

# IDENTIFYING AND COUNTING WATERBIRDS IN AFRICA

## A Toolkit for Trainers Sub-Saharan Africa



2015



## Identifying and Counting Waterbirds in Africa – A Toolkit for Trainers - Sub-Saharan Africa

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This toolkit is available in French, Portuguese and English. The English version was edited by Simon Delany and Tim Dodman.

A version covering the birds of North Africa is also available in French, Arabic and English.

**Recommended citation:** Hecker N., 2015. *Identifying and Counting Waterbirds in Africa – A toolkit for trainers - Sub-Saharan Africa*. ONCFS, *Hirundo-FT2E*. France.

**Acknowledgements:** I am very grateful to Jean-Yves Mondain-Monval, Pierre Defos du Rau, Marc Lutz, Szabolcs Nagy, Clémence Deschamps, Tim Dodman and Anne Ambellan for their contribution at different stages of this project. I am also very grateful to my colleagues, friends and trainees for helping in the development and test of this toolkit. Thank you so much to Marc, Nina and Cécile for their unwavering support to *Hirundo-FT2E*.

This publication was produced as part of Action 18 of the *contrat d'objectif* 2012-2014 of ONCFS « Améliorer la connaissance des populations d'oiseaux migrateurs sur l'ensemble de leurs aires de répartition ». Financial support for this publication was received from the Ministère français de l'Écologie, du Développement durable, et de l'Énergie (French Ministry of Ecology, Sustainable Development, and Energy), the Office National de la Chasse et de la Faune Sauvage as well as the MAVA Foundation.

This toolkit is a new version of: Hecker N., 2012. *Identifying and Counting Waterbirds in Africa – A toolkit for trainers*. ONCFS, *Hirundo-FT2E*. France and HECKER, N. 2000. *Formation pour le suivi des populations d'oiseaux d'eau en Afrique sub-saharienne*. ONCFS - Tour du Valat, France, produced as part of the “*Mise en place d'un réseau de suivi des populations d'oiseaux en Afrique subsaharienne*” project (a project to establish a network to monitor bird populations in sub-Saharan Africa) financed by the European Commission and produced by the Office National de la Chasse et de la Faune Sauvage (France) in partnership with the departments responsible for the management of fauna of Burkina Faso, Guinea, Mali, Mauritania and Senegal, as well as Tour du Valat. This project coordinated by Jean-Yves Mondain-Monval, aimed to establish a network to monitor waterbird populations in five West African countries; Burkina Faso, Guinea, Mali, Mauritania and Senegal.



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## TRAINING TOOLS FOR IDENTIFYING AND COUNTING WATERBIRDS IN AFRICA

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### Who is the Toolkit for?

- For professional or volunteer trainers from governmental or non-governmental organisations involved in wetland conservation and waterbird monitoring.

### What is its purpose?

- To provide trainers with an educational framework and tools to carry out training courses on waterbird identification and counting. These courses are for beginners or for those already familiar with ornithology and likely to take part in monitoring waterbirds.

### What does it include?

- Guidelines for preparing training courses;
- Training modules comprising explanations and exercises about identifying and counting waterbirds;
- Guidelines for evaluating the course and the trainees;
- Actual case studies of waterbird counting protocols in different settings;
- A glossary of the main technical terms used in these tools.

### How should it be used?

The training modules are structured in a chronological and progressive manner.

The modules and their corresponding tools can be used as they are, or can be adapted to the participants, the region, the length of the course, etc. (see Tool 2: Training modules, § *Module adaptation*).



## TOOL 1: GUIDELINES FOR ORGANISING A TRAINING COURSE

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This section outlines some important considerations to take into account when organising a training course.

### Introduction

Training adults is different from teaching young people at school or university.

In fact adults are often less receptive because of their past experiences, positive or less positive memories of education, and their relationship with their teachers. This will influence their attitude to a new course.

**All adults know something about birds from experience.** It is not necessary to have studied ornithology to recognise certain species and know how they live. Birds are part of everyone's surroundings, especially in rural areas. **The purpose of a training course should be to add to existing knowledge.** If new facts are not integrated into existing knowledge there is a risk of conflicting information, with any new knowledge remaining isolated and therefore probably ineffective. A training course should integrate itself into the real life and experience of each person.

Identifying and counting birds needs little theoretical knowledge but requires specific abilities such as how to describe a bird or how to count a group of birds in flight, developed from mastering techniques and carrying out field work. Appropriate behaviour such as being methodical, rigorous and patient, is equally important. The course should therefore help the trainees to expand their know-how, to use their initiative and adapt their behaviour.

**To be motivating, a course should be seen as a means or tool to progress.** It should become part of the trainees' interests and concerns, allowing them to progress on their career or professional paths. It is therefore essential that the trainer has a good understanding of the personal and professional backgrounds of trainees in order to understand what this course represents and how it fits into their lives.

### Definition of a course's objectives

The first thing is to identify who will be involved in the course. This will depend on:

- The aim of the course. Is it to set up a country-wide, region-wide or site-based network of counters?
- Existing human resources. Are there already people in the area, be it the country, region or site, able to identify and count birds; if so, who are they? If there are, do you want to improve their skills? If there are not, do you want to train beginners?

The level of training is defined by the answers to these questions; initiation or improvement. The objectives of the course can now be clearly established. They show what the trainees should be able to do after the training.

The objectives of a week-long course aimed at beginners in ornithology, who will go on to participate in counts as part of a monitoring network should be:

- To master techniques for identifying waterbirds;
- To know the birds which are mainly found within the site;
- To master techniques for counting waterbirds.

These objectives can be broken down into three main themes:

#### ***Knowing waterbirds***

- To know the main families of birds likely to be found in a region (area where the course takes place).

#### ***Identifying waterbirds***

- how to use equipment necessary for identification: binoculars, telescope and field guide;
- how to accurately describe a bird;
- how to match it to a family, a genus then a species.

## **Counting waterbirds**

- to master the main techniques for counting birds on the ground and in flight;
- to adopt these techniques in the field.

These objectives do not claim to enable someone to identify each and every bird or to be able to count any group after just one week's training. They are set out in a way that teaches methods of identifying and counting birds throughout the week. Each trainee should then practice regularly in order to become proficient.

Therefore the objectives of the course depend on the people involved, their initial level of knowledge, and activities to be carried out after the course, such as one-off counts, monitoring an area or organising counts.

## **Selecting trainees**

Where possible, the person organising the course should select trainees according to the following criteria:

- trainees should be motivated by their role in bird counts as part of a wetlands monitoring network;
- trainees should be able to carry out tasks assigned to them in the future: will their other activities make them unavailable?; will they still be in the area in the medium to long term?; if they're participating in the counts as part of their job, how long are they likely to stay?, etc;
- trainees on any course should ideally have a similar initial level of knowledge in ornithology and similar personal and professional backgrounds. Methods needed to train wetland village residents, NGO nature protection students or members of a public service in charge of the environment will be different;
- the number of trainees should be limited. The optimum number is around eight to 15 people for the highest quality of learning and the best group dynamics. The size of the group will also depend on availability of material resources including finance, logistics and optical equipment, and human resources, such as the number of available trainers.

## **Identifying the needs of trainees**

Once the trainees have been chosen or designated, the trainer should assess the needs of each one and should find out:

- the trainees' initial "level" - student or professional, existing ornithological knowledge, social or cultural background, etc.
- the trainees' future roles in waterbird censuses;
- what they need to learn to progress from their initial level to their future position.

Based on this information, some of which will have been learned when selecting the trainees, the trainer will be in a position to accurately define the training needed to reach the desired level, the length of training (number and length of courses), type of training, other appropriate methods, and so on.

This analysis can be done at group level if the trainees are at a similar level, or on an individual basis. It is much more effective if it is carried out for each person individually as this will take into account variations that occur even among people with a similar profile. It is preferable to do this before the course starts, but if this isn't possible it should be done on the first day. In order to assess how much and what each trainee needs to learn, it is helpful to analyse and dissect the objectives of the course. For example, to achieve a simple objective such as "how to identify a bird", the trainee should learn skills (how to do something) which in turn call upon knowledge (theoretical knowledge) and behaviour (how to behave in a certain way depending on the situation). The table below analyses the skills, knowledge and behaviour necessary to identify birds.

<b>Skills</b>	<b>Knowledge</b>	<b>Behaviour</b>
<ul style="list-style-type: none"> <li>Using binoculars and a telescope</li> <li>Watching a bird</li> </ul>		<ul style="list-style-type: none"> <li>to be methodical and rigorous</li> <li>to be observant and patient</li> </ul>
<ul style="list-style-type: none"> <li>Describing a bird's shape</li> <li>Describing plumage</li> <li>Describing behaviour</li> </ul>	<ul style="list-style-type: none"> <li>Knowing bird topography (anatomy, vocabulary)</li> <li>Knowing how to name colours consistently</li> </ul>	<ul style="list-style-type: none"> <li>to be observant</li> <li>to be rigorous</li> <li>to be careful</li> </ul>
<ul style="list-style-type: none"> <li>Taking notes</li> </ul>		<ul style="list-style-type: none"> <li>to be meticulous</li> </ul>
<ul style="list-style-type: none"> <li>Matching a species to a group</li> </ul>		<ul style="list-style-type: none"> <li>to be logical</li> </ul>
<ul style="list-style-type: none"> <li>Using a field guide</li> </ul>	<ul style="list-style-type: none"> <li>knowing the layout, contents and vocabulary of the field guide</li> </ul>	<ul style="list-style-type: none"> <li>to be logical and rigorous</li> </ul>
<ul style="list-style-type: none"> <li>Giving a well-argued result: the name of the species observed</li> </ul>		<ul style="list-style-type: none"> <li>to be careful and objective</li> <li>to spot one's mistakes</li> </ul>

This analysis highlights the following points:

- there is little theoretical knowledge to learn compared to skills and behaviour that the trainees will need to develop;
- the trainer's role is therefore different from that of a teacher who has and passes on knowledge. Above all, the trainer is there to help the trainees to learn and improve their skills and behaviour;
- the trainer should therefore use adapted teaching methods to fulfil the role of facilitator;
- It is essential that trainers should give each trainee individual attention to help each one to adapt their behaviour.

## Creating a training programme

The course programme must take the objectives and teaching methods to be used into account: what is it hoped the trainees will achieve, and how can they be helped to fulfil these achievements?

The activities on offer use different teaching methods (see next section).

The programme should alternate between exercises and speakers:

- alternating indoor activities and field work. Class work establishes the basics necessary for field work and should be fairly short. Field work should be favoured in order to develop practical skills;
- alternating “passive” activities requiring little action from the trainees and activities requiring them to use their initiative;
- alternating speakers. Different people can lead the activities. The diversity and complementary nature of the speakers enrich the course where both content and relationships are concerned;
- alternating work and rest periods.

The programme must take the duration of the course into account.

The programme should be sent to each participant before the course starts. It should be presented and discussed at the trainees’ reception at the beginning of the course to:

- clarify the objectives of the course and prevent any unrealistic expectations;
- specify what the trainees should have achieved by the end of the course;
- clearly explain each person’s role, such as trainers, speakers and trainees at different levels.

Speakers should be chosen by the course organiser for their technical ornithological skills as well as their ability to teach and pass on their know-how, and to motivate the trainees. They must be contacted personally prior to the course. The objectives of each presentation should be set by the course organiser and discussed with the presenter.

Each presentation should fit logically into the structure of the course, and should completely fulfil the organiser’s requirements.

## Teaching methods

Different teaching methods can be used depending on whether the objectives relate to knowledge, skills or behaviour. (see table on page 5) These methods can be grouped into three types: affirming, questioning and active.

### *Affirming methods*

- As with a trainer’s presentations, these are used to pass on theoretical knowledge. They are easy to implement but give the trainees little opportunity to join in and don’t make it so easy to remember facts. This problem can be overcome by distributing fact sheets after the presentation.

Example: a presentation on bird migration.

### *Questioning methods*

- By asking questions, the trainer encourages the trainees to join in and helps them to find things out for themselves. This method helps with memorising the topics being discussed.

Example: a group workshop about “what are bird censuses for?” (see module 4).

### *Active methods*

- The trainees have to carry out a full-scale task and solve problems they encounter. The trainer should encourage them to take the initiative and to discuss problems they encounter, and should act as technical support to solve them.

Example: the trainees should organise and carry out a bird count at a count site.

## **Trainer's role**

The trainer will endeavour to:

- Personalise the course according to each person's profile.
- Make a connection with the trainees by listening to them, being available, flexible and firm, and fostering respect and mutual trust.
- Encourage each trainee to have self-confidence, initiative and independence.
- Adapt the training to the type and objective of the activity; for example being available even when wanting to help the trainees become more independent (experienced trainees will need as much training as beginners, but of a different nature), being encouraging but demanding.
- Encourage trainees to share and help each other.
- Get feedback from the trainees through recapping and "on-the-spot" discussions at the end of the day or after an exercise, and "after the event" discussions having let the trainees think and talk among themselves.
- Adapt the training according to the reaction and progress of the trainees. To do this, regular evaluations of the training should be carried out throughout the course (see Tool 3: Conducting evaluations).

## **Some helpful notes**

Organising a course involves a lot of logistical arrangements such as accommodation, catering and transport. It is better for the trainer to delegate this work to someone else, allowing the trainer to fully focus on organising the educational aspect of the course. However, some materials and arrangements required relate directly to the educational organisation of the course.

## **Necessary equipment**

Implementing the activities on offer requires some equipment, listed below:

- Class work: a computer, a projector, a flipchart and marker pens.  
  
If the equipment is not available, or if there is no electricity, most of the activities can still be carried out to some degree after course adaptation and planning (e.g. printing out presentations in advance, or putting greater emphasis on field work)..
- Field work:
  - Equipment for each trainee: a pair of binoculars, a notebook, a pencil, and a field guide (possibly one between two people)
  - Shared equipment: a telescope for two to five trainees, tally counters.

## **Location of the course**

The richness of the wetland where the field work will be carried out is vital to the success of the course. The diversity and number of birds are important factors in motivating the trainees. If possible, the classroom should be close to the wetland. Being able to walk to the wetland from the classroom would be ideal, making it easy to alternate activities without travelling by vehicle, and without wasting money or time.

The closer the work places (field and classroom) are to the accommodation, the better the work conditions will be. This allows the trainees to continue watching birds, if they want, outside of work time.

## **Useful documents**

To learn more about training:

*Wings over Wetlands: The flyway approach to the conservation and wise use of waterbirds and wetlands: Flyway Training Kit and Critical Site Network Tool* available from <http://wow.wetlands.org>

## TOOL 2: THE TRAINING MODULES

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### Teaching bird identification

#### *A learner-centred approach*

Teaching bird identification can be done in different ways. The method used here is based on two important approaches:

- **It takes the trainees' initial knowledge into account** and is based on that, whatever their level, to learn new facts and know-how. It allows each one to learn and integrate facts more quickly and memorably, in order to logically enrich their current knowledge.
- **It enables gradual learning of techniques:** techniques for description, to match a bird to a group of species, and for identification. This step-by-step approach helps beginners to progress quickly and therefore motivates them more. It makes for more reliable identifications thanks to more detailed descriptions.

As always in ornithology, field work is the key to the trainees' success.

The suggested training can be carried out in three successive modules.

**Module 1 "Initial knowledge"** identifies what the trainees know at the beginning of the course. Everyone knows something, whatever their level, and this can be used as a basis for their training.

**Module 2 "How to describe a bird accurately"** introduces techniques and exercises to help the trainees make detailed descriptions.

**Module 3 "How to identify a species"** introduces techniques to allow the trainees to reliably identify birds seen in the field.

#### *Skills the trainer will need*

- Sound knowledge of all the species of waterbird present in the study area;
- Willingness and ability to pass on techniques and methods.

## Teaching waterbird counting methods

### *A learner-centred approach*

Teaching waterbird counting methods can be done through the four following modules:

#### **Module 4: Why count waterbirds?**

#### **Module 5: Count or estimate?**

#### **Module 6: How to count a small group of birds**

#### **Module 7: How to estimate the size of a large group**

Teaching these modules indoors allows the trainees to understand and learn the core principles and techniques of the counts.

The examples used in exercises are deliberately simple because their purpose is to gradually reveal the technical questions (and difficulties!) to consider when carrying out counts.

These modules should be followed by fieldwork where intensive practice will enable each trainee to master count techniques in a real life situation.

### *Skills the trainer will need*

To successfully teach methods of counting waterbirds, the trainer must be able to use the various techniques, to identify and count, to the nearest five birds, a group of 270 or 573 waders perched on a sandbank 500 metres from the shore against the light! Above all, the trainer needs to structure the course in a progressive way to enable trainees to succeed step by step and to face more and more complex situations. The trainer should be clear and rigorous, as the ability to pass on knowledge and know-how will be put to the test.

## Useful publications and links

### **Species identification**

Sinclair I. & Ryan P. 2010. *Birds of Africa – South of the Sahara*. 2<sup>nd</sup> Edition. Struik, Cape Town.

Barlow, C. & Dodman, T. 2015. *Waterbird Guide of the East Atlantic Flyway in Africa*. Wadden Sea Flyway Initiative. BirdLife International, Regional Office for Africa / Common Wadden Sea Secretariat, Wilhelmshaven.

Azafzaf H., Defos du Rau P., Feltrup-Azafzaf C., Mondain Monval J-Y. & Girard O. 2013. *Guide d'identification des oiseaux d'eau en Afrique du Nord*. Association « Les Amis des Oiseaux » (AAO) et Office National de la Chasse et de la Faune Sauvage français (ONCFS). Charguia 1 Tunis. <http://www.oncfs.gouv.fr/Le-suivi-des-oiseaux-d-eau-migrateurs-en-Afrique-ru495>

Borrow, N. & Demey, R. 2014. *Birds of Western Africa*. 2<sup>nd</sup> Edition. Princeton University Press.

Girard, O. 2003. *Échassiers, canards, limicoles et laridés de l'Ouest africain*. ONCFS. L'Ile d'Olonne.

Redman, N., Stevenson, T. & Fanshore, J. 2009. *Birds of the Horn of Africa: Ethiopia, Eritrea, Djibouti, Somalia and Socotra*. Christopher Helm, London.

Stevenson T. & Fanshawe J. 2004. *Birds of East Africa: Kenya, Tanzania, Uganda, Rwanda, Burundi*. Princeton University Press.

Sinclair I., Hockey P. & Tarboton W., Ryan P. 2011. *Sasol Birds of Southern Africa IV*. Struik Nature. Cape Town.

Sinclair I. & Ryan P. 2009. *The Complete Photographic Guide : Birds of Southern Africa*. Struik Nature. Cape Town.

Sinclair I. & Langrand O. 2013. *Birds of the Indian Ocean Islands: Madagascar, Mauritius, Reunion, Rodrigues, Seychelles, Comores*. Struik, Cape Town.

<http://www.xeno-canto.org/collection/area/africa> : Site dedicated to sharing recordings of vocalisations of the birds of the world

<https://www.flickr.com/groups/africanbirds/pool/>: photo sharing site, with many pictures of birds that may be useful for creating new slides (ensure that only copyright free images are used).

### Species and sites

<http://www.hbw.com/species> *Handbook of the birds of the world Alive* provides full accounts for every bird species known to science up to June 2013, including distribution maps and color illustrations. From del Hoyo, J., Elliott, A., Sargatal, J., Christie, D.A. & de Juana, E. (eds.) 2014. *Handbook of the Birds of the World Alive*. Lynx Edicions, Barcelona.

<http://www.oiseaux.net/> : collaborative encyclopaedic website (in French).

<http://avibase.bsc-eoc.org/avibase.jsp?lang=EN> : an extensive database information system about all birds of the world, containing over 12 million records about 10,000 species and 22,000 subspecies of birds, including distribution information, taxonomy, synonyms in several languages and more

*World Bird Database* (BirdLife International): provides useful information on species and sites. <http://www.birdlife.org/datazone/home>

*IUCN Red List of Threatened species*: widely recognized as the most comprehensive, objective global approach for evaluating the conservation status of plant and animal species. <http://www.iucnredlist.org/about/introduction>

*Agreement on the Conservation of African-Eurasian Migratory Waterbirds* (AEWA): Technical publications and guidelines: <http://www.unep-aewa.org/en/publications/technical-publications>

*Critical Site Network Tool*: combines and integrates information on BirdLife International Important Bird Areas, Wetlands International's International Waterbird Census sites, Ramsar sites and other protected areas and includes data for all waterbird species and bio-geographical populations in the region including those covered by the AEWA <http://csntool.wingsoverwetlands.org/csn/default.html#state=home>

Ramsar Convention: Information and technical publications on wetlands and waterbirds [www.ramsar.org](http://www.ramsar.org)

World Database on Protected Areas (UNEP/WCMC & IUCN): provides the most comprehensive global spatial dataset on marine and terrestrial protected areas available. <http://www.protectedplanet.net/>

### Waterbird census and monitoring

Wetlands International: documents and tools related to waterbird monitoring

<http://www.wetlands.org/AfricanEurasianWaterbirdCensus/Documents/tabid/2791/Default.aspx>

- Guidance on waterbird monitoring methodology: Field Protocol for waterbird counting ;
- Guidance on how to digitise site boundaries in Google Maps, Google Earth, Observado and the IWC online database ;
- Use of Observation.org for collecting IWC data from the observers ;
- Use of Observation.org for collecting IWC data from the observers
- Official data submission form for national coordinators of the African-Eurasian waterbird Census;
- A manual for the IWC Online database is available in English at: <http://www.wetlands.org/LinkClick.aspx?fileticket=tvRJOptSvGA%3d&tabid=2791&portalid=0&mid=11794>
- Examples of national reports: <http://www.wetlands.org/OurWork/Biodiversity/WaterbirdForums/tabid/2582/afv/topicsview/aff/93/Default.aspx>
- IWC reports and newsletters : <http://www.wetlands.org/AfricanEurasianWaterbirdCensus/Outputs/tabid/3044/Default.aspx>
- Etc.

*Wadden Sea Flyway Initiative* : Some examples for strategic planning of monitoring framework are available in English from the Wadden Sea Flyway Initiative:

- West Africa Monitoring Strategy:

[http://www.waddensea-secretariat.org/sites/default/files/downloads/west\\_africa\\_monitoring\\_strategy.pdf](http://www.waddensea-secretariat.org/sites/default/files/downloads/west_africa_monitoring_strategy.pdf)

- Integrated monitoring of waterbirds along the East Atlantic Flyway:  
[http://www.waddensea-secretariat.org/sites/default/files/downloads/flyway\\_monitoring\\_plan.pdf](http://www.waddensea-secretariat.org/sites/default/files/downloads/flyway_monitoring_plan.pdf)

### **Waterbird Population Estimates**

*An Atlas of Wader Populations in Africa and Western Eurasia. 2009. Delany S., Scott D., Dodman T. & Stroud D. (eds). Wetlands International – Wader Study Group. Wageningen, The Netherlands.*

Compilation of current data about numbers, distribution and movement of waders in the region covered by the African-Eurasian Migratory Waterbird Agreement (AEWA).

More information at:

<http://www.wetlands.org/Whatwedo/Wetlandbiodiversity/MonitoringWaterbirds/WaderAtlas/tabid/1564/Default.aspx>

*The Waterbird Population Estimates (WPE) online database provides current and historic estimates, trends and 1% thresholds for over 800 waterbird species and 2300 biogeographic populations worldwide. This project has been developed by Wetlands International:*

<http://wpe.wetlands.org/>

*Wetlands International, 2012. Waterbird Population Estimates, Fifth Edition. Summary Report. Wetlands International, Wageningen, The Netherlands. This booklet aims to present the current knowledge of the population estimates, trends and conservation status of waterbird populations in different parts of the world in 2012.*

<http://wpe.wetlands.org/bundles/voidwalkerswpe/images/wpe5.pdf>

### **Capacity building**

*Wings over Wetlands : The flyway approach to the conservation and wise use of waterbirds and wetlands: A Training Kit: The purpose of the Training Kit is to strengthen networks of people to understand and implement the flyway approach to conservation throughout the AEWA*

region and beyond. It is designed for anyone who is closely involved in wetland and waterbird conservation or management.

<http://www.wetlands.org/CAPACITYBUILDING/TRAININGAWARENESSRAISING/WOWTrainingResources/tabid/1688/language/en-US/Default.aspx>



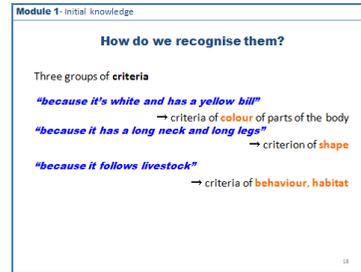
## The modules

The modules are presented in PowerPoint.

### The different slides

Each module comprises different types of slides:

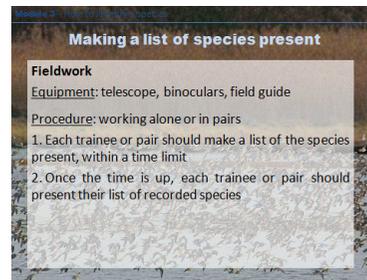
- **White background:**  
technical explanations;



- **Coloured background:**  
indoor exercises, some of which can also be used as fieldwork;



- **Photo background:**  
fieldwork.



### Notes pages

The notes page of each slide includes additional information for the trainer to help with implementing the exercises and the progress of the module, with advice on running the exercise's procedure or the trainer's role during the exercise. To view the notes pages, select “notes” in the PowerPoint “display” tab.

### Photographs

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### Species names

The English, French, Portuguese and scientific names of the illustrated species are given in the notes section of each slide.

French and English names, as well as the scientific names used in this document follow: del Hoyo, J., Collar, N., Christie, D., Elliot, A. & Fishpool, L. (eds.) 2014. *Handbook of the Birds of the World/BirdLife International Illustrated Checklist of the Birds of the World, Volume 1: Non-passerines*. Lynx Editions, Barcelona.

## ***Adaptation of modules***

The trainer may adapt the training to suit particular issues: such as the target audience and their training needs, the duration of the course, the course location and the area in which the trainees will be working after the course and the facilities available for the course (such as materials, personnel or finances) as well as the facilities which will be available to the trainees on completion of the course.

The process of selecting trainees and the first technical exchanges indoors or in the field will be crucial to inform modification or orientation of training to the needs of the trainees.

### **Adaptation to suit the geographical context**

The exercises included in the modules should use species which the trainees are likely to encounter both during training and following completion of the course in the areas where they will be counting waterbirds, so that the species identification course is effective and responds realistically to the needs of the trainees. For this, the trainer will modify the training to suit different situations.

The three modules on water bird identification include slides containing general and technical information (white background) which may be used without modification regardless of the region, and slides containing exercises (white and blue background) to be modified before use. For the exercises, the trainer will select slides representing relevant species in each exercise and will hide or delete others.

If the trainer considers that the course should cover wider species diversity or that it would be appropriate to develop a particular theme, such as concentrating on a specific family or group of birds, supplementary slides can be created, to be illustrated using photographs of characteristic species (see for example <https://www.flickr.com/groups/africanbirds/pool/>, making sure to only use copyright free images).

Modules dealing with waterbird census present general methods which can be completed and explained by the trainer in a regional context, the types of wetland covered and the species to be surveyed. Certain geographical factors may impose modifications on the census methods, such as counts of the huge flocks of flamingos capable of

exceeding a million individuals, which occur on the alkaline lakes of the Rift Valley in East Africa.

### **Adaptation to suit the competence of the trainees**

The trainer may also select slides so that the level of difficulty of identification corresponds to the competence of the trainees. For beginners, in particular, the trainer should only select species which are easily seen. For more experienced trainees it may be appropriate to focus on species and groups of species such as waders for which identification is critical and for which a taught course will be faster and more effective.

The trainer needs to be aware of the type of audience involved as well as their current and future role, whether they may be national or local coordinators, experienced surveyors or beginners, or managers or staff of wildlife management departments etc. Certain elements of the modules may be modified for presentation to decision-makers, to raise awareness of the complexity of waterbird counts.

### **Adaptation for partial use of the training tool-kit**

The trainer may focus on certain identification and census method themes, and for this only, selected modules or parts of modules will be used.

If the course does not start with module 1, the trainer must ensure that the trainees have the knowledge and information necessary to follow other elements of the training course.

The trainer will ensure that enough time is available for the training that is planned.

The trainer will ensure that presentations both in the lecture room and in the field are suited to all participants whatever the duration of the course,

Extracts from the modules may also be used for training or presentations which are not specifically aimed at waterbird identification or census. For such purposes, selected slides may be used to illustrate these themes in a wider context.

## MODULE 1: INITIAL KNOWLEDGE

All trainees already know a certain number of bird species, even without any previous ornithological training. They use criteria to identify them but this is not always a conscious act, as many people believe that they've always been able to recognise the most common birds.

It is important for the trainer to **assess the initial knowledge of each trainee** and show that recognising any species is the result of logical analysis based on various criteria. The trainer can use this initial knowledge to develop the training that will follow. New facts, and learning new methods, will be integrated logically into the trainees' existing knowledge.

### Objectives of the module

At the end of this module,

- the trainees will be aware of the extent of their knowledge and also their limits;
- the trainer should have discovered what each trainee already knows and introduced the aspects that will be dealt with in detail later, such as description and identification.

### A learner-centred approach

The trainer should win the trainees' trust and develop their initial knowledge.

The trainer should highlight the complementary nature of each trainee's knowledge and thus show that the group has great and diverse knowledge.

### Running the module

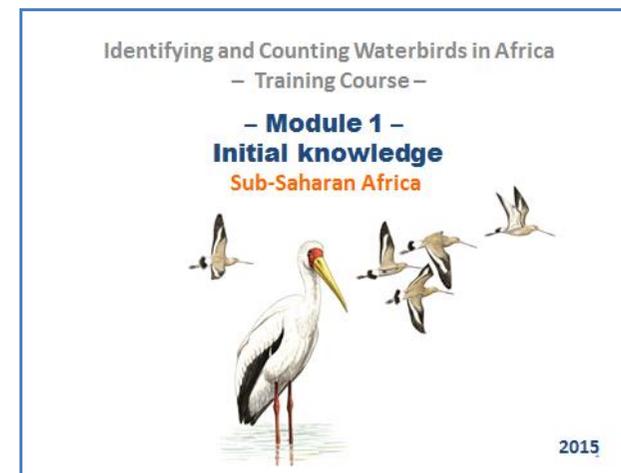
The module should preferably begin in the field, to make a better connection between real life, each person's experience and the training that will follow.

If this is not possible, it can also be carried out indoors with a selection of slides showing known species.

The second part of the module ("How do we recognise them?") should be presented indoors.

### PowerPoint presentation

Module 1 includes illustrations of Palearctic and Afrotropical species found in **Sub-Saharan Africa**.



## MODULE 2: HOW TO DESCRIBE A BIRD ACCURATELY

### Objectives of the module

At the end of this module, the trainees should be able to:

- name the different parts of a bird's body;
- describe the shape of a bird;
- describe a bird's plumage;
- describe a bird's behaviour.

### A learner-centred approach

Learning to identify a species always involves describing it. This module addresses the characteristics which are used to describe a bird's shape, plumage and behaviour.

The trainer should encourage the trainees to make the best use of the time they have when watching a bird and to adopt a method of rigorous description in order to:

- make notes on all the key elements for identification (and to prevent "I forgot to look at the bill");
- make a written description before the bird flies away and before looking in the field guide (and prevent "I know it's in the book ... but I didn't know there are three almost identical species");
- describe a bird objectively (and answer questions such as "when do we consider a bill to be long?").

This method can be time-consuming to apply at first, but will be useful from the first identification onwards. It helps the observer to remember species.

Throughout the module, the trainer should make sure that all the trainees understand all the terms being used.

### Running the module

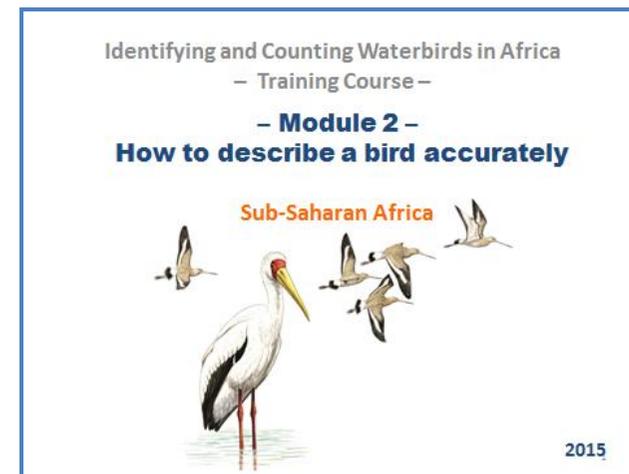
The first exercises should take place indoors and then be put into practice outdoors.

The following fact sheets can be found in the Appendix and should be distributed at the beginning of the module:

- Main features to note for waterbird identification: S2.1.a and S2.1.b
- The Cattle Egret's silhouette depending on its posture: S2.2

### PowerPoint presentation

Module 2 includes illustrations of Palearctic and Afrotropical species found in **Sub-Saharan Africa**.



## MODULE 3: HOW TO IDENTIFY A SPECIES

### Objectives of the module

At the end of this module the trainees should be able to:

- match a species to a family or genus by its silhouette;
- identify a species and explain their choice.

### A learner-centred approach

Identifying a bird is knowing “why it's this species” and also “why it's not that species”. It is therefore necessary to be able to name a bird and tell it apart from similar species.

The trainer should help the trainees to make well-argued identifications and focus on the need for rigour in making reliable identifications.

### Running the module

The trainees will need a field guide to the birds of the region concerned.

It is important to alternate indoor activities and fieldwork in this module.

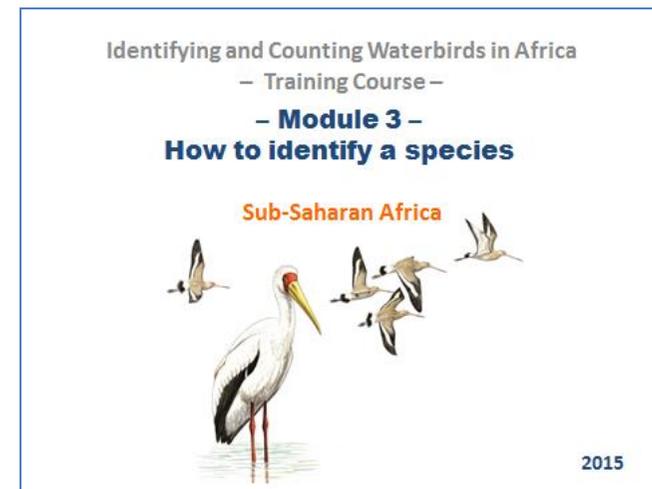
The following fact sheets can be found in the Appendix and should be distributed at the beginning of the module:

- Sub-Saharan Africa: Silhouettes of common waterbirds. 2 pages - S3.1.a/sub & S3.1.b/sub
- Sub-Saharan Africa: Identifying common waders: What are the main morphological criteria to note? 1 page - S3.2/sub
- Sub-Saharan Africa: Identifying common waders: - characteristic shapes of large families.1 page –S3.3/sub
- Sahel West Africa: Identifying common waders: - characteristic shapes of large families.1 page –S3.4/Sahel

- Sahel West Africa: An example of identification key to waders. 2 pages - S3.5.a/Sahel & S3.5.b/Sahel. This training tool has been designed for Sahel West Africa and tested in Burkina Faso. It is not suitable for use in other regions

### PowerPoint presentation

Module 3 includes illustrations of Palearctic and Afrotropical species found in **Sub-Saharan Africa**.



## MODULE 4: WHY COUNT WATERBIRDS?

### Objectives of the module

At the end of this module the trainees should be able to:

- explain how census results are used at three different levels: local, national and international;
- describe the operation and roles of national and international networks;
- understand how their own work fits into these networks.

### A learner-centred approach

This module should motivate each trainee and show them the importance of their involvement, whatever the level, in the census networks.

To achieve this, the trainer should help each trainee, be they a future counter and/or count organiser and/or coordinator, to gain awareness of their role in the network and the value of their work as a link in the chain that makes up the network.

The trainer's role is to:

- help with the trainees' thought-processes;
- encourage the sharing of ideas and show how the trainees can help each other out;
- guide the trainees to discover and structure everything they will need to learn themselves.

The trainer should have a sound knowledge of national and international waterbird census networks, as well as international conventions, agreements and organisations.

### Running the module

This module should be carried out indoors.

The following fact sheets can be found in the Appendix and should be distributed at the end of the module:

- What are waterbird counts for? The main objectives: S4.1
- How a waterbird monitoring network works: S4.2

### PowerPoint presentation



## MODULE 5: COUNT OR ESTIMATE?

### Objectives of the module

At the end of this module the trainees should be able to:

- List the deciding factors between counting or estimating;
- Make a quick decision whether to count or estimate when faced with a given situation.

### A learner-centred approach

Before learning the actual census methods, the trainees need to know in which situations a group of birds should be counted, and when they should be estimated.

The trainer should not explain beforehand when to use which method, but should let the trainees work it out for themselves from the exercises.

The trainer should help with the thought process and ensure the smooth running of the discussions.

### Running the module

This module is to be carried out indoors.

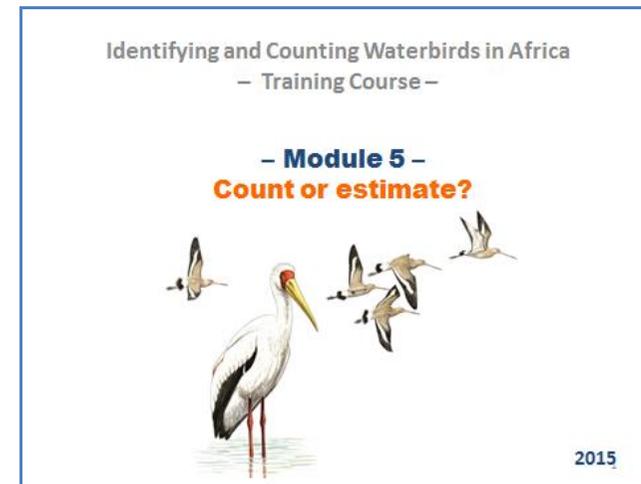
It introduces the differences between counting and estimating.

The different case studies in the exercises should be analysed by the trainees in order to understand instinctively when to count or estimate depending on the situation, taking into account flock size and density, bird movements, disturbances or size of the site.

The following factsheet can be found in the Appendix and should be distributed at the end of the module:

- “Count or estimate?": S5

### PowerPoint presentation



## MODULE 6: HOW TO COUNT A SMALL GROUP OF BIRDS

### Objectives of the module

At the end of this module the trainees should be able to:

- Count small groups of one or more species of birds;
- Carefully record data from a count.

### A learner-centred approach

This is the form of counting which is simplest and easiest to learn.

It is important to emphasise recording information in a rigorous and organised way as the participants' roles are generally divided between those of "counter" and "assistant" during a count.

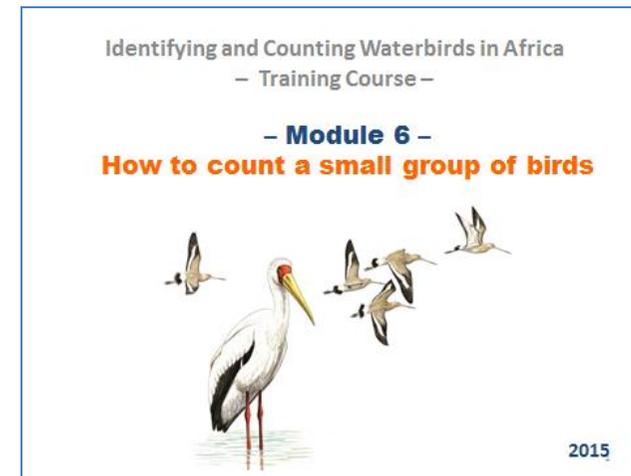
Note-taking is not always seen as a rewarding task even though it is essential. The trainer should stress the value of the assistant's role (clear note-taking will make it easier to process data later) and responsibility (a good count can only be used when it is well transcribed).

### Running the module

This module should begin indoors with explanations about the principles of counting and notes to be taken, as well as exercises to be done.

This will be put into practice in part 2.

### PowerPoint presentation



## MODULE 7: HOW TO ESTIMATE THE SIZE OF A LARGE GROUP

### Objectives of the module

At the end of this module the trainees should be able to:

- Make a preliminary overall estimate of a flock of birds;
- Immediately choose the size of the “block” to use for counting;
- Discern differences in density within a group of birds;
- Quickly apply the “block” method;
- Estimate numbers of several species in a flock of birds;
- Assess the risk of overestimating or underestimating numbers.

### A learner-centred approach

The trainer should be encouraging, as techniques for estimating are always daunting for beginners.

The instructor should stress the importance of staying focused throughout counting even a large flock, as a lack of attention or concentration can lead to serious mistakes.

The trainer should emphasise the value of regular training using any medium like groups of birds, livestock, seeds or counting programmes (see PowerPoint presentation notes on slide 3 for more information).

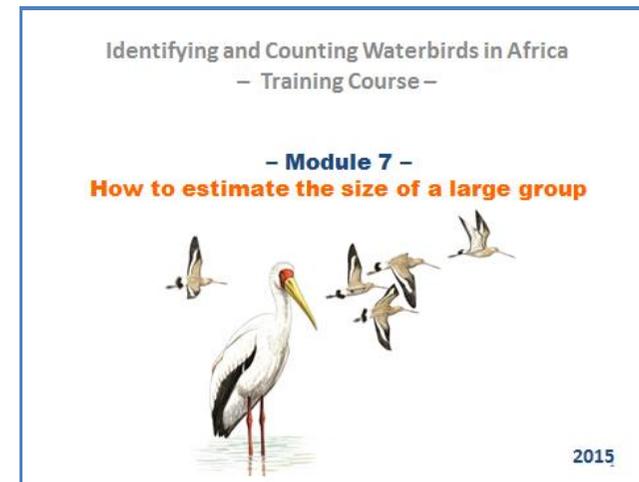
### Running the module

The indoor activities allow the trainer to make sure that everyone has understood the principles, and allow each trainee to calculate the error percentage of the estimate compared to the actual numbers.

Once the techniques for estimating have been learned, the trainer should highlight the frequently occurring situation of multi-species flocks, and the risk of over-estimating or underestimating numbers, in particular due to bird size and colour.

Follow-up fieldwork should be planned.

### PowerPoint presentation



## MODULE 8: FROM COUNTING TO MONITORING

### Objectives of the module

At the end of this module the trainees should be able to:

- understand a waterbird survey programme;
- define the information to be collected and the collection method;
- report on counts.

They will also know how count data will be used and the way in which these data contribute to waterbird conservation.

### A learner-centred approach

The trainer will make the trainees aware of the need to collect data rigorously and systematically, conforming to the defined protocol.

The trainer will modify this module before use to suit the competence and experience of the trainees, as well as to suit their role in waterbird census operations.

### Running the module

This module will take place entirely indoors.

### PowerPoint presentation



## TOOL 3: CONDUCTING EVALUATIONS

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The training should aim for all trainees to learn new knowledge and skills. The trainees' success depends largely on the way in which a subject is taught. Depending on the trainees' problems or successes, it can be determined which aspects the trainers need to improve for them to better fulfil their role, and to improve the trainees' success rate. To do that it is necessary to evaluate each module as well as the course as a whole.

Three complementary evaluations are presented here and allow the trainer to achieve different aims:

### Evaluating the trainees

- Aim: to know and assess each trainee's level at different stages of the course. This is helpful in assessing progress.
- When: before or at the beginning of the course to know each trainee's level at the outset, during the course to assess their progress, and afterwards to evaluate how much they have learned.

### Evaluating the modules

- Aim: to judge whether the training is relevant, to find out the trainees' opinions of the methods used, and to see if it's possible to move onto the next module, etc.
- When: at the end of each module.

### Evaluating the course

- Aim: to learn what the trainees thought of the overall course in order to improve any future courses.
- When: at the end of the course.

## EVALUATING THE TRAINEES

### Objective for organisers and trainers

It is useful to evaluate trainees at different stages of the training course:

- Before or at the beginning of the course to assess the trainees' initial knowledge of ornithology;
- During the course to evaluate each trainee's progress;
- At the end of the course to evaluate what has been learned.

The examples of evaluation that follow can be adapted to apply to the participants.

### Initial evaluation

The aim of this is to evaluate each trainee's knowledge of ornithology. It can also be used to sort participants into groups according to their abilities. To be comprehensive it can begin outside and be finished indoors in writing.

#### *Fieldwork*

For beginners, refer to module 1 "Initial knowledge" exercise 1 "What birds do you know?" The trainer should encourage each trainee to relate everything they know.

#### *Indoor activities*

The trainer should prepare a questionnaire with questions of varying degrees of difficulty depending on whom they are aimed at. The questions should only require short written answers.

### **An example of a questionnaire that was used at Mare d'Oursi in Burkina Faso for trainees of varying levels (beginners and experienced trainees)**

1. Name 2 species of migrants from the Palearctic found at Mare d'Oursi.
2. Name 2 species of Afrotropical ducks found on lakes in the Sahel.
3. Name 2 species of fish-eating birds seen at Oursi.
4. Name 3 waders seen at Oursi.
5. Name a bird that uses a night roost.
6. Name 2 species of *Tringa* sandpipers that may occur in Sahelian wetlands.
7. Name a predator that regularly visits Sahelian wetlands during the rainy season.
8. Name a species of ibis that lives in Burkina Faso.
9. Name a country that can hold Palearctic migrants in the breeding season
10. About 556 Whistling-Ducks fly over the Mare d'Oursi. What sized groups (or "blocks") would you use to estimate the number?

### **Identification plates**

A black and white sheet showing the following 20 species is handed out to each trainee: White-breasted Cormorant, Blacksmith Lapwing (Plover), Comb (Knob-billed) Duck, African Jacana, Grey Heron, Black-headed Heron, Marabou Stork, White-faced Whistling Duck, Common Snipe, Wood Sandpiper, Black-tailed Godwit, Grey Crowned Crane, Garganey, African Spoonbill, Sacred Ibis, White Stork, Hamerkop, Purple Swamphen, Northern Shoveler.

#### **Question:**

"Name each bird or if identification isn't possible, name the family to which it belongs."

## **Evaluation during the course**

Evaluation can be carried out continuously during the exercises. The trainer should be attentive and be sure that all the trainees have understood everything from the indoor exercises and fieldwork.

The trainer can formalise the evaluation by asking all the trainees to carry out the same exercise(s) in order to compare results.

## **End-of-course evaluation**

This evaluation is important for the trainer to be able to assess what level the trainees have reached. It is also highly anticipated by the trainees as it allows them to compare their own level to that of the others. Written results can be given if requested by the trainees.

The evaluation will depend on the content of the course. Here are some suggestions:

### **Fieldwork**

1. Each trainee should make a list of all the birds present which they can identify.
2. The trainer can find a bird with the telescope and ask each trainee to identify it.
3. Each trainee should count a group of birds on the ground or in flight and give the results to the trainer.

### **Indoor activities**

1. The trainer can present a series of slides showing birds to be identified and the trainees should write down the names of the species.
2. The trainer can present one or more slides showing flocks of birds and ask the trainees to write down the counted or estimated numbers.

The trainer could also hand out a questionnaire. An example of a second questionnaire used at Mare d'Oursi in Burkina Faso for trainees of different levels (beginners and experienced trainees) is given below.

### Questions

- *Beginners: questions 1, 2, 3, 4, 5*
- *Experienced trainees: questions 1, 2, 3, 4, 5, 6*

1. What are the main differences in shape that allow you to tell *Calidris* sandpipers from *Tringa* sandpipers?
2. Name two species that belong to the same family as the Little Egret.
3. You have to count birds in a zone that includes a river and a flood plain 85km long and 5 - 20km wide. There are three people in your team. You have a car, a motorboat and an aeroplane. In no more than 10 lines say which you would choose, and why.
4. You have to fill out the Wetlands International Site Description Form for the Mare d'Oursi. What would you put for "ecological features"?
5. What is the purpose of the African Waterbird Census?
6. Over the past few days you have prepared an identification or counting exercise aimed at trainees. In about 10 lines give a brief summary description of the exercise, including the objective, number of trainees per group, necessary equipment, the trainees' tasks and the trainer's role.

## EVALUATING THE MODULE

### The organisers' and trainer's objectives

This evaluation should:

- Get the trainees' opinions about a module or a day of training, including the running of the activity, meeting objectives, problems encountered, and the suitability of the exercises and tools;
- Enable future modules are improved upon by using these results;
- Verify that the trainees have understood this module well enough to move onto the next one.

### Carrying out an evaluation of a module

#### Phase 1: Filling out a short questionnaire

- Group work
- Equipment: the following table should be handed out to each trainee, or can be copied down by them on a sheet of paper.

	yes	maybe	no
Were the objectives of the module clear?			
Were the objectives met?			
Were your expectations of the subject met?			

- Procedure: each trainee should fill out the table to answer all three questions.
- Trainer's role: to explain the table beforehand, to point out that it is anonymous and to urge trainees to answer honestly. Afterwards, the trainer should collect the tables and add up the crosses in each box.

## ***Phase 2: Analysing the results and discussing them with the trainees***

Two people are necessary for this:

A facilitator should present the general findings of the questionnaires, and then encourage the trainees to discuss them by asking questions such as:

- Which objectives were not met and why? What did you feel was missing?
- What did you like the most (exercises, tools, etc.)?
- What did you least like?

The facilitator should come back to any points needing clarification, in order to be sure that it will be possible to move on to the next module.

A second person needs to write down what the trainees say,

- Being precise, as details that can seem unimportant at first can prove to be important when the evaluation is analysed.
- Word for word, in order to best convey what the trainee is saying. Making such notes will help to improve any future module of a similar nature with similar participants.

## **EVALUATING THE COURSE**

### **The organisers' and trainers' objectives**

Evaluating the course allows the organisers and trainers to:

- Compile the trainees' opinions about the various aspects of the course, including how it was run, the activities, content and methods used, whether the training objectives were met, the relationship between the trainers and trainees, and their relationship with each other.
- Use this evaluation to improve the next course with similar participants and objectives.

### **Running the evaluation**

#### ***Indoor activity: An evaluation form to be completed by each person***

A facilitator should explain the purpose of the evaluation and how it is to be carried out, i.e. filling out the questionnaire then discussing it. It is important that the trainees should be made aware of how valuable their opinions are to the trainers. It must be stressed that the questionnaire is anonymous and the trainees should be encouraged to write openly.

The questionnaire (see form) should be handed out to each trainee.

They should be given enough time (20-30 minutes depending on the group and the length of the questionnaire) to think and write down their opinions.

#### ***Informal discussion between the trainers and the whole group***

Two people are necessary for this:

A facilitator should encourage the trainees to express their views:

- by focusing the discussion on both the good and bad points,
- by allowing them to speak openly and take their time,
- concisely, if necessary, so as not to monopolise the conversation.

A second person should write down what the trainees say:

- Being precise, as details that can seem unimportant at first can prove to be important when the evaluation is analysed.
- Word for word, in order to best convey what the trainee is saying.

## **Documents used**

- *Course evaluation form*

You might be asked to adapt the evaluation to the course that you are organising. You can therefore change, leave out or add questions depending on the aspects you want to gather information about.

## TOOL 4: EXAMPLES OF FIELDWORK

---

Three case studies are presented here. They describe organising waterbird counts in particularly challenging field situations:

- Coastal tidal mudflats;
- Large stretches of water covered in vegetation;
- A vast complex of wetlands.

These case studies sum up the experiences of count teams at these sites and discuss the following points:

- Features of the sites;
- Means of transport used;
- Number of people necessary and required skills;
- Necessary equipment;
- Methods used;
- Problems encountered;
- Recommendations;
- Use of results.

These examples should not be duplicated at other sites but may be used to help with organising counts in similar situations.

### COASTAL TIDAL MUDFLATS

*By Bertrand Trolliet and Michel Fouquet, Office National de la Chasse et de la Faune Sauvage, 39 bd A. Einstein 44000 Nantes, France.*

By their nature, coastal mudflats are subject to alternating high and low tides twice a day.

In particular they are used by waders, gulls and Ardeidae (herons & egrets). These birds adapt their habits to those of the tides. On a rising tide most of them, especially waders, progressively concentrate on high water roosts where they await the ebb tide before returning and feeding on the mudflats as the water recedes. The count method has to take this movement into account, as well as the layout and accessibility of the count site. As such there are two basic approaches, depending on whether or not the mudflat is bordered by mangroves.

#### Mudflats without mangroves

These are mudflats, beaches or sandbanks which are not directly bordered by mangroves.

##### *Scheduling*

The count should usually begin with the rising tide. The count has to be scheduled according to tide times and how long it takes to get to the vantage points.

How long the count itself takes depends on circumstances and participants, but in general two to three hours should be enough.

### Access and selecting vantage points

Having reached the count site by land or boat, the birds can now be counted from one or more fixed vantage points located near the high water roosts. This assumes that it is already known how the birds behave at this site, so that observers know where to go and at what stage of the tidal cycle the count will be possible.

If possible, a vantage point between the sun and the high water roost should be chosen to avoid being dazzled by the sun.

### Necessary skills

The count organiser needs to have prior knowledge of the site, and of bird movements and distribution throughout the tidal cycle.

Birds should be counted in flight going towards the roost and/or at the roost itself, depending on the situation of the vantage point in relation to the roost.

In any case the counter should be able to:

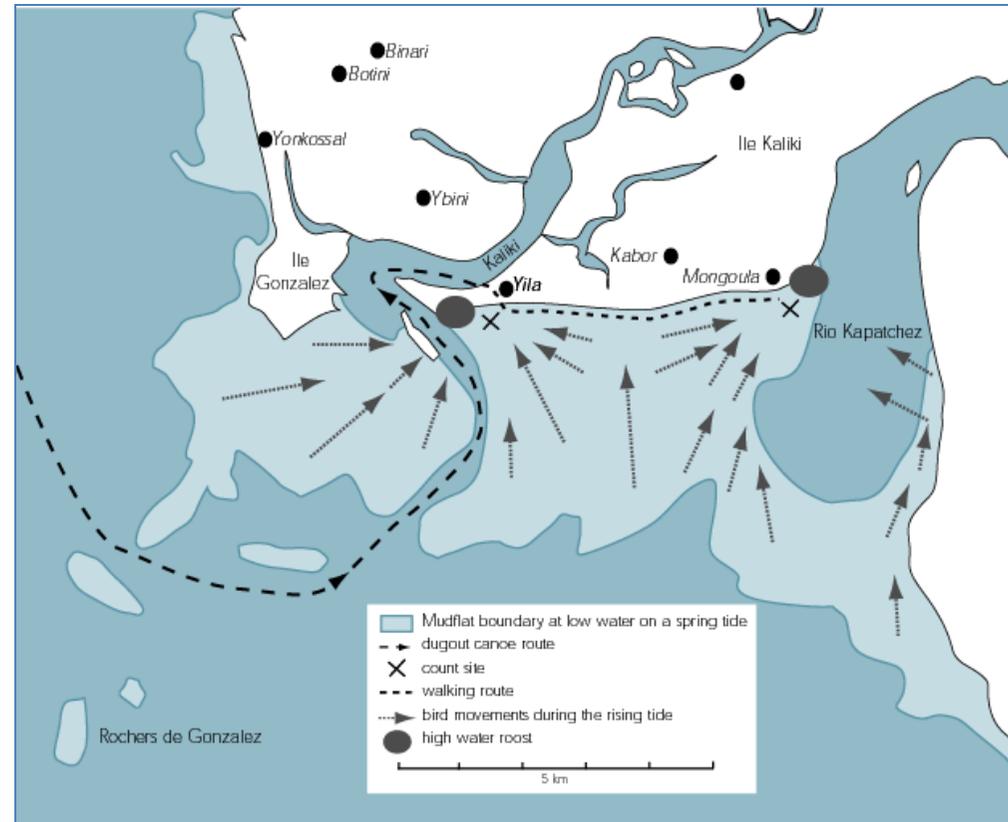
- identify the species present, both in flight and on the ground;
- quickly estimate group sizes in often difficult situations. Groups of waders and gulls can contain large numbers.

This requires a lot of experience of course, which can only be attained through practice.

### Example: Khonibenki (Rio Kapatchez estuary, Guinea)

This is a series of mudflats covering slightly less than 3000 ha at the lowest tides.

The site is only accessible by dugout canoe, from the fishing port of Kamsar, which takes 2 to 3 hours depending on the engine power of the boat.



The boat docked at the fishing village of Yila. With the rising tide, the birds concentrated gradually at two roosts on the banks of the Rio Kapatchez and the Kaliki backwater. The two respective vantage points were reached on foot.

The counters had to be in place by the rising tide. The birds were counted with binoculars and telescopes as they approached the roosts, and on the roosts themselves. Preferably there should be at least two counters at each point, given the difficulty of the situation including bird numbers and diversity, distance, and heat haze.

Some birds, especially flamingos and egrets, stayed on the left bank of the Rio Kapatchez at high tide, a long way from the counters. It is best to carry out the count at this site on a day with a large tidal range so that few or no waders stay on the left bank of the Rio Kapatchez.

It is also necessary to choose a day when the diurnal high tide is in the afternoon, to allow time to get to the site and the viewing points.

In January 2000 about 22,400 birds of 45 different species were counted at this site.

## **Mudflats with mangroves**

These are mudflats, beaches or sandbanks which are immediately bordered by mangroves. Compared to the previous case study, the first main difference for the count is that at high tide the birds seek refuge in the mangroves themselves, where they cannot be counted.

### ***Schedule***

The birds have to be counted before or after high tide, when they are more or less spread out across the mudflats which can be quite vast.

### ***Access and selecting vantage points***

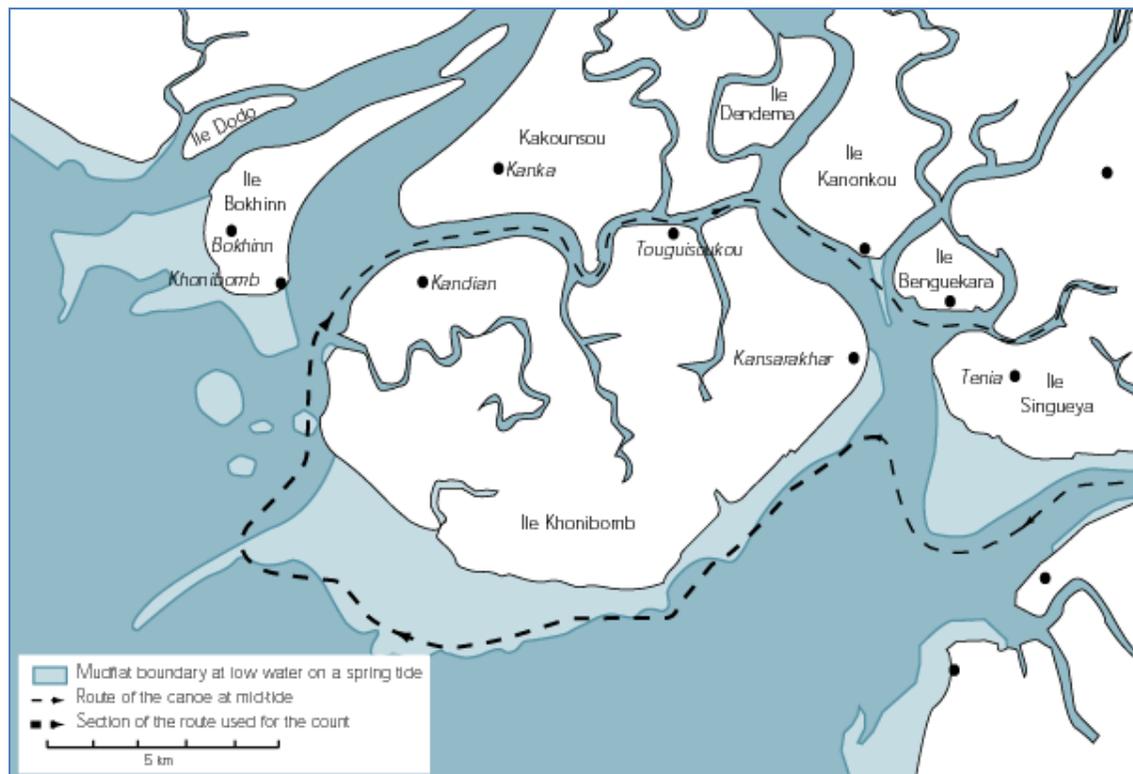
Access is usually impossible by land in the mangroves. The mud also tends to be soft so it is not possible to walk there, from a mooring point for example. The only way to avoid a partial count is to count from a dugout canoe. Going slowly along the mudflat in the canoe, as close as possible to the edge, the birds can be counted as the boat passes them by.

### ***Necessary skills***

A telescope is not stable enough on a dugout canoe, so only binoculars were used. For a narrow mudflat, along a river or backwater for example, the count is not particularly difficult. On the other hand when the mudflats are wide and extensive, it can be extremely difficult to count the more distant birds, especially with eye level being scarcely above the birds because the dugout canoe is lower than the mudflat. Another challenge is keeping a constant mental image of bird distribution, to be able to count them in detail but without repetition. Finally, it is necessary to work with several people, with each counter dealing with a selection of the species present.

### Example: Khonibombé (Guinea)

The mudflats in question border Khonibombé Island which is covered in mangroves. These mudflats cover about 1700 ha at the lowest tides and extend for almost 17km.



They are accessible by dugout canoe from the port of Dubréka. The dugout canoe can follow the mudflats, as close to the edge as possible. The mudflats are narrow in the south-eastern part of the island, so counting is easy. In the south-west however, it becomes almost impossible to count due to distance and sea swell.

In January 2000, about 17,600 waterbirds of 39 species were counted at this site. Of these, 3000 small waders could not be specifically identified. In general it is small waders, especially plovers and sandpipers, which are most difficult to identify when counting from a dugout canoe because of their small size and the large distances from which they're seen.

To overcome the problems of mangroves and counting from a dugout canoe, it can be tempting to use another method, but this supposes there is a given point such as a coastal rice field or section of beach that can be crossed on foot to reach the mudflat.

In this case the count would take place at low tide from a fixed point, using binoculars and telescopes, counting all the birds on the section of mudflat visible from the vantage point. The area of mudflat covered by a count like this is usually less than 200ha, therefore the site is only partially covered. These partial results are then extrapolated by multiplying them by the ratio between the total surface area of the site and the surface area actually covered by the count.

This method reveals the following problems:

- it is difficult to accurately assess the area of the section of mudflat where the birds were counted.
- the extrapolation assumes that the birds were more or less evenly distributed across the whole of the site, which is rarely the case.

These extrapolations, which give unreliable and sometimes absurd results, should therefore be avoided. If it is only possible to carry out a partial count on a coastal mudflat it is better to record the actual results, pointing out on the count form that it is only a partial result.

Where possible, a detailed count of the whole site is always preferable, even if some of the species can not be identified (which must be pointed out on the count form) due to the counter's lack of experience or constraints arising from the conditions.

## LARGE STRETCHES OF WATER COVERED WITH VEGETATION

By Marc Lutz and Nathalie Hecker

Large stretches of water of at least several hundred hectares, whose surface is partially covered by aquatic plants such as lilies or vetiver, are fairly common in sub-Saharan Africa.

There are several such lakes in the Sahel which are used by numerous waterbird species, especially waders, Anatidae and Ardeidae. Because of this great wealth of avifauna, it is essential to monitor these sites and they must be included in count networks.

The configuration of large areas with vegetation often makes it very difficult for a detailed waterbird count because:

- visibility is reduced by the vegetation in which birds hide,
- the ranges over which the most distant birds have to be counted are often too great for reliable counts or even estimates,
- a detailed count of such a site would be a lengthy procedure and/or require significant resources, both financial and human.

If, for these reasons, a detailed count cannot be carried out, it is still important to include the site in the monitoring network. Using a sampling method can, in such cases, give estimates of some of the species present.

The results from these estimates must be considered with great caution but can be used as an important indicator of the species found and their estimated numbers.

N.B. Whatever the layout of the site, it is essential to assess the feasibility of carrying out a detailed count which always gives better results than sampling.

## Detailed count or sampling?

To assess whether a detailed count or sampling is feasible, the following questions need to be asked:

- is there enough time for a detailed count? (how many vantage points are there to cover?)
- can the count be completed in a short enough time that the birds don't move?
- can all the birds be seen, or are some hidden in the vegetation far from the banks?
- What human resources and equipment are available?

The example of the Mare d'Oursi in Burkina Faso is used here to illustrate the evaluation carried out to choose a method.

The Mare d'Oursi is a shallow Sahelian lake with a surface of up to approximately 800ha. It has a 20km perimeter. It is almost entirely covered with aquatic plants. A part of the shoreline is wooded with *Balanites* sp. and acacias. The lake shores have a flat topography without any adjacent high ground.

The birds are distributed in the following manner:

- The Anatidae (ducks and geese) are concentrated in the middle of the lake during the day. Only a few can be seen from the shore. They can only be counted in flight.
- The other species cover the rest of the water. In the right conditions large species, including storks, large herons and cranes can be counted as they are barely hidden by the vegetation. Small species like waders and jacanas can be seen and counted within a radius of 150m. Beyond that, lots of individuals are hidden by vegetation.

Three means of transport can be considered:

- Aerial survey: the relatively small numbers of Anatidae alone do not justify using this means. Aeroplanes are not suitable for counting small birds largely hidden by vegetation. The financial resources available do not cover the cost of such a count. This method was not used.

- Counting by boat: the shallow water and thick floating vegetation make it very difficult to travel by boat.
- Counting on the ground from the shores: the only financially feasible and practical solution that can be considered.

Next, the different groups of species must be considered:

- Anatidae should be counted in detail in flight.
- Large birds should also be counted in detail when they are on the ground, by scanning the lake with a telescope from different vantage points.
- Small birds within a radius of 150m can be seen by a counter on the shore. There is no way to count the birds "in" the lake; therefore a detailed count is impossible.

These counts can therefore only cover the shoreline. To cover the shoreline, a count is needed every 300m.

In January 2000 the lake had a 17km perimeter, so 56 vantage points were needed. They covered 196ha, which was 24% of the lake's surface.

Allowing 20 minutes per point including travel, 56 points meant:

- 18 ½ hours for one team, which was not possible;
- 9 hours for two teams. The birds would have moved too much in that time;
- 6 hours for three teams. This was still a long time given how much the birds would have moved, and would have required at least two vehicles;
- 4 ½ hours for four teams. This was a reasonable time. At least three vehicles were needed to drop the teams off, so the time needed to take the teams to their starting points had to be taken into account.

Though the latter solution seems fine on paper, it is rare for a counting team in Africa to have three 4-wheel drives, three drivers and eight experienced counters at its disposal. Therefore this cannot be put into practice to ensure regular monitoring of the area. The shoreline cannot normally be counted in detail so the sampling method has to be chosen.

## Counting and sampling method

The count/sample was carried out in two stages on the same day:

- morning: all species except Anatidae;
- evening: Anatidae (ducks and geese).

### *Means of transport used*

Counts were carried out from the lake shores, and 4-wheel drives were used for transport because of the large perimeter to cover (17km in January 2000).

### *Teams*

A coordinator has to organise the count and the teams.

Two teams of counters were set up (two vehicles) to carry out the count at the lake in the morning (except for the Anatidae) before the hottest part of the day. Both teams set off from the same point and went around the lake in opposite directions.

Each team had at least one driver, counter and assistant to record the results. The counter had to be able to identify all the species present. A second observer/counter would have been beneficial as the two counters could share the task, for example one could use binoculars to count the larger birds, while the other could use the telescope to count smaller birds.

### *Required equipment*

One telescope per team, a pair of binoculars for each counter, possibly tally counters for estimates of birds in flight.

### *Schedule*

- the count (except Anatidae) had to be carried out as early in the morning as possible to avoid being bothered by the sun, and to count birds at their most active, from sunrise to 10 a.m.
- the Anatidae were counted in the evening, an hour before sunset.
- some parts of the lake are used a lot by livestock at various times of day. It was important to cover these areas before the

livestock arrived so their presence did not affect the birds' distribution, or even their presence.

### ***Sampling small birds***

Sampling points were spread out evenly along the water's edge, the distance between two points being decided according to the site's perimeter and the available means.

12 points 1½ km apart were counted at Mare d'Oursi in January 2000.

The maximum distance over which all species could be seen was determined at the beginning of the count. This decision depended on the density and height of the vegetation, and the species present. At the Mare d'Oursi it was estimated that a counter would be able to see birds 150m away at most.

All birds within a semi-circle with a 150m radius were counted at each point.

When visibility was reduced because of trees or other obstacles, the count team went into the water beyond the tree line to count with a 180° field of vision.

### ***Counting large species and groups in flight***

There was no major problem with counting large species other than the risk of double-counting. Birds were counted in an area no bigger than the middle of the lake and halfway between two vantage points. Finding visual landmarks such as bushes or trees in the landscape, was helpful to define each area.

Flocks in flight were counted or estimated according to the size of the flock, and the direction of flight was recorded.

### ***Estimating Anatidae***

There need to be enough counters to cover the whole stretch of water and avoid counting twice, according to the size and layout of the lake. Three teams were set up for the Mare d'Oursi.

Various methods including whistles and dugouts can be used to flush all the ducks simultaneously. This should be done carefully and without the birds going too far away.

The birds should be estimated as soon as possible after they have taken flight, as some species such as Garganey settle again very quickly. Two further estimates can be carried out to be sure of the result.

## **Interpreting the results**

### ***Estimating the number of small birds***

Estimates were derived by dividing the total surface area of the lake by the proportion of the surface area that was counted. Count totals were then multiplied by this ratio.

For a given species:

Estimated total of birds = total of birds counted x (total surface area/counted surface area).

### Example of estimates of African Jacanas at the Mare d'Oursi:

Number of vantage points:  $n = 12$

Lake perimeter:  $p = 17\text{km}$

Count radius:  $r = 150\text{m}$

Surface area of a counted section:  $S_s = \pi \times r^2/2 = 3.14 \times 150^2/2 = 3.5\text{ha}$

Total surface area counted:  $S_a = n \times S_s = 12 \text{ points} \times 3.5 \text{ ha} = 42\text{ha}$

Total shoreline surface area:  
 $S_h = \text{perimeter} \times \text{radius} = 17,000\text{m} \times 150 \text{ m} = 255\text{ha}$

Total of jacanas counted in each section:  $T_c = 334 \text{ individuals}$

Estimated total of birds on the shoreline:  
 $T_e = 334 \text{ individuals} \times (255\text{ha} / 42\text{ha}) = 2028 \text{ jacanas}$

### ***Limitations of each method***

#### Sampling

This method does not give an exact number of birds on the lake, but gives an overall estimate.

The same counting distance, 150m, was used for all small species in order to simplify the count. All the same, the ranges at which species are detectable vary depending on the species. For example a stilt on the ground 150m away is easier to see than a Little Stint. These differences were not taken into account. Estimates can be more accurate if a distance appropriate to each species is chosen during the count.

A species is not always evenly distributed throughout the whole coastal area, but the number of samples can partly correct for this. In fact the counted total corresponds to the total numbers found in the sample areas which may hold few, or many, birds.

This total gives an idea of the "average" number of birds.

Some species found at the site can "escape" sampling.

This is the case when there are very few birds of a certain species, or when they are hard to see, as with the Greater Painted Snipe or Jack Snipe, or when they are very spread out. Missing from the results does not mean that they are missing from the lake, but this method does not

allow them to be counted or even estimated. A few very skulking species are simply impossible to count accurately.

Birds often move from one point to another on the lake which can result in them being counted twice, or missed when they are in flight.

### Estimating the number of Anatidae

It can be difficult to simultaneously flush all the birds.

Some groups tend to settle again very quickly, others will only fly away if there is a real disturbance. Plenty of experience, good teamwork and a sound knowledge of species are essential.

### ***Using the results***

For an annual census, methods of counting and estimating should be the same each year in order to allow comparison of results. Where possible, the same vantage points should be used for every count. Of course, if methods can be improved, they will give more reliable results.

Results from extrapolated samples must not be used in the same way as results from detailed counts.

If these results appear in reports or publications, it is vital to state that they were obtained from sampling and the result was extrapolated.

**The actual results should be used as the benchmark results, which must always be given with an explanation saying that it was a partial count and stating which part of the count site it was carried out on.**

## PARC NATIONAL DES OISEAUX DU DJOUDJ

(PNOD, or Djoudj National Bird Sanctuary)

By Vincent Schricke and Gilles Leray, Office National de la Chasse et de la Faune Sauvage, 39 bd A. Einstein, 44000 Nantes, France

Designated in 1971, the Parc National des Oiseaux du Djoudj (PNOD) in Senegal is located in the Senegal River delta, and covers an area of 16,000 hectares. The park comprises vast lakes, backwaters and ponds connected by freshwater channels. These channels are charged with fresh water in the rainy season and when the river floods between June and October, thanks to sluice gates near to the biological station, the Djoudj pier, and the Canal du Crocodile.

The main geographical regions of the park have the following characteristics:

- Vast stretches of water: Lac du Lamantin (400ha), Grand Lac (3000ha) and Lac du Khar (600ha) are evaporation basins and become increasingly saline through the dry season. These expansive, shallow waters barely 1m deep have well-defined banks sparsely covered with trees. Because the park waters have become less saline since the Diama dam was built, the stretches of open water have shrunk as emergent aquatic plants, notably *Typha*, have spread, thereby reducing the space available for waterbirds, especially Anatidae.
- Backwaters and ponds: Khar, Dinko, Djoudj, Khoyoye, Tieguel, Gainthe and Diar are characterised by lakes and small, fairly narrow channels which are difficult to access, and are lined with shrubs which can be dense in places and include clumps of tamarisk, acacias, reed beds and *Typha*. The middle and the banks of Gainthe and Dinko are covered with emergent vegetation, mostly grasses and water lilies.
- Djoudj pier: Located alongside the river, it marks the beginning of the backwater of the same name. Bordered with dense vegetation including acacias and tamarisk, this stretch of fresh water can be more than a metre deep. The pier can be easily accessed from a six km-long dyke to the west of the park between the Gainthe/Dinko and Diar backwaters.

- Canal du Crocodile: this shallow (25-50cm) and slightly brackish canal to the extreme north-east of the park is lined with acacia groves and tamarisk. It is six km long and flows into the Lac du Lamantin. For several years the PNOD's flow management has worked well, and the smooth operation of the sluice gates during the river's spate creates sustainable irrigation of all the park's wetlands.

Accessing the Canal du Crocodile, Lac du Lamantin and the periphery of the pelican colony by dugout or canoe is made more difficult by the growth of *Typha*, and the spread of Nile Cabbage. This growth of invasive plants slows down in the dry season when the area dries out, and because of recent positive effects of biological control.

There is limited human activity, notably tourism, which is restricted by time and space constraints, and does not generally affect bird distribution.

### Geographical coverage of the count site

The diversity of habitats and size of the PNOD necessitate dividing the site into six distinct geographical areas to carry out the census in a day in optimum conditions.

The geographical areas were defined and named as follows, as part of the census protocol:

- Lac du Khar and Grand Lac;
- the Djoudj (from the pier to the pelican colony);
- Canal du Crocodile-Lamantin- Tieguel;
- Gainthe;
- Petit Dinko to Grand Lac;
- Tantale-Gainthe-Khar.

The Diar backwater, which is impenetrable and hardly used by waterbirds, was counted from the dyke, which offers good raised vantage points. The Khoyoye backwater, which is totally covered in vegetation and holds very few waterbirds, was excluded from the protocol.

Dividing the PNOD into six areas ensures that virtually all of the sites used by waterbirds are covered.

## Carrying out the counts

Because of the diversity of habitats, the scale of the site and varying degrees of accessibility, the waterbird census had to be done on foot, by vehicle, by boat or canoe depending on the area.

All waterbird species were counted with a varying degree of accuracy depending on the group of species:

- A virtually comprehensive census of grebes, pelicans, cormorants, storks, ibises, spoonbills, flamingos, Anatidae, and some waders i.e. stilts and avocet and Black-tailed Godwits;
- A partial count of Ardeidae, Rallidae, Laridae, and most waders.

The PNOD waterbird census required a minimum of 22 observers, added to which 2 or 3 drivers were needed to pick people up after the count.

### ***Chronological sequence of operations (example is the mid-January census)***

1. In December the network of observers was informed of the census date and told that a preparatory meeting, organised by the network's National Coordinator and the park warden, would be held at the Djoudj Biological Station.
2. At the preparatory meeting the day before the census, the following activities were carried out: organising the count, creating teams with someone in charge of each area, deciding on number of observers, what transport to use, number of dugouts, canoes and vehicles to be verified, checking and distributing optical equipment such as binoculars, telescopes and tally counters, setting start times for each area, discussing species to be counted and how to record the results i.e. a chart summing up each group of species.
3. On the day of the census: the census methods have to be adapted for the characteristics of each of the six pre-defined geographical areas (size, accessibility and numbers of birds) according to the

problems anticipated, the number and ability of observers, and the available equipment.

The person in charge of each area had these guidelines to follow:

#### Lac du Khar and Grand Lac

- equipment: binoculars, telescopes (essential), tally counter, pencil and notepad, and a 4-wheel drive,
- number of observers: at least four experienced observers;
- vantage points: from hides, one at Lac du Khar, three at Grand Lac;
- route: counting from fixed points starting at the Khar tower hides to the last Grand Lac raised hide;
- schedule and duration: leaving at 7.15a.m. and returning at midday. Three hours of counting;
- species counted: all species, mainly Anatidae and flamingos;
- difficulties encountered: vast area, high concentration of birds (several thousands or tens of thousands), heat haze and turbulence.

#### The Djoudj (from the pier to the pelican colony)

- equipment: binoculars, telescopes, tally counters, pencils and notepads, boots or waders, a 4-wheel drive, a motorised canoe;
- number of observers: at least four not counting the boatman, of whom two must be experienced;
- vantage points: dyke at the pier for counting whistling-ducks, pelicans, etc.;
- route: by canoe from the pier to the pelican colony inclusive, estimating numbers of the main species on each side of the canoe, with 2 observers on each side. Estimating less numerous species on the way back (same route);
- schedule and duration: leaving at 7.45 a.m. and returning about 1.00 p.m. Three hours of counting;
- species counted: all species, mostly whistling-ducks, pelicans, Ardeidae and cormorants;

- difficulties encountered: counting birds in flight most of the time, difficult estimates, underestimating some species especially pelicans, due to their location, large numbers and frequent movement between the park and the Diawling National Park in Mauritania. Ardeidae and cormorants were frequently underestimated, especially when the latter were diving.

#### Canal du Crocodile-Lamantin-Tiguel

- equipment: binoculars, telescopes, tally counters, pencil and notepads, Dictaphone, backpack, flask, lightweight sturdy shoes, a 4-wheel drive and a canoe;
- number of observers: at least two, preferably three, one of whom must be experienced;
- route: by canoe from the start of the canal to about half way down. On foot along the canal on the left bank then across Lac du Lamantin and Tiguel. Return by the same route;
- schedule and duration: leave at 7a.m. and return about 6p.m. Four hours of counting;
- species counted: all species, especially Anatidae, cormorants, spoonbills, storks and waders;
- difficulties encountered: counting birds in flight for 2/3 of the route, difficult route with five or six hours walking in water and through vegetation, underestimating breeding populations due to dense vegetation. Partial results for species such as Rallidae, Ardeidae and some waders as they were greatly dispersed in tall grasses.

#### Gainthe

- equipment: binoculars, telescopes, tally counters, pencils and notepads, a 4-wheel drive, a dugout, a motorised canoe;
- number of observers: at least four, two of whom must be experienced;
- route: by canoe then dugout from the start of the Gainthe backwater to start of the Tiguel backwater. Return by the same route;
- schedule and duration: leave at 7.30 a.m. and return about 2 p.m. Three hours of counting;

- species counted: all species, especially Anatidae, flamingos and Ardeidae;
- difficulties encountered: some areas were difficult to access due to floating vegetation, under-estimating Ardeidae and Rallidae, most often counting birds in flight.

#### Petit Dinko-Grand Lac

- equipment: binoculars, telescopes, pencils and notepads, a 4-wheel drive, a motorised canoe;
- number of observers: at least four, two of whom must be experienced;
- route: by canoe to point 4 (Grand Lac).

Counting from the canoe on both sides, then on arrival at Grand Lac counting on the left side. Return from point 4 by vehicle.

- schedule and duration: leave at 7.30 a.m. and return about 2 p.m. Three hours of counting;
- species counted: all species, especially ducks, flamingos and Black-tailed Godwits;
- difficulties encountered: mostly counting birds in flight. Underestimating numbers of Ardeidae.

#### Tantale-Gainthe-Khar

- equipment: binoculars, telescopes, tally counters, pencils and notepads, a 4-wheel drive;
- number of observers: at least four, two of whom must be experienced;
- vantage points: Tantale tower hide and frequent stops along the route.
- route: following the Tantale backwater to the Khar backwater. Return by the same route;
- schedule and duration: leave at 7.45 a.m. and return at midday. Two hours of counting;
- species counted: all species, low numbers;
- difficulties encountered: underestimating Ardeidae and some waders.

### Using the census results

As soon as each team returned to the biological station, the person in charge of each area had to copy the count results into tables which had already been prepared by the National Coordinator or the park warden, using a table for each group of species (Anatidae/Rallidae, waders, Laridae, other species). The person in charge of an area added the results for that area into the table.

A synthesis meeting took place in the evening of the count to examine and verify each area's results, and if necessary to standardise results according to difficulties encountered throughout the day, such as possible double-counting, adding species, and partial or complete counts.

With the agreement of all the area heads, the National Coordinator or the park warden entered the results into a computer, by area and by group of species, then sent the results to all observers.

Afterwards the National Coordinator filled out a Wetlands International form for the PNOD site combining all the results from each area, and sent a copy to the Wetlands International Africa office in Dakar.

## GLOSSARY

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**Afrotropical:** refers to a species that lives in Africa all year round, whether it migrates or not.

**Biometrics:** average measurements characterising a species, such as weight, winglength, body length and bill length.

**Distribution area:** area in which a species is likely to occur.

**Diurnal:** occurring during the daytime (opposite of nocturnal)..

**Double-counting:** counting the same bird twice during a site visit, which results in overestimation.

**Gregarious:** a species habitually living in a group.

**Intertidal area:** the coastal area between low and high tide levels.

**Multi-species flock:** flock of several different species (opposite of single-species group).

**Nocturnal:** occurring during the night time (opposite of diurnal).

**Nomadism:** seasonal, sometimes irregular movements depending on the conditions of the birds' surroundings.

**Occurrence period:** period during which a species can be seen at a given site.

**Palaearctic:** occurring in the geographical region of Europe, North Africa, the Middle East and Western Asia. Some Palaearctic breeding species spend part of the year in Africa.

**Population:** group of individuals of the same species in an area or site at any given time.

**Reed-bed:** area of *Phragmites* reeds.

**Roost:** place where birds concentrate for part of the daily cycle, usually to sleep, such as high tide roosts or night roosts.

**Rush beds:** area of *Typha* rushes.

**Single-species flock:** flock of just one species of bird (opposite of multi-species flock).

**Wingspan:** distance between wing tips when the wings are spread.

## FACTSHEETS TO DISTRIBUTE

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### Module 2: How to describe a bird accurately

- Main features to note for waterbird identification. 2 pages - S2.1.a and S2.1.b
- Silhouette of the Cattle Egret in different postures. 1 page - S2.2

### Module 3: How to identify a species

- Sub-Saharan Africa: Silhouettes of common waterbirds. 2 pages - S3.1.a/sub & S3.1.b/sub
- Sub-Saharan Africa: Identifying common waders: What are the main morphological criteria to note? 1 page - S3.2/sub
- Sub-Saharan Africa: Identifying common waders: - characteristic shapes of large families. 1 page - S3.3/sub
- Sahel West Africa: Identifying common waders: - characteristic shapes of large families. 1 page - S3.4/Sahel
- Sahel West Africa: An example of identification key to waders. 2 pages - S3.5.a/Sahel & S3.5.b/Sahel. This training tool has been designed for Sahel West Africa and tested in Burkina Faso. It is not suitable for use in other regions.

### Module 4: Why count waterbirds?

- What are waterbird counts for? The main objectives. 1 page - S4.1
- How a waterbird monitoring network works. 1 page - S4.2

### Module 5: Count or estimate?

- "Count or estimate?" 1 page - S5

### Evaluation form for the “Waterbird identification and census” training course

- 4-page form



## Main features to note for waterbird identification

## Module 2 - S2.1.a

A bird must be observed with precision for a reliable identification to be made. Descriptive notes should be written in a notebook so that nothing is forgotten. The genus or species in italics on this sheet are given as examples and are not complete lists.

### SHAPE

#### Size

Compare size to that of a bird you know well, for example: bigger than a turtle-dove but smaller than a duck.

#### Silhouette

Silhouette is often typical of a family or genus:

- round: *plovers*
- elongated, slender: *Stilts*, *Tringa sandpipers*, *egrets*
- hunched or stocky: *Squacco Heron at rest*

Remember that general shape varies with the posture of the bird.

#### Neck

length:

- short: *plovers*
- medium: *ducks*
- long: *Tringa sandpipers*, *herons*

position in flight:

- extended: *storks*, *Anatidae*, etc.
- retracted: *herons*, *pelicans*

#### Bill

shape:

- pointed and dagger-like for fish-eating birds: *herons*, *kingfishers*
- slender and long: birds that feed in silt: waders
- straight: *Gallinago snipes*
- down curved: *curlews*
- upturned: *avocet*
- flat: *ducks*
- short: *plovers*, *gulls*, *Calidris sandpipers*

length:

- short or long when compared to the length of the head seen from the side:



bill > head



bill = head



bill < head

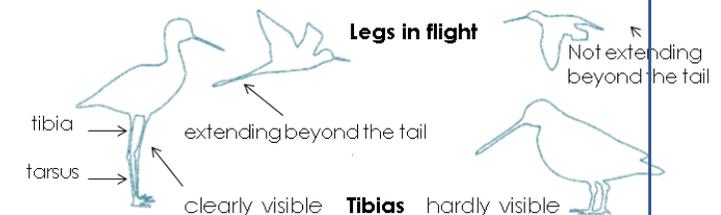
#### Legs

toes: (if visible)

- webbed or not webbed
- short or long

leg length:

- long: extending beyond the tail when in flight, or visible tibia when on the ground: *large wading birds*, *Tringa sandpipers*, *stilts*, *godwits*, etc.
- short: not extending beyond the tail when in flight or barely visible tibia: *Anatidae*, *cormorants*, *grebes* etc.



## Main features to note for waterbird identification

## Module 2 - S2.1.b

### ***Wings (in flight)***

length:

- long
- short

shape:

- broad: *storks, pelicans, herons*
- pointed: *terns, Tringa sandpipers, etc.*
- rounded: *rails, etc.*

### ***Tail***

length:

- long
- short: *teals, Little Grebe*

shape (in flight):

- rounded: *Common Snipe*
- forked: *pratincoles*
- pointed: *Jack Snipe, Northern Pintail*

### **PATTERNS AND COLOURS**

Patterns, colours and contrasts of each part of the plumage

- colour of the legs
- colour of the bill
- colour of bare skin or wattles for some species

### **BEHAVIOUR**

Behaviour of a bird on the ground or water, the way it takes flight, flies and lands are all important to note.

#### ***On the ground***

- walking: *cranes, storks, herons, etc.*
- running: *Thick-knees, plovers, etc.*
- standing still: *heron watching prey*
- constantly active: *Calidris sandpipers, Kentish Plover*

#### ***On the water***

- dives underwater: *grebes, diving ducks*
- dives partially: *surface-feeding ducks*

#### ***In flight***

Flight actions

- flapping: *waders, ducks*
- soaring: *storks*
- direct: *ducks*
- zigzagging: *Common Snipe*
- hovering (followed by a dive): *osprey, terns*

Wing beats

- quick or slow
- regular or irregular

#### ***Voice***

- the bird is silent or calls; type of call (calls are very important in the identification of many species)

### **DISTRIBUTION AND HABITAT**

Different species found in a wetland are not distributed in the same way throughout the area and do not use the same areas of the wetland.

#### ***Distribution***

- solitary: *Jack Snipe*
- in small flocks: *Thickknees, Sanderling*
- in large flocks: *Ruff*

#### ***Habitat***

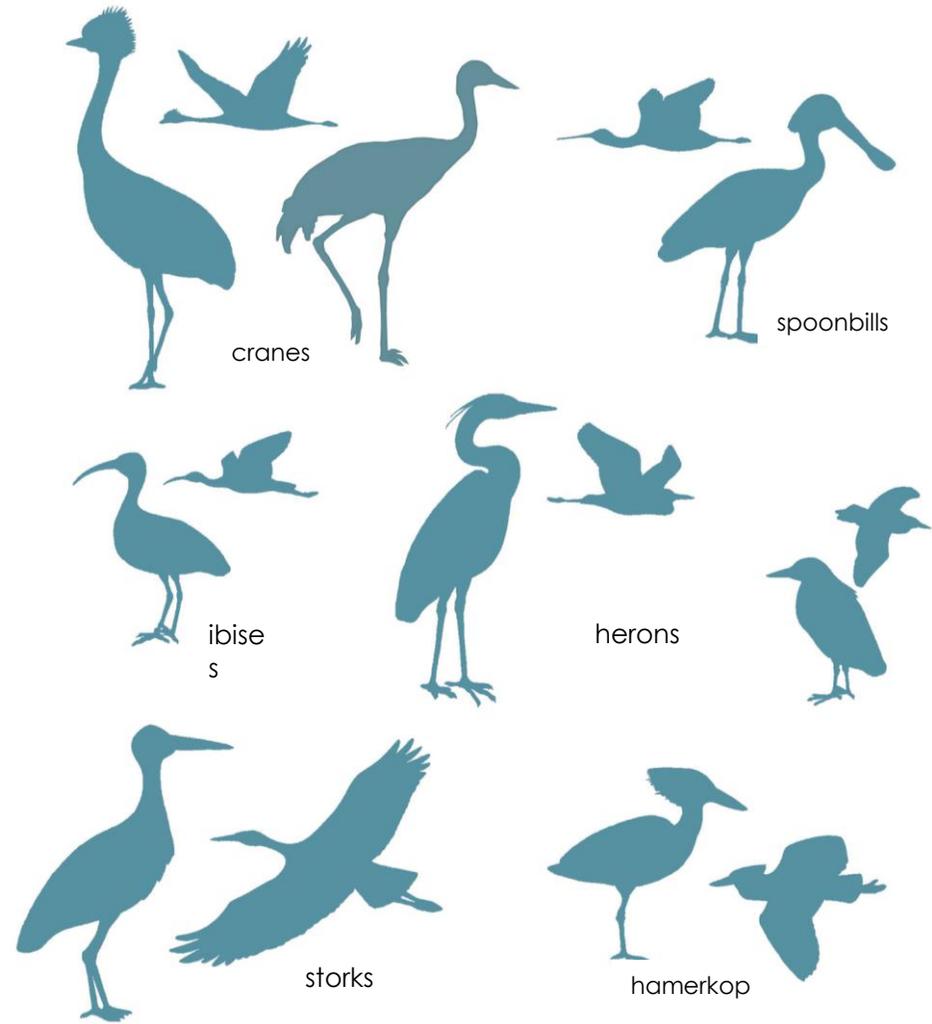
- open water: *ducks, grebes*
- shoreline vegetation: *herons*
- floating vegetation: *terns*
- on mudflats: *waders*

## Silhouette of Cattle Egret in different postures

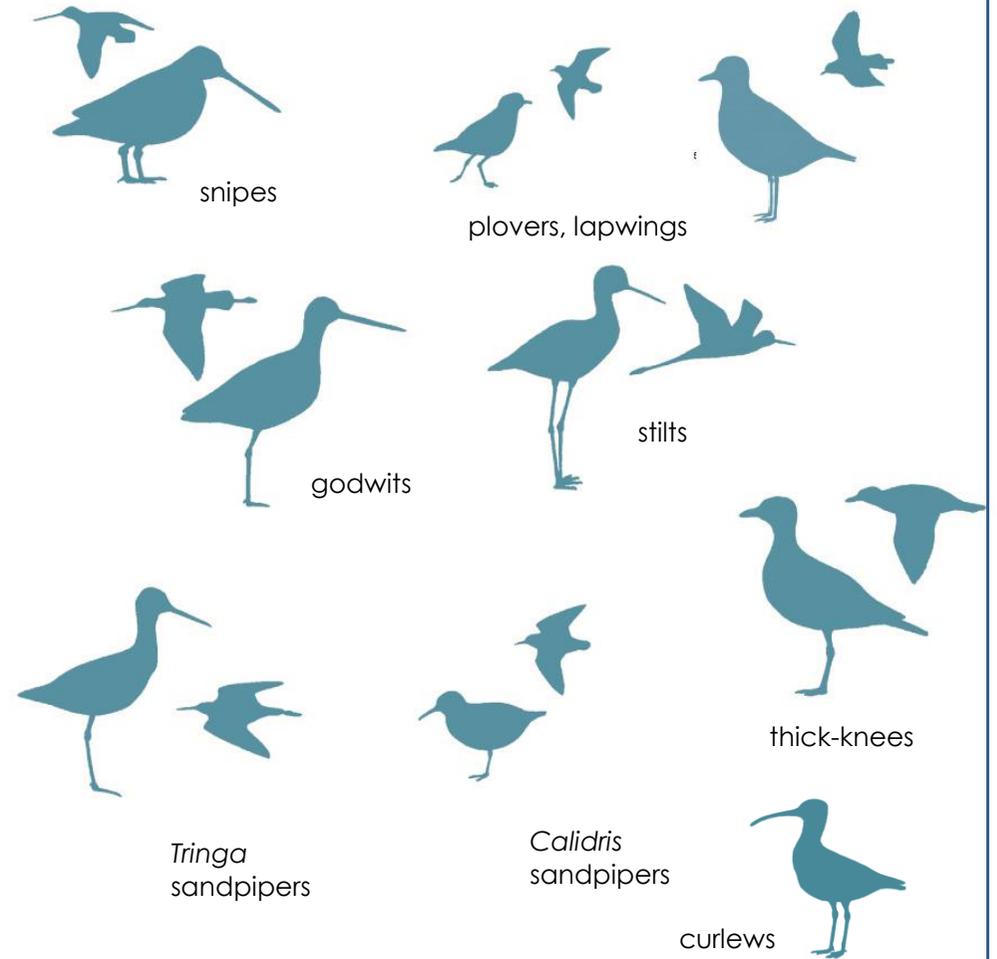
Module 2 - S2.2

	On the ground, walking	On the ground, resting	In flight	
				<i>Remember, some features look different when the bird is seen in different postures.</i>
<b>Size</b>	medium	medium, but smaller than when walking	medium	<i>Size varies between small to medium</i>
<b>Silhouette</b>	slender	squat		<i>Silhouette varies between squat and slender</i>
<b>Neck</b>	long, sinuous, thin	not visible - "head in its shoulders"	very thick, retracted	<i>The neck varies from long to short and thin to thick</i>
<b>Bill</b>	medium length (= length of the head) dagger-shaped		medium	<i>The bill may be difficult to see in flight</i>
<b>Legs</b>	long (clearly visible tibias)	short to medium (tibias not visible)	extending beyond the tail	<i>Legs are often hidden by plumage</i>
<b>Wings</b>	not prominent		broad, rounded tips	<i>Wing shape is not always visible</i>
<b>Tail</b>	short			<i>The tail can be difficult to distinguish</i>

**Large wading birds**



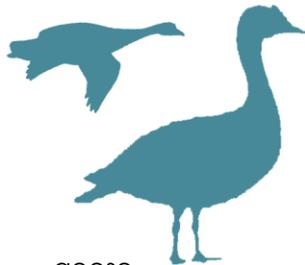
**Waders**



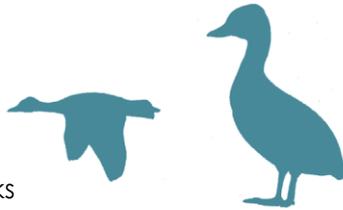
**Sub-Saharan Africa: Silhouettes of common waterbirds**

**Module 3 - S3.1.b/sub**

**Anatidae**



geese



whistling-ducks



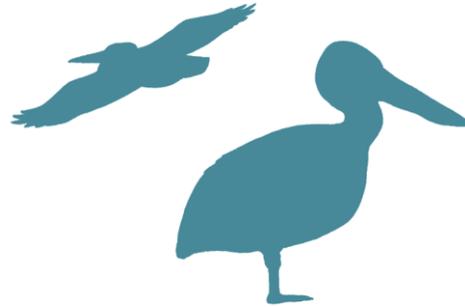
surface-feeding ducks

diving ducks

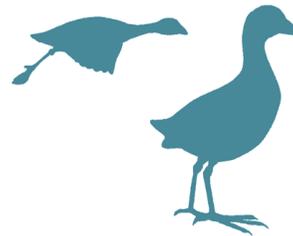
**Grebes**



**Pelicans**



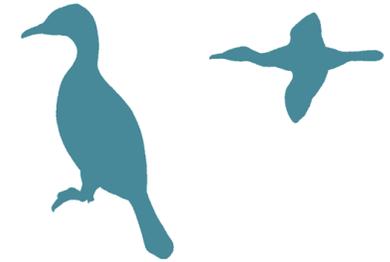
**Rails, Moorhens**



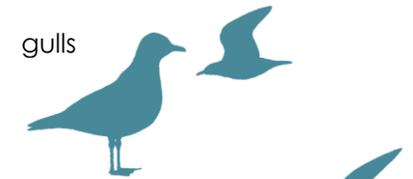
**Jacanas**



**Cormorants**



**Laridae**



gulls



terns

**Raptors**

Not waterbirds but often encountered in wetlands



## Sub-Saharan Africa: Identifying common waders

## Module 3 - S3.2/sub

### *What are the main morphological criteria to note?*

#### **Silhouette**

- is it thin and slender?
- is it squat and round?
- is it in between, and neither slender or squat?

#### **Head**

- is it big, medium or small compared to the rest of the body and the overall silhouette?

#### **Neck**

- is it visible?
- is it short or long?

Remember that when a bird is resting the neck can seem short when it would look long in other positions.

#### **Bill**

- is it long or short compared with the head when seen from the side?
- is it straight or curved?
- is it slender or broad?

#### **Legs**

- are they long or short?
  - long legs: clearly visible tibia and long tarsus.
  - short legs: barely visible tibia and short tarsus.

These criteria make it possible to sort a bird into one of the following groups:

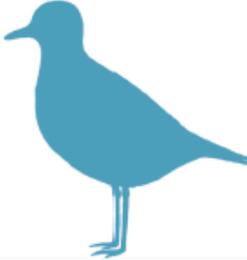
- Plovers, Lapwings
- Godwits, Curlews
- *Calidris* sandpipers
- Snipes
- *Tringa* sandpipers
- Black and white birds (Pied Avocet, Eurasian Oystercatcher, Black-winged Stilt).

Typical characteristics of these groups are illustrated in the diagram in S3.3/sub.

Some other species cannot be assigned to these large groups; these are Pied Avocet, Crab-plover, Black-winged stilt, Ruddy Turn-stone as well as the 2 species of oystercatcher and 3 species of phalarope.

Note: Coursers, Pratincoles & Thick knees are not included

**Characteristic shapes of main large families**

<p><b>Plovers &amp; Lapwings</b></p>  <p>Round and squat silhouette Large head Short, straight bill Short, often barely visible neck Short legs (plovers) to long legs (lapwings)</p> 	<p><b>Godwits / Curlews</b></p>  <p>large size small head very long straight or down curved bill long neck very long legs</p> 
<p><b><i>Calidris</i> sandpipers</b></p>  <p>squat silhouette medium-sized head short to medium slender, straight or down curved bill fairly short, often barely visible neck</p> 	<p><b>Snipes</b></p>  <p>squat silhouette large slightly square head medium to very long bill short neck medium to short legs</p> 
<p><b><i>Tringa</i> sandpipers</b></p>  <p>thin and slender silhouette small head medium to long slender, straight or slightly upturned bill clearly visible neck generally long legs</p> 	<p><b>And some other species...</b></p> <p>Depending on the region: Pied Avocet, Crab-plover, Black-winged stilt, Ruddy Turn-stone as well as the 2 species of oystercatcher and 3 species of phalarope</p> 

**Characteristic shapes of main large families**

**Plovers & Lapwings**



Round and squat silhouette  
Large head  
Short, straight bill  
Short, often barely visible neck  
Short legs (plovers) to long legs (lapwings)



**Godwits / Curlews**



large size  
small head  
very long straight or down curved bill  
long neck  
very long legs



**Calidris sandpipers**



squat silhouette  
medium-sized head  
short to medium slender, straight or down curved bill  
fairly short, often barely visible neck



**Snipes**



squat silhouette  
large slightly square head  
medium to very long bill  
short neck  
medium to short legs



**Tringa sandpipers**

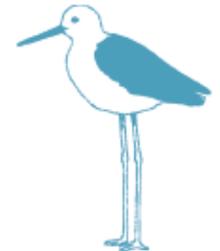
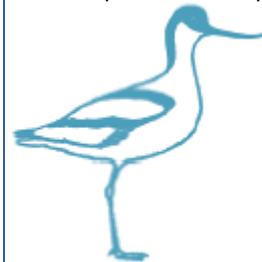


thin and slender silhouette  
small head  
medium to long slender, straight or slightly upturned bill  
clearly visible neck  
generally long legs



**Black and white waders**

three species easily recognised by their black and white plumage



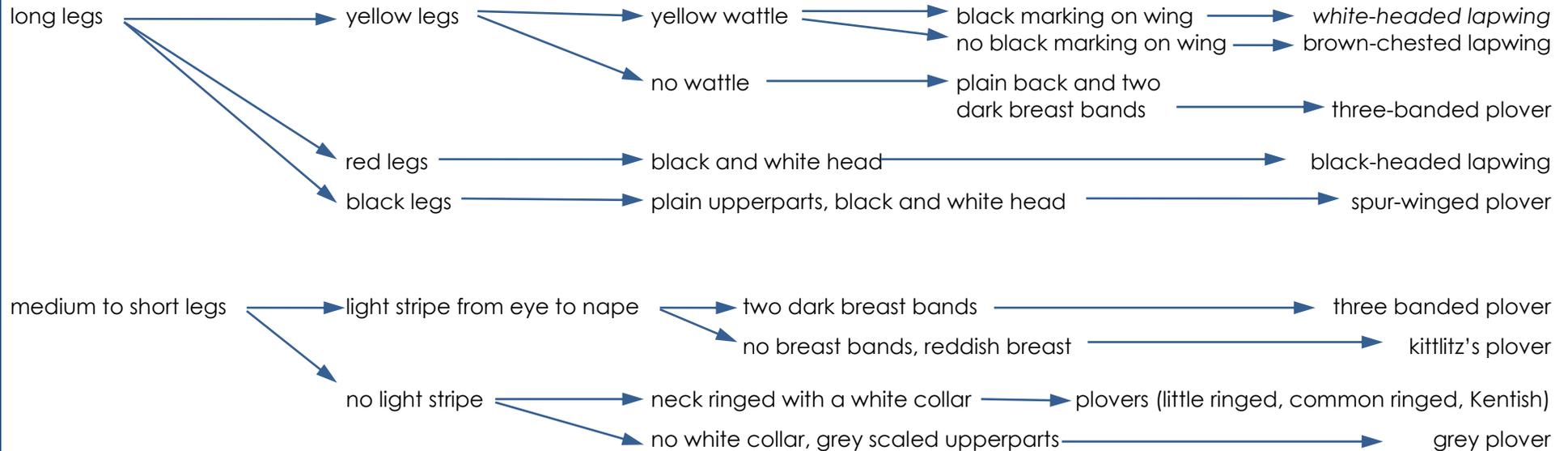
## Sahel West Africa: An example of identification key to waders

## Module 3 – S3.5.a/Sahel

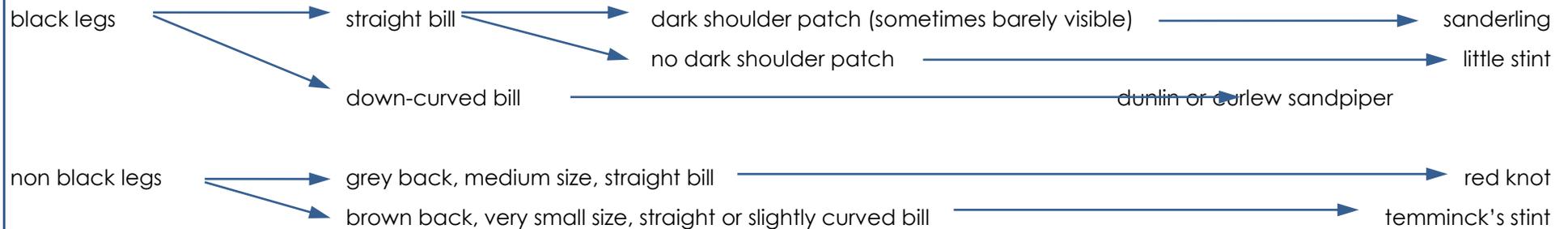
This training tool has been designed for **Sahel West Africa** and tested in Burkina Faso. **Not suitable for use in other regions.**



### Lapwings / Plovers



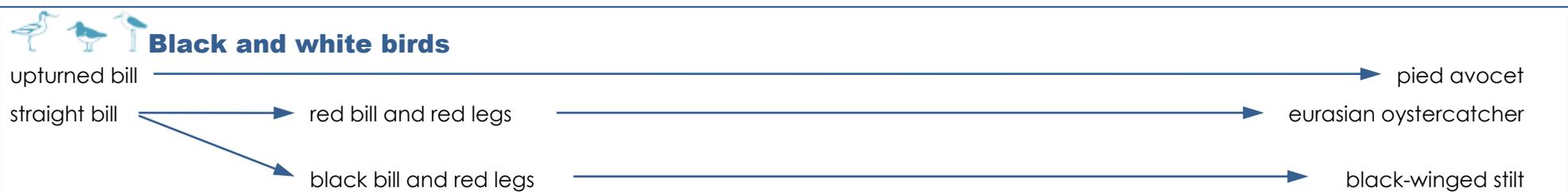
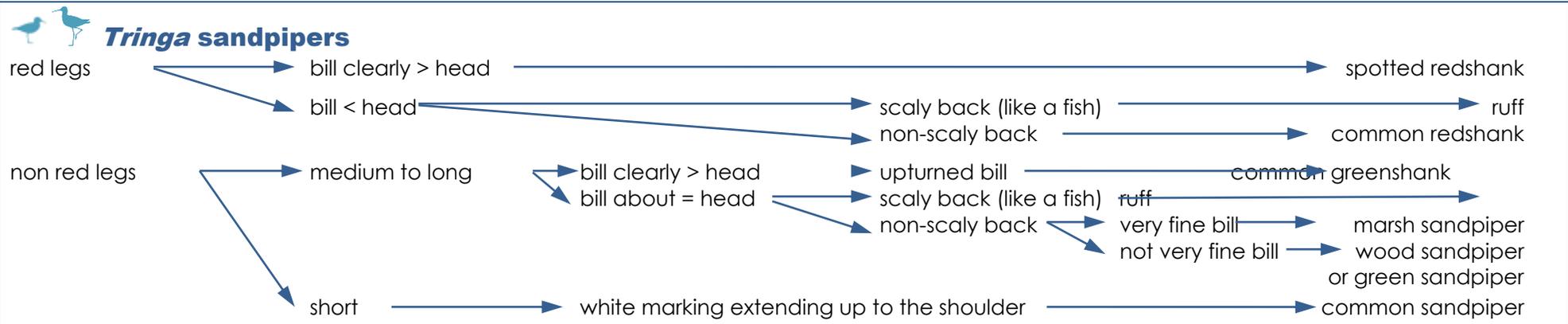
### *Calidris* sandpipers



## Sahel West Africa: An example of identification key to waders

## Module 3 – S3.5.b/Sahel

This training tool has been designed for **Sahel West Africa** and tested in Burkina Faso. **Not suitable for use in other regions.**



## What are waterbird counts for? – The main objectives

## Module 4 – S4.1

### *At site level*

#### **Evaluating the importance of the site**

- To know the numbers of different species of birds that use a site,
- To know the fluctuations in a site's capacity to hold different species of waterbird, from one year to another, one season to another, etc.,
- To compare census results from different count sites in the region or country and assess the relative value of each wetland for waterbirds,
- To prioritise measures to be taken for threatened species.

#### **Ensuring the monitoring of a site**

To detect changes in numbers of birds of different species,

- To help identify the reasons for these changes in order to implement conservation measures if necessary,
- To assess the impact of activities such as subsistence hunting, shooting and grazing,
- To regularly check that the use and/or management of the wetland and its natural resources is wise and sustainable.

### *At national level*

- To know the role and importance of the country's wetlands for the different species of waterbird through their annual cycle,
- To provide information for implementing conservation measures and steps towards the sustainable use of natural resources,
- To provide information for nature protection laws (including huntable species, hunting seasons, species and areas to protect, and threatened species) and national policy for wetland conservation,
- To provide information to compile data (for an atlas, for example).

### *At international level*

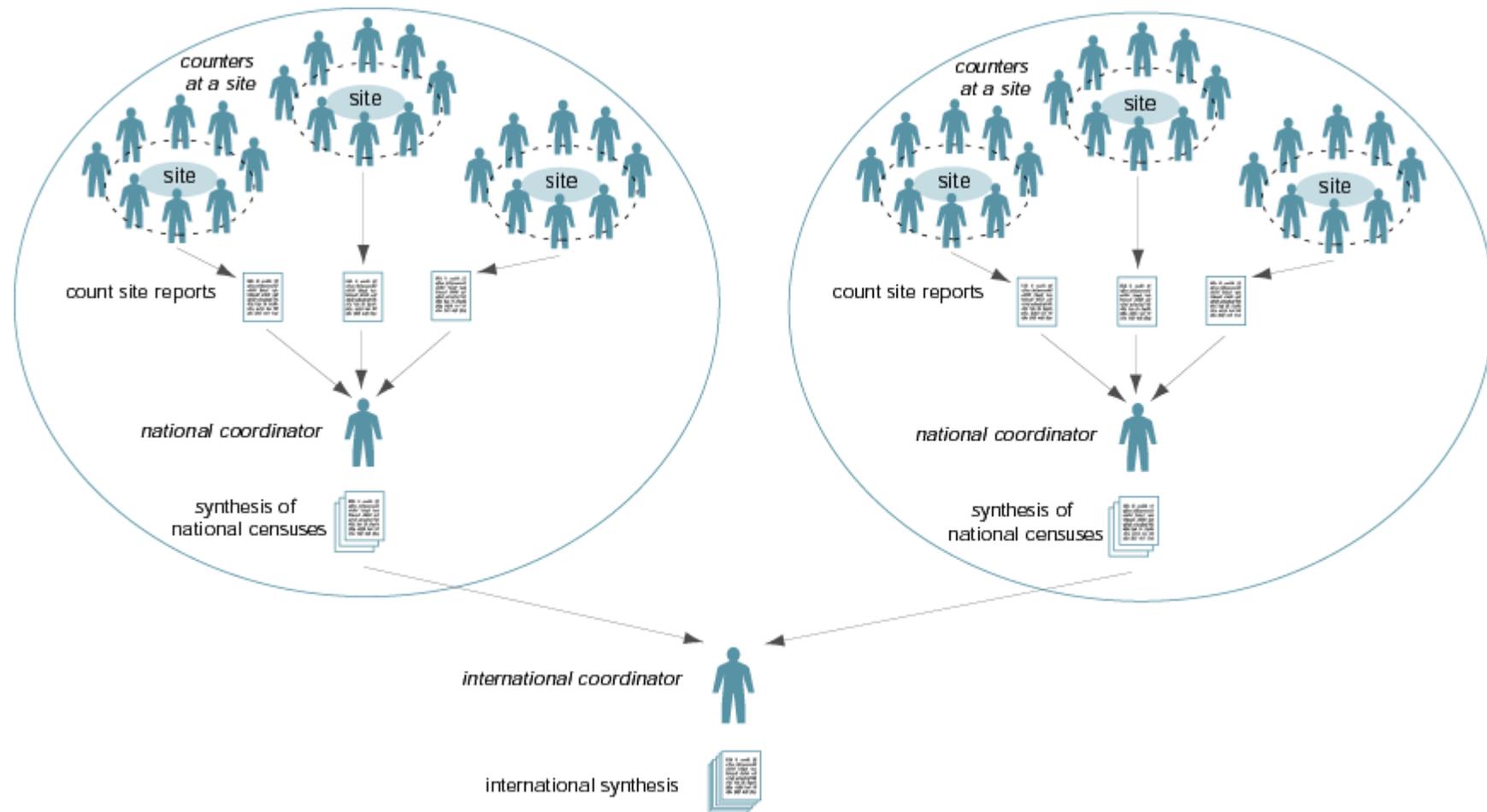
- To improve the understanding of species in their distribution ranges (including population sizes, annual cycles, movements and migrations) and to monitor changes in certain parameters such as population size,
- To provide information necessary for international conventions and agreements such as Ramsar, CMS, AEW and CBD, and for producing strategic documents, e.g. a Single Species Action Plan.

### *At all levels*

- To increase knowledge of species and their biology, including annual cycles, movement and migration.

## How a waterbird monitoring network works

Module 4 – S4.2



**Count or estimate?****Module 5 – S5**

	<b>Birds are counted accurately (one or two at a time)</b>	<b>Birds are estimated (counting in groups of 5, 10, 50, 100, etc.)</b>
<b>How much time is available for this census?</b>	<ul style="list-style-type: none"><li>• enough time</li></ul> e.g. birds are perched or on the ground	<ul style="list-style-type: none"><li>• little time</li></ul> e.g. birds start to take off and may leave the site, there is not enough time to count them
<b>What is the approximate group size?</b>	<ul style="list-style-type: none"><li>• &lt; 100 individuals</li></ul> depends on other conditions	<ul style="list-style-type: none"><li>• &gt; 100 individuals</li></ul> depends on other conditions
<b>Is the group dense?</b>	<ul style="list-style-type: none"><li>• no</li></ul> e.g. birds are evenly dispersed over a mudflat	<ul style="list-style-type: none"><li>• yes</li></ul> e.g.: birds are in a dense group on a mudflat
<b>Are the birds moving about?</b>	<ul style="list-style-type: none"><li>• no</li></ul> e.g. they are at rest or feeding	<ul style="list-style-type: none"><li>• yes</li></ul> e.g. they are flying to another site or a roost
<b>Could a possible or real disturbance disrupt the count?</b>	<ul style="list-style-type: none"><li>• no, it's quiet.</li></ul>	<ul style="list-style-type: none"><li>• yes</li></ul> e.g. a raptor flushes some of the birds or a herd of cattle is heading for the water's edge, or fishing boats are heading towards the birds
<b>Is the count site extensive?</b>	<ul style="list-style-type: none"><li>• no, the birds are clearly visible</li></ul>	<ul style="list-style-type: none"><li>• yes, some birds are a very long way from the counters</li></ul>
<b>Is visibility good?</b>	<ul style="list-style-type: none"><li>• yes</li></ul> e.g. the sun is behind the counters and the weather conditions are good	<ul style="list-style-type: none"><li>• no</li></ul> e.g. the birds have settled in the vegetation which is into the sunlight, or the birds are a very long way off and it's not possible to get any closer, or there is a heat haze

## Evaluation form for the “Waterbird identification and census” training course

We need your opinions about the course you have just completed, so that we can improve any future courses we may organise. Please do not hesitate to speak freely, all your comments are of interest!

Thank you for your participation.

### Running the module

The length of the course, bearing in mind its objectives, was:	Too long	Just right	Too short

The pace of work(schedule, amount of work) was:	Too intense	Just right	Not intensive enough

Comments:

### Activities

Were the duration and variety of activities appropriate?

	Not at all appropriate	Not very appropriate	Quite appropriate	Extremely appropriate
fieldwork				
Indoor work				
discussions				

Comments:

### Content and methods

What did you think of:

	Not at all satisfactory	Unsatisfactory	Mostly satisfactory	Very satisfactory
The trainers' technical expertise				
Their ability to speak in an understandable way				
Their leadership abilities				

What did you think of the **methods** used to achieve the objectives?

	Not at all satisfactory	Unsatisfactory	Mostly satisfactory	Very satisfactory
fieldwork				
indoor work				
indoor discussions and synthesis				
evaluations				
working in a group				
working alone				
factsheets used				

Comments:

### Achieving the objectives

	Not at all	Slightly	Yes	Totally
Have the course objectives been met?				
Have your own aims been met?				
Has the course opened up new opportunities for you?				

If you answered yes to the last question, please specify which opportunities (at a personal level, or as part of your job or the organisation for which you work?) If you answered no, why not?

What are you missing to be able to put what you've learned into practice, in terms of facts, know-how and experience?

### The trainers' relationship with the trainees

What did you think of:

	Not at all satisfactory	Unsatisfactory	Mostly satisfactory	Very satisfactory
How well they listened?				
How well they understood your problems and needs?				
Their response to your problems and needs?				
Their consideration of each one?				
Their availability?				

Comments:

### The trainees

	Not at all	Slightly	Yes	Totally
Did the group make it easy to carry out the tasks on the course?				
Did you help achieve the group's tasks?				
Did you feel part of the group?				

Say how you felt being a part of the group:

Did the other trainees help you?

Did you help the other trainees?

### To sum up

The parts of the course that you liked the most were:

Which aspects of the course did you find less than satisfactory that could be improved for future courses? :

Which aspects of the course did you find unsatisfactory that need to be changed for future courses?:

**In the future ...**

Do you feel able to organise a training course and be a trainer yourself?

YES       NO

If NO, what do you feel is missing for you to be able to do so?

What do you still need to learn?

– about organising:

– about teaching:

– about ornithology:

If YES, do you think you would use aspects from this course? Which ones?

What tools would you need to implement a course?