

---

## 1 INTRODUCTION AND ANSWERS TO YOUR QUESTIONS

---

Welcome to the Nest Record Card Scheme, NERCS for short. The project aims to monitor the breeding success of birds and increase our knowledge of their nesting habits. The Avian Demography Unit (ADU), at the University of Cape Town, is responsible for organizing the project on behalf of BirdLife South Africa. The ADU will curate and computerize the data and will provide regular feedback through the ADU's newsletter *Bird Numbers* and circulars to participants.

Note that this new scheme continues where the old scheme of the Southern African Ornithological Society (SAOS) left off, and the new completely replaces the old. The cards from the old scheme are curated within the ADU and will continue to be a valuable source of information. As and when resources permit, subsets of that collection of cards will be computerized to provide a backward perspective to the data from the new scheme.

### ***Why do we need nest records?***

There are three main reasons. The first is our woeful ignorance of the details of the basic breeding biology of even some of our commonest species. A quick review of *Roberts' Birds of Southern Africa* reveals the large number of species for which we have little or no information on breeding season, clutch size, incubation and nestling periods, and especially how these may vary. The second objective is to monitor breeding productivity. Our knowledge of the breeding success of virtually all South African birds is poor. We have even less information on how breeding success varies between different regions and time periods, and the factors responsible for this. Lastly, a project focusing on nests will introduce many people to this intriguing aspect of the natural history of birds. It is hoped that the fascination of examining birds' nests will translate into a strengthened resolve to conserve our rich avian heritage.

### ***Who can take part?***

NERCS is for everyone; the only qualification you need is to have found a bird's nest somewhere in South Africa, Lesotho or Swaziland and to have identified the species with certainty! There is no minimum number of nest records to be submitted and every nest record is a valuable contribution.

### ***Do I have to be a member of BirdLife South Africa?***

No, but membership is recommended. As a member, you receive *Africa – Birds and Birding*, a magazine with high-quality articles on birds and birding areas throughout southern Africa, and further afield. You will be able to attend regular outings, evening talks by distinguished ornithologists, lectures and courses on bird identification and general biology. You will also be able to avail yourself of a wide variety of services that benefit the amateur birder, including discounts on fieldguides, bird tapes, etc. Being a member means that you will be kept informed of birding activities throughout southern Africa and will be part of an organization working to conserve our birds and their habitats. Details of how to join are provided in this book-

let.

### ***What do I have to do to participate?***

Details of nests are recorded on **nest record cards**. One card is completed for each breeding attempt. A revised card that is compatible with computerization has been designed. Blank cards are available free of charge direct from the ADU or from your local bird club. When you have completed a card, check that all the details have been correctly recorded and nothing has been overlooked; then simply post it off direct to the ADU.

It is important that you fill in the card as accurately and completely as possible. Do not make any guesses and record only the details of which you are certain! If there are any queries or problems with a card you have submitted, the NERCS Coordinator at the ADU will contact you for clarification.

### ***Isn't it too complicated for an amateur birdwatcher?***

Not at all! Although the nest record card may seem a bit daunting at first glance, it is really quite simple and you will soon get the hang of it. Included in this booklet is a full explanation of how to fill in each entry on the card. The few professional ornithologists in South Africa could never match the large amounts of data that can be gathered by many enthusiastic volunteers like yourself. So the issue is not that someone more qualified should do it, but that it cannot be done at all without your help!

### ***What books would help?***

Apart from this booklet, *Roberts'* (Maclean 1993) and your favourite fieldguide, Peter Steyn's book, *Nesting Birds*, published by Fernwood Press in 1996, is an excellent introduction to the topic.

### ***Does this project help in the conservation of birds?***

Definitely yes! Knowledge of breeding success is a key element in monitoring the health of bird populations. It is, after all, the only way birds can replace themselves before they die! An example of how nest recorders uncovered a serious threat to the survival of a species is that of the Peregrine Falcon in Britain. Nest recorders noted that many of the eggs were breaking and that this was responsible for widespread breeding failure. This led to the discovery that DDT, an insecticide applied to crops, was causing the thinning of eggshells. The phenomenon was soon found in many other species throughout the world, and, for a while, DDT was one of the foremost threats to the survival of birds on the planet. Happily, the substance is now banned in most countries and the populations of many species, including the Peregrine in Britain, are recovering. This thanks to a few people who took the time to observe nests!

It is not just rare birds that need monitoring. Indeed, common species are often more useful in revealing major threats to the environment. For this reason NERCS has compiled a list of 'priority species' (elsewhere in this booklet) which have good potential to provide sufficient data for monitoring purposes. These birds are good 'indicators' of the health of our environment because they are common, widespread,

and cover a broad range of habitats and food items.

***Won't I endanger a bird's nest by observing it?***

The potential dangers of disturbance include parent birds deserting the nest, prolonged exposure of the eggs or young to cold or heat, and the danger of well-grown young jumping out of the nest. Another potential problem is the increased danger of predation by mammalian or bird predators on nests visited by humans, especially in breeding colonies. Human disturbance in breeding colonies can also result in nests, eggs and chicks being trampled, attacked, or otherwise threatened by other birds.

However, if done carefully, the examination of the nests of most species does not pose a significant threat. Included in this booklet is a **Code of Conduct** that should be read carefully before you search for or visit birds' nests. As long as you adhere strictly to this Code, you will not endanger the nests that you find and monitor. Also NERCS focuses on common birds, not rare and endangered species, so from a conservation viewpoint there is no cause for alarm.

***Do I need any special equipment?***

All you need to record the relevant details of most nests is a nest record card and a pen! The chapter entitled 'Techniques for nest finding and monitoring' in this booklet outlines some useful equipment to help in gathering information on nests.

***During what time of the year should I look for nests?***

Unlike the situation in the northern temperate areas of Europe and North America, breeding birds can be found throughout the year in South Africa, although the spring and summer months are the most productive. This means that participation in the NERCS can be a year-round occupation!

***Are there any clues that I can use to help me find nests?***

Experience is the crucial factor and, once you find your first few nests, it will become easier and easier. The chapter entitled 'Techniques for nest finding and monitoring' later in this booklet provides some tips on nest finding.

***Should I submit records of any nests?***

Just about. Within the constraints of the Code of Conduct, NERCS will accept records of 'active' nests, that is, nests under construction or containing eggs and/or young. However, it is not worth submitting records of old derelict nests that are not being attended by adults. It is also important that you try not to submit records only of nests that are easily accessible, as this may result in biases in the data and subsequent analyses. In other words, the ideal is to have an unbiased sample of all active nests, even if the contents of inaccessible nests are not always visible. When dealing with such inaccessible nests, just provide as much detail as you can.

***Are there species that I should make a special effort to monitor?***

Yes. Records for species included in the list of 'priority' species in this booklet are particularly important, especially if the nests can be visited at least twice in order to

gather information on breeding success.

***Are there species whose nests I should avoid?***

Further on in this booklet is a list of species whose nests should not be approached under any circumstances. Many of these species are extremely rare or are already being monitored by professional ornithologists and therefore do not require additional monitoring. If you come across a nest of one of these, or suspect that there is a nest in the area, do not investigate any further but contact the NERCS Project Coordinator at the ADU as soon as possible with the details.

***Should I submit records of nests if I am not 100% sure of my identification of the species involved?***

No. Unfortunately, it is essential that the species be accurately identified. If you have *any* doubts about the identity of the species, do not submit the card. If possible, confirmation of your identification by another birder is always a good idea.

***Is NERCS interested in nests found in my garden?***

Yes! The scheme is interested in nests found anywhere in South Africa, and especially in those of 'priority' species, many of which frequently nest in gardens. On the other hand, we wouldn't like to get cards from gardens only, but from a range of habitats.

***What about nestboxes?***

Yes, records of breeding attempts in man-made nestboxes should be submitted and the card makes provision for recording that a nestbox was used. Nestbox records are often particularly valuable because inspecting the contents of natural nests of hole-nesting species is very difficult.

***Should I only submit records of nests that are 'successful'?***

No! The scheme needs unbiased records of **all** active nests found, both successes and failures. (A 'successful' nest is one which produces at least one fledgling which leaves the nest.). A major aim of NERCS is to monitor breeding success rates and we cannot calculate this if we do not also know the proportion of nests which failed!

***Is the scheme interested in my old records of nests?***

Yes. Obtain and fill in nest record cards as completely as possible from records you have kept in the past. If you submitted nest record cards under the old SAOS scheme, however, it is not necessary for you to re-submit them on the new cards.

***Should I submit records of flightless chicks seen away from their nest?***

Yes! In many species of birds, especially the larger, ground-living species, the chicks leave the nest soon after hatching and spend the entire fledgling (flightless) period following their parents but feeding themselves. Such chicks are called '**precocial**' or '**nidifugous**'. Chicks that remain in a nest and are fed by their parent(s) until they can fly are called '**altricial**' or '**nidicolous**'. The nest record card makes provision for the recording of precocial chicks and the information is no less valuable than that for altricial chicks. The only difference is that it can sometimes be difficult, and extra care must be taken in counting the total number of young in a brood of precocial

chicks, especially when they are all scurrying for cover! Precocial chicks are common amongst South African species, including the following: the Ostrich, grebes, ducks, geese, francolins, guineafowl, quail, buttonquail, cranes, crakes, rails, flufftails, gallinules, moorhens, coots, finfoots, bustards, korhaans, jacanas, African Black Oystercatchers, plovers, snipe, Avocets, Blackwinged Stilts, dikkops, and coursers.

***Should I submit a nest record card if I visit a nest only once?***

Yes, but if at all possible nests should be revisited at least a day later, because this helps us to calculate nest success, an important component of this new nest record scheme.

***How frequently should I visit a nest?***

Although records of a nest visited just once are useful and should be submitted, those of nests visited more than once are *far* more valuable, especially in the case of the ‘priority’ species, because they provide information that can be used to calculate breeding success. The chapter entitled ‘Techniques for nest finding and monitoring’ in this booklet gives a detailed indication of how to space your visits to nests. It is not necessary – although it is desirable – to monitor every nest until the young fledge (leave the nest) in order to determine the breeding success of a species, as statistical techniques exist that can estimate breeding success based on information from nests visited at least twice, even if the outcome of any particular nest is not determined.

***How do I record information from breeding colonies?***

Many species, especially waterbirds, breed in dense colonies, and often several different species congregate together to breed in this way. This habit is especially common in members of the following groups of South African birds: cormorants, herons, egrets, storks, ibises, spoonbills, vultures, gulls, terns, swifts, bee-eaters, swallows, martins, starlings, weavers, bishops, and queleas.

The first priority is to fill in a Colony/heronry Record Card for the colony as a whole. Detailed instructions on how to complete colony record sheets can be found on page 27. Remember that special care must be taken at colonies to avoid excessive disturbance (see Code of Conduct).

***What will happen to the information I submit and who will it belong to?***

Your nest record cards will be curated and computerized by the ADU on behalf of BirdLife South Africa. The ADU will also provide regular feedback to contributors on the amount of information received and, most important, the current breeding success of the priority species being monitored. ADU staff will use the information for scientific and popular publications that will expand our knowledge and conservation awareness of the breeding habits of our birds. In addition, other researchers, from South Africa and other countries, will be able to access the information for their own research and publications. Authors of scientific papers, popular articles, bird books and fieldguides will all benefit from the information made available by

NERCS.

**Data submitted to NERCS are ceded to the ADU/BirdLife South Africa.** This means that particular data belong both to the ADU/BirdLife South Africa and to the relevant contributor. This does not prevent the contributor from also using his/her own data for publications or any other purpose, but it does prevent a contributor from imposing restrictions on the ADU/BirdLife South Africa's use of the data.

The ADU levies charges for extraction of data from its databank; this fee covers the real costs of providing data to researchers, including staff time taken to perform the data extraction, and the costs of developing the necessary computer software. The ADU is not in a position to pass on any such proceeds to contributors.

---

## 2 THE CODE OF CONDUCT

---

The paramount principle is that the welfare of the birds comes first. Observers must act responsibly when searching for or observing a nest. This is especially important for shy or rare species, and for colonies of breeding birds. Special care should also be taken during the particularly sensitive periods in the nesting cycle.

### ***The danger of nest desertion***

It is a widely believed fallacy that touching a bird's eggs or young leaves a scent, causing parents to desert them. In fact, birds have very little sense of smell. However, birds are more likely to desert a nest that is disturbed during the early stages, namely nest building, egg-laying, and early incubation stages, and disturbance should be kept to a minimum during these sensitive periods. Ground-nesting species seem more likely to desert in the face of disturbance than are species that nest in elevated positions.

### ***The danger from predators***

Another common fallacy is that mammalian predators follow the smell of humans to nests and then raid them. Scientific research shows that this rarely happens and that, in fact, mammalian predators possibly avoid areas where they pick up human scent. A real threat, however, is posed by avian predators, in particular gulls, crows and ravens, which will raid nests from which the adult birds have temporarily departed because of disturbance by humans. This is a major problem in colonies of breeding birds, especially seabirds.

### ***Examining breeding colonies***

Another, and possibly more serious problem when disturbing breeding colonies comes from the threat posed by competitors of the same species, rather than from predators of another species. Breeding colonies may appear to be harmonious gatherings of birds of the same species; in fact, there is usually intense competition for nest sites within the colony and extreme aggression between breeding pairs. Colo-

nially breeding birds are often very hostile to chicks that are not their own and will fiercely attack them. During disturbance, some birds may attempt to usurp the unguarded nests of their neighbours, steal the nest material, trample the eggs and chicks, and drive the chicks away from their nests. Chicks displaced from their nests may be attacked by neighbouring adults and may become lost and unable to return to their nests.

For these reasons, extreme care must be taken when examining breeding colonies. You should never approach the colony so closely that adults and chicks leave their nests; certainly you should never intrude within the outer perimeter of the colony. Rather count or estimate the number of birds and active nests of each species present in the colony from a safe distance, using binoculars or a telescope. If you can visit a colony more than once in the same season, sketches, photographs, or even detailed descriptions of nest locations within the colony, taken from observation points on your first visit, may be useful in pinpointing the same nests on subsequent visits. This will help you in monitoring the breeding success of individual nests within the colony.

#### ***Tips on how to examine nests without posing a threat***

Searching for and visiting nests should not be done in large groups. Ideally you should work alone, or with one or two companions. Do not sneak up on a nest quickly, silently and directly, but rather approach slowly and casually by a circuitous route, and gently rustle the vegetation or make other soft noises; this will allow the parent bird to steal away safely. Startling the adult at the nest increases the chances of desertion and the adult may displace or damage the eggs or chicks as it flushes in panic. Do not flush adults from nests at dusk, as they may not have time to return before night-fall. The nests of nocturnal species such as owls and nightjars, however, are best examined in the very late afternoon or in the evening.

It is irresponsible to let everyone present examine the nest contents; one person is sufficient for this. You should not dawdle at nests or in the immediate vicinity of nests. A companion can assist in keeping the visit short by writing down the details that you dictate while examining the nest. Remain only as long as is necessary to gather the requisite information and then vacate the area entirely. Do not let other people (or domestic cats and dogs) see you visiting nests and, if these are present, postpone your visit.

When searching for nests, keep the trampling of vegetation to a minimum. If you have had to part the vegetation to examine a nest, be sure to cover the nest again before leaving. Overhanging vegetation is a useful protection against the elements and conceals the nest from predators, which is why such sites are chosen in the first place! Also try to straighten any surrounding vegetation that you may have trampled when approaching the nest. Take care not to stand on the eggs or young of ground-nesting species. Take note of some prominent natural feature near the nest, or use some inconspicuous object to mark the position of the nest, if you intend to make repeat visits. This will enable you to re-locate the nest quickly and without further trampling of vegetation. Take care not to weaken the nest structure or its support when examining the nest and do not jar the branch on which a nest is situated, as the contents may

be catapulted out.

It is not necessary or desirable to visit a nest more than once a day. Do not search for or visit nests during very cold, very hot or very windy weather, as this exposes eggs, chicks and parent birds to undue stress and danger during extreme weather conditions. Try to avoid exposing eggs or chicks to direct sunlight, and keep them covered by a cloth or in your shadow while you examine them. In our warm country, the danger to eggs and chicks from overheating is far more serious than from chilling.

Care must be taken when examining a nest with well-grown young so that they do not jump ('explode') out of the nest. Nests with large young should be observed from a distance and the number of young counted without actually touching the nest if this can be avoided. All measures must be taken to return any young that jump out of the nest to the safety of the nest structure. Placing a cloth over the chicks as you replace them, and at other times, is useful to quieten them. Grebes, ducks and some plovers cover their eggs with nesting material when they leave; make sure you do likewise.

Keep all the items you will need, for example your notebook (with your nest record card firmly tucked inside!) and pen, readily available when you visit a nest so that you do not waste time 'organizing yourself' at the nest site. A stout stick is useful to part vegetation at the nest. Sometimes it will be necessary to handle the eggs or chicks and this should be done with circumspection. After being handled, they should be carefully replaced in the nest cup, taking care that the smallest chicks are not smothered or in danger of being trampled or ejected from the nest by their bigger siblings. Refrain from handling eggs or chicks in cold or windy weather, or when you are fatigued, as you may drop or damage them.

#### ***Nests on overhead electricity transmission structures***

Several species, such as crows and birds of prey, have adapted to nesting on electricity poles and pylons. **Do not attempt to climb such structures under any circumstances, as there is a high risk of electrocution.**

#### ***Species which should never be disturbed***

Further on in this booklet is a list of species whose nests should not be approached under any circumstances. Many of these species are extremely rare or are already being monitored by professional ornithologists and therefore do not require any further monitoring. If you come across a nest of one of these, or suspect that there is a nest in the area, do not investigate any further but contact the Project Coordinator at the ADU as soon as possible with the details.

#### ***Egg collecting and removal of chicks***

Egg collecting without a permit is illegal. The ADU and BirdLife South Africa are strongly opposed to egg collecting for non-scientific purposes and will not condone such activity under any circumstances. Similarly, the removal of chicks for raising as pets is completely unacceptable.

If, in addition to observing all the guidelines above, you exercise common sense and

a caring attitude, you are unlikely to do any harm.

---

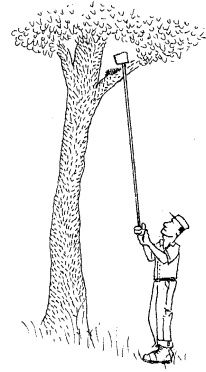
### 3 TECHNIQUES FOR NEST FINDING AND MONITORING

---

#### **Equipment**

Some useful equipment for examining nests is described below. Do not be put off by these relatively sophisticated techniques; all you need to record the relevant details of most nests is a nest record card and a pen! Binoculars and telescopes, to see adult birds clearly and to look into distant nests, and fieldguides to identify birds properly, are useful, as in all aspects of birding. A hard-covered notebook, nest record cards, and a pen or pencil are indispensable.

A long pole onto which a mirror is attached is useful for looking into elevated nests. Some birders have a series of wooden, plastic, or aluminium poles ('mirror sticks') that can be slotted into one another, with a mirror attached to the end of the top-most pole, allowing them to see into nests high up in trees or on cliffs, using binoculars to examine the mirror from the ground below. Nests as high up as 20 m can be examined in this way, using aluminium poles. Mirror sticks are recommended because nest contents can be checked more quickly in this way, and the parent birds and nestlings are less disturbed by seeing a mirror stick at the nest than they are by climbing humans. It is also safer for the humans involved!

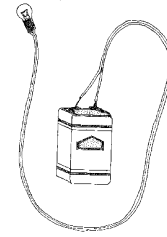


Ladders, rope ladders, and rock-climbing paraphernalia can be used to climb up, or down, to some nests. But take care! No nest is worth endangering your life, or even your health, to examine. Small boats (or at least a set of rubber waders!) may be necessary to approach nests of waterbirds on islands or in reedbeds. Be aware of the danger of bilharzia.

A camera is also useful for taking photographs of the nest and nest area. These photographs may be handy in re-locating nests (especially in colonies) and describing nest sites and their surrounding habitats at a later stage. You can also use them to minutely study details of nest structure, colours and markings of eggs, and details of chicks, at your leisure. Photographs can be particularly useful when faced with massed colonies of breeding birds, as the number of birds present and the number of active nests can sometimes best be counted from an enlarged photograph or projected slide.

If you plan to measure the dimensions of the nest, or weigh and measure the eggs or

young, some combination of a ruler, tape measure, set of calipers, spring scale, balance, and weighing bag will be necessary. A loose piece of cloth can also be useful to place over the heads of restive chicks, which might otherwise jump out of the nest; chicks are immediately quietened when their surroundings are darkened. You can also use the cloth to protect the nest contents from direct sunlight (your own shadow is also useful for this) and rain. A stout stick is useful to part vegetation at the nest. Gloves are useful when handling the young of some species, such as some birds of prey, which peck intruders with their beaks, or, more usually, grasp at them with their needle-sharp talons. (This sort of activity is in no way required of participants in NERCS.)



The nests of hole-nesters, such as woodpeckers and barbets, are notoriously difficult, indeed usually impossible, to see into. An ingenious combination of a modified penlight torch and a separate tiny mirror on a piece of flexible wire, similar to a dentist's mirror, however, can solve even this problem. The bulb of the torch is soldered onto a length of flex and can then be lowered into the bottom of the nest cavity. The mirror is inserted into the entrance hole and positioned such that it reflects the image of the illuminated nest contents back out of the hole to the observer. Try it, it's easy and it works; you will see the eggs or nestlings down at the bottom of the hole! A torch can also be useful in illuminating nests situated in gloomy positions, such as owls' nests in caves, mine shafts, and lofts.

All new ADU projects make provision for coordinates to be coded as degrees, minutes and hundredths of a minute. Such accuracy is possible when using a global positioning system or GPS. Although we appreciate that, at this stage, few birders own GPSs, it is likely that they will become as commonplace as VCRs in the range of personal gadgets. These days they are about the size of cell phone and cost less than R1000, so we are making provision for the levels of accuracy that will become the norm in the not-too-distant future.

### ***The best times of year to search for nests***

Breeding birds can be found throughout the year in South Africa. Breeding seasons differ from species to species and from region to region, and can even vary between years. Most species, especially smaller birds, tend to breed in the spring and early summer (September–December), but many small birds extend their breeding seasons through until autumn (March–April). In the southwestern Cape Province winter-rain-fall region, the breeding season starts earlier, in about August, and is more concentrated, winding up by the end of November. In arid areas, such as the Karoo, many small birds breed erratically at any time of the year, depending on unpredictable rain-fall, which in many arid areas is more likely in late summer (February–April). Many large birds, such as the larger birds of prey, breed during the cold winter months (May–August). Therefore, unlike the situation in Europe and North America, nest finding can be done throughout the year, although the spring period is still the most productive. It is important to try to spread your nest-finding efforts throughout the **entire** breeding season and so avoid a bias towards any particular part of the season.

**Hints for finding nests**

The key to success in nest finding is experience; the more you work at it, the more proficient you will become. If you think that a species may be breeding in your area, first check in a fieldguide that it is indeed a species that breeds in South Africa and check that its breeding distribution overlaps with your area. Then check the breeding season and the typical habitat and nest site of the species; *The Atlas of Southern African Birds* is a good reference for this. This will help you pinpoint the best time to search for nests, and the appropriate places in which to look. However, do not be too surprised if you still find a nest in an unusual locality or habitat, or at the 'wrong' time of year; not all the birds have read the books! If everything was already known, we would not need a Nest Record Scheme.

Useful indications of breeding are courtship behaviour, or males singing and displaying. Even the presence of a species during the breeding season, or the adoption of breeding plumage, may be indicative of breeding in the area. The most useful indications, however, are observations of birds carrying nest material or food in their beaks or feet. Small birds also carry distinctive white faecal sacks away from their nests when they have nestlings. Breeding adults tend to become highly agitated when you are close to their nests, and may perform characteristic 'distraction displays', whereby they pretend to be injured in order to lure predators away from their nests or young. If you observe such behaviour, move away from the area and watch the adults from a distance; frequently you will soon see them return to the nest. The sounds of begging chicks can also give a nest site away.

Bear in mind that many species will attempt to breed again soon after a brood failure, and may also breed again after succeeding. Many use the same nest or another nest in the immediate area. Therefore it is worth checking a nest site again some time after the termination of a breeding attempt, to see if another has been initiated. These subsequent breeding attempts may be initiated several days to several weeks after the previous attempt, so more than one visit may be necessary to reveal them. Many species also breed in the same nest, or in the same general area, the following season.

Having found a nest you also want to be able to re-find it on subsequent visits. This can be remarkably difficult unless you take certain precautions. Make careful notes on the location of the nest, with reference to landmarks, to guide you back. If obvious landmarks are lacking, create some of your own with scraps of cloth tied to twigs, small piles of stones, etc. Note that these should not be close to the nest itself or the parents may be distressed by them; rather measure a certain number of paces (10–15 paces is suggested) from the nest to your artificial landmark. This will help to prevent predators and mischief-makers exploiting your markers.

**Nests above ground in trees or on cliffs**

Fresh white droppings or discarded food items below or around a nest high up in a tree or on a cliff, especially of some of the larger species of birds, are sound indications that the nest is active. Many large birds use the same nest in a tree, or at least the same tree or a nearby tree in the same area, year after year. Finding these nest

sites is often most easily achieved during the winter, when the trees have lost their leaves. So, for example, it is a paradox that the nests of Wahlberg's Eagle are most easily found in midwinter, when the birds are not even in South Africa! Cliff faces should be scanned with binoculars or telescopes to search for nests and the tell-tale white droppings of the species breeding on them.

### ***Nests on or close to the ground***

Species that nest on, or close to the ground, frequently only flush from the nest when you are very close, and may do so silently and furtively. At the right time of year, a search of the area from which the bird flew up will often reveal an active nest. If you cannot find the nest in this way, move away and watch from a distance to see if the bird returns to the site; you may need to move back a few hundred metres, even for a small bird. Birds carrying nest material or food often do not fly directly to their nests. Typically, they fly from perch to perch first, even spending several minutes at one spot, before eventually deciding that it is safe to go to their nest. Even when they make their final flight to the nest, they usually land a little distance away and then walk or scramble to the nest itself. When they leave the nest again, however, they usually fly off directly from the nest; therefore the spot that they fly up from is the best guide to the nest's location. Walk up to this spot and put down a marker (for example, a hat or stick) and search in concentric circles around it. Remember when searching for nests on the ground to watch where you put your feet! It would be a horrible experience to find a nest by crunching the eggs or squashing the chicks.

If you watch a bird carrying food or nesting material to a site and you then approach but are unable to find the nest, because you have either 'overshot' or stopped short of it, note the line of your first approach and move away again in a different direction (at right angles if possible) and wait for the bird to return again. Your next search should be at the intersection of your two approach lines. If you do not find the nest on the second attempt, or if the adults are reluctant to return to the nest while you are around, give up before you endanger the eggs or chicks, and try again the next day.

Many ground-nesting birds typically live in pairs, for example plovers and cranes. The sight of a solitary bird of these species standing on 'guard duty' during the breeding season often is a clue that its mate is sitting on eggs nearby. Scan around carefully with your binoculars and you will frequently spot its mate sitting on a nest somewhere in the area. If this fails to reveal the other bird, walk up to the bird on 'guard duty', and keep your eyes out for its mate, which will then often appear as it stands up and moves away from the nest. If you only spot the other bird when it has already moved well away from the nest, it is usually best for you to retire to a safe distance and wait for the incubating bird to return to the nest, rather than trying to find the nest when you are unsure of its location. It is particularly in sunny, hot weather that birds which nest in exposed positions on the ground will quickly return to the nest to shade their eggs.

A useful technique for finding the nests of species that breed in concealed nests in tall grassland is for two people to drag a rope between them over the grass. As the

rope passes over a nest, the incubating bird will flush, allowing you to pinpoint the nest. To increase the chances of flushing birds, several plastic bottles can be tied to the rope at intervals. The appropriate length and thickness of rope for a particular species or area can only be determined by trial and error, and experience.

Many ducks breed in tall, dense grassland around wetlands and the use of a dragged rope can help in locating their nests. Remember that any duck flushed in thick grass next to a wetland is likely to have come off a nest, and it is worth searching the area it flew up from.

A telescope can be an aid in pinpointing the exact location of a ground nest in cases where the bird has flushed, or is seen incubating, some distance in front of you. Focus the telescope, mounted on a tripod, on the spot where the bird flushed or is sitting, and then walk forward to the general area of the nest. Looking back, you can find the line between the nest and the telescope when you move to a position from where you can see a light spot in the front lens of the telescope; otherwise the front lens appears all-black.

#### ***Frequency of nest visits***

It is not necessary, nor desirable, to visit a nest every day during the nesting cycle, and certainly not more than once a day. A few well-planned visits will provide the necessary information on key periods in the breeding cycle. Species with a long breeding cycle can be monitored with visits that are widely spaced, while those with short breeding cycles need to be visited at shorter time intervals. For example, an eagle's nest can be visited at intervals a week apart, bearing in mind that an eagle can have an incubation period of 50 days and a nestling period of 100 days. A small passerine's nest, on the other hand, could be visited on alternate days, bearing in mind that a small passerine can have an incubation period of 12 days and a nestling period of 15 days. As a rough guide, the frequency of visits should not exceed the incubation period divided by six. Incubation periods are given in *Roberts' Birds of Southern Africa* (Maclean 1993) and *Nesting Birds* (Steyn 1996); if the incubation period is not known, use that of other members of the family as a guide.

In practice, it will rarely be possible to stick to an ideal schedule. For example, many nests will be found after the eggs are laid or the young have hatched. Remember that the scheme needs records of nests visited even just once, but that two or more visits make the data vastly more useful, and that the closer you can adhere to a schedule, such as the one outlined below, the better.

Ideally, visits to a nest should be timed to cover the periods listed below:

- 1) the egg-laying period, to determine the date when the first egg is laid,
- 2) the incubation period, to determine the complete clutch size (number of eggs), (When examining eggs, look for the characteristic 'starring', a small, raised bump on the surface of the shell, usually near the end, with small cracks radiating outwards from it, that reveals that the hatching process is beginning.)



---

## 4 COMPLETING A NEST RECORD CARD

---

- 3) just after hatching, to determine the number of young hatched,
- 4) just before fledging, to determine the number of young reared to full size, and
- 5) at or just after fledging, to determine how many young successfully fledged. If the nest site is visited soon after the young have fledged, it may be possible to search the immediate area for the chicks and their parents.

**NB There is a quick reference for codes at the end of this booklet.**

### **General**

In the field you should make notes in a notebook; fill in the NERC later when it can be done neatly. For each nest that you find, fill in a new NERC (hereafter referred to as a 'card'). Repeat visits to the same nest get noted on the same card. Do not write anything in the shaded boxes, as these are for office use only. An example of a completed nest record card is found on pages 25–26. Take care to write legibly and use a pencil; pencil is easier to correct and does not fade.

If you visit a nest so frequently that you cannot fit the details of all the visits onto a single card, simply continue on a second card, but clearly indicate on both cards that they relate to one another (with a remark written in the comments column), and pin the cards together before submitting them.

Basic information to be given on each card includes the following:

**Species:** the common name of the relevant species, as given in the species list in this booklet.

**Roberts' Number:** as per Maclean (1985 or 1993).

**Observer:** the observer's name, including initials and surname. Note that the observer may not have been you, the person filling in the card, in which case give your name as well.

**ADU Number:** your ADU number if you have already been allocated one. (One will be allocated to you after you submit your first data.)

**Year:** the year of the *first* observation on the card.

**Address:** your current postal address; mention if this has changed.

**Nearest town:** the name of the town nearest to the nest site. If in a suburb of a city, give the names of both the city and the suburb.

**Locality:** if the locality in which the nest was found has a name, give that name, e.g. the name of a farm, park, domestic address, etc.

**Protected area:** If the locality is a protected area, e.g. a national park or provincial nature reserve, give the official name of the area.

**QDGC:** the code of the relevant quarter-degree grid cell, if known. This information is optional but highly desirable; if not supplied, it will have to be worked out by the ADU prior to computerization.

**Coordinates:** the coordinates of the nest site, to the nearest minutes south and east, or hundredths of a minute if using a global positioning system (GPS). (Use of a GPS is recommended.) This is optional but the information is very useful if the nest needs to be found again.

## **Habitat**

### *General*

An important aspect of the analysis of NERCS information is finding out how breeding varies between habitat types. It is therefore essential that you fill in the habitat section of the card; this involves allocating four codes (habitat levels 1 and 2, human-impact, and nest-position codes) and writing some notes.

When allocating codes, it is important to operate at an appropriate scale. The appropriate scale is determined not only by the immediate surroundings of the nest itself, but by the area in which the parent birds move and forage while breeding; i.e. we want to know something about the 'landscape ecology' which forms the context of the nest. You do not need to determine the size of this area accurately, but be guided by the fact that, generally speaking, the bigger the bird the larger the area it needs to use to obtain food. Therefore, for example, in the case of a Cape White-eye, the hectare surrounding the nest would be appropriate, while in the case of a Pied Crow, a square kilometre would be more appropriate. (Do not agonize over this choice of scale; if you cannot decide, write notes which will then be translated into codes at the ADU.) The habitat codes which you allocate should refer to this landscape context. Only the nest position codes refer to the actual position of the nest.

### *Habitat codes, Levels 1 and 2*

The habitat should be described both at a crude and at a more detailed level, viz. Levels 1 and 2. Choose only one code at Level 1. At Level 2 you may need to choose two or three codes to properly describe the habitat. Write the codes into the relevant boxes on the card. The letter in **bold** is the code. (Hint: Your choice may sometimes be easier at Level 2 than Level 1, so do not be scared to work 'backwards' if necessary.)

*'It's very nice but I miss  
the sense of personal  
achievement.'*

## LEVEL 1

## LEVEL 2

**COASTAL MARINE**

upper **b**each, sandy **d**une, stable **v**egetated dune, **r**ocky shore, **c**liff, **i**sland, **l**agoon shore, **o**ther (specify)

**FOREST**

(indigenous, evergreen, including coastal, montane, Knysna and mistbelt forests, with characteristic forest understorey)

forest **i**nterior, forest **e**dge, **b**racken/briar, canopy height <5 m (**x**), 5–10 m (**y**), >10 m (**z**), **o**ther (specify)

**RIVERINE FOREST\***

(tall trees in a dense, narrow strip along the banks of a river, including 'gallery forest')

forest **i**nterior, forest **e**dge, canopy height <5 m (**x**), 5–10 m (**y**), >10 m (**z**), largely **a**lien trees, **o**ther (specify)

**DENSE WOODLAND\***

(trees, relatively dense with a more-or-less continuous canopy, often with thickets)

**A**cacia-dominated, **M**opane-dominated, other **b**roadleaved, largely **a**lien trees, **i**nterior, **e**dge, **t**hicket, **r**ocky, **s**andy, **g**rassy, **o**ther (specify)

**OPEN WOODLAND\***

(trees, far apart with no continuous canopy and stretches of open ground between trees)

**A**cacia-dominated, **M**opane-dominated, other **b**roadleaved, largely **a**lien trees, **r**ocky, **s**andy, **g**rassy, **o**ther (specify)

**GRASSLAND**

(natural grasses over large, treeless areas)

grass height <5 cm (**v**), 5–10 cm (**w**), 10–30 cm (**x**), 30–100 cm (**y**), >100 cm (**z**), **b**urnt, **m**arshy, **o**ther (specify)

**SCRUBLAND\***

(dominant woody vegetation less than 2 m high, including much of the fynbos, Karoo and Kalahari biomes)

**f**ynbos, **K**aroo, **K**alahari, **r**iparian, largely **a**lien trees, **o**ther (specify)

**DESERT**

(natural plant growth very sparse, i.e. plants separated by several metres of bare ground)

**g**raVel, **s**and, **r**ock, **g**rass, **s**Crub, **o**ther (specify)

**MONTANE**

(including koppies, hills, mountains and escarpments)

**h**ill, **k**oppie, **m**ountain, **l**ow cliff (<10 m), **h**igh cliff (>10 m), **p**lateau, **s**teep slope, **g**entle slope, **n**orth-facing, **s**outh-facing, **e**ast-facing, **w**est-facing, **r**ocky, **e**ven, **w**ooded ravine, **m**arshy ground, **o**ther (specify)

**LEVEL 1 cont.****WETLAND**

(must have a definable boundary, i.e. not a seep or temporarily wet area without recognizable wetland habitat)

**PASTURES**

(i.e. planted/sown grass, or secondary growth after bush clearance, NOT natural grassland)

**PLANTATIONS AND ORCHARDS**

(i.e. planted trees)

**PLOUGHED FIELDS**

(ground has been ploughed, but not necessarily recently)

**PARKS AND GARDENS**

(artificially planted areas usually associated with human habitation)

**MISCELLANEOUS****LEVEL 2 cont.**

small **dam** (<1 ha) (**a**), **big dam** (<1 km<sup>2</sup>) (**b**), **very large dam** (>1 km<sup>2</sup>) (**c**), **estuary**, **lake**, **vlei**, **marsh**, **river**, **Stream**, **sewage works**, **natural saltpan**, **salt Works**, **other** (specify)

**cultivated grass**, **wild grass**, grass <5 cm (**v**), grass 5–10 cm (**w**), grass 10–30 cm (**x**), grass 30–100 cm (**y**), grass >100 cm (**z**), **burnt**, **marshy**, **Cattle**, **Sheep**, **goats**, **Other** (specify)

**pine**, **eucalypt**, **wattle**, **vineyard**, **fruit trees**, **interior**, **edge**, **Saplings**, **tall trees**, **Other** (specify)

**interior**, **edge**, **bare ground**, **freshly tilled**, **leafy crops**, **short grain**, **tall grain**, **grain stubble**, **fallow less than 2 years**, **fallow more than 2 years**, **Other** (specify)

**industrial**, **urban**, **Suburban**, **rural**, **Other** (specify)

give a description of the habitat

\* Note that these categories can consist largely or entirely of invasive alien trees or bushes, in which case this should be specified at Level 2.

\* **Human impact codes**

We want to know how sensitive or adaptable species are to human impacts on the environment. Given your choice of habitat codes from the list above, you now need to assess the degree of modification by humans. As for the habitat codes, focus on the general area (50 m<sup>2</sup>–1 km<sup>2</sup>) which forms the context of the nest and includes the territory of the breeding pair. Choose a two-letter code.

**LITTLE**: natural vegetation which is in relatively undisturbed condition.

**LP** pristine wilderness area, negligible human presence

**LR** natural and unspoiled but with regular human presence, e.g. along a hiking trail

**LT** natural but plenty of human activity, **tourism**, recreation, e.g. a lake with fishing, boating, etc.

**LC** natural but at times crowded with visitors, i.e. intensely utilized, e.g. a popular beach

**MODERATE:** mainly natural vegetation but degraded or partially destroyed.

- MG** degraded by **g**razing  
**MA** invaded by **a**lien plants  
**MR** indigenous vegetation **r**emoved/cut but regenerating  
**MB** **b**urnt but regenerating  
**MH** human **h**abitation (i.e. houses or huts or shacks) with moderate impact

**HEAVY:** natural vegetation present but it constitutes a minor proportion of the area and the impact of humans is high.

- HG** natural vegetation heavily over**g**razed  
**HA** heavy **a**lien-plant infestation  
**HH** human **h**abitation (i.e. houses or huts or shacks) with heavy impact  
**HF** **f**arming activity with heavy impact  
**HM** **m**ixed residential and agricultural impact

**TOTAL:** natural vegetation totally removed and replaced by

- TP** **p**lant crops, tree plantations, orchards, etc.  
**TB** **b**uildings, roads, etc., i.e. 'concrete jungle'  
**TS** dense informal **s**ettlements  
**TG** parks, **g**ardens, typical middle- to upper-class suburbia  
**TW** dams, reservoirs, sewage works, **w**ater purification plants, salt works

\*

### *Nest site and position*

Details of the nest site and position have relevance to analyses of breeding success and are also an interesting aspect of a species' breeding behaviour. A great deal of detail is possible in this regard and not all the details can be conveniently coded; therefore you should supply information on the nest site and position in the form of one of the following codes, PLUS additional details on the back of the card.

Choose one of the codes below to describe where the nest is positioned. Give a full description of other nest details in the space provided on the back of the card.

- N** natural site, specify
- A** alien/exotic tree or bush, specify if possible
- M** man-made building or structure, specify
- Q** man-made quarry or cutting or earthworks, specify
- B** nestbox, specify type
- O** other, specify

Your notes should include details to clarify your choice of code (above), and to provide additional information. For example, notes expanding on code M might read: 'Nest in a hole under the eaves of a barn, 4 m above the ground. Enclosed on the inside by bricks and wooden rafters. Entrance hole 6 cm in diameter, facing south.'

Or, for code N: 'Nest in the centre of a tussock of grass, approx. 4 cm above the ground. The nest partially hidden from above by overhanging grass. The tussock approx. 30 cm in diameter and 1 m high, surrounded by similar tussocks, 5 m from a dirt road.'

**Nest description**

A description of the nest itself is not essential but would be an interesting and potentially valuable addition to the card. Such information may be put in the space provided on the back of the card. Include such information as the outer and inner dimensions of the nest and the kind of materials used in construction and for lining.

**Nest contents**

**General**

The following instructions are vitally important; please read them carefully and refer to the example card on pages 25–26. Note the following:

- The manner in which the nest contents are recorded is different to the system used on old SAOS nest record cards, and different to any other system of which we are aware.
  - The nest contents are described on the lower half of the card. This portion of the card is divided into lines and columns; observations made on a visit to the nest are summarized on one **or more** lines. A separate line is used to record each type of thing observed in the nest. More than one line may, and often will, be necessary to describe the nest and its contents for any particular visit.
  - Only the first line for any particular visit should bear the time and date, and the first line for each visit **must** be dated; otherwise the information will be virtually useless. The first line begins with the time of day, according to the 24-hour clock system, followed by the day and the month (the year of the first observation is given at the top of the card). Round the time off to hours only by leaving off the minutes, e.g. 08h00 to 08h59 is recorded as 08.
  - The next column contains a 'count' (i.e. a number) followed by a 'status code' which describes what that counted item is. Only one counted item and its code should appear on a given line.
- If eggs have not yet been laid, enter a 'count' of zero and use one of the nest-building status codes.

The number given in the 'count' column refers to a number of EITHER eggs OR chicks (never both), which can be described with the same status code. (Note that it is the code itself which identifies the item as an egg or a chick.) If some require a different code, they must be entered on a separate line. In other words, the status code given in the 'code' column, on a particular line, refers only to the counted item given on that same line.

In the 'comments' column, provide any additional comments which may be necessary to clarify the choice of code, or to provide additional information; use more than one line if necessary.

For example, if on your first visit you find three apparently similar eggs in the nest, you record this on one line with the appropriate code. On the next visit you find two eggs and one chick in the nest. The eggs are recorded on one line with an appropriate code, and the chick is recorded on the next line, with an appropriate code. Only the first of the two lines for the second visit has the time and date filled in; these columns are left blank on line 3. On the third visit, a new time and date are entered on line 4. On this visit you find two chicks and one egg, but the chicks are at clearly different stages of development with one still naked and the other with primary feathers in pin. Thus three lines are required: one for the egg, one for the younger chick and one for the older chick.

This method of recording the nest contents allows status codes to be clearly linked to a particular number of eggs or chicks; it also avoids the need to cram a complex string of information onto one line. The only drawback is that you may quickly run out of space on one card if you make several visits to the nest. In such circumstances, simply pin another card to the first and continue, but be sure to mention the existence of other card(s) in the comments column.

Two terms, 'incubation period' and 'fledging period', require clarification here. The **incubation period** covers the period from the date of *laying of the last egg* in the clutch to the date of *hatching of the last-laid egg*. (The implication is that the eggs really need to be marked if one is trying to determine the incubation period.) The **fledging period** covers the period from the date of *hatching of the last egg* to the date of *fledging* (being able to fly) *of the last young* in the brood. It is very valuable if your observations allow you to calculate these periods accurately.

### **STATUS CODES**

The following codes are used to describe the condition and contents of the nest and the stage of development of the eggs and chicks. Use as many lines as are necessary to describe a particular set of circumstances. Enter one status code on each line, in the 'codes' column.

#### ***Nest-building codes***

The following codes describe the condition of the nest itself and do not imply anything about its contents. If there are eggs and/or chicks in the nest, these codes are

redundant, EXCEPT if the nest is incomplete. In such cases, have a line for the nest in addition to lines for eggs and/or chicks.

<b>NU</b>	nest under construction, stage unknown
<b>N0</b>	nest not yet built
<b>N1</b>	nest 1/4 built
<b>N2</b>	nest 1/2 built
<b>N3</b>	nest 3/4 built
<b>NC</b>	nest complete, unlined
<b>NL</b>	nest complete, lined

Please note: if a nest is built or partially built, but is never used for a breeding attempt, i.e. eggs are never laid in it, the nest record is of little value and should not be submitted.

◇ ◇

#### *Egg laying and incubation codes*

These codes apply to the period when there are eggs in the nest. More than one line may be necessary to describe the clutch if it can be seen that the eggs are at different stages of incubation. Note that newly laid white eggs often have a pinkish hue which lasts for approximately one day.

<b>EU</b>	stage unknown
<b>E0</b>	clutch incomplete
<b>E1</b>	eggs fresh or clean and in first 1/3 of incubation
<b>E2</b>	eggs in middle 1/3 of incubation
<b>E3</b>	eggs in last 1/3 of incubation
<b>E4</b>	eggs pipped/hatching
<b>EA</b>	eggs addled

#### *Chick codes*

Note that chicks may be in a nest or outside of a nest. The following codes are designed to meet the needs of both situations. More than one line may be necessary to describe the brood. If eggs are also present, use separate lines to describe them as well.

**Precocial chicks** leave the nest soon after hatching and spend the flightless, pre-fledging period following adults. They usually have cryptic down. They are mostly able to feed themselves and can usually be seen away from the nest where they hatched, e.g. gamebirds, ducks. The best-known examples of precocial chicks are those of domestic chickens, turkeys, ducks and geese. The following are codes for precocial chicks:

<b>PU</b>	stage unknown
<b>P0</b>	just hatched
<b>P1</b>	1/4 adult height/length
<b>P2</b>	1/2 adult height/length
<b>P3</b>	3/4 adult height/length

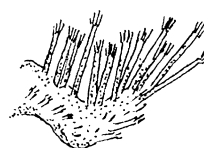
**P4** >3/4 adult height/length  
**PD** chick dead in or near nest

**Altricial chicks** remain in the nest until ready to fly. They are naked and helpless and are fed by adults. They develop down and feathers before leaving the nest. Probably the best-known examples of altricial chicks are those of doves and pigeons. The following are codes for altricial chicks:

**AU** chicks in nest, age unknown  
**A0** naked, downy, blind/eyes closed  
**A1** primary feathers in pin, no feather coloration visible\*  
**A2** primary feathers in brush, feather structure and colour visible\*  
**A3** whole body feathered  
**A4** chicks fledged successfully  
**AD** chick dead in nest



*Primary feathers  
in pin.*



*Primary feathers  
in brush.*

\* Please note: tracts of feathers on the wings and body develop at different rates. Make sure that you check the *primary* feathers on the wing.

#### *Comments*

Not every situation can be adequately described with a code. Use the 'comments' column to provide additional detail which may be of relevance or interest. Any additional data, e.g. measurements of the eggs, can also be given here.

#### **Outcome**

The following codes are intended to summarize evidence for the success or failure of the breeding attempt. The evidence must be given as one or more **dated** observations, on separate lines. In other words, if there is more than one item of evidence, enter each on its own line. Evidence may also come from more than one visit, in which case the lines will have different dates. Use codes only for observed evidence, i.e. do not make assumptions. The evidence which you observe may be contradictory, i.e. some evidence may indicate success and some may indicate failure. Present all the relevant evidence in an unbiased manner, but delete any assumptions or interpretations which subsequently proved to be incorrect.

#### *Evidence of success codes*

The following codes relate to live young which have left the nest, NOT including *downy* precocial chicks because they always leave the nest immediately after hatching (with the exception of code SF). (In other words, for precocial species it is necessary to make a distinction between downy chicks and properly feathered fledglings.) Note that a nest is 'successful' even if only one fledgling (i.e. a fully feathered young bird, out of the nest) is reared, and other chicks in the brood died or disappeared earlier in the breeding attempt. Remember to give the evidence codes on a **dated line** on the card.

<b>NE</b>	nest <b>e</b> mpy, undisturbed and lining well trodden, containing feather scales and/or droppings
<b>SF</b>	hatched <b>s</b> hell <b>f</b> ragments in empty nests (gamebirds and ducks)
<b>EX</b>	chicks <b>e</b> xploded from nest
<b>LB</b>	young <b>l</b> eft nest naturally <b>b</b> efore fledging (e.g. herons)
<b>SL</b>	fledged young <b>s</b> een <b>l</b> eaving nest
<b>NN</b>	fledged young <b>n</b> ear <b>n</b> est
<b>AF</b>	<b>a</b> dults <b>f</b> eeding nestlings near nest
<b>MR</b>	<b>m</b> arked/ringed young <b>r</b> etrapped/resighted

#### *Evidence of failure codes*

These codes describe evidence for failure of a breeding attempt. Note that a nest is 'successful' even if only one fledgling (i.e. a fully feathered young bird, out of the nest) is reared, and other chicks in the brood died or disappeared earlier in the breeding attempt.

<b>EN</b>	<b>e</b> ggs <b>n</b> ot hatched
<b>EB</b>	<b>e</b> ggs <b>b</b> roken
<del><b>CK</b></del>	<del>chicks <b>k</b>illed, cause unknown</del>
<b>CP</b>	chicks killed or thrown out by brood <b>p</b> arasite
<b>CD</b>	chicks <b>d</b> eserted/starved
<b>NF</b>	nest <b>f</b> looded
<b>NB</b>	nest <b>b</b> urnt
<b>NW</b>	nest damaged or displaced by <b>w</b> ind
<b>PN</b>	<b>p</b> redation, <b>n</b> atural
<b>PD</b>	<b>p</b> redation by <b>d</b> omestic animals (e.g. a cat)
<b>DD</b>	<b>d</b> eliberate human <b>d</b> isturbance
<b>DV</b>	<b>d</b> estroyed by <b>v</b> ehicle
<b>DH</b>	unintentional <b>d</b> amage by <b>h</b> umans
<b>DU</b>	unintentional <b>d</b> isturbance by <b>h</b> umans
<b>DL</b>	<b>d</b> amage by <b>l</b> ivestock (e.g. trampling)
<b>AI</b>	<b>a</b> dditional <b>i</b> nformation on cause of failure noted in comments

#### *Outcome codes*

These codes should be chosen after the final visit to the nest to describe whether the nest succeeded or failed to rear a single chick, if this is known. 'Success' and 'failure' of breeding attempts are important criteria in estimates of productivity. The outcome must be one of **success (S)**, **failure (F)** or **unknown (U)** in the block provided in the top half of the card. Note that a nest is 'successful' even if only one young is reared and other chicks in the brood die or disappear earlier in the breeding attempt.

#### *Special cases*

##### *'Repeat' attempts*

Many species pairs attempt to breed more than once in the same nest, or in different nests, during the same season. Sometimes such 'repeat' attempts follow a breeding failure; sometimes they follow successful breeding ('multiple brooded' species). Details of all of these breeding attempts in the same season should be recorded on

Separate cards but, if this occurs, you should staple together all the cards for that pair in that season so that we can cross-reference them. This is useful in assessing the overall breeding success of a pair of birds in an entire season. It is a good idea, therefore, to wait until the breeding season is over before submitting the card/s for a pair of birds which you are monitoring. However, you should be very sure that you are dealing with the same individuals and this can be difficult unless they are marked/ringed.

Tracking the breeding success at a particular breeding site over several years is especially important for large solitary species that tend to breed in the same nest, or general area, year after year; for example, many large eagles. Therefore, if the same nest, or a nearby nest, is used again in the *following* season, indicate in the comments column of subsequent cards that they are associated with the previously submitted card, and briefly outline the relevant details, so that we can cross-reference the cards.

#### *Nest usurpation*

Some species commonly usurp the nests of other species. For example, kestrels frequently nest in crows' nests. This may occur directly after breeding by the 'builder' species has been completed, or during the builder's breeding attempt. You should fill in two separate cards in both instances, one for each species. In the comments column of each card you should provide extra details, such as the name of the species whose nest has been usurped. Such pairs of cards should be stapled together when submitted so that we can cross-reference them. If the nest used by the second species, however, is old and derelict, i.e. not active, you should complete a card only for the second species and merely indicate the identity, if known, of the original species that built the nest, in the comments column.

#### *Records of brood parasites*

Some species lay their eggs in the nests of other species and leave the incubation of their eggs and the rearing of their young to the owners of the nests. This is called 'brood parasitism'. The species that breed in this way are called 'brood parasites' and their victims are called 'host species'. Sometimes the hosts' eggs are removed or broken by the brood parasite at the time she lays her egg. Sometimes the young of the brood parasite kill the young of the host or push its eggs or young out of the nest. In other species, both the young of the brood parasite and the host are reared together. Although renowned in cuckoos, other South African brood parasites are honeyguides, whydahs, widowfinches, and the Cuckoo Finch. *Roberts'* (Maclean 1993) and *Nesting Birds* (Steyn 1996) provide details of the species that are brood parasites and the hosts that they exploit.

If you find a parasitized nest, you should fill in only one nest record card for both host and parasite. Give the host species in the normal species box, and give the name of the parasite in the parasite species box. Give the details for the eggs and chicks of both species in the normal manner, BUT remember to state in the comments column which species is being referred to in each case. Similarly, provide evidence of brood success or failure for both species in the separate boxes provided.

**NB There is a quick reference for codes at the end of this booklet.**





---

## 5 RECORDS OF BREEDING COLONIES AND HERONRIES

---

**Remember, extreme care must be taken when examining breeding colonies so as not to cause disturbance to the birds. You should never approach a colony so closely that adults and chicks leave their nests. Certainly, you should never intrude within the outer perimeter of the colony.**

If you are able to examine the contents of nest(s) in a colony safely, and are able to make more than one visit to those nest(s), you should fill in normal nest record card(s) in the normal way, but indicate clearly in the comments that the nest was part of a colony/heronry, and pin all cards for the colony together when submitting them.

For colonies and heronries it is important that you fill in a colony record card. This card records the salient details of a colony or heronry without going into the details of individual nests. Colonies and heronries have great significance for conservation and it is important that we learn more about where they are situated and how big they are.

The information to be filled in on a colony record card includes the following:

**Date:** the day, month and year of your observations.

**Observer:** the observer's name, including initials and surname. Note that the observer may not have been you, the person filling in the card, in which case give your name as well.

**ADU Number:** your ADU number if you have already been allocated one. (One will be allocated to you after you submit your first data.)

**Address:** your current postal address; mention if this has changed.

**Nearest town:** the name of the town nearest to the nest site. If in a suburb of a city, give the names of both the city and the suburb.

**Locality:** if the locality in which the nest was found has a name, give that name, e.g. the name of a farm, park, domestic address, etc.

**Protected area:** If the locality is a protected area, e.g. a national park or provincial nature reserve, give the official name of the area.

**QDGC:** the code of the relevant quarter-degree grid cell, if known. This information is optional but highly desirable; if not supplied, it will have to be worked out at the ADU prior to computerization.

**Coordinates:** the coordinates of the colony/heronry site, to the nearest minutes south

and east, or hundredths of a minute if using a global positioning system (GPS). (Use of a GPS is recommended.) This is optional but the information is very useful if the colony needs to be found again or if different cards for the same colony need to be traced.

**Species information:** For each species breeding in the colony, enter the following: its name, Roberts' Number (as per Maclean 1985 or 1993), the number of adult birds seen at the colony, and an estimate of the number of active nests. Note that other species incidentally present at the colony need not be recorded here, only those species found breeding should be recorded; the presence of other species, e.g. predators, should be noted under additional information. Estimate the number of active nests of each species. You should disregard nests that appear old and derelict, and only include nests being actively built, recently completed and ready for eggs, with eggs and young, or which are empty but appear to have been used recently.

**Habitat:** Codes for habitat levels 1 and 2, and human impact, are exactly as for ordinary nest record cards (see pages 15–18).

**Nest position:** The nest position codes are as for ordinary nest record cards (see pages 18–19) but, because there are many nests, the code should refer to the position of **most** of the nests. As with ordinary nest records, it is vital that additional information on nest position be provided. Remember to state whether or not the colony is on an island.

**Nest description:** Because there are many nests, this is less appropriate than on an ordinary NERC, but if interesting features are observed, note them in the appropriate box.

**Additional information:** Provide notes on any other observations which may be relevant.



The following are answers to a few questions you may have on reporting colonies and heronries:

***Should I report a colony/heronry even when no breeding is taking place?***

No. The potential for recording sites which are no longer regularly used, and for confusion with roosts, is too great.

***How often should I fill in a card for a particular colony/heronry?***

If you are able to regularly revisit a site, fill in a new card at least once a year. If you suspect that the number of pairs using the site is changing rapidly, once a month would be good.

***How do I clarify that I am reporting again on the same colony/heronry?***

If you have several cards for the same site which you are submitting together, pin them

together with a covering note highlighting the fact that they are all for the same site. Otherwise always take care to record the locality information (i.e. nearest town, locality name, grid cell, coordinates) as accurately and as consistently as possible.

***Should I report on colonies of weavers and other passerines?***

Because these are more common and more ephemeral than most non-passerine colonies, they are probably not as important from a conservation perspective. Nevertheless, they are of interest; particularly the breeding colonies of the Redbilled Quelea are of great interest. We will gladly receive information on any type of colony.

***How do I estimate the number of active nests if I can't actually see many of the nests?***



Your estimate of the number of active nests will often have to be fairly crude. Early morning and late afternoon/evening are probably better times to make such estimates because more of the adults are likely to be present at the nests. Sometimes you may have to get a reasonably accurate estimate for one small part of the colony and then multiply up by an appropriate factor.



***Redbilled Quelea.***



**Example of a colony record card (back)**

Habitat level 1	E	Habitat level 2	V	M	O	Human impact	H	A	Nest position	A	
<p><b>Additional information on habitat</b></p> <p>Seasonal vlei in heavily degraded surroundings: considerable infestation by alien acacias, and much human activity due to future construction site e.g. road-building, clearing of vegetation.</p> <p>Probable pollution by storm-water runoff, and consequent eutrophication.</p> <p>A few informal dwellings in acacia thickets about 100m from colony.</p>											
<p><b>Additional information on nest position</b></p> <p>Most nests situated in dead alien acacias surrounding the wetland. Height of nests above water varied from about 30cm for the heron spp. to approx. 2-5m for the Reed Cormorants and Darter.</p>											
										Are the nests above water? Y/N	Y
										Are the nests on an island? Y/N	N
										Are the nests of different species mixed or in discrete areas? M/D	M
<p><b>Description of nests</b></p> <p>Most appear to be constructed from alien acacia branches and twigs. One nest contained a piece of plastic shopping bag.</p>											
<p><b>Additional information</b></p> <p>The heronry and associated wetland are due to be destroyed in the next few months to make way for urban development.</p>											
		<p><b>South African Nest Record Card Scheme (NERCS)</b></p> <p>Return this card to: Avian Demography Unit, UCT, Rondebosch 7700</p>									

## 6 PRIORITY SPECIES FOR MONITORING

Although NERCS accepts records for all species breeding in South Africa, the list below contains species (with their Roberts' numbers) for which we would especially welcome nest record cards. Note that they are all common species, so it should be possible to accumulate large numbers of cards for each, on an annual basis. We want to develop annual indices of productivity, so it is particularly desirable that the nests of these species be visited *at least twice*, to gather information on breeding success.

008*	Dabchick	523	Pearlbreasted Swallow	710*	Paradise Flycatcher
127	Blackshouldered Kite	529	Rock Martin	713*	Cape Wagtail
148	African Fish Eagle	541*	Forktailed Drongo	716	Grassveld Pipit
155	Redbreasted Sparrowhawk	547	Black Crow	732*	Fiscal Shrike
158	Black Sparrowhawk	548	Pied Crow	736	Southern Boubou
172	Lanner Falcon	566	Cape Bulbul	746*	Bokmakierie
226	Moorhen	567	Redeyed Bulbul	757	European Starling
228*	Redknobbed Coot	568	Blackeyed Bulbul	758	Indian Myna
246*	Whitefronted Plover	577*	Olive Thrush	769	Redwinged Starling
248*	Kittlitz's Plover	580	Groundscraper Thrush	775	Malachite Sunbird
249	Threebanded Plover	596	Stonechat	783	Lesser Doublecollared Sunbird
255*	Crowned Plover	601*	Cape Robin	792	Black Sunbird
258*	Blacksmith Plover	614	Karoo Robin	796*	Cape White-eye
297	Spotted Dikkop	621	Titbabbler	801	House Sparrow
349	Rock Pigeon	635	Cape Reed Warbler	803*	Cape Sparrow
352	Redeyed Dove	645	Barthroated Apalis	813*	Cape Weaver
354*	Cape Turtle Dove	651	Longbilled Crombec	814*	Masked Weaver
355*	Laughing Dove	653	Yellowbellied Eremomela	824*	Red Bishop
392	Barn Owl	664	Fantailed Cisticola	821	Redbilled Quelea
401*	Spotted Eagle Owl	677*	Levaillant's Cisticola	844	Blue Waxbill
424	Speckled Mousebird	681	Neddicky	847	Common Waxbill
425	Whitebacked Mousebird	683	Tawnyflanked Prinia	869	Yelloweyed Canary
426	Redfaced Mousebird	685	Blackchested Prinia	872	Cape Canary
451	Hoopoe	686*	Spotted Prinia	878	Yellow Canary
507	Redcapped Lark	697	Chat Flycatcher	884	Goldenbreasted Bunting
516	Greybacked Finchlark	698	Fiscal Flycatcher	885	Cape Bunting
520*	Whitethroated Swallow	701	Chinspot Batis		
		703	Pririt Batis		

The species marked with an asterisk are probably those with the best chance of good enough coverage for the calculation of indices. For this reason they can be considered as having the highest priority.

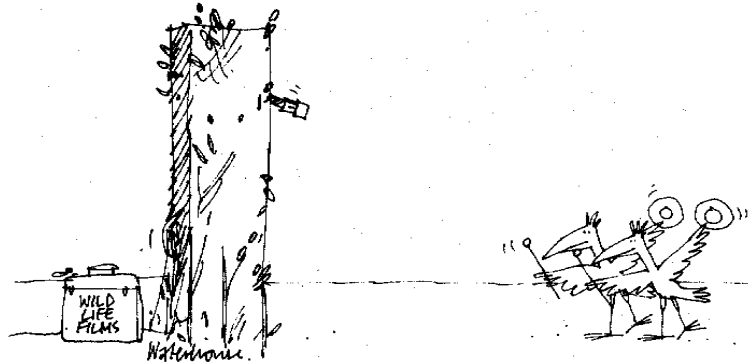
---

## 7 SENSITIVE SPECIES, NOT TO BE DISTURBED

---

The nests of the species listed below should not be approached under any circumstances. Many of these species are extremely rare or are already being monitored by professional ornithologists and therefore do not require any further monitoring. If you come across a nest of one of these species, or suspect that there is a nest in the area, do not investigate any further but refer the information to the Project Coordinator at the ADU.

- 003 Jackass Penguin
- 049 White Pelican
- 050 Pinkbacked Pelican
- 089 Marabou Stork
- 092 Bald Ibis
- 122 Cape Vulture
- 129 Bat Hawk
- 147 Palmnut Vulture
- 171 Peregrine Falcon
- 176 Taita Falcon
- 207 Wattled Crane
- 322 Caspian Tern
- 499 Rudd's Lark
- 509 Botha's Lark
- 521 Blue Swallow
- 725 Yellowbreasted Pipit

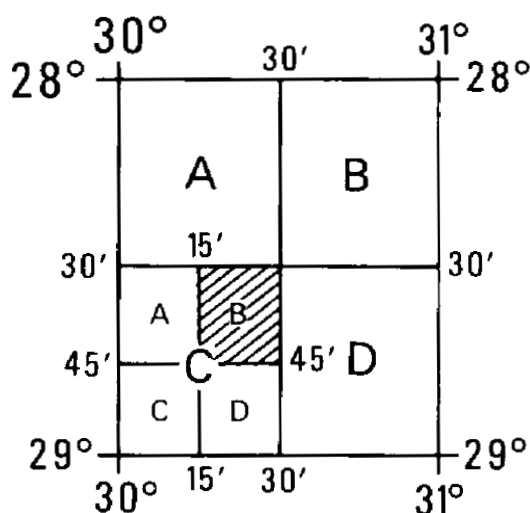


*'I think they've spotted the hide, Neville.'*

## 8 WORKING OUT GRID CELLS

A quarter-degree grid cell (QDGC) corresponds to the area shown on a 1:50 000 map which covers an area 15 minutes of latitude by 15 minutes of longitude and is approximately 27 km long (north to south) by 23 km wide (east to west). These cells are obtained on a larger-scale map (e.g. 1:250 000) by drawing lines across the map at 15-minute intervals. The degrees and minutes are clearly indicated in the margins, so the exercise is trivial with a long ruler and a pencil.

Having found your position on the map within a QDGC, you need to work out the code of that cell. The code consists of four digits and two letters (e.g. 2420BA) and is easily worked out as follows:



- 1) Each full-degree cell (1 degree lat. x 1 degree long.) is designated by the values of latitude and longitude of the NW corner (i.e. top left-hand corner). In the sketch this is 2830.
- 2) Each degree cell is divided into four half-degree grid cells (HDGCs) measuring 30' x 30'. These are designated by one letter added to the four digits of the degree-cell code (e.g. 2830C), as indicated in the sketch.
- 3) Each HDGC is again divided into quarters at 15' intervals to give four quarter-degree grid cells (QDGCs) each measuring 15' x 15'. These are designated by a second letter added to the four digits and one letter of the HDGCs, as indicated in the sketch (e.g. 2830CB).

---

## 9 BIRDLIFE ADDRESSES

---

Membership forms for BirdLife South Africa can be obtained from:

Membership Secretary  
 BirdLife South Africa  
 PO Box 515  
 RANDBURG  
 Johannesburg  
 2125  
 Tel. (011) 789-1122  
 Fax (011) 789-5188  
 Email: info@birdlife.org.za

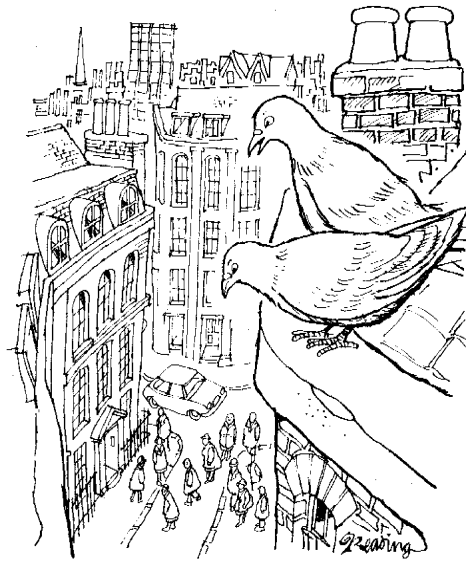
Details of other projects coordinated by the Avian Demography Unit (ADU) can be obtained from the following address:

Avian Demography Unit  
 Department of Statistical Sciences  
 University of Cape Town  
 RONDEBOSCH  
 Cape Town  
 7701  
 Tel. (021) 650-2423  
 Fax (021) 650-3726

Blank nest record cards can be obtained from the ADU and various BirdLife branches:

<b>BirdLife Eastern Cape</b>	PO Box 27454, GREENACRES 6057
<b>BirdLife Lowveld</b>	PO Box 19334, NELSPRUIT 1200
<b>BirdLife Northern Natal</b>	PO Box 20421, NEWCASTLE 2940
<b>BirdLife Southern KZN</b>	PO Box 45160, PORT SHEPSTONE 4240
<b>Border Bird Club</b>	PO Box 2440, BEACON BAY 5205
<b>Cape Bird Club</b>	PO Box 5022, CAPE TOWN 8000
<b>Free State Bird Club</b>	PO Box 6614, BLOEMFONTEIN 9300
<b>Inkwazi Bird Club</b>	PO Box 588, GALLO MANOR 2052
<b>Memel Bird Club</b>	PO Box 282, MEMEL 2970
<b>Natal Bird Club</b>	PO Box 37861 OVERPORT (DURBAN) 4067
<b>Natal Midlands Bird Club</b>	PO Box 2772, PIETERMARITZBURG 3200
<b>Phalaborwa Bird Club</b>	PO Box 76, PHALABORWA 1390
<b>Pietersburg Bird Club</b>	PO Box 31086, SUPERBIA 0789
<b>President Ridge Bird Club</b>	PO Box 3049, CRAMER VIEW 2060
<b>Pretoria Bird Club</b>	PO Box 12563, HATFIELD 0028

<b>Rand Barbet Bird Club</b>	PO Box 130355, BRYANSTON 2021
<b>Reins Bird Club</b>	PO Box 292, ALBERTINIA 6645
<b>Riemland Bird Club</b>	PO Box 2270, SASOLBURG 9570
<b>Rustenburg Bird Club</b>	PO Box 1056, RUSTENBURG 0300
<b>Sandton Bird Club</b>	PO Box 650890, BENMORE 2010
<b>Soutpansberg Bird Club</b>	PO Box 737, LOUIS TRICHARDT 0920
<b>Vaal Dam Bird Club</b>	PO Box 7, DENEYSVILLE 9412
<b>Wesvaal Bird Club</b>	PO Box 2413, POTCHEFSTROOM 2520
<b>Witwatersrand Bird Club</b>	PO Box 72091, PARKVIEW 2122



*'Their protective colouring sometimes makes them very difficult to hit.'*

---

## 10 MAPS SALES OFFICES

---

Your 1:50 000 map sheets can be obtained from the following offices. The price per sheet is R20.00. Postage costs R18 extra.

### PRETORIA

The Government Printer  
Bosman Street  
Private Bag X85  
PRETORIA  
0001  
Tel. (012) 323-9731

### PIETERMARITZBURG

Surveyor-General  
300 Pietermaritz Street  
PO Box 396  
PIETERMARITZBURG  
3200  
Tel. (0331) 45-1215

### BLOEMFONTEIN

Surveyor-General  
Aliwal Street  
Private Bag X20634  
BLOEMFONTEIN  
Tel. (051) 8-0984

### CAPE TOWN

Chief Director of Surveys and Mapping  
Rhodes Avenue  
Mowbray  
Private Bag  
MOWBRAY  
7700  
Tel. (021) 685-4070  
Fax (021) 689-1351



---

## 11 QUICK REFERENCE LIST OF CODES

---

This list of codes is for easy reference. They also appear elsewhere in this booklet with more explanatory text.

**\* Habitat codes, Levels 1 and 2**

The habitat should be described both at a crude and at a more detailed level, viz. Levels 1 and 2. Choose only one code at Level 1. At Level 2 you may need to choose two or three codes.

### LEVEL 1

#### COASTAL MARINE

#### FOREST

(indigenous, evergreen, including coastal, montane, Knysna and mistbelt forests, with characteristic forest understorey)

#### RIVERINE FOREST\*

(tall trees in a dense, narrow strip along the banks of a river, including 'gallery forest')

#### DENSE WOODLAND\*

(trees, relatively dense with a more-or-less continuous canopy, often with thickets)

#### OPEN WOODLAND\*

(trees, far apart with no continuous canopy and stretches of open ground between trees)

#### GRASSLAND

(natural grasses over large, treeless areas)

#### SCRUBLAND\*

(dominant woody vegetation less than 2 m high, including much of the fynbos, Karoo and Kalahari biomes)

### LEVEL 2

upper **b**each, sandy **d**une, stable **v**egetated dune, **r**ocky shore, **c**liff, **i**sland, **l**agoon shore, **o**ther (specify)

forest **i**nterior, forest **e**dge, **b**racken/briar, canopy height <5 m (**x**), 5–10 m (**y**), >10 m (**z**), **o**ther (specify)

forest **i**nterior, forest **e**dge, canopy height <5 m (**x**), 5–10 m (**y**), >10 m (**z**), largely **a**lien trees, **o**ther (specify)

**A**cacia-dominated, **M**opane-dominated, other **b**roadleaved, largely **a**lien trees, **i**nterior, **e**dge, **t**hicket, **r**ocky, **s**andy, **g**rassy, **o**ther (specify)

**A**cacia-dominated, **M**opane-dominated, other **b**roadleaved, largely **a**lien trees, **r**ocky, **s**andy, **g**rassy, **o**ther (specify)

grass height <5 cm (**v**), 5–10 cm (**w**), 10–30 cm (**x**), 30–100 cm (**y**), >100 cm (**z**), **b**urnt, **m**arshy, **o**ther (specify)

**f**ynbos, **K**aroo, **K**alahari, **r**iparian, largely **a**lien trees, **o**ther (specify)

**LEVEL 1 cont.****LEVEL 2 cont.****DESERT**

(natural plant growth very sparse, i.e. plants separated by several metres of bare ground)

gravel, sand, rock, grass, scrub, other (specify)

**MONTANE**

(including koppies, hills, mountains and escarpments)

hill, koppie, mountain, low cliff (<10 m), high cliff (>10 m), plateau, steep slope, gentle slope, north-facing, south-facing, east-facing, west-facing, rocky, even, wooded ravine, marshy ground, other (specify)

**WETLAND**

(must have a definable boundary, i.e. not a seep or temporarily wet area with no recognizable wetland habitat)

small dam (<1 ha) (a), big dam (<1 km<sup>2</sup>) (b), very large dam (>1 km<sup>2</sup>) (c), estuary, lake, vlei, marsh, river, stream, sewage works, natural saltpan, salt works, other (specify)

**PASTURES**

(i.e. planted/sown grass, or secondary growth after bush clearance, NOT natural grassland)

cultivated grass, wild grass, grass <5 cm (v), grass 5–10 cm (w), grass 10–30 cm (x), grass 30–100 cm (y), grass >100 cm (z), burnt, marshy, cattle, sheep, goats, other (specify)

**PLANTATIONS AND ORCHARDS**

(i.e. planted trees)

pine, eucalypt, wattle, vineyard, fruit trees, interior, edge, saplings, tall trees, other (specify)

**PLOUGHED FIELDS**

(ground has been ploughed, but not necessarily recently)

interior, edge, bare ground, freshly tilled, leafy crops, short grain, tall grain, grain stubble, fallow less than 2 years, fallow more than 2 years, other (specify)

**PARKS AND GARDENS**

(artificially planted areas usually associated with human habitation)

industrial, urban, suburban, rural, other (specify)

**MISCELLANEOUS**

give a description of the habitat

\* Note that these categories can consist largely or entirely of invasive alien trees or bushes, in which case this should be specified at Level 2.



\* *Human impact codes*

As for the habitat codes, focus on the general area (50 m<sup>2</sup>–1 km<sup>2</sup>) which forms the context of the nest and includes the territory of the breeding pair. Choose a two-letter code.

**LITTLE**: natural vegetation which is in relatively undisturbed condition.

- LP** pristine wilderness area, negligible human presence  
**LR** natural and unspoilt but with regular human presence, e.g. along a hiking trail  
**LT** natural but plenty of human activity, tourism, recreation, e.g. a lake with fishing, boating, etc.  
**LC** natural but at times crowded with visitors, i.e. intensely utilized, e.g. a popular beach

**MODERATE**: mainly natural vegetation but degraded or partially destroyed.

- MG** degraded by grazing  
**MA** invaded by alien plants  
**MR** indigenous vegetation removed/cut but regenerating  
**MB** burnt but regenerating  
**MH** human habitation (i.e. houses or huts or shacks) with moderate impact

**HEAVY**: natural vegetation present but it constitutes a minor proportion of the area and the impact of humans is high.

- HG** natural vegetation heavily overgrazed  
**HA** heavy alien-plant infestation  
**HH** human habitation (i.e. houses or huts or shacks) with heavy impact  
**HF** farming activity with heavy impact  
**HM** mixed residential and agricultural impact

**TOTAL**: natural vegetation totally removed and replaced by

- TP** plant crops, tree plantations, orchards, etc.  
**TB** buildings, roads, etc., i.e. 'concrete jungle'  
**TS** dense informal settlements  
**TG** parks, gardens, typical middle- to upper-class suburbia  
**TW** dams, reservoirs, sewage works, water purification plants, salt works

\* *Nest site and position*

Choose one of the codes below to describe where the nest is positioned. Give a full description of other nest details in the space provided on the back of the card.

- N** natural site, specify  
**A** alien/exotic tree or bush, specify if possible  
**M** man-made building or structure, specify  
**Q** man-made quarry or cutting or earthworks, specify  
**B** nestbox, specify type  
**O** other, specify

Your notes should include details to clarify your choice of code (above), and to provide additional information.

◇ *STATUS CODES*

Enter one status code on each line, in the 'codes' column.

◇ ◇ *Nest-building codes*

The following codes describe the condition of the nest itself and do not imply anything about its contents. If there are eggs and/or chicks in the nest, these codes are redundant, EXCEPT if the nest is incomplete. In such cases, have a line for the nest in addition to lines for eggs and/or chicks.

<b>NU</b>	nest under construction, stage unknown
<b>N0</b>	nest not yet built
<b>N1</b>	nest 1/4 built
<b>N2</b>	nest 1/2 built
<b>N3</b>	nest 3/4 built
<b>NC</b>	nest complete, unlined
<b>NL</b>	nest complete, lined

◇ ◇ *Egg laying and incubation codes*

These codes apply to the period when there are eggs in the nest. More than one line may be necessary to describe the clutch if it can be seen that the eggs are at different stages of incubation. Note that newly laid white eggs often have a pinkish hue which lasts for approximately one day.

<b>EU</b>	stage unknown
<b>E0</b>	clutch incomplete
<b>E1</b>	eggs fresh or clean and in first 1/3 of incubation
<b>E2</b>	eggs in middle 1/3 of incubation
<b>E3</b>	eggs in last 1/3 of incubation
<b>E4</b>	eggs pipped/hatching
<b>EA</b>	eggs addled

◇ ◇ *Chick codes*

Note that chicks may be in a nest or outside of a nest. The following codes are designed to meet the needs of both situations. More than one line may be necessary to describe the brood. If eggs are also present, use separate lines to describe them as well.

**Precocial chicks**

<b>PU</b>	stage unknown
<b>P0</b>	just hatched
<b>P1</b>	1/4 adult height/length
<b>P2</b>	1/2 adult height/length
<b>P3</b>	3/4 adult height/length
<b>P4</b>	>3/4 adult height/length
<b>PD</b>	chick dead in or near nest

**Altricial chicks**

- AU** chicks in nest, age unknown  
**A0** naked, downy, blind/eyes closed  
**A1** primary feathers in pin, no feather coloration visible  
**A2** primary feathers in brush, feather structure and colour visible  
**A3** whole body feathered  
**A4** chicks fledged successfully  
**AD** chick dead in nest

**Outcome**

The evidence must be given as one or more **dated observations**, on separate lines.  
 ✧ ✧

**Evidence of success codes**

The following codes relate to live young which have left the nest, NOT including *downy* precocial chicks. (In other words, for precocial species it is necessary to make a distinction between downy chicks and properly feathered fledglings.) Note that a nest is 'successful' even if only one fledgling (i.e. a fully feathered young bird, out of the nest) is reared, and other chicks in the brood died or disappeared earlier in the breeding attempt.

- NE** nest empty, undisturbed and lining well trodden, containing feather scales and/or droppings  
**SF** hatched shell fragments in empty nests (gamebirds and ducks)  
**EX** chicks exploded from nest  
**LB** young left nest naturally before fledging (e.g. herons)  
**SL** fledged young seen leaving nest  
**NN** fledged young near nest  
**AF** adults feeding nestlings near nest  
**MR** marked/ringed young retrapped/resighted  
 ✧ ✧

**Evidence of failure codes**

Note that a nest is 'successful' even if only one fledgling (i.e. a fully feathered young bird, out of the nest) is reared, and other chicks in the brood died or disappeared earlier in the breeding attempt.

- EN** eggs not hatched  
**EB** eggs broken  
**CK** chicks killed, cause unknown  
**CP** chicks killed or thrown out by brood parasite  
**CD** chicks deserted/starved  
**NF** nest flooded  
**NB** nest burnt

<b>NW</b>	nest damaged or displaced by <b>w</b> ind
<b>PN</b>	predation, <b>n</b> atural
<b>PD</b>	predation by <b>d</b> omestic animals (e.g. a cat)
<b>DD</b>	<b>d</b> eliberate human <b>d</b> isturbance
<b>DV</b>	destroyed by <b>v</b> ehicle
<b>DH</b>	unintentional <b>d</b> amage by <b>h</b> umans
<b>DU</b>	unintentional <b>d</b> isturbance by <b>h</b> umans
<b>DL</b>	<b>d</b> amage by <b>l</b> ivestock (e.g. trampling)
<b>AI</b>	<b>a</b> dditional <b>i</b> nformation on cause of failure noted in comments
✧ ✧	

#### *Outcome codes*

These codes should be chosen after the final visit to the nest to describe whether the nest succeeded or failed to rear a single chick, if this is known. The outcome must be one of **success (S)**, **failure (F)** or **unknown (U)** in the block provided in the top half of the card. Note that a nest is 'successful' even if only one young is reared and other chicks in the brood die or disappear earlier in the breeding attempt.



*'Goodness! This little chap is an awfully long way from a bird table.'*

---

**NOTES**

---