BOTSWANA'S
Protected
Important Bird Areas

Status and Trends Report
2010

Compiled by

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Acronyms

BLB	BirdLife Botswana
BLI	BirdLife International
CBD	Convention on Biological Diversity
CKGR	Central Kalahari Game Reserve
DEA	Department of Environmental Affairs
DWNP	Department of Wildlife and National Parks
EIS	Environmental Information System
IBA	Important Bird Area
KTP	Kgalagadi Transfrontier Park
PA	Protected Area
RSPB	Royal Society for the Protection of Birds
WBDB	World Bird Data Base

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Executive Summary

In 1998, BirdLife Botswana (the BirdLife partner in Botswana) identified and documented 12 sites as Important Bird Areas (IBAs) of Botswana. However, monitoring efforts at these sites have lacked adequate co-ordination and the success of management and conservation efforts have, therefore, been difficult to gauge. In 2007, BirdLife Botswana, together with seven other African countries (Burkina Faso, Burundi, Uganda, Kenya, Tunisia, Zambia and Zimbabwe) benefited from European Commission funding to pilot a reporting mechanism for biodiversity through the monitoring of birds at IBAs using the Pressure-State-Response model adapted from the global IBA monitoring framework. In Botswana, the target sites for the project are IBAs overlapping protected areas, of which there are seven: Chobe, Linyanti Swamps, Okavango Delta, Makgadikgadi Pans, Central Kalahari Game Reserve, Mannyelanong and Kalahari Transfrontier Park IBAs.

This is the third year of project implementation and this report summarises the analysis of data and information gathered during 2010 and compares them with the figures from the 2008 and 2009 reports. Out of the seven protected IBAs of the project focus, 2010 records were only received from five; Chobe, Okavango, Makgadikgadi, Mannyelanong and Lake Ngami IBAs.

State

Records for the numbers of trigger species recorded at each site was very low at all IBA sites during 2010, with records coming mainly from the Chobe, Okavango, Ngami and Makgadikgadi IBAs. The highest numbers of wetland trigger species were found in the Okavango and Makgadikgadi, with Wattle Crane and Slaty Egret making up the numbers in the Okavango and flamingos, once again breeding successfully on Makgadikgadi in their tens of thousands. As a result of the low numbers of bird counts recorded and submitted in 2010, the habitat quality was used more often to assess the state of the IBAs (Figure 3). The overall state of the IBAs was still good this year, with only the Makgadikgadi IBA scoring below good for habitat condition/quality (moderate). Figure 3 shows that the habitat state of most IBAs has remained the same since 2009. The Okavango IBA has, however, experienced an increase in its overall habitat condition indicator owing largely to the exceptionally large flooding that has persistently occurred during the winter periods of 2008 and 2009 in these wetlands, providing larger safer habitat for the water bird trigger species.

Pressure

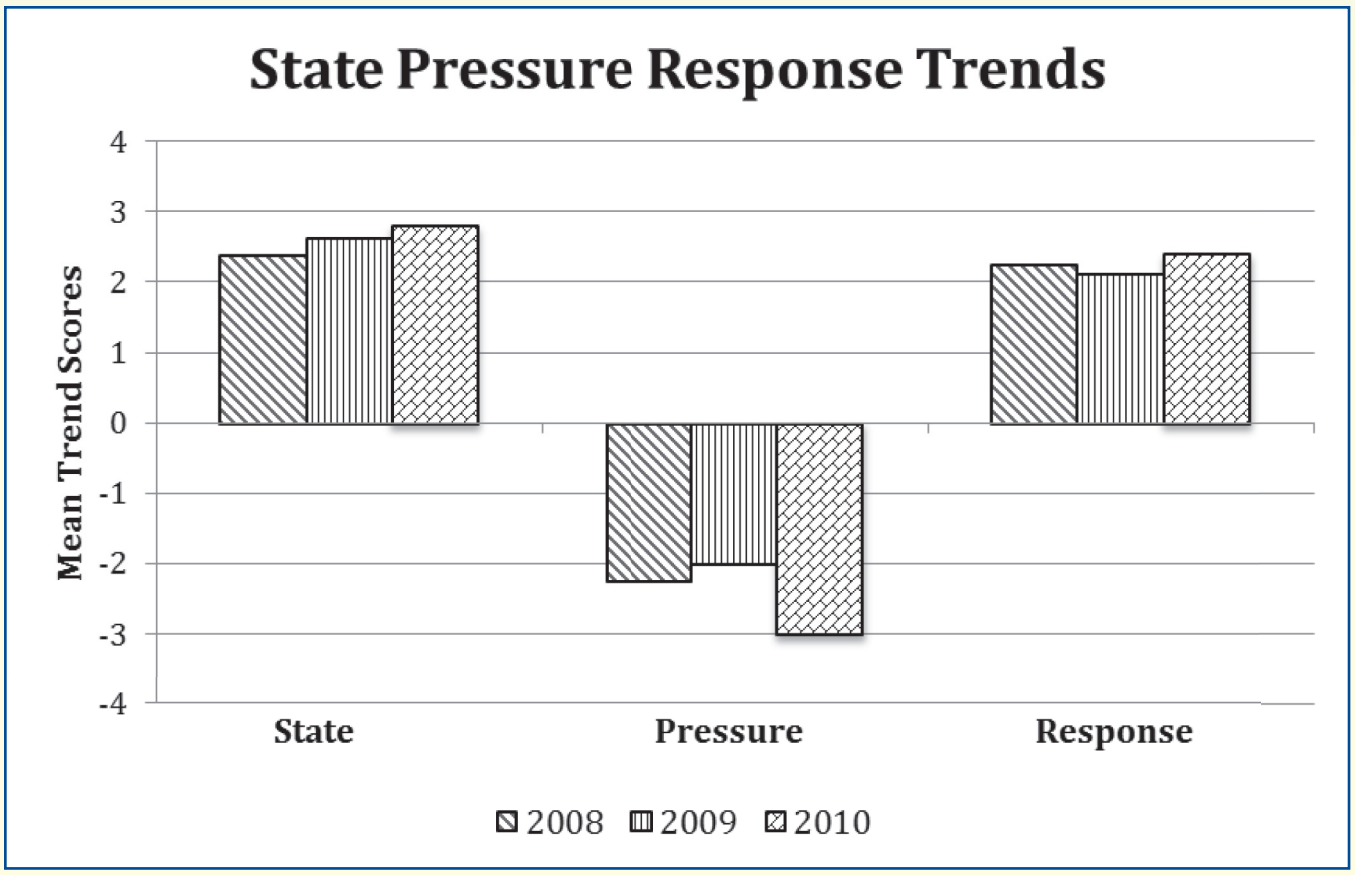
The number of threats identified by recorders in Botswana's protected IBAs decreased in number by three compared to 2009, from twenty two to nineteen different threat types. This is mainly because the number of IBAs, for which records were received, decreased from the previous year. Data came from BLB and independent researchers only. The IBA with by far the most threats is Makgadikgadi (16), owing to its enormous size and the wide variety of increasing land use changes and development around the wetland. In particular, an increase in mining activity at the Soda Ash mine (well-field expansion programme) and the increased development at the diamond and new copper mines in the catchment have increased the overall threat level associated with these activities to 3. The number of threats to the Okavango and Lake Ngami has also increased, where pressure scores have also increased to -3 on account of, respectively, poisoning and fishing pressures. Indeed, the severity of the threat from poisoning has become such a serious issue, with impacts on vulture populations been observed across the country, that this threat has increased the overall level of pressure in the Chobe, Okavango and Mannyelanong to -3. All IBAs, except for Mannyelanong, received higher threat scores compared with records from 2009. In particular, the pressure score at Lake Ngami has increased in severity by 2, to -3, owing to the rapid increase and threats from fishing in the lake. Overall, the pressures of the major wetland IBAs have increased during 2010, owing to an increase in poisoning, fishing pressure, fires and impacts from mining.

Response

Submissions from recorders regarding responses or conservation measures and management interventions were again varied for different sites. While many remained largely the same as those identified last year, there were some encouraging success stories in terms of the progress of some conservation measures that have been progressing over the past few years. This meant that the scores for response indicators haven't changed from last year. Of particular importance in this regard; Makgadikgadi has improved in terms of its response indicators, largely owing to the successful establishment of a sanctuary for the flamingo breeding grounds on Sua Pan. In addition, the completion of Makgadikgadi Framework Management Plan for the entire wetland means that improved integrated management and sustainable development in the area, with effective conservation and appropriate management of its resources, including its biodiversity will be formally promoted. The Okavango has also seen some improvements in site-specific management actions, which include the establishment of a five year project to implement basin-wide Integrated Water Resource Management of the Okavango River basin, funded by USAID, called SAREP will form the implementation phase of the tri-party OKACOM agreement between Botswana, Namibia and Angola. This is a huge plus for the future management and conservation of the Okavango deltas biodiversity.

In conclusion, records received from IBAs have decreased considerably since 2009, with very few figures for trigger species numbers. The information received was, however, adequate to successfully assess the state of habitat condition, the current state of pressures and make a good assessment of the conservation and management activities that are either being developed or being implemented in the five of the country's protected IBAs.

Biodiversity at protected IBAs, as shown by birds as a proxy, appears to be generally getting better, although considerable increased pressures threaten them and their biodiversity, compared to 2008 and 2009. Considerable efforts are being maintained by BLB, the government and others to curb these pressures, leading to some significant successful progression towards long-term protection and appropriate management of the country's protected IBAs and elevating the overall response score in 2010 compared to the previous two years



The main concerns that need immediate effective intervention remain in the form of wildlife and habitat destruction from fire, poisoning, overfishing and water pollution, with mining coming out as a serious potential threat in the future. There are some encouraging positives with the successful establishment of protected areas and management planning progress and these actions and activities will certainly help maintain biodiversity in these IBAs in the future.

In addition, great progress has been made in strengthening partnerships between BirdLife Botswana, Botswana's Department of Wildlife and National Parks, and the Department of Environmental Affairs. As well as strengthening and coordinating biodiversity monitoring in protected areas, this report has been used as one of the key indicators used in the government's annual CBD reports. Valuable relations have been forged and maintained with community based Site Support Groups, independent researchers, private tourism operators, and the general public, all of whom have contributed considerably to this monitoring programme.

Finally, the launch of the Common Bird Monitoring programme in November of last year saw the beginning of a very important monitoring tool, which, like TickBird and the Waterfowl counts, could facilitate and augment IBA monitoring record collections. Bi-annual monitoring on defined transects includes recording all species including IBA trigger species and BirdLife Botswana are determined to make these programmes compliment, enhance and sustain the IBA monitoring programme.

1 INTRODUCTION

In 1998, BirdLife Botswana (the BirdLife partner in Botswana) identified and documented 12 sites as Important Bird Areas (IBAs) of Botswana (Barnes, 1998). These sites are (listed with the IBA numbers in parenthesis):

- Chobe National Park (BW001);
- Linyanti Swamps (BW002);
- Okavango Delta (BW003);
- Lake Ngami (BW004);
- Central Kalahari and Khutse Game Reserve (CKGR) (BW005);
- Makgadikgadi Pans (BW006);
- Mannyelanong Hill (BW007);
- Tswapong Hills (BW008);
- Bokaa Dam (BW009);
- Phakalane Sewage ponds (BW010);
- South Eastern Botswana (BW011), and;
- Kalahari Trans frontier (Gemsbok) National Park (BW012).

The Chobe and Okavango Delta IBAs have the richest avifauna, with 433 and 464 species respectively.

The majority of IBAs in Africa (57% of the 1,230 sites) overlap to varying degrees with some kind of protected areas (PAs). Although not all IBA boundaries in Botswana are adequately defined on a map, descriptions of them in Botswana's list of IBAs (Barnes et al., 1998) indicate that some follow the boundaries of already designated protected areas while others follow the bio-geographical boundaries of their respective habitat or ecosystem. Of Botswana's twelve IBAs identified in Botswana, seven of Botswana's Important Bird Areas are partially or entirely covered by some form of designated protected area, under the Botswana government's Wildlife and National Parks Act (Figure 1).

The Chobe National Park and Kalahari Trans frontier National Park IBA completely overlap with their respective National Parks, the Linyanti Swamps IBA is partially protected by the Chobe National Park, the Makgadikgadi Pans IBA is partially protected by the Makgadikgadi Pans and Nxai Pans National Park in the west and the Nata Bird Sanctuary to the east, the Central Kalahari and Khutse Game Reserve and Mannyelanong Hill IBAs are both designated Game Reserves, and the Okavango Delta is partially protected by Moremi Game Reserve (see Appendix 1 for details of the extent of formally protected area coverage at each IBA).

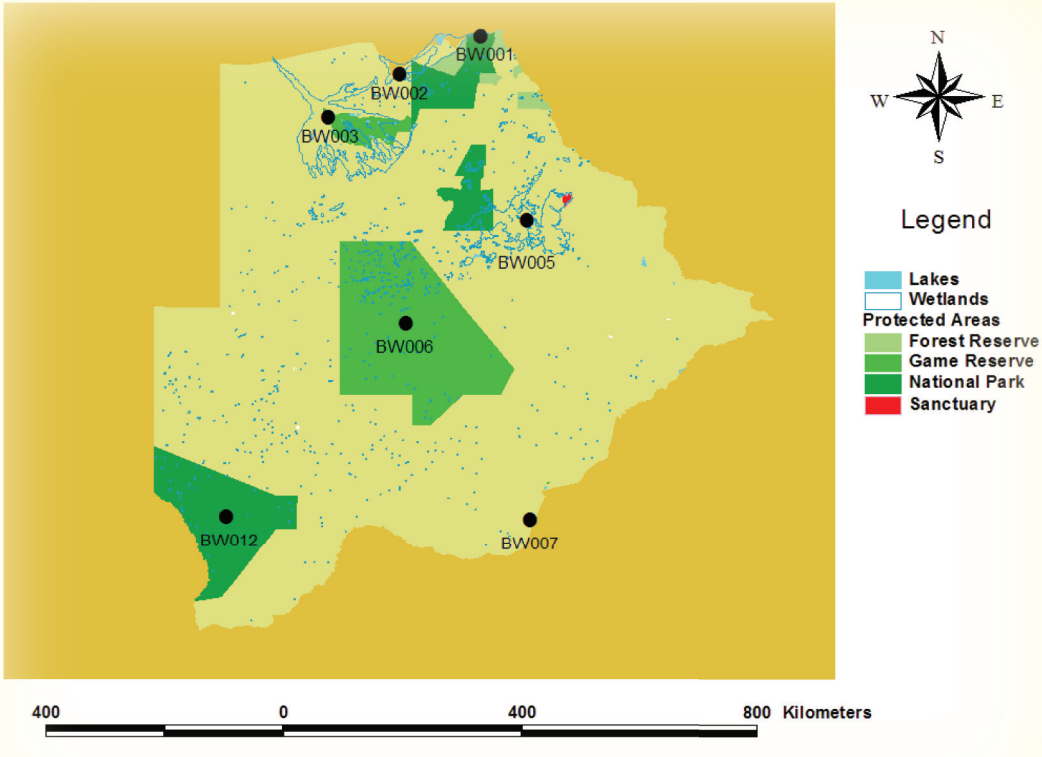


Figure 1. Map of Botswana's seven IBAs, identified by their IBA numbers, that partially or entirely overlap with various designated protected areas: Chobe National Park (BW001), Linyanti Swamps (BW002), Okavango Delta (BW003), Makgadikgadi Pans (BW005), Central Kalahari Game Reserve (BW006), Mannyelanong Game Reserve (BW007) and the Kalahari Trans Frontier Park (BW012).

Even though a huge amount of work has been done by BirdLife Botswana in identifying and safeguarding these IBAs, monitoring efforts at these sites have suffered from a lack of adequate co-ordination. This has been largely due to insufficient funding for designing and achieving active participation of stakeholders in reporting on IBAs.

It has been widely accepted and appreciated that birds function as good indicators of ecosystems (Bennun, 2002; BirdLife international, 2004); particularly wetland health. Since they often respond very quickly to changes in their environment, their status can be a powerful indicator of changes to other organisms in the ecosystem, which are more often difficult to measure. Indeed, birds are monitored in many parts of the world, both for their intrinsic conservation interest and because they can act as indicators of ecological status (e.g. Owino et al, 2001, Tyler, 2001).

In 2007, BirdLife Botswana together with seven other African countries (Burkina Faso, Burundi, Uganda, Kenya, Tunisia, Zambia and Zimbabwe) benefited from European Commission funding to pilot a reporting mechanism for biodiversity at PAs using the Pressure-State-Response model adapted from the global IBA monitoring framework. This four-year project, which commenced in 2007, is regionally referred to as the "Instituting effective monitoring of protected areas (Important Bird Areas) as a contribution to reducing the rate of biodiversity loss in Africa" project. This report is a product of that project, which essentially aims at monitoring the biodiversity status and trends in those IBAs overlapping with protected areas, which comprise critical components of the world's natural ecosystems and biodiversity.

1.1 Overall Project Goal

Since monitoring is not coordinated in most countries, the project seeks to leverage the support from the national agencies mandated to manage biodiversity at protected areas to ensure that the process of monitoring is sustainable and embedded as a core activity that is undertaken on a daily basis. At the institutional and operational level, the Department of Wildlife and National Parks is mandated to manage, including monitor, biodiversity inside PAs and the Department of Environmental Affairs (DEA) reports to CBD on biodiversity (e.g. Anonymous, 2009). The project aims to achieve its goals through ensuring that appropriate capacity is built in the relevant institutions for monitoring and sustaining all stages of biodiversity monitoring at protected areas. The monitoring process should also generate information that is widely available and can be used by the relevant institutions to influence policy and management actions at various levels.

As indicator species, birds have many advantages as a group to use for biodiversity monitoring. They are known more than other groups of organisms and have been shown to be effective indicators of biodiversity richness as opposed to other animals and plant groups. Birds have also been recognised as an excellent barometer 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 projects target sites; those IBAs in Botswana that overlap with protected areas, as listed above. In doing so, this monitoring programme aims to support and strengthen the coordination and capacity of the DWNP in monitoring biodiversity, while providing a useful tool to facilitate its use in national reports and decision making processes. In Botswana the programme has successfully gained full support, especially from the Department of Wildlife and National Parks, without which there would be very little success.

1.2 Aims and Objectives of this report

The report outlines the status of the habitat and/or species, pressures or threats and conservation efforts at PAs overlapping Important Bird Areas (referred to in some parts of this report as protected Important Bird Areas) for 2010. Since not all species can be covered for biodiversity monitoring, birds were used as indicator species. As this is the third report of its kind, the report will present IBA data for 2010 regarding the current scenario, where possible, with respect to avifauna in protected Important Bird Areas. It also compares this year's data with that of 2008 and 2009 to show the trend in protected IBA status, pressures and response indicators since then.

2.0 BACKGROUND TO MONITORING IMPORTANT BIRD AREAS

2.1 What are IBAs?

IBAs are generally 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 are considered in identifying the site as important, are referred to as 'trigger' species. The 'trigger' species in Botswana have been listed in 'Important Bird Areas of Botswana by Tyler and Bishop (1998); see Appendix II for a list of 'trigger' species identified for each protected IBA.

2.2 The IBA Programme

The Important Bird Areas (IBA) Programme of BirdLife International is a world-wide project launched in the mid 1980s aimed at identifying, monitoring and protecting a network of critical sites for the world's birds. The early stages of the Programme focused on developing national constituencies and identifying the sites, and the subsequent ones focus on activities to conserve and safeguard these sites in the long term, with effective monitoring and advocacy taking place. The aims of the programme are:

- Identify and document globally important places for bird conservation in Africa based on inclusion of endemic avifauna, threatened species, concentrations of numbers of individuals or species and representation of regionally characterised bird assemblages.
- Promote, develop and involve national organisations and contributors in the implementation of the programme.
- Increase national contributions to the programme through the promotion of institution- building, network development and training as appropriate.
- Publish and distribute widely a continental directory of sites, Important Bird Areas in Africa and associated islands.
- Promote the publication of national IBA directories in appropriate languages.
- Establish a database containing the critical IBA information in a way that can be maintained, updated and made available in individual countries and to the wider conservation community.
- Inform relevant national authorities, where appropriate, of the programme and seek their acceptance of its concept, aims and progress at the national level.
- Inform decision- makers at all levels of the existence and significance of Important Bird Areas.
- Encourage and initiate conservation actions at Important Bird Areas throughout the continent.

2.3 What is monitoring?

Monitoring involves repeated collection of information over time, in order to detect changes in one or more variables of interest. The general objective for monitoring is to evaluate the success of sustaining biodiversity by measuring specific indicators. Monitoring is a central part of the IBA process. IBA monitoring is needed both to assess the effectiveness of conservation measures and to provide an early warning of the extent of threats to biodiversity at a species, site, habitat, landscape and ecosystem level. Species are very sensitive to changes in their habitat quality and therefore there is an emerging need to understand what changes are relevant to sites and how these changes affect the survival of species for which the sites are designated as IBAs. Such information will help in adapting our interventions accordingly, as well as allocating the scanty resources effectively to the most deserving sites (BirdLife International, 2006).

At the site level, IBAs are monitored in order to:

- Detect and act on threats in good time. Monitoring data provide ammunition for advocacy and information for designing interventions;
- Assess the effectiveness of conservation efforts. Is investment in conservation actually bringing about an improvement? Are 'sustainable use' approaches really proving sustainable?

Nationally, IBA monitoring data provide information on biodiversity status and trends (BirdLife International, 2006). This has a great potential for generating information that could feed directly into the process of reporting to the Convention on Biological Diversity (CBD) and other international and (where appropriate) Multilateral Environmental Agreements (MEAs). It also allows the impacts of economic and environmental policies that affect more than one IBA to be assessed. A regular IBA status report is also a useful product for national advocacy (BirdLife International, 2006).

2.4 The BirdLife global monitoring framework

In Botswana, monitoring of these areas and the avian biodiversity they contain has largely been built on the use of a global monitoring framework developed by BirdLife International (2006). The monitoring tool is based on a Pressure–State-Response model - Pressures are threats facing the trigger species and/or the habitat for the trigger species; the State refers to the condition or situation of the habitat or population of the trigger species; and the Responses are the conservation actions taken to reduce the threats or improve on habitat conditions. This monitoring tool uses the weakest link approach, which detects change without giving details on the cause of the change. The weakest link approach identifies the most negatively affected habitat or species to be considered for management or intervention. Consistency in monitoring is crucial in ascertaining the actual measure of the population over time.

2.5 What should we Monitor?

In order that IBAs can be managed to conserve important bird populations and other biodiversity, we need to understand what is happening to IBAs in relation to those bird species for which the sites qualify. We cannot monitor every relevant attribute of an IBA, so we need to choose indicators that are appropriate for our conservation goal. The BirdLife International Monitoring Framework places indicators into a 'Pressure–State–Response' framework; an approach that has also been adopted by the CBD (Figure 2):

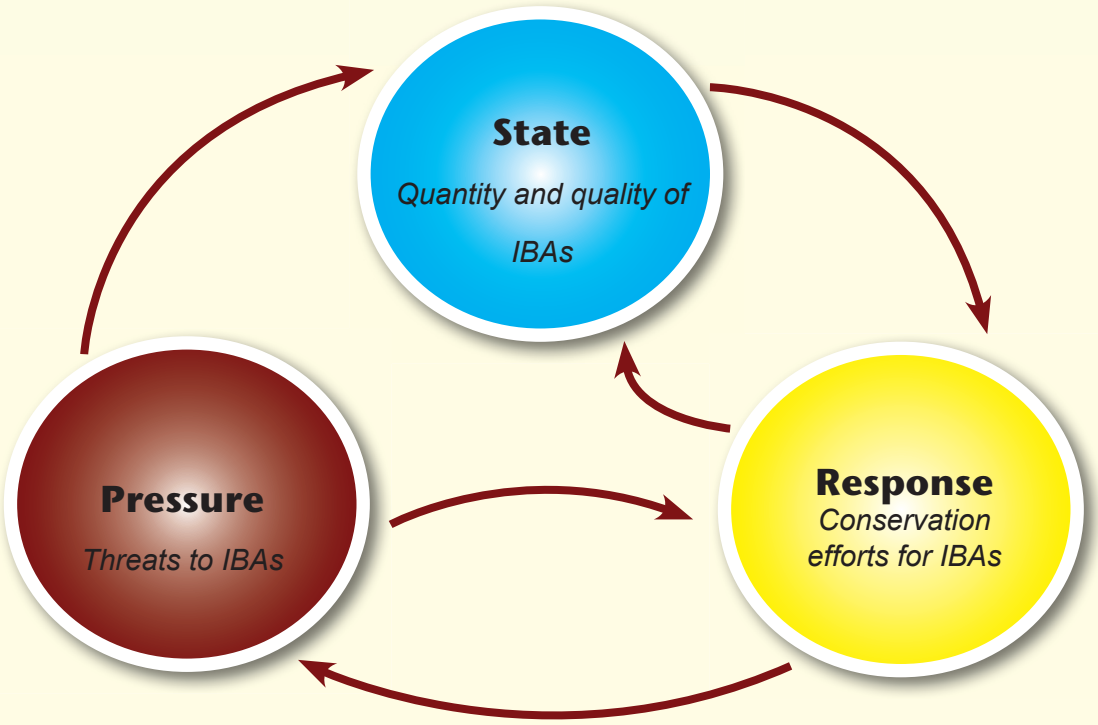


Figure 2. The relationship between indicators of pressure, state and response

Pressure

Pressure indicators identify and track the major threats to important bird populations at IBAs. Examples include rates of agricultural expansion, over-exploitation and pollution.

State

State indicators refer to the condition of the site, with respect to its important bird populations. State indicators might be population counts of the birds themselves. They might also be measures of the extent and quality of the habitat required by these birds.

Response

Response indicators identify and track conservation actions: for example, changes in conservation designation, implementation of conservation projects and establishment of LCGs.

2.6 Monitoring history

In 2006, monitoring protocols for IBAs in Botswana were produced. In 2007, a comprehensive monitoring report for three IBAs (Lake Ngami, Makgadikgadi Pans and Linyanti Swamps) was then produced (BirdLife Botswana, 2007). 2009 saw the beginning of the engagement and training of monitors from all stakeholders, which resulted in the first baseline data report. In the long run, the intention is to monitor and assess all other IBAs and protected areas.

3.0 METHODOLOGY

3.1 Application of the global monitoring framework

IBA monitoring was guided by the IBA global monitoring framework (BirdLife International. 2006). IBA monitoring sheets were distributed to all stakeholders to facilitate data entry and information gathering, summarized by the Status, Pressure, Response format and methodology below. To facilitate collation of the data and information gathered, IBA specific data sheets were designed per IBA (see Appendix III for an example of a completed IBA data sheet for the Okavango Delta).

3.1.1 Status of the birds and habitat

The state indicator refers to the state of the bird species in terms of numbers recorded for a particular site or the condition of a particular habitat for the trigger species, ranked according to Table 1, below. A recorder can monitor the species number or the habitat condition or both depending on the recorder's confidence. The basic assessment of the habitat is considered in relation to the trigger species.

Table 1. A key to assessing the habitat condition as interpreted by the recorder

Status				
	0	1	2	3
Habitat	Very poor	Poor	Moderate	Good

3.1.2 Pressures/threats

Several threats were identified for a particular IBA and all described further by being assigned scores using Table 2 as a key to scoring. Scores were then summed to get a total impact score. A pressure or threat with a high score became a major threat at the site of assessment. It is worth noting that the summation is assigned a negative, as it is an unwanted item i.e. the more negative it is the more intense it is.

Table 2. Key to assigning scores to the threats or pressures to the bird species or habitat.

Scores				
	0	1	2	3
Timing	Past, unlikely to return, no longer happening	To happen beyond four years (long term)	To happen within four years (short term)	Happening now
Scope	Small area/ few individuals (>10%)	Some of the area/small population (10-50%)	Most of the area/ population (50-90%)	Whole area/ population (>90%)
Severity (Over 10 years or 3 generations)	No deterioration (<1%)	Slow deterioration (1-10%)	Moderate deterioration (10-30%)	Rapid deterioration (>30%)

3.1.3 Conservation measures/ response

Conservation measures at each site were recorded and assigned scores using guidance from Table 3,on the next page.

Table 3. Key to recording the management intervention at the site and scores used in assessing different action types

Action type Scores				
	0	1	2	3
Conservation designation	Little or no IBA covered (0 - 10%)	Some IBA covered (10-49%)	Most IBA covered (50-90%)	Whole area (more than 90%)
Management plan	No management planning has taken place	No management plan but management planning has begun	Management plan exists but out of date or not comprehensive	Comprehensive and appropriate management plan exists that aims to maintain or improve the populations of species
Conservation action	Very little or no conservation action is taking place	Some limited conservation initiatives in place	Substantive conservation measures being implemented but not comprehensive and limited by resources and capacity	Conservation measures needed for the site are being comprehensively and effectively implemented

3.2 Sources of information

Recorders from the Department of Wildlife and National Parks (park wardens and wildlife officers), tour operators (mainly professional guides), and members of the communities around protected Important Bird Areas were trained using the BirdLife International Global Monitoring Framework version 1.2 (2006), as outlined above. Appendix IV shows the list of recorders that contributed to the data and information gathering in 2010.

In addition to the data that was collated on the IBA monitoring data forms, additional information from the bi-annual waterfowl counts at some of the IBAs was used where necessary to augment or fill in data gaps in species numbers. A review of current management plans for the protected areas overlapping Important Bird Areas was carried out to obtain information relating to, and to put into context the Response indicator of the global monitoring framework.

3.3 Analysis and presentation approach

Information was analysed for each site and presented accordingly to obtain the status quo on the state, pressure and response indicators:

State:

• The highest number of each species recorded on an individual IBA monitoring form was documented in tabular form for each IBA to indicate its status with regard to the trigger species populations;

• Habitat status was used to score each IBA and the resulting scores were compared for each IBA using a graph, with a graph illustrating the change in habitat condition (scores) from 2008 also included;

Pressures:

• Pressures were identified for each IBA and listed in a table to summarise them and their frequency of use by recorders;
• The pressures score for each IBA were compared in a graph and a comparison with pressure scores form 2008 and 2009 highlighted using a graph;

Responses:

• The list of responses (conservation/management actions) for each IBA were identified and listed in a table to identify what actions were taking place and where;
• Response scores for each IBA were compared among IBAs and with 2008 and 2009 response scores using graphs;

Trends:

Overall state, pressure and response scores were summarized in a graph for 2010 and compared with similar overall scores for 2008 and 2009 to identify the current trend by plotting the average state, pressure and response scores for each year.

Recommendations:

Based on the amount and quality of the data received this year and the resulting information and analysis, a set of recommendations were made to highlight where improvements can be made in the current monitoring programme, its coordination and to any of the information that contributes to IBAs and its effective management and conservation of biodiversity within.
Action type

4.0 RESULTS

4.1 Findings and discussion

Records were received from five IBAs i.e. Chobe National Park, Okavango Delta, Makgadikgadi Pans, Lake Ngami and Mannyelanong Game Reserve. Lake Ngami is not a site considered in the scope of this project but the data recorded from this site were included in the analysis as they were seen to be important and relevant. In the long run, the intention is to monitor and assess all other IBAs and protected areas and include figures of trigger species recorded through the Common Bird Monitoring, as well as TickBird and Waterfowl count numbers as much as possible.

4.1.1 State indicators

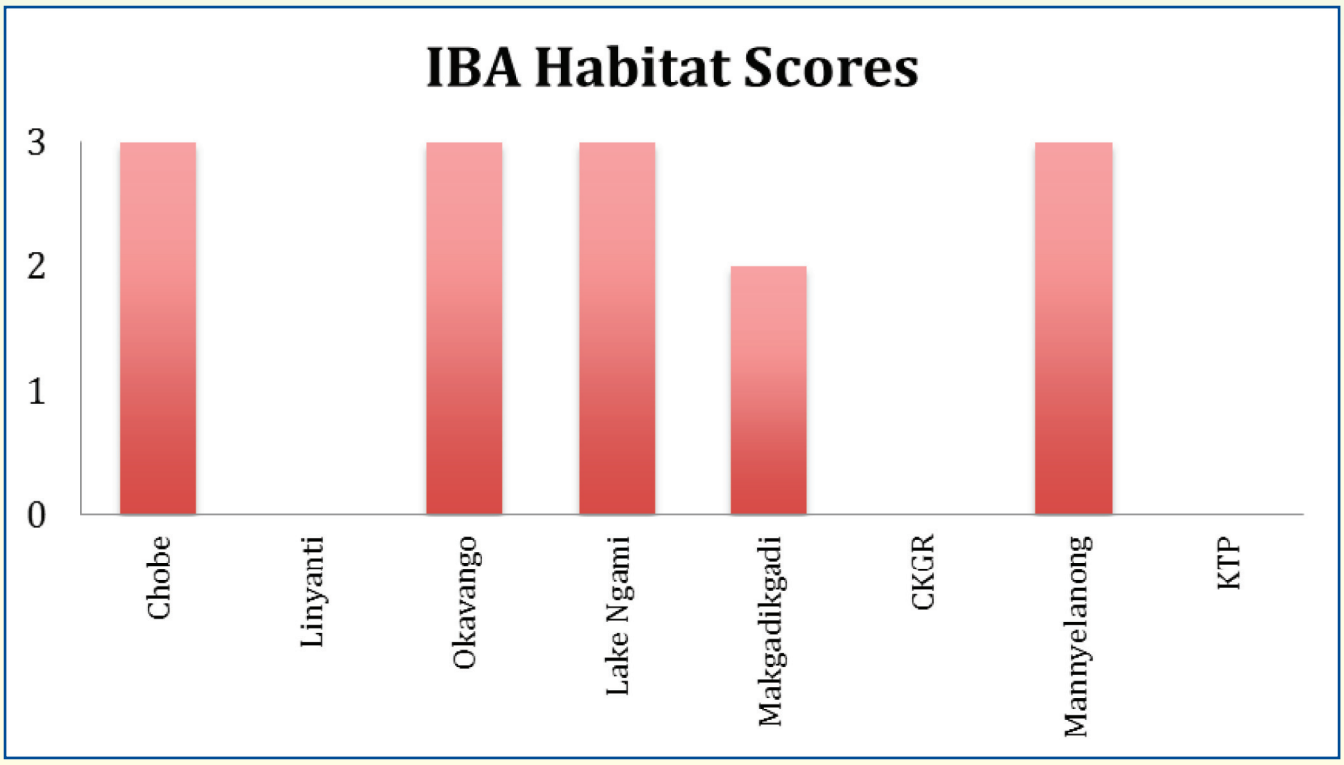
Records for the numbers of trigger species recorded at each site was very low at all IBA sites during 2010, with records coming mainly from the Chobe, Okavango, Ngami and Makgadikgadi IBAs, where there were more recorders (independent researchers and individual birders and safari guides) compared to those IBAs that relied on DWNP recording e.g. KNP and CKGR. Even at these four sites, the records for trigger species numbers were very scanty and only numbers for some species were provided. Table 4 lists the trigger species identified and their highest number counted by an individual recorder, at each IBA during 2010.

The highest numbers of wetland trigger species were found in the Okavango and Makgadikgadi, with Wattle Crane and Slaty Egret making up the numbers in the Okavango and flamingos, once again breeding successfully on Makgadikgadi in their tens of thousands. Lappet-faced Vultures and White-backed Vultures, once again made up the largest numbers of trigger species recorded in the Chobe National Park.

Table 4. Trigger species and their highest recorded number for each protected IBA.

SPECIES	Chobe National Park	Linyanti Swamps	Okavango Delta	Lake Ngami	Makgadikgadi Pans	Central Kalahari Game Reserve	Mannyelanong Game Reserve	Kalahari Trans-frontier Park
Lappet-faced Vulture	25							
White-headed Vulture	25							
White-backed Vulture	150							
Wattled Crane			1400					
Slaty Egret			4000					
Greater Flamingo				100	40000			
Lesser Flamingo				100	60000			
Great White Pelican				200				
Bradfield's Hornbill	200							
Marabou Stork	150							
Woolly-necked Stork	20							
African Skimmer	200							

As a result of the low numbers of bird counts recorded and submitted in 2010, the habitat quality was used more often to assess the state of the IBAs (Figure 3). The overall state of the IBAs was still good this year, with only the Makgadikgadi IBA scoring below good for habitat condition/quality (moderate). Figure 3 shows that the habitat state of most IBAs has remained the same since 2009. The Okavango IBA has, however, experienced an increase in its overall habitat condition indicator owing largely to the exceptionally large flooding that has persistently occurred during the winter periods of 2008 and 2009 in these wetlands, providing larger safer habitat for the water bird trigger species.



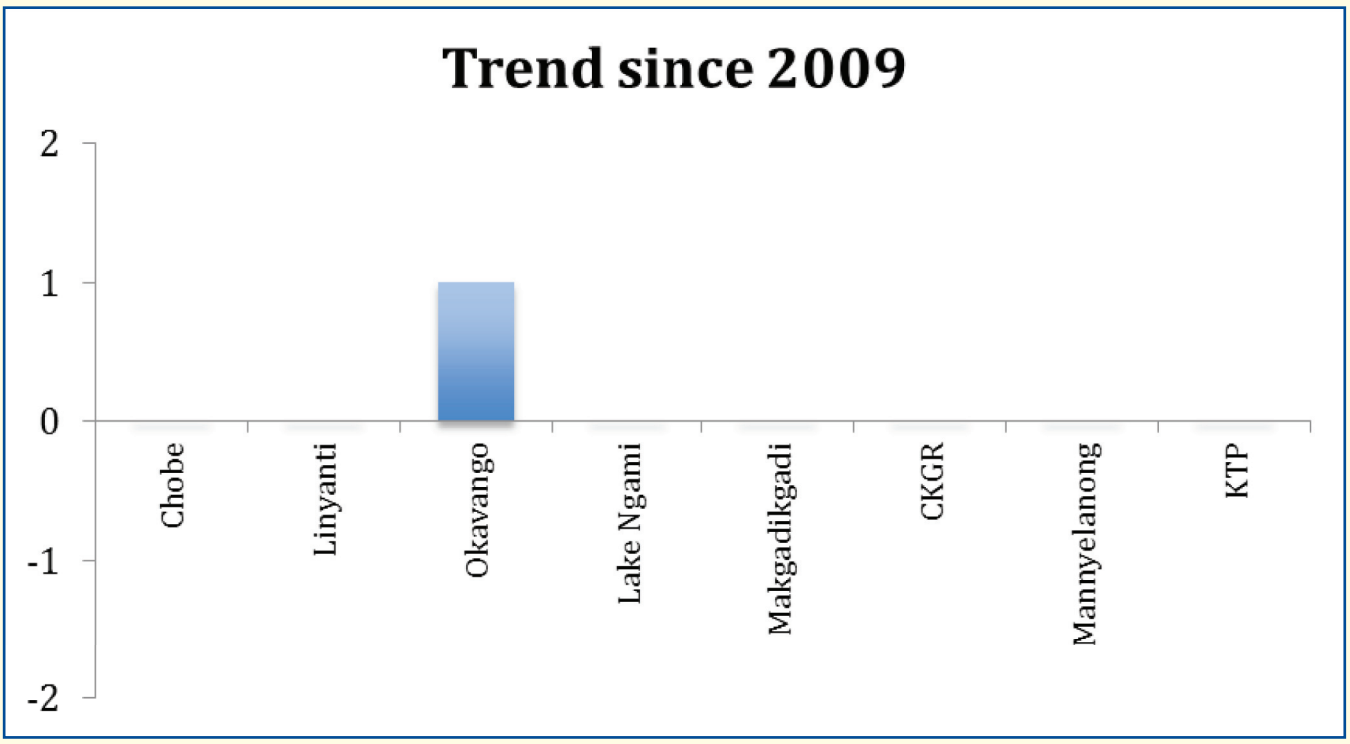


Figure 3. IBA habitat scores collated from the data forms for each IBA and the trend (difference in scores) in habitat condition since 2009.

4.1.2 Pressure indicator

The number of threats identified by recorders in Botswana's protected IBAs decreased in number by three compared to 2009, from twenty two to nineteen different threat types. This is mainly because the number of IBAs, for which records were received decreased from the previous year and DWNP staff did not record threats like illegal poaching and road construction impacts in Game reserves and National Parks. Again, the data came from BLB and independent researchers and no information was collated by DWNP this year. Table 5, below, provides a summary of the status of threats for these IBAs in 2010, with the average pressure score provided for each threat, at each IBA.

The IBA with by far the most threats is Makgadikgadi (16), owing to its enormous size and the wide variety of increasing land use changes and development around the wetland. In particular, an increase in mining activity at Soda Ash mine and the increased development at the diamond and new copper mines in the catchment has increased the overall threat level associated with these activities to 3. The number of threats to the Okavango and Lake Ngami has also increased, where threat levels have also increased to three on account of, respectively, poisoning and fishing pressures. Indeed, the severity of the threat from poisoning has become such a serious issue, with impacts on vulture populations being observed across the country, that this threat has increased the overall level of pressure in the Chobe, Okavango and Mannyelanong to 3. Those threats at Chobe are largely a result of the increase in impacts and pressures on the system and its trigger species in the surrounding area from farming (and its associated conflict activities, e.g. poisoning) and pollution.

A summary of the state of Botswana's protected area pressures is illustrated in figure 4, below. In comparison with last year's pressure scores, all of the IBAs, except for Mannyelanong received higher threat scores, with all scoring a maximum -3 score, i.e. their pressures have increased in severity. In particular, the pressure score at Lake Ngami has increased in severity by 2, to -3, owing to the rapid increase and threats from fishing in the lake. Large and ever increasing numbers of fishing nets are now being deployed in the lake, threatening the feeding and breeding conditions for fish-eating trigger species. Overall, the pressures of the major wetland IBAs have increased during 2010, owing to an increase in poisoning, fishing pressure, fires and impacts from mining.

Table 5. Threats identified by recorders in Botswana's protected IBAs, in 2009.

Threats	Chobe National Park	Linyanti Swamps	Okavango Delta	Lake Ngami	Makgadikgadi Pans	Central Kalahari Game Reserve	Mannyelanong Game Reserve	Kalahari Trans-frontier Park
• **Poisoning of by farmers**	3		3				3	
• **Over-fishing**	2		2	3				
• **Water quality reduction/ pollution by sewage**	2				2			
• **Habitat conversion by development**	1							
• **Commercial farming impacts**					1			
• **Hunting; subsistence and sport**	2			2	1			
• **Fire**			2		2			
• **Habitat destruction by elephants**			1					
• **Mining activities**				1	3			
• **Powerline obstacles**					2			
• **Tourism desturbance**			1	1	2			
• **Proposed Dam**					1			
• **Long-term ground water level impacts**					2			
• **Invasive species**			1		1			

• **Problematic natural species**				2		
• **Solid waste pollution**				1		
• **Air-bourne pollution**				1		
• **Noise pollution/ disturbance**				1		
• **Light pollution**				1		
• **Natural climate alterations**				2		
Total Threats per site, reported by DWNP (D) or independent researchers (IR)	5 (IR)	6 (IR)	4 (IR)	16 (IR)	3 (IR)	

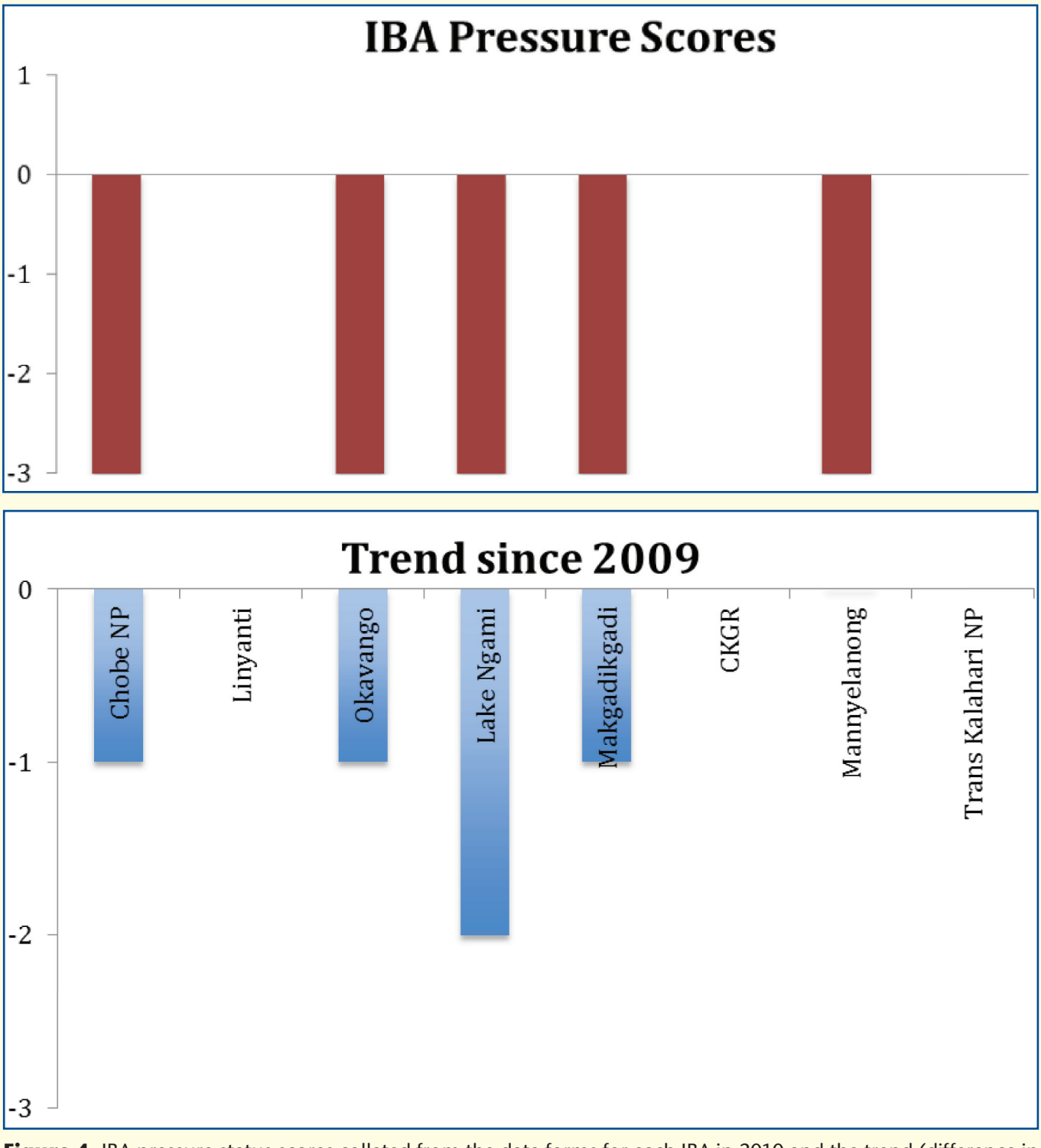


Figure 4. IBA pressure status scores collated from the data forms for each IBA in 2010 and the trend (difference in scores) since 2009.

Fishing and poisoning were recorded as the most frequent and highest scoring pressures to occur in the five protected IBAs in 2010, and scoring an average of -3 in each case. This differs somewhat from the highest scoring threats recorded in 2009, which included fire as a major threat to the habitat. 2010 was, however, once again one of the worst years for the extent and intensity of fire outbreaks in recent history (see below for more details). The fact that this pressure did not come out strongly in this report as a threat was most likely a result of the absence of monitoring forms from the DWNP relating to the CKGR and KNP IBAs. The impact of fire on the Makgadikgadi National Park was severe, affecting many wildlife species, including observed Elephants and Zebra with large burn scars.

The following threats on protected IBAs are highlighted for serious consideration as they have serious long-term impacts and ramifications on the conservation of the IBA trigger species and biodiversity in general, and require regulation and improved long-term conservation action and management interventions.

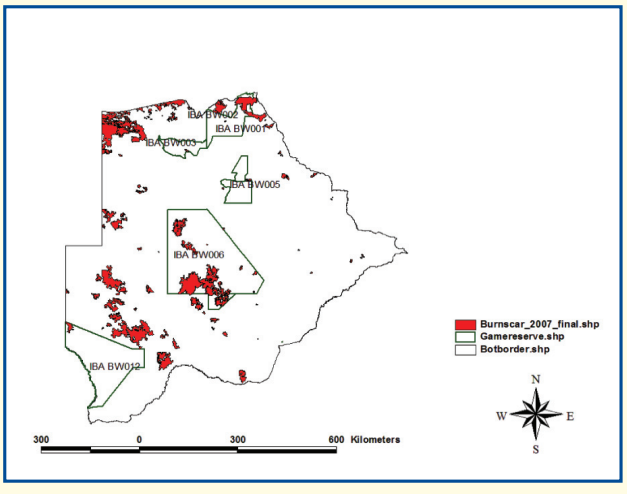
Fire

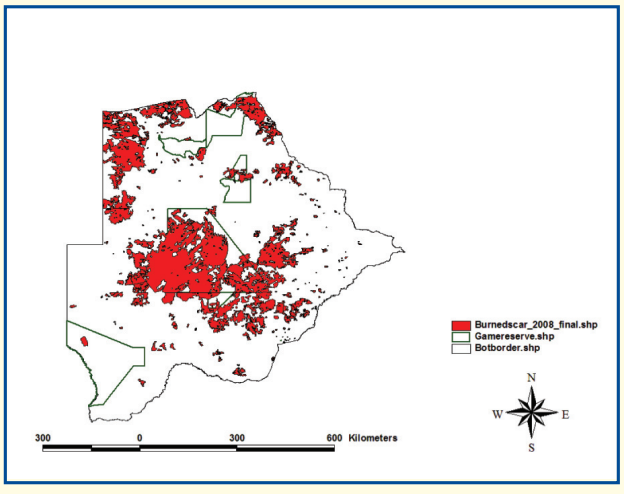
Fires impact birdlife in a number of ways; they cause damage to and loss of reed-beds that were important as roost or breeding sites and have also killed young birds, such as egrets and Squacco Herons, in their nests at breeding colonies. Fires also result in the loss of many old dying or mature trees which are important as nest sites for many hole-nesting birds as well as providing invertebrate food for species such as woodpeckers and Wood-Hoopoes. Standing dead wood is a very important resource for many bird species.

Owing to a recent wet period in Botswana's climate, recent wet seasons have provided higher than average rainfall. This has resulted in large amounts of biomass in the vegetation, particularly, among the grass sword of large grasslands across all protected areas in Botswana. Large-scale fires during 2008 and 2010 have been among the worst experienced in recent history, with large areas being affected and many plants and animals perishing (Figure 5). Figure 2 shows fire occurrences in Botswana from 2007 to 2010. On average, fire impacts on Botswana's IBAs have been ranging between a combined pressures score of 4 and 5.67. The extent of fires in consecutive years suggests that habitat deterioration due to human induced fires is followed by a small improvement the following year and vice visa, indicating a two year biomass accumulation period before fires become widespread and destructive (Figure 5). Fire impact on Botswana's IBAs appears, however, more pronounced on IBAs in central and western Botswana compared with those in northern Botswana. Among other factors that may explain this trend is that part, or most of the areas surrounding IBA in northern IBAs comprise wetlands (natural fire breaks) or are leased by private companies who actively manage fire outbreaks and conduct preventative fire management.

The frequency and extent of fire incidents has increased, in general, in recent years as a result of an increased number of fire generating activities in and around the protected areas, like farming activities, grass cutting and poaching with their associated camps. 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 or cigarette disposal.
It is important, therefore, to address two major issues in relation to this increased occurrence and spread of fires:

1. Reduce their causes by increased awareness and prevention of the dangers of camp fires and cigarette disposal, for example, if not extinguished properly, and;
2. Improve fire management in protected areas by building on and improving existing management programmes; fire extinguishing techniques and pro-active preventative measures.





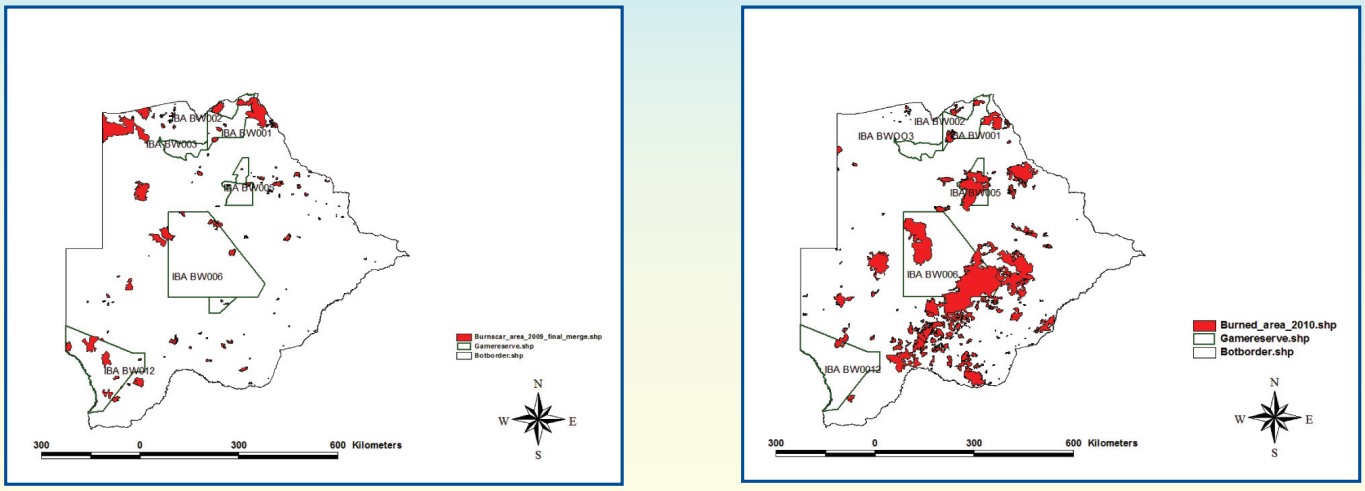


Figure 5. The extent of area damaged by fires in Botswana during the dry seasons of 2007, 2008, 2009 and 2010.

Poisoning

In August of this year, BirdLife Botswana (through Pete Hancock) initiated a formal request for action against the use of illegal poisoning of birds and mammals, addressed to the Minister of Environment, Wildlife and Tourism. The following comes from this informed request for action:

In the past two years, a minimum of 160 globally threatened vultures have been poisoned in northern Botswana in three major incidents. Typically, large numbers of vultures (in excess of 50) are killed at each incident, and this constitutes the single greatest threat to the birds in Botswana. Where it was possible to identify the poison used, it was an agricultural insecticide, Carbofuran, but some poisoning incidents almost certainly involved a second insecticide, Aldicarb. The motives for the poisoning vary: In most cases, the vultures are innocent victims of attempts to kill 'problem' predators, but at least one incident - in the Xudum area of the Okavango – the vultures were targeted by poachers who claimed that the birds were alerting the authorities to their activities. It is believed that the poisons are being brought illegally into the country from Zimbabwe, in small, unlabelled packages (which are illegal) and sold on the street as 'rat poison'.

Other African countries, notably Kenya, are working towards a complete ban of these insecticides, and Botswana should do the same. However, a ban alone will not suffice. Botswana already has the legislation needed to curb illegal use of these pesticides – it needs to be enforced more rigorously in conjunction with a ban. For example, when the Police check vehicles passing through the veterinary gates, they should be looking for unlabelled packages of the poisons (the environmental NGO community can produce awareness posters for the police showing what the poisons look like).

Mining

Mining development is becoming an ever-increasing threat to IBAs around Botswana. A recent increase in the number and types of mining activities, particularly around Makgadikgadi, and now, too, near Lake Ngami (new copper mine) has resulted in an increase in the number of potential threats and observed impacts to birdlife in and around these IBAs. In addition to physical presence of obstacles and disturbance at the mines themselves, increasing mortalities and disturbance have been observed along the infrastructural routes (roads and power lines). While these infrastructural developments may be necessary, proper due diligence and appropriate effective mitigation of such impacts are not given enough attention and enforcement of EIA recommendations in this sector, in particular, is for some reason severely lacking.

There is also the added threat of the long-term impacts to environmental health, in particular through the deterioration in groundwater and surface water quality, which are impacts that are much harder to flag and predict, being difficult to gauge and quantify. These potential threats are, however, potentially much more concerning with far reaching ramifications, and very often not fully quantified or understood until it is too late. Appropriate comprehensive monitoring programme nestled in a 'precautionary principle' approach to management, that leads to swift adaptive management interventions in response to the data and analysis that results is, therefore, essential to avoid and mitigate against such serious impacts. This is something that could be paid more attention to in this monitoring programme, and certainly should be enforced among the various mining companies throughout the country.

4.1.3 Response indicator

Botswana total area: 578,150 km2 of which 242,120 km2 (41.9%) is set aside for conservation. About 17 percent of the country has been set aside as national parks and game reserves, with 20 percent set aside for wildlife management areas. Despite the impressive extent of the countries' protected area status, management of these sites still lacks co-ordinated monitoring be it of species or habitat. Out of the twelve IBAs, only six are protected and the rest are not. Some sites though not protected such as the Tswapong Hills and South-eastern Botswana, hold globally threatened species, namely the Cape Vulture and Short-clawed Lark respectively.

Submissions from recorders regarding responses or conservation measures and management interventions were again varied for different sites. While many remained largely the same as those identified last year, there were some encouraging success stories in terms of the progress of some conservation measures that have been progressing over the past few years. This meant that the scores for response indicators haven't changed from last year (Figure 6).

Of particular importance in this regard; Makgadikgadi has 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 by law, under the Wildlife Act, which strictly prohibits entry into, or flights over the sanctuary (below 7000ft), without prior written permission by the DWNP and the Ministry of Environment Wildlife and Parks, and only for purposes of approved research. The regulations for the sanctuary have been drafted, which include provision for a buffer zone around the sanctuary that will promote controlled and well-managed tourism activities that will benefit the surrounding communities.

In addition, the completion of Makgadikgadi Framework Management Plan for the entire wetland means that improved integrated management and sustainable development in the area, with effective conservation and appropriate management of its resources, including its biodiversity will be formally promoted. Approval of the plan by the government late in the year means that implementation of the plan will start in 2011.

The Okavango has also seen some improvements in site-specific management actions, e.g. continued and improved legislative management implementation, as a result of the 2008 implementation of the Okavango Management Plan and the actions of the Bio-Okavango project in forming strategic partnerships with various institutes and NGOs, and conducting various implementing activities in and around the delta. In addition, the funding and establishment of a five year project to implement basin-wide Integrated Water Resource Management of the Okavango River basin, funded by USAID, called SAREP will form the implementation phase of the tri-party OKACOM agreement between Botswana, Namibia and Angola. This is a huge plus for the future management and conservation of the Okavango Delta's biodiversity.

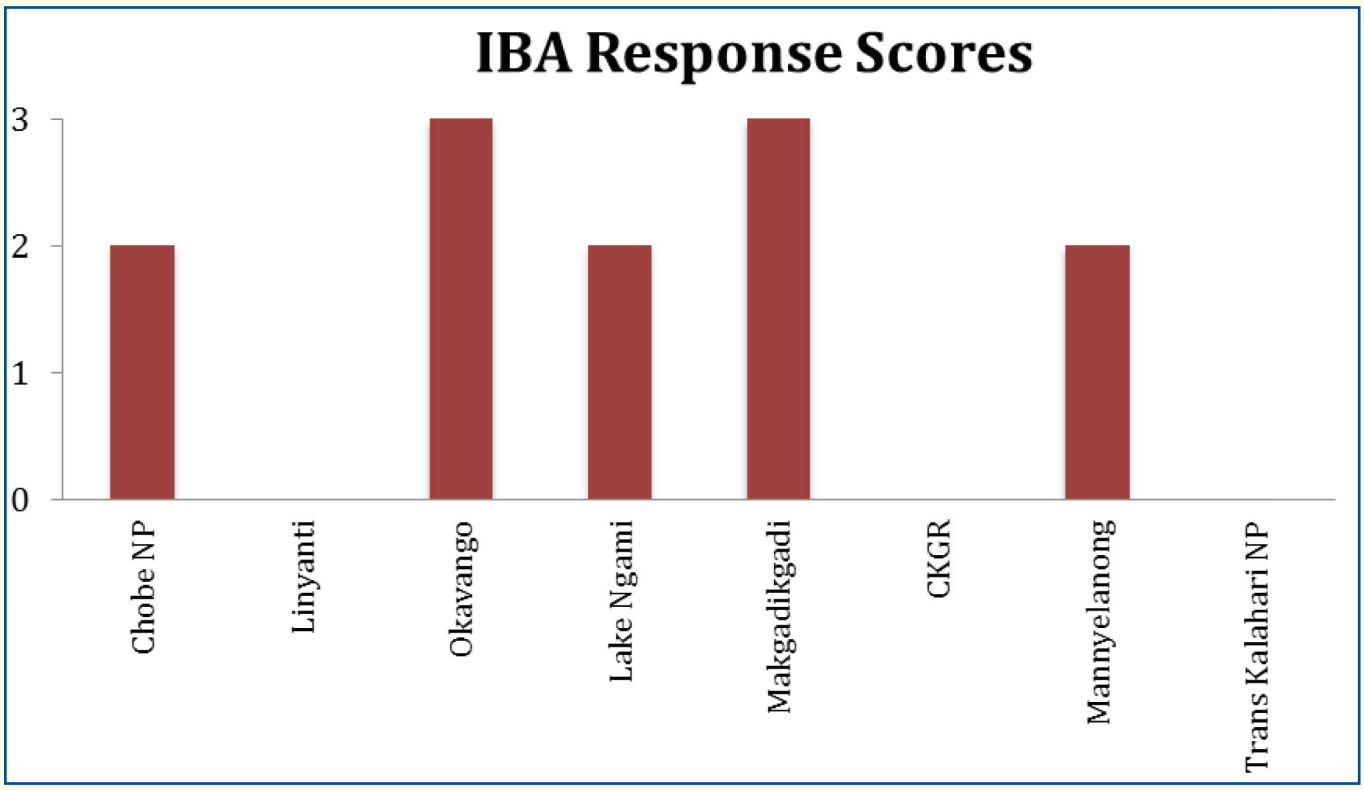


Figure 6. IBA response indicator scores collated from the data forms for each IBA in 2010.

4.1.4 Pressure, State and Response Trends

Records received from the IBAs have decreased considerably since 2009, with very few figures for trigger species numbers in 2010. The information received was, however, adequate to successfully assess the state of habitat condition, the current state of pressures and make a good assessment of the conservation and management activities that are either being developed or being implemented in the five of the country's protected IBAs.

Biodiversity at protected IBAs, as shown by birds as a proxy, appears to be generally getting better, although considerable increased pressures threaten them and their biodiversity, compared to 2008 and 2009 (Figure 8). Considerable efforts are being maintained by BLB, the government and others to curb these pressures, leading to some significant successful progression towards long-term protection and appropriate management of the country's protected IBAs and elevating the overall response score in 2010 compared to the previous two years (Figure 8).

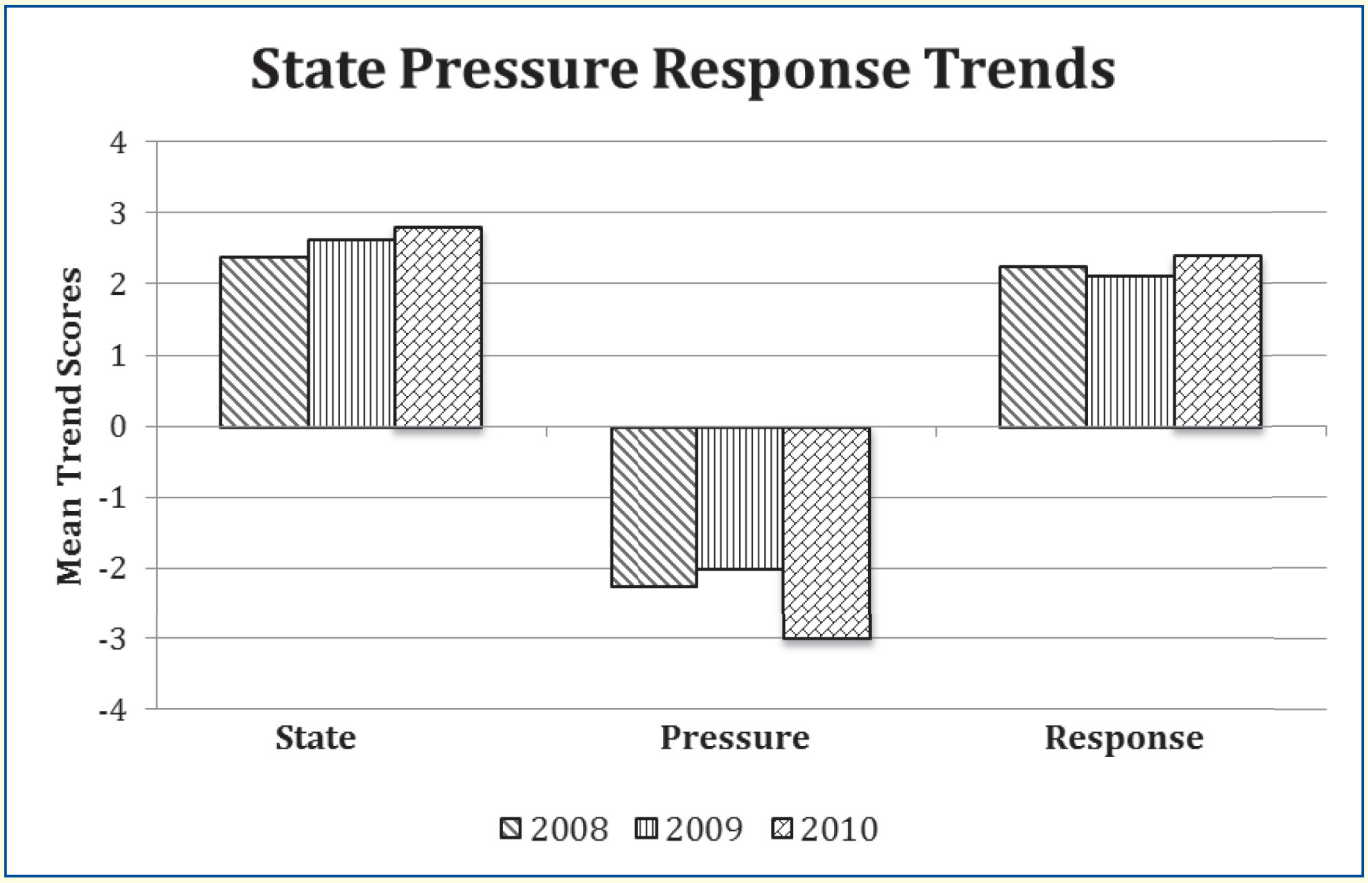


Figure 8. State, Pressure and Response trends since 2008.

5. Conclusions

In conclusion, records received from IBAs have decreased considerably since 2009, with very few figures for trigger species numbers. The information received was, however, adequate to successfully assess the state of habitat condition, the current state of pressures and make a good assessment of the conservation and management activities that are either being developed or being implemented in five of the country's protected IBAs. Biodiversity at protected areas, as shown by birds as a proxy, remains stable, although considerable increased pressures threaten them and their habitat, while considerable conservation efforts are being maintained by BLB, the government and others to curb these pressures, leading to some significant successful progression towards long-term protection and appropriate management of the country's protected IBAs.

The main concerns that need immediate effective intervention remain in the form of wildlife and habitat destruction from fire, poisoning, overfishing and water pollution, with mining coming out as a serious potential threat in the future. There are some encouraging positives with the successful establishment of protected areas and management planning progress and these actions and activities will certainly help maintain biodiversity in these IBAs in the future.

In addition, great progress has been made in strengthening partnerships between BirdLife Botswana, Botswana's Department of Wildlife and National Parks, and the Department of Environmental Affairs. As well as strengthening and coordinating biodiversity monitoring in protected areas, this report has been used as one of the key indicators used in the governments annual CBD reports. Valuable relations have been forged and maintained with community based Site Support Groups, independent researchers, private tourism operators, and the general public, all of whom have contributed considerably to this monitoring programme.

This IBA status and trends report is a national tool that can and should be used to guide decision making, development planning, enhance collaborative partnerships and reporting on international obligations including the Convention on Biological Diversity (CBD). To this effect, great progress has been made in strengthening partnerships between BirdLife Botswana, Botswana's Department of Wildlife and National Parks, and the Department of Environmental Affairs. As well as strengthening and coordinating biodiversity monitoring in protected areas, this report has been used as one of the key indicators used in the governments annual CBD reports. In addition, valuable relations have been forged and maintained with community based Site Support Groups, independent researchers, private tourism operators, and the general public, all of whom have contributed considerably to this monitoring programme.

6. Recommendations

BIRDLIFE BOTSWANA

1. An update of the protected IBAs trigger species lists is required per site to take into account the new additions of threatened species to the IUCN Red Data list.

2. Efforts are required to define the IBA boundaries of some of the IBAs where boundaries are arbitrary and PA overlap is unclear, based on new research and PA management planning that have occurred since IBA identification in 1998. Remote sensing and GIS techniques would be invaluable in this regard.

3. Further training is needed on IBA monitoring and bird identification (trigger species), as well as data management among some of the stakeholders, particularly the DWNP given the frequency of staff turnover and the inconsistency of reporters and report quality as a result.

4. Improved co-ordination of and relations with the DWNP participants to ensure adequate form completion, quality control and timely submission, providing additional support to the DWNP focal point coordinator.

5. Site Monitoring Committees remains an area needing improvement. BirdLife should focus further concerted efforts in this direction to establish key SSGs where they are urgently required or support those already existing by way of additional participatory involvement encouragement and co-ordination, and capacity building.

6. Improved efforts to increased the scope of and incorporate the Common Bird Monitoring (CBM) System into the monitoring programme, as it has great potential to include bi-annual trigger species monitoring during CBM transects.

7. Additional financial and human resources support should be sourced from stakeholders in the implementation of the programme and to ensure the sustainability of the monitoring.

8. Improve on the co-ordination and the platform for participants to give feedback on their involvement, and identify ways of motivating participants to continue monitoring.

9. Organize exchange visits for community participants so that best monitoring practices can be shared and interest is encouraged and improved.

10. Improve the monitoring programme by paying more attention/training and informing recorders to recording potentially serious pressure and impacts, like indicators of mining pressure, for example.

Department of Wildlife and National Parks

11. Considerable efforts are required to ensure adequate form completion, quality control and timely submission of forms by particpants from the DWNP at each protected IBA. Improved coordination by the DWNP focal point coordinator will help in this regard.

12. Before monitoring can be extended to unprotected IBAs, the system needs to show more signs of it being sustainable and engaging more recorders. DWNP could be extended to protected areas that are not IBAs first, which would satisfy the CBD requirements on biodiversity status in the protected areas. This would also help involve more officers and spread and improve monitoring capacity among DWNP officials.

13. The IBA global monitoring framework adoption in the DWNP could be improved by its further and sustainable incorporation into the general MOMS system, thereby, assisting the latter programme's effectiveness and successful implementation.

14. The most important threats, especially fires, poisoning, over-fishing and water pollution, should be acted upon through specific focused management interventions in the respective PAs by District wildlife officers and their subordinates;

- Fire management needs considerable improvement in order to reduce the destruction of biodiversity, through effective clearing of fire breaks, back burning and improved patrolling practices (camp fire management) and community awareness of the dangers of fire mismanagement;

• Improved Human-Wildlife Conflict mitigation measures should include the enforcement of the ban on illegal pesticides used to kill predators and scavengers in the community surrounding PAs and nation-wide in general. Outreach programs could include submission of poisons for compensation, or other strategies to curb their use and the shocking slaughter of vultures and other raptors, as well as mammalian scavengers;

• Bio-Okavango have implemented a project in the Okavango to identify and raise awareness of No-go fishing areas, in order to provide refuges for fish stocks and enforce the fishing ban during the fish breeding season. This project can be implemented by DWNP along waterways in the respective PAs at some of the other IBA sites.

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APPENDIX I: Degree of protected area coverage and other management designations for seven protected IBAs in Botswana.

IBA	Protected Area	Management Plan	Status of the management plan	Size of the IBA in Ha	% of IBA protected
Chobe	Chobe National Park	2002 (Final Draft)	Outdated, but appropriate for the objectives set	1 069 800	100
Linyanti	Chobe National Park & Chobe Forest Reserve	2002 (Final Draft) None	Outdated, but appropriate for the objectives set	20000	Unknown/ no well defined boundaries
Okavango Delta	Moremi Game Reserve Okavango Delta Management Plan area	2006 (Final Draft) Okavango Delta Management Plan	Not yet approved Approved and implemented since 2008	1 900 000	25% of the IBA area: (487100)
Makgadikgadi Pans	Makgadikgadi Pans and Nxai Pan National Park ('The Pans Parks') & Nata Bird Sanctuary Flamingo Sanctuary Makgadikgadi Wetlands	2006 2008, Flam Sanctuary Regulations Makgadikgadi Framework M P (MFMP) 2010	Pans Parks MP approved, but out dated. Nata Bird Sanctuary MP: approved Draft Complete and Approved	1 200 000	IBA boundary not clearly defined but Pans Parks is 62% of IBA area (747800) Nata Bird Sanctuary: 1.7% (20000) 100% covered by MFMP area (3,645,200)
Central Kalahari Game Reserve	Central Kalahari Game Reserve	2003 (Final draft)	Not yet approved and out dated, but appropriate for objectives	5 600 000	100
Mannyelanong	Mannyelanong Game Reserve	1997 (final draft)	Outdated. Appropriate for the objectives set	**c.** 100	100
Kgalagadi Trans-frontier Park	Kgalagadi Trans-frontier Park	1997 (Approved)	Outdated. Tourism development framework in 2006. Appropriate for the objectives	2 840 000	100

APPENDIX II: List of Trigger Species found in the seven protected IBAs in Botswana.

IBA 'Trigger' Species	Chobe National Park	Okavango Delta	Central Kalahari Game Reserve	Kgalagadi Trans-frontier Park	Mannyelanong Game Reserve	Makgadikgadi Pans	Linyanti Swamps / Chobe River
Lesser Kestrel	X	X	X	X	X	X	X
Pallid Harrier	X	X	X	X		X	
Racket-tailed Roller	X	X					X
Kalahari Scrub-Robin	X	X	X	X		X	X
Broad-tailed Paradise Whydah	X						X
Bradfield's Hornbill	X	X				X	X
Barred Wren-Warbler	X	X	X	X		X	
Coppery-tailed Coucal	X	X					X
Kurrichane Thrush	X	X				X	X
White-bellied Sunbird	X	X	X			X	X
Woolly-necked Stork	X						
Lappet-faced Vulture.	X	X	X	X		X	
Dickinson's Kestrel	X	X					
Chirping Cisticola	X	X					X
Burchell's Starling	X		X	X			
Burchell's Sandgrouse	X		X	X		X	X
Arnot's Chat	X	X				X	X
Meves's Starling	X	X				X	X
Hartlaub's Babbler	X	X				X	X
Stierling's Wren-Warbler	X					X	X
Marabou Stork	X	X					X
Lesser Moorhen	X						
Cape Vulture		X	X		X	X	X
Slaty Egret		X					X
Corn Crake		X					
Black-winged Pratincole		X	X			X	X
Sharp-tailed Glossy Starling		X					
Great Egret		X					X
Squacco Heron		X					
Saddle-billed Stork		X					
White-backed Duck		X					

Lesser Jacana		X					
Black-crowned Night-Heron		X					
African Darter		X					X
Little Egret		X					
African Skimmer		X					
Yellow-billed Egret		X					
Woolly-necked Stork		X					
Red-billed Teal		X					
Cattle Egret		X					
African Sacred Ibis		X					
Wattled Crane		X				X	X
Brown Firefinch		X					
Great White Pelican		X				X	
Rufous-bellied Heron		X					X
African Pygmy-Goose		X					
Collared Pratincole		X					
Goliath Heron		X					
Black Heron		X					
African Openbill		X					
African Spoonbill		X				X	
Spur-winged Goose		X					
Little Bittern		X					
Fulvous Duck		X					
Long-toed Lapwing		X					
White-backed Night-Heron		X					
Allen's Gallinule		X					
Denham's Bustard				X			
Sociable Weaver				X			
Lesser Flamingo						X	
Chestnut-banded Plover						X	
Greater Flamingo						X	
Kittlitz's Plover						X	
White-throated Robin						X	
White-headed Vulture							X
White-backed Vulture					X		X
Hottentot Teal							X
Miombo Rock Thrush							X

APPENDIX III: An example of a completed data for 2010 from for one of the IBAs: the Okavango Delta

MONITORING FORM / IMPORTANT BIRD AREAS IN BOTSWANA

Relevance of this monitoring process;

- *It is an objective, quantitative measure of bird diversity (as part of biodiversity) that will contribute to achieving the Botswana Government's commitment to the Convention on Biological Diversity (CBD)*
- *Effective and sustainable monitoring of biodiversity in Important Bird Areas*
- *To contribute to informed decision making at all levels*

PLEASE ANSWER THE QUESTIONS BELOW

Give details wherever possible.

Return a completed form once a year if you are resident at a site or a regular visitor, but note that relevant information is helpful, at any time.

Consider making use of sketch maps as an additional means of recording key results, such as the precise location & extent of threat, sightings of key species, extent of particular habitats, routes taken and areas surveyed etc. Return the completed form to your nearestBirdLife Botswana office.

PART 1. (Please use a different form for each site)

Name of the IBA: Okavango Delta

Date: 2010

Name of recorder (your name): P Hancock
Postal address: PO Box 20463, Maun.
Telephone/fax: 6865618

E-mail: birdlifemaun@gmail.com

1. Period of assessment. From: 1st January

To: 31st December, 2010

2. What does this form cover? (Tick a.or b)

(a) The whole IBA ✓

(b) Just part of the IBA

If (b), which part/how much of the whole area?

2. **Do you live in or around the IBA?** (Tick a or b)

(a) Yes ✓

(b) No

If (b) when did you visit the IBA and for how long?

What was the reason for your visit(s)? Checking IBA status, and monitoring waterbirds.

PART 2.

STATE OF THE IBA (CONDITION OF THE BIRD POPULATIONS AND HABITAT)

General comments on condition of the site and any changes since your last assessment (if relevant):

Limited monitoring shows that the State, Pressures and Responses in this IBA have not changed significantly since the previous assessment. It is likely that the State has improved significantly with the return of the high flood levels of the 1960s and 1970s since the Delta will has increased substantially in size, but there are no data to support or refute this (circumstantial evidence comes from improved breeding of some trigger species at traditional heronries).

1. If you have **estimates or counts of bird populations,** or other information on the important bird species (trigger species) at the IBA, please summarize these in the table below:

	Bird species / group	Population estimates (Indicate whether individuals or pairs)	Details/other comments e.g. trend
1	Wattled Crane	1,300	No monitoring but population stable or increasing due to large floods.
2	Slaty Egret	4,000	No monitoring but population stable or increasing due to large floods.
3	Lappet-faced Vulture		Monitoring results not yet available
4	White-headed Vulture		Monitoring results not yet available
5	White-backed Vulture		Monitoring results not yet available
6	Southern Ground-Hornbill		Not monitored
7	African Skimmer		Breeding success good during 2010.
8	Bateleur		Monitoring results not yet available
9	Martial Eagle		Monitoring results not yet available
10	Black-winged Pratincole		Monitoring results not yet available
11	Great White Pelican		Population believed to be stable
12	Goliath Heron		Breeding success good during 2010
13	Saddle-billed Stork		Not monitored – population believed to be stable
14	African Darter		Monitoring results not yet available
15	African Openbill		Breeding success very good due to high floods – there has been an irruption of this species
16	Marabou Stork		Breeding success good during 2010
17	Great Egret		Breeding success good during 2010; new colonies found
18	Squacco Heron		Breeding success good during 2010 – new breeding site found.

2. If you have information on the **area** of the natural habitats important for bird populations at the IBA, please summarize it below. Please note any major changes since the last assessment in the 'details' column.

	Habitat	Current area if known (include units, e.g. ha, km^2, or use codes*)	Details/other comments/major changes
1	Wetland	About 20,000 km^2 = Good	The Okavango Delta has doubled in size over the past two years due to high flood levels, increasing the available habitat for all waterbirds and, in known cases, boosting their populations considerably.
2			

*Habitat area codes: Good (>90%) Moderate (70-90%) Poor (40-70%) Very poor (<40%)

If you do not know the actual habitat area, give your best assessment of the current habitat area at the site, in relation to its potential optimum if the site was undisturbed. The percentages are given as guidelines only: use your best estimate. Please justify your coding in the 'details' column.

3. If you have information on the quality of the natural habitats important for bird populations at the IBA, please summarize it below. Please note any major changes since the last assessment in the 'details' column.

	Habitat	Quality rating	Details/other comments/major changes
1	Wetland	Good	The wetland has flooded naturally with no human interference.

*Habitat quality rating: Good (>90%) Moderate (70-90%) Poor (40-70%) Very poor (<40%)

Give your best assessment of the average habitat quality across the site, in terms of its suitability for the important bird species. The percentage ranges relate to the population density of the 'trigger' species in its key habitat. Thus 100% means that the species is at carrying capacity in its habitat. The percentages are given as guidelines only: use your best estimate. Please justify your selection in the 'details' column.

PART 3. THREATS TO THE IBA (PRESSURE)

General comments on threats to the site and any changes since your last assessment (if any):

In the table on the next few pages, please score each threat **that is relevant** to the trigger species in the IBA, based on your observations and information, for Timing, Scope and Severity. In the details column, please describe the threat in your own words and explain your scoring. Please note any changes in individual threats since the last assessment. If threats apply only to particular bird species, please say so.

Use the following guidelines to assign scores for Timing, Scope and Severity. The numbers are there to help you score, but are intended as guidance only; you don't need exact measurements to assign a score. For scoring combined threats Timing, Scope and Severity scores should either be equal to or more than the highest scores for individual threats; scores cannot be less than those allocated to individual threats.

	0	1	2	3
Timing of selected threat	Past, unlikely to return, no longer happening	Likely in long term (beyond four years)	Likely in short term (within four years)	Happening now
Scope of selected threat	Small area/few individuals (<10%)	Some of the area/ population (10-50%)	Most of the area/ population (50-90%)	Whole area/ population (>90%)
Severity (Over 10 years or 3 generations, whichever is longer)	No or imperceptible deterioration (<1%)	Slow deterioration (1-10%)	Moderate deterioration (10-30%)	Rapid deterioration (>30%)

Choose from one of the standard categories below

1. **Agricultural expansion and intensification.** Threats from farming and ranching as a result of agricultural expansion and intensification. Note that agricultural pest control and agricultural pollution-specific problems are covered by 5 and 9 respectively, below.
2. **Residential and commercial development.** Threats from human settlement or other non-agricultural land-uses with a substantial 'footprint'; resulting in habitat destruction and degradation, also causing mortality through collision. Note that domestic or industrial pollution-specific problems are covered by 9 below.
3. **Energy production and mining.** Threats from production of non-biological resources; resulting in habitat destruction and degradation, also causing mortality through collision.
4. **Transportation and service corridors.** Threats from long, narrow transport corridors and the vehicles that use them, resulting in habitat destruction and degradation, disturbance and collision.
5. **Over-exploitation, persecution and control.** Threats from consumptive use of wild biological resources including both deliberate and unintentional harvesting effects; also persecution or control of specific species. Note that hunting includes egg-collecting, and gathering includes firewood collection.
6. **Human intrusions and disturbance.** Threats from human activities that alter, disturb and destroy habitats and species, associated with non-consumptive uses of biological resources.
7. **Natural system modifications.** Threats from actions that convert or degrade habitat in service of managing natural or semi-natural systems, often to improve human welfare. Note that 'other ecosystem modifications' includes intensification of forest management, abandonment of managed lands, reduction of land management, and under gazing. 'Dams and water management/use' includes construction and impact of dykes/dams/ barrages, filling in of wetlands, groundwater abstraction, drainage, dredging and canalization.
8. **Invasive and other problematic species and genes.** Threats from non-native and native plants, animals, pathogens and microbes, or genetic materials that have or are predicted to have harmful effects on biodiversity (through mortality of species or alteration of habitats (following their introduction, spread and/or increase in abundance).
9. **Pollution.** Threats from introduction of exotic and/or excess materials, causing mortality of species and/or alteration of habitats. Note that domestic and/or urban waste water includes sewage and run-off; industrial effluents includes oil spills and seepage from mining; agricultural effluents and practices includes nutrient loads, soil erosion, sedimentation, high fertilizer input, excessive use of chemicals and salinisation; and air-borne pollutants includes acid rain.
10. **Geological events.** Threats from catastrophic geological events that have the potential to cause severe damage to habitats and species.
11. **Climate change and severe weather.** Threats from long-term climatic changes which may be linked to global warming and other severe climatic/weather events.

Type of threat	Scores			**Details** Give specific details
	Timing	Scope	Severity	
1. Agricultural expansion and intensification				
Annual crops – shifting agriculture				
- small-holder farming				
- commercial farming	1	0	1	There is a potential problem with enrichment of the waters from fertilizers used upstream in Namibia and/or Angola, that could result in changes in water quality that would gradually effect the Delta.
Perennial non-timber crops – small holdings				
- commercial				
Wood plantations – small holdings				
- commercial				
Livestock farming and ranching - subsistence				
- small holding				
- commercial				
Aquaculture – subsistence				

Type of threat	Scores			**Details** Give specific details
	Timing	Scope	Severity	
2. Residential and commercial development				
Housing and urban areas				.
Commercial and industrial areas				
Tourism and recreation areas				
3. Energy production and mining				
Oil drilling				
Mining and quarrying				
Renewable energy				
4. Transportation and service corridors				
Roads and railroads				
Utility and service lines				
Flight paths				
5. Over-exploitation, persecution and control of species				
Direct mortality of 'trigger' species - hunting and trapping				
- persecution/control				
Indirect mortality (by catch) of 'trigger' species - hunting				
Habitat effects – hunting and trapping				
- gathering plants				
- logging				
- fishing and harvesting aquatic resources	3	1	1	Over-exploitation of fish resource ***e.g.*** at Chanoga lagoon, could impact negatively on piscivorous birds. Fishermen also burn floodplains prior to incoming floods to clear vegetation so that they can more easily use their nets.
6. Human intrusions and disturbance				
Recreational activities	3	0	0	There is increased boat and air traffic due to steadily expanding tourism activities.
War, civil unrest and military exercises				
Work and other activities				
7. Natural system modifications				

Type of threat	Scores			**Details** Give specific details
	Timing	Scope	Severity	
Fire and fire suppression	3	1	1	Uncontrolled fires still continue in the IBA and, coupled with high elephant density, can destroy reedbeds used by colonially nesting waterbirds. Fishermen also burn floodplains prior to incoming floods (see above).
Dams and water management/use				
Other ecosystem modifications				
8. Invasive and other problematic species and genes				
Invasive alien species				
Problematic native species	3	0	1	There is a high density of elephants in the IBA which has a significant impact on trees, particularly some species used preferentially by nesting raptors.
Introduced genetic material				
9. Pollution				
Domestic and urban waste water				
Industrial and military effluents				
Agricultural effluents	3	0	1	Selective spraying of the interior of houses in the Delta with DDT to eradicate mosquitos could have wider impacts if not managed properly.
Garbage and solid waste				
Air-borne pollutants				
Noise pollution				
Thermal pollution				
Light pollution				
10. Geological events				
Earthquakes				
11. Climate change and severe weather				
Habitat shifting and alteration				
Drought				
Temperature extremes				
Storms and floods				
12. Other				

Type of threat	Scores			**Details** Give specific details
	Timing	Scope	Severity	
Poisoning of some trigger species ***e.g.*** vultures and other raptors	3	2	2	During 2010 there have been some incidences of deliberate and incidental poisoning of vultures and other raptors.

PART 4. CONSERVATION ACTIONS TAKEN AT THE IBA (RESPONSE)

1. General comments on action taken at the site, including recent changes or developments

Very little conservation action was taken during 2010 either by BirdLife Botswana or the Bosele Lake Ngami Conservation Trust. The Trust is still functional but is hamstrung by political and administrative issues relating to the existence of a second Trust in the area.

2. Please place a tick next to the text that applies for each of conservation designation, management planning and conservation action below. Please add any details and where appropriate give a brief explanation for your choice.

CONSERVATION DESIGNATION

✓ Whole area of IBA (>90%) covered by appropriate conservation designation
Most of IBA 50–90%) covered (including the most critical parts for the important bird species)
Some of IBA covered (10–49%)
Little/none of IBA covered (<10%)

Details and explanation

Part of the IBA is formally protected in Moremi Game Reserve; the surrounding concession areas are well-managed for photographic tourism and enjoy de facto protection. The whole area is designated as a RAMSAR site.

MANAGEMENT PLANNING

✓ A comprehensive and appropriate management plan exists that aims to maintain or improve the populations of qualifying species ('trigger' species)
A management plan exists but it is out of date or not comprehensive
No management plan exists but the management planning process has begun
No management planning has taken place

Details and explanation

A comprehensive management plan exits for the RAMSAR site, and this includes components related to trigger species such as the Slaty Egret. Due to the current economic climate, there were less funds available for environmental management during 2010.

CONSERVATION ACTION

The conservation measures needed for the site are being comprehensively and effectively implemented
✓ Substantive conservation measures are being implemented but these are not comprehensive and are limited by resources and capacity
Some limited conservation initiatives are in place (e.g. action by Local Conservation Groups)
Very little or no conservation action is taking place

Details and explanation

More conservation action is needed for trigger species specifically.
The process of listing the Okavango Delta as a World Heritage Site was initiated during 2010, and BirdLife Botswana is formally contributing to the process.

ACTIVITIES UNDERTAKEN AT THE IBA

Notes on action types:
1. **Land/water protection** Actions to identify/establish or expand parks and other legally protected areas.
2. **Land/water management** Actions directed at conserving or restoring sites, habitats and the wider environment.
3. **Species management** Actions directed at managing or restoring species, focused on the species of concern itself.
4. **Education and awareness** Actions directed at people to improve understanding and skills, and influence behaviour.
5. **Law and Policy** Actions to develop, change, influence and help implement formal legislation, regulations (including at the community level), and voluntary standards.
6. **Livelihood, economic and other incentives** Actions to use economic and other incentives and to influence behaviour.
7. **External capacity-building** Actions to build infrastructure resulting in better conservation, including through civil society development (e.g. enhancing community role in decision-making on natural resource use)

ACTION TYPES	Action being undertaken by:				DETAILS
	ASCBO	Government	BirdLife partner	Others (specify)	
1. Land/water protection					
Site/area protection	✓	✓		✓	**The private sector (safari companies) contributes to protection of the IBA**
Resource & habitat protection	✓	✓		✓	**Sectoral bodies are responsible for protection of the site e.g. Wildlife Dept. is responsible for wildlife, Dept. of Forestry and Range Resources is responsible for forests and rangelands etc.**
2. Land/water management					
General site/area management	✓	✓		✓	**The private sector (safari companies) contributes to management of the IBA**
Invasive/problematic species control					
Habitat & natural process restoration					
3. Species management					
General species management		✓			
Species recovery					
Species (re)introduction					
4. Education & awareness					
Formal education					
Training		✓			

Awareness, publicity & communications		✓	✓		
5. Law & policy					
Public legislation					
Policies and regulations		✓			
Private sector standards & codes		✓			
Compliance, enforcement & policing		✓			
6. Livelihood, economic & other incentives					
Linked enterprises & livelihood alternatives (e.g. ecotourism)					
Substitution (alternative products to reduce pressure)					
Market forces (e.g. certification)					
Conservation payments					
Non-monetary values (e.g. spiritual, cultural)					
7. Capacity building					
Institutional & civil society development					
Alliance and partnership development		✓			
Conservation finance					
8. Other (e.g. surveys, monitoring, research, EIAs)					
1 Waterbird monitoring			✓		**BirdLife Botswana conducts biannual African Waterbird Counts and Common Bird Monitoring in the IBA.**
2					

PART V. ADDITIONAL INFORMATION

Thank you for partnering with us to conserve birds and biodiversity.

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APPENDIX IV: List of contributors to the 2010 records

Recorder	Organization		Site for which information has been availed
	Name	Sector	
Glynis Humphrey	Okavango Wilderness Safaris	Private Sector	Xigera, Chiefs Island
Kgalalelo Moagi	Department of Wildlife and National Parks	Parks Authority	Makgadikgadi Pans
Onkgopotse July	Khwai Development Trust	Community (Site Support Group)	Okavango Delta
Marcus Kajuusa	Department of Wildlife and National Parks	Parks Authority	Makgadikgadi Pans
Ishmael Sikwane	Department of Wildlife and National Parks	Parks Authority	Moremi Game Reserve
Elizabeth Sefako	Department of Wildlife and National Parks	Parks Authority	Moremi Game Reserve
Okar Setswalo	Department of Wildlife and National Parks	Parks Authority	Okavango Delta
Sylvester Masimega	Department of Wildlife and National Parks	Parks Authority	Okavango Delta
Lucas Johannes	Department of Wildlife and National Parks	Parks Authority	Central Kalahari Game Reserve
Justin Soupo	Department of Wildlife and National Parks	Parks Authority	Khutse Game Reserve (included with Central Kalahari Game Reserve)
John Mosenya	Department of Wildlife and National Parks	Parks Authority	Khutse Game Reserve (included with Central Kalahari Game Reserve)
Bethuel Direng	Department of Wildlife and National Parks	Parks Authority	Khutse Game Reserve (included with Central Kalahari Game Reserve)
Morui Kebiditswe	Department of Wildlife and National Parks	Parks Authority	Central Kalahari Game Reserve
Oreemetswe Dingake	Department of Wildlife and National Parks	Parks Authority	Central Kalahari Game Reserve
Mr Ntema			Okavango Delta
Batshabi R Boikanyo	Department of Wildlife and National Parks	Parks Authority	Chobe National Park
Mothusi Jenamiso	Department of Wildlife and National Parks	Parks Authority	Chobe National Park
Benjamin Setlhong	Department of Wildlife and National Parks	Parks Authority	Moremi Game Reserve
Mothonyane Kobamelo	Department of Wildlife and National Parks	Parks Authority	Moremi Game Reserve
K Moroba	Department of Wildlife and National Parks	Parks Authority	Chobe National Park
Madimabe M E	Bosele Lake Ngami Conservation Trust	Community (Site Support Group0	Lake Ngami
Zenzele Mpofu	Department of Wildlife and National Parks	Parks Authority	Makgadikgadi Pans, Okavango Delta

Rebecca Ryan			Makgadikgadi Pans
Onalenna Selema	Department of Wildlife and National Parks	Parks Authority	Okavango Delta
Stephanie Tyler	BirdLife Botswana	WI Waterfowl Counts Coordinator	All wetlands
Chris Brewster	BirdLife Botswana	Scientific Committee & Rarities Comm	Mannyelanong and South East records
Pete Hancock	BirdLife Botswana	Maun Branch	Okavango, Makgadikgad & Lake Ngami
Keddy Mooketsa	BirdLife Botswana	Common Bird MOnitoring	All IBAs
Graham McCulloch	Independent Researcher	Sua Pan Flamingo Research	Makgadikgadi
Pete Laver	Independent Researcher	Chobe NP Research	Chobe NP
Neil Taylor	BirdLife Botswana	Non Governmental Organization	Makgadikgadi Pans, Central Kalahari Game Reserve
Motshereganyi Virat Kootsositse	BirdLife Botswana	IBA Monitoring	Chobe National Park, Makgadikgadi Pans, Central Kalahari Game Reserve
Lesego Ratsie	BirdLife Botswana	IBA Monitoring	All
Benjamin Noga	Cape Vulture Environmental Club	Community (Site Support Group)	Mannyelanong Game Reserve
Moemedi Letshabo	Cape Vulture Environmental Club	Community (Site Support Group)	Mannyelanong Game Reserve
Ofentse Nthai	Cape Vulture Environmental Club	Community (Site Support Group)	Mannyelanong Game Reserve

APPENDIX V:

List of Bird species of national concern in Botswana, indicating those that are Vulnerable (VU) or Near Threatened (NT) in the IUCN Red Data List (2009), and those other species and bird groups protected under law by the Wildlife Conservation and National Parks Act 1992.

Species, New names: Roberts 7	Birds of National Concern	IUCN Status	Protected under Wildlife Act 1992
Lesser Kestrel	C	VU	Protected
Wattled Crane	C	VU	Protected
Lappet-faced Vulture	C	VU	Protected
Cape Vulture	C	VU	Protected
White-headed Vulture	C	VU	Protected
Lesser Flamingo	C	NT	Protected
Chestnut-banded Plover	C	NT	Protected
Black-winged Pratincole	C	NT	Protected
European Roller	C	NT	Protected
Maccoa Duck	C	NT	Protected
Pallid Harrier	C	NT	Protected
White-backed Vulture	C	NT	Protected
Martial Eagle	C		Protected
Bateleur	C		Protected
Kori Bustard	C		Protected
Southern Ground-Hornbill	C		Protected
Slaty Egret	C		Protected
Hooded Vulture	C		Protected
Grey Crowned Crane	C		Protected
Hamerkop			Protected
Secretarybird			Protected
African Spoonbill			Protected
All eagles			Protected
All buzzards			Protected
All kites			Protected
All vultures			Protected
All harriers			Protected
All sparrowhawks			Protected
All herons			Protected
All egrets			Protected
All falcons			Protected
All goshawks			Protected
All ibises			Protected
All pelicans			Protected
All storks			Protected
All bitterns			Protected