Bird Ringing

In Denmark, 1899, European Starlings were the first birds ringed with aluminium serial numbered rings. By 1904, Germany and Hungary had bird-ringing stations and within 10 years this model had spread to a host of European countries. The Smithsonian Institute (USA) started bird ringing (Americans use the word banding) in 1902. In 1948 Dr Austin Roberts, known for the bird-guide "Roberts Birds of Southern African", started the first ringing project in South Africa with Cape Vultures, a species now critically endangered throughout southern Africa and extinct as a breeding species in Namibia.

In Namibia, 1958, 89 birds were ringed under a German bird-ringing scheme. Then in 1964, a European scientist encouraged local members of the "South West African Scientific Society" to start ringing under the southern African scheme. By 1965, 753 birds of 41 species had been trapped and ringed in Namibia. To date, the Ministry of Environment and Tourism has over 52 000 Namibian ringing records on their electronic database.

Contents

Sponsored by: Namibia Bird Club

Compiled by: NARREC

Ringing for Science and Bird Ringing Schemes

Some birds, such as parrots and pigeons are bred for commercial or recreational purposes and may have rings put on to mark ownership, this is not ringing. Ringing birds is a scientific tool used to better understand bird biology.

A Ringed bird means that:

- A bird is individually identifiable with a ring stamped or engraved with a **serial number**
- The ring's information can be traced to a recognised institution that co-ordinates a **bird-ringing scheme**.

In the SADC region the **Avian Demographic Unit** (ADU), University of Cape Town (UCT), administrates a number of bird-related projects including SAFRING. SAFRING (Southern African Bird Ringing Unit) is one of many recognized bird-ringing schemes and their rings are used throughout the SADC region as far north as Malawi.

SAFRING: Co-ordinates bird ringing in southern Africa

- Collates ringing, recapture and recovery data
- Acts as a clearing house for data from other ringing schemes
- Supplies equipment (nets, rings etc.)
- Advises members on best methods for selected projects
- Provides a regular medium for data exchange.

Afring: Co-ordinates ringing in Africa and mainly works with wetland species.

The International Committee for Bird Ringing: Co-ordinates bird ringing schemes on a global scale.

"The aim of a ringing project should concentrate on a conservation relevant species..." (SAFRING). Ringing projects need to be properly planned to balance costs of fieldwork and administration against gains in research, development and conservation. Ringing projects used for **research** and **conservation** can, for example determine:

- Migration routes and wintering grounds
- Movement of species and individuals
- Effects of human development on dispersal and survival
- Mating systems
- Population dynamics
- Survival rates of nestling and fledglings
- Dispersal of fledglings
- Moult and relationships between age and plumage
- Longevity
- Quotas for huntable species
- Disease transmission
- Movement of pest-bird species
- Production of guano from sea birds
- Food resources such as fish stocks.

Have a look at the SAFRING web-site for a list of projects that have used ringing (see contacts page).

Ringers and Ringing Permits

Before a bird is ringed it must be trapped. Trapping and ringing of birds is only legal with relevant permits. In southern Africa, SAFRING issues a "ringer's number" to qualified individual ringers, this permits them to ring birds. SAFRING also supplies rings. No "foreign" rings may be used in the SADC region.

To legally ring birds in Namibia, ringers must have a SAFRING "ringer's number" as well as a ringing permit from the Ministry of Environment and Tourism (MET). A person with a ringing permit from outside Namibia needs to apply to MET for a local ringing permit.

A person who wants to start ringing birds needs to be trained by a ringer who has a SAFRING "ringer's number" and a local ringing permit. Once the trainer (ringer) is satisfied with the trainee's level of experience and expertise, applications for a local ringing permit (from MET to ring birds in Namibia) and a "ringer's number" from SAFRING can be made (see contacts page). Ringers can be professional scientists, corporate bodies (e.g. marine management) or amateur ornithologists. Permit restrictions, for example; types of traps, places, times and species permitted may be made according to the ringer's age and experience and the extent of a registered ringing project.

A ringer must be able to:

- Identify birds in the hand
- Operate trapping and ringing equipment in a safe way
- Plan, site, handle and monitor nets or traps
- Handle, hold, fit rings and take anatomical measurements without causing "undue stress" to the bird
- Record information
- Adhere to the national (MET in Namibia) and the co-ordinating scheme's (e.g. SAFRING) administrative procedures.

What Rings Are

Rings are metal bands made from aluminium, incoloy or stainless steel.

Aluminium - for terrestrial species with about a 10-year life span. Not for aquatic or hard beaked species.

Incoloy (36% Ni, 19% Cr, 45% Fe) - for all aquatic species.

Stainless steel - most durable for terrestrial species. Safest for hard-beaked species. Corrodes faster than incoloy in saline water.

Rings are available in sizes from 1.8 mm to 26 mm diameter. Some ring sizes are made in different metals because species with the same tarsus width measurement have differences in beak structure, habits and habitats. Some ring sizes are made with long and short shanks because there are long and short-legged species that have the same tarsus width.

Rings are supplied in sets of 50 or 100. Each ring is inscribed with a prefix (numbers or letters) and a number in series (e.g. AB 12301, AB 12302 - AB 12350). The ring also has a contact to a bird-ringing scheme (e.g. SAFRING, University Cape Town, South Africa). The first SAFRING rings were given "Inform Zoo Pretoria" as the contact; many of these, especially of the large rings series, are still in use. Current rings are inscribed with "SAFRING Univ. Cape Town SA", the prefix and the serial number.

A stainless steel ring showing the prefix, the number and the contact details.

Choosing a Ring Size

Based on the average tarsus diameter of a species, SAFRING provides a guide to ring sizes for almost all southern African birds, but there is tarsus-diameter variation within a species. To ensure that the correct ring diameter is chosen, every individual bird must have the tarsus diameter measured before being ringed. Measure from the front of the leg to the back (not from side to side), check three tarsal diameter measurements; proximal, distal and middle, then choose a ring slightly larger than the largest measurement.

Rings must:

- Fit comfortably onto the leg allowing space for rotation and sliding
- Not interfere with the joints above or below the tarsus
- Close so that nothing can be caught between the closed edges of the ring.

MARKING birds with colour rings has not proved completely safe. Colour rings may increase risks of predation and behavioural changes. Celluloid slit rings and "darvic" or "vinylast" spiral rings are available in a range of colours and sizes. Patagial tags, plastic streamers, nasal saddles, dyes, window cuts and imping are also marking methods.

SAFRING must be notified of all colour-marking projects:

- To avoid confusion with other marking projects
- To advise on and monitor experimental marking projects.

Color ringing projects assist species that are at risk or endangered because individual birds can be identified from a distance. The sequence of the color ring combination on each leg is important. The Lappet-faced Vulture in this photograph was reported as: Right leg: Top-stainless steel, middle-red, bottom-white. Left leg: Top-yellow, middle-green, bottom-blue.

Ringing Rules

A ringing permit is only valid within the permit issuing country and a qualified visiting ringer must obtain a permit from the local authority (in Namibia, MET).

- Exotic or aviary birds may not be ringed with SAFRING rings
- Tamed wild birds may not be ringed
- Rehabilitated birds may only be ringed after they are deemed fit for release
- A bird may not be ringed if it is not positively identified
- A used ring cannot be reused
- A bird with a ring may not (in most cases) be moved from the ringing site for release elsewhere.

Ringing Ethics - Capture, Handling, Data Collection, Ringing

Ethics are necessary to ensure a bird's safety, for humanitarian reasons as well as not to affect a bird's behaviour:

- No capture can be undertaken in conditions that will endanger or severely stress birds, e.g. extreme heat or wet
- A ringer may not set up more equipment than can be handled
- No unqualified people may use capture equipment without supervision
- Accurate records must be kept and submitted as required by co-ordinating bodies
- All traps must be regularly checked, (every 5 to 10 minutes or less)
- All birds must be processed (data collection and ringed) as quickly as possible
- Ringers must be able to explain the project benefits when queried by the public
- Permission must be given from landowners or specific authorities to trap and ring in an area.

Basic safety precautions include:

- **Safe equipment**; capture equipment must have no obvious projections that could injure the birds, nylon netting and welded mesh are the best materials.
- **Exposure;** a captured animal struggles and is in shock, temperature extremes (and rain) can kill it.
- **Predators;** capture sites can attract predators.
- **Shock;** birds must be handled and processed carefully and quickly.
- **Drowning;** must be prevented where nets are set close to the ground over water or tidal areas.
- **Emergencies;** tools to cut traps and to treat minor injuries must be on hand.
- **Nesting**; some species will desert a nest site especially during incubation periods.
- **Nestlings**; a full grown nestling may jump from the nest and refuse to be put back in, the best nestling age is when pins are fully formed with at least 3mm of web, care must be taken with the ring size when a nestling is ringed.
- **Colony ringing;** many aquatic birds nest in colonies. Disturbance forces the nestlings from nest sites (often into water). Dangers include nestlings not relocating their nest-sites or parents, drowning in cold or rough water as well as predators (often other birds) that opportunistically forage around colony nesting sites.

Ringing Equipment

Ringing box with rings properly stored ↔ SAFRING ring-size guide ↔ Ringing pliers for up to 7mm rings ↔ Ringing pliers from 8mm rings and up ↔ Accurate weighing scales ↔ Stopped-end wing ruler ↔ Pair of dividers ↔ Vernier or dial callipers ↔ Pen Data recording schedules ↔ Bird ID guide ↔ Small pair of scissors ↔ Fishing line Ear buds ↔ Parasite collection containers ↔ Friar's balsam or mechurochrome ↔ Bird bags/boxes ↔ Crochet hook or other small hook ↔ Engineers tape measure ↔ Equipment to remove badly placed rings.

Important ringing equipment available from SAFRING.

An organized ringing box.

Trapping Equipment

Before a bird can be ringed it must be caught, the main concern of any trapping is for the safety of the birds.

Mist-nets

The most commonly used capture equipment for a range of species is "mist-nets" made from 30-120mm nylon diamond mesh. They are available in varying lengths and heights. They can be used as vertical, horizontal or flick nets (for swallow and swift colonies) and can be erected singly, in a line or in an L-or V-shape. Netting equipment includes nets, poles, pole pegs, guy-ropes, hammer, panga/slasher and pruning shears. Mist-nets can kill birds. Never leave nets unmanned and beware of trapping during very hot/cold or rainy weather. Cut lines need to be prepared for the nets and wind and sun direction should be taken into account. Decoys and tape recordings can be used to call birds into nets. The success of netting depends on knowing the species, the selection of the site and the time when trapping is done. Dawn and dusk are generally best times for netting but birds can be caught throughout the day. For meaningful results trapping should be done regularly in one area.

A ringer removing birds from a mist net.

Balchatri and Other Traps

Balchatri traps are mostly used for birds of prey. They are cages covered with attached nylon nooses and usually have live bait (a mouse or rat) to attract the predator. The condition of the nylon nooses must be checked regularly in order to prevent a noose from snapping off the trap when the bird pulls. Balchatri traps are best made of welded mesh and should be weighted to prevent a raptor being able to drag them. The bait (prey animal) must not be able to escape.

Other capture methods include, walk-in traps, drop-traps, canon-nets, torch-netting and other baited traps.

A walk-in trap.

A Blackshouldered Kite on a balchatri trap.

A baited snap trap, opened and loaded (left), snapped closed (right).

Basic Removal Technique for Mist-Netted Birds

A mist-netted bird can only be removed from the same side that it entered the net and in the exact reverse order to the way that it was caught. Find the belly of the bird then remove the netting from the legs and feet. Secure the bird by placing a hand over its back with the neck held between the middle and index fingers. Take out the first wing, make sure the body and neck is free and remove net strands from the second wing. Turn the bird on its back to encourage it to release a foot grip of the net, (blowing on the belly may also help). Work net strands gently off the toes and claws. A tight strand caught on a wing must be pulled clear of the wing and not jerked or pulled up the leading edge as this may damage the alula and feather structure. A strand caught in the mouth may get stuck under the tongue, this can only be removed with a probe or the net can be cut. Remove an entangled bird in the following order; feet and legs, tail, first wing, head then second wing. Give the bird a stick to bite (instead of your finger).

Handling and Holding

The correct way to hold a small bird.

Trapped birds must be processed as quickly and carefully as possible. After being removed from the trap, processing includes being identified, weighed, measured, moult scored and ringed. Birds must be held securely to avoid damage to feathers, joints and internal organs. Small birds are usually held in the ringer's non-dominant hand, with the palm over the bird's back and the head between middle and index fingers. Large birds need at least two handlers. Raptors' heads should be covered and they can be given a stick to hold onto with their talons. Ringers should protect their eyes and secure the beak of long and sharp-beaked birds. After birds are removed from the trap they often need to be held for a short time until they are processed. A darkened space keeps most birds quiet and still and reduces shock. Birds should be held separately, in the shade and are as a rule not kept overnight. For small species use a drawstring bag (± 180 x 250 mm) made of light, breathable material. Bags are best hung in a safe shaded space; they should not be put on the ground nor on a chair where they could be stepped on or sat upon, nor on a high surface as a moving bird could cause the bag to fall. For larger birds, a box closed on all sides and with sufficient air-holes works well.

Biometric Data

Processing a trapped bird includes recording measurements and moult scores. Measurements are useful for ageing and sexing of birds as well as for taxonomy. Traditional (standard) measurements are the birds' weight and measurements of the length of the wing, bill, head, tail and tarsus. Other useful measurements include total head length, bill width and depth, but there are many others that can be recorded. Birds replace their feathers every year or so. After an old feather is moulted the new feather emerges in a sheath, called a "pin". The sheath splits open and the feather grows to full length. Moult scores basically give the feather an age and typically concentrate on the primary (outer) wing feathers. All feathers can however be analysed and given a score. Primary wing feathers are counted from the inner primary P1 to the outer primary P10 (although not all birds have the same number of primary feathers). Secondary wing feathers are counted from the outer secondary inwards to the birds' body. The scores given for each feather are on a scale of 0 - 5;

0 = old feather, 1 = missing feather or pin,
2 = emerging from sheath up to 1/3 grown,
3 = 1/3 – 2/3 grown,
4 = almost grown but still with waxy sheath visible,
5 = new feather and no sheath.

A wing extended to examine the condition of the primary and secondary flight feathers for moult scoring.

Releasing a Ringed Bird

Birds may not be transported away from the ringing site for release. Never throw a bird. Place your free hand under the hand holding the bird. Open your holding hand and just let the bird fly away. Know the species, as some birds prefer to walk or run and then fly, these must be put onto the ground facing a chosen release direction. Swifts and other short-legged, long-winged birds should be released into the wind direction so that they can get airlift. Sea birds should be released toward the sea but releases directly over open water can be dangerous. Release the bird so that it does not immediately fly back into the trap.

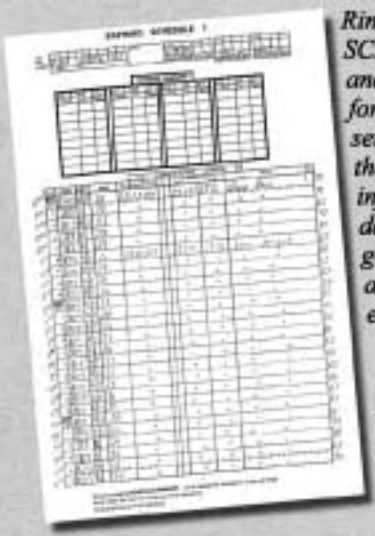
Mortality and Injured Birds

Mortalities should not happen, but if a bird dies it should be put in cold storage and given to a national depository. In Namibia, the National Museum, Windhoek is the national depository for the biodiversity collection. An injured bird should be taken for professional help as soon as possible. Birds are sometimes shocked by the whole trapping and ringing process and may need a short time (15-20 minutes) to recover before flying away.

Ringing and Recapture Records

Ringing schedule forms are provided by SAFRING. Information can also be recorded in a digital format. Essential information includes; the ringer's number, the allocated OLD southern African (Roberts) species number, date, place, ring number, any marking (e.g. colour rings), sex, age, mass, wing length. In Namibia, all ringing records must be submitted annually (preferably electronically) to SAFRING as well as to MET. Ringers must keep copies of their records.

Birds that are trapped and **already** have a ring should have all the above information recorded. This information is sent to SAFRING and MET as a "recapture".



Ringers complete copies of "SAFRING SCHEDULE 1" forms, for SAFRING and MET annually. Individual forms are used for each ring series (50 rings). Columns on the form are for basic information such as: species, date ringed, age, sex, weight, geographical coordinates and special marking, for example colour rings.

"Raptor Measurements Data Form" allows for more detailed standardized measurements of birds of prey. It does not replace the "SAFRING SCHEDULE 1" form.

Recovery Records and Reporting on Ringed Birds

Recovery of ringed birds can be as low as 0.025% or as high as 20%. Recovery depends on the species and to a large extent on an informed and co-operative public. Rings supplied by SAFRING are stamped "SAFRING Univ Cape Town" (old SAFRING rings are stamped "Inform Zoo Pretoria"). Birds that migrate may have rings stamped with another organization's details. No matter what is stamped on the ring, SAFRING or MET (see contacts page) should be informed. They will trace the information and will let the finder know when and where the bird was ringed and how far it has moved.

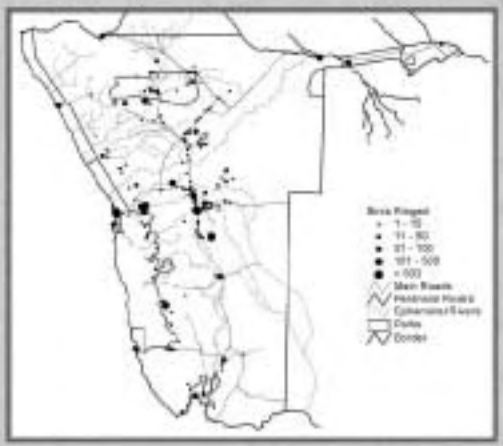
The date, place, ring number and the finder's contact details are the most important information for recovery records. Other measurements and the condition of the carcass can be recorded. A recovered ring on a dead bird should, if possible, be taken off the bird, flattened and sent with information to SAFRING or MET.

A number of projects use colour rings that have large stencilled colour numbers (e.g. a red ring with black numbers). If these numbers can be seen and read, then the date, place, time, ring number and colours should be reported. Some projects use combinations of colours, if these are seen they need to be recorded and reported in their combination arrangement (e.g. Left leg; top yellow, middle blue, bottom green. Right leg; top red, middle blue, bottom metal).

An example of the annual digital summary sent to each ringer by SAFRING, after the ringer has reported on all birds caught and ringed or retrapped.

More on Ringing

MET or any person listed on the contacts page can assist with information on bird ringing in Namibia. MET also produces an annual digital report on bird ringing events. The SAFRING website provides in-depth information and useful links to bird ringing sites.



An annual report on Namibian bird ringing activities and localities is produced by the Ministry of Environment and Tourism.