana has implemented over the past few years, in partnership with the Department of Wildlife and National Parks (DWNP), is the Important Bird Areas (IBA) monitoring programme which this report is focused on. This four-year project (2007-2011) was titled “Instituting effective monitoring of protected areas (Important Bird Areas) as a contribution to reducing the rate of biodiversity loss in Africa.” This report present the status and trends of IBAs in Botswana, and is a product of continued collaboration between BirdLife Botswana and the Department of Wildlife and National Parks.

1.2. OVERALL GOAL OF THE PROJECT.

With the realization that IBA monitoring was not coordinated in most countries, the project (Instituting effective monitoring of protected areas (Important Bird Areas) as a contribution to reducing the rate of biodiversity loss in Africa) was initiated by BirdLife partners in eight African countries to foster the support from the national agencies mandated to manage biodiversity in protected areas to ensure that the process of monitoring is sustainable and embedded as a core activity that is undertaken on a routine basis by the responsible authorities. In Botswana, at the institutional and operational level, the Department of Wildlife and National Parks is mandated to manage and monitor biodiversity inside PAs. The project aimed to achieve its goals through ensuring that appropriate capacity for monitoring and sustaining all stages of biodiversity monitoring at protected areas was built within DWNP. The monitoring process has also generated information that is widely available and can be used by the relevant institutions to influence policy and management actions at various levels.

Birds as a group, have many advantages as proxies for the status of biodiversity in general. They are better-researched than most other taxa, and have been shown to be effective indicators of biodiversity richness as opposed to other animals and plant groups (Fishpool & Evans 2001). Birds have also been recognized as an excellent indicator for environmental health, especially in detailed studies where summary biodiversity assessment data from a range of species may be obtained.

This project aims to use IBA trigger species to facilitate a coordinated and sustainable monitoring programme of indicators of biodiversity and ecosystem health at the project’s target sites. In Botswana the programme successfully gained full support, and has been taken up by the Department of Wildlife and National Parks, as one of their most important internal process of monitoring protected areas.

1.3 AIMS OF THIS REPORT

The aim of this report is to outline the status and trends (2008 to 2011) of the habitat and species, with respect to pressures or threats and conservation efforts at PAs overlapping Important Bird Areas. The 2011 findings are compared with the past three years (2008–2010) to determine trends in status, threats and responses at the respective IBAs.
2.0 BACKGROUND ON THE IBA PROGRAMME

This section gives a synopsis on what IBAs are, international IBA categories, IBAs found in Botswana, and lastly a brief description of each IBA in Botswana.

2.1 WHAT ARE IBAS?

IBAs are sites of global conservation importance for birds and other biodiversity identified using standard internationally-agreed criteria, which are objective, quantitative and scientifically defensible. The sites must, wherever possible, be large enough to support self-sustaining populations of those species for which they are important. These sites are distinct areas amenable for practical conservation and part of a wider, integrated approach to conservation and sustainable use that embraces sites, species, habitats, and people.

IBAs are identified on the basis of the presence of globally threatened species, range restricted species, and biome restricted species or congregations. Species, which qualified a site as an IBA are referred to as ‘trigger’ species. See Appendix 2 for a list of the trigger species identified for each of Botswana’s protected IBAs.

Most IBAs in Botswana are protected areas which therefore enjoy some form of protection. However there is an increasing concern on how much biodiversity the protected areas can harbour, and for how long (Sinclair et al. 2002), as protected areas are continually threatened by human population encroachment, and unsound management policies such as improper fire management practices (Parr & Andersen 2006, Parr & Brockett 1999, Parr & Chown 2003). This therefore inevitably calls for monitoring, and subsequent development and implementation of management strategies that will ensure the sustainable conservation of these critical habitats and their associated species.

Box 1- Birds of Conservation Concern In Botswana

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>IUCN STATUS</th>
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<tbody>
<tr>
<td>Slaty Egret <em>Egretta vinaceigula</em></td>
<td>Vulnerable</td>
</tr>
<tr>
<td>Bateleur <em>Terathopius ecaudatus</em></td>
<td>Vulnerable</td>
</tr>
<tr>
<td>White-headed Vulture <em>Aegypius occipitalis</em></td>
<td>Vulnerable</td>
</tr>
<tr>
<td>Lappet-faced Vulture <em>Aegypius tracheliotos</em></td>
<td>Vulnerable</td>
</tr>
<tr>
<td>Cape Vulture <em>Gyps coprotheres</em></td>
<td>Vulnerable</td>
</tr>
<tr>
<td>Wattled Crane <em>Bugeranus carunculatus</em></td>
<td>Vulnerable</td>
</tr>
<tr>
<td>Southern Ground Hornbill <em>Bucorvus leadbeateri</em></td>
<td>Vulnerable</td>
</tr>
<tr>
<td>Lesser Kestrel <em>Falco naumanni</em></td>
<td>Vulnerable</td>
</tr>
<tr>
<td>Black-winged Pratincole <em>Glareola nardmwanni</em></td>
<td>Near Threatened</td>
</tr>
<tr>
<td>Hooded Vulture <em>Necrosyrtes monachus</em></td>
<td>Near Threatened</td>
</tr>
<tr>
<td>White-backed Vulture <em>Gyps africanus</em></td>
<td>Near Threatened</td>
</tr>
<tr>
<td>Lesser Flamingo <em>Phoenicopnaias minor</em></td>
<td>Near Threatened</td>
</tr>
<tr>
<td>Martial Eagle <em>Polemaetus bellicosus</em></td>
<td>Near Threatened</td>
</tr>
<tr>
<td>Pallid Harrier <em>Circus macrourus</em></td>
<td>Near Threatened</td>
</tr>
<tr>
<td>Grey Crowned Crane <em>Balearica regulorum</em></td>
<td>Near Threatened</td>
</tr>
<tr>
<td>Chestnut-banded Plover <em>Charadrius pallidus</em></td>
<td>Near Threatened</td>
</tr>
<tr>
<td>European Roller <em>Coracias garrulus</em></td>
<td>Near Threatened</td>
</tr>
<tr>
<td>Kori Bustard <em>Ardeotis kori</em></td>
<td>Near Threatened</td>
</tr>
<tr>
<td>Maccoa Duck <em>Oxyura maccoa</em></td>
<td>Near Threatened</td>
</tr>
<tr>
<td>African Skimmer <em>Rynchops flavirostris</em></td>
<td>Near Threatened</td>
</tr>
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</table>

2.2 RECOGNISED IBA CATEGORIES

There are different categories of IBAs, identified are chosen using objective and quantitative criteria (Fishpool & Evans 2001) to ensure consistency, and enable comparison of IBAs at national, regional and global level. Categories used in the selection of IBAs are as follows:

**CATEGORY A1: Habitat for Globally Threatened Species**
These are sites regularly holding significant numbers of a globally threatened species (as per the IUCN Red List), or other species of global conservation concern.

**CATEGORY A2: Habitat for Restricted–Range Assemblages**
These are sites known or thought to hold a significant component of a restricted-range species whose breeding distributions define an Endemic Bird Area (EBA) or Secondary Area (SA).

**CATEGORY A3: Habitat for Biome-Restricted Assemblages**
These are sites known or thought to hold a significant component of a group of species whose distributions are largely or wholly confined to one biome.

**CATEGORY A4: Habitat for Congregations**
- They are sites known or thought to hold, on a regular basis
  - i. ≥1% of a biogeographic population of a congregatory waterbirds species
  - ii. ≥1% of the global population of a congregatory seabird or terrestrial species
  - iii. ≥20,000 waterbirds or ≥10,000 pairs of seabirds of one or more species
  - iv. exceed thresholds set for migratory species at bottleneck sites

2.3 THE IBA PROGRAMME

As mentioned in the introduction, Important Bird Area Monitoring is a broad, global programme seeking to identify, document section 2.1, and work towards the conservation and sustainable management of globally important areas for bird conservation. Activities of the programme include:

- (1) Species conservation;
- (2) Conserving habitats;
- (3) Empowering people near IBAs to sustainably manage biodiversity
1. CONSERVATION OF SPECIES

This aspect of the programme strives to conserve bird species whose populations are threatened nationally, regionally, or globally, or are of economic and/or social importance. In Botswana, there are several species of conservation concern (Box 1). Monitoring of Important Bird Areas has been an integral part of addressing management needs of species of conservation concern.

2. CONSERVATION OF HABITATS

Conservation of protected areas and the wider environment forms the core of the IBA programme. Habitat conservation has been achieved through monitoring threats and instigating remedial actions, restoring degraded sites, and evaluating/updating of protected area management plans and supporting their implementation.

3. EMPOWERING PEOPLE

All BirdLife Partners work with local communities by empowering them to make informed decisions about natural resources in their areas. This is achieved by capacity building for biodiversity conservation. The “Instituting effective monitoring of Protected Areas (Important Bird Areas) as a contribution to reducing the rate of biodiversity loss in Africa” project empowered biodiversity-rich and resource-poor African countries to reduce the rate of biodiversity loss and deliver biodiversity trend information meant to stimulate local, national and global action.

The main project activities included:
1. Capacity building for conducting and sustaining all stages of biodiversity monitoring at all IBAs.
2. Institutionalising biodiversity monitoring and effectively co-ordinating management authorities, Park Authorities and local communities.
3. Collecting, analysing and disseminating information on the condition of selected Protected Areas/Important Bird Areas
4. Developing monitoring and evaluating procedures and mechanisms for sustaining biodiversity monitoring beyond the project life.

Nationally, capacity building and training was provided to the Department of Wildlife and National Parks (DWNP), the Department of Environmental Affairs (DEA), local community groups living in and around IBAs, and research institutions. Awareness and understanding of the programme were developed primarily through workshops and production of resource materials, with about 600 people trained to collect monitoring data. The DWNP undertook the bulk of the fieldwork by monitoring ‘IBA trigger species’ at the seven PAs which overlap IBAs. Information was analysed annually with results presented in an annual Biodiversity Status and Trends report:

2.4 IMPORTANT BIRD AREAS OF BOTSWANA

In Botswana there are 12 IBAs (Fig. 1), seven of which are protected areas in the form of national parks and game Reserves, while the remainder are protected under other regulations (e.g. as dams), or are unprotected. The IBAs cover approximately 134,196 km², an area more than 25% of the country’s land surface.

Conservation areas that are managed by the Department of Wildlife and National Parks enjoy relatively better conservation protection and these consist of: two national Parks (Chobe, Makgadikgadi, Linyanti Swamps); one transfrontier conservation area (Kgalagadi Transfrontier Park); three game reserves (Central Kalahari, Khutse and Mannyelanong). There is also the Okavango Delta, protected by the Ramsar Convention of Wetlands.

The other five IBAs are under a different form of governance: these are two (2) artificial water reservoirs (Phakalane Sewage Ponds and Bokaa Dam), Lake Ngami, Tswapong Hills and South–East Botswana.

FIGURE 1. Map of Botswana showing the twelve (12) Important Bird Areas.
2.4.1 BRIEF SITE DESCRIPTION OF EACH IBA (Description of sites: Tyler & Bishop 1998, Setswana Names: Senyatso 2005)

1. BW001: CHOBE NATIONAL PARK

Chobe National Park is an area of about 10,720 km². This site stretches from Moremi Game Reserve to Kasane, spanning 17°45’–19°25’S and 23°50’–25°10’E. It borders the Linyanti and Chobe rivers in the north, and a range of forest reserves in the north-east.

Typical vegetation in the park comprises dry grassland, and woodlands in the uplands and along the two rivers is the seasonally-wet area. Water for wildlife is mainly along the two rivers and some artificial waterholes that are spread out in some sections of the park.

Chobe National Park supports a variety of fauna and avifauna species. It holds the highest densities of many raptors, such as Lappet-faced Vulture (*Torgos tracheliotus*) and Bateleur (*Terathopius ecaudatus*). In November/December, and again in March/April, large numbers of both Palearctic and intra-African migrant raptors pass through the park and over the adjacent Khwai valley in the Okavango Delta.

2. BW002: LINYANTI SWAMPS

The Linyanti swamp is an IBA mainly because of the Slaty Egret (*Egretta vinaceigula*) that is found in that area. The Linyanti River flows from the Angolan highlands, where it is called the Kwando River where it enters Botswana, and then separates to become the Linyanti, Itenge, and Chobe Rivers. The Linyanti River forms the international boundary between the Caprivi Strip and Chobe National Park, forming part of the park’s northern boundary. The main habitats are riparian woodland (including mopane), flood-plain grasslands, swamp vegetation and Kalahari acacia.

3. BW003: OKAVANGO DELTA

The Okavango Delta, the largest Ramsar Site in Southern Africa, has a wide range of habitats than any other wetland in the region. The Okavango Delta is an inland delta fed by the Okavango River that enters Botswana from Angola through Namibia as a single meandering channel, following a minor north-west to south-east rift that forms the ‘Pan handle’ of the delta.

The main habitats in the delta are open clear water (rich in aquatic plants), permanent swamp dominated by paper reed and blooming wonder maiden grass (*Miscanthus sinensis*), seasonal swamps dominated by the common reed, and river flood-plain dominated by grasses. The main land-uses are tourism, sport and subsistence hunting, recreational and artisanal fishing, cutting of grass, sedges and reeds, and gathering of veldt products.
About 450 bird species have been recorded in the delta, of particular note are breeding and visiting Wattled Crane (*Bugeranus carunculatus*) and the near endemic Slaty Egret. The delta is the most important breeding site in the world for the Slaty Egret. A diversity of other wetland birds occur in the delta, notably Great White Pelican (*Pelecanus onocrotanus*) and Pink-backed Pelican (*Pelecanus rufescens*), as well as 18 species of heron (*Ardeidae*).

### 4. BW004: LAKE NGAMI

This is a historic remnant of the old Lake Makgadikgadi. The site covers 25,000 ha of a shallow sedimentary basin south west of the Okavango Delta.

The lake had not been filling up for many years and this has resulted in the growing of woody vegetation in the lake. In recent years more water has been coming in from Angola into the delta and spilling further into the delta spillways which has seen Lake Ngami filling up again and becoming a very important bird areas.

### 5. BW005: MAKGADIKGAI PANS

The Makgadikgadi Pans is a very large and diverse area between 19°40’S–21°30’S, and 24°10’E–26°20’E, once the flat bottom of the old Kalahari Lake, in north-west Botswana. The Makgadikgadi Pans comprise seasonally inundated salt-pans, surrounded by grasslands, low tree-and-bush Acacia savanna and stunted Mopane woodland. There are two main pans, the Sua Pan, fed by the Nata River in the east, and the Ntwetwe Pan in the west. These two large pans are alkaline flats akin to the soda lakes of the Kenyan Rift Valley. The Nata Delta section of Sua Pan rarely dries out completely and is therefore particularly important for waterfowl. When flooded, Sua Pan attracts breeding Lesser Flamingos (*Phoenicopterus minor*) and Greater Flamingos (*Phoenicopterus ruber*).

### 6. BW006: CENTRAL KALAHARI AND KHUTSE GAME RESERVE

This IBA is situated in central Botswana, and comprises Central Kalahari Game Reserve (CKGR) and the adjoining Khutse Game Reserve. It is part of the Kalahari Basin (the world’s largest continuous stretch of sand, stretching from the Orange River up to the Democratic Republic of Congo). Although there are large open grasslands, the Game Reserves are both largely covered with semi-arid shrub savanna and scrub. Fossil riverbeds like the Deception and Okwa valleys mark the positions of rivers which once drained into the ancient Lake Makgadikgadi. There are pans and shallows depressions periodically containing water. The floors of the pans are bare or covered with short grass and herbs, but may occasionally develop into wetlands after heavy rain.

The Central Kalahari and Khutse Game Reserves support Kalahari–Highveld biome birds. The reserves hold good numbers of visiting Lesser Falcon (*Falco naumanni*), Pallid Harrier (*Circus macrourus*), as well as resident grassland species such as Ostrich (*Struthio camelus*) and Kori Bustard (*Ardeotis kori*).
This is a sandstone hill with a high cliff in the hard veldt of South-Eastern Botswana. The hill was declared a Game Reserve in 1965; the cliff and the wooded lower slopes are all fenced. There is no public access within this area except by permission from DWNP. The area is predominantly a conservation area for the Cape Vulture (*Gyps coprotheres*) where an estimate 50-100 breeding pairs usually nests in the cliff.

The Mannyelanong cliff, the two nearby sandstone hills of Otse and Baratani, and a sandstone escarpment, Manyana, about 30 km away, have been used in the past as breeding sites by Cape Vulture; however due to human encroachment and disturbance Mannyelanong is now the only occupied site in south-east Botswana.

Tswapong Hills extends 67 km in eastern Botswana in the hardveld dominated by tree savanna. There are gorges along the hills with precipitous cliffs and seasonal streams. In 1990, there was an estimated 300 breeding pairs of Cape Vultures across the entire mountain range; however in some areas like Machibaba and Kukubye, breeding sites were abandoned due to direct persecution. Presently the only breeding place is Manongnye area in Moremi village.

The site is a reservoir of about 620 ha. It provides drinking water for human consumption. A perimeter fence was once erected by Water Utilities Corporation but it has since been damaged in many sections thus livestock now drink from the dam. Some sections of the shore are open bare mud but there are patches of Papyrus (*Cyperus papyrus*), Common reed (*Phragmites*) and other emergent aquatic vegetation although this is rather sparse and degraded because of pressure from domestic stock. One point on the southern shore is used as a picnic site by weekend visitors. The west side of the north-west arm of the reservoir is fringed by taller trees which support a large mixed heronry.

The dam is surrounded by Acacia savanna, which is used for grazing by many sheep, goats, donkeys and cattle, and away from the reservoir there are some cultivated areas. An estimated total of 650 individual Southern Pochard (*Netta erythrophthalma*) are found in the dam.

These are four rectangular sewage treatment lagoons (with at least 70 ha of water) built in Gaborone North close to Phakalane residential area. They are in a grassland area, surrounded by Acacia savanna. The site lies adjacent to the Ngotwane River. Riparian vegetation along this section of the Ngotwane is dominated by Bushwillow trees (*Combretum*) and there are some open areas of wet grassland. The ponds are used by waterfowl which frequently move from one dam or sewage pond to another.
Phakalane lagoons support a wide diversity of visiting waders and other waterbirds, including both species of flamingo. Of particular note are the high numbers of Maccoa Duck (*Oxyura maccoca*) particularly in the winter; usually 100–200 pairs, but at least 440 individuals were recorded in 1998. The site also typically supports large numbers of Southern Pochard. Small numbers of some duck breed by the lagoons whilst waterbirds, notably Sacred Ibis (*Threskiornis aethiopicus*) and Cattle Egret (*Bubulcus ibis*), roost on dead trees.

**11. BW011: SOUTH –EAST BOTSWANA**

South-east Botswana holds an important population of the restricted-range species Short–clawed Lark (*Certhilauda chuana*), which is widespread and locally abundant in the area. The site holds about 90% of the total world population comprising an estimated 30,000 pairs. Cape Vultures from the breeding colony at Mannyelanong Hill use the area for most of their foraging. The site also supports a number of species which include Orange River Francolin (*Francolinus levaillantoides*) and Long-tailed Widowbird (*Euplectes progne*). A wide range of species restricted to the Kalahari–Highveld biome occur, including Sociable Weaver (*Philetairus socius*).

**12. BW012: Kgalagadi Transfrontier Park**

Kgalagadi Transfrontier Park is a transboundary conservation area comprising about 26,400 km² of the former Gemsbok National Park in Botswana established in 1938, and 9,591 km² of the former Kalahari Gemsbok National Park in South Africa established in 1931. This IBA encompasses the former Mabuasehube Game Reserve.

Vegetation in this area is mainly open Kalahari thorn veldt with tufted perennial grasses and grassed sand dunes towards the south. Vegetation changes along a rainfall gradient from the north (dominated by more water-dependent species), to the south, converting to more open grass savannah with scattered *Acacia* shrubs and more species of karoo origin (Botha & Mills 1977, Skarpe 1986, Knight 1995). The Mabuasehube area is mainly open *Acacia* and *Boscia* woodlands and shrub savanna.

The Mabuasehube area has become an IBA particularly because of its high population of range-restricted Burchell’s Sandgrouse (*Pterocles burchelli*) which occurs mostly in the dry biome of the Karoo vegetation of Southern Africa. This park supports important populations of several raptor species, especially White-backed Vulture (*Gyps africanus*) and Lapped-faced Vulture (*Torgos tracheliotus*) occur in good numbers.
Lake Xau is an ephemeral lake in the Makgadikgadi area of Botswana. It is fed by the Boteti River that diverges from the Thamalakane River close to Maun that receives floodwater from the Okavango Delta in July each year. In the past Lake Xau supported large numbers of waterbirds including breeding White Pelicans (Tyler 2012).

During the 1980s and 1990s the Boteti River received little water and the river was largely dry, never reaching more than 20-30 km from Maun. Lake Xau consequently was dry. In recent years floods coming down the Okavango River have been high and the Boteti River has reached further and further south until late in 2010 it again flowed into Lake Xau. The lake dried again as the water evaporated but filled again during August/September 2011 and water remained well into April 2012. Visits have been made to count waterbirds in December 2010, September and December 2011, February 2012, March and April 2012.

A large mixed heronry was found in February and March 2012 (Hancock & Oake 2012). If floods in the Okavango Delta continue to be high over coming years then Lake Xau will remain as a wetland of considerable importance to waterbirds. It qualifies as an IBA under the following categories

<table>
<thead>
<tr>
<th>IBA CATEGORY</th>
<th>TRIGGER SPECIES</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 Globally Threatened Species</td>
<td>Black-winged Pratincole</td>
<td>100-200 in March and April 2012</td>
</tr>
<tr>
<td>A4 i The site is known or thought to hold, on a regular basis, ≥1% or more of a biogeographic population of a congregatory waterbird species</td>
<td>Black-winged Pratincoles, White Pelicans</td>
<td>About 2,000 in December 2011 (&gt;5% of the estimated global population), December 2011 and March 2012 (equates to more than 6% of the Southern African population)</td>
</tr>
<tr>
<td>iv. The site is known or thought to exceed thresholds set for migratory species at bottleneck sites</td>
<td>Black-winged Stilt</td>
<td>700 (Exceeded the 0.5% threshold)</td>
</tr>
</tbody>
</table>


3.0 METHODS

The project adopted the global monitoring framework methodology (summarised in section 3.1) that was developed by BirdLife International (2006). The monitoring tool uses the weakest-link approach, which detects change without giving details on the cause of the change. This approach identifies the most negatively affected habitat or species to be considered for management or intervention. The tool is based on ‘state–pressure–response’ framework and uses birds as environmental indicator species (Fig. 2).
**STATE**
State refers to the condition of the site with respect to its important bird populations/trigger species (see Box 1). Bird population has been used to infer the status of biodiversity in PAs/IBAs. Every year indices of abundance were collected and compared with the baseline (year 2008 counts) to infer trends.

**PRESSURE**
Pressures are major threats to important bird populations at IBAs e.g. agricultural expansion and intensification, residential and commercial development, and fire.

**RESPONSE**
Responses are conservation actions: for example, policy review and formulation, policy and management plan implementation, changes in conservation area designation, implementation of conservation projects and establishment of Site Support Groups.

**Figure 2:** The relationship between Important Bird Areas’ State, Response and Pressure.

### 3.1. THE GLOBAL MONITORING FRAMEWORK TOOL

**STATUS/STATE: Trigger Species Population Estimates.**

The status/state is the population (or index of abundance) of the trigger bird species in terms of numbers recorded for a particular site, or the condition of a particular habitat utilized by the trigger species. Below is a table of a World Biodiversity Database (WBDB). This is an online system used by BirdLife Partnership to collect, manage and report on sites and species data. [www.globalconservation.info](http://www.globalconservation.info). Monitoring teams are to record information as presented on the table (Trigger species, actual population and units) while the administrator at BirdLife Botswana indicates reference population and updates information on the system.

**Table 1.** WBDB key to assessing the habitat condition using population

<table>
<thead>
<tr>
<th>Trigger species:</th>
<th>Actual population</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reference Population</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Tick relevant box</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Units</strong></td>
<td><strong>Adults</strong></td>
</tr>
<tr>
<td><strong>Status score</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Habitat condition</strong></td>
<td>Very poor</td>
</tr>
</tbody>
</table>
The status score of the habitat is determined by the recorded population of trigger species per year with respect to reference population i.e. high population estimates and number of species would mean the habitat is favorable/good for biodiversity hence status score 3. It is important to state the units recorded (adults, chicks, breeding pairs etc) Monitoring teams are advised to provide complete and accurate information for effective data management.

**PRESSURES/THREATS**

Threats identified for a particular IBA are rated using Table 2. Scores for each threat are summed to get a total impact for a site.

*Table 2. WBDB Key to assigning scores to the threats/pressures*

<table>
<thead>
<tr>
<th>Threats Score</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Timing</strong></td>
<td>Past, unlikely to return, no longer happening</td>
<td>Likely in long term (beyond four years)</td>
<td>Likely in short term (within four years)</td>
<td>Happening now</td>
</tr>
<tr>
<td><strong>Scope</strong></td>
<td>Small area/ few individuals (&lt;10%)</td>
<td>Some of the area/ population (10 _ 50%)</td>
<td>Most of the area/ population (50 _ 90%)</td>
<td>Whole area/ population (&gt;90%)</td>
</tr>
<tr>
<td><strong>Severity</strong></td>
<td>No or imperceptible deterioration (&lt;1%)</td>
<td>Slow deterioration (1 _ 10%)</td>
<td>Moderate deterioration (10 _ 30%)</td>
<td>Rapid deterioration (&gt;30%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>0</td>
<td>3 _ 5</td>
<td>6 _ 7</td>
<td>8 _ 9</td>
</tr>
<tr>
<td><strong>Overall score</strong></td>
<td>0</td>
<td>-1</td>
<td>-2</td>
<td>-3</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td>Very High</td>
</tr>
</tbody>
</table>

**CONSERVATION MEASURES/ RESPONSE**

Conservation measures at each site are recorded and assigned scores using guidance from Table 3. Each conservation measure is assigned a score from 0 _ 3, then the scores are summed to find the conservation status of the site. A site with a score of 3 is effectively managed while the one scoring 0 needs urgent interventions.
Table 3. Key to recording the conservation measures at the site and scores used in assessing different action types

<table>
<thead>
<tr>
<th>Action Type</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation Designation</td>
<td>Whole area of IBA (&gt;90%) covered by appropriate conservation designation</td>
<td>Most of IBA (50–90%) covered (including the most critical parts for the important bird species)</td>
<td>Some of IBA covered (10–49%)</td>
<td>Little/none of IBA covered (&lt;10%)</td>
</tr>
<tr>
<td>Management Planning</td>
<td>A comprehensive and appropriate management plan exists that aims to maintain or improve the populations of qualifying species (‘trigger’ species)</td>
<td>A management plan exists but it is out of date or not comprehensive</td>
<td>No management plan exists but the management planning process has begun</td>
<td>No management planning has taken place</td>
</tr>
<tr>
<td>Conservation Action</td>
<td>The conservation measures needed for the site are being comprehensively and effectively implemented</td>
<td>Substantive conservation measures are being implemented but these are not comprehensive and are limited by resources and capacity</td>
<td>Some limited conservation initiatives are in place (e.g., action by Local Conservation Groups)</td>
<td>Very little or no conservation action is taking place</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Score</th>
<th>8 _ 9</th>
<th>6 _ 7</th>
<th>2 _ 5</th>
<th>0 _ 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Status</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Description</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
<td>Negligible</td>
</tr>
</tbody>
</table>
3.2 DATA COLLECTION

IBAs that overlap national parks and game reserves were monitored by Department of Wildlife and National Parks personnel. For those IBAs that are not under DWNP management the information was collected by tour operators (mainly professional guides), and SSGs. All these data collectors have been trained using the BirdLife International Global Monitoring Framework (2006), as outlined above. Appendix 1 shows the list of recorders who contributed to data and information gathering in 2011.

In addition to the data that was collated on the IBA monitoring data forms, additional information was used where necessary to augment or fill in data gaps in species numbers. Such data was obtained from the bi-annual waterfowl counts, BPM and World Birds: (http://www.worldbirds.org/v3/ibasall.php). Information is populated into the Worlds Biodiversity Database (WBDB) where it is analysed.

[Image: Community Based Organisation Surveying a site during BPM training workshop in Zutshwa, Ghantsi Region (July 2011)]
4.0 RESULTS AND DISCUSSION

BIODIVERSITY STATUS AND TRENDS

Below is information on the status of trigger species, threats and conservation actions in IBAs.

1. BW001: CHOBE NATIONAL PARK

In 2008, threats in Chobe National Park were low (0), however, they increased in the following years, these included high population of elephants, floods, fires and tourists activities. From 2008 to 2011, the status (blue bar) of biodiversity in Chobe National Park ranges from moderate (2) to close to good (3), this means that more than 70% of its habitat is undisturbed. This is because comprehensive management measures are fully implemented by DWNP.

2. BW002: LINYANTI SWAMPS/CHOBE RIVER

In 2008, the status of the site was very unfavourable as biodiversity threats recorded were very high. Conservation measures included law enforcement and patrolling by DWNP to curb poaching, and maintenance of fire breaks by DFRR. In 2009, there was no data submitted from the site, due to logistical constrains. In 2010 and 2011, the threats were high: fires ravaged more than 50% of the whole area. Although flooding affected less than 10% they impact and caused rapid deterioration (-2). According to monitoring teams of the site (DWNP Kasane), high population of elephants in the area also negatively affect the ecosystem.

3. BW003: OKAVANGO DELTA

In 2009 and 2010, threats in the Okavango Delta included human intrusion and disturbance to nesting birds due to increased use of engine boats that create large waves, washing away eggs laid on the banks. However this affected a small area with moderate deterioration. Human intrusions by recreation in Xakanaka and Gadikwe Lagoons also routinely occur, especially from February to June each year. Tourists camp in the area, disturbing breeding waterbirds and other aquatic animals. Throughout the years, the high densities of elephants in the area have caused a lot of destruction to the habitat, destroying the nests of raptors. The shallow waters of the delta have been invaded by the overgrowth of the Kariba weed, although it is affecting a small area, the impact is very severe as it might block some channels.
In 2011, bird population of trigger species increased though there were floods in the area. The delta’s size has doubled due to high floods levels; this has largely resulted in increased waterbird numbers. Over-exploitation of fishing and harvesting aquatic resources has been observed to be negatively impacting the breeding of African Skimmers; however, the impact is moderate and largely confined to the Okavango Panhandle. Conservation measures have been ongoing: government departments, BirdLife Botswana, Safari Companies and CBOs such as Banoka Camp, Okavango Community Trust and others have been working over the years on site protection, water management, invasive/problematic species control and general species management in the delta.

4. BW004: LAKE NGAMI

The lake flooded to its greatest area (250km²) in 2009 and life flourished for birds and people alike. The alien plant species (Datura and Xanthium) that invaded the site during its dry period diminished. Waterbirds such as Marabou stock, Great White Pelican and African Skimmer started breeding successfully, increasing the state of biodiversity; but, fishermen also flocked to the site, and the challenge then became overexploitation of aquatic resources and fish, causing rapid deterioration (-0.2) in 2010 as shown by the bar chart above. Infrastructure for copper mine at Toteng/Kwebe Hills will also disturb biodiversity of the lake; this can cause a long term impact and slow deterioration affecting a wider area. In 2011, pollution from fishermen and recreational boaters increased, despite increased awareness-raising efforts and production of publicity and communication materials by BirdLife Botswana and government departments such as DWNP.

Since filling up in 2004, Lake Ngami has more than justified its designation as an Important Bird Area (Hancock 2011). See also www.birdlifebotswana.org.bw/doc/newsletter_31.pdf. As stated above, it now supports a significant number of globally threatened species, range-restricted and large numbers (≥5%) of the population of congregatory waterbirds. The site is one of the unexplored potential avitourism destinations with 19 globally threatened waterbirds and terrestrial species, 9 range-restricted terrestrials and 16 congregatory waterbird species. Currently the site is partially protected by the Ramsar Convention as the Okavango Ramsar site overlaps it. However, birds have been greatly disturbed by new developments in the area, such as houses for the new mine and installation of utility services. Therefore BirdLife Botswana has engaged stakeholders and Southern African Regional Environmental Programme (SAREP) for the protection of the avifauna and rational development of a management plan.

5. BW005: MAKGADIKGADI PANS

In 2009, aerial counts over Sua Pan suggested population estimates of 77,491 individual Lesser Flamingo and 14,798 individuals Greater Flamingo; the Lesser Flamingo count outnumbered the total estimate for Southern Africa, ~65,000 individuals (McCulloch et al 2009). As a result of good rains over the previous 5 years, the site has been an important breeding area for the globally threatened Lesser Flamingos. Threats included soda ash and copper mining in the area which affect a small area of the pans with possible severe, long term negative effects.
Human disturbance by quad bikes is continuously affecting the biodiversity of the site. Veld fires are also common in the area. On the eastern side, several cases of indirect poisoning of White-backed Vultures have been reported.

In 2010, Makgadikgadi improved in terms of its response indicators, largely owing to the successful establishment of a sanctuary for the flamingo breeding grounds on Sua Pan. An area covering the whole of the southern basin of Sua Pan where the flamingo colonies exist is now protected under the Wildlife Act, which prohibits entry into, or flights over the sanctuary (below 7,000 ft), without prior written permission by the DWNP, and only for purposes of approved research. Implementation started in 2011 with BirdLife Botswana working with DWNP and communities around Southern Sua towards co-management of protected areas and to sustainably exploit the potential tourism and natural resources of the area.

In addition, the completion of the Makgadikgadi Framework Management Plan for the entire wetland should result in improved integrated management and sustainable development in the area.

**6. BW006: CENTRAL KALAHARI AND KHUTSE GAME RESERVE**

As presented in the Figure above, the status of biodiversity has increased over the years due to good rains as shown by the blue bars. Key threats affecting both game reserves are the inadequacy of water/unreliable boreholes, veld fires and unregulated hunting. Explorations for copper in the north-west of CKGR has greatly disturbed the area; noise pollution from road construction and drilling disturb animals, while casualties due to trucks transporting goods to the site have been reported. Other concerns include cattle encroachment and pollution/litter by tourists at camp sites.

**7. BW007: MANNYELANONG GAME RESERVE**

Anthropogenic threats/activities are minimal in this site as the cliff where the vultures breed is fenced, and movement inside the reserve is restricted; visitors view the birds from the ground using telescopes and binoculars. Breeding success is largely affected by severe weather events such as high temperatures (2009) and heavy rains (2010). Conservation actions in this area are reasonably adequate as Cape Vultures Environmental Association (a local environmental club) work closely with BirdLife Botswana in educating and raising awareness of the sensitivity and significance of the Cape Vultures.
Tswapong Hills were listed as one of Botswana’s monuments in 2008. A community Based Organisation (Manonnye Moremi Conservation Trust) was also formed in 2008 to benefit from natural resources in the area. Prior to the formation of the CBO, Moremi gorge and the cliff where the Cape Vultures reside and breed were routinely disturbed by noise and waste pollution from tourists. However, conservation initiatives implemented by the CBO with the help of Botswana Tourism Organisation have since decreased these two threats.

At this site, the perimeter fence erected to control movement of people and animals into Bokaa Dam has been vandalised. Threats at the dam include human intrusion and disturbance and pollution by people who come for picnics and fishing. However these do not affect the breeding Southern Pochard as their numbers increase over the years. Water Utilities often patrol to enforce awareness and education.

The site is highly threatened: domestic and commercial waste, water pollution by effluents from industries in the area, disturbance and direct persecution of birds and their eggs by wild dogs and cats, and overexploitation of fish in the pond. All these activities have been happening for the past four years and are still ongoing, causing rapid deterioration. Most bird species have migrated to other sites such as Jwana.
Park, Bokaa and Mogobane Dams, and other water sources, suggesting that the ponds are very unfavourable for their survival. BirdLife Botswana’s efforts to restore the area have not succeeded.

Litter at Phakalane Sewage Ponds (December 2011)

11. BWO11: SOUTH EAST BOTSWANA

As stated in description of sites this is a large IBA covering several land uses. The threats in the area are minimal, and include veld fires, roads and service line construction, and agricultural activities.

12. BW012: KALAHARI TRANSFRONTIER PARK

Kalahari Transfrontier Park, within Botswana, has been experiencing medium to high threats (-0.1 to -0.5) from 2008 to 2011. These included veld fires which affected 9.82% in 2009, 1.51% in 2010 and 16.61% in 2011, as shown on Annex 3. Comprehensive conservation measures are implemented both in Botswana and South Africa e.g. veld fire monitoring and control of active fires, construction of fire-breaks and educating the public.
5.0 BOTSWANA’S BIODIVERSITY STATUS TRENDS: 2008 _ 2011

Monitoring of Botswana’s IBAs using the IBA Monitoring Protocol (BirdLife International 2006) started in 2007, with the first status and trends report produced in 2008. Annual status reports have been produced since then, and this is the fourth Botswana’s status and trends report (showing trends from 2008 to 2011).

Biodiversity status at protected IBAs, as shown by improvement on the State measures (Fig. 3), appears to be generally improving, although threats are concurrently increasing in some sites. Efforts are being maintained by BirdLife Botswana, government agencies, community based organisations and the private sector to curb some of these pressures, leading to some positive progression towards long-term protection of the country’s protected IBAs and marginal increases in the overall response score.

FIGURE 3. State, Pressure and Response (2008 _ 2011) of Botswana’s protected IBAs

5.1 STATE

The figure above shows the status and trends from 2008 to 2011, The status of biodiversity at Botswana’s protected IBAs has marginally improved over the period 2008–2011. In 2008, IBA monitoring was a new approach to most monitoring teams; they were trained in data collection but bird identification was a challenge hence data collected was of medium standard. In 2009 there were gaps in information collected while at some sites, no data was collected at all. This was mainly due to staff turnover in protected area management and low participation by some community based organisations.

There were good rains in 2010 and 2011, and the highest numbers of trigger species were found in the Okavango and Makgadikgadi (Wattled Crane and Slaty Egret), while flamingos bred successfully in the Makgadikgadi (McCulloch et al 2010). In 2011, Lake Ngami provided excellent breeding opportunities for most of waterbirds as it flooded to its greatest extent (250 km²). Over the period 2008 to 2011, most of the IBAs enjoyed some form of legal protection hence the better state of the environment that is reflected in Figure 3.
In 2010, the number of threats identified by recorders in Botswana’s protected IBAs decreased compared to 2009 (McCulloch et al. 2010). This was probably because of the good rains and increased awareness/education by stakeholders.

**FIRE**

Fire is the most important threat factor to most IBAs, especially those that are also protected areas. Records from Department of Forestry and Range Resources (Fire Management Unit), the district with the highest proportion of burned area was Ngamiland District, in and around Chobe Game Reserve. Annex 3 shows that in 2008, Forest Reserves along Chobe National Park were greatly affected by fire, the most affected being Kasane Forest Reserve with a total burned area of 88% and Kazuma on the eastern side of the park with 92%. In 2009, there was less fire destruction in protected areas, only 9.96% of 134,196 km² (total PA area). However in 2010 there were more veld fires, with a total of 40.45% burned areas in protected areas, highly affected area were Chobe, Maikaelelo, Sibuyu Forest Reserves, Khutse and Central Kalahari Game Reserve. The map below shows burned areas per quarter in 2011

In general, the frequency and extent of fire incidents has increased, in recent years, as a result of an increased number of fire-generating activities (such as farming, grass cutting and illegal hunters and their associated camps) in and around the protected areas. Indeed, evidence shows that many of the fires that occur in many of the remote areas of the country originate along access roads and tracks, as a result of campfires and other human activities.

However, fire management does not only entail fire exclusion from the IBAs, as prolonged exclusion can have more negative impacts on many wildlife species. Thus fire management should include prescribed burning which, if properly implemented, can have a wider benefit to much of the biodiversity in a particular IBA. “Patch mosaic burning” has been promoted for its ability to provide refuge areas for most taxa during a fire (Brockett et al. 2001). Although the practice has been criticised (Parr & Andersen 2006) and there is limited knowledge on the effect of fire on much of the fauna (Davis et al. 2000, Hassan et al. 2007, O’Reilly et al. 2006, Parr & Chown 2003, Trollope & Trollope 2002), “patch mosaic burning” is perhaps the fire management practice to pilot at some of Botswana's IBAs, in efforts to mitigate the effects of veld fires.

There is however a need to improve the practice as recommended by Parr and Anderson (2006) and to increase knowledge on ecological requirements of the wider range of avifaunal species. A species-specific approach, contrary to community approach, would be more beneficial to most species. General conclusion on the responses of bird communities to fire should be used cautiously as some species could suffer greatly from fire.
In the past two years (2009 and 2010), a minimum of 160 globally threatened vultures have been poisoned in northern Botswana (McCulloch et al 2010). Primarily agricultural insecticide, Carbofuran and Aldicarb, have been used in most poisoning events. The motives for the poisoning vary: in most cases, the vultures are innocent victims of attempts to kill ‘problem’ mammalian predators that depredate livestock. However, there have been events where vultures appear to have been deliberately targeted by poachers who kill large animals and bait the carcass with poisons as over-arching vultures could otherwise alert park authorities to such illegal hunting.

**5.3 RESPONSE**

BirdLife Botswana is committed to work at grassroots and site-level to continue mainstreaming and integrating bird conservation in schools, CBOs, government agencies, private sector and to the general public. Annually, BirdLife Botswana organises bird conservation awareness days/activities for students e.g. World Migratory Bird Day Celebrations, World Bird Festival, School Bird Watch. As for stakeholders and communities, capacity building, empowerment and support in advancing for bird conservation capabilities is achieved by country-wide training workshops exchange visits, in-house training.

The IBA monitoring programme has influenced several conservation initiatives such as the Makgadikgadi Framework Management Plan which was completed 2010, and which has since seen the protection of some areas of conservation concern in the Makgadikgadi wetland system. BirdLife Botswana is also involving citizens in conservation through Bird Population Monitoring which started in 2010 with massive participation by local people. During the four year period of implementing IBA monitoring, management improved at some sites e.g Tswapong Hills and Lake Ngami.

IBA monitoring results were also useful in identifying gaps in protected area management, reporting to CBD and State of Botswana’s environment, for lobbying, advocacy, and to guide research priorities at several sites. For these reasons, DWNP staff (all park managers from Botswana’s 14 protected areas) were supported by BirdLife Botswana through its GEF/UNDP-funded *Strategic Partnerships to Improve the Financial And Operational Sustainability of Protected Areas* project. Delegates went for a course in project management and effective protected area monitoring at South Africa. They learned the necessary skills, tools and techniques to effectively manage Botswana’s PAs/IBAs.

*DWNP & BLB Staff at a Training in Project Management and Effective Protected Area Management course at Southern African Wildlife College: Hoedspruit, South Africa (August 2011)*
The Strategic Partnerships to Improve the Financial And Operational Sustainability of Protected Areas project is a four year (2009–2012) collaborative project between BirdLife Botswana, DWNP, DEA and local communities from Mmeya, Mosu, Mokubilo and Mmatshumo. This project seeks to strengthen management partnerships between public, private, NGO and community stakeholders for the improvement of financial and operational sustainability of protected areas in a measurable manner, using the Makgadikgadi Wetland System as a pilot site. Local communities residing around protected areas are capacitated to co-manage and reduce the expenses that are currently incurred by the government.

As part of capacity building efforts, 25 local community members and district staff were supported to undertake a benchmarking trip to Namibia in September 2011 (see photo below). The communities living around Southern Sua Pan visited Namibia and toured Etosha Pans which has a similar ecosystem as the Makgadikgadi Pans, they learned more on Community Based Natural Resource Management (CBNRM). This would then assist them in emulating approaches from the Namibian communities so that they can realize direct economic benefits from natural resources and better conserve the Makgadikgadi ecosystem.

*Community members from Southern Sua on a benchmarking tour, learning from Conservancy Managers in Namibia (September 2011)*
Humans depend on a healthy environment that can meet people’s needs by providing the goods and services on which we all depend. Therefore conservation has the potential to contribute to the fulfilment of peoples’ needs by helping to secure the delivery of these environmental benefits. Based on the initiative of the IBA monitoring project (2007–2011), it is important to sustain conservation measures to reduce pressures to biodiversity at PAs/IBAs. The project action is well aligned with the global priority to measure progress towards the achievement of the global biodiversity target http://www.cbd.int/convention/articles/?a=cbd-07. It is therefore hoped that IBA monitoring will continue to receive attention from local and international funding agencies beyond 2011. Botswana, as a nation has a clear vision for its rich biodiversity as stated in Biodiversity Strategy and Action Plan of 2007:

“A nation in balance with nature, with fair access to biological resources, where the benefits deriving from the use of these resources are shared equitably for the benefit and livelihoods of current and future generations, and where all citizens recognize and understand the importance of maintaining Botswana’s biological heritage and related knowledge and their role in the conservation and sustainable use of Botswana’s biodiversity”.

To effectively implement the vision and achieve goals of the strategy, there is need for greater support for conservation efforts. This therefore calls for the investment in conservation knowledge and use of local expertise, sharing experience and building strong institutions with links to policy makers and wider society.

IBA monitoring is one of the activities assisting in biodiversity management with its approach of using birds as environmental indicators. The programme is scientifically, socially and economically effective to the wider network of biodiversity rich areas in Africa and the world and should be kept intact by continual monitoring of sites. As explained in this document, the programme is successfully institutionalised in stakeholders and beneficial to all. Monitoring of biodiversity remains crucial as long as man disturbs habitats by agriculture, industries and developments
7.0 RECOMMENDATIONS

To ensure sustainability of biodiversity conservation and monitoring actions, stakeholders need to be supported in data collection and managing, compiling reports and availing results to protected area/IBAs authorities. The following actions are recommended for each stakeholder:

A. BIRDLIFE BOTSWANA

The organisation should:

1. Undertake bird surveys specifically for trigger species in each site. The surveys (complemented by BPM results) would help with conservation priority-setting: those species needing urgent intervention will be prioritized while those with large populations would be removed from the list of trigger species/birds of conservation concern.

2. Define IBA boundaries where they remain unclear, particularly the extent of overlap with the formal PA network. Delineating boundaries is important particularly for restricted-range and biome-restricted assemblages (Langhammer et al. 2007). Putting up IBA sign boards would also help in raising awareness of the importance of these sites.

3. Continue with training workshops to capacitate, empower and give feedback to monitoring teams. More refresher workshops should be done to facilitate CBOs and PA authorities to oversee the compilations of information at their respective places.

4. Explore avi-tourism as a means to increase benefits accruing to communities living in and around IBAs. This should enhance their understanding and participation in biodiversity monitoring and management in their respective areas.

5. Better engage the private sector and other stakeholders in biodiversity monitoring and management.

6. Continue collaboration with stakeholders to maintain and strengthen relations. This will enable exchange of lessons learned from projects, replication of best environmental practices, maximise use of available conservation funds and enhance synergies for biodiversity management.

B. DEPARTMENT OF WILDLIFE AND NATIONAL PARKS

DWNP has been collaborating with BirdLife Botswana in implementing conservation projects. With regards to IBA monitoring, park managers supervised monitoring in sites overlapping/adjacent to PAs. A National Coordinator at DWNP headquarters is responsible for collecting monitoring forms from all protected IBAs, validate and analyse with technical assistance from BirdLife Botswana. There is adequate capacity built, therefore the department should continue its roles and the following are recommended. DWNP should:

1. Continue coordinating data collection and ensure adequate form completion, quality control and punctual submission, providing additional support to the district IBA monitoring coordinators.
2. Encourage monitoring teams to be engaged in bird conservation in general to improve their bird identification and ecological survey skills.

3. Increase the number of people who have an active role in the programme management structure. This will help in maintaining a momentum during staff transfers. The department should also involve other stakeholders for co-management of protected areas e.g. communities living on the periphery of PAs.

4. Lobby government to continue mainstreaming biodiversity management in all sectors. The department should ensure that nature conservation measures are supported by multi sectors and secure high level political and administrative support.

C. COMMUNITY BASED ORGANISATIONS

Conservation can help create environments that provide sustainable supplies of the goods and services that people need in order to live healthy, fulfilled and dignified lives, thus helping to fulfil people’s right to development and to life (BirdLife International 2010). Local communities often rely directly on environmental goods and services. Therefore, BirdLife Botswana aims to maximise the long-term benefit of nature for all, including future generations. The organisation has worked with local communities by enhancing their capacity for a range of activities including species conservation, citizen empowerment, linking conservation and livelihoods.

At site level, communities living in and around IBAs are actively engaged in the conservation and management of those sites. They are encouraged to develop and support ownership and responsibility of biodiversity management of their area. For improved benefit from capacity gained, community groups should:

1. Participate in public awareness and educational programmes and disseminate information to other villages/settlements. In Botswana, most government departments have community outreach programmes, events and commemorations organised in villages e.g. World Wetlands Day, World AIDS Day, and World Environment Day (See Table 4 for environmental awareness days). Engaging in such events will generally increase awareness and understanding of communities, enabling them to make informed decisions.

2. Utilise culture and traditional knowledge for conserving biodiversity. Setswana culture is rich in concepts of environmental management which are not used and are dying out. Old generations should impart their wisdom to young ones as there are opportunities in indigenous knowledge.

3. Community leaders, Members of Parliament and Councillors should raise awareness of sustainable use of resources. Overharvesting of natural resources is one of the main biodiversity threats in Botswana, and communities should be aware of the catastrophic effects of overexploitation. Each Community Based Group/Village Development Committee should ensure compliance in harvesting natural resources in their area.

4. Participate in implementing community based biodiversity management projects. Such initiatives are opportunities to enhance cooperation among local communities, preserve indigenous culture and restore cultural heritage aliened to biodiversity.
Schools and the wider public should observe the following environmental awareness days and participate. IBA monitoring is done throughout the year, tourists, private sectors and the general public are encouraged choose sites to monitor and manage IBAs.

**TABLE 4-SOME ENVIRONMENTAL AWARENESS DAYS**

<table>
<thead>
<tr>
<th>EVENT/ACTIVITY</th>
<th>MONTH</th>
<th>RESPONSIBLE AGENCY</th>
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</thead>
<tbody>
<tr>
<td>Waterfowl Counts</td>
<td>January &amp; July</td>
<td>BirdLife Botswana Tel: +267 3190540 <a href="http://www.birdlifebotswana.org.bw">www.birdlifebotswana.org.bw</a> <a href="mailto:blb@birdlifebotswana.org.bw">blb@birdlifebotswana.org.bw</a></td>
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<tr>
<td>Bird Population Monitoring</td>
<td>February &amp; November</td>
<td>BirdLife Botswana Tel: +267 3190540 <a href="http://www.birdlifebotswana.org.bw">www.birdlifebotswana.org.bw</a> <a href="mailto:blb@birdlifebotswana.org.bw">blb@birdlifebotswana.org.bw</a></td>
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<tr>
<td>World Migratory Bird Day</td>
<td>April/May</td>
<td>BirdLife Botswana Tel: +267 3190540/1 <a href="http://www.birdlifebotswana.org.bw">www.birdlifebotswana.org.bw</a> <a href="mailto:blb@birdlifebotswana.org.bw">blb@birdlifebotswana.org.bw</a></td>
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<tr>
<td>Vulture Awareness Day</td>
<td>September</td>
<td>BirdLife Botswana Tel: +267 3190540 <a href="http://www.birdlifebotswana.org.bw">www.birdlifebotswana.org.bw</a> <a href="mailto:blb@birdlifebotswana.org.bw">blb@birdlifebotswana.org.bw</a></td>
</tr>
<tr>
<td>Important Bird Area Monitoring</td>
<td>Throughout the year</td>
<td>BirdLife Botswana Tel: +267 3190540 <a href="http://www.birdlifebotswana.org.bw">www.birdlifebotswana.org.bw</a> <a href="mailto:blb@birdlifebotswana.org.bw">blb@birdlifebotswana.org.bw</a></td>
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### APPENDIX 1- LIST OF CONTRIBUTORS FOR 2011 INFORMATION

<table>
<thead>
<tr>
<th>Recorder</th>
<th>Organisation</th>
<th>IBA/PA Monitored</th>
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<tbody>
<tr>
<td>Madimabe Edwin</td>
<td>DWNP-Research Officer</td>
<td>Chobe National Park, Linyanti Swamps</td>
</tr>
<tr>
<td>Mpofu Zenzele</td>
<td>DWNP-Research Officer</td>
<td>Chobe National Park, Linyanti Swamps</td>
</tr>
<tr>
<td>Dikgantsho Keone</td>
<td>DWNP-Research Officer</td>
<td>Central Kalahari Game Reserve</td>
</tr>
<tr>
<td>Tau Kgosietsile</td>
<td>DWNP-Research Officer</td>
<td>Kalahari Transfrontier National Park</td>
</tr>
<tr>
<td>Kgaditswe Tshepiso</td>
<td>DWNP-Research Officer</td>
<td>Makgadikgadi Nxai Pan National Park</td>
</tr>
<tr>
<td>Keorapetse Jenamiso</td>
<td>DWNP-Research Officer</td>
<td>Kalahari Transfrontier Park</td>
</tr>
<tr>
<td>John Mosenya</td>
<td>DWNP-Research Officer</td>
<td>Khutse Game Reserve</td>
</tr>
<tr>
<td>Mokolwane B. Mokolwane</td>
<td>DFRR- Fire Management Unit</td>
<td>All IBAs/PAs</td>
</tr>
<tr>
<td>Harold &amp; Geraldine Hester</td>
<td>BirdLife Botswana Member</td>
<td>Central Kalahari Game Reserve, Makgadikgadi Pans</td>
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<tr>
<td>Chris Brewster</td>
<td>BirdLife Botswana Member</td>
<td>South-East Botswana</td>
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<tr>
<td>Mike &amp; Daphne Goldsworthy</td>
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<td>John Daziel</td>
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<td>Craig Brits &amp; Janet Woods</td>
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<td>Lauren &amp; Alan Calenborne</td>
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<td>Kevin MacFarlane</td>
<td>Independent Researcher</td>
<td>Central Kalahari and Khutse Game Reserves</td>
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<td>Graham McCulloch</td>
<td>Independent Researcher</td>
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<td>Pete Hancock</td>
<td>BirdLife Botswana -Maun Branch</td>
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<td>BirdLife Botswana-Kasane Branch</td>
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<td>Benjamin Noga</td>
<td>Cape Vultures Environmental Club</td>
<td>Mankyanong Game Reserve</td>
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<td>Chief Mothaedi</td>
<td>Banoka Camp</td>
<td>Okavango Delta</td>
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<td>Solomon Gakenathata, Aubrey Malekane &amp; Isaac Tapa</td>
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<td>Phodiso Obusitswe</td>
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<td>Meno a Kweny Guides</td>
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<td>Borwa C.J.S.S. 2011 Environmental Club Members &amp; Mr Mogae Sono (Club Coordinator)</td>
<td>Borwa Community Junior Secondary School (Bokaa Village)</td>
<td>Bokaa Dam</td>
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## APPENDIX 2: TRIGGER SPECIES IN BOTSWANA IBA’S

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<th>≥1% biogeographic population of congregatory waterbirds</th>
<th>≥20,000 waterbirds</th>
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<td><strong>BW010: PHAKALANE SEWAGE PONDS</strong></td>
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<td>Maccoa Duck Great Crested Grebe</td>
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<td><strong>BW011: SOUTH-EAST BOTSWANA</strong></td>
<td>Lesser Kestrel Pallid Harrier</td>
<td>Short Clawed Lark White Throated Robin Chat Kurrichane Thrush Sociable Weaver Kalahari Robin</td>
<td></td>
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<tr>
<td><strong>BW012: KGALAGADI TRANSFRONTIER PARK</strong></td>
<td>Lappet-faced Vulture Pallid Harrier</td>
<td>Burchell’s Sandgrouse Sociable Weaver Denham’s Bustard Kalahari Robin Barred Warbler</td>
<td></td>
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</table>

**Source:** Kootsositse M.V & Hancock P (2009) *Monitoring Manual for Birds in Botswana*
### ANNEX 3: FIRE STATISTICS OF PROTECTED AREAS/IMPORTANT BIRD AREAS

<table>
<thead>
<tr>
<th>PROTECTED AREA</th>
<th>% BURNED AREA</th>
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<tr>
<td></td>
<td>2008</td>
<td>2009</td>
<td>2010</td>
<td>2011</td>
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<tr>
<td>Chobe National Park</td>
<td>16.96</td>
<td>0.45</td>
<td>19.65</td>
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<td>Kasane Forest Reserve Extension</td>
<td>88.70</td>
<td>0.00</td>
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<td>Chobe Forest Reserve</td>
<td>29.81</td>
<td>0.00</td>
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<td>Kazuma Forest Reserve</td>
<td>92.04</td>
<td>0.00</td>
<td>10.96</td>
<td>45.78</td>
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<td>Maikaelelo Forest Reserve</td>
<td>29.02</td>
<td>0.00</td>
<td>68.49</td>
<td>56.96</td>
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<td>Sibuyu Forest Reserve</td>
<td>68.26</td>
<td>12.67</td>
<td>76.71</td>
<td>82.31</td>
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<td>Moremi Game Reserve</td>
<td>0.16</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Nxai Pan National Park</td>
<td>21.47</td>
<td>0.75</td>
<td>51.28</td>
<td>14.71</td>
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<td>Makgadikgadi Pans National Park</td>
<td>0.93</td>
<td>2.89</td>
<td>60.99</td>
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<td>Nata Bird Sanctuary</td>
<td>1.61</td>
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<td>CKGR Game Reserve</td>
<td>64.15</td>
<td>1.51</td>
<td>63.72</td>
<td>51.72</td>
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<td>Khutse Game Reserve</td>
<td>28.20</td>
<td>2.37</td>
<td>97.39</td>
<td>61.89</td>
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<td>Kgalagadi Transfrontier National Park</td>
<td>0.00</td>
<td>9.82</td>
<td>1.51</td>
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<tr>
<td><strong>Total area Burned</strong></td>
<td><strong>35.82</strong></td>
<td><strong>9.96</strong></td>
<td><strong>40.45</strong></td>
<td><strong>35.02</strong></td>
</tr>
</tbody>
</table>

**Source:** Mokolwane B, M (December 2011). Department of Forestry and Range Resources; Fire Management Unit
1. ZIBOTSWANA BIRDLIFE

The Important Bird Area (IBA) Programme of BirdLife International, and its country BirdLife partners, is a worldwide initiative aimed at identifying, documenting and protecting a network of sites critical for the conservation of the world's birds. The IBA programme in Africa is addressing site-oriented research and action, encompassing management, monitoring, education, advocacy and national and international legal protection. Botswana currently has 12 IBAs.

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1. CHobe NATIONaL PaRK

The Chobe River forms the border between Zambia and Botswana and is one of the greatest birding areas in southern Africa. It supports a range of important bird species, including several near-threatened species. The river is a key habitat for hippos, crocodiles, and elephants, and is home to a variety of fish species, including the Chobe River catfish. The Chobe National Park is home to large herds of elephants, buffaloes, and giraffes. The park is also known for its birdlife, with more than 450 species recorded.

1. CHobe NATIONaL PaRK

2. LEyTONHWA TRaNS-FRONTIER PaRK

The LEyTONHWA TRaNS-FRONTIER PaRK is located in the Eastern Province of South Africa and shares many of the same bird species with the Chobe National Park. The park is also home to the LEyTONHWA TRaNS-FRONTIER PaRK, which is a key migration corridor for birds between southern Africa and tropical Africa. The park is known for its birdlife, with more than 450 species recorded.

3. NAIROBi NATIONaL PaRK

The LEyTONHWA TRaNS-FRONTIER PaRK is located in the Eastern Province of South Africa and shares many of the same bird species with the Chobe National Park. The park is also home to the LEyTONHWA TRaNS-FRONTIER PaRK, which is a key migration corridor for birds between southern Africa and tropical Africa. The park is known for its birdlife, with more than 450 species recorded.

4. ZIBOTSWANA BIRDLIFE

The ZIBOTSWANA BIRDLIFE programme is a collaboration between BirdLife International and its partners in the region. The programme is focused on identifying and protecting important bird areas in southern Africa. The programme is supported by the European Commission and is led by BirdLife Botswana.
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Date


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Swift FIRNBWGX

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<td>Mike Soroczenski</td>
<td>Phil Zappala</td>
<td>Jerusalem Mooketsi</td>
<td>Kevin Grant</td>
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<tr>
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<td>PO Box 570</td>
<td>P O Box 87</td>
<td>PO Box 820</td>
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<tr>
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01/2012