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BirdLife
SOUTH AFRICA

COORDINATED AVIFAUNAL ROADCOUNTS (CAR)

The Tony and Lisette Lewis
Foundation South Africa

Information Sheet No. 2   June 2000

The design of new routes and the modification of existing routes

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The primary objective of CAR is to monitor the populations of large terrestrial birds in South Africa, especially on farmlands. Thirteen of the 21 species which we monitor appear as either critical, vulnerable or near-threatened in the Red Data Book. Besides increasing the awareness of these birds, the conservation goal is to gain insight into how land-management practices, particularly by farmers, are affecting these birds, and to make scientifically based recommendations which will ensure the long-term viability of the populations.

If you are involved in the design of new routes, or the modification of existing routes, please read this information sheet carefully and follow the guidelines. The planning of the network of CAR routes is vitally important. If this is done correctly from the beginning, many problems are saved later. Please consult with Donella Young at the ADU if you have any difficulties.

A. Procedure for registering a route

Please note that, while the ADU is keen for the CAR project to expand and grow, we do need to take a long view and ensure, as far as possible, that routes and precincts are sustainable. It is very important to carry out a **reconnaissance of each route** to assess its suitability. Use 1:250 000 maps in planning your routes (these can be provided on request). If you are setting up a new precinct, or adding routes to an existing precinct, please follow the following steps:

1) Plan and map the route(s) according to the principles below.
2) Carry out a recce count along the route(s), preferably before a CAR count day. If possible fill in a route description form as well.
3) Submit the count (preferably on a standard CAR roadcount form) and route description form, together with a clear map of the route(s) (preferably on a photocopy of a 1:250 000 map sheet), to the ADU. Remember to mark the start and end of each route clearly, as routes must always be counted in the same direction.
4) Await the Project Coordinator's decision on whether the route(s) is appropriate or not.

B. Principles of route design

Please follow these guidelines rigorously.

1) **Focus on areas where large terrestrial birds occur, especially in agricultural landscapes.** Clearly, there is no point in establishing routes where the relevant birds do not occur. Routes need to cover areas which contain **reasonable numbers** of **at least one of the species of primary interest**, namely cranes (particularly Blue and Crowned), bustards (Stanley's, Ludwig's and Kori), korhaans, storks, Secretarybird and Bald Ibis. Additional species being monitored are listed in Information Sheet No. 4. Other large species which are seen principally on the ground can, and should, be included on a regional basis if they are of particular local interest and if numbers of the principal species are low. Examples of potential additional species are: Helmeted Guineafowl, Cape Francolin, Greywinged Francolin, and Swainson's Francolin. **Species more likely to be seen in the air, or on electricity pylons and telephone poles and wires, should NOT be included** because searching the ground and searching the sky are not compatible activities.

2) *Sample* **such areas, but do NOT try to exhaustively cover every inch of available road.** CAR's approach is to sample an area sufficiently to be able to monitor trends in the populations. This does not require that every bird be seen and therefore does not require that every road be covered. Select only the most suitable routes, according to the full set of criteria. If there is pressure to involve more people than there are routes available, rather encourage doubling up of the number of observers per vehicle than create unsuitable routes.

3) **Routes should be situated in terrain where the observers can see for long distances.** Most farmlands are ideal from this point of view, but forests, plantations and steeply mountainous areas are not. Circumstances will vary seasonally as grass and crops grow tall and are grazed, burnt or harvested, but such variations are unavoidable.

4) **Select roads which are likely to be open to the public for the foreseeable future.** Continuity is vital if CAR is to achieve its basic aim of monitoring of populations. It is highly undesirable that routes be discontinued.

5) **Select roads which do not require 4×4 vehicles, but also avoid excessively busy and dangerous roads.** Most participants do not have 4×4 vehicles, and even if one is available now, those observers and their vehicle will not always be around and will need to be replaced. Busy roads are not the best for birds, but what is even more important is that we do not want to put people at risk when they stop every 2 km to scan and count. A good rule of thumb is not to include any road with a tarred shoulder, because such verges are driven on by vehicles making way for other vehicles to overtake, and it is therefore difficult to pull off safely. Gravel verges/shoulders are usually safe for pulling off to count.

6) **Configure routes so that they do not require backtracks or 'blank' stretches of road.** A route MUST have clear starting and finishing points, and between those two points an UNINTERRUPTED stretch of road must be covered, WITHOUT backtracking or leaving out portions. (If the route can also be roughly circular, it is a useful bonus, but not essential.) Deviation from these basic design principles causes difficul-

ties in the recording of distances and in the subsequent computerization of the data.

7) **Ensure that routes do not cross, or come close to, themselves or other routes.** If routes cross over themselves or other routes, or if they come too close to other stretches of road which are being counted, there will be a real chance of double counting, that is, of counting the same birds twice. This will obviously create inaccuracies in the birds-per-kilometre statistics and thereby undermine the monitoring objective. The rule to follow is this:

> **No part of a route should come closer than 2 km to any part of a different route, or to any other part of the same route.**

This may sometimes be difficult to avoid where the only available roads are very winding, with lots of sharp bends. This is less of a problem if it involves only one route because the observers should be aware of what they have counted before. The problem is much more serious where two routes are involved, or where a route doubles back on itself much further on, so that it is no longer clear what has been counted before.

8) **Keep routes to reasonable lengths (50–80 km) which can be covered in three to four hours.** It is important to create routes which are not excessively onerous to cover, both financially and in terms of effort. If the task is too expensive and too exhausting, it will be difficult to maintain continuity. Bear in mind that observers often need to travel considerable distances just to get to their routes, and to return home.

9) **Routes should not cross major ecological boundaries.** In South Africa there are places where there is a rapid transition from one vegetation zone to another across relatively short distances e.g. fynbos to Karoo, grassland to forest, lowveld to highveld. When designing routes these major transitions should not be crossed by individual routes, in other words try to keep the whole of each route within a particular vegetation zone. In places this may be difficult because of, for example, the patchy distribution of forest. But it is less serious when one vegetation type is irrelevant to the count e.g. forest which does not involve large terrestrial birds. To a lesser extent we would also like to avoid crossing major agricultural boundaries e.g. crop farming versus stock farming, but as most agricultural areas are mixed it is usually unavoidable that there will be a variety of land uses along any given route. The reason for avoiding inclusion of more than one vegetation zone/biome in a route is that the more uniform routes are the easier it is to interpret the results obtained. This objective is more easily achieved if routes are roughly circular than if they are long and straight. Note that this principle of uniformity does not necessarily apply to a whole group of routes within a region because the results from different routes can be analysed separately.

10) **Routes should, as far as is possible, be clustered to form a 'precinct'.** The clustering of routes means that a particular area gets covered thoroughly. The different routes within the area help to prevent unusual or highly localized events from skewing the data excessively. In other words, the different routes provide replicates which allow for more robust statistical analysis and therefore more reliable results. However, for organizational purposes, clusters or 'precincts' should ideally contain 10–15 routes, but not more than 20 routes. These routes should be within a more-or-less uniform area, so that well-supported generalizations can be made about the area as a whole. A 'more-or-less uniform' area is one over which the topography, vegetation, type(s) of farming, and bird community are consistently similar and therefore probably consistently present a particular set of circumstances to the birds found there. Possible variation within the area will be picked up by having several different routes in the precinct.

C. Guidelines for correcting 'mistakes' in existing routes

Unfortunately, the planning and registering of routes in the past has not been sufficiently rigorous, with the result that some very unsuitable routes have been registered. To a degree, and for the sake of continuity, we have to live with the situation as it is, but in the worst cases, corrective action should be taken. The following are 'candidates' for correction, in descending order of priority:

a) Routes which are dangerous.
b) Routes which cross other routes.
c) Routes with extensive backtracks and 'blank' stretches.
d) Routes with unsuitable habitat for the relevant species.
e) Routes which are inaccessible to 2-wheel drive vehicles.
f) Routes which are too long.

The circumstances vary greatly from precinct to precinct, so it is not easy to generalize about what should be changed, or what form the changes should take, but please note the following:

1) Routes which put observers at risk should definitely be discontinued or modified.
2) Routes which cross other routes are not acceptable. The easiest solution to this problem is to discontinue one of the routes, entirely or in part.
3) Where precincts have a dense array of routes (e.g. in the Free State), there will be little loss if some routes are discontinued. (See principle number 2, above.)
4) Existing routes which cross themselves may be retained without change, but the observers should be warned to take care to avoid double counting.
5) If 'blank' stretches of route cover relatively safe roads, they should simply be surveyed as part of the route. Obviously, this will make the route longer, and care should be taken not to make the route too long.
6) If fixing a route involves a change which affects less than about 10% of the original route, the route can retain its original name, and the disruption to the database is minimal.
7) If fixing a route involves more than about 10% of the route, the modified route will be treated as a new route, and the original route will be treated as discontinued.
8) **NB: If you plan to modify a route it is essential to submit a map of the new configuration for approval.** A test count is necessary only when modifying a route extensively. **Please inform us if you are planning to discontinue a route.**

N.B. PLEASE DO NOT CHANGE OR DISCONTINUE ANY ROUTES WITHOUT PRIOR DISCUSSION WITH DONELLA.

We do appreciate your time and effort in designing routes and setting up a precinct. Good luck!

James Harrison and Donella Young
Projects Manager and Project Coordinator