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Waterbirds around the world

A global overview of the conservation,
management and research of the
world's waterbird flyways

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Waterbird ringing in Africa

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ABSTRACT

An overview of bird ringing in Africa is presented, specifically relating to waterbirds. Summaries for West Africa and East Africa are based mainly on annual ringing reports. SAFRING's database is used for the analysis of ringing in southern Africa, the region where most waterbird ringing has occurred. Bird ringing started in southern Africa in 1948, and nearly 600 000 waterbirds have been ringed since then. There have been 15 000 recoveries of these birds (2.5%), and at least one recovery for 101 species. In addition, there have been 52 000 recaptures and re-sightings of marked birds (8.7%). There have been 1 900 recoveries and recaptures of waterbirds ringed in Europe. The annual ringing totals and recovery rates in different groups of waterbirds are investigated. More Pelecaniformes have been ringed than any other group, largely because of the large-scale ringing of Cape Gannets *Morus capensis* in southern Africa, but the highest recovery rate is found in the Gruiformes. Waterbird ringing has decreased in the last two decades, but efforts are being made to revitalize this. SAFRING is computerizing ringing data, as these provide large amounts of as yet unutilized data for analysis. Efforts are being made to expand waterbird ringing in Africa through training programmes and species projects with funding from UNEP/AEWA.

INTRODUCTION

In 1909, the London Times announced the recovery of a European-ringed White Stork *Ciconia ciconia* found dead in South Africa. This was the first recovery of a bird migrating across the equator. The stork had been ringed in Hungary on 10 July 1908 and recovered in Himeville, KwaZulu-Natal, South Africa, in January 1909 (ring number 209). While bird ringing started in Europe in 1899, it only began in Africa some 50 years later. To date, at least 600 000 waterbirds have been ringed in Africa, and although the recovery rate is low, valuable data on migration and other movements have been collected. Ringing schemes in Africa have not operated consistently, except for two schemes, one in southern Africa and one in eastern Africa. This paper provides a general overview of waterbird ringing activities in Africa, and gives more details for waterbird ringing in southern Africa, where the vast majority of waterbirds have been ringed. Finally, the paper looks at the AFRING concept in the past, present and future.

METHODS

To investigate the extent of waterbird ringing in Africa, the literature was searched for annual ringing reports. For southern Africa, statistics relating to waterbird ringing were extracted from the SAFRING database. As most of the waterbird ringing in Africa has been in southern Africa, more extensive analyses are presented for this region than for other parts of the continent. The

literature was searched to investigate the history of the AFRING concept, while a summary of potential future waterbird ringing projects in Africa was drawn from Underhill *et al.* (1999).

RESULTS

Waterbird ringing in Africa outside southern Africa

General bird ringing has been sporadic throughout most of Africa. The first ringing scheme was started in 1948 in southern Africa; this is now known as SAFRING. Annual ringing reports have been published in the journals *Ostrich* and *Safring News* (now *Afring News*) (see Appendix I). Reports of recoveries have been published separately from ringing reports since 1993. The former are not listed in Appendix I, but are easy to trace as they always directly follow the ringing reports. More details of waterbird ringing in southern Africa are given below.

Ringing started in Zambia in the early 1960s, and initially used South African rings (address: Zoo Pretoria). Zambian rings (address: Livingstone Museum) were introduced in 1969, but by the early 1980s, it had become obvious that an independent scheme was not justified, and so Kenyan rings (address: Nairobi) and SAFRING rings (address: SAFRING UCT) replaced Zambian rings (Dowsett & Leonard 2001). Low numbers of waterbirds were ringed during the period 1985-1999; ringing totals of over 500 are listed for African Openbill *Anastomus lamelligerus* (667), Red-billed Teal *Anas erythrorhyncha* (2 121), Hottentot Teal *A. hottentota* (525), Collared Pratincole *Glareola pratincola* (518), Blacksmith Plover *Vanellus armatus* (719) and Wood Sandpiper *Tringa glareola* (852). Ringing totals for the years up to 1999 have been published by Dowsett & Leonard 2001. A total of 212 waders were ringed in Zambia between 1997 and 2003, mostly using Zambian rings but also some SAFRING rings.

East Africa

The East African Ringing Scheme (address: Nairobi) started in 1950, and concentrated on passerine migrants at Ngulia (from 1969 to the present), resident passerines in Nairobi, and Palearctic waders on the Kenya coast (mostly at Mwamba Bird Observatory, Watamu). The area covered by this ringing scheme includes Kenya, Tanzania, Uganda and Sudan, with small numbers of "Nairobi" rings also being used in Djibouti, Ethiopia, Rwanda, Somalia and Zambia (Backhurst 1988). Rings from other schemes have also been used in Kenya, e.g. 8 000 Lesser Flamingos *Phoenicopterus minor* were ringed with British Trust for Ornithology rings. A total of 44 927 waterbirds were ringed in East Africa between 1960 and 1987, including over 3 000 waders at Lake Magadi in the Rift Valley and Mida Creek on the coast (Backhurst 1988). Annual ringing reports were published by Backhurst and covered the years 1966-1987 (see Appendix I); in addition many reports (published or only cyclostyled) are available for bird ringing activities at Ngulia.

Liz and Neil Baker compiled separate annual ringing summaries for Tanzania. Their totals are included in the East African totals, as Nairobi rings were used. There was also a ringing scheme in operation in Ethiopia from 1969 to 1980 (Ash 1981). Annual ringing reports for this period were published by Ash; recovery reports were produced for at least two years (see Appendix I).

West Africa

From 1958 to 1983, R. Sharland published a series of annual bird ringing reports for Nigeria in the journals *Nigerian Field*, *Bulletin of the Nigerian Ornithological Society* and *Malimbus*. Ringing in Ghana was included in these reports for the years 1960-1963. A full list of reports is provided in Appendix I; some of these were duplicated in different journals.

A ringing scheme was started again in Ghana in 1991, and there was some ringing in Senegal in 1991-1993 (Djoudj ringing project), but these schemes have not been consistent. There have been various expeditions from Europe to West Africa to ring passerine migrants, and the Dutch Working Group for International Wader and Waterfowl Research (WIWO) has undertaken expeditions to West Africa to ring migrant waders. Waders were also ringed in Mauritania by W. Dick. Brussels rings have been used in Senegal, and Jan Veen ringed gulls and terns with SAFRING rings.

Waterbird ringing in southern Africa

Waterbird ringing began in southern Africa in 1948 with the ringing of five ducks, 15 plovers, 19 migrant sandpipers and one Caspian Tern *Sterna caspia*. Over the next 55 years, almost 600 000 waterbirds were ringed. The waterbird species reported here are the species listed in the African-Eurasian Waterbird Agreement (AEWA), as well as some seabirds and some non-AEWA waterbirds (e.g. Long-tailed Cormorant *Phalacrocorax africanus*). The annual totals of waterbirds ringed and recovered have been extracted from the SAFRING database. Many recoveries are from the Palearctic region (Fig. 1).

To understand how ringing effort has changed in southern Africa, it is practical to divide the first five decades of ringing into two periods, each of about 25 years, here referred to as the first (1948-1974) and second (1974-1999) periods. The total number of birds ringed by July 1999 was 1.8 million, of which 45% were ringed in the first period (Oschadleus & Underhill 1999). A list

of the top 10 species ringed over the 50-year period includes various non-waterbird species, two seabirds (Cape Gannet *Morus capensis* and African Penguin *Spheniscus demersus*) and two waterbirds (Yellow-billed Duck *Anas undulata* and Cattle Egret *Bubulcus ibis*).

It is striking that in the period up to 1974, the emphasis was on waterbird ringing. Thus 97% of all Cattle Egrets were ringed in this first period. Similarly 74% of the Yellow-billed Ducks were ringed in the same period. This reflects the efforts of ringers working at Barberspan, North-west Province, and Rondevlei, Western Cape, ringing egret chicks and trapping adult waterfowl in walk-in traps. Unfortunately, most of the people who were ringing during this period have either retired or passed away, and there is an acute lack of skills in using these techniques. A large amount of dam construction has taken place in southern Africa since 1974, and it is likely that the patterns of movements of waterbirds have changed since then. Some waterbirds are migratory within Africa, e.g. Comb Duck *Sarkidiornis melanotos*, while others show dispersal as far as central Africa, e.g. Cattle Egret (Underhill *et al.* 1999). These would make interesting subjects for co-operative research projects between African countries.

During the second period, the overwhelming majority of ringers focused on mist-netting. Terns, gulls and waders began to appear in the top twenty most frequently ringed species (see Oschadleus & Underhill 1999). While not many Common Terns *Sterna hirundo* have been ringed in South Africa, large numbers have been recovered in this country. This species could be studied along Africa's coastline to obtain more information on its migration, e.g. the locations of stopover sites, and the timing and rate of migration.

Ringing and recovery totals by waterbird groups

A breakdown of waterbird ringing in southern Africa is given in Table 1. The most frequently ringed group is the Pelecaniformes due to the large number of Cape Gannet chicks that are ringed. This is followed by the Anseriformes. The highest recovery rate is for the cranes (Gruiformes), possibly because these are large birds and thus easily seen. The next highest recovery rate is for species of Anseriformes, probably because many of these are hunted and then reported, or recovered at the site of ringing. Other groups with high recovery rates include the storks (Ciconiiformes) and flamingos (Phoenicopteriformes). Very few

Table 1. Numbers of waterbirds ringed and recovered in southern Africa.

Order	Group	Ringed by 2000*	Recovered by Sept 2003	Percent recovered	Re-sighted or recaptured	Percent re-sighted or recaptured	Foreign recoveries
Sphenisciformes	Penguins	75 382	2 511	3.3	27 250	36.1	0
Podicipediformes	Grebes	135	0	0.0	0		0
Pelecaniformes	Pelicans etc.	162 331	3 955	2.4	21 816	13.4	0
Ciconiiformes	Storks etc.	69 766	1 027	1.5	88	0.1	809
Phoenicopteriformes	Flamingos	1 754	10	0.6	6	0.3	0
Anseriformes	Ducks	106 637	3 793	3.6	66	0.1	15
Gruiformes	Cranes	28 559	1 304	4.6	188	0.7	0
Charadriiformes, Charadrii	Waders	92 718	645	0.7	930	1.0	45
Charadriiformes, Laridae	Gulls & terns	60 617	1 780	2.9	1 959	3.2	1 036
Totals		597 899	15 025	2.5	52 303	8.7	1 905

* Only the ringing totals up to 2000 were available at the time of writing.

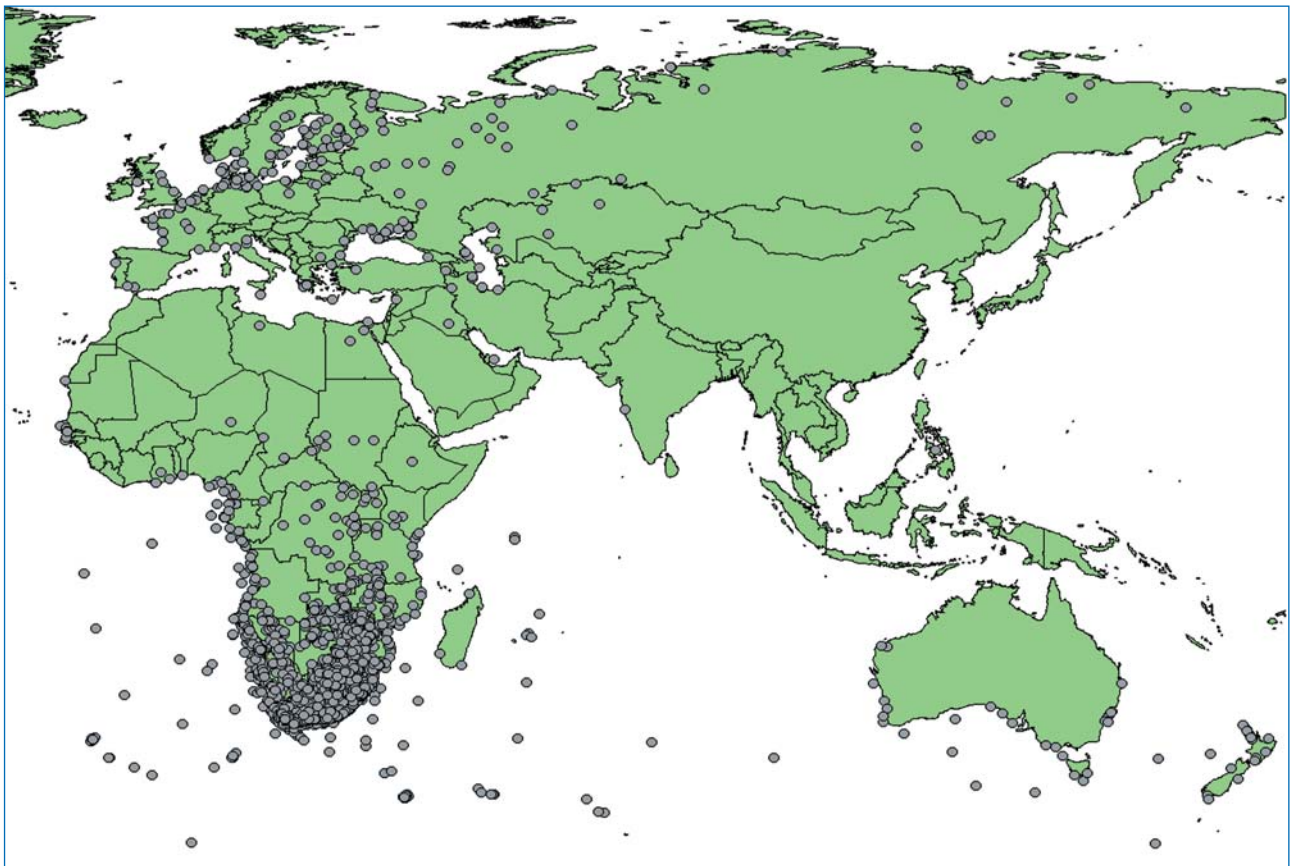


Fig. 1. Recoveries of seabirds and waterbirds ringed in southern Africa (from the SAFRING database).

grebes (Podicipediformes) have been ringed and none has been recovered. The larger birds tend to have higher recovery rates, partly because the corpses of dead birds are more visible. These rates are well over 1%, and thus mass ringing of large birds should be encouraged. Waders (Charadriiformes, Charadrii) have a lower recovery rate, and yet ringing of this group has produced spectacular information on migration routes. The highest recapture rate is in the African Penguin (36%), which has been the subject of an intensive recapture effort because of its endangered status. The next highest recapture rate is for the Great White Pelican *Pelecanus onocrotalus* (re-sightings), followed by the Cape Gannet (recaptures of birds on nests). Gulls and terns (Charadriiformes, Laridae) also have high recapture rates, while waders have a higher recapture rate than recovery rate. The highest numbers of foreign recoveries and recaptures are for the White Stork and Common Tern.

Marking projects – colour rings and satellite transmitters

Colour rings and flags have been used on a wide variety of seabirds, waders and other waterbirds in southern Africa, usually to identify cohorts rather than individual birds. Engraved rings are becoming popular as they can be used for re-sightings of individual birds. These are being used on African Black Oystercatchers *Haematopus moquini*, Hartlaub's Gulls *Larus hartlaubii* and other seabirds, and will be used in projects currently being planned for the Sacred Ibis *Threskiornis aethiopicus*.

Satellite tags are still little-used in southern Africa, partly because of the high costs involved. Satellite transmitters were fitted to three African Penguins after the oil spill in June 2000

from the tanker *Treasure* (Crawford *et al.* 2000), before the cleaned birds were released. These three birds, Peter, Percy and Pamela, went on to make world news headlines, e.g. on the front cover of *Time* magazine. White Storks migrate from Europe to spend the non-breeding season in South Africa, and do not normally breed there. For the last 60 years, however, a few pairs have bred regularly in the Western Cape, and many of their chicks have been fitted with satellite transmitters. Satellite transmitters have also been used by the Crane Working Group on Blue Cranes *Grus paradisea*.

AFRING – extending waterbird ringing throughout Africa

The concept of AFRING was first proposed in 1969, at a meeting of bird ringers during the Third Pan-African Ornithological Congress in Kruger National Park (Anon. 1971). The meeting recognized the need to establish close co-operation between ringing schemes in Africa, and between African and European schemes, and concluded that to achieve this, it was necessary to develop a code for recoveries, and to compose a numbered checklist for African species. It was agreed that another meeting should be organized within six months to develop the code for recoveries. Accordingly, an AFRING meeting was held at the 15th International Ornithological Congress in The Hague, The Netherlands, in 1970. Countries represented at this meeting included Angola, Congo, Ethiopia, Kenya, Nigeria, Senegal, South Africa, Tanzania, Uganda and Zambia. Two aims were established, namely to standardize recovery data, and to put all African recovery records on standard forms (Anon. 1970).

Ornithologists from South Africa played a leading role, but due to the political climate, these ornithologists could no longer easily be involved in African meetings. The concept of AFRING was thus not realized for nearly three more decades, although Prof. Les Underhill (at the Avian Demography Unit in the University of Cape Town) at various times applied for funding for AFRING, and made the following suggestions:

- Model AFRING on EURING;
- Standardize codes and methods;
- Facilitate bird ringing through training, the provision of rings and the establishment of a database;
- Provide leadership in all aspects of bird-marking in Africa;
- Promote collaborative projects (country/continent/flyway);
- Provide a secure backup for data;
- Curate primary data of defunct schemes; and
- Analyse data, especially with respect to conservation and management issues.

The Second International Conference on Wetlands and Development, held in Dakar, Senegal, in November 1998, recommended that the development of an intra-African ringing co-ordination scheme (AFRING) be accorded a very high priority. This opened the way for Wetlands International to apply for funding and establish the co-ordination of waterbird ringing schemes in Africa. The Avian Demography Unit received the tender for this project in January 2004. Doug Harebottle (Avian Demography Unit) was appointed to co-ordinate the project. A stakeholders' meeting was held at the Waterbirds around the world Conference in Edinburgh in April 2004, and a follow-up meeting was planned for the Eleventh Pan-African Ornithological Congress in Tunisia in November 2004.

During their review of recoveries of waterbirds in southern Africa, Underhill *et al.* (1999) identified a number of specific waterbird ringing projects in Africa, and these were presented in Israel (Oschadleus 2002). From this list of projects, a short list of species was chosen for immediate consideration: Great White Pelican, Sacred Ibis, Greater Flamingo *Phoenicopterus ruber*, Lesser Flamingo, Comb Duck, Wood Sandpiper, Sandwich Tern *Sterna sandvicensis*, Royal Tern *S. maxima* and Great Crested (Swift) Tern *S. bergii*.

An important requirement for ringing schemes is to computerize historical ringing data. These data can be used to provide information on past ringing activities and on the timing of arrival and departure of migrants (e.g. Wood Sandpiper, Oschadleus & Underhill 2002), and are required for the analysis of survival rates, moult patterns and biometrics. They can also be used to study changes in historical distribution.

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APPENDIX I. SELECTED PUBLISHED REPORTS ON BIRD RINGING IN AFRICA.

West Africa

Annual ringing reports

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East Africa

Annual ringing reports for Ethiopia

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Immature Crab Plover *Dromas ardeola*. Photo: Dieter Oschadleus.