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MONITORING OF UGANDA'S IMPORTANT BIRD AREAS

A Training Manual

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Monitoring of Uganda's Important Bird Areas:

A Training Manual

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About *Nature*Uganda

***Nature*Uganda** is a Non Governmental Organization working towards the conservation of species, sites and habitats for people and biodiversity. It is the BirdLife partner in Uganda and a member of IUCN. The organization is involved in various research, conservation and advocacy work in many sites across the country. The conservation of species sites and habitats are achieved through a membership programme, conservation projects, and environmental education programmes together with government and community involvement. Overall aim is to promote the understanding, appreciation and conservation of nature.

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CHAPTER ONE

1. Important Bird Areas in Uganda

1.1 What are Important Bird Areas (IBAs)?

IBAs are sites of global conservation importance identified using birds to locate key sites for conservation across the globe. They are practical tools for conservation. IBAs are identified using standard internationally agreed criteria, which are; objective, quantitative and scientifically defensible. IBAs vary in size however, they must be large enough to support self-sustaining populations of those species for which they are important. When selecting IBAs the existing protected area system forms the backbone of the IBA network with additional sites being added to fill in the gaps. IBAs therefore do not cover all bird species and, for some, IBAs may only be appropriate across part of their range (e.g. the wide ranging raptors) or are only so in part of their life cycle e.g. birds using sites only seasonally for breeding. It is therefore necessary for IBAs to be considered a part of a wider, integrated approach to conservation that includes sites, species, and habitat protection. IBAs are important for other biodiversity, for example in Uganda; IBAs contain various mammals, fish, reptiles and insects and therefore are important biodiversity areas.

1.2 Aims of the IBA Programme

- The function of the IBA programme is to identify and protect a network of sites, at a scale large enough to ensure long term survival of naturally occurring bird populations.
- It is meant to cover the range of those bird species for which a site-based approach is appropriate.
- The IBA process has been used to build institutional capacity and set an effective conservation agenda for biodiversity in many countries.

1.3 Criteria for identifying IBAs

There are four categories used to identify IBAs as explained below:

(i) In the category of globally threatened, species threatened with extinction are considered. The criterion looks for a site that regularly holds significant number of globally threatened species or other species of global conservation concern. These include:
   - Critical or Endangered (CR) – considered to be facing an extremely high risk of extinction in the wild
   - Vulnerable (VU) – considered to be facing a high risk of extinction in the wild
   - Conservation dependent (CD) - the focus of a continuing taxon-specific or habitat-specific conservation programme is necessary for the taxon's

existence.

- Data deficient (DD) - inadequate information to make a direct, or indirect, assessment of its risk of extinction.
- Near threatened (NT) - is close to qualifying for or is likely to qualify for a threatened category in the near future.

(ii) In the category of restricted range, species have highly restricted distribution. The criterion looks for a site known or thought to hold a significant component of the restricted range species i.e. species restricted to Endemic Bird Areas (EBAs) or Secondary Areas (SA).

- Endemic Bird Areas (EBAs) are places where two or more species of restricted range occur together.
- Secondary Areas (SA) are places supporting one or, rarely, more restricted range species but does not qualify as an EBA.

(iii) Biome restricted species looks at sites holding species that are characteristic of a particular biome. The criterion looks for a site known or thought to hold a significant component of the group of species whose distributions are largely or wholly confined to one Biome. The site must be one of the set of sites selected to ensure that as far as possible, all species restricted to that biome are adequately represented.

(iv) The criterion congregatory species looks for sites holding exceptionally large numbers of congregatory birds. The sites may qualify under any of the following:

- A site is known or thought to hold, on a regular basis, ≥ 1% of a biogeographic population of congregatory waterbird species.
- A site is known or thought to hold, on a regular basis, ≥ 1% of the global population of a congregatory seabird or terrestrial species.
- A site is known or thought to hold on a regular basis, ≥ 20,000 waterbirds or ≥ 10,000 pairs of seabirds of one or more species.
- A site is known or thought to exceed thresholds set for migratory species at bottleneck sites.

1.4 IBAs in Uganda

In Uganda, thirty three (33) sites have been identified as IBAs (Fig 1). Of these, twenty two (22) are within the national protected areas system i.e. a Forest Reserve, National Park or Wildlife Reserve. Although eleven (11) sites are unprotected, nine are designated as Ramsar sites. In fact all the twelve Ramsar sites in Uganda are IBAs (WMD/NU 2008). The other two sites not under any protected area category are in private ownership. The IBA network covers all Uganda's major habitat categories and the 33 IBAs contain all the bird species for which Uganda has global responsibility (East African Red list). All IBAs are, by definition, priorities for conservation, but some need more urgent attention than others (IBA prioritization report, 2001). A detail of each IBA site account is given in the Uganda's IBA directory (Byaruhanga et. al 2001) and may be accessed in the World Biodiversity Database (WBDB) [www.globalconservation.info]

Map and Location of Important Bird Areas in Uganda

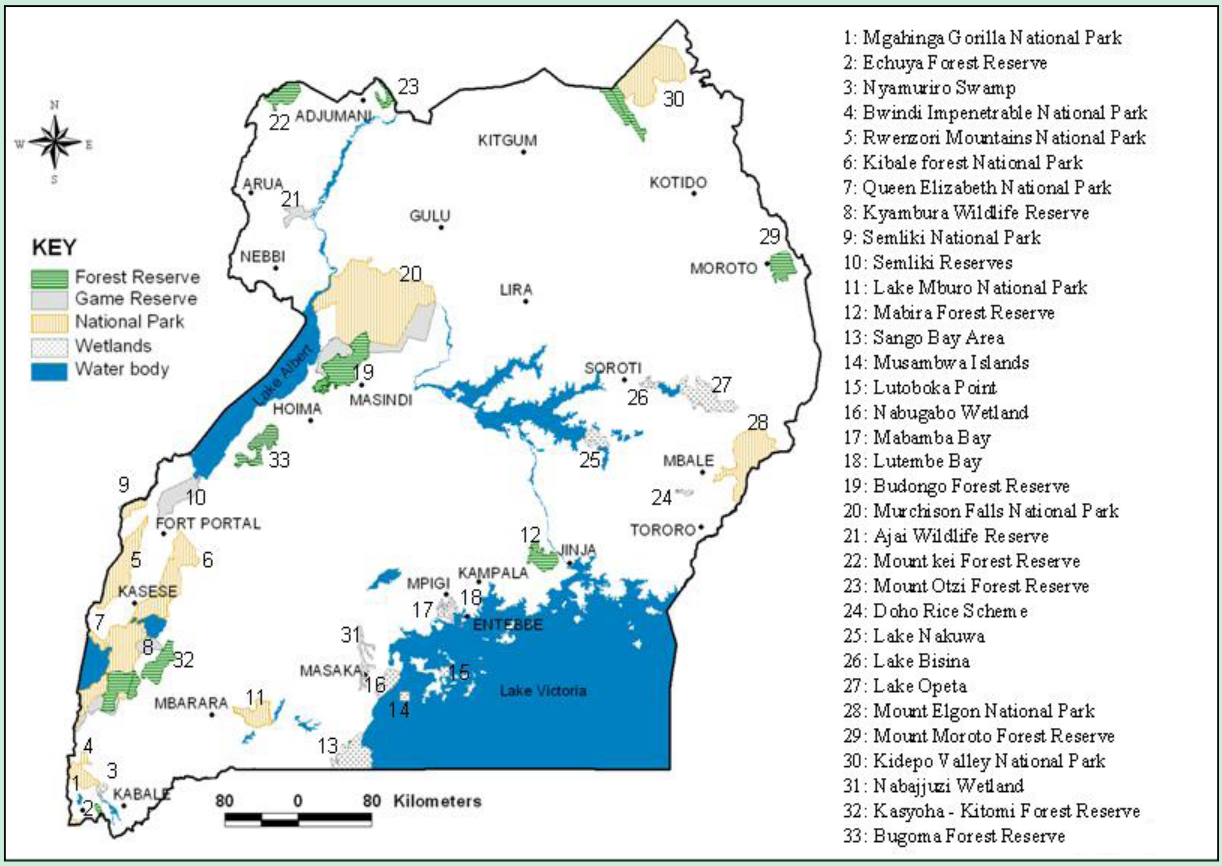

Fig 1: Map of IBAs in Uganda

1.5 History of the IBA Programme

The IBA identification process started in 1994. ***Nature*Uganda** supported by the Royal Society for the Protection of Birds (RSPB) identified areas important for conservation. A national IBA directory was produced in 2001 with the provision of information on 30 IBAs. However, the number of IBAs to date is 33 with information on the other three new IBAs uploaded to the BirdLife International web-based database. To focus the conservation efforts, IBA prioritization was done in 2001. The process aimed at agreeing on what conservation activities were needed for each category of IBAs and identified major stakeholders. It developed a list of prioritized IBAs in Uganda according to the agreed criteria. To focus the process, a National Important Bird Areas Conservation strategy (NIBACS) was needed.

Guided by the National Liaison Committee (NLC) an analysis of and priority actions for conservation of IBAs in Uganda was done. The process identified a list of priorities and made recommendations, of which IBA monitoring was highlighted. Since monitoring was seen as very important, IBA Monitoring project in eight African countries was proposed. This four year project that started in 2007 aimed at developing a strong foundation on which the monitoring of IBAs can be sustained beyond the life span of the project. This therefore required that a sustainability plan is developed to steer such a process. The plan will help make the implementation process more focused in its deliverables and furthermore, encourage interests and commitments of other stakeholders as well as the target groups that would eventually be the beneficiaries.

The IBA Programme is a worldwide initiative aimed at identifying, documenting and protecting a network of sites critical for the conservation of world's birds. With a mission to "conserve all bird species on earth, and their habitats" all BirdLife International partners in more than 100 countries across the world are implementing the programme.

1.6 IBA conservation in Uganda

(i) What has been done?

The working relationship with the local conservation groups sometimes referred to as Site Support Groups (SSGs) in or around IBAs has been strengthened. The SSGs are now able to monitor, protect and sustainably use the available resources without damaging the quality of the habitats. SSGs at Mabamba, Lutembe, Musambwa and Katwe Tourism Information Center are good examples.

In addition to 30 IBAs in the IBA directory, three more IBAs have been qualified and identified bringing the total to 33 IBAs in Uganda.

There are many conservation projects that have been implemented in many IBAs. These projects address pertinent issues that are affecting particular sites. They touch on issues relating to species, sites and habitats while considering the livelihood of the people around them.

Wetlands IBAs did not have any national protection status and were previously referred to as wastelands. There was need to propose their designation as Ramsar sites in order to improve their conservation status. This process led to the designation of all wetland IBAs as Ramsar sites.

A number of research and monitoring programmes that are aimed at informing management authorities such as UWA, NFA and WMD have been conducted either individually or through the existing partnership and collaborations between government agencies and the Non Governmental Organizations. Data and information availability has increased or improved recognition of IBAs as key conservation areas. Monitoring programmes include African Waterfowl Censuses and Land Bird Monitoring among others.

Many advocacy initiatives have been undertaken and a number of issues debated. A case in point is campaign against Mabira Forest Reserve give away and demand of EIA for major developments near and/or in conservation areas.

Collaborative Forest Management (CFM) agreements with forest adjacent communities and user quotas for communities have improved on the community relations with most authorities and have provided learning lessons on how to engage communities in conservation. Taking lessons from Echuya Forest Reserve and Kasyoha Kitomi Forest Reserve CFM activities.

The habitat restoration programmes at different sites have been promoted. This included provision of an alternative resource as one way of diverting interest away from natural resources in IBAs but also physical restoration of degraded sites by planting of indigenous trees in degraded forests or restore wetlands as another option for restoration. Some examples include Nyamuriro wetland restoration and Kasyoha Kitomi Forest Reserve gap enrichment.

(ii) What are the challenges?

The major threat to sites in Uganda is the loss and/or modification of habitats. Some forest areas have changed to woodlands due to logging and others have changed from grasslands to woodlands due to invasive species. In some areas, the size reduced due to loss to other land uses especially agriculture and settlement.

There is intense pressure on forests, wetlands and protected areas which make up the bulk of IBAs. The examples of pressures within these habitats include: Oil and gas exploration in protected areas, there are many oil wells already discovered in Murchison Falls National Park, Queen Elizabeth National Park and other Reserves in Albertine Rift areas. Forest degradation is extensive as a result of oil palm plantations in Ssese Islands, Dam construction in Mpanga gorge and massive maize plantation in Busoga. Wetland encroachment in different forms can be seen at Lutembe Bay through horticultural farms, rice growing in various critical satellite wetlands in Eastern Uganda and subsistence farming in Nyamuriro swamp. Other threats include; poor farming practices such as use of pesticides and monoculture. Another major threat is poor policy implementation that leads to habitat destruction. Mining and mineral extraction at Dura quarry in Queen Elizabeth National Park has been approved which may degrade the Park and unauthorized cattle movements in National Parks continue to be a major threat.

The ever increasing human population in Uganda, increases demand on land for agriculture and other land use forms. The demand on natural resources also will increase with increasing population. This therefore leads to increase in encroachment and loss of biodiversity both at species or site or habitat levels.

(iii) Looking into the future

There is a need to identify and get involved in different advocacy issues such as those identified in the previous section. This eventually should input into policy formulation and

development through production of policy briefs. Another avenue for advocacy could be through EIA and ecosystem studies.

There is need to make an input into the Protected Area management at both site and habitat levels. This can be done through actions that lead to improvement on the condition of disturbed areas and also raising profile especially wetland IBAs as Ramsar sites where applicable

There is a need to continue to involve local communities and community groups in conservation. This may be done through forging collaboration. An example is negotiating and implementing Collaborative Forest Management or initiating Community Conservation Areas (CCAs) for wetland areas.

Undertaking research and conservation study programmes by surveying poorly known sites can lead to more additional IBAs sites being identified. These sites need to be monitored to understand changes and provide feedback to conservation and policy mechanisms.

There is a need to raise awareness locally and nationally on conservation issues. This involves developing collaboration between local communities, Government and NGO agencies land-users and all stakeholders such that all parties know what is under discussion.

There is a need in developing and strengthening local Site Support Groups through supplying site information to national-level co-ordination and priority setting processes and stimulating conservation action and locating resources to support it.

Preparing site action and management plans and securing their implementation. This can be supported by building local and national NGO and Government as well as local communities to sustain the IBA process. The result of this can then be shared through structures of experience exchange and information sharing through lessons learnt.

CHAPTER TWO

2. Introduction to IBA monitoring in Uganda

2.1 What is IBA monitoring?

The IBA concept aims to identify and protect a network of sites critical for the long term viability of wild bird populations. This is achieved through conservation advocacy and action to protect the sites. IBA monitoring is one tool that is used to inform decision making or improve site management. Monitoring here is used to mean the repeated collection of information over time in order to detect changes in one or more variables. Currently, monitoring in IBAs is being conducted by lead government agencies and NGOs. This type of monitoring includes: waterbird populations, habitat condition, terrestrial bird populations, mammal populations and climatic variables.

(a) Levels of monitoring

There are two levels of monitoring considered including basic and detailed monitoring. Basic monitoring is based on low cost, less technical, quick and yet robust method of field data capture and any additional information available. More detailed and focused monitoring may take place at some sites selected on basis of conservation value and feasibility. This is more technical and time demanding.

(i) Basic monitoring

There is an IBA monitoring form that has been developed. These are distributed every year to all IBA sites. The forms are filled and returned to the coordination unit. IBA monitoring unit checks and compiles the information submitted on forms, and adds this to whatever is already available from other sources such as published reports and newspapers. Based on all this information, overall performance trend is assessed as a simple score, and a rating filled in for each site covering state, pressure, and response. This is less costly, quick and yet robust enough to trigger conservation actions where needed. This type of monitoring is intended to provide consistent indices that can track performance of conservation actions.

(ii) Detailed monitoring

This is a more elaborate, more expensive and time consuming than basic monitoring. It is only done at priority sites with threats that need tracking or ongoing conservation interventions that need tracking. This is made easier by presence of SSGs willing to undertake the monitoring. Detailed monitoring has no single standard methodology. Each site has its own design according to the nature of IBA and conservation issues. For sustainability government and SSGs are encouraged to institutionalise detailed monitoring. Variables tracked at detailed monitoring can be used to score trends in basic monitoring. Detailed

monitoring is important since it is less subjective. It provides informed recommendations that will improve delivery of conservation actions.

(b) Resources required

The requirements include:

(1) Human resources: Are needed for conducting training, awareness creation, designing of samples and studies and establishing site monitors.

(2) Finance and logistics (Funds): Are required for coordination, buying computer hardware to run databases, filing cabinet for maintaining paper records and producing and circulating forms and reports. It is necessary to facilitate ecological survey training, management plans preparation training and IBA monitoring training.

(3) Management and coordination of the programme such as making follow up within the monitoring network and visiting monitored sites for follow up and quality checking.

(c) Sampling methods and types

A sample is a finite part of a statistical population whose properties are studied to gain information about the whole. Sampling is the act, process, or technique of selecting a suitable sample, or a representative part of a population for the purpose of determining parameters or characteristics of the whole population. Sampling helps draw conclusions about populations. It is cheaper to observe a part rather than the whole, but we should prepare ourselves to cope with the dangers of using samples. Taking a sample requires fewer resources than a census. Depending on the method and what is under study, the two sampling methods below are encouraged, systematic sapling for relatively homogenous habitats and stratified random sampling for heterogeneous habitats.

(i) Regular or Systematic Sampling

This is easier to select. Only one random number is required and a determined sequence is followed. This samples evenly over an area with 'built in' stratification. It is often more accurate and can be used to generate maps and atlases. One of the strengths of this method is that it is easier to understand and explain to others.

(ii) Stratified Random- Sampling

This divides a population or area into sub- populations or sub areas, known as 'strata'. Each stratum should be more internally homogenous. The strata may be identified from bird atlases and survey information, maps (altitudes, habitats, land uses etc), agricultural statistics, climate maps administrative and geo - political boundaries. The aim of stratification is to minimize variation between different sampling units within a stratum, but maximize variation between different strata

2.2 Why is monitoring IBA important?

Locally and nationally, this is done to detect and act on threats in good time. Assess the effectiveness of conservation efforts and provide information on biodiversity trends. The

monitoring programmes have schedules but annual IBA monitoring is the target. To ensure that biodiversity and its habitats are conserved in a good way, we need to monitor these habitats in order to understand:

- How the abundance of biodiversity (e.g. birds species) is changing with time
- How the structure and quality of their habitats are changing with time
- How land use is changing with time
- How forest structure is changing with time
- How forest birds respond to change in forest structure
- How regeneration affects the forest and forest specialists

Monitoring also provides a timely warning so that action can be taken. In some instances, it is a platform for see if conservation interventions are having any positive effect. It may also be used to build skills as people participate in monitoring. In fact some monitoring schemes are designed to collect quantitative data that is required to shed light on causes of change or simplify complex processes. The product of which are indices that are understood by politicians and experts alike for example understanding how state (condition) of habitat is affected by different pressures (threats) is important. And how responses (conservation actions) help reduce pressures are simple interpretations.

2.3 What are the characteristics of good IBA monitoring?

Good monitoring should be well designed. Monitoring should take a systematic approach and should be done regularly with minimum interuptions. Monitoring should be sustainable (going on over a long period of time).

The monitoring methods chosen should be simple. The method should be robust enough to collect all the need variables and in usable form. The monitoring should be inexpensive to implement for it to stand the test of time.

It is good for the monitoring to be flexible such that it can be universally applicable and above all it should be able to give meaningful outputs because it is the product of monitoring that will be informative.

2.4 What can we monitor in IBAs?

We can monitor physical condition of the site: This could involve for example counting different plant species in the forest or measuring the height of all hardwood species.

We can monitor biodiversity (wealth of life): This could be the population of threatened birds, mammals, and butterflies etc that are important to the site being monitored. It is possible to measure these aspects directly or indirectly.

We can monitor indicators of status and trend relevant to bird populations for which the sites are listed. This is specifically done by measuring state (condition), pressure (threats) and response (conservation actions).

2.5 Planning for monitoring

Planning is a process of setting goals, developing strategies, and outlining tasks and schedules to accomplish the goals. When planning for monitoring, the following should be given consideration for monitoring to create impact.

(a) Targeting change in communities

Monitoring being a resourceful tool for creating awareness, it must be well designed. Monitoring allows people to understand how some of their day to day activities may impact negatively on the very ecosystem and biodiversity they survive on. Monitoring human impacts and communicating the results should be planned. There is a need to commend people where they do particularly well and advising where they go wrong. The advantages of involving the local communities in monitoring include; creating new skills as they carry out the exercise, providing a way of getting feedback and encouragement, sharing responsibilities, and giving a sense of ownership.

(b)Targeting the correct parameters

This involves identifying and prioritizing the parameters to be measured. Planning should consider all parameters including obviously known impacts on the site whether natural or man made. It should identify all measurable parameters including physical (e.g. soil, tree diameter at breast height, etc) and biological parameters (including plants, animal species etc). The planning process should hint on which parameters may appropriate the site if measured repeatedly and will be simple and cost effective to assess.

(c) Quality control and effectiveness in monitoring

At planning stage, accuracy and precision in measurement of parameters are crucial. It should identify and avoid bias. There is a need to have clear definition of the parameters to be measured and the scale used should be standard in space and time. The planning should guide on measuring only what is feasible. Quality control includes avoiding ambiguity and using methods appropriately.

(d) Handling monitoring results

Planning should clearly state how to perform analysis and interpretation of monitoring data. This may include communicating monitoring results of human impacts and making recommendations to decision makers. This is the avenue of turning monitoring data to action through advocacy.

(e) Policy implications of monitoring

Monitoring information gives scientifically justifiable basis for priority setting. It is a tool for convincing politicians and agencies on what point of action to take. It is a tool for increasing public support and increases credibility of conservation message. Before monitoring is started therefore, the policy implications should be well spelt out.

2.6 Planning and setting-up monitoring teams

The objective of this checklist is to assist members of a site especially SSGs who may be involved in monitoring Important Bird Areas to effectively plan and execute habitat and

species monitoring in their own sites. It helps guide and focus the monitoring teams in executing their tasks by understanding the following questions:

Why monitor?
The team planning monitoring should focus the group to know monitoring is essential. The monitoring should either be project or policy or management based. The team should advise why monitoring is being started.

For whom is monitoring being done?
The team should understand who is initiating the monitoring exercise. This will make them understand who the parties are and what their interests are so that everyone knows their roles and responsibilities.

What to monitor?
The monitoring team should understand what is going to be monitored. The key questions on what monitoring is going to address need to be indicated. This helps focus the team to see that the task is a realistic one.

How will monitoring be done?
When preparing the team, all who will be involved should be known to each other. This involves highlighting the different roles of the different participants and the equipment they will use. The team should be familiar with the equipment. Therefore all necessary field precautions need to be communicated.

Who will do monitoring?
A team leader needs to be chosen to be in-charge of the exercise, coordinate it and make sure it happens. The team has to plan and decide on the process. The leader should be on top of the monitoring and be able to choose who is going to do the exercise. The team should be able to learn from the people in the group who have the skills from previous similar experience. The team needs to be gender balanced and have the expertise for the kind of monitoring.

Time frame for monitoring
The time frame for monitoring should be known. The planning should give enough time to cover the whole exercise from planning, site visits, compiling reports, contacting and submitting data. The monitoring should be at the time when all the members of the monitoring team are available for the exercise taking into consideration time of the year appropriate for the exercise. Time for any ground work needed to be done prior to the exercise should be allocated. It is necessary for the team to agree on the data before submission to the coordination unit.

How much will it cost?
The teams preparing for field work need to know the resources that are available including human and financial. These will spell clearly what will be done by whom and by when.

What are the constraints?

The teams need to be prepared for any constraints that might be and how they can be minimized or overcome them. This includes weather, distances and public holidays. The sites need to be accessible for the monitoring teams and should fit within the time and finances.

Planning requirements at different stages

Early planning

- Ensure the monitoring team is in place
- Select participants for the team
- Ensure the team is properly briefed and understand the task very well
- Plan logistics and agree on the date for the exercise
- Select the main approach and methods based on the key questions
- Ensure responsibility for final product is understood
- Organize meetings with the monitoring team members to get them to understand the task, sites, methods etc

Nearer the date of doing monitoring

- Ensure members of the team are available to carry out the exercise
- Decide who you want to involve in the exercise
- Plan for adequate infrastructure/equipment for the team
- Decide what equipment you are going to use, find out if they are in good order, ensure there is somebody who knows how to operate them perfectly well, even then check that they are still functional prior to the exercise
- Ensure that the teams have adequate data sheets for the exercise
- Contact the authorities and/or communities for permission of access if needed
- Ensure there is good coordination of the exercise
- Prepare a checklist of the items/equipment needed for the exercise

During the monitoring

- Ensure the team members are properly briefed for the exercise
- Ensure that the team have adequate equipment for the exercise
- Before monitoring commences, ensure that duties are well shared and that every team member knows in advance what role they are going to play for example: observers, recorders, boat operators, etc. This is part of the data quality control measures.

After the exercise

- Ensure that the data sheet is properly filled and ready for submission
- Ensure that the compiling of data are properly done
- Ensure that the entries are counter checked
- Make copies for submission and one to be used as back-up.

Composition of a monitoring team
The team should be composed of recorders, boat controllers if applicable, counters or observers and/or play-back player.

Role of the monitoring team
The monitoring team is prepared to carryout monitoring. They are needed for compiling the data, quality control of the data, ensuring that the right data is collected. They are responsible for submitting the data to the coordination units and overall planning of the exercise.

Developing Terms of Reference
The Terms of Reference should include tasks which are well described. It should include roles and responsibilities for both logistical and managerial aspects. The terms should be as specific as possible and avoid ambiguity.

2.7 How we manage monitoring programmes
Monitoring is a process and it is therefore important that all the stages are managed well. It is important to know why we want to carry out monitoring in the beginning. Then we need to Design and Test monitoring protocols. It is important to involve the people who will execute the exercise in the designing. Once the monitoring kicks off, then co-ordination of it should be efficient. Normally an institution like ***Nature*Uganda** can do this effectively. It is good to do training in order to ensure that people have the required skills. We need equipment therefore we need to ensure that there are adequate equipment necessary to carry out monitoring in the specific habitat types e.g. Play back system, binoculars, field guides, tape measures, telescopes, hygrometer, thermometer etc. There is a need to ensure an effective and efficient system of submitting the survey results to the coordinating body. As a precaution, there is a need to always retain copies of monitoring data as this improves the ownership and minimizes complete loss of information.

2.8 Why birds are used in IBA monitoring?
Birds have been used as indicator taxa for many years. They have many advantages as a group to use for biodiversity priority setting compared to other taxa. This is because they are widespread, they are diverse, they are easy to survey, they have the aesthetic appeal and many people watch them as a sport or for fun. The other advantages are that they are better known than other organisms. Birds have been shown to be effective indicators of biodiversity richness in other animals and plant groups. The IBA network is defined by the avifauna it holds but the conservation of these areas have been shown to protect up to 87% of the biodiversity. Therefore Important Bird Areas (IBAs) are essentially Key Biodiversity Areas (KBAs).

CHAPTER THREE

3. Important Bird Areas monitoring techniques in Uganda

There are many monitoring techniques available but here, specific monitoring regimes have been considered for monitoring waterbirds, land birds and monitoring habitats where they are found. Much as most of the techniques considered here are related to birds as taxa, other management oriented techniques have also been highlighted. These include the Permanent Sample Plots (PSP) in Forest Reserve IBAs and Management Information SysTem (MIST) in protected Areas. The list here is not exhaustive but gives highlights on major monitoring areas using birds as indicators of change.

3.1 African waterfowl censuses

African waterfowl census is a scheme that monitors the population of waterfowl in Africa. The census attempts to count all waterbirds in a site. The counts are conducted in January - February and July - August periods. The January count targets Palearctic migrants while the July counts assumes that only resident species shall be encountered.

A team of four or five people is most efficient. Counts are conducted on boat, on foot or in a vehicle. The team should have at least one person experienced in identifying waterbirds, who will be responsible for coordination of the exercise. Another person should be the recorder. The rest of the team members can split responsibilities during the count.

Records must be filled on the recording forms. These forms have provisions for names and addresses, time and weather conditions and any other comments noticeable. Birds are counted individually where it is easy. When birds are in large groups, estimates of numbers are made by grouping flocks in small sections (10, 20, 50…or 1000) and using this to assess the rest by eye estimations.

Ideally counts should start after a practice session to standardize the numbers estimated by different team members. If birds fly in from in front of you, do count them. If birds fly from behind you do not count them. The same applies for flocks of birds flying past you. It is more important to make accurate counts of the common birds than to spend a lot of time trying to identify unusual ones.

If you see a bird that no one in the group can identify, take full notes and consult with identification experts later. Do not include doubtful records. It is better to record the bird as unidentified. Follow the count coordinators instruction. Calculate and check the totals for each species on each count form before handing it in to the count coordinator.

Equipment you need include writing materials (note book, pencils, erasers, sharpeners, data sheet tally counters); field equipment (binoculars, watch, telescope and tripod, field guides books, GPS); and field gear (boat, rain coats, updated map, life jackets).

3.2 Bird Population Monitoring

(a) Area Counts:

This method includes full search, census, absolute counts, spot mapping, and territory mapping: They attempt to count all birds in a pre-defined area (often a map grid square or pre-determined census plot). Here one to several visits is needed. It is possible for single or multiple species to be counted. The uses of Area Counts include: estimates of density and population sizes, monitoring of national population, mapping of bird distributions and studying bird-habitat associations. The Area Counts are suitable for scarce to fairly common or widespread species and/or territorial species.

(b) Point Counts:

Here you need to walk to pre-defined spots for the counts. Allow time for birds to settle. Then record all birds around the spot for a set time (e.g. 10 minutes). Make consideration of selection and location of points, duration of count, measuring distances and observer bias. Always aim to carry out a standardized point count and working in pairs is advisable. The requirement includes binoculars, a watch, note pad and pen/pencil. It is advised that you use only the established locations that have been mapped with count points set 200m apart. As a precaution, always know the easy routes to and from the count points, observe minimum noise, and wait for some minutes for the birds to settle then count all the birds heard or seen for 10 minutes exactly.

(c) Transects Species Counts (TSC)

Transects Species Counts (TSC) method is one which the Bird Population Monitoring Scheme has adopted for use across the country. The scheme has established sites in the major habitat categories. Each of these sites is visited twice a year (January/February and July/August). Counts should ideally start around 0700 hours and no later that 0900 hours. It is advisable to keep the starting times similar within and across years and that the start and end times be recorded in 24 hour format.

(i) Field protocols

- Each count site transect consists of ten 200m sections making a total of a 2Km stretch.
- All birds encountered (seen or heard) along the transect are recorded (species and number) even when distant.
- The birds behind the start of transect or beyond the end of transect are not included (i.e. behind your first 200m section or in front of your last 200m section).
- The birds to the sides of the transect line are included in the counts.
- Bird species names are recorded on the Field Recording Sheet provided in the order in which they are observed.
- Record all the birds in the appropriate transect sections (1-10). Space is provided on the recording form to allow you to tally different individuals of each species seen for each transect section

- Ensure that only the number of birds recorded is written in each box on the count summary forms.
- The counts require walking along the transect route at a slow and methodical pace, pausing briefly to listen for bird songs and scanning for birds flying overhead.
- Try not to double count, e.g. a bird that can be heard singing from several 200m sections should be recorded once, where it was first detected.
- The count dates should whenever possible be kept similar across the years and remember counts are more productive earlier in the day, with birds generally becoming quiet and inactive during the middle of the day.

(ii) Transect count routes

- Transects may take any shape but to minimize the risk of double counting, points on not straight routes should not pass within 500m of any other part of the route.
- All the sites have sketch maps showing the count route (the transect line) established, name and grid square reference of the transect.
- This route must be followed to ensure consistency of recording at that site (note: if a different route is taken, different birds will probably be recorded).
- If the route has to be changed because of inaccessibility, the sketch map of the new route should be developed.
- For new sites, a new transect route should be created and mapped out while including all the descriptions of identifying land marks.
- A field sheet is provided for recording any other information about transect, for instance GPS waypoint references or information on broad habitat types.

(iii) Weather

The weather conditions describe the cloud cover, rain, wind speed, and visibility. The scoring is based on a (1-3) for each of the four variables. These should be appropriately scored and recorded. If the weather conditions change during counts, select a single weather category that best represents the overall conditions.

Cloud cover		Rain		Wind		Visibility	
0 – 1/3rd	= 1	None	= 1	Calm	= 1	Good	= 1
1/3 – 2/3rds	= 2	Light	= 2	Light	= 2	Moderate	= 2
2/3rds– total	= 3	Heavy	= 3	Strong	= 3	Poor	= 3

3.3 Raptor and vulture monitoring

3.3.1 Raptor counts

Raptors are birds of prey and they occupy the top part of the food chain. Monitoring them therefore is good indicator of ecological health. The method used should at much as

possible not be changed from one year to another or from one site to the next. The raptor counts are done in a moving vehicle and often 3-5 observers are used. Sometimes when situations allow, one or two people can observe from outside the vehicle, either on the back of a pick-up or on the roof of the car with such provisions. However, this is almost impossible on public roads. The suggested protocols with details are given as below:

The first consideration is made such that counts are done not to include raptors departing from and returning to their roosts and therefore the survey is done from 0900 to 1600. To reduce time of day effects, road surveys should be confined to the period between 0930 and 1530. Ideally the survey routes should be 100 to 300 kilometers long. It is always advised to record latitude and longitude at the start and end of each survey, as well as the road and place name. If the survey route involves more than one road, record each road number and the time and place name where the route changes roads. Travel at a rate of 30-50 kilometers per hour. During the survey, use a driver and one or two observers whenever possible.

Record the time when you begin and end the survey in hours and minutes. As a means to trace speed, the total distance traveled on the hour and on the half hour during the survey is recorded. Apart from the time, records are made of percentage cloud cover, wind, and temperature at the beginning and end of each survey. The survey should not be conducted when rain is likely. If rain occurs, indicate its beginning and end to the nearest kilometer.

All the raptors seen are counted and appropriately recorded in banded distances. If you need to stop to count the numbers of individuals in large flocks, include only those birds and not any new birds sighted after you stopped. Record horizontal distance perpendicular to the road to individuals or the centers of groups as, <100, <200, <500, or >500 meters. The distances may be grouped differently as long as consistency is maintained. Record perched birds as “Perched” and flying birds as “Flying”.

3.3.2 Vulture counts

Vulture populations have been monitored either by their breeding colonies or counts on a kill. The populations on a kill attempts to estimate the number within a site. The suitable sites selected for counts should be constant from year to year. The time in terms of the month when to conduct the counts should be decided and January/July seem appropriate.

Baits are used and Cows are considered large enough for the carcass to be seen from far. The following procedure is suggested for count days. An early start – certainly not later than 0900 – seems desirable. Counting the numbers of birds as they arrive (and, if possible, departures too) would probably give a better (and higher) total but is harder to do. The present system of making total counts after 30-minute intervals might be decreased to 20 or even 15 minutes. Such counts will best be referred to as estimates of relative abundance, which also allows for the fact that unknown numbers of birds in the area may never come close enough to be recorded.

As a caution, remember to park the vehicle 100 – 200 meters away at a place with a wide view. Record all vultures and other scavengers on the ground or perched within 500 meters of the carcass. Record all the vultures flying or soaring above in notes. The counts should continue at least until 1400 or until no new birds have come since last count and should not go beyond 1700.

3.4 Site Support Group (SSG) Monitoring

Site Support Groups are local conservation groups working on various conservation programmes within an IBA. The SSG may be involved using different monitoring techniques such as the State-Pressure-Response, in-depth monitoring of populations etc through patrols and visits to the sites. The SSGs may establish data collection spots for regular monitoring.

The SSG collect data by filling the relevant information on to the data collection forms and sometimes the report is forwarded to the Site Conservation Officer or *Nature***Uganda** main offices. They may establish other networks outside SSG membership to enhance monitoring of especially the roosting grounds and other breeding sites. In some situations, the SSGs may monitor the number of the inhabitants (settlement) in sensitive sites to reduce on the encroachment of the breeding ground for the birds. The SSG monitoring is done at least twice a month. The recording sheet takes note of the time, weather, pressures (incidences and magnitude) and any interesting records. The monitoring is based on a group consensus of about five people, one being secretary, one the leader and when observations are made, members agree on what to record. The filled forms are sent to a resident field officer who uses them for reporting.

Benefits of the SSG monitoring approach

- It is a cheap site monitoring model and sustainable conservation may be achieved.
- The communities develop a sense of resource ownership when actively involved.
- The community monitoring may lead to a positive change in attitudes towards biodiversity and its management.
- It is a platform for community capacity development and may promote the conservation values within the site.

3.5 Projects and consultancy based studies

3.5.1 Monitoring through projects

*Nature***Uganda's** conservation work is based on research and therefore all projects have components of monitoring. During the project period, various assessments are done to detect change in species, sites and habitats. The assessments take two major forms of approaches: community threat monitoring and resource use quota monitoring.

(a) Community threat monitoring
The communities living near IBAs may be better placed to detect and monitor threats. They do this by ascertaining the presence of the threats and assessing their magnitude (increasing or decreasing). This assessment is done through patrols and making community reports. Sometimes the patrols are complemented with field visits by officers. The whole exercise is guided by the parish extension agents.

(b) Resource use quota monitoring
Resource utilization is part of the items in negotiating Collaborative Forest Management (CFM) agreements and therefore resource harvesting in CFM areas should be monitored. This is therefore done on resource collection days. On this day, field monitors are stationed at entry and exit routes. They then record the number and category of resource harvesters themselves and the different harvested resource types. The main item is the quantity harvested or off-takes or number of head loads. Other vital information on the purpose of end use (domestic or commercial) is ascertained. The whole monitoring process is supported by resource user groups reports.

3.5.2 Consultancy based studies
At the start of some programmes, consultancies are awarded to individuals or firms to assess and produce baseline information to be able to detect change in the future. This therefore requires that a study is done at the start through to the end of those projects. Some of the information includes: Population of IBA trigger species, mapping the distribution of IBA trigger species, ascertaining the number of breeding pairs within known areas using playbacks and ascertaining the presence and magnitude of threats

3.6 Monitoring based on IBA global framework

3.6.1 The monitoring framework
A simple global monitoring framework for IBAs has been designed. From this, an IBA monitoring form for Uganda was adopted. This is a simple and easy to use form and with it, are guidelines. The variables are State, Pressure and Response. **State** means the condition of the IBA. The status is assessed either by obtaining the population of the trigger species and relating to the habitat or by using habitat as proxy, as long as one has a sound basis for using habitat. **Pressure** on IBAs refers to threats. This is measured using three attributes namely time, scope and severity. And **response** refers to conservation efforts that are being taken to either reduce the threats or improve the condition of the IBAs.

3.6.2 Assessing and scoring IBA monitoring variables
- The scoring system uses the 'weakest link' approach or the worst case scenario meaning that the most threatened species or the least intact habitat determines site score.
- When scoring, the focus is on the IBA trigger species, i.e. those species for which

the site is recognized as an IBA or the habitats they use.

- The smaller details of scoring pressure, state and response may differ but the resulting scales are the same since the score is based on a simple 4 - point scale, from 0 to 3.
- The trend scores are calculated by comparing status scores between assessments, also weighed on a scale from 0 to 3.

3.6.2.1 Assessing and scoring threats or pressures

- Assessment may be based on habitat or species, depending upon data availability
- Threats are scored according to their timing, scope and severity, in how they affect trigger species at the site.
- Timing, scope and severity all are scored on a 0-3 scale
- Impact score equals sum of timing, scope and severity (0-9 scale), giving the overall site threat status score

(a) Timing refers to when threats occur and scoring is as follows:

- Happening now 3
- Likely in short term (<4 years) 2
- Likely in long term (>4 years) 1
- Past and no longer applies 0

(b) Scope refers to proportion of area or population affected with scores as below:

- Whole area / population (>90%) 3
- Most of area / population (50-90%) 2
- Some of area / population (10-50%) 1
- Small area / few individuals (<10%) 0

(c) Severity refers to the resulting effect of threat and scores are as follows:

- Rapid deterioration (>30% over 10 yrs or 3 generations) 3
- Moderate deterioration (10-30% over 10 yrs or 3 generations) 2
- Slow deterioration (1-10% over 10 yrs or 3 generations) 1
- No or imperceptible deterioration (<1% over 10 years) 0

(d) Overall site threat status score (impact of threat)

- Threat impact score is sum of timing score + scope score + severity score
- If a score equals to zero for either timing, scope or severity, then impact score equals to zero
- Using weakest link approach, highest impact score of any threat sets overall threat status for the IBA

(e) IBA threat status score

Highest threat impact score	IBA threat status score and description
• 0	0 = low
• 3-5	-1 = medium
• 6-7	-2 = high
• 8-9	-3 = very high

3.6.2.2 Assessing and scoring state

Assessment may be based on population size of trigger species or habitat information. The scores are based on actual observations against optimum observations. This is scored on a 0-3 scale ranging from very poor to good respectively

(a) Assessing and scoring State (option one)

The scores are based on population sizes of trigger species, using either direct estimate of populations of one or more trigger species. After applying the 'weakest link' approach, the worst performing species is considered if data available for more than one species. The scoring also can be based on area and quality of key habitats on which trigger species depend, as an indirect measure of population size.

Worked example on habitat area and quality assessment:

- An IBA of 10,500 ha consisted on designation of 10,000 ha forest and 500 ha grassland with trigger species found only in forest
- Now, only 9000 ha forest remains, of which half has been logged, leaving 4,500 ha intact
- Where logged, density of most sensitive trigger sp is now only 60% of former levels
- 'Devaluation' calculation becomes:
  % age population remaining = (4500x0.6) + 4500)/10000) x 100) = 72%

Habitat area and quality assessment continues:

In absence of quantitative data, the following is proposed as a guide. The quality percentage ranges refer to population density of trigger species in key habitats

Area

Quality		Good (>90%)	Moderate (70-90%)	Poor (40-70%)	Very poor (<40%)
	Good (>90%)	3	2	1	0
	Moderate (70-90%)	2	1	0	0
	Poor (40-70%)	1	0	0	0
	Very poor (<40%)	0	0	0	0

Scoring IBA status (score)

Percentage of potential population or habitat remaining of worst species or habitat	IBA condition status score and description
• >90%	3 Good
• 70–90%	2 Moderate
• 40–70%	1 Poor
• <40%	0 Very poor

(b) Assessing and scoring state (option two)

The scores can be derived by comparing of population sizes of trigger species to either their size when the IBA was first identified or the optimum for the site, based on extent of habitat and population density in undisturbed conditions.

(c) Assessing and scoring state (option three)

Similarly, scoring also takes account of existing areas and quality of key habitats compared to the estimated optimum for the site. These comparisons are used to calculate the percentage potential population or habitat remaining, where: Percentage remaining = (size remaining / estimated optimum) x 100%.

(d) Assessing and scoring state (option four)

For habitat, the equation in option three above assumes optimal quality. Often, this will not be so and estimates need to be 'devalued' accordingly. The worked example in option one shows how this can be done

3.6.2.3 Assessing and scoring responses

- Each of three measures of response i.e. level of formal conservation designation, management planning and implementation of conservation action are all scored on a 0-3 scale
- The sum of the three attributes above (0-9 scale), equals to the overall site response status score.

(a) Scoring conservation designation

Conservation designation refers to the protection status of the site. This may refer to the National Parks, Wildlife Reserves or Ramsar Sites and are scored as follows:

- Whole of IBA covered by appropriate conservation designation (>90%) 3
- Most of IBA (most critical parts for trigger species) covered (50-90%) 2
- Some of IBA covered (10-50%) 1
- Little/none of IBA covered (<10%) 0

(b) Scoring management planning

Management planning refers to the different stages of development of the site management plan and is scored as follows:

- Comprehensive and appropriate management plan exists 3
- Management plan exists but is out of date or not comprehensive 2
- No management plan but planning process begun 1
- No management planning undertaken 0

(c) Scoring conservation actions

Conservation actions refer to the various conservation efforts taken up and how well they are addressing the problems and are scored as follows:

- Conservation measures fully and effectively implemented 3
- Conservation measures in place but not comprehensive 2
- Conservation measures limited and inadequate 1
- Little or no conservation measures 0

(d) IBA Response status score

Summed action scores	IBA action status score & description
• 8-9	3 = high
• 6-7	2 = medium
• 2-5	1 = low
• 0-1	0 = negligible

Scoring trends:

Trends in threats, condition and actions may be calculated by comparing status scores between assessments to provide a snapshot in time. Thus, IBA status scores in the second assessment minus the status scores in the first gives trend of status between these two assessments. For each of threat, condition and action, these differences map to a scale ranging from +3 to -3

IBA state, pressure and response trend scores	Description
+3	Large improvement
+2	Moderate improvement
+1	Small improvement
0	No change
-1	Small decline
-2	Moderate decline
-3	Large decline

3.6.3 The IBA monitoring framework site activities

For someone to be well conversant with the framework, one must participate in trainings that may be organized. The skills acquired from this kind of training can be used to train other colleagues to do IBA monitoring. The site monitors are then required to collect data and take lead on data handling and record keeping. Additional relevant information requires identifying potential collaborators (CBO, Researches) at site, seeking relevant

records from eco-lodges and tourist centers and keeping briefs on major activities of potential collaborators while helping disseminating awareness information at site

3.7 Other relevant monitoring techniques

3.7.1 Permanent Sample Plots (PSPs) monitoring;

Much of the knowledge on forest development is gained from focused research on resources. PSPs are means of obtaining such knowledge on growth and eventually yield. The major objectives for establishment PSPs include: providing forest growth and yield information for efficient management of the forest and estimating the potential productivity of the site. PSPs also aim to quantify the effects of silvicultural treatment on growth and yield and provide data on the effect of management of stands on physical, chemical and biological properties of the site. The functioning of this method is well described in the forestry sector inventories literature.

3.7.2 Ranger Based Data Collection or Monitoring

This is the collection of data on wildlife and human activities by rangers on patrol. The basic tools used are patrol data sheet, GPS and a compass. There are many advantages of this method which include: cheap to collect data because staff are already there, can cover the whole protected area relatively easily and rangers know the place and have a good idea about what is happening where. It is therefore necessary to (a) manage ranger patrols by planning patrol routes, monitoring performance and evaluating patrol effectiveness.

Management Information SysTem (MIST) is a custom-made, easy to use, flexible programme developed to improve management efficiency and effectiveness. It is for provision of up-to-date information needed for planning, monitoring and evaluation. **Information System** is a system to convert data from internal and external sources into information and to communicate this information to managers at all levels to enable them to make timely and effective decisions for planning, directing and evaluating the activities for which they are responsible

3.7.3 Wetlands ecological monitoring

This occurs at both local and national levels. It attempts to map land cover through satellite images and photographs to detect change. Digital images or photographs are interpreted and processed into land cover maps and then compared to detect change in either size or land use. This is however, expensive, requiring expertise and takes time. At district level inventory reports produced are used for detecting change at systems level. It involves parameters such as flora, fauna and water quality. At local level, visits are conducted to sites following reports from informants, sub-counties or districts about encroachment

CHAPTER FOUR

4.0 Field practice and bird identification

4.1 Field practice

When planning for fieldwork, plan well ahead of time. It is necessary to make initial bookings. On the day of the trip, leave early such that you have ample time for travel. Remember to follow the work schedules as planed and be mindful of time and your safety throughout the trip. The following should be a working guide:

Work out what you are going to do in advance. Always carry the recording forms --- (IBA monitoring field data forms). Obtain map of the area --- (IBA map with the boundaries outlined). Carry both identification guide books and relevant field equipment--- (on birds). Carry right field gears --- (boots, rain jackets, warm clothing, caps). Carry recording materials --- (GPS, pencils, note books etc).

Remember to carry along with you a first aid kit and basic field hazards guide. Take note of the safety of all equipment. Plan all your movements, directions and locations strategically. Inform colleagues of your plans and schedules when on a lengthy surveys. Most importantly, collect and edit the data as soon as possible. File the data appropriately and always submit copies of data to relevant authorities

4.2 Bird watching

(i) Bird watching tips

Bird watching usually calls for individual patience, being alert by use of your senses. It is important to learn various characteristics in a bird that guide identifying the birds in the field. One should always be accompanied with a notebook in order to note down some important characteristics, these are the principles of bird identification especially if the bird is being observed for the first time.

When bird watching, one needs to be very attentive. The noise levels should be kept to the minimum. Take a slow pace to give time to interact with birds. Scan thoroughly even the most difficult habitats. It is necessary to look in all directions so as not to miss any bird. Be watchful of both flying and perching birds. Be quick to note as many features on a bird as possible. Take time to carefully listen to the voice calls of singing birds

(ii) Bird watching code of conduct

- The welfare of the bird must come first
- Habitat must be protected

- Keep a distance to birds in their habitat
- When you find a rare bird think carefully about whom you should tell
- Do not harass rare migrants
- Respect rights of land owners
- Respect rights of other people in the countryside
- Make your records available to the local bird recorder
- Wear clothing that do not frighten birds

4.3 Bird identification tips

Birds may be identified both by their appearance and by the sound they make.

Identification by sight **-** you need to note the main features of its appearance and behaviuor. Anything that appears particularly conspicuous or unusual may be especially helpful in identification. Features to note include bird's size, shape, and colour (including colour of soft part – eye, feet and bill), how it is behaving and the type of habitat in which the bird is. As you write these features of a bird you cannot identify, make a labeled sketch to illustrate what you describe. Do this at the time of sighting, and NOT later.

Description of birds in terms of color has always been difficult if not confusing. Birds come in all sorts of colors of which some may not be as common. The background of the birds' position in relation to the observer is another thing to consider as this will interfere with the plumage for example sunbirds giving a different impression of the plumage.

Juvenile may at times appear different from the adult and in most cases mistaken for other species e.g. chats, thrushes, shrikes e.g. the common fiscal. During breeding certain birds wear their breeding plumages e.g. widow birds, paradise flycatchers and they become brightly coloured and patterned. In most circumstances this acts to attract partners. In the non breeding season this plumage is lost and they become duller.

How big is the bird**? –** It is often difficult to judge size exactly, especially at a distance. It is usually better to compare the bird with common ones that are well known to you e.g. is it larger or smaller than a Rufous Sparrow? an Olive Thrush? Etc.

What is the bill's shape, size and colour**? –** The bill's shape is a guide to what the bird eats, and therefore to what family it belongs to. Is the bill long, thin and curved like that of a Sunbird? Is it powerful and hooked like a bird of prey's, or weak, short and flattened like a flycatcher's? What is its colour? Many birds have blackish bills but some beaks are highly colored.

What is the bird's stance and posture**? –** This can be very revealing as it often peculiar to members of the same family. E.g. Plovers stand with head held high while Mousebirds often hang upside down from a branch or telephone wire and many birds of prey stand almost upright.

***What is the bird's shape*? –** The overall shape can be very important in placing the bird in a particular family. Is it slender, with a long tail, like a Wagtail? Is it chubby and stout, like a Crombec? Is it tail forked, as in a common Drongo? Are the central tail feathers elongated, as in Bronze Sunbird? Does it seem to have especially long legs, like a Black-winged Stilt?

Birds express themselves in different sizes and shapes depending on the species. Different parts of the body will also come in various shapes in terms of length, and breath. When describing the size of the bird that is seen for the first time one can relate it to the size of other birds or object e.g. the size of an olive thrush. Ensure that description of shape is made for all body parts. Some patterns are only visible when the bird is in flight. E.g. wheatear and honey guides

***What plumage colours or markings strike you*? –** Knowing the various parts of a bird's topography is often very important. Feather pattern differs for various birds i.e. the primaries and secondaries and tertials and the coverts. The tail also will differ in terms of colour pattern when closed or open e.g. the edge will show different colour to the centre of the tail. Some patterns e.g. of the tail also takes different shape when closed or when exposed e.g. swallows when in flight. The wing structure and pattern also aid in identification including the birds posture this is especially as seen with the raptors. The bill length, shape and plumage are other important characteristics to look at while in the field as they differ for various bird species. The neck and head should not be left out.

***What is the bird doing*? –** Is it walking or hoping? Does it peck a tree like a Woodpecker? Hover in the air like Black-shouldered Kite? Try to detail behavior as carefully as possible. Birds are always mobile and sometimes may not give one an opportunity to observe it in details. It is important to, note the appearance of the bird when in flight, on the ground or perched on a branch and when hunting and feeding. This will help have a quick guess and an ultimate identification of the bird.

What habitat is the bird in – *and where is it within that habitat?* – Within certain habitats, birds still have preferences. In a papyrus wetland for instance, some will prefer the edges, others the interior, and some the disturbed or intact parts, or one with mixed stands of vegetation.

After observing the bird in the field and noting all possible features the final but very important thing to consider is consulting the guide to check on its habitat and the range of occurrence. It could be a new record for an atlas or perhaps confusion may have been made for a commoner species. These thoughts must be put in place before coming to a conclusion of the birds' identity. Some species are restricted to certain habitats and hence you should not find them in other habitats.

Bird identification can be a very frustrating and difficult exercise especially for the beginner but there's always a joy once a discovery is made. Bird watching should always start at

home. Know the birds in your garden instead of rushing to the parks and reserves as this will only cause more frustrations and disappointments. No bird survey can be undertaken without special skills and kits. A birder is required to be equipped with necessary instruments that will help him/her accomplish the birding mission.

Age of birds: A juvenile may have characteristics of other species. Studies of moult are important to understand age of birds. This usually occurs as the bird grows and sheds some feathers.

Calls and song: Calls are very useful in identification especially when a bird is hidden i.e. in the dark, in the forest or in the swamps. Confusion of calls can be a common problem and the observer should bear this in mind when it comes to identification of birds by calls. It is worth noting that birds may have more than one type of call e.g. the Robin Chats. Different calls serve different purposes e.g. courtship, flight, alarm or contact calls.

4.4 Record and record keeping

- Always have a separate notebook for keeping records of birds
- A pencil is preferred for recording as in the event of rain it is less likely to be washed away
- Always carry binoculars to help in identifying and confirming records
- Use Identification Guide Books to aid the process of getting quality records
- The use of Playbacks may help in confirming records if available
- Learn other skills of attracting the attention of birds, such as imitating their calls
- It is good to keep a record of all birds identified by sight or sound
- If it is a seemingly new record for the country, contact relevant institutions for guidance

4.5 Handling and care for equipment

There are essential considerations when using binoculars, telescopes, GPSs and other meters (hygrometer, thermometer). For proper functioning of the equipment, the following needs to be observed:

- Binoculars should always be held firm with both hands. In most cases these should be hung around the neck, where they are readily accessible when a bird is spotted.
- Use a tripod to stabilize a telescope and allow for positions to be easily switched when necessary.
- The lenses should not be touched with the fingers. A soft cloth or preferably cotton wool should be used when cleaning. Remember to always cover the lenses when the binocular is not in use.
- Care should be taken to avoid any wetting of the equipment or any dust getting in. This applies both during and after the field work. The equipment should be kept in a safe and secure cupboard when not in use.
- Special fitting bags can be used to cover the equipment. This applies to both the binoculars and the telescopes.

- The optical equipment must be cleaned regularly to maintain their good functioning. Regular checks will help in general equipment maintenance and repairs
- Always make adjustments on binoculars and telescopes to suit your view when observing birds.
- If you are not sure of how to use equipment, then either ask for instructions from someone who understands there use or read the manual to acquaint yourself.

4.6 Field health and safety precaution

- Always plan for a trip when you are in good health
- Always be mindful of your safety
- Carry your first aid kit and basic field hazards guide
- Consider all potential hazards and avoid them
- Minimise any risks of working alone
- Make sure you are always in pairs and ensure there is a system of contact in case of any emergency.
- Always carry with you a map of the place with outlined identification information
- Use appropriate field gear wherever possible and be mindful of the safety of the equipment
- Above all, work out your schedule well in advance and take the best option

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