

# 1. INTRODUCTION

Dear atlaser

Welcome to the Southern African Bird Atlas Project 2 (SABAP2). We hope that your participation in this project will bring you many hours of enjoyment and a sense of satisfaction from contributing to a scientific endeavour which will help in the conservation of our birdlife. Bird atlasing is relatively easy to do but errors in procedure could render your efforts worthless, so please read the following instructions carefully!

SABAP2 is a joint project of the South African National Biodiversity Institute (SANBI), Avian Demography Unit (ADU), based at the University of Cape Town, and BirdLife South Africa (BLSA). The project has been endorsed by the SABAP2 Steering Committee, made up of members from the above partner organizations, university researchers, museum researchers, provincial nature conservation authorities and bird clubs. The ADU will oversee the coordination of the project, including all administrative and IT services while BLSA will be responsible for publicity, outreach and training.

## 1.1 *SABAP1 and SABAP2*

SABAP2 is a follow-up project to SABAP1 which ran from 1987–1991. SABAP1 provided a 'snapshot' of the distribution and relative abundance of birds in southern Africa and was an exemplary example of a project which improved the public understanding of science, and which played a key role in science education. SABAP2 plans to build on the results of SABAP1 in order to produce an improved atlas and contribute in a greater way to biodiversity conservation.

The SABAP2 database will add enormous value and be complementary to the SABAP1 database, and together they will provide a powerful tool for assessing and planning the conservation of avian biodiversity in South Africa, Lesotho and Swaziland.

## 1.2 *OBJECTIVES*

SABAP2 has the following primary objectives:

- To measure the impact of environmental change on southern African birds through a scientifically rigorous and repeatable platform which uses standardised data collection on bird distribution and abundance;
- To provide a basis for increasing public participation in biodiversity data collection, and public awareness of birds, through large-scale mobilization of citizen scientists; and
- To provide information that can be used to determine changes in the distribution and abundance of birds since SABAP1.

# 2. CONTRIBUTING TO SABAP2

There will be some of you who would have taken part in SABAP1 and are familiar with atlasing techniques. There will also be many of you who have never taken part in an atlas project before and are not familiar with atlas methodology. With a change in methodology for SABAP2, and to accommodate all observers, the protocol for SABAP2 will be described in relation to SABAP1 methodology, with examples for first time atlasers. This will give atlasers an idea of the amount of change from SABAP1 to SABAP2 and will show the kind of data that we want to collect for the second atlas. Therefore, it will be important for those atlasers from SABAP1 to pay special attention to the changes that have been made in SABAP2.

## **2.1 BASIC ATLASING TECHNIQUES**

For those of you who are not familiar with basic atlasing techniques SABAP2, like SABAP1, will require filling in a checklist of species for a particular defined area, for a particular period of time. The one important difference, however, of SABAP2 is that there will be increased standardization in terms of the way in which species are recorded. For SABAP1, data were collected in various ways but this created some problems when it came to analysing the data. Collection of data for SABAP2 will be done in the same way by all observers; this will help us interpret the results in a better way.

## **2.2 THE GEOGRAPHIC AREA**

The atlas region for SABAP2 includes the countries of South Africa, Lesotho and Swaziland. This means that you will be able to carry out your atlasing within the boundaries of these three countries.

For SABAP1, Quarter-Degree Grid Cells (QDGCs) were the geographical sampling units. QDGCs are grid cells that cover 15 minutes of latitude by 15 minutes of longitude (15' × 15') and correspond to the area shown on a 1:50 000 map. For SABAP2 the sampling unit has been reduced to **pentad grid cells (or pentads)**; these cover 5 minutes of latitude by 5 minutes of longitude (5' × 5'). Each pentad is approximately 8 × 7.6 km. The north to south length remains the same everywhere on the planet. The east to west length gets narrower southwards because the planet is a sphere, but within southern Africa this change is not very large.

This finer scale has been selected for SABAP2 to obtain more detailed information on the occurrence of species and will give us a clearer and better understanding of bird distributions. The quarter degree grid gave us an excellent broad brush picture of bird distributions, but has been demonstrated to be too coarse for the kind of fine-scale planning decisions which are needed for the conservation of biodiversity. Because there are nine pentads in a QDGC, the data for pentads can also be combined into QDGC format, which can then be compared with SABAP1 data to detect any large-scale changes in bird distribution.

There are 17 444 pentads covering South Africa, Lesotho and Swaziland, compared to the 2002 QDGCs for SABAP1. Covering all pentad grid cells presents a big challenge but also represents an enormous opportunity for birders to collect some really detailed information on bird distribution.

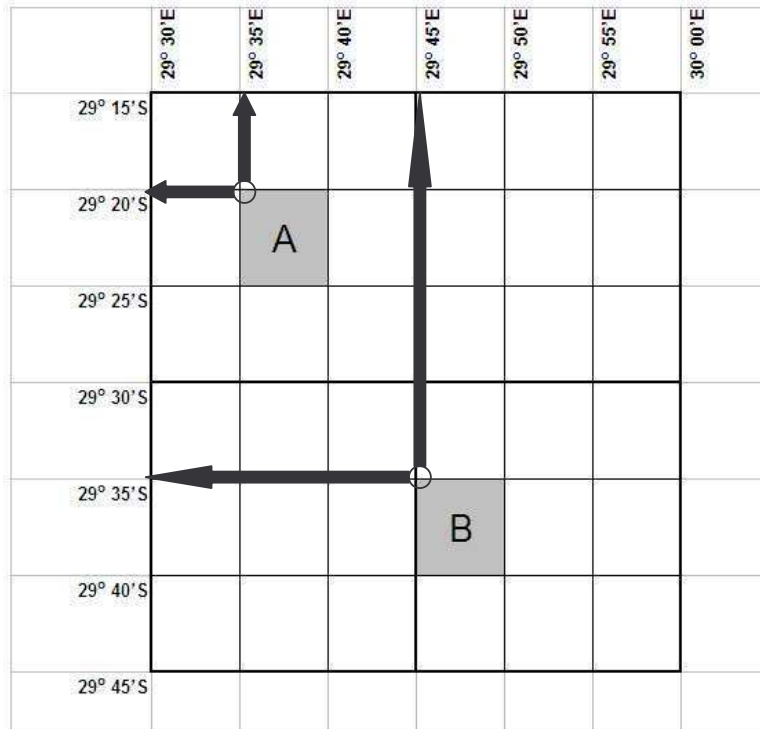
### **2.2.1 Working with maps and pentads**

Maps are an essential tool when doing field surveys for SABAP2, since they allow you to define where the boundaries of each pentad are, what roads pass through the pentad, and also give you an idea of the different landscape elements present within each pentad.

Even if you are equipped with a GPS, a good map is essential in order to plan a proper atlas survey for SABAP2 (see p. 12).

### **2.2.2 Determining and coding pentad grid cells**

As mentioned above, a pentad is a 5' × 5' grid cell. Thus, each 1:50 000 map which is 15' × 15' is made up of nine pentads. For SABAP2, each grid cell will be coded by the coordinates of the north-west (or top left-hand) corner of the cell, e.g. 2920\_2935 refers to the pentad that has the coordinates of 29°20' south and 29°35' east. Each set of coordinates are separated by an underscore (\_). This is illustrated in the diagram below:



This diagram shows four Quarter-Degree Grid Cells (15' x 15'). Each of the nine blocks in each QDGC represents a pentad.

The pentad code is the coordinates at the top-left hand (north-west) corner of the pentad grid cell (shown by the O). For example:

Pentad code for grid A = 2920\_2935 (29°20'South, 29°35'East).

Pentad code for grid B = 2935\_2945 (29°35'South, 29°45'East).

### 2.2.3 Determining pentad boundaries

To determine the boundaries of each pentad you will need to use either a map and/or a GPS. Please note that a **GPS is not essential** when atlas for SABAP2. However, should you have access to a GPS we encourage you to use it as much as possible, particularly where landscape features on maps are unclear or not prominent or you do not have access to maps. **We do recommend that, where possible, a GPS and maps be used together to derive maximum accuracy when atlas in pentads.**

#### Using a map

To determine pentad boundaries using a map you need to draw lines across the map for every 5 minutes of latitude and every 5 minutes of longitude. This method will be useful in areas which are unfamiliar to you as you will need to know where you are in relation to the map when you

are crossing pentad boundaries. The map will help you identify landscape features that will guide you to as to the position of pentad boundaries in the field.

Maps are available either in hardcopy format (paper maps) or in digital format (electronic maps). For South Africa, paper copies can either be purchased directly from the General-Surveyor: Mapping and Survey office in Cape Town or from various distributors located around the country (contact details on p. 27). For Lesotho and Swaziland you will need to contact the relevant mapping office in that country (contact details on p. 28).

All 17 444 digital maps of South Africa are available on DVD from your nearest bird club or from the ADU (Tel. 021-650 2330, email: [doug.harebottle@sabap2.org](mailto:doug.harebottle@sabap2.org)) or BirdLife South Africa (Tel. 011 789 1122, Fax. 011 789 5188, email: [neil.smith@sabap2.org](mailto:neil.smith@sabap2.org)). Copyright has been generously waived by the General-Surveyor: Mapping and Survey for the purpose of this project, so copies of maps can be made to participants.

Digital maps are in TIFF format and can be opened using Windows Picture & Fax viewer, which comes standard with Windows XP and Vista (and any standard graphical programme). They are also geo-referenced which means that the coordinates are given as you move the cursor around the map. This allows you to use these maps with Geographical Information System (GIS) software. For atlasers who are familiar with GIS software or those of you who would like to use this technology, we have provided a simple, user-friendly GIS software package called DIVA-GIS together with the maps in the DVD package. You will need to load the DIVA-GIS software on your computer and then load the maps into the programme. The pentad layer (shape file) is also supplied in the CD Starter Kit and by loading the maps and then overlaying the pentad layer, you will be able to pick out the landscape elements and habitats within the pentads you intend surveying. Instructions on how to use DIVA-GIS are supplied in the CD Starter Kit.

### Using a GPS

Atlasing in pentads that have uniform habitat and limited landscape features (e.g. in the Karoo or Kalahari) or that are unfamiliar may present problems if you are using maps. In these cases, the use of a GPS is extremely useful in determining when you cross pentad boundaries.

An advantage of a GPS is that you can atlas even if you do not have a map because you will be able to work out where you are and when you have moved into another pentad. The main disadvantage of using a GPS only is that you may not be aware of the spread of habitats in a cell which you usually get from a map. For example, there might be a wetland within the pentad, which is easy to determine from the map.

Although most people who own a GPS know how to use it, we have provided the following guidelines for those who are not familiar with GPS technology and who may be considering purchasing one for SABAP2.

### Determining pentad boundaries using a GPS

Learn how to operate the GPS so that the coordinates displayed represent the coordinates of the spot you are standing on, and change as you move. The coordinates need to be displayed as degrees, minutes (and preferably decimals of a minute, the so called DD MM.MMM format).

Look at the degrees. The degrees of latitude (south) and longitude (east) are easy, and become part of the pentad code. In South Africa, the numbers for the degrees always have two digits, and so we call them DD.

Look at the minutes. What is the multiple of five that is just smaller than the minutes? If the minutes read 13.784, then the multiple of five which is smaller than this is 10. If the minutes read 59.432, then the multiple of five is 55. If the minutes read 24.561, then the multiple of five is 20. If the minutes read 07.285, then the multiple of five is written as 05. If the minutes read 02.241, then the multiple of five is written as 00.

The pentad code has pattern DD MM DD MM, where the first DD stands for degrees south and the second DD for degrees east. These digits come directly from the GPS. The MMs stand for the minutes; these will always be numbers that are multiples of five, worked out using the method in the paragraph above.

If your GPS reads 25°20.861'S 30°16.191'E, then the pentad code is 25 20 30 15. The first DD is 25 and the second DD is 30. The first MM is worked out from 20.861; the multiple of five just smaller than this is 20. The second MM is worked out from 16.191; the multiple of five just smaller than this is 15.

## 2.3 REGIONAL COVERAGE

### 2.3.1 Choosing your field data sheet (checklist)

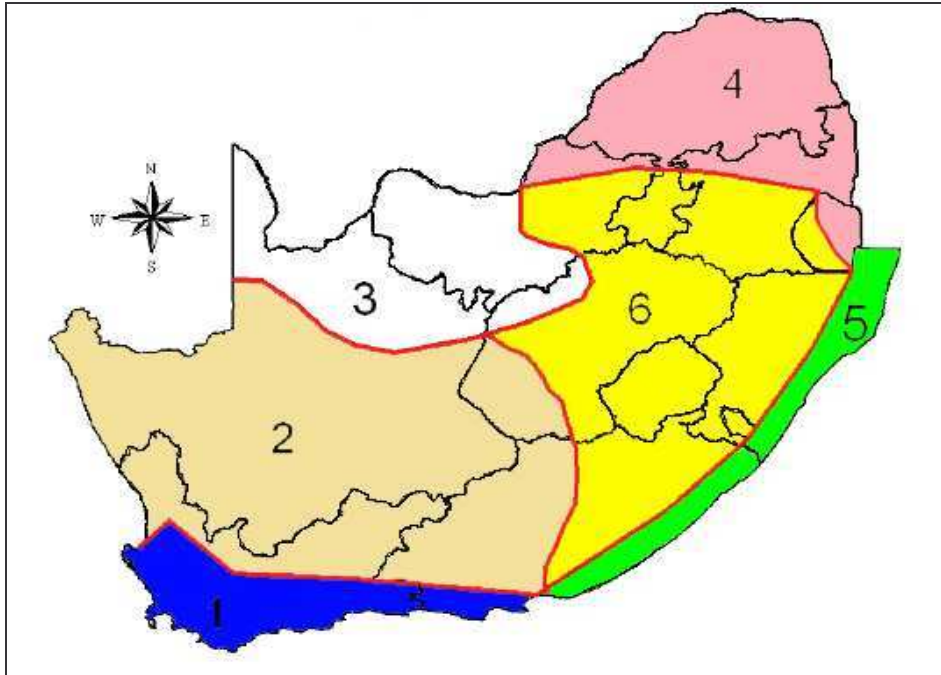
Depending on where you would like to carry out your atlas surveys you will need to choose an appropriate Field Data Sheet. The field data sheets equate to the 'checklists' used in SABAP1. There are six atlas field data sheets (see below) to choose from and each has been drawn up to give you a list of species which is appropriate to the area in which you are doing your surveys. These areas equate to the biogeographical regions encompassing South Africa, Lesotho and Swaziland, i.e. they are **broadly divided** based on habitat differences.

**It will be to your advantage to use the field data sheet which is appropriate to the area in which you carry out your surveys.** Using the wrong checklist is likely to cause you to add many "additional species" to your data sheet. A map is provided on page 9 to guide you in the use of the different checklists. There will be areas where a fair amount of overlap exists. Where this occurs, we recommend that you review the two field data sheet options and select the one you regard as the best species coverage for that area.

- Field Data Sheet 1 = South-Western Cape, Southern Coastal Belt & Little Karoo (Blue)
- Field Data Sheet 2 = West Coast and Succulent Karoo (Beige)
- Field Data Sheet 3 = Kalahari (White)
- Field Data Sheet 4 = Bushveld, Lowveld, North Eastern Escarpment and Eastern Swaziland (Pink)
- Field Data Sheet 5 = Eastern Coastal Belt (Green)
- Field Data Sheet 6 = Highveld, Lesotho, Free State, KZN Drakensberg & Midlands and Western Swaziland (Yellow)

**Please note:**

- (1) The field data sheets do NOT list all species for a particular region but we have attempted to make them as comprehensive as possible. Rarities and/or out-of-range species (if recorded) will most likely need to be added to the data sheets as additional species.
- (2) Species marked in **bold** on the field data sheets are pairs or groups of species which can be easily confused and special care should be taken to distinguish these in the field (and to mark the correct species on the data sheet). Single species marked in bold indicate that no confusing species occur in that region but that they can be confused with similar species in other regions.



**Map to provide you with a rough guide to the choice from the six SABAP2 data sheets according to biogeographical region.**

The colour of the field data sheet will also assist when it comes to capturing the data using the SABAP2 electronic Data Management System for those observers who choose to use this method for storing and submitting their data. This is further explained in the manual for the Data Management System which is provided with the CD Starter Kit.

Field data sheets can be downloaded from the SABAP2 website ([www.sabap2.org](http://www.sabap2.org)) or can be printed direct from the CD Starter Kit. They are also obtainable from BirdLife South Africa (Tel. 011 789 1122, Fax. 011 789 5188, email: [neil.smith@sabap2.org](mailto:neil.smith@sabap2.org) or the ADU (Tel. 021 650 2330, Fax. 021 650 3434, email: [doug.harebottle@sabap2.org](mailto:doug.harebottle@sabap2.org))

## **2.4 THE TIME PERIOD**

During SABAP1, checklists were submitted for any period up to a maximum of one calendar month. This resulted, in many instances, in checklists being submitted for a 10-minute drive through a grid cell to a concerted 30-day list for the same grid cell. This large variation in observer effort created problems when it came to interpreting the data because some lists were more comprehensive than others. In particular, this lack of a record of research effort proved a hindrance to conservation planning.

For SABAP2, we will be **standardizing observer effort** as much as possible so that the data can be used in a more comparable way, thus strengthening the quality of the data collected. Therefore, we have set the **minimum observation time period to be two (2) hours**. The two-hour minimum is motivated by the concept that two hours in a pentad with uniform habitat in low-diversity areas is probably enough to locate most species. For pentads with more varied habitats and in high-diversity areas the minimum time could take as long as 10 hours to locate all possible species in a complex grid cell.

***The minimum time period is known as the period of initial intensive survey.***

The **maximum time period will be five (5) days**. This means that after the initial minimum observation time has been reached any additional species can be added per field data sheet up to a period of five days. A new survey for each pentad should then only be started five days after the start of the previous survey. *So, if you started your survey on a Monday for a particular grid cell, then a new survey (i.e. field data sheet) for that grid cell should only be started on the Saturday, etc.*

Reducing the maximum time period per checklist to five days for SABAP2, compared to 30-calendar days during SABAP1, means that we will be able to map the seasonal patterns of both resident and migrant species more accurately.

Seasonal coverage will also be important and we encourage you to try and cover each pentad as frequently as you are able. Aim for at least one survey each in mid-summer and mid-winter.

## **2.5 HABITAT COVERAGE**

For SABAP1, surveying all the different habitats within a QDGC was frequently not possible because of the relatively large size of the survey area. With pentads, the survey area has been reduced to a size in which surveys covering all or most of the different habitats are now possible.

**For SABAP2, we would like you to make a special effort to try and cover all the different major habitats in each pentad.** This will maximize information on species diversity in each cell and will ensure that each field data sheet that is submitted represents a thorough search for all species in the different habitats. A representative sample of the major habitats need only be visited. From an atlas survey perspective, this means we would like you to cover as many different areas to record as many new species as possible. Ultimately we would like to establish that absence of a species from a checklist is a reasonable indication that the species was not present in the pentad during the period of intensive fieldwork.

This is where the 1:50 000 maps are important, because they will be able to provide a good indication as to how the landscape varies in each pentad (e.g. areas of natural vegetation, cultivated areas, wetland areas, and presence of mountains or cliffs).

The kind of broad habitats we would like you to survey (if present in your pentad) include:

1. **Forests** (incl. lowland or montane)
2. **Wetlands** (incl. dams, lakes, rivers, sewage works, pans, marshes, vleis, estuaries)
3. **Grasslands**
4. **Woodlands** (incl. savanha, thornveld, bushveld, alien trees)
5. **Fynbos**
6. **Karoo**
7. **Farmland**
8. **Mountains, cliffs, gorges and koppies**
9. **Urban and suburban environments** (incl. parks, golf courses, gardens, built-up areas)
10. **Beaches**
11. **Open sea** (any species you can positively identify from the shore)

## 2.6 ADDITIONAL INFORMATION (optional)

The only additional information collected by SABAP1 was breeding information. This was collected in a series of codes that ultimately proved less than completely satisfactory. Space was provided on the atlas sheet to record additional information but this was rarely completed. For SABAP2, a mechanism has been provided to capture a far more extensive set of additional information. It should be emphasized that the **collection of additional information will be entirely optional** and observers should not, in any way, feel obligated to collect additional information for SABAP2. However, we encourage SABAP2 observers to learn the system, and to add value to their observations by recording the additional information they observe while they are doing fieldwork for the project.

The more time you spend observing birds, the more interesting things you will see. We want to give you the opportunity to record these observations with respect to the categories below, so that they can be made available for future use. Your contributions will be acknowledged in future research outputs (as far as possible).

- A. Breeding
- B. Roosting
- C. Behavioural
- D. Abundance
- E. Alien species
- F. Habitat
- G. Other

It is only for the breeding category that codes are used with an option to write additional text. For all other categories, the observations are recorded as text only.

Additional information is recorded on the supplementary data sheets or, more easily, within the SABAP2 Data Management System. For the former, the top line of each additional information box contains just enough information to enable the SABAP2 software to link the information record with the correct field data sheet. The top line contains the eight-digit code for the grid cell (pentad), the date in DDMMYY format, and your SABAP2 observer code. All this comes from the fieldsheet. This is followed by the species number, which can also conveniently be found on the fieldsheet.

### 2.6.1 Breeding

When submitting additional information sheets in the post, you will need to select any of the following codes as are relevant, using a comma between each code. If you use the electronic Data Management System you need only to select the relevant descriptions, the software will assign the codes automatically.

<u>Code</u>	<u>Description</u>
CDP	- courting display
ACN	- adult bird carrying nesting material
ANB	- active nest building
NCN	- newly completed nest or nests
NWE	- nest with eggs
NWC	- nest with chicks
PFY	- parents feeding young in nest
PFS	- parent with faecal sac
PAY	- parents and young not in nest
JUV	- juvenile birds

In addition, provide textual information. Examples of information that will be useful include locality of the nest (GPS coordinates), nest contents, (and/or number of nests, for colonial species), information about brood parasite egg/chicks (e.g. cuckoo) in host nests (e.g. robin or weaver), and any other information about the breeding observation that you would like to have recorded for posterity.

### **2.6.2 Roosting**

Provide textual information and details of the roost site (provide GPS coordinates, if possible).

### **2.6.3 Abundance**

Use this option if you wish to report either exceptional numbers of a common species, or even one bird if it is a Red Data species. Provide textual information about what you saw and, if appropriate, the GPS coordinates of the exact locality.

### **2.6.4 Habitat**

Only provide this category of additional information if you wish to place on record some **unusual** feature of the habitat the species was in. For example, you might want to note that a species was observed **flying over** the grid cell, if it is a species unlikely to land in it (e.g. a Swift Tern observed in the southern suburbs of Cape Town taking the short cut across the Cape Flats between Table Bay and False Bay). Or it might be a species out of habitat: a Cape Sugarbird in a plot of alien acacias. Or you might want to draw our attention to the fact that the grid cell was in the Karoo, but that you saw the House Sparrow only at the farm house.

### **2.6.5 Behaviour**

Use this category if you wish to report some particularly interesting or unusual behaviour. Provide textual information about what you saw.

### **2.6.6 Alien species**

If you see a House Crow, a House Sparrow, a Common Starling, a Common Myna or any other alien bird species in an area where you know they have not previously been recorded, please record this. If possible, give the locality (GPS coordinates) and the numbers.

### **2.6.7 Other information**

This category should be used if you want to report some other category of information. For example, you might want to report that the species was recorded as a dead bird on the road, or that it was caught and ringed during a particular ringing outing. Alternatively, you can use this category to provide a detailed description of a species that you suspect may be queried because it is rare or outside of its normal range. Your description may help to confirm your identification.