RINGING TECHNIQUES PUBLISHED IN SAFRING NEWS, 1972-1993

L G Underhill

Avian Demography Unit, Department of Statistical Sciences, University of Cape Town, Rondebosch 7700

Every issue of Safring News has contained one or more articles describing the hard-won know-how of SAFRING ringers. This article is a compendium of the techniques and suggestions made by ringers in southern Africa in the first 22 volumes of Safring News published since 1972. Reference is also made to articles in other journals – this is done if the Safring News article reviewed an article published elsewhere. Techniques developed by SAFRING ringers and published elsewhere are also mentioned, but the coverage of these articles is not comprehensive.

The information is classified into three categories: catching methods and equipment, marking methods and miscellaneous techniques. Each article mentioned here is summarised, sometimes very inadequately, by a sentence or two – it is essential to go back to the original articles. Ringers whose collections of Safring News do not stretch back far enough can write to SAFRING for photocopies of articles that are relevant to their ringing programmes.

In volumes 1, 2, 3 and 7 of Safring News, each issue started from page 1 – the volume number is then followed by the issue number which is placed in brackets. The year of publication is the volume number plus 71. This article is a companion to an article in the previous issue of Safring News (23:49-52), which reviewed the identification, ageing and sexing guides published in the first 22 volumes of this journal.

Catching methods and equipment

Mistnetting ‘software’


Mistnetting ‘hardware’

Mistnet poles, guyropes and pegs are easy to erect using the design of J. Harwood (2(1):18-19). P. Ginn (2(3):26-27) described his method of anchoring mistnet poles in the ground.

A specially designed wire hook prevented guy ropes from slipping down net poles (D. de Swardt, 17:23, with mark II version in 19:45-47). The latter article also describes a device for adjusting the positions of unreachable shelf strings.

Aluminium-tubing poles, of two diameters that slide inside each other into “compact” and “extended” positions, and secured in these positions by a wingnut and bolt, were used by P. le S. Milstein (12:44-45). A similar (but slightly simpler) design was favoured by C. Vernon (20:32-35) – the improvement was that indentations near the end of the wider diameter tube were used as a stop for the smaller diameter tube. He also described a mistnet pole support that could be hammered into hard ground, eliminating the need for guy ropes.

T.B. Oatley (19:50) reviewed a double height mistnet set up that enabled two equal-sized nets to be used simultaneously. The original article was published in North American Bird Banding (1990) 15(1):13-16.

Mistnets in action

P.G.H. Frost (3(1):23-25) gave advice on setting up mistnets to catch Black Ducks.
Single-shelf mistnets can be set up to catch waders in a variety of habitats (A.J. Tree, 1(1):20-23). J.E. Robson (15:51) followed this advice at a farm dam in the central Transvaal but discovered an unexpected hazard – some of his mistnetted waders and Whitewinged Black Terns were attacked by large barbels that lunged out of water only 20 cm deep.

**Palm Swifts** were mistnetted at dusk in a palm tree used as a roost near White River in the eastern Transvaal (H. Kirk 3(3):3-4).

J. Bunning (16:9-12) described his methods for catching swifts in mistnets.

H.T. Laycock (9:38-40) explained how to avoid all the pitfalls that can arise when setting up mistnets over water in the evening in a reedbed.

**Longtailed Wagtails** were caught in mistnets set at right angles across a small river (S.E. Piper 9:10-13).

**Quail Finches** were most effectively caught in mistnets set horizontally over vegetation near the edge of drinking water (R.J. Nuttall 21:55-59). Birds were trapped both as they were landing and taking off.

**Tape recorders**

Several papers describe the use of tape recorders in association with mistnets. D. Ludwig (1(1):18) caught cuckoos (species unspecified) and *Pearlspotted Owlets* by playing back their calls. The editor’s footnote to Dieter Ludwig’s article mentions the success of German ringers using tapes to lure waders to mistnets at night, increasing catches by 90%.

A paper by B.J. Speek in *EBBA News* (1973, 36(2):106) was reviewed (2(2):27) describing how *European Swallows* could be induced to roost around a tape recorder.

J. Bunning (3(1):22-23) provided observations on which species of diurnal bushbirds at Melville Koppies Nature Reserve were attracted to mistnets by tape recordings and which species ignored recordings. Reactions to owl calls were noted (see also 9:47-48).

**Storm Petrels** respond to tape recordings of their burrow calls ghettoblastered out to sea (L.G. Underhill 22:77-78, reviewing *Ringing & Migration* (1993, 14:133-134). The method has been used near the breeding islands in northwestern Europe, and successes in Portugal suggest that tape luring could be successful along the South African coast, especially in March, during migration towards the breeding grounds.

**Walk-in traps**

J. Cooper (3(1):19-21) and assistants erected a W-shaped pen on Dassen Island and herded Jackass Penguins into it.

A variation on the walk-in trap was the capture kraal, a triangular roofless pen with sides about 20 m in length, two capture funnels and a holding box. This was used by J.N. Geldenhuys & J.J. Blom (12:17-23) to catch *Spurwinged Geese* while they were flightless during moult. They caught 965 geese in three months.

Specially designed walk-in traps were used by M.B. Schmitt (2(2):7-9) to catch *crakes and rails* in reedbeds. The dimensions of the traps are illustrated as is their layout in the reeds, with zig-zag guides between traps consisting of chicken mesh.

A *wader* nest trap was made of chicken wire in a kidney-shaped design (R.W. Summers, 4:18-19). Most birds entered the trap within between 4 and 25 minutes, and trapping was abandoned after 30 minutes.

A cylindrical trap of 2 cm wire mesh, baited with locusts, was used for catching Fiscal Shrikes (J.E. Hargrove, B.E. Marshall & D.L. Mentz, 2(2):17-18).

A large walk-in funnel trap was constructed to catch *guineafowl and francolin* (S.W. Wolff, 5:12-13) with improvements so as to trap *Orange River Francolin* (6:9-10).
Another Crowned Guineafowl walk-in trap was designed by J. van Niekerk (11:57-60), who also gave consideration to bait, the best time for operating the trap, trap injuries and how to eliminate them.

W.R.J. Dean (5:36) praised the merits of “welded mesh” as a suitable material for making baited traps and walk-in traps easily, economically and efficiently. He used baited traps for doves, sparrows, weavers and bishops and walk-in traps for waders. R.T. Laycock (6:8, 7(1):8, 8:22-25 and especially 9:36-38) used Dean’s designs to catch (mainly!) Thickbilled Weavers – his embellishment was to use a 9-volt battery, solenoid and condensor to release a trap roof. As a final indignity, his wife caught him in his own trap (13:82) – no, actually, it was his aviary she trapped him in! T. Robertson (11:34) gives the dimensions for his “backyard” walk-in trap, and the recipe for the combination of seeds he used to bait it.

Balchatri traps
Instructions for making, baiting and using a balchatri noose trap for catching raptors along road sides are given by H.C. Biggs & F. von Maltitz (2(1):6-10). Further hints and suggestions were made by P.G.H. Frost (3(2):36), modifications for catching Steppe Buzzards included changing noose thickness and using one mouse instead of two mice (M.B. Schmitt & S. Baur 8:65-67). The anecdote by F. von Maltitz (7(1):21) has an important moral for balchatri users.

Zap net
The zap net is a hybrid between a cannon net and a clap net, powered by strong elastic or rubber tubing. It can be used to catch species that can be baited to a site (L.G. Underhill & G.D. Underhill 16:21-24).

Cannon net
The detonator-propelled cannon net, invented by SAFRING ringer Peter Mundy to catch vultures in Zimbabwe, is one of the region’s major contributions to ringing techniques – the paper describing its design, construction and the circuit diagram of the firing box is by P.J. Mundy & T.S. Choate (1973) in Arnoldia 6(17):1-6.

An improved firing circuit for a detonator-propelled cannon net was described and illustrated by I. von Maltitz (11:49-54), who also gave cautionary advice on how to avoid premature explosions.

Flood lights
A.J. Tree (3(1):35) found that migrants, mainly Palearctic warblers, were attracted to farm floodlights during the bush war in Zimbabwe. G.C. Backhurst (3(3):6-7), the coordinator of the East African Ringing Scheme, described ringing operations at Ngulia, a lodge in the Tsavo National Park in Kenya. Birds are attracted to floodlights there, mainly on foggy or rainy nights. There is an interesting paper about this project “The southward migration of palearctic birds over Ngulia, Kenya” by D.J. Pearson & G.C. Backhurst in Ibis (1976, 118:78-105). M. Herremans (22:43-46) asked why floodlights are not very successful in attracting migrants in Botswana and put forward several hypotheses.

Torch-and-handnet
K.Z. Edwards (2(1):20-21) caught 350 waders, including dikkops, plovers and coursers, in seven months using a torch and handnet; he described the equipment used, and passed on information on the best conditions (dark and moonless nights, to avoid blowing one’s cover), localities (where to find waders at night) and methods (mainly stealth).

Dutch ringers used a dazzle light and handnet from a rowing boat to catch coots, moorhens, bitterns, gulls and grebes. C.C.H. Elliott (3 (3):34) tried the same method in the Okavango Swamps, and caught “Pied Kingfisher, Darter, Whitebacked Night Heron, Slaty Egret and crocodile”!

Marsh Owls sitting in the road at night can be caught using a “rather weak two-celled torch” (F. von Maltitz 9:45-46).
H.D. Jackson (1984, *Bokmakerie* 36:86-89) described his method for catching **nightjars** on moonless nights. ... ??

**Handnet**

**Masked Weavers** were trapped at their nests in a 10 cm diameter net at the end of a 90 cm long dowel (H.D. Oschadleus 20:27-31). The nest was approached silently at night, the net placed over the nest entrance, the vegetation rustled and a drawstring pulled once the bird was in the net. Birds (and their eggs) were kept safely overnight and no cases of immediate desertion were recorded.

A handnet was held over the entrance of **Greater Striped Swallow** nests at night; when a torch was shone down the tunnel, the bird popped into the net (G.H. Bradley 22:3-4). Birds were replaced after ringing and a cloth was placed over the nest until the bird settled down – no desertions were observed.

**Cast net**

R.A. Earlé (17:25-28) threw a 850 mm diameter cast net to catch **nightjars** at distances of 3-7 m. The method could be used even in bright moonlight. He caught 97 birds (five **nightjar** species, both **dikkops** and a **Doublebanded Sandgrouse**) in about 16 hours of operation. We are lucky that Roy Earlé is still with us; he sat on an “outboard chair” on the hood of a car on bumpy gravel roads!

**Fish net**

**South African Cliff Swallows** were caught at breeding culverts using fish net and hessian (R.A. Earlé 13:6-9).

**Little Swifts** were caught using a similar setup (Bradley 22:11-14).

**Stuffed Owl**

L.J. Bunning (9:47-48) placed a stuffed **Spotted Eagle Owl** near his mistnets and observed which species mobbed the owl.

**Helmet shrikes** reacted to C. Vernon’s (20:32-35) stuffed owl so vigorously that he had to cover it with a pillow slip while he carried it to the mistnetting site near the nest!

**Hands**

Mountaineers abseiled down cliffs to ring the chicks of **Cape Vultures** (M.H. Currie 7(1):16-17) – this is only mentioned here for the sake of completeness!

E. Fritze (19:48-49) got dressed up in plastic bags and lay quite still in the Copenhagen rubbish dump, grabbing **Herring Gulls** and **Greater Blackbacked Gulls** with his hands as they foraged in the rubbish near him. He could process up to 50 gulls per hour and ringed 3 662 over an nine-month period.

**Comparison of catching methods**

A.J. Tree (9:3-9, especially Table 4) compared three methods of catching various of the small **plovers** – mistnets, torch-and-handnet and nest traps.

**Redbilled Oxpecker** catching methods were described and compared by C.J. Stutterheim (3(2):11-15). Mistnetting close to penned mammalian symbiants was best.

Various methods for catching **Crested Bar-bets** were compared. They are attracted to decoys in walk-in traps or, even better, to decoys placed near mistnets (A. van Zyl 16:25-28).

**Marking methods**

**Nasal saddles for ducks**

Nasal saddles were used on **Cape Teals** – information is provided on dimensions, materials and attachment method (C.J. Heyl, 1(1):19-20).

**Colour rings**

The procedure for making and fitting Darvic colour rings for **vultures** was described by J.A. Ledger (3(2):23-28). The rings for vultures have 24 mm internal diameter, but the procedure could be modified to produce other diameters. The Vulture Study Group later introduced a new design with a 25 mm internal diameter ring (16:18).
F. Kriel & E. O’Niel (11:3-4) devised a system whereby one person could make more than 1 000 coiled Darvic rings for Cape Gannets and Cape Cormorants in a eight-hour shift. A. Berruti (11:72) subsequently reported that these rings had proved satisfactory for Cape Cormorants, but that problems with uncurling of rings had been experienced by plunge-diving Cape Gannets, causing both ring loss and foot injuries. This problem was greatly reduced by using cyanoacrylate glue to seal the rings, the glue was effective on blue, red, yellow and green Darvic rings, but not on white or black (J.H. Colclough & G.J.B Ross 16:35-37). E. Komen (16:83-84) was still not satisfied, and suggested using a corrosion-resistant rivet, as used on vultures (see previous paragraph).

H.C. Biggs & R. Biggs (13:51-55) evaluated their experiences colour-ringning Pale Chanting Goshawks with 10 mm PVC rings sealed with cyanoacrylate glue. There was no ring loss after two years, after which ring loss became evident. Apart from one small incident, the colour rings caused the birds no apparent inconvenience. Rings could easily be seen using a telescope at 50-150 m.

The difficulties of using colour rings in his study of forest robins in gloomy Natal forest were discussed by T.B. Oatley (3(3):9-12).

A method to produce home-made plastic colour rings, or rather “leg flags” (T.S. Choate 2(2):18-20), was subsequently both slated and defended (2(3):28-29).

A celluloid colour ring can last 68 months on a Cape Robin (L.J. Bunning & P. Rohloff 8:26-27). R.J. Dowsett and L.J. Bunning (9:52-53) exchanged views on how long plastic rings last on average and agreed that 68 months was exceptional!

This is not stictly colour rings, but fits best here – D.M. Schultz (8:33) designed an 8-gauge wire perch angled so that the bird will sit on the far side in such a way that both legs and all colour rings are presented to the observer.

Colour ringing chaos needs to be avoided – says an extract of a paper by B. Ens (10:35-36) reprinted from Wader Study Group Bulletin (1981, 31:28-29). All ringers intending to use colour rings or other colour marks MUST first get approval from SAFRING. For waders, there is an international register of colour marking schemes organised through the Wader Study Group.

Based on a decade’s experience of faecal data on Cape Vultures, S.E. Piper & D.M. Schultz (16:31-34) finally worked out the logistics of getting the right colour rings on the right legs in the right order. Jokes aside, if there is one aspect to a study of individually marked birds where perfection is desirable, it is in getting the colour-marking right!

Wing tags

P. Eggleton (5:22-23) devised colour flipper tags for Jackass Penguins: the tags were threaded through the steel flipper band.

Directions for making and fitting patagial wingtags for Rock Pigeons were given by C.C.H. Elliott (3(3):16-19). The design was effective, tags could be seen at distance of up to 200 m and tagged birds bred successfully.

Patagial tags for Crowned Guineafowl were designed and evaluated for endurance of material (unfortunately the material is not named), effects on behaviour (no change, and no increased vulnerability to predators) and visibility (they were mostly difficult to observe, so it took 10-15 minutes to read a tag) (J.H. van Niekerk 12:48-53).

Plumage dyes

Picric acid (yellow) and rhodamine B (red) dyes were used on waders (R. Summers, 5:7-8). J.P. Reed & M.B. Schmitt tested the dyes ‘Fuchsin’, ‘Brilliant Green’, ‘Crystal Violet’ and ‘Orange’ (a Marzan commercial ink) on bantams before using them on Ruff.
A.P. Martin (13:55-57) described how to prepare a solution of picric acid and how to apply it. L.G. Underhill & J.H. Hofmeyr (16:29-30) used a slightly different concentration on Common Terns.

Natural markings
J.H. van Niekerk (12:48-53) found that the variation in casque shapes and the colours of the bare skin around the face enabled him to identify individual Crowned Guineafowl in small flocks. A photographic record of re-trapped birds showed that these colours and patterns remained stable for periods of several months.

Comparison of marking methods
C.J. Stutterheim (3(2):11-15) used a variety of methods to colourmark Redbilled Oxpeckers: neckbands, backtags, ponchos and colour rings. Colour rings worked best.

Methods to mark raptors were reviewed by A.C. Kemp (5:38-43): cutting windows in the wing and tail, colour rings and patagial tags. Patagial tags were evaluated as the preferred method — Kemp's design, but using 'Sterkolite' rather than 'Darvic' was subsequently used on Wahlberg's Eagles by A.J. Anthony (8:28-30) and found to work well.

Nestlings
D.M. Schultz (8:35) ringed Dusky Flycatcher nestlings and observed that the adults pulled at a ring on a chick. He hypothesised that the adult had confused the ring with a faecal sack, and recommended that shiny rings should be blackened with a waterproof marker pen before being used on nestlings.

R.A. Earlé (8:36-40) made recommendations about the ideal ages for ringing passerine nestlings.

Miscellaneous
Ringing box
Is your ringing box living proof of Chaos Theory? J. Lodder's (2(3):18-19) design will get you organised, with natty ring dispensers and spaces for all the requisite gadgetry.

Pliers
The modification of “gas pliers” to make ringing pliers for large diameter rings was described by E.F. von Maltitz (11:55-56). J. Bunning (3(2):29-30) modified an old surgical instrument to make a pair of pliers that could be used to remove rings when one is working singlehanded.

Keeps and holding boxes
A collapsible keep for easy transportation was used for a range of species, from weavers to waders (P.J. Whitehouse & S. Whitehouse, 3(3):16 & 39). The shape was cyclindrical and the materials used were “8 gauge galvanised wire” and “showerproof gaberdine material”.

M. Waltner (5:37) described an ingenious collapsible keep used for holding waders on sandy beaches. It was made of a few hoops of galvanised wire covered with hessian sacking with sand heaped along the edges to keep the birds in.

A story with a moral to it was recounted by R.A. Earlé (12:43): a South African Cliff Swallow squeezed in between two walls of hessian in a keep, but flew away strongly 61 hours after capture, having decreased in mass from 22.4 g to 15.3 g! You can never check your keeps, holding boxes and bird bags too carefully after a ringing session.

Ring loss
D.A. Whitelaw (8:57-64) showed that long-lived birds may outlast their aluminium rings — however, the problem was not assessed to be a serious one. Note that aluminium corrodes in alkaline environments. In southern Africa, these occur at many places such as Barberspan. Alkaline wetlands are more productive that acid ones and tend to attract more birds.

Positioning of rings
G. Currie (11:39-41) contributed to the debate about whether White Storks should be ringed on the tibia, on the tarsus, or maybe even not at all. See also T.B. Oatley (16:49-50).
Measurements  
H.C. Biggs (7&2):2-8) took 25 measurements on raptors, including some non-standard ones.

D.B. Hanmer (14:69) suggested that ringers should compare wing lengths at (or near!) the time of first flight with adult wing lengths to test the suggestion that ground-nesting species fledge at an earlier stage of development than species nesting elsewhere.

Masses  
D.B. Hanmer (8:19-21) made suggestions about how to make published lists of bird masses more useful.

D.A. Whitelaw (9:44-45) devised a method to score the crop contents of raptors and estimated the mass corrections to be applied for each crop score. But S.E. Piper (10:37-38) didn’t like his method of scoring as it would be wasteful of computer space, and proposed codes just consisting of one character. Care of spring balances was discussed by E.F. von Maltitz (11:56-57).

Bare parts, plumage and moult  
The SAOS moult scheme was described by R.P. Pryś-Jones (14:81-82) with three subsequent reports (16:2, 19:39-41, 22:15-18). R.K. Brooke (15:43-44) provided a guide to the number of visible primaries in passerines.

The problems of recording primary moult in Common Terms were solved by L.G. Underhill & R.P. Pryś-Jones (15:44-49).

D.B. Hanmer (10:3-5) reported on looking for abnormal numbers of rectrices. H.T. Laycock (10:11) was intrigued by a female Thick-billed Weaver that always grew a white sixth primary. R.K. Brooke (11:68-69) encouraged ringers to record any plumage aberrations they encounter in the birds they handle, both photographically and in writing, and pointed out that occasionally such observations provide useful clues to taxonomists.

In similar vein, D.B. Hanmer (12:11-15, follow-up in 13:58-70) reported aberrant bill patterns on Woodland Kingfishers, and C.H. Fry (12:14) asked observers between Malawi and the coast to keep a sharp lookout for unusual bill patterns. Later, P. Le S. Milstein (12:53-56), commenting on the same matter, made the point that ringers are in a better position than other ornithological fieldworkers to determine this kind of variation. The only ringers who reported their results were (predictably) H.T. Laycock (14:43-44, 14:45-47) and D.B. Hanmer (14:72-74, 14:83, 17:22, 18:43-46!)

To study variations in plumage colour, H.C. Biggs (7:2):2-8) took colour slides including a “colour control chart” in the photograph. This enables differences in exposure and light conditions to be accounted for. This colour chart is further described by R. Biggs (9:43).

Record-keeping  
D.M. Skead (12:6-7) discussed the merits of a “ring stock book”, in which the key information for each string of rings is given on one line. This enables the ringer to know exactly how many rings there are on hand, to track down retraps quickly, etc.

S.E. Piper & D.M. Schultz (17:65-76) described the rationale for a long-term study of the territoriality and population biology of Long-tailed Wagtails, and their methods for recording the observations.

Monitoring  
L.G. Underhill & T.B. Oatley (18:47-48) proposed that ringing operations, conducted at least monthly at a study site, could be used to monitor bird populations at the site, provided that ringing effort was measured. L.G. Underhill & G.D. Underhill (19:7-12) showed their results from two such sites near Cape Town.

Retraps  
D.B. Hanmer’s series of papers on longevity records from retraps (10:12-22, 12:56-64, 14:51-60, 16:73-78, 18:19-30), based on...
16 years of ringing at one site, provides an excellent model for other ringers to follow. The same comment applies to her papers on fidelity of migrants to non-breeding grounds (11:41-43, 18:33-42).

Bats
S. Sowler (7/2:32-33) marked some species of bats with incoloy bird rings, catching them with mistnets – we are not sure how this article crept into Safring News!

On a more serious note, there is a brilliant account by D.B. Hanmer (19:43-44) on how to deal with Epaulleted Fruit Bats Episcopus minor in mistnets. The wingspan of males can exceed 0.6 m (what about E. major?) You simply let the bat hook its feet onto a finger, and it licks you while you disentangle it, “without any kicking, screaming or biting.” Sounds easy, but takes a lot of courage

Unexpected hazards
Woodpeckers’ tongue tips get ensnared in Velcro (16:43).

Ticks can be vectors of Congo fever (16:50)

Leg cramps in waders can be treated with valium (22:33).

Mistnets are not strong enough to catch motor cars (18:1), tractors and cows, but do sometimes hold dogs (19:43-44). Members of the general public, especially ones armed with scissors, are not good for mistnets (20:58-60).

Rats and mice bite, and carpenter bees sting. But if the latter are left in the net they can rapidly destroy a square metre of it (19:44).

Puffadders get into crake traps and boom-slangs can climb into mistnets (17:33-35).

The feathers and skin of the Hooded Pitohui Pitohui dichrous contain a similar poison to that of the Amazonian dart frogs used for blow gun darts. Fortunately the pitohui occurs in the forests of Papua New Guinea and is the first bird species known to possess a chemical defence, presumably to avoid predation by hawks, snakes and arboreal marsupials. The SAFRING Coordinator (22:32-33) suggested that if SAFRING ringers wanted to test if the species they handle had developed chemical defenses, they should suck the tails of mistnetted birds.

Dale Hanmer’s 10 most dangerous birds weighing in at less than 100 g include barbets, shrikes, kingfishers and the needle-sharp claws of the Rattling Cisticola (20:61-62).

And then there are unpublished accounts of a ringer (male) who had a nipple nipped by a Caspian Tern and a ringer (female) who suffered a similar fate from the beaks of two successive Jackass Penguins she handled. Ouch

AVOIDING DANGEROUS BEAKS

Mrs Susan Schoeman

P O Box 94, Lydenburg 1120

I have been studying the Thickbilled Weaver Amblyospiza albitrons in Lydenburg for some time now. Besides wading through reedbeds in muddy water to, amongst other things, ring weaver chicks, I also ring adult weavers.

During the non-breeding season these weavers visit my garden to enjoy the sunflower seeds on my bird table. Having filled their crops, they head off again – some straight into my mistnet. At such times, a ringer needs to have three hands; one for holding the weaver’s head with its beak pointing away from the other two hands extracting the bird from the net. To a certain extent I have mastered this problem with only two hands.