Review of Ring Recoveries of Birds of Prey in Southern Africa: 1948–1998

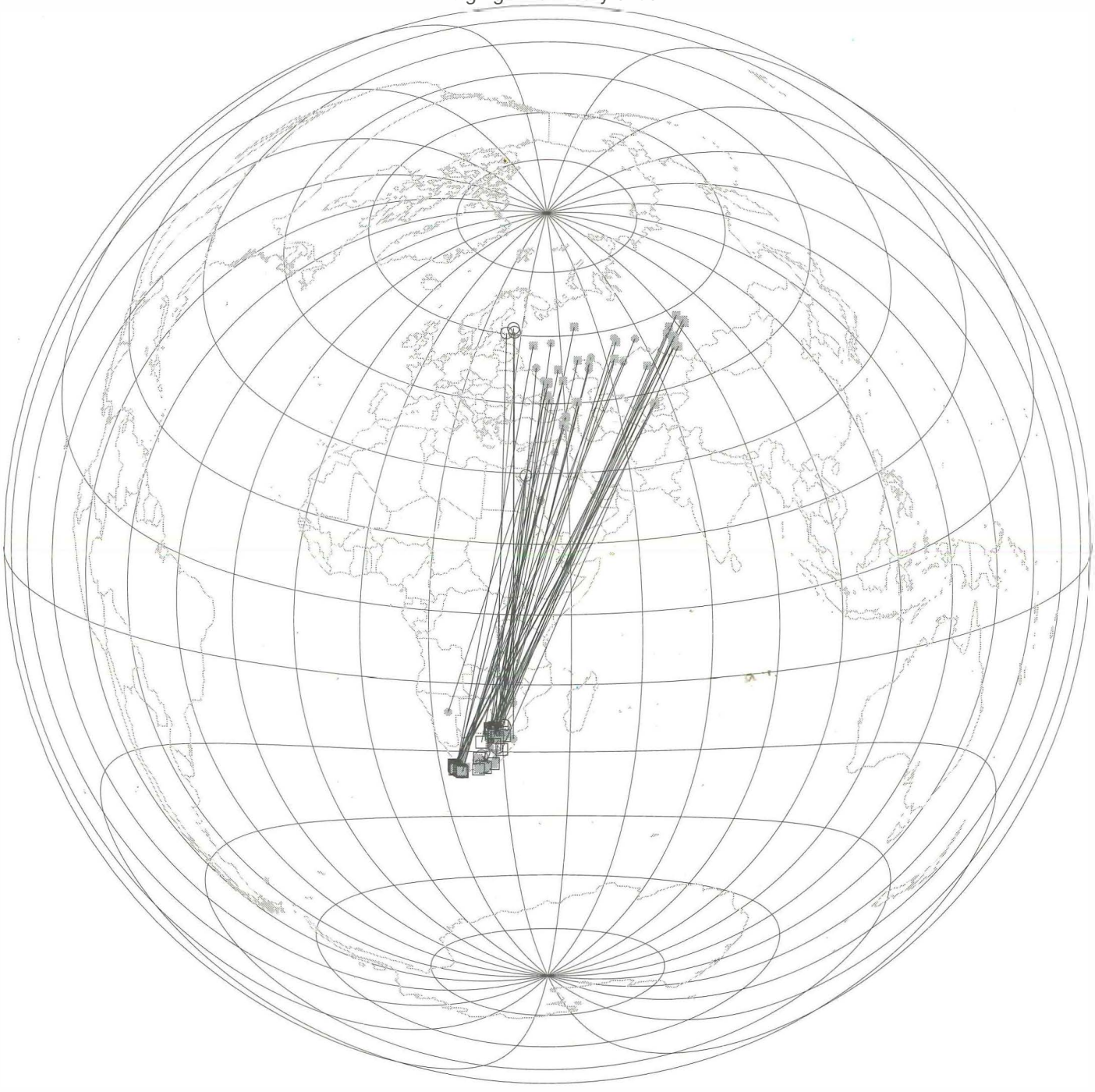
T.B. Oatley, H.D. Oschadleus, R.A. Navarro and L.G. Underhill

Endangered Wildlife Trust

Avian Demography Unit

STEPPE BUZZARD

Ringing & recovery sites



Endangered Wildlife Trust

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'The very first ringing took place over the August holiday weekend 1948, just three months after the scheme had been given the go ahead by the A.G.M. The rings were ready a matter of hours beforehand and were collected in Pretoria en route to Kranzberg. It was organized jointly by the Witwatersrand Bird Club and the Transvaal Mountain Club, who were essential as we had decided to give the Cape Vulture *Gyps coprotheres* the honour of being the first recipients of the new rings. I cannot remember why this choice was made unless it was that an expedition of this sort was sufficiently way out to celebrate so important an occasion. Anyway 31 birds were ringed and a good time was had by all, except the newspaper reporter who had come along in leather-soled town shoes and insisted on climbing to the nesting sites.' (Ashton 1979)

One of those 31 first-day-of-ringing birds was recovered 15 months later near Bulawayo, Zimbabwe.

This report is dedicated to these ringers and all their successors.

Cover illustrations

Front cover: Colour-ringed Cape Vulture *Gyps coprotheres* (Photograph: Gerhard Verdoorn).

Back cover: Map of the world, showing Steppe Buzzard *Buteo buteo* movements from southern Africa; the map projection is Lambert's Azimuthal Equal Area, with 10°N 40°E as central point (Map generation: Rene Navarro).

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This report celebrates some of the results of 50 years of bird ringing in southern Africa.

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The Endangered Wildlife Trust has been initiating and managing projects to protect endangered species and ecosystems throughout southern Africa since 1973. The Trust receives no government funding for its work and is entirely dependent on the generosity of individuals and corporations for its existence.

The mission of the Avian Demography Unit, a research unit in the Department of Statistical Sciences at the University of Cape Town, is to contribute to the improved understanding of bird populations, and thus make a contribution to their conservation.

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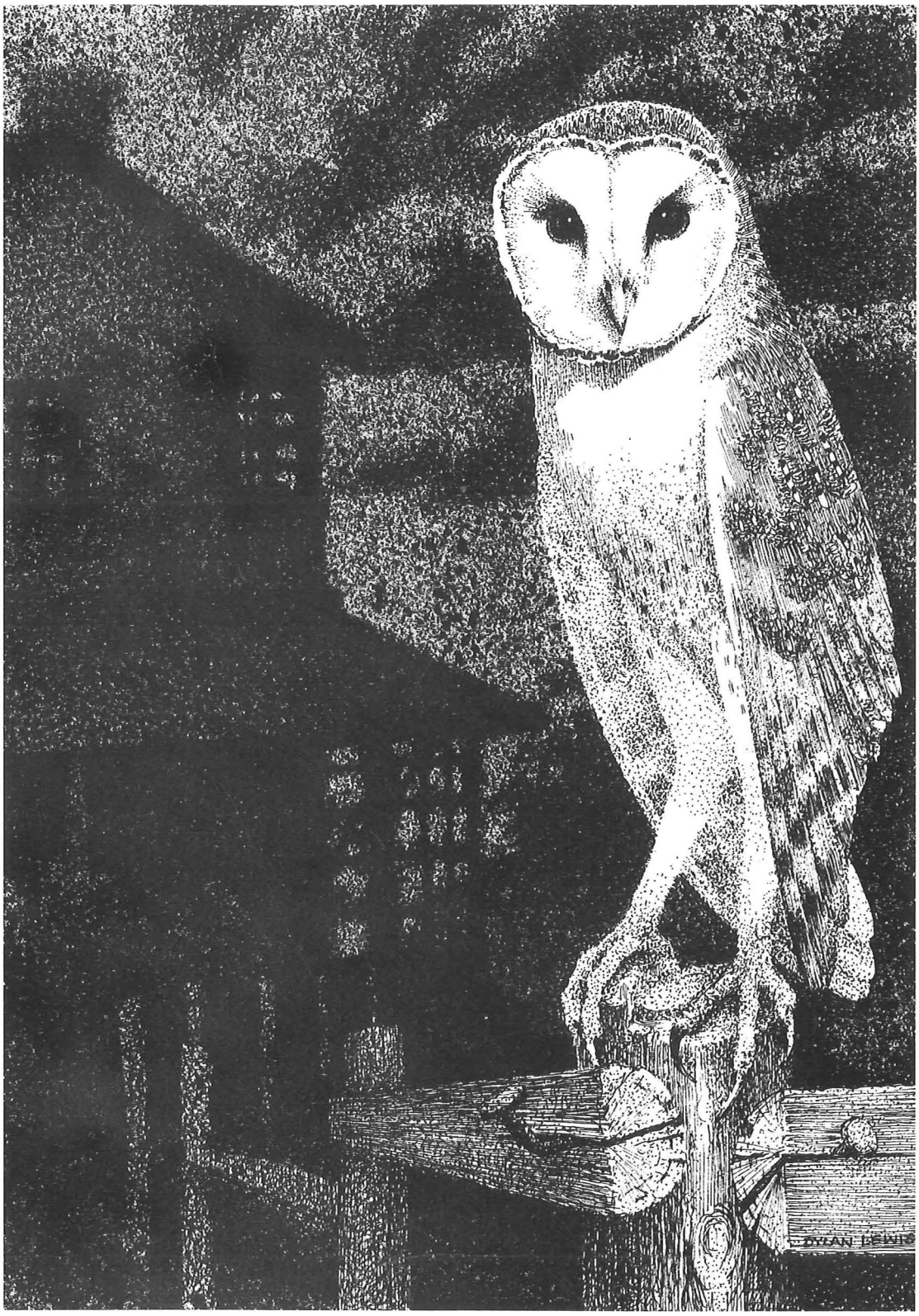


Barn Owl by D. Lewis

Introduction

Scientific bird ringing is a systematically organized research method in which birds are individually marked. When these birds are subsequently reported, the place, date and cause of death provide information on patterns of movements, survival rates and threats. This is crucial information for conservation planning and management.

Bird ringing is conducted throughout the world. The first systematic ringing was done in Denmark in 1899; the results were so impressive that bird ringing schemes proliferated rapidly. Scientific bird ringing started in South Africa in 1948. But the first discovery in South Africa of a ringed bird had been made more than 40 years earlier, when a White Stork *Ciconia ciconia* ringed in Romania was shot in KwaZulu-Natal.

Only a small percentage of birds that are ringed are found and reported when they die; we then speak of the ring being 'recovered'. Overall ring recovery rates vary between ringing schemes; in western Europe they may be as high as 2.2%, but in southern Africa the South African Bird Ringing Unit (SAFRING) has a rate of less than 1.0%. Rates for individual species may be lower or higher, depending on the nature of the species and its size, but the inescapable consequence of these rates is that the accumulation of returns is slow. Substantial data-sets for different species can only be obtained if large numbers of birds are ringed on a regular basis. Even then, comprehensive results can only be obtained in the long term.

It has been customary for ringing schemes to publish annual lists of recoveries. This means that a researcher has to consult a large number of publications in order to extract the occasional recoveries of a species under study, and there is no guarantee that individual records will not be overlooked, either by the scheme (not published), or by the researcher. One way to counteract such impediments to research is for schemes to compile summaries of recoveries for specific species or groups of birds. Because such summaries are still in the nature of interim results, they will not nowadays find a place in ornithological journals and are probably best published as reports which can be made available to specialist groups.

This report summarizes results from the ringing of birds of prey (Falconiformes and Strigiformes) in southern Africa. It is compiled from data recorded in the 50 years of operation of SAFRING. It is appropriate to choose these species for this first review because Cape Vultures *Gyps coprotheres* were the first species to be ringed when the scheme was initiated by the then South African Ornithological Society in 1948 (Ashton 1979; Underhill & Oatley 1994). The ringing of Cape Vulture chicks in their cliff-face nests became the focus of a small band of enthusiasts who formed the Vulture Study Group (VSG) and initiated what was to prove one of the most notable ringing projects in the history of the scheme.

Since those early days there has always been, in addition to the members of the VSG, a small but dedicated group of ringers in southern Africa who have devoted their efforts to the capture and ringing of raptorial birds. Known to some as the 'Balchatri Brigade', their exploits have been travel-intensive, often frustrating, sometimes (in retrospect) hilariously funny, but consistently contributive (e.g Robertson & Searle 1994), and this report would not exist but for their activities.

Substantial numbers of raptors and owls have been ringed and released by rehabilitation centres. By ringing rehabilitated birds before release, such centres hope to monitor the success of their efforts, but very few are 'hacked back', in falconry parlance, to ensure that they can adequately fend for themselves after release. Most rehabilitated birds of prey therefore contribute little to our knowledge of the natural behaviour of their respective species. Birds known to have been captive-reared and rehabilitated by such centres, or captured and relocated by conservation authorities, are flagged in the tables of recoveries.

Mention must be made of some historic aspects of the South African ringing scheme which are pertinent, in particular, to raptor recoveries. For the first 23 years the scheme was administered by then South African Ornithological Society (now BirdLife South Africa). When the scheme was initiated in 1948, the headquarters of the society was in Pretoria, and permission was obtained to use the National Zoological Gardens as a return address for the scheme's rings; 'Zoo Pretoria' or 'Inform Zoo Pretoria' was the legend used. Initially, all records of the scheme were centrally housed by the Transvaal Provincial Administration, but from 1951 it was decided that the Honorary Organizer of the scheme (at that time Dr H. Ashton) should receive the records. In 1956 Dr G.R. McLachlan became Honorary Organizer and under his direction a start was made with entering all records on Hollerith punch cards. Meanwhile the society's headquarters changed, office bearers changed, and the scheme grew apace until it sorely tested the financial and voluntary manpower resources of the Society. In 1971, the National Unit for Bird Ringing Administration (subsequently to become SAFRING) was set up with government funding at the University of Cape Town.

One of the consequences of two decades of itinerant history is that some of the old documentation has been lost to the scheme, making it impossible to verify all the details of some of the early records. Another loss of accuracy stems from early instructions which required the ringer to provide the locality of the ringing site as the district or nearest town. In southern Africa, where towns or settlements can be more than 100 km apart, this policy (adopted from the British ringing scheme) was inappropriate, particularly for raptor ringing where every nest or trapped bird is at a different site and often at a considerable distance from the nearest town. Nowadays, many ringers pinpoint the coordinates of the ringing site with a GPS instrument, but there is no way of determining whether those coordinates of old ringing sites which coincide with towns are correct. Calculated distances between ringing and recovery sites may therefore be artefacts of incorrect coordinates.

The zoo address is likely to have negatively influenced the reporting rate. It was suspected that there was a reluctance on the part of landowners to report their killing of birds which, because of the ring address, were thought to have escaped from the National Zoo. The experimental use

on Yellowbilled Ducks *Anas undulata* of 10 000 rings with the address 'Museum Durban' achieved a significantly higher recovery rate than did the same number of 'Zoo Pretoria' rings used on the same species at the same site on the same dates, and provided confirmation that the zoo address was not ideal (SAFRING unpubl. data). Ring stocks replaced since 1982 use the legend 'SAFRING, University Cape Town', but turnover of many of the larger-sized rings is slow, and some 'Zoo Pretoria' rings are still in use on birds of prey.

The SAFRING databank cannot boast a complete inventory of all recoveries in southern Africa of foreign-ringed birds. This is because some such rings have been reported direct to their schemes of origin. It is now common practice for schemes receiving such direct reports to copy the details to the country of recovery, but this has not always been done in the past. The current report cannot therefore claim to be exhaustive in respect of migrant raptors from the northern hemisphere.

One of the most notable benefits to have been derived from the ringing of vultures and other birds of prey has been the insight gained into hitherto unsuspected levels of mortality in these birds resulting from poisoning, electrocution and drowning. Unringed birds of prey that drown in farm water reservoirs constitute an unremarked inconvenience, long familiar to farmers in dry areas. When the carcass carries a ring, however, it is likely to get reported, and evidence soon accumulates to show how serious the hazard is. Effective conservation action has resulted to counteract these hazards (Mundy *et al.* 1992). In the case of watertanks, the Northern Cape Nature Conservation Service has produced a pamphlet illustrating how a simple and inexpensive modification can prevent accidental drownings of birds of prey. SAFRING sends out one of these pamphlets together with the ringing details to every farmer who reports the recovery of a ringed bird of prey from a water reservoir.

In the species reports that follow, 'recovery' refers to a ringed bird found dead, or alive but incapacitated by injury or illness. 'Control' means a bird that was intentionally or accidentally trapped and then released in good health after its ring number was recorded. All recoveries received at SAFRING up to and including April 1998 are included. The cut-off month for ringing totals is June 1996, and the some of the totals quoted will therefore be slightly low, especially for common species, but not significantly so because annual ringing totals for birds of prey are consistently low.

For some birds of prey ringed in southern Africa there are, as yet, no recoveries. For others there are recoveries, but only of rehabilitated birds and these are generally of dubious significance; such species have been excluded from this report, which provides information on 41 species.

In the species texts, the abbreviation ASAB1 refers to *The atlas of southern African birds*, volume 1, given in the references as Harrison *et al.* (1997). The abbreviation is followed by the page numbers in the atlas for the species text referred to. This atlas provides the most up-to-date information available for the distributions of the species covered. When a data-set for any species contains more than 10 records, the 10 most informative are tabulated; all records are mapped. If a species has 3–10 records these are detailed in a table; when there are one or two records, the information is included in the text. In the tables, 'U' denotes 'Unknown' and 'N' denotes 'Nestling'; all other abbreviations are obvious. All tabulated dates are in the 20th century. Elapsed times were computed from the exact number of days between ringing and recovery/control dates.

Each species has a map showing places of ringing and recovery. The open symbols on the maps refer to the place of ringing, closed symbols to the place of recovery. If the symbols for an individual are circles, the bird was ringed as a nestling or young bird; squares denote birds adjudged to be adults when ringed. The species maps are to three scales: southern Africa (Alber's Equal Area Projection), sub-Saharan Africa and Africa–Eurasia (both on Lambert's Equal Area Projection) (Snyder 1982).

For species with more than 20 recoveries, histograms showing elapsed times and distances between ringing and recovery sites are presented, occasionally separated for birds ringed as adults and juveniles. The vertical axes of all histograms show the percentage of records falling into each class. The horizontal axes of the histograms showing distances between ringing and recovery site are on a logarithmic scale.

The two maps of southern Africa on the last pages of this report, taken from Harrison *et al.* (1997), show the major towns and cities of the subcontinent, the protected areas, and the boundaries of the former and current provinces of South Africa.

SAFRING's main sponsors are the South African Department of Environmental Affairs and Tourism, BirdLife South Africa and the Namibian Ministry of Environment and Tourism. The University of Cape Town provides serviced accommodation. The publication of this report was sponsored by the John Voelcker Bird Book Fund and the Endangered Wildlife Trust. Professor Steven Piper provided additional data on Cape Vulture recoveries from the files of the Vulture Study Group. We acknowledge also the crucial role played by the National Zoo in Pretoria in acting as the clearing house for ring recoveries for half a century. This report represents the results of many thousands of hours of patient fieldwork; we salute the ringers whose dedication and determination have generated these data.

Secretarybird

Sagittarius serpentarius

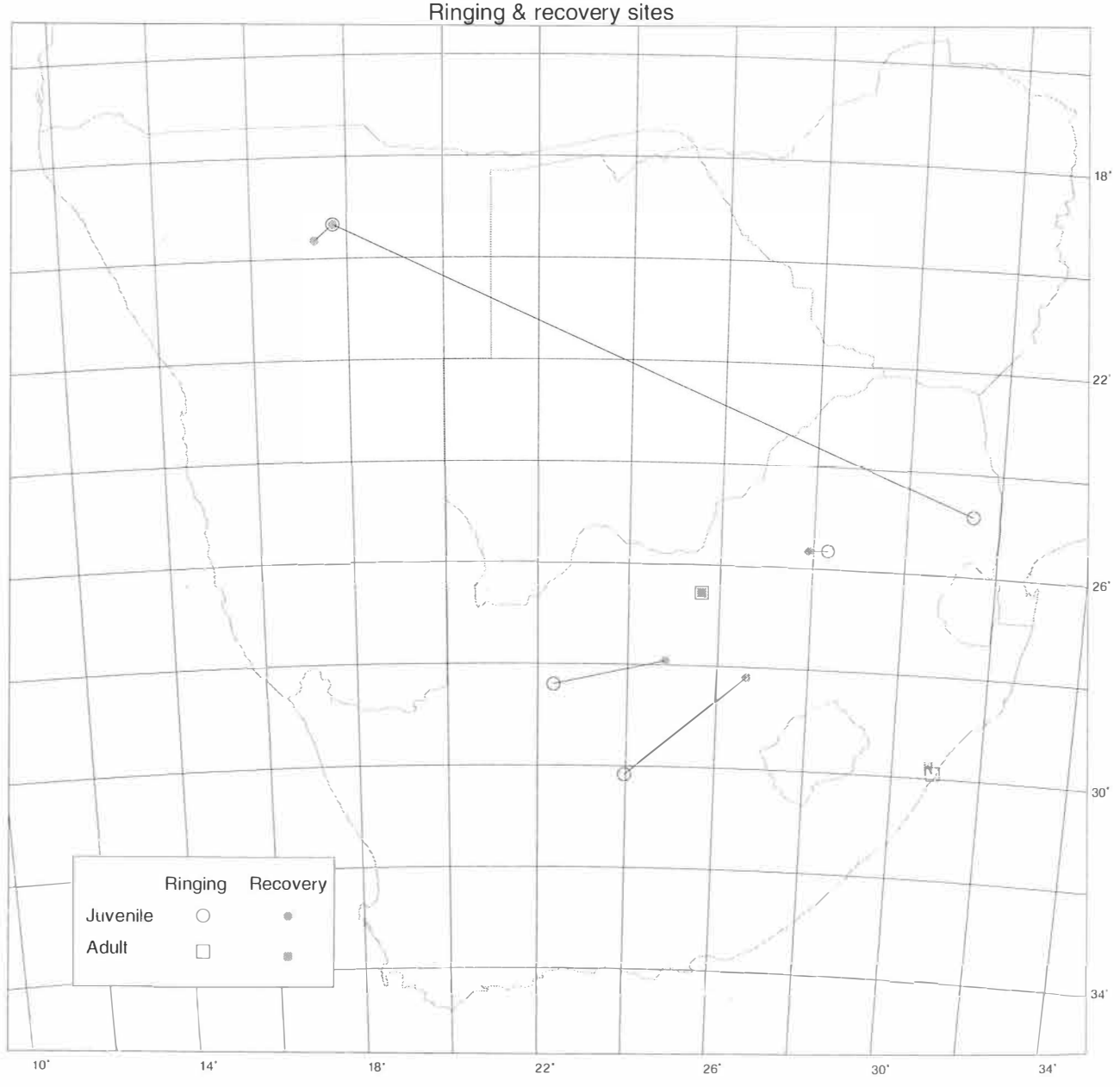
The Secretarybird occurs throughout southern Africa, and its current overall distribution pattern is probably similar to what it was in the historical past, locally modified by patterns of recent land use (ASAB1: 152–153).

Regular seasonal movements have not been documented in southern Africa, but wide fluctuations in numbers are known to occur at some localities (Tarboton & Allan 1984) and atlas reporting rates suggest that the species may be nomadic in arid parts of its range in Namibia and the Northern Cape (Steyn 1982; ASAB1: 152–153).

Recoveries of four juveniles ringed as nestlings between 1985 and 1995 provide information on postnatal dispersal. Distances moved and elapsed times from ringing to recovery were 42 km (5m 26d), 249 km (3m 4d), 340 km (6m 14d) and 1537 km (3m 25d), respectively. According to Steyn (1982), young Secretarybirds remain 'within a few hundred metres of the nest during the first year or so'. It is not known at what ages (i.e. how long before first leaving the nest) the recovered birds were ringed, but it is evident that the elapsed times from ringing to recovery cannot be presumed to represent the respective travel times.

Two of the birds were found dead, one of causes unknown and the other electrocuted on high voltage power lines. The remaining two were found alive but weak. The first of these died shortly afterwards. The long-distance bird was cared for and rehabilitated, only to be found a few weeks later with a broken wing. The potential of even young birds to travel substantial distances, as illustrated by this recovery, is noteworthy in the context of potential gene flow throughout the widespread Afrotropical range of the species.

The SAFRING databank has two recoveries of Secretary-



Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
65703026	Ad	U	27/03/68	2633S 2536E	16/04/69	2633S 2536E	1y 0m 20d	0	140 Sick
917033	Ad	U	19/08/79	2954S 3056E	05/10/79	2945S 3050E	0y 1m 17d	19	Unknown
G04976	N	U	11/09/85	2539S 2819E	08/03/86	2540S 2754E	0y 5m 26d	42	Unknown
918550	N	U	05/01/92	2450S 3125E	30/04/92	1920S 1743E	0y 3m 25d	1537	Injured
992409	N	F?	23/11/94	2824S 2221E	26/02/95	2755S 2450E	0y 3m 4d	249	Sick
906541	N	U	21/12/95	3010S 2358E	05/07/96	2812S 2639E	0y 6m 14d	340	Electrocuted

birds ringed as adults, but in both cases the circumstances were abnormal. The first was a bird ringed and subsequently recovered in the Barberspan Nature Reserve, but it had a very heavy infestation of feather lice and was probably a sick bird (P. Milstein pers. comm.). The second was released after rehabilitation in the greater Durban area of KwaZulu-Natal and was found dead 19 km from the release site less than two months later.

Bearded Vulture

Gypaetus barbatus

Only 21 individuals of this rare bird have been ringed in the course of study of the southern African population which, at a recent count, was estimated to number 204 breeeding pairs (Mundy *et al.* 1992)

There has been one recovery. An adult of unknown age and sex, ringed (G15517) at the Giant's Castle Nature Reserve (29°18'S 29°31'E) in KwaZulu-Natal on 22 January 1981, was found dead 17 km from the ringing site (29°18'S 29°31'E) on 14 October 1991. Minimal information was supplied about the recovery, so the cause of death was not established, nor was it known how long (days, weeks or months) the bird might have died before being found. The elapsed time from ringing to recovery was 10y 8m 21d.

Hooded Vulture

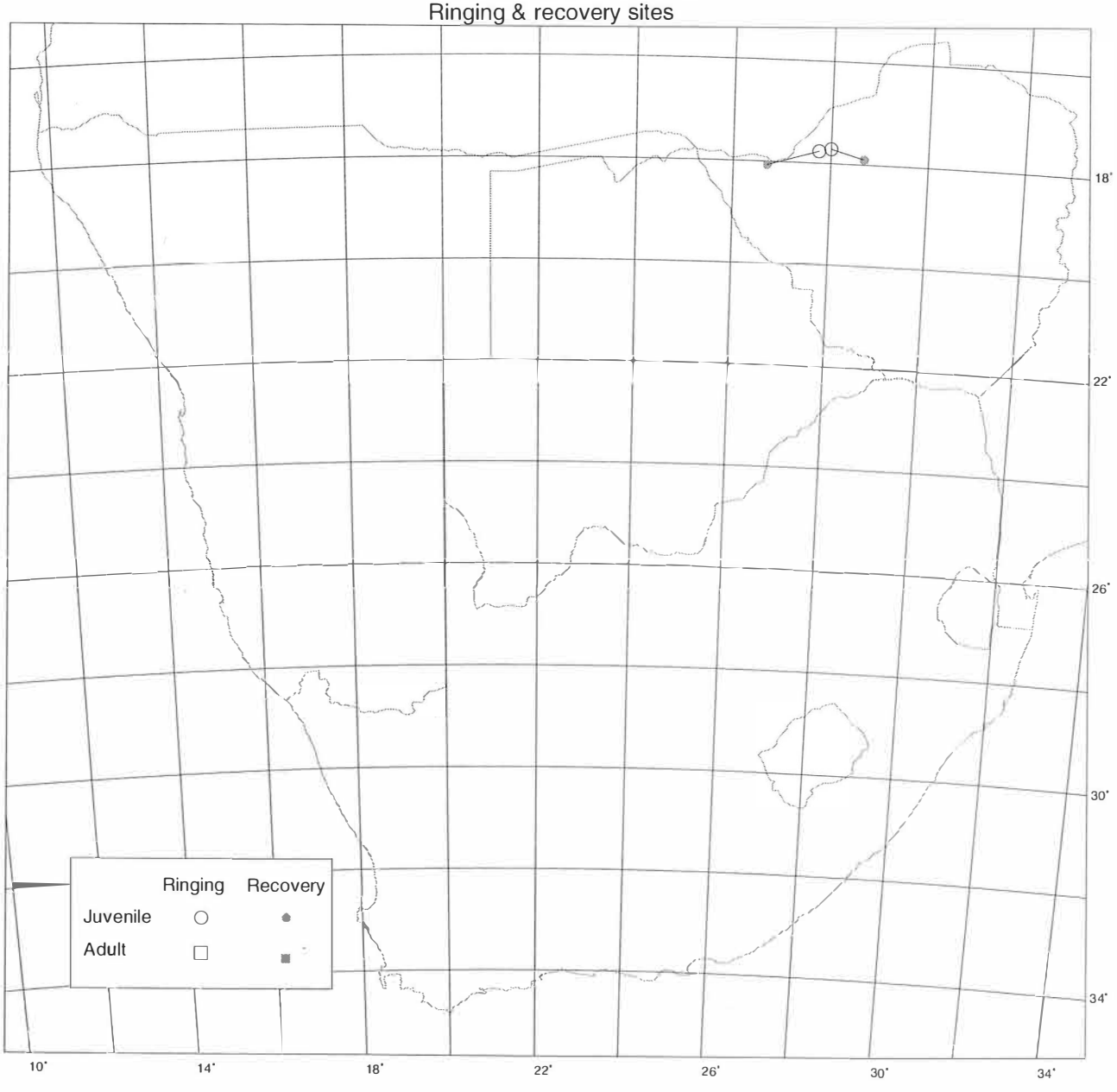
Necrosyrtes monachus

In southern Africa this widespread Afrotropical species is largely restricted to the northern peripheral regions (especially the Okavango region and the Zambezi River valley) and the lowveld of the Limpopo River valley and the Kruger National Park. In these regions it is present throughout the year (ASAB1: 156–157).

59 birds have been ringed and two recoveries have been reported to SAFRING. In the first one, an immature bird, caught in a cannon net on 13 April 1973, came to an untimely end when it detonated a land mine near the Deka River confluence with the Zambezi River (18°04'S 26°42'E), 116 km from where it had been ringed (17°46'S 27°45'E). Its remains, together with the ring (914209) were found on 10 January 1980 (Mundy 1996), giving an elapsed time from ringing to recovery of 6y 8m 28d.

The second recovery provided information on potential longevity and confirmation that poisoning is a threat to the survival of this species. A dependent juvenile, captured by cannon net on 7 May 1974 and fitted with ring 914230, was one of about 10 vultures which died after eating at a poisoned goat carcass in the Gokwe district (17°54'S 28°41'E) of northcentral Zimbabwe on 8 September 1995. The bird perished 75 km from the ringing site (17°43'S 28°00'E), 21y 4m 2d after being ringed.

Mundy (1996) was able to determine that the stainless steel ring used on this bird had lost 7.4% of its mass at an average rate of attrition (1.5 mgm/month) that would have resulted in failure (the ring falling off the bird) after a lapse of 99 years.

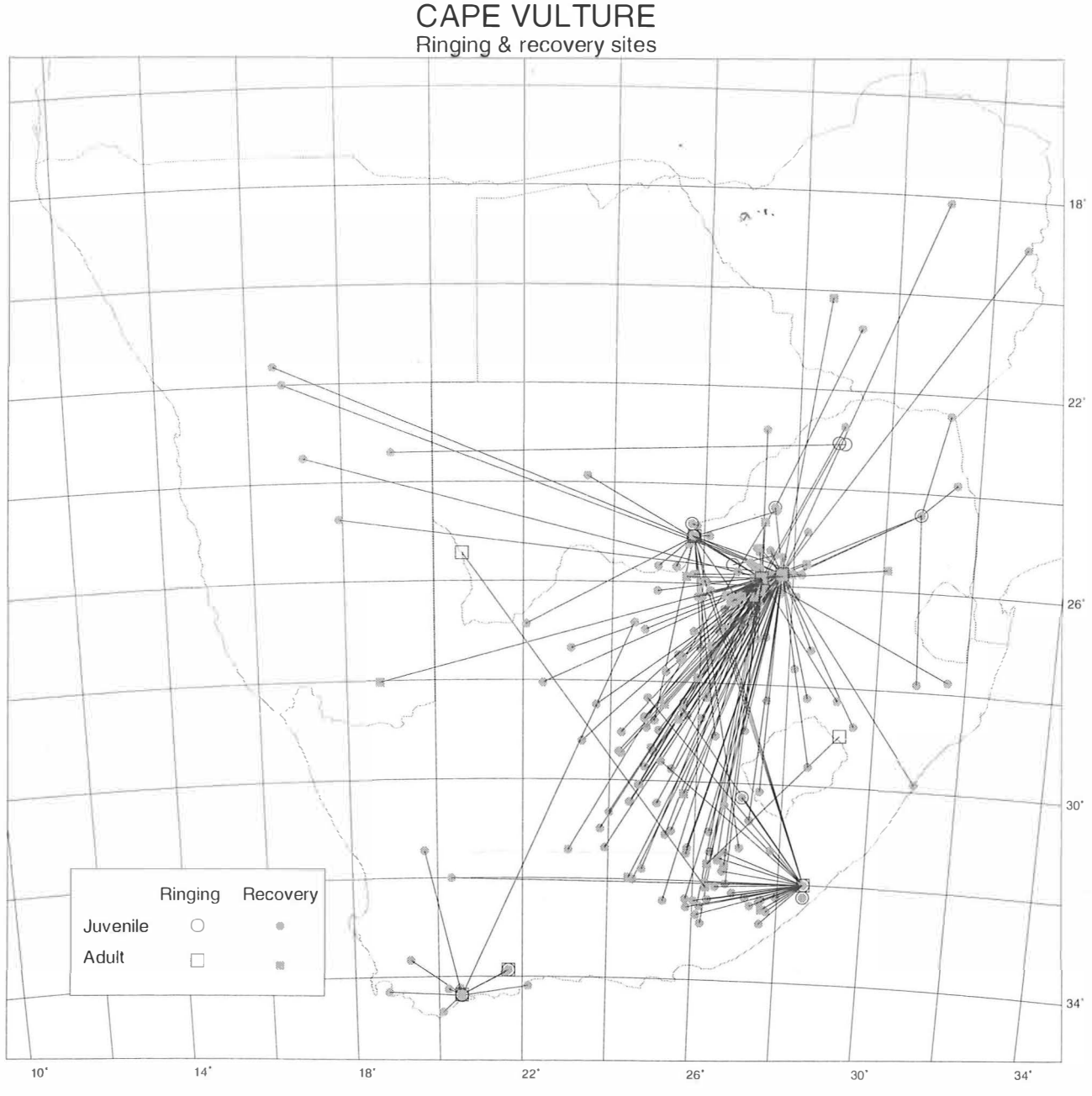


Cape Vulture (Cape Griffon)

Gyps coprotheres

This is an endemic southern African vulture which occasionally wanders north of the Zambezi River. Most of the breeding colonies are concentrated in two discrete regions, one being in the North West Province of South Africa and adjacent eastern Botswana, the other in the Lesotho highlands, the former Transkei (now part of the Eastern Cape) and western KwaZulu-Natal. Remnant and isolated colonies persist in the Western Cape, the northern Namibian Waterberg and central Zimbabwe (ASAB1: 158–159). With 6455 birds ringed, this is the most-ringed of all species of Falconiformes and Strigiformes in southern Africa. Cape Vultures were the first birds to be ringed when the South African ringing scheme was initiated in 1948 (Ashton 1979), and the first to provide an interesting recovery (C00086 – the first record in the table). Ringing has been conducted in four main areas: Magaliesberg, southeastern Botswana, Transkei (Collywobbles) and Western Cape (Potberg) (Mundy *et al.* 1992). The dispersal of Cape Vultures from these areas is well illustrated in the map. Some 631 rings have been reported, giving a recovery rate of 10%. This high rate is due in part to the monitoring of scree below the cliff-nesting sites for fallen birds. (Because of the different process that has generated these recoveries, birds recovered at the place of ringing have been excluded from the histograms.) Additionally, the large size of Cape Vultures (relative to other birds), the nature of mortality factors and the effective publicity campaigns conducted by the Vulture Study Group have all influenced the reporting rate. A cross section of 10 recoveries is provided in the table.

As can be seen from the map, these birds can fly all over southern Africa. Young birds are great wanderers and inclined to be nomadic. A radio-tracked adult from the



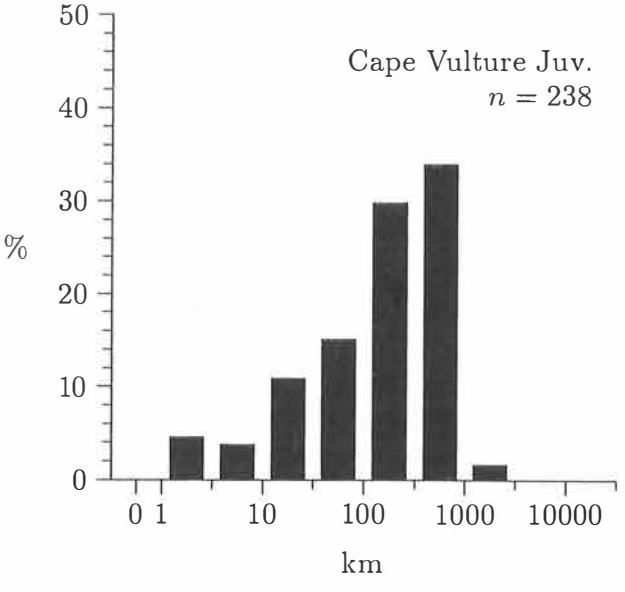
Potberg colony foraged over an area of about 600 km² (Mundy *et al.* 1992). More detailed analyses of the recovery data for this species were presented by Piper (1994) who showed, for example, that fledglings move to 'nursary areas' which tend to be on the periphery of the current range.

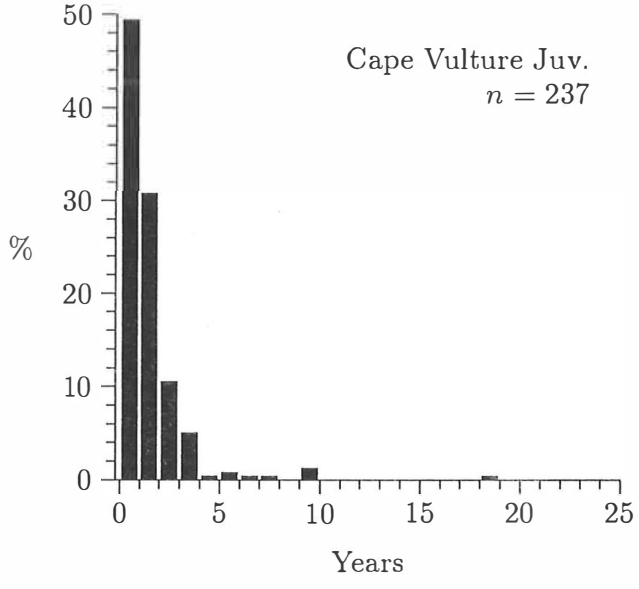
Calcium deficiency was the most frequently reported cause of death among ringed nestlings (46 birds, with a further 27 cases in which only 'illness' was specified). Among free-flying birds, electrocution was the most commonly reported cause of fatality (54 birds), exceeding the combined totals of drowning (27) and shooting (23). Poisoning killed 16 ringed birds, but is probably underreported.

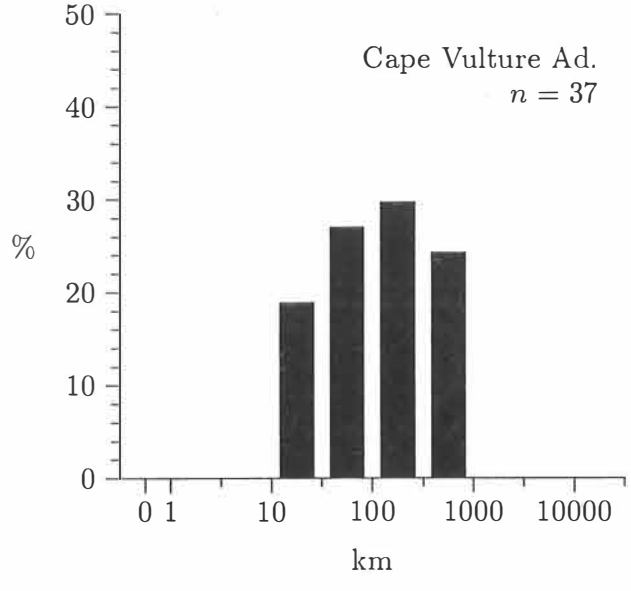
The high electrocution rate was due to incompatability between Cape Vultures and certain tower designs of the electricity grid, especially the 88 kV transmission lines in the North West Province. The dimensions of the kite-shaped tower at the top of 88 kV lines are such that if a Cape Vulture attempts to perch on the crossarm it can touch the suspended centre-phase with its wing and cause a flashover through its body. Such incidents sometimes resulted in power supply interruptions; G12753 (in table) was a victim responsible for one such blackout.

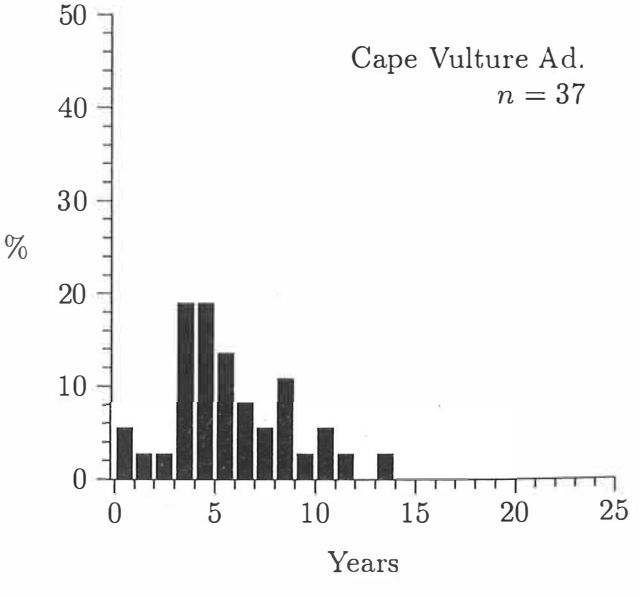
Modification of the tower designs was undertaken by ESKOM (the South African electricity utility) to provide safe perches for vultures and thus to minimize flashovers which could result in blackouts (Mundy *et al.* 1992). This commendable action has undoubtedly saved the lives of many, many vultures.

It is noteworthy, given the number of recoveries and the fact that ringing of Cape Vultures started 50 years ago, that few birds have survived for 10 years or longer (see histogram of elapsed times). This is perhaps a consequence of the unnatural toll taken on birds of all ages by hazards such as poisoned carcases, sheer-sided farm watertanks and electrocuting perches.









Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
C00086	N	U	01/08/48	2425S 2732E	23/10/49	2045S 2915E	1y 2m 23d	447	Unknown
50900346	Ad	U	22/09/57	2545S 2745E	21/01/69	2009S 2836E	11y 4m	628	Unknown
50900041	N	U	19/09/70	2545S 2745E	15/12/71	2138S 1634E	1y 2m 26d	1226	Poisoned
G12062	Ad	U	01/09/75	2551S 2718E	18/07/86	2540S 2715E	10y 10m 17d	21	Caught and killed
G12235	N	U	27/09/75	2503S 2546E	30/06/94	2502S 2607E	18y 9m 3d	35	Electrocuted
G11070	Ad	U	04/09/76	2551S 2718E	08/07/87	2614S 2652E	10y 10m 4d	61	Electrocuted
G12753	N	U	04/09/77	2545S 2745E	11/02/78	2609S 2610E	0y 5m 7d	164	Electrocuted
G15457	N	U	12/09/82	2545S 2745E	28/11/83	3222S 2550E	1y 2m 16d	758	Drowned
G18348	Ad	U	19/01/89	2526S 2038E	06/12/89	3207S 2618E	0y 10m 18d	925	Unknown
G13930	Juv	U	22/02/91	3423S 2033E	13/04/91	2649S 2430E	0y 1m 20d	922	Unknown

Whitebacked Vulture

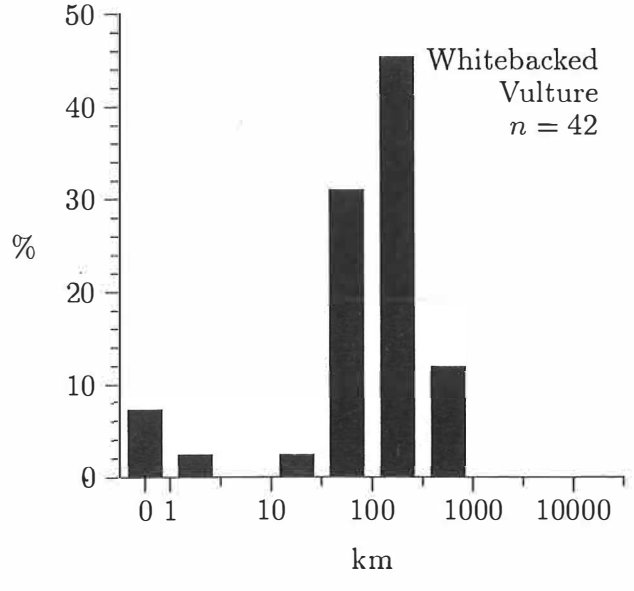
Gyps africanus

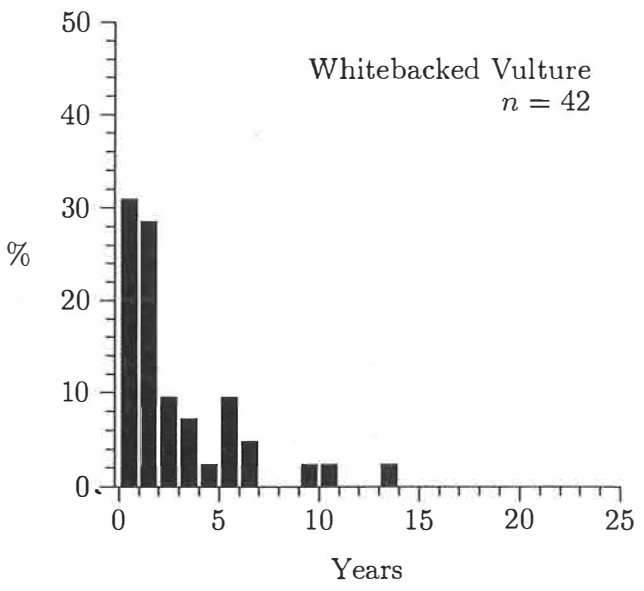
This vulture is widespread in the Afrotropical region and in the tree savanna regions that cover much of the northern half of southern Africa. It shows a preference for the drier woodland types: the highest atlas reporting rates were in the Okavango and the Kalahari (Botswana) and wildlife refuges such as the large national parks of Etosha (Namibia), Kalahari Gemsbok and Kruger (South Africa) (ASAB1: 160–161).

After the Cape Vulture, this is the second most-ringed vulture species in southern Africa. There have been three main areas of ringing activity: the Kimberley district in the Northern Cape of South Africa, the Gwai River district of northwestern Zimbabwe, and the Kruger National Park in the northeastern lowveld of South Africa. There are 42 recovery records in the SAFRING databank. Ten of the most informative of these are listed in the table. The sexes of all birds ringed were unknown.

The histograms provide the distribution of elapsed time and distance moved for all the recoveries. Four of the 42 birds recovered were ringed as adults, so histogram is dominated by records of subadults. The distances moved by adults ranged from 120 km to 392 km and averaged 247 km; that of subadults ranged from 0 km to 971 km with a mean of 149 km.

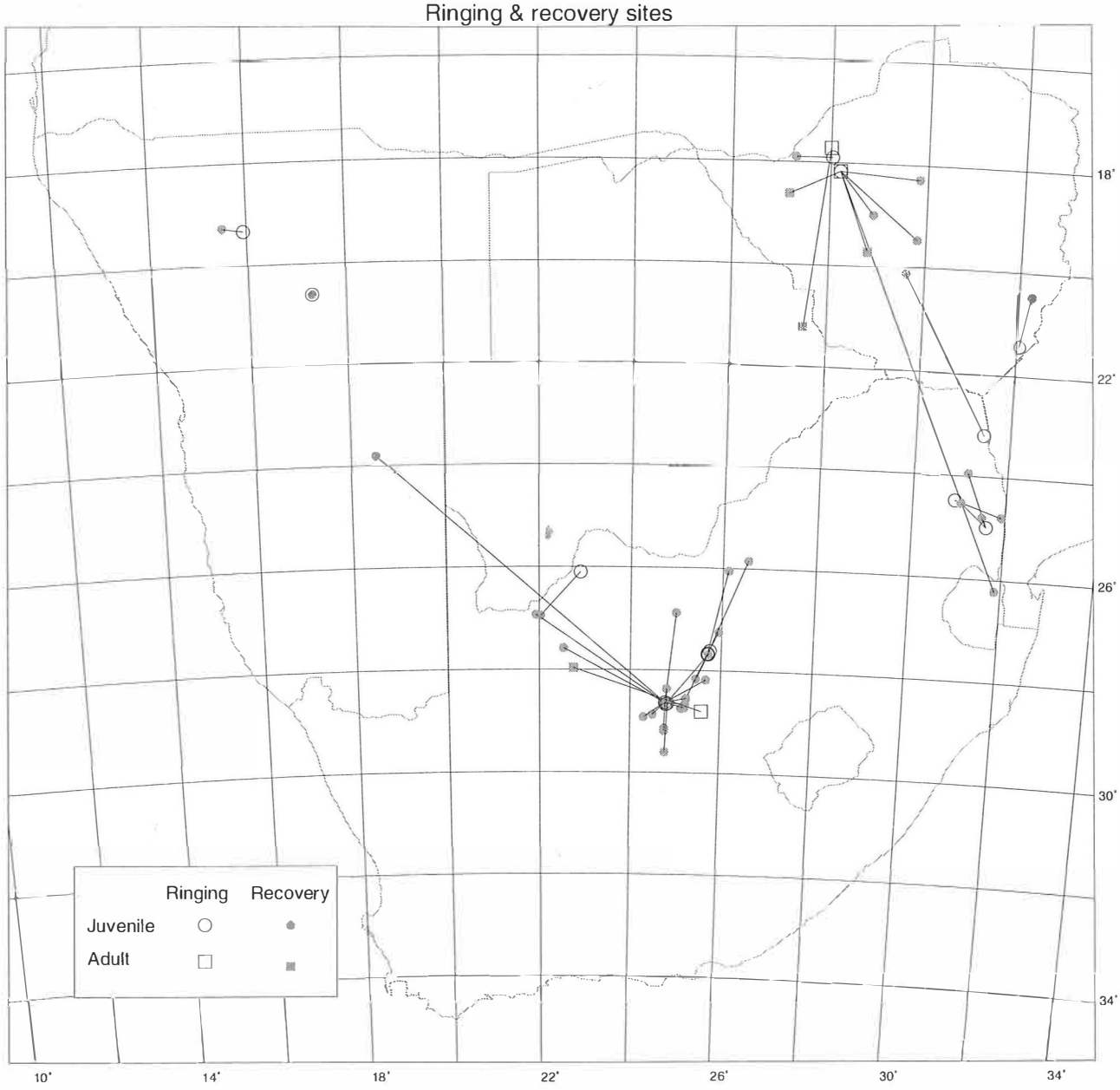
Cause of death was undetermined in 21 of the records; known causes included collision with powerlines (7), electrocution on high tension transmission lines (5), poisoning (3) and shooting (2). It is probable that a substantial number of birds for which the cause of death was reported unknown, died from poisoning, because this species is known to be highly vulnerable to poisoned carcasses (ASAB1: 160–161).





WHITEBACKED VULTURE

Ringing & recovery sites



Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
65800419	2Y	U	22/04/73	1810S 2812E	13/10/73	2613S 3152E	0y 5m 22d	971	Unknown
G05569	Ad	U	13/08/73	1743S 2800E	09/09/86	2113S 2713E	13y 0m 27d	392	Unknown
G10169	Juv	U	08/07/74	1810S 2812E	15/12/74	1900S 2854E	0y 5m 8d	118	Shot
G12309	N	U	21/09/75	2838S 2447E	15/01/86	2840S 2513E	10y 3m 25d	42	Collided with powerlines
G12317	N	U	22/09/75	2838S 2447E	20/04/76	2348S 1832E	0y 6m 28d	823	Found alive but sick
G12248	N	U	20/09/76	2838S 2447E	15/02/78	2656S 2156E	1y 4m 26d	338	Poisoned
G00077	Juv	U	02/10/76	1920S 1556E	14/10/85	1916S 1520E	9y 0m 12d	46	Caught in mammal trap
G04546	Imm	U	22/09/92	2740S 2542E	19/01/97	2715S 2556E	4y 3m 28d	52	Electrocuted
G19388	Imm	U	08/07/93	2311S 3126E	15/10/95	2007S 2938E	2y 3m 7d	388	Unknown
G19833	N	U	21/09/94	2606S 2254E	13/01/96	2657S 2202E	1y 3m 22d	128	Drowned

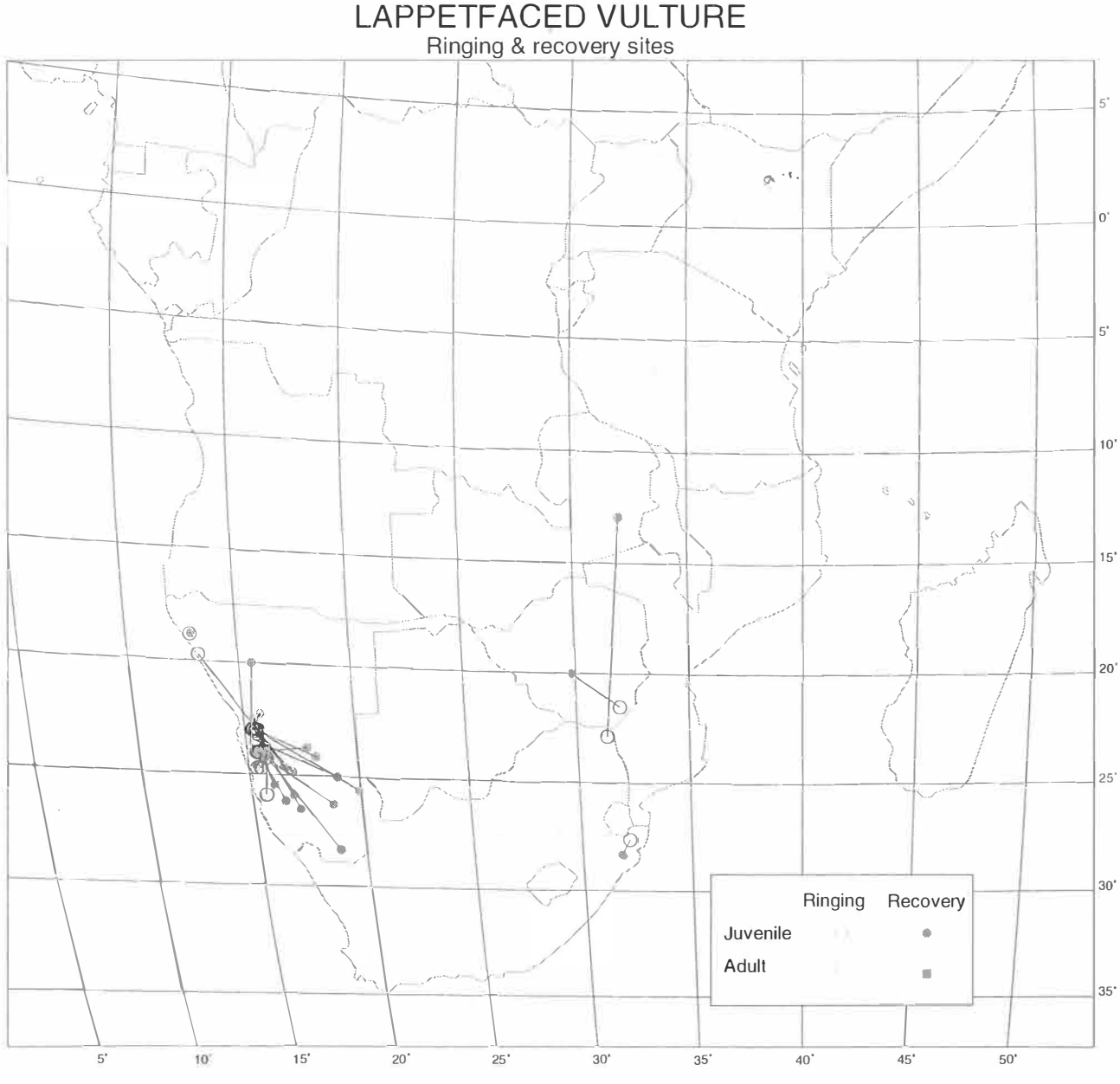
Lappetfaced Vulture

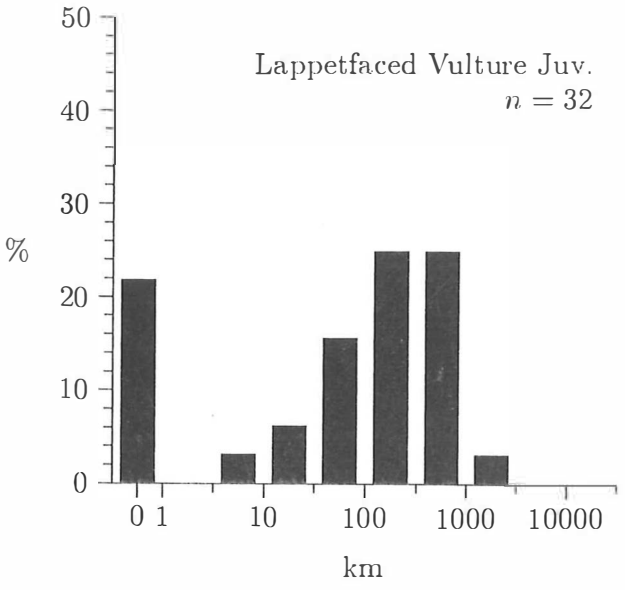
Torgos tracheliotus

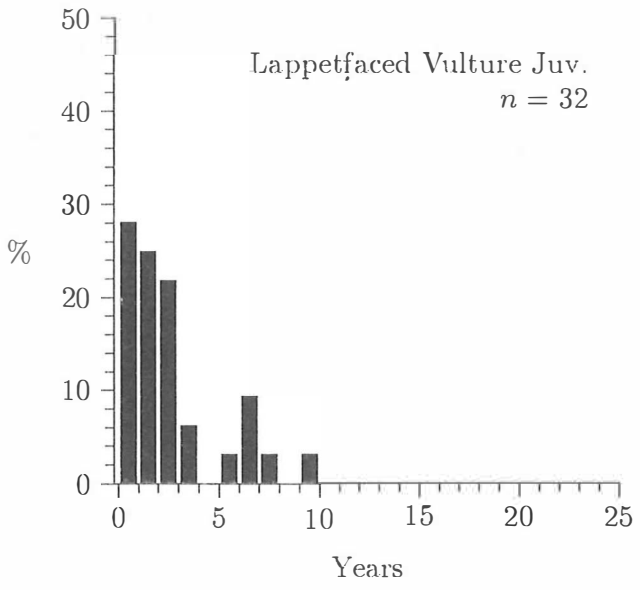
In terms of wingspan, this is the largest of African Vultures; it is also the most widespread, with a distribution extending beyond the continent to the Arabian Peninsula (Mundy *et al.* 1992). It is a species of arid woodlands; in southern Africa it is most common in Botswana and Namibia, though also frequent in parts of Zimbabwe and the eastern lowveld of South Africa (ASAB1: 162–163).

650 Lappetfaced Vultures have been ringed, the majority as nestlings. The bulk of the ringing effort has been in Namibia, as is evident from the map. There have been 30 recoveries and two controls, all of birds ringed as nestlings, the most notable involving a bird ringed at the confluence of the Shingwedzi and Limpopo Rivers on the South Africa–Zimbabwe border. In addition to its ring, this bird was fitted with a patagial tag numbered L029, which enabled it to be unequivocally sighted while feeding on a hippopotamus carcass in the South Luangwa National Park in Zambia, 1107 km north of its birthplace.

Adult Lappetfaced Vultures are normally resident and not known to move about, but young birds disperse over substantial distances as is well illustrated in the map. Unfortunately, many of the movements take these young birds out of protected areas into stock-farming areas where they are vulnerable to poisoned carcasses used in predator-control campaigns. The second oldest bird recovered (G09050) had moved from the Mkuzi Game Reserve to the Umfolozi Game Reserve in KwaZulu-Natal, and was one of the 13 birds not positively known to have died from poisoning (8), shooting (2) or trapping (2).







Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
G00073	N	U	08/10/75	2330S 1530E	17/07/77	2501S 1900E	1y 9m 9d	393	Poisoned
G00171	N	U	04/09/77	2311S 1532E	21/12/79	2630S 1709E	2y 3m 16d	403	Shot
G00220	N	U	06/10/78	2256S 1522E	19/11/84	2406S 1807E	6y 1m 14d	309	Poisoned
G00247	N	U	20/10/78	2303S 1528E	24/08/88	2343S 1554E	9y 10m 4d	86	Trapped
G09996	N	U	25/09/81	2258S 1529E	30/04/83	2535S 1955E	1y 7m 4d	535	Poisoned
G09050	N	U	17/10/87	2738S 3213E	27/09/94	2820S 3150E	6y 11m 11d	86	Unknown
G17419	N	U	20/10/93	2348S 1549E	26/07/95	2357S 1553E	1y 9m 5d	18	Poisoned
G19435	N	U	08/11/93	2252S 3120E	23/10/94	1256S 3202E	0y 11m 14d	1107	Identified by patagial tag
G17427	N	U	17/12/93	2359S 1527E	18/07/95	2342S 1745E	1y 6m 30d	238	Poisoned
G17441	N	U	06/11/94	2555S 1541E	26/07/95	2357S 1553E	0y 8m 19d	220	Poisoned

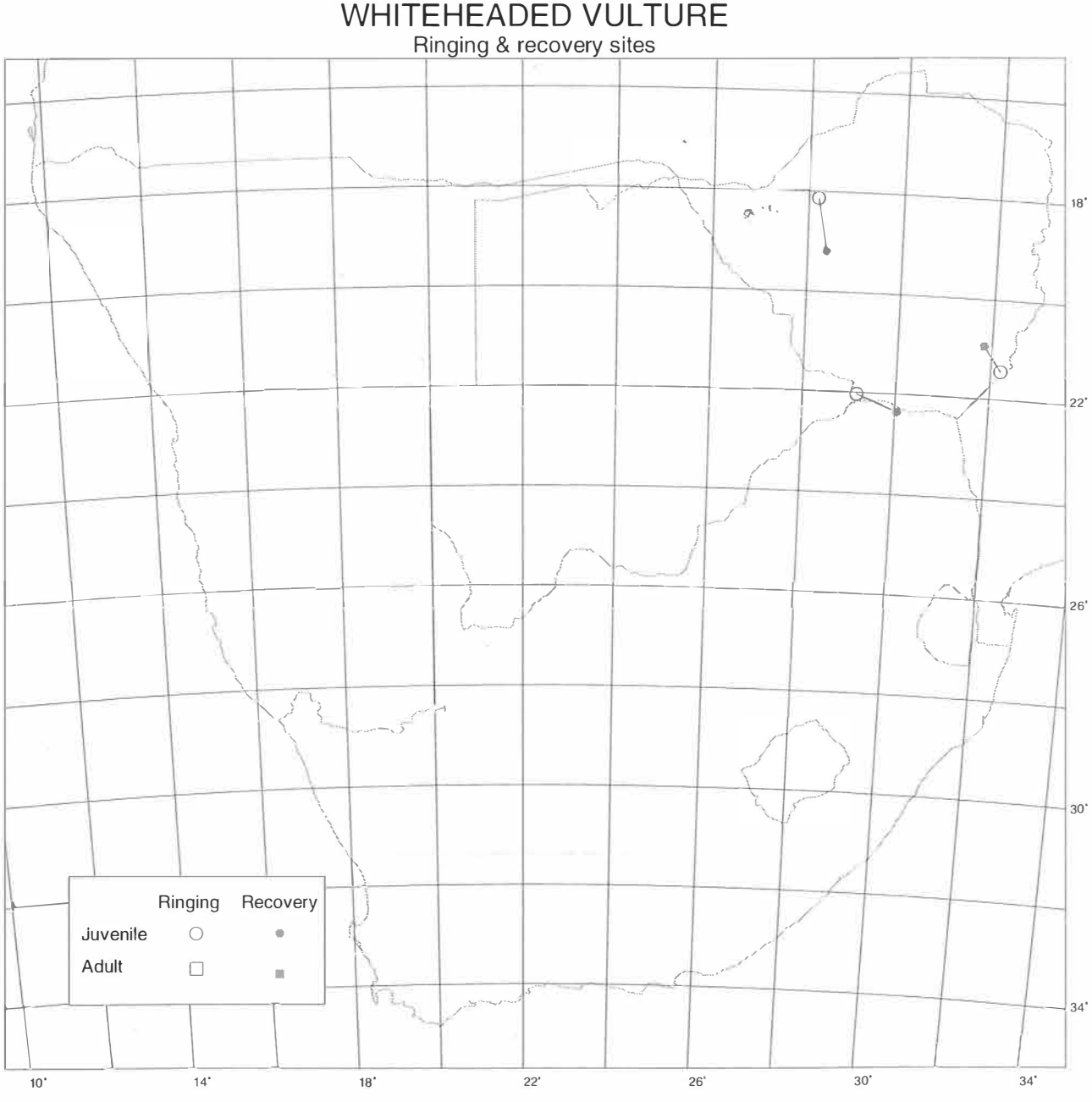
Whiteheaded Vulture

Trigonoceps occipitalis

The Whiteheaded Vulture is widespread in Afrotropical woodlands, but is a comparatively rare bird in southern Africa where its main strongholds are in Botswana, the Zambezi River valley, the Limpopo River basin of southeastern Zimbabwe, the eastern lowveld of the Kruger National Park and the game reserves of northeastern KwaZulu-Natal (ASAB1: 164–165). It is the most solitary of African vultures, normally being encountered in singletons or pairs, and is second only to the Bateleur *Terathopius ecaudatus* in the location of carcasses, especially of smaller carrion (Steyn 1982).

Comparatively few (77) birds have been ringed and the three recoveries on record are all of Zimbabwe birds. In the first of these (the most northerly on the map) the ring was found with no trace of carcass or skeleton, so the elapsed time from ringing to recovery is not informative. The bird was ringed as a juvenile on 16 March 73 and the ring was found almost three years later, 119 km from the ringing site. A nestling ringed in October 1979 was found dead of unknown causes 66 km from the ringing site in southeastern Zimbabwe after an elapsed time of 5y 8m 5d. Another nestling, ringed in November 1979, was controlled alive and well in May 1980, 98 km from its birthplace in the Limpopo River valley.

These few records give substance to the belief that immature birds wander about; breeding adults are believed to hold territories and not to range far from them (Steyn 1982; Mundy *et al.* 1992).



Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
65800459	Juv	U	16/03/73	1808S 2812E	10/02/76	1911S 2824E	2y 10m 26d	119	Unknown
G11855	N	U	10/10/79	2125S 3212E	15/06/85	2056S 3150E	5y 8m 5d	66	Unknown
G11864	N	U	07/11/79	2202S 2910E	19/05/80	2221S 3003E	0y 6m 11d	98	

Yellowbilled Kite and Black Kite

Milvus migrans

In accordance with current taxonomic opinion, the Yellowbilled Kite is here treated as a race *M. m. parasiticus* of the Black Kite *Milvus migrans*. Unlike the Black Kite, however, it is confined to sub-Saharan Africa and in the south it is present during the austral summer both as a seasonal breeding migrant and as a nonbreeding visitor from populations breeding at lower latitudes (ASAB1: 166–167).

In southern Africa it is sparse to absent in the arid regions of southern Namibia, the Northern Cape and the Karoo, but is particularly common in northern and southeastern Botswana and the coast–hinterland of KwaZulu-Natal and adjacent Eastern Cape (ASAB1: 166–167). Although ubiquitous in such areas, and a common patroller of roadways, it is not a species that is easily caught for ringing; 214 Yellowbilled Kites have been ringed, mostly as nestlings or as rehabilitees. The number of Black Kites ringed is 46.

There are 13 recoveries and controls of Yellowbilled Kites, 11 of which are from rehabilitated birds (including two from the same individual); some of these (ringed in July 1989) may have been artificially reared from nestling stage (record-keeping at most rehabilitation centres has been poor). Information derived from recoveries of 'rehabilitated' birds (marked with an asterisk in the table) may not be representative of natural behaviour.

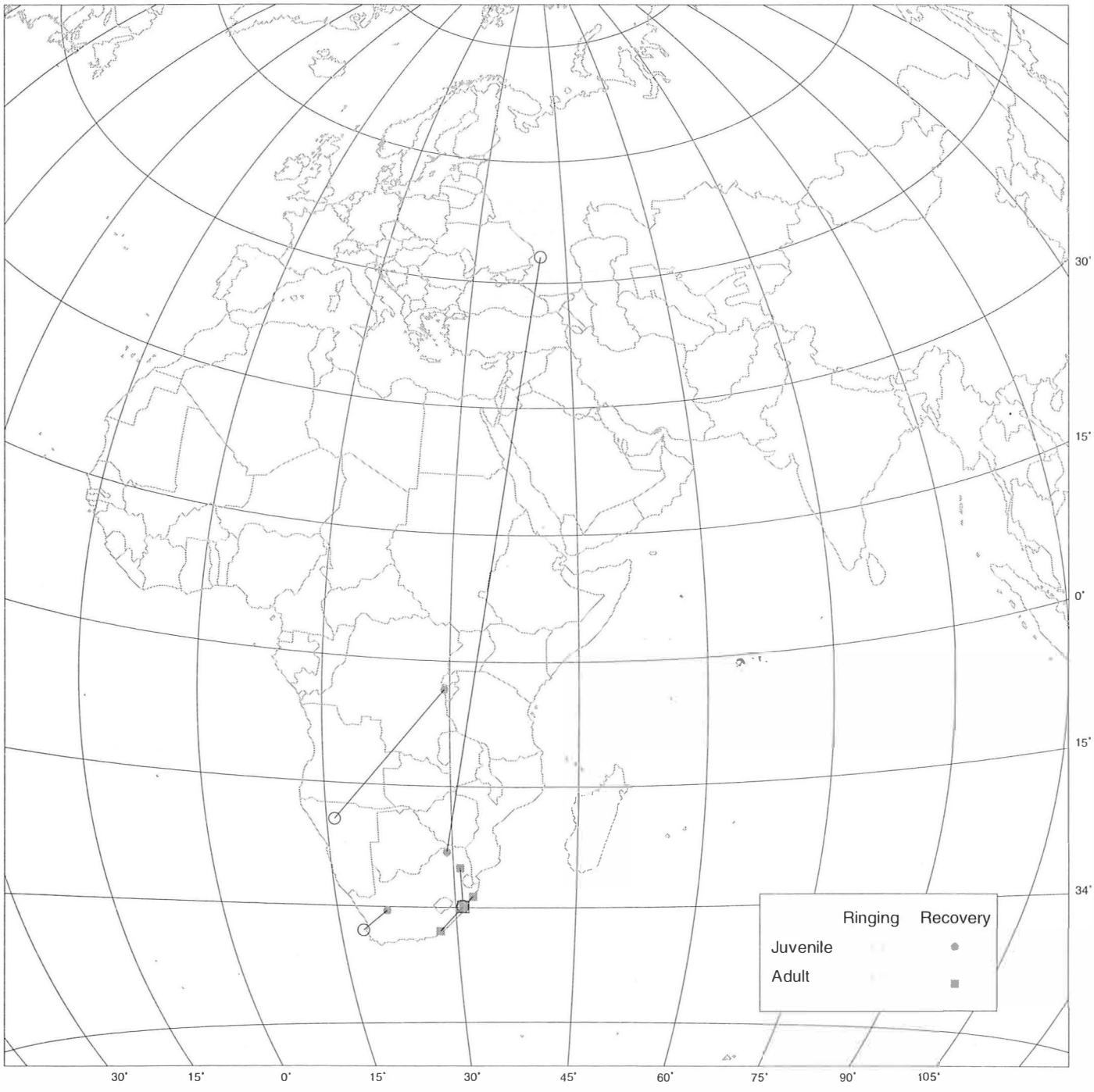
The first recovery in the table, from a wild bird, provides an indication of the nonbreeding area of Yellowbilled Kites which breed in southern Africa. A first-year bird, ringed as a juvenile in northern Namibia, flew to Burundi, where it collided with an Air France passenger jet on the runway of Bujumbura Airport at the northern end of Lake Tanganyika. The other recovery of a wild bird, a nestling ringed in KwaZulu-Natal, provides evidence of fidelity to natal area.

The last record in the table of recoveries is of a Black Kite ringed in the Ukraine and recovered in the Northern Province of South Africa. It is the only ringed Black Kite recovered in southern Africa to date.

Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
657006	Juv	U	21/11/85	1922S 1558E	15/06/86	0323S 2922E	0y 6m 23d	2297	Collided with aircraft
847401	N	U	22/11/87	2947S 3052E	24/01/91	2953S 3056E	3y 2m 2d	13	Injury
*838052	Ad	U	21/07/89	2955S 3056E	19/08/90	3302S 2751E	1y 0m 29d	453	Injury
*838059	Ad	U	21/07/89	2955S 3056E	13/02/90	2958S 3057E	0y 6m 24d	6	Shot to promote airport runway safety
*843266	Ad	U	22/01/90	2955S 3056E	19/03/91	2504S 3049E	1y 1m 25d	539	Road casualty
*843277	Ad	U	22/01/90	2955S 3056E	30/10/92	2836S 3215E	2y 9m 8d	194	Injury
*786564	1Y	U	15/09/95	3300S 1756E	03/12/95	3029S 2120E	0y 2m 18d	426	Control
C360341	Juv	U	15/06/86	4811N 4046E	07/04/87	2307S 2917E	0y 9m 22d	8010	Collided with aerial wires

YELLOWBILLED KITE AND BLACK KITE

Ringing & recovery sites



Blackshouldered Kite

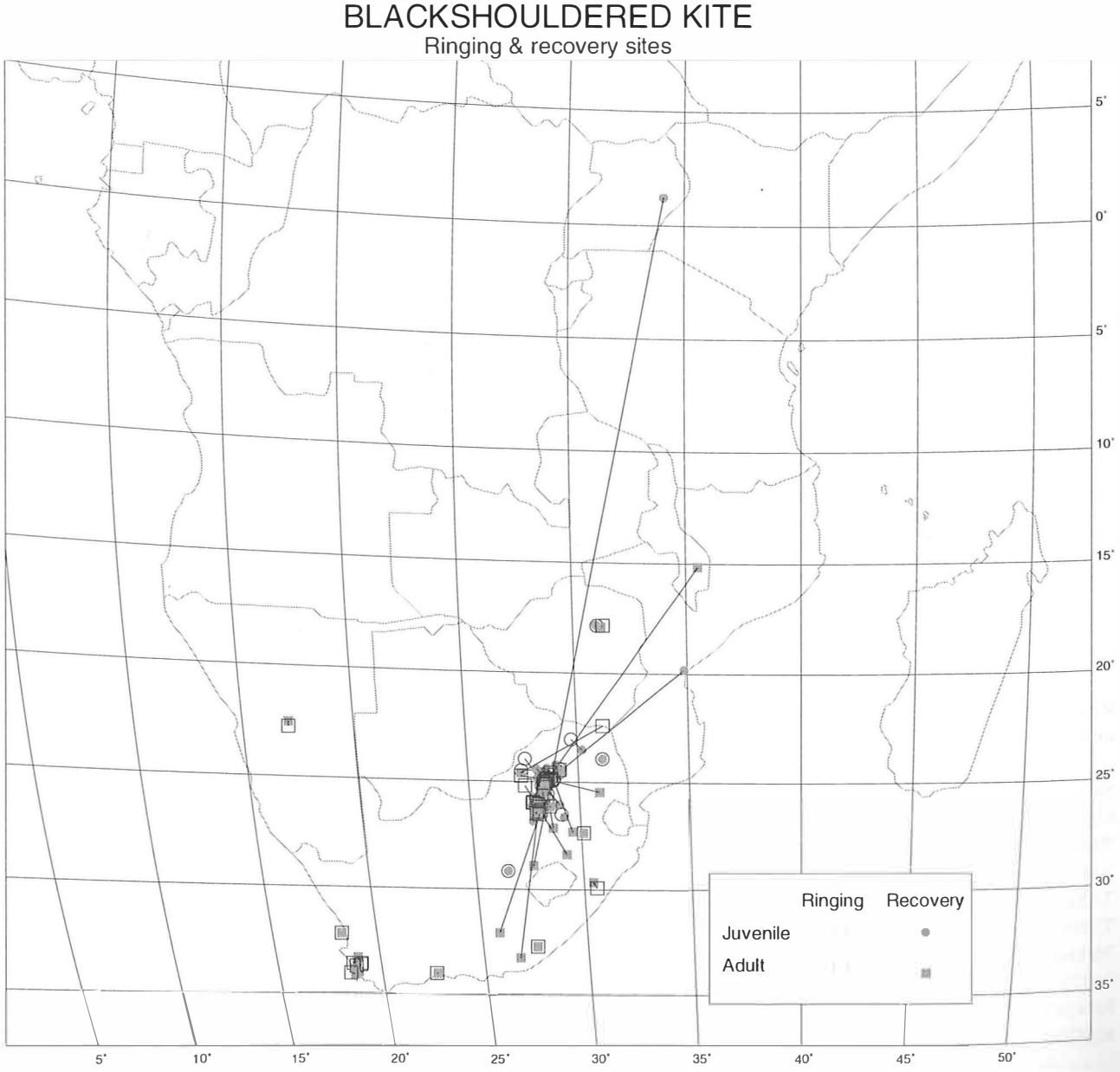
Elanus caeruleus

The Blackshouldered Kite is probably the commonest bird of prey in southern Africa (Steyn 1982). To the north it ranges through most of sub-Saharan Africa and Madagascar, and occurs also on the Iberian Peninsula and parts of southern Asia, with closely related and similar-looking species in both North and South America and in Australia (Del Hoyo *et al.* 1994).

In southern Africa it is most commonly encountered in grassland and fynbos, but it occurs in most habitats (atlas reporting rates exceeded 10% in 19 vegetation types), consistently avoiding only the deserts or dense woodlands or forests at the extremes of the moisture gradient (ASAB1: 170–171).

It hunts either by hovering or from a perch (Steyn 1982) and regularly uses utility lines or telephone poles as lookout sites. It is easily caught in a Balchatri trap and is the raptor most commonly trapped by this method with 2836 birds ringed. There have been 58 recoveries and 16 controls of 72 individuals.

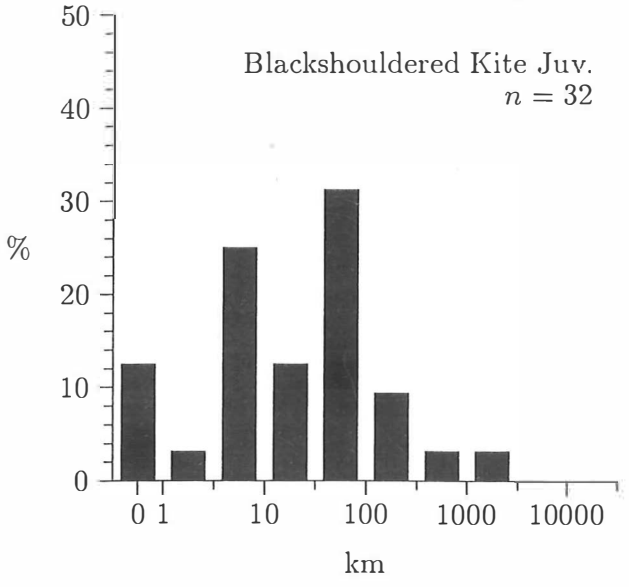
This species is known to indulge in frequent, nomadic movements, and a population studied at the Springbok Flats in the Northern Province showed a monthly turnover of 25% (ASAB1: 170–171). The ring recoveries indicate the extent of this movement and the map illustrates quite well the seemingly random directions recorded. Ringed birds have been known to stay near to the ringing site area for months or years and then suddenly to leave the area and travel a hundred kilometres or more; for example, the bird carrying ring 732001 (see table) was retrapped 10 km from the ringing site almost six months after being ringed but was subsequently found dead on a roadway more than 230 km distant. The most noteworthy recovery was from a bird ringed as a nestling near Pretoria and reported 4.5 years later from Uganda, over 3000 km to the north (K04243 in table). Because of the time lapse it is not possible to determine whether this was an example of postnatal dispersal, or

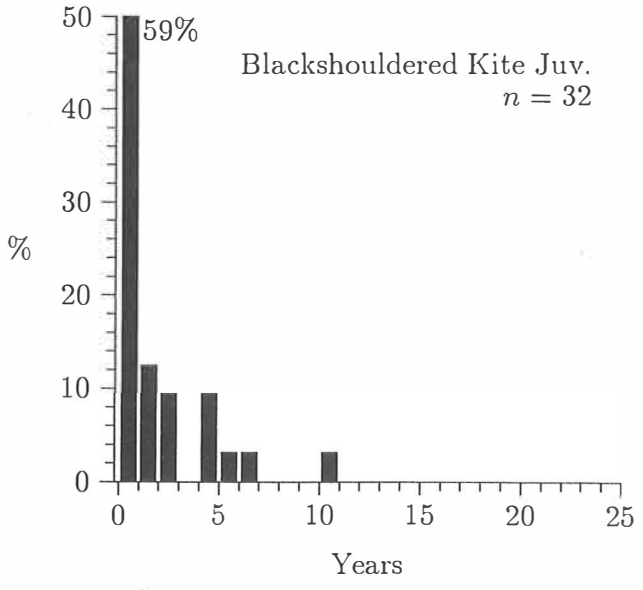


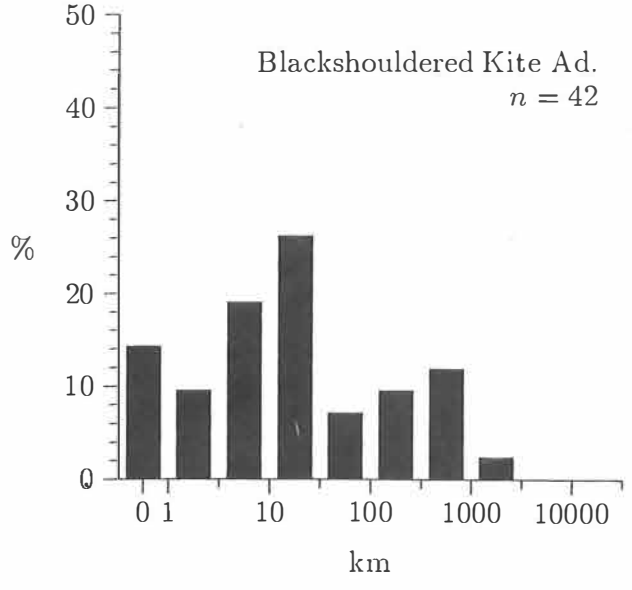
whether the bird undertook the journey at some subsequent time up to its fifth year. Whatever the case, it provides a graphic example of potential gene flow in this widespread species; all African Blackshouldered Kites belong to a single subspecies (Del Hoyo *et al.* 1994).

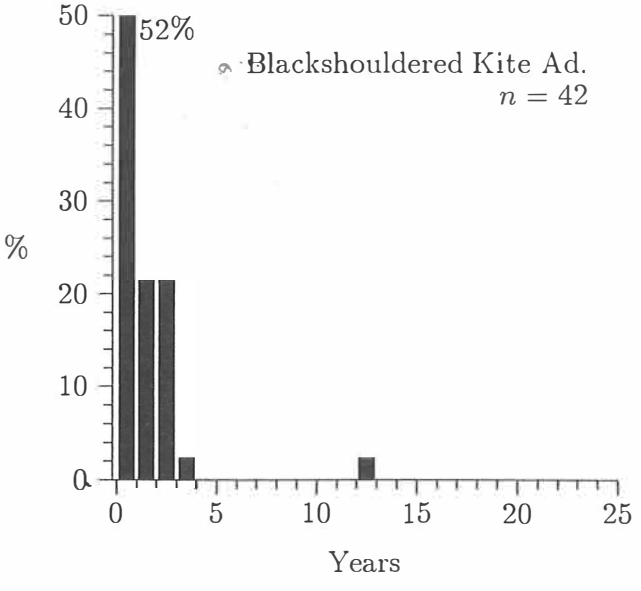
The most commonly reported cause of death of ringed birds was road kills (14), followed by shooting (11), with injury (from causes unknown) accounting for six birds.

The elapsed times from ringing to recovery or control (16 birds) exceeded 10 years for two birds; the oldest of these was 12y 6m 15d, but it is possible that this bird might have been years dead when found. The comparative paucity of birds of advanced years is notable, but may be due in part to the nomadic nature of the species.









Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
58607572	Ad	U	29/06/69	2630S 2808E	06/10/69	3203S 2550E	0y 3m 8d	656	Shot
615335	Imm	U	26/12/71	2456S 2851E	03/12/82	2543S 2752E	10y 11m 8d	132	Unknown
704443	Imm	U	10/10/72	2457S 2837E	09/08/73	1949S 3452E	0y 9m 29d	859	Shot
704212	Ad	U	26/11/72	2224S 3111E	11/12/75	2436S 2724E	3y 0m 14d	457	Shot
732001	Ad	U	06/10/74	2504S 2829E	06/10/76	2708S 2843E	2y 0m 1d	231	Road casualty
738961	Ad	U	10/10/74	2434S 2845E	14/08/75	2718S 2936E	0y 10m 4d	316	Shot
769061	Ad	U	11/03/79	2602S 2808E	14/06/79	3313S 2643E	0y 3m 4d	810	Bad weather
704252	Ad	M	19/04/82	2505S 2827E	31/08/82	1509S 3532E	0y 4m 12d	1328	Trapped
K04243	N	U	28/03/88	2551S 2831E	12/10/92	0132N 3407E	4y 6m 15d	3069	Unknown
K07783	Ad	U	05/09/93	2451S 2846E	23/12/95	2853S 2742E	2y 3m 17d	461	Road casualty

Black Eagle

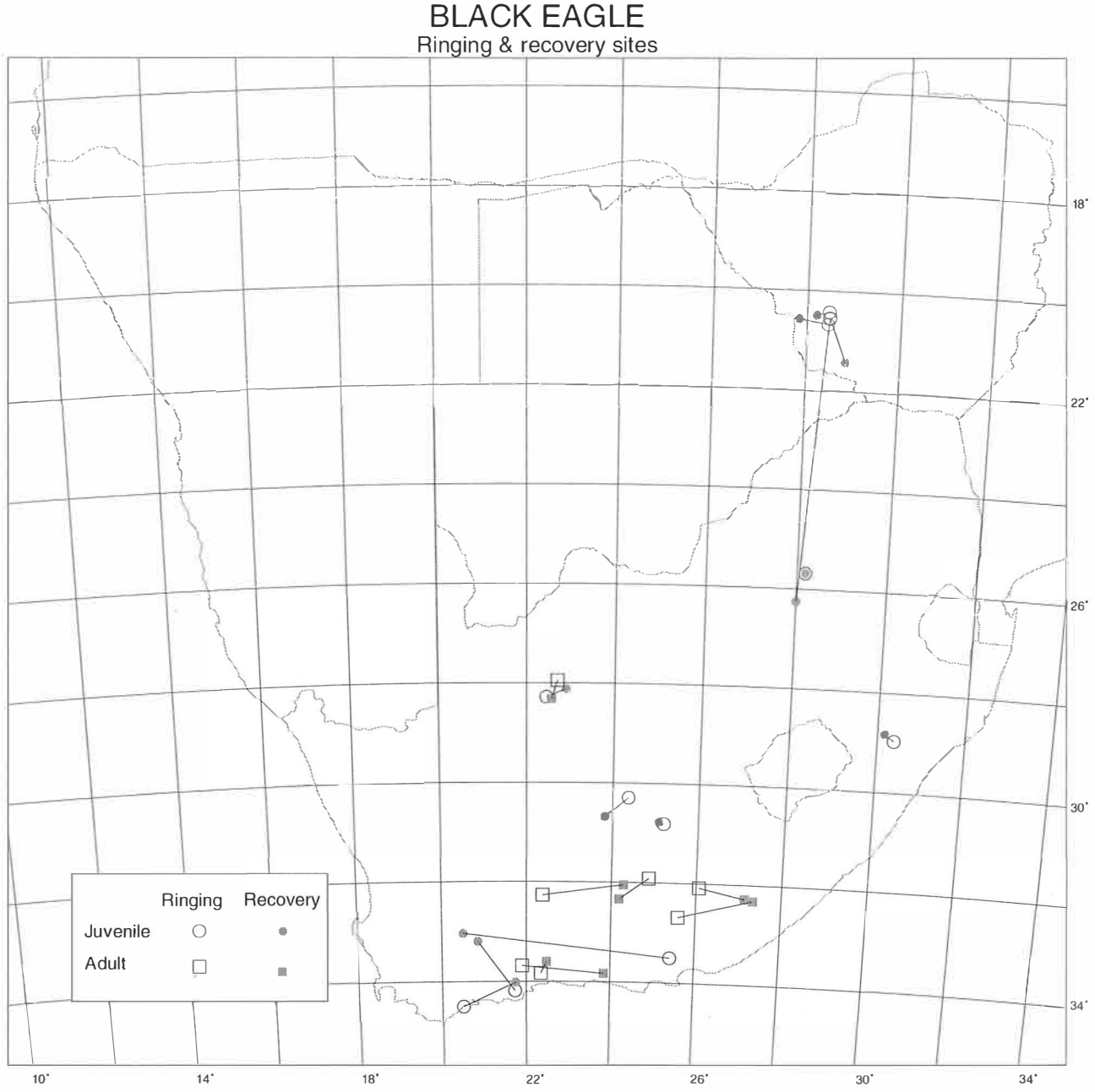
Aquila verreauxii

Although given the appropriately descriptive name of Black Eagle in southern Africa, this species is known as Verreaux's Eagle elsewhere in Africa, where it extends as far north as Egypt and beyond the continent into Israel (Del Hoyo *et al.* 1994). In southern Africa its distribution is generally similar to that of its preferred prey, the Rock Hyrax *Procavia* spp., which is associated with exposed rock faces and scree in mountainous or hilly areas. The Black Eagle is thus absent from much of Botswana and from regions where hyraxes have been exterminated by hunters and their dogs (ASAB1: 175–177).

In terms of breeding biology and ecology, the Black Eagle is probably one of the best-studied of African eagles (e.g. Rowe 1947; Gargett 1977, 1990; Davies 1994). Adults show strong fidelity to breeding territory, but nonbreeding birds, especially subadults, are thought to move 'significant' distances (Gargett 1990). No more than 400 birds have been ringed in southern Africa. In recent decades many of these have been 'problem' birds in the opinion of small-stock farmers, and the Department of Nature Conservation in the former Cape Province pursued an active policy of capturing, ringing and relocating such birds (which were often subadults) to save them from being shot. At least eight of the 19 recoveries and controls of this species in the SAFRING databank involve rehabilitated or relocated birds, and many of the movements shown in the map have stemmed from such birds.

A feature of the recoveries is that few birds have survived a year or more after release (see histogram of elapsed times), which is perhaps indicative of the compromised status of most of the ringed birds at risk in the general population.

The bird carrying ring number G18571 was a fledgling which flew down from its nest in the Apies River poort (in the Magaliesberg near Pretoria) and stood on the railway line where it was run over by a train, exemplifying the additional hazards faced by those eagles which attempt to breed in built-up areas.



Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
G05603	N	U	02/09/72	2040S 2827E	25/04/73	2034S 2750E	0y 7m 22d	65	Unknown
G10731	Juv	U	17/07/76	3048S 2512E	16/07/77	3046S 2505E	0y 11m 29d	12	Injury
G10314	N	U	08/08/76	2032S 2829E	16/01/77	2125S 2850E	0y 5m 9d	105	Killed for research
G04804	N	F?	29/07/78	2025S 2828E	12/01/79	2029S 2812E	0y 5m 15d	29	Unknown
*G08988	Ad	U	30/05/84	3350S 2221E	12/07/84	3336S 2229E	0y 1m 13d	29	Electrocuted
G13961	Ad	U	04/08/88	3241S 2535E	19/08/89	3219S 2720E	1y 0m 15d	169	Control
G18571	N	U	20/07/93	2541S 2811E	21/09/93	2541S 2811E	0y 2m 2d	0	Hit by train
G19550	N	U	09/09/93	3017S 2422E	16/05/94	3040S 2350E	0y 8m 6d	67	Drowned

Tawny Eagle

Aquila rapax

Although widespread in the Afrotropical region and occurring also in southern Asia, the Tawny Eagle is considered a threatened species in southern Africa, where it is distributed across the northern half of the subcontinent with extensions southwards into the grassy Karoo between 22°E and 27°E and into the wooded savannas of central and northeastern KwaZulu-Natal (ASAB1: 178–179). It obtains food by scavenging, by piracy (robbing other species) and by direct hunting, employing one or other mode according to the opportunity (Steyn 1982).

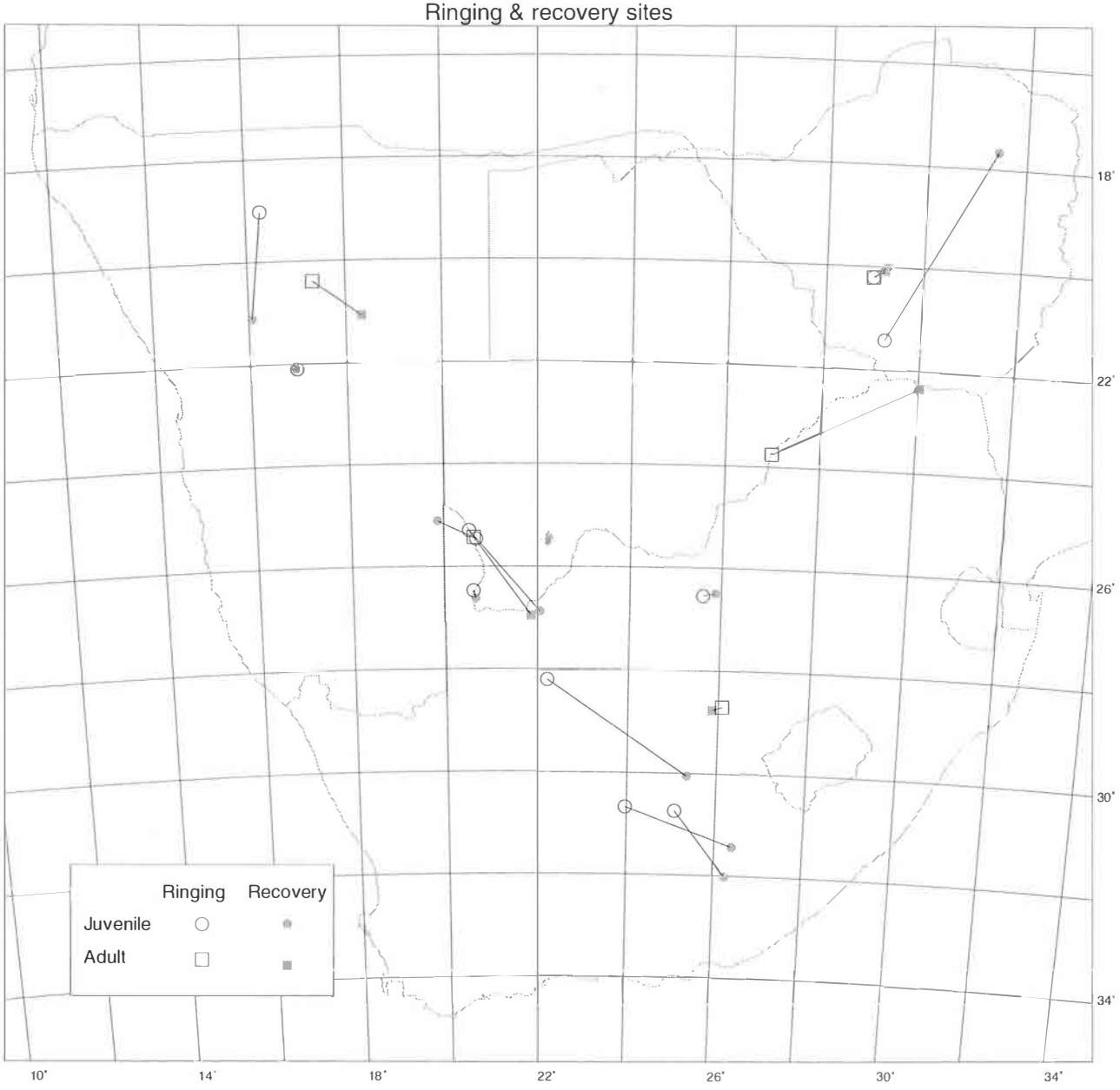
The 198 Tawny Eagles ringed in southern Africa have yielded 16 recoveries; two of these are of released captive-reared birds (one of which is shown in the table, marked with an asterisk), two are from rehabilitated birds and two lack detailed recovery data. In six records the cause of death was unknown. In the remaining 10, three were road fatalities (birds struck by motor vehicles, presumably while scavenging other road kills), two records of drownings, one each in Tawny Eagles were shot, trapped or collided with powerlines.

The map indicates that most of the movements were undertaken by young birds, with the longest distance reported by a captive-reared individual. An interesting feature of the map is that six of the movements are in the southeasterly quadrant, though this my be due to chance, given the small sample size.

Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
54612003	N	U	23/10/64	2125S 2915E	06/09/66	1740S 3125E	1y 10m 13d	475	Unknown
912636	Ad	M	14/12/74	2345S 2659E	01/05/75	2220S 3002E	0y 4m 16d	349	Unknown
6802141	N	U	02/09/76	2633S 2536E	22/08/77	2630S 2553E	0y 11m 19d	29	Found sick or injured
*914326	Imm	U	17/09/84	2206S 1658E	07/01/91	2205S 1656E	6y 3m 20d	4	Road fatality
903833	Imm	U	09/01/86	1901S 1618E	18/03/89	2107S 1604E	3y 2m 7d	235	Road fatality
914281	Ad	M	12/01/87	2024S 1720E	13/07/87	2105S 1820E	0y 5m 30d	129	Drowned
J08714	Ad	U	19/12/90	2526S 2038E	30/06/93	2657S 2152E	2y 6m 11d	209	Unknown
J08724	1y	U	26/12/90	2518S 2032E	03/10/91	2652S 2203E	0y 9m 7d	231	Drowned
G17002	N	U	25/09/92	2812S 2213E	19/04/93	3003S 2520E	0y 6m 23d	366	Unknown
65800164	Imm	F?	05/01/96	3040S 2358E	14/06/96	3125S 2624E	0y 5m 9d	246	Injured on road

TAWNY EAGLE

Ringing & recovery sites



Wahlberg's Eagle

Aquila wahlbergi

This comparatively small eagle is considered to be Africa's commonest eagle (Steyn 1982; Meyburg et al. 1995; ASAB1: 182–183). It is a bird of woodland and open savannas, preferring regions where the annual rainfall exceeds 500 mm. In southern Africa it ranges from northeastern Namibia through the Okavango of northern Botswana to Zimbabwe and the Limpopo River basin as far as 26°S, with an extension farther southwards through eastern Swaziland and KwaZulu-Natal to 31°S (ASAB1: 182–183).

In southern Africa it is a migratory eagle, arriving from its nonbreeding haunts in August or September, and departing during March–April. Steyn (1982) commented that its migratory movements were not properly understood in spite of its common status. Even while these words were being written, however, the first of several ringed birds was found in its nonbreeding area. There are now 11 recoveries from the 301 Wahlberg's Eagles ringed in southern Afrca, and nine of these have yielded useful information on locations of migrant birds, on survival and on fidelity to breeding area.

The elapsed time for the first record (59702970) in the table of recoveries is best ignored because only the ring was

Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
59702970	N	U	03/12/67	2035S 2836E	07/10/73	2035S 2836E	5y 10m 4d	0	Ring found; no remains of bird
59702974	U	U	17/12/67	2026S 2824E	23/09/79	0302S 2826E	11y 9m 6d	1035	Shot
81660	N	U	21/12/72	2025S 2828E	01/09/78	2035S 2840E	5y 8m 10d	28	Shot
830507	N	F?	19/12/81	2029S 2832E	17/09/83	0941S 2252E	1y 8m 28d	1346	Trapped for food
904977	Ad	U	21/01/83	2510S 2747E	14/02/91	2510S 2736E	8y 0m 24d	18	Injury
918523	Ad	F	03/11/89	2450S 3125E	16/03/90	1451S 2446E	0y 4m 11d	1309	Trapped
918533	N	U	06/01/90	2450S 3125E	29/08/93	1305N 3021E	3y 7m 22d	4218	Unknown
839752	N	U	12/10/90	2438S 3128E	29/03/91	1818S 2946E	0y 5m 16d	726	Unknown
*968070	1Y	F	30/12/92	2301S 2946E	18/04/94	0719S 2525E	1y 3m 17d	1807	Trapped
850498	Juv	M?	08/02/95	2642S 2232E	24/02/97	2456S 2827E	2y 0m 17d	624	Unknown

found and the bird might have died in any year after being ringed. The longest-surviving bird (59702974) was likely to have been ringed as a nestling; if so, it was close to 12 years old when shot. Brown (1970) suggested, on the basis of recruitment rates determined in Kenya and Zimbabwe, that the average life span of adult Wahlberg's Eagles must be about eight years if each bird is to replace itself in the population.

The recent successful satellite tracking of an adult female Wahlberg's Eagle over a distance of 8816 km from Namibia via Angola to Cameroon, Nigeria and Chad, and back again (Meyburg *et al.* 1995) means that more is now known about the migratory movements of this species than about any other Afrotropical raptor.

Although satellite tracking can provide more information on migratory routes and destinations in a few months than ring recoveries can ever be expected to reveal, rings remain indispensable for determining longevity and survival rates.

African Hawk Eagle

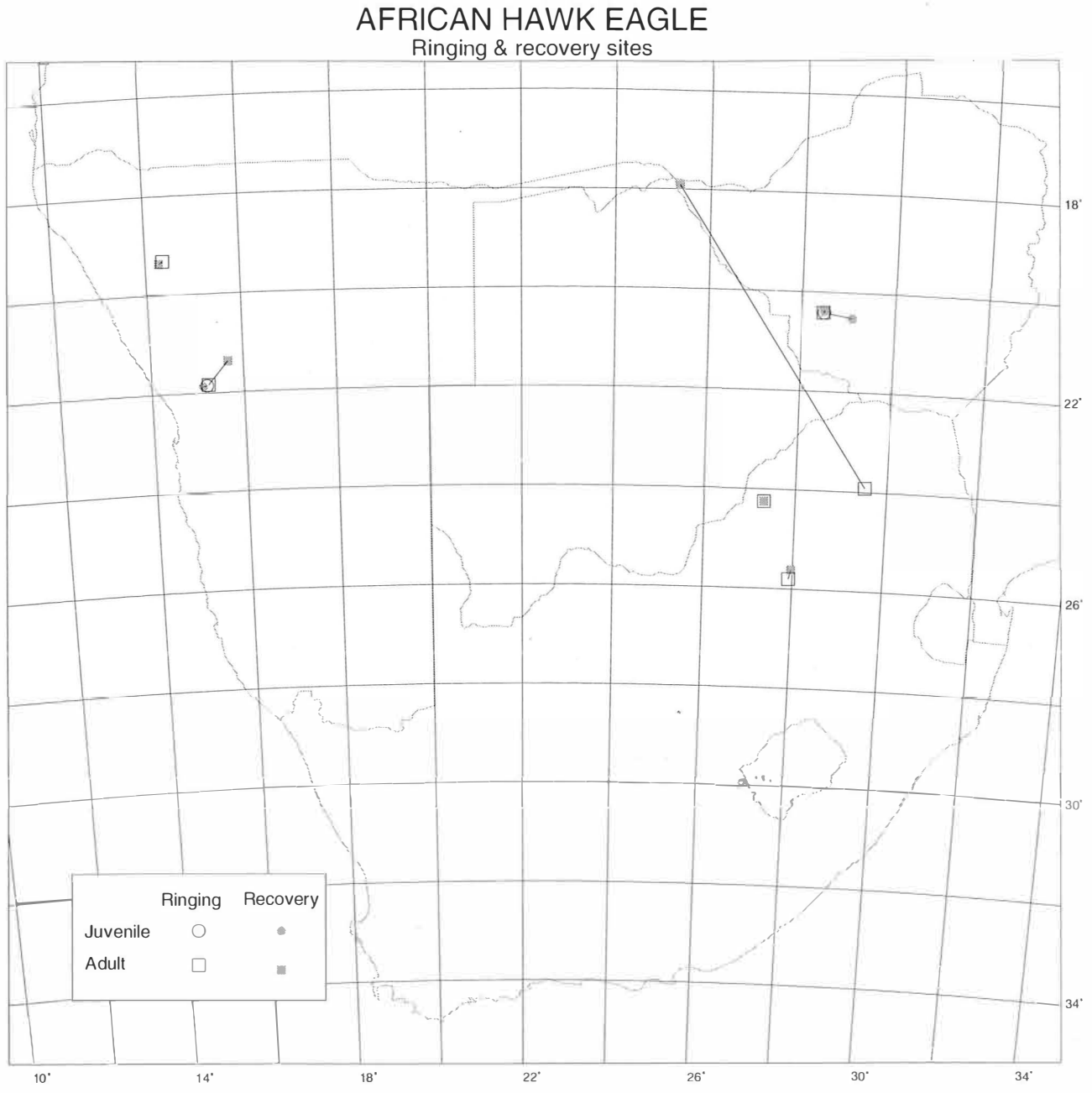
Hieraaetus spilogaster

The African Hawk Eagle is species of well-wooded areas and has a wide distribution in the Afrotropical region, including the northern half of southern Africa, avoiding areas of open tree savanna and seldom ranging far south of 26°S (ASAB1: 188–189).

There are eight recoveries of this species, all of which are tabled. The cause of death was established for four of the birds recovered; one of these was shot and three were drowned, an indication of the susceptibility of this species, in the drier parts of its range, to the hazard of unmodified farm watertanks.

A feature of the African Hawk Eagle map of ringing and recovery sites is the comparatively small scale of movement for all but one of the recoveries, the mean distance of the remaining seven being 25 km. Steyn (1982) considered the species to be resident and commented that young birds probably mature and remain in the general area in which they are reared. The long-distance movement (almost 800 km) from the Northern Province to the Victoria Falls on the Zimbabwe–Zambia border by one adult bird seems out of character for this species. There are, however, other instances within this report of seemingly resident individuals suddenly moving substantial distances (e.g. Black-shouldered Kite *Elanus caeruleus*). In this instance, the adult hawk eagle was ringed in November 1969, which was late in the dry spell that characterized the summer rainfall area of southern Africa from 1962/63 to 1970/71 (Tyson 1986). It is not known when the bird moved from where it was ringed, nor how long its movement to the recovery site took, but substantial movements by otherwise resident species might be triggered by diminishing food resources resulting from prolonged periods of below-average rainfall.

Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
C02106	N	U	06/10/63	2025S 2828E	30/10/71	2023S 2830E	8y 0m 24d	5	Drowned
65802325	Ad	U	02/11/69	2355S 2931E	30/08/76	1755S 2521E	6y 9m 28d	795	Unknown
52600730	Ad	U	10/12/72	2548S 2755E	15/06/73	2537S 2758E	0y 6m 4d	21	Unknown
912956	N	U	24/09/73	2025S 2829E	15/05/85	2031S 2095E	11y 7m 20d	63	Shot
916501	U	U	10/04/77	2415S 2719E	11/11/77	2415S 2719E	0y 7m 2d	0	Unknown
914263	Ad	M?	31/08/86	2150S 1514E	15/12/92	2122S 1540E	6y 3m 15d	69	Drowned
914265	N	U	31/08/86	2151S 1512E	20/12/86	2152S 1507E	0y 3m 20d	9	Drowned
953192	Ad	M?	05/01/90	1919S 1422E	11/09/93	1922S 1417E	3y 8m 6d	10	Unknown



Longcrested Eagle

Lophaetus occipitalis

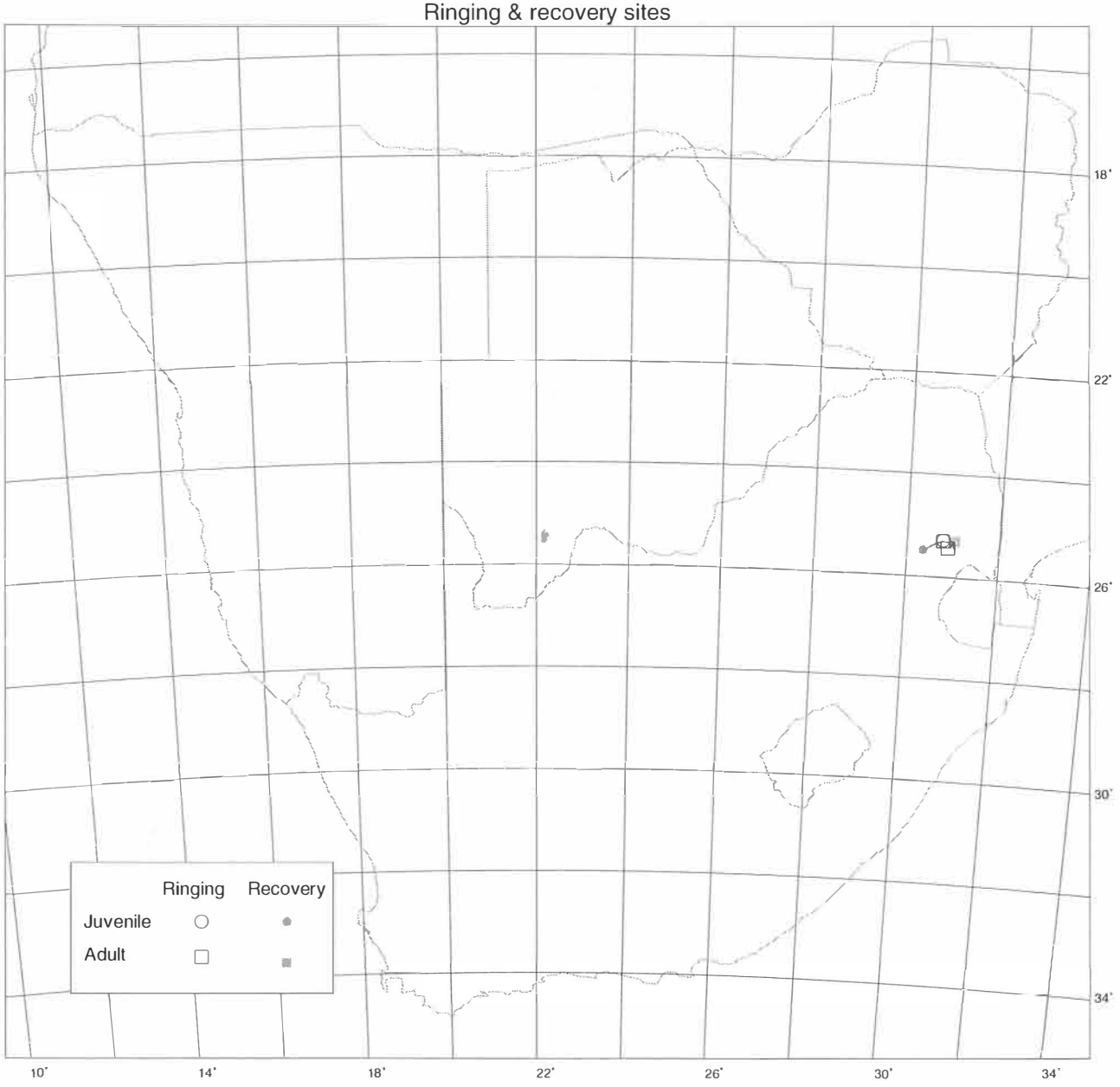
This rather small and distinctive eagle is widespread in the Afrotropical region, ranging from West Africa and Ethiopia southwards in moist woodlands and forest-fringed wetlands or rivers (Brown *et al.* 1982). In southern Africa it is largely confined to the eastern half of the subcontinent, shunning the drier western areas, though plentiful in the Okavango and occasionally wandering to northern Namibia (ASAB1: 190–191).

Although considered to be sedentary, the Longcrested Eagle moves opportunistically into areas of temporarily abundant food supply (Steyn 1982), and in the course of a 16-year study of this species in the Nelspruit District of Mpumalanga, Hall (1992) found that females were absent from their breeding territories during the nonbreeding season. There was no evidence from atlas reporting rates that regular seasonal movements of Longcrested Eagle populations occurred anywhere in the southern African atlas region (ASAB1: 190–191).

There are three recoveries from a total of 67 birds ringed and all have occurred in the Nelspruit district of Mpumalanga. In the first of these, an adult, ringed on 14 August 1984, was found electrocuted under powerlines 19 km from the ringing site at Mataffin on 15 August 1989, 5y 0m 1d after being ringed, though it may have been dead for a few weeks when found. The second recovery involved an adult ringed in February 1993 and found dead of causes unknown 4y 1m 11d later in April 1997, 22 km from the ringing site. The third, aged as a bird in its second year when ringed in March 1993, was killed in a collision with a motor vehicle after 2y 0m 24d, 49 km from the ringing site. It is noteworthy, in the light of Hall's (1992) findings, that each of these three birds was sexed as a probable female at the time of ringing.

LONGCRESTED EAGLE

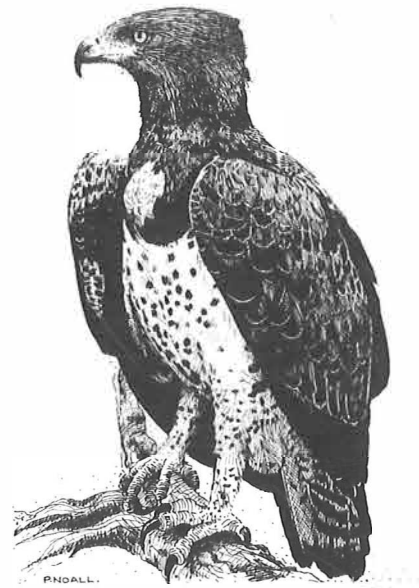
Ringing & recovery sites



Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
845601	Ad	F?	14/08/84	2526S 3053E	15/08/89	2518S 3102E	5y 0m 1d	19	Electrocuted
J10656	Ad	F?	28/02/93	2518S 3047E	10/04/97	2520S 3100E	4y 1m 11d	22	Unknown
984505	2Y	F?	20/03/93	2517S 3047E	13/04/95	2529S 3021E	2y 0m 24d	49	Road casualty

Martial Eagle

Polemaetus bellicosus

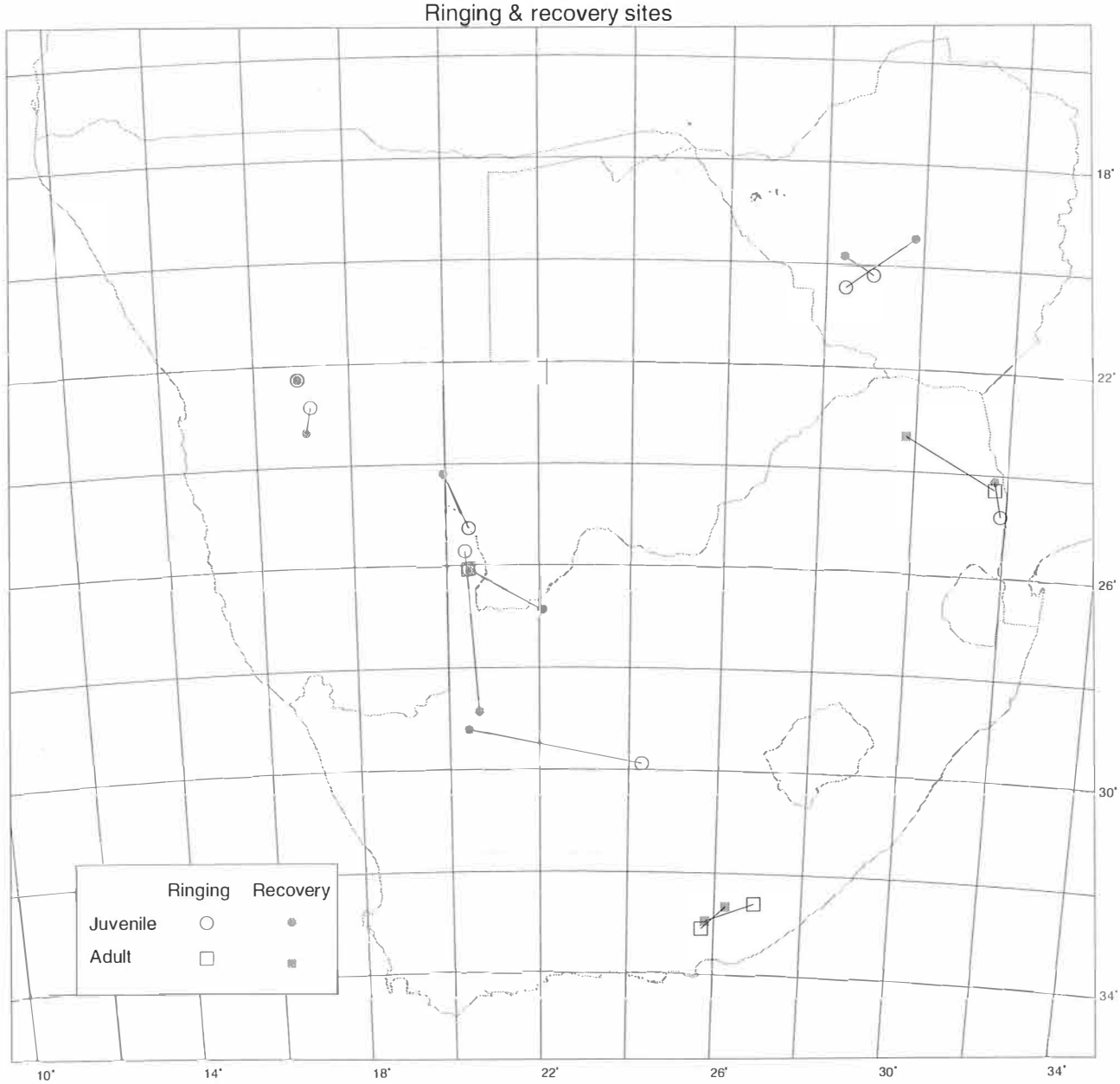


This bird, the largest of Afrotropical eagles, is widespread in woodlands and tree savanna, but requires a large home range (in excess of 130 km2) and is generally rather uncommon (Brown *et al.* 1982). It is the most widespread eagle in southern Africa, but is nevertheless absent or rare in many areas, especially in well-populated regions. It is locally common only in the extensive protected enclaves of the larger national parks and in regions of low human population density (ASAB1: 192–193).

Breeding adults are thought to be sedentary, perhaps ranging over wider areas when not involved in reproductive activities (Steyn 1982); juveniles and immature birds, however, wander widely from their natal areas (Brown *et al.* 1982).

MARTIAL EAGLE

Ringing & recovery sites



Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
50902901	N	U	26/08/64	2012S 2858E	24/06/65	1950S 2822E	0y 9m 28d	75	Shot
G01984	N	U	05/08/73	2250S 1710E	10/10/80	2320S 1704E	7y 2m 5d	57	Shot
G09402	U	U	07/10/78	3306S 2543E	18/01/80	3240S 2615E	1y 3m 11d	69	Trapped
G01721	Imm	U	25/07/84	2516S 2029E	28/01/90	2412S 1957E	5y 6m 4d	130	Trapped
G13833	Ad	U	25/06/88	3236S 2654E	13/09/97	3257S 2548E	9y 2m 19d	110	Unknown
G18390	Juv	U	14/09/90	2605S 2028E	10/10/91	2652S 2203E	1y 0m 26d	180	Drowned
*G19099	Imm	M?	05/01/9	2448S 3153E	13/08/94	2407S 3143E	1y 7m 7d	13	Collided with powerlines
*G18916	1Y	M	16/02/93	2953S 2417E	15/06/94	2913S 2026E	1y 3m 27d	380	Drowned
G19120	Ad	U	19/01/94	2417S 3144E	02/09/94	2319S 2948E	0y 7m 13d	224	Electrocuted
G18668	N	U	27/07/94	2543S 2024E	05/09/95	2852S 2040E	1y 1m 9d	351	Drowned

Thirteen recoveries have been recorded from the 212 birds ringed, and the 10 most informative are listed in the table. Two of these (marked with an asterisk) were from relocated birds which were caught (by nature conservation officials) and removed from farms whose owners considered them to be a threat to their livestock.

Summarized known causes of death included drowning in sheer-sided water reservoirs on farms (3), shooting (2), deliberate or accidental trapping (2), electrocution on powerlines (1) and collision with powerlines (1). Although high tension transmission lines are a hazard to these eagles, there is a positive side to the electricity distribution grid inasmuch as the pylons offer secure breeding sites in open country such as the Karoo, where natural nesting sites are absent (Boshoff 1993).

Crowned Eagle

Stephanoaetus coronatus

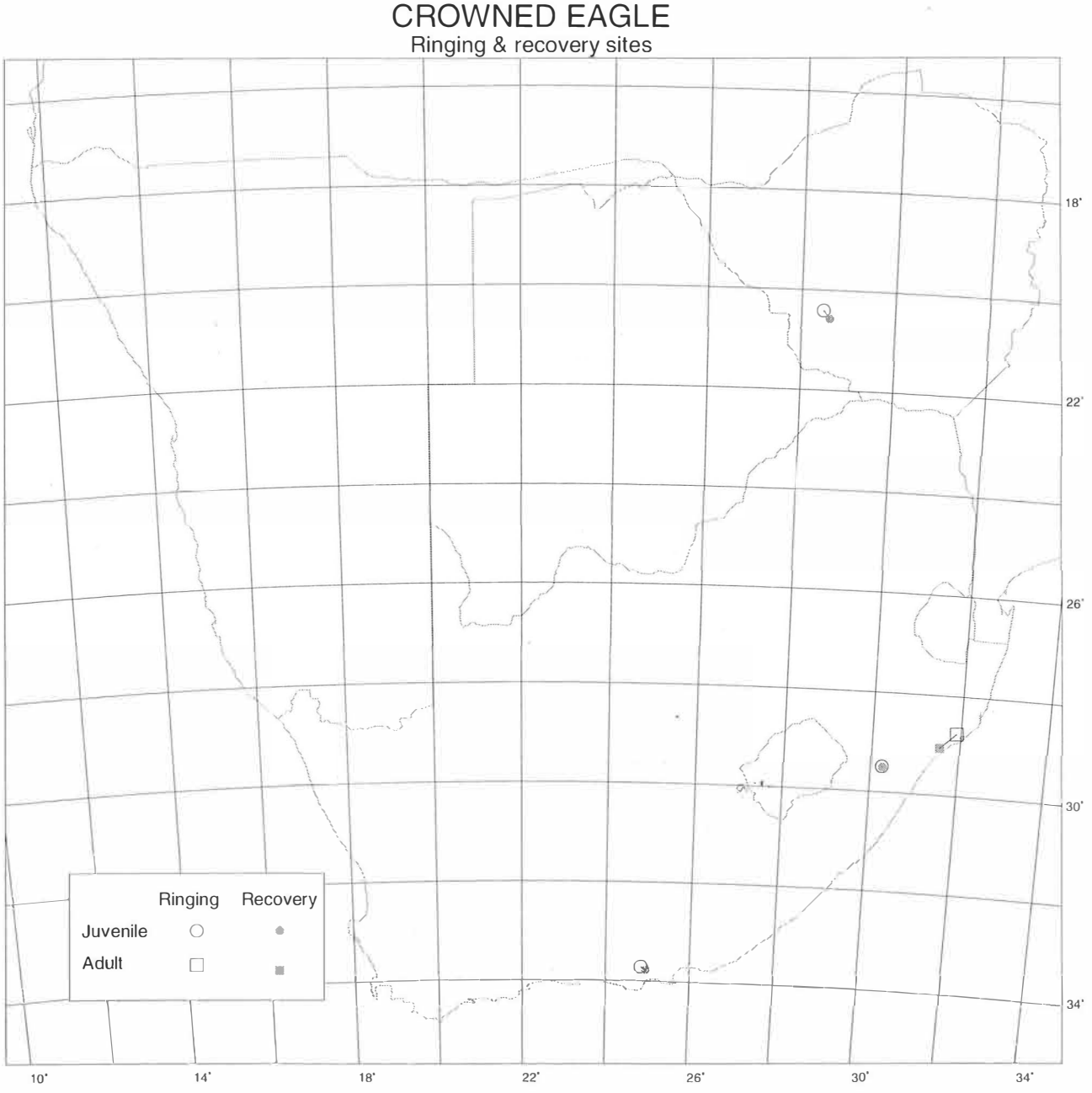
Though not the largest, this is the most powerful of Afrotropical eagles, killing antelope prey up to six times its own mass (Steyn 1982). It is widespread in sub-Saharan Africa, occupying evergreen forest (both lowland and Afromontane), closed woodlands, and even open wooded country, though its vociferous aerial display and comparatively short, rounded wings are typical adaptations to a forest existence. In southern Africa its distribution south of the Limpopo River valley coincides with that of Afromontane forest, though it is by no means confined to such habitat. In Zimbabwe it is more widely distributed, though sparse in the midlands and on the central plateau. Adult Crowned Eagles, usually observed as breeding pairs, are sedentary; independent young birds are presumed to disperse from their natal areas (ASAB1: 194–195).

44 birds have been ringed in southern Africa and there have been four recoveries. A chick, ringed near the end of 1968, was found dead in April 1969, 23 km from its nest in the Matobo Hills of southwestern Zimbabwe (Steyn 1982, pers. comm.). Another chick, ringed in a nest in the Umgeni Valley Game Ranch in KwaZulu-Natal, was recovered after a lapse of two years, electrocuted under powerlines 2 km from its birthplace.

The other two recoveries were of rehabilitated or relocated young birds which were released in 'suitable' areas, one near Empangeni in KwaZulu-Natal, the other in the Patensie area of the Eastern Cape; the first of these was found dead within 24 days, 49 km from its release point, and the second was electrocuted 13 km from the release site after 4m 26d.

Although this is a very small sample of recoveries, it nevertheless draws attention to the potential hazard that high voltage electricity transmission lines pose to inexperienced young Crowned Eagles.

Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
50902930	N	U	29/12/68	2034S 2836E	26/04/69	Unknown	23	0y 3m 27d	Unknown
G11633	N	U	02/12/86	2929S 3015E	13/10/88	2930S 3006E	2nd	1y 10m 8d	Electrocuted
G11671	U	U	10/10/79	2845S 3154E	03/11/79	2903S 3132E		0y 0m 24d	Unknown
G18921	Imm	F	27/12/95	3343S 2450E	23/05/96	3347S 2457E		0y 4m 26d	Electrocuted



Brown Snake Eagle

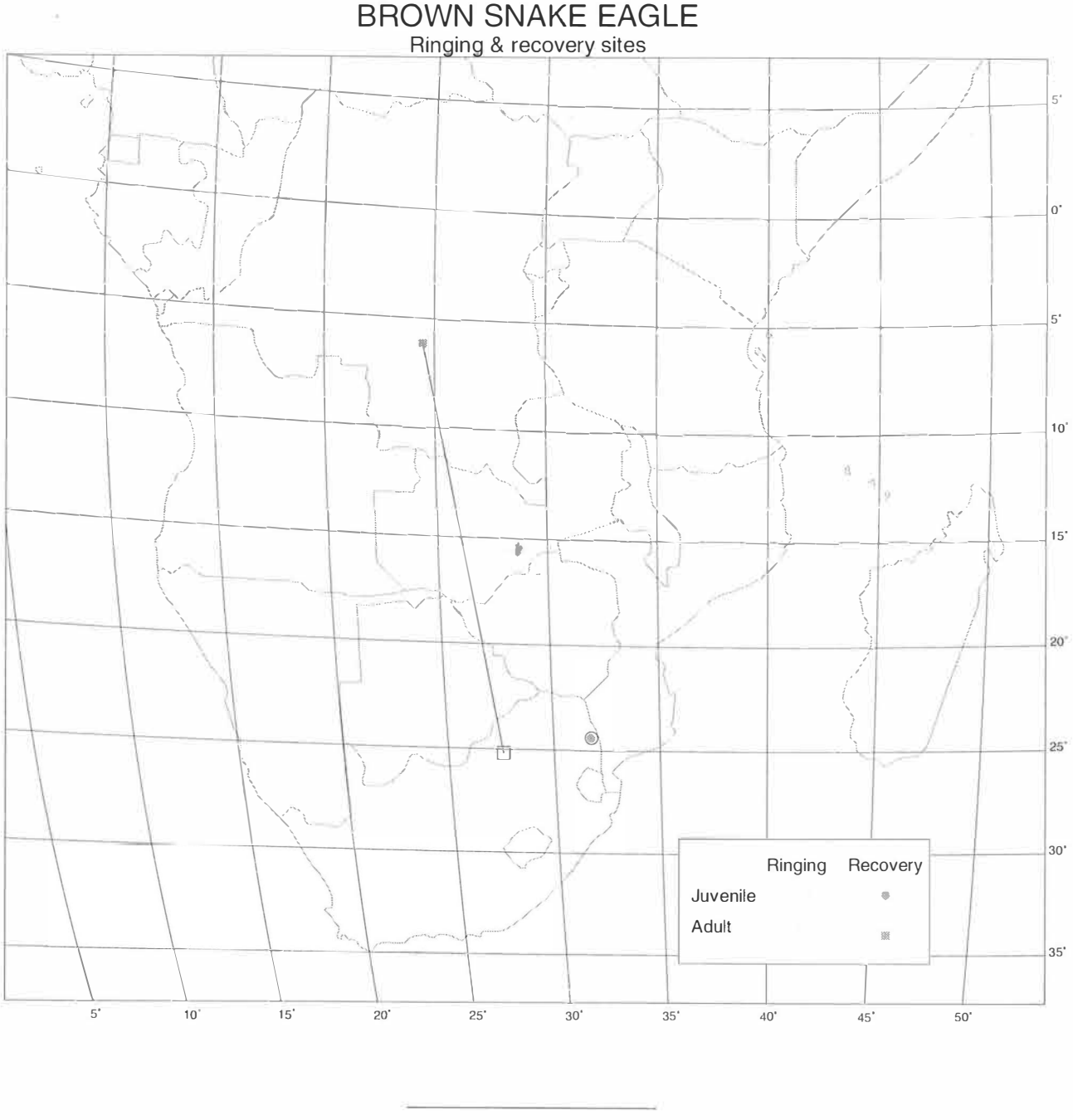
Circaetus cinereus

The Brown Snake Eagle inhabits rather dry savannas over much of sub-Saharan Africa, but is also common in dense *Brachystegia* woodland (Brown *et al.* 1982). In southern Africa most of its distribution lies north of a diagonal drawn from 21°S on the west coast to 30°S on the east coast, and atlas reporting rates for the different vegetation types show that it prefers moderately arid woodlands to moister habitats (ASAB1: 196–197).

In the former Transvaal Province of South Africa it was found to be a common breeding nomad by Tarboton & Allan (1984), and Jenkins (ASAB1: 196–197) commented on evidence from atlas reporting rates for a seasonal pattern of east–west movement between northern Namibia and northern Zimbabwe.

The 74 Brown Snake Eagles ringed in southern Africa have yielded two recoveries. Ring 65802344, put on a nestling near Satara (2423S 3147E) in the Kruger National Park on 13 June 1969, was found on 29 August, 2m 16d later, and 3 km from the nest site, a circumstance that suggests predation of the young bird.

The second recovery, of an adult bird (sex unknown) ringed 915303 on 3 March 1974 at Assen (25°11'S 27°36'E) in the Northern Province of South Africa, was reported by a missionary in the Democratic Republic of the Congo (06°08'S 24°29'E). The ring was brought to him in January 1981 by villagers who said that it came from 'a big bird that died in a fight with a big snake'. The claim is sufficiently in keeping with the known prey preferences and habits of this species (Steyn 1982) for it to be deemed credible. The elapsed time from ringing to recovery was about 6y 9m (assuming the reported month of recovery was correct), and the distance from ringing to recovery site was 2144 km.



Blackbreasted Snake Eagle

Circaetus pectoralis

With an Afrotropical distribution extending from the Democratic Republic of the Congo and Ethiopia southwards, the Blackbreasted Snake Eagle is widely distributed in southern Africa north of 26°S, ranging farther south in the Nama Karoo and in northeastern KwaZulu-Natal (ASAB1: 198–199). It is evidently unique among eagles in its propensity for communal roosting (Steyn 1982, pers. comm.), and though present throughout the year in much of its southern African range it is subject to seemingly patternless fluctuation in numbers. It has been suggested (Brown *et al.* 1982; Steyn 1982) that two populations (local breeders and visiting nonbreeders) may be involved. Our knowledge of these movements is still tantalizingly inadequate, but has been well summarized by Boshoff (ASAB1: 198–199).

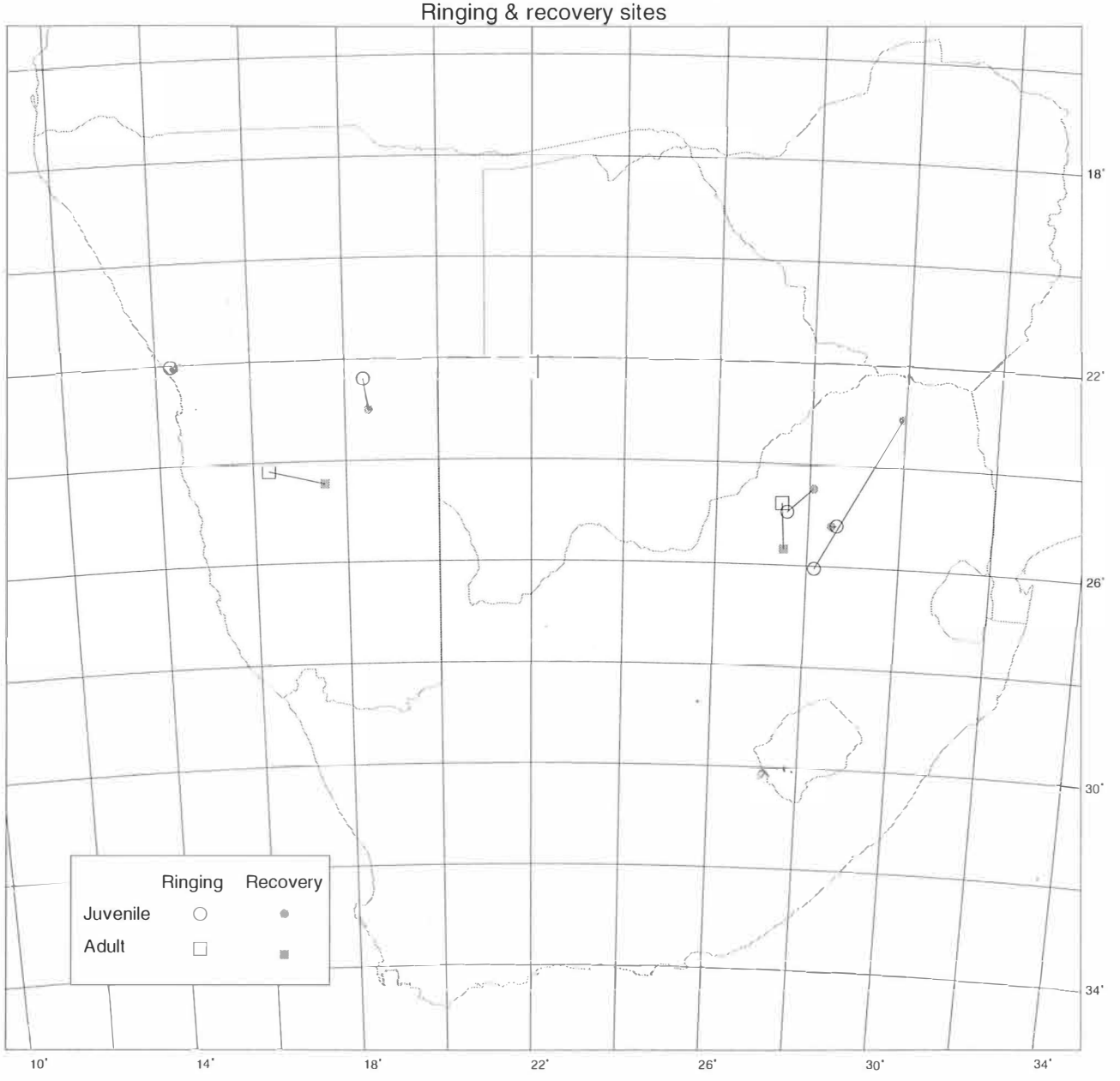
There have been seven recoveries from the 289 Blackbreasted Snake Eagles ringed in southern Africa. All of these recoveries involved movement but with a median distance of 76 km and a mean of 110 km, they present a picture of limited local movement.

Causes of death of these eagles were the familiar ones of drowning, shooting, electrocution and collision with overhead powerlines.

The most noteworthy data provided by these records are the elapsed times; five out of seven birds survived for periods ranging from 3.5 years to 13 years, an impressive result from a sample of 289 ringed birds.

BLACKBREASTED SNAKE EAGLE

Ringing & recovery sites



Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
90931	2Y	M	20/02/72	2603S 2810E	26/02/85	2303S 2956E	13y 0m 7d	378	Collided with power lines
912623	Juv	U	18/02/73	2457S 2732E	18/09/76	2429S 2805E	3y 6m 30d	76	Unknown
915301	Ad	U	08/12/73	2447S 2725E	10/11/77	2541S 2729E	3y 11m 2d	100	Unknown
916514	Imm	U	10/12/77	2223S 1824E	30/08/83	2300S 1830E	5y 8m 19d	69	Drowned
916547	Ad	U	10/10/82	2411S 1620E	26/09/92	2427S 1732E	9y 11m 17d	125	Drowned
953403	Imm	U	16/03/85	2512S 2837E	11/01/86	2513S 2830E	0y 9m 27d	12	Shot
914268	Imm	U	01/05/87	2202S 1419E	08/02/88	2204S 1424E	0y 9m 9d	9	Electrocuted

Bateleur

Terathopius ecaudatus

The French name of this African eagle was given to it by Francois Le Vaillant, the 18th century naturalist and explorer of southern Africa. The name can refer to a tumbler, juggler, acrobat or tight-rope walker; the last is the most appropriate, as pointed out by Steyn (1982), because the flying bird rocks slowly from side to side like the tight-rope walker's long balancing pole.

Simmons (ASAB1: 202–203) provided a comprehensive and well-referenced account of the distribution and status of the Bateleur in southern Africa, where it has undergone a severe range contraction in historical time. Its current distribution is mainly north of the Orange and Limpopo Rivers, with a southwards extension through the Kruger National Park to the game reserves of northeastern KwaZulu-Natal. Because of its vulnerable status, the Bateleur has been the subject of several studies (e.g. De Kock & Watson 1985; Watson 1986, 1990;

Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
52703153	Juv	U	15/01/68	2429S 3147E	03/11/69	2432S 3115E	1y 9m 19d	54	Unknown
917602	N	U	23/07/81	2426S 3150E	06/11/82	2406S 3110E	1y 3m 14d	77	Poisoning suspected
J07248	N	U	07/05/90	2455S 2012E	09/02/91	2506S 2025E	0y 9m 4d	30	Control: Sighting of colour-ringed bird
J07248	N	U	07/05/90	2455S 2012E	20/10/92	2652S 2203E	2y 5m 14d	285	Shot

Herholdt & de Villiers 1991); 87 have been ringed in southern Africa. To date there have been three recoveries, with one of these birds being previously controlled, as detailed below.

These records, all of birds ringed as nestlings, reinforce the concern for the welfare of the Bateleur. It is known that immature birds are nomadic (ASAB1: 202–203). The Bateleur is a superb glider, spending long hours on the wing at speeds of 50–80 km/hour, and in this way traversing hundreds of kilometres daily (Steyn 1982), so the distances moved by the recovered birds are not remarkable, though they are significant in the context of ranging into danger. Young Bateleurs are more reliant than adults on the food resources provided by carcasses of large animals (Steyn 1982), and movement out of protected areas makes them susceptible to accidental poisoning by farmers involved in problem carnivore control programmes (Watson 1990).

African Fish Eagle

Haliaeetus vocifer

This is probably the best known (and most photographed) of Afrotropical eagles due to its choice of habitat, bold and distinctive plumage, conspicuous perching habits and loud, ringing calls that are so characteristic of African waterways. Its southern African distribution is concentrated in the more mesic eastern half of the subcontinent, though it extends along the southern and southwestern coast, and through the dry western regions by way of major rivers and man-made impoundments; its greatest centre of abundance within the southern African atlas region is in the Okavango Delta of northern Botswana (ASAB1: 205–207).

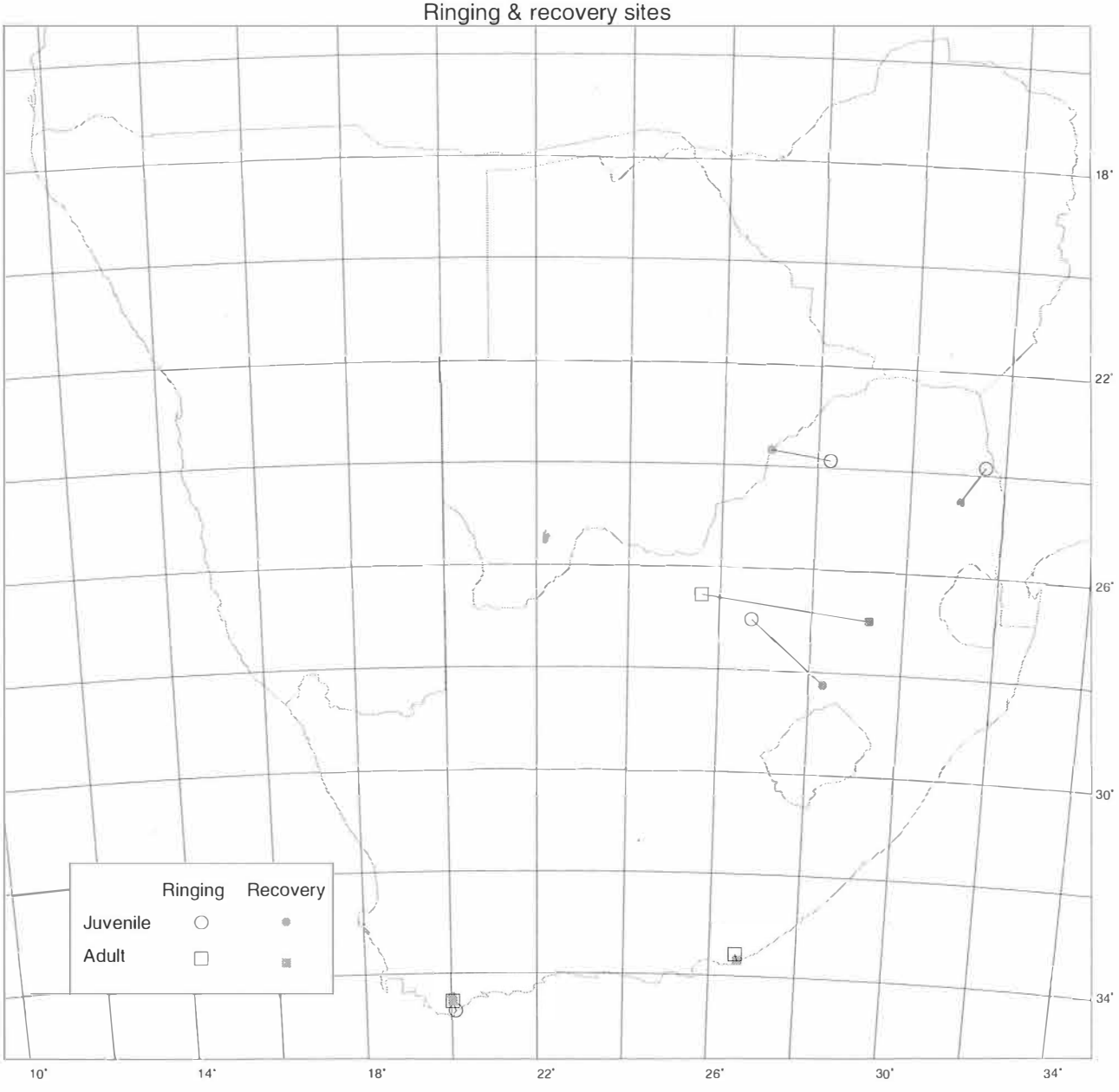
It is known that immature and subadult Fish Eagles disperse widely from their natal areas (Brown *et al.* 1982), the basis this knowledge probably underpinned by the 1959 recovery of a young South African-ringed bird 200 km distant from its nest site (Steyn 1982). The primary details of these early records in the SAFRING databank are poorly documented, however, and even recent records have been inadequately scheduled to the extent that rehabilitated and/or relocated birds may not have been coded as such. The seven recoveries (from a total of 68 birds ringed) are listed below.

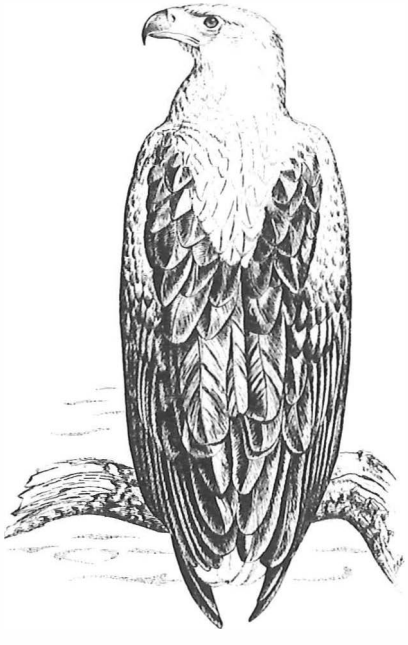
The elapsed time from ringing to recovery for 50800756 above is of no consequence because only the ring was found and the bird could have died anytime after being ringed. The bird carrying ring G17701 was released in the Lapalala Wilderness area in the Waterberg area of the Northern Province of South Africa. The bird was found dead in a sheer-sided hole (the intake sump hole of a waterpump) in the dry bed of the Limpopo River. It is perhaps indicative of the desperation of the unfortunate bird's search for water in the dry season that it would enter such an unnatural site.

Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
50800756	N	U	14/07/56	2700S 2642E	15/01/59	2814S 2818E	2y 6m 2d	209	Ring found; no sign of carcass or skeleton
65804503	U	U	10/10/68	3432S 2002E	23/12/68	3432S 2002E	0y 2m 13d	0	Drowned
65804504	U	U	10/10/68	3432S 2002E	19/12/68	3432S 2002E	0y 2m 9d	0	Drowned
65802322	Juv	U	20/10/68	2351S 3134E	07/07/70	2432S 3105E	1y 8m 16d	90	Unknown
65802052	U	U	19/10/71	2633S 2536E	03/10/78	2657S 2915E	6y 11m 15d	365	Unknown
G17701	Imm	U	26/09/87	2351S 2816E	30/06/90	2341S 2700E	2y 9m 4d	130	Drowned
G13992	Juv	U	24/02/92	3443S 2006E	15/01/93	3427S 2001E	0y 10m 22d	31	Drowned

AFRICAN FISH EAGLE

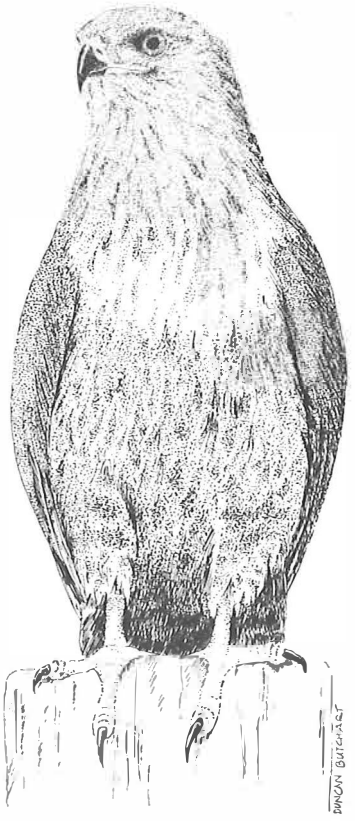
Ringing & recovery sites





Steppe Buzzard

Buteo buteo



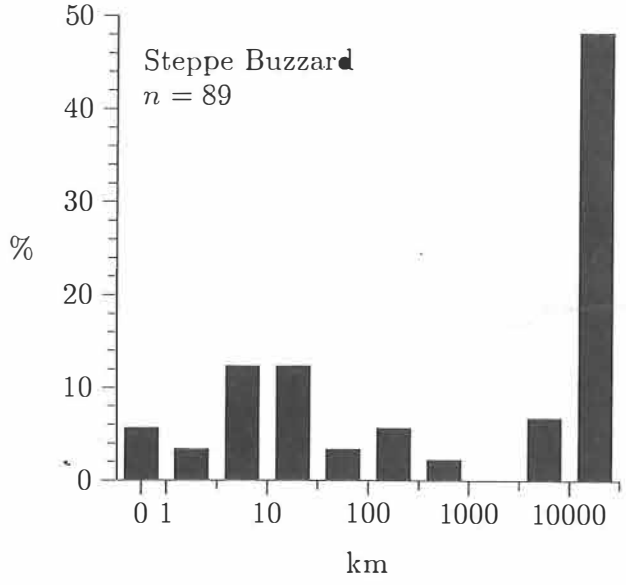
Out of 11 subspecies of the Common Buzzard of the Palearctic region, only one, *B. b. vulpinus*, migrates to eastern and southern Africa, where it occurs abundantly during the austral summer (Del Hoyo *et al.* 1994). In southern Africa it is called the Steppe Buzzard, a name which Moreau (1972) considered 'surprising' in view of this species' preference for woodland or coniferous forest habitats within its breeding quarters in Eurasia. It adopts a wider range of habitats in its winter quarters, as shown by atlas reporting rates which exceeded 10% in 13 vegetation types, and it favours open country with dwarf shrubs or cropland/grassland mosaics (ASAB1: 208–209).

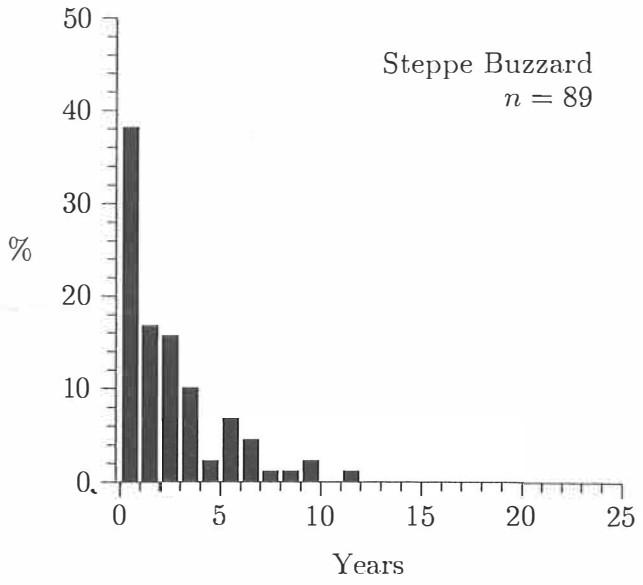
Most of its hunting is done from a perch. Its partiality to using roadside utility poles, an encounter rate which can average as high as 1 bird/2 km (Underhill *et al.* 1992), and a diet in which small rodents predominate (Steyn 1982), have made it a popular quarry of raptor ringers (for whom the chance of a long-distance recovery has no doubt been an additional incentive). Altogether, 2187 birds have been ringed and have yielded 80 recoveries. Additionally, six recoveries in southern Africa of foreign-ringed Steppe Buzzards have been reported to SAFRING, but there are undoubtedly more such records.

Commenting on the Palearctic origins of Steppe Buzzards ringed in South Africa, Mendelsohn (1986) showed that 36 recoveries (available at that time) bracketed an area stretching roughly 3500 km from 24°E in southern Finland to 93°E near the Yenesei River. He also pointed out that birds ringed in the Western Cape and in the former Transvaal (1200 km apart) came from the same range of Palearctic sites, indicating that they mixed freely in their austral nonbreeding quarters. Subsequent recoveries have not changed this picture, but the plotted ringing and recovery sites in the map illustrate it well.

As shown in the table, ring recoveries in southern Africa have confirmed what was suspected from observations, namely that the same buzzard returned each October and sat on its customary pole or tree-top perch. Fidelity to nonbreeding destination is not universal, however, as pointed out by Mendelsohn (1986), because 18 birds have been recovered or retrapped over 10 km from their ringing sites, seven of these at distances in excess of 100 km (118 km–858 km).

Known causes of mortality were as follows: shot (21), road fatalities (15), injury (9), aerial collisions (8) and trapped (3). Many birds were shot by farmers (as opposed to hunters) concerned for poultry livestock, notwithstanding the facts that the Steppe Buzzard is unlikely to be a threat to any poultry larger than downy young and that its prey is mainly rodents. Chittenden (1985) ascribed persecution of Steppe Buzzards to misidentification and misunderstanding.

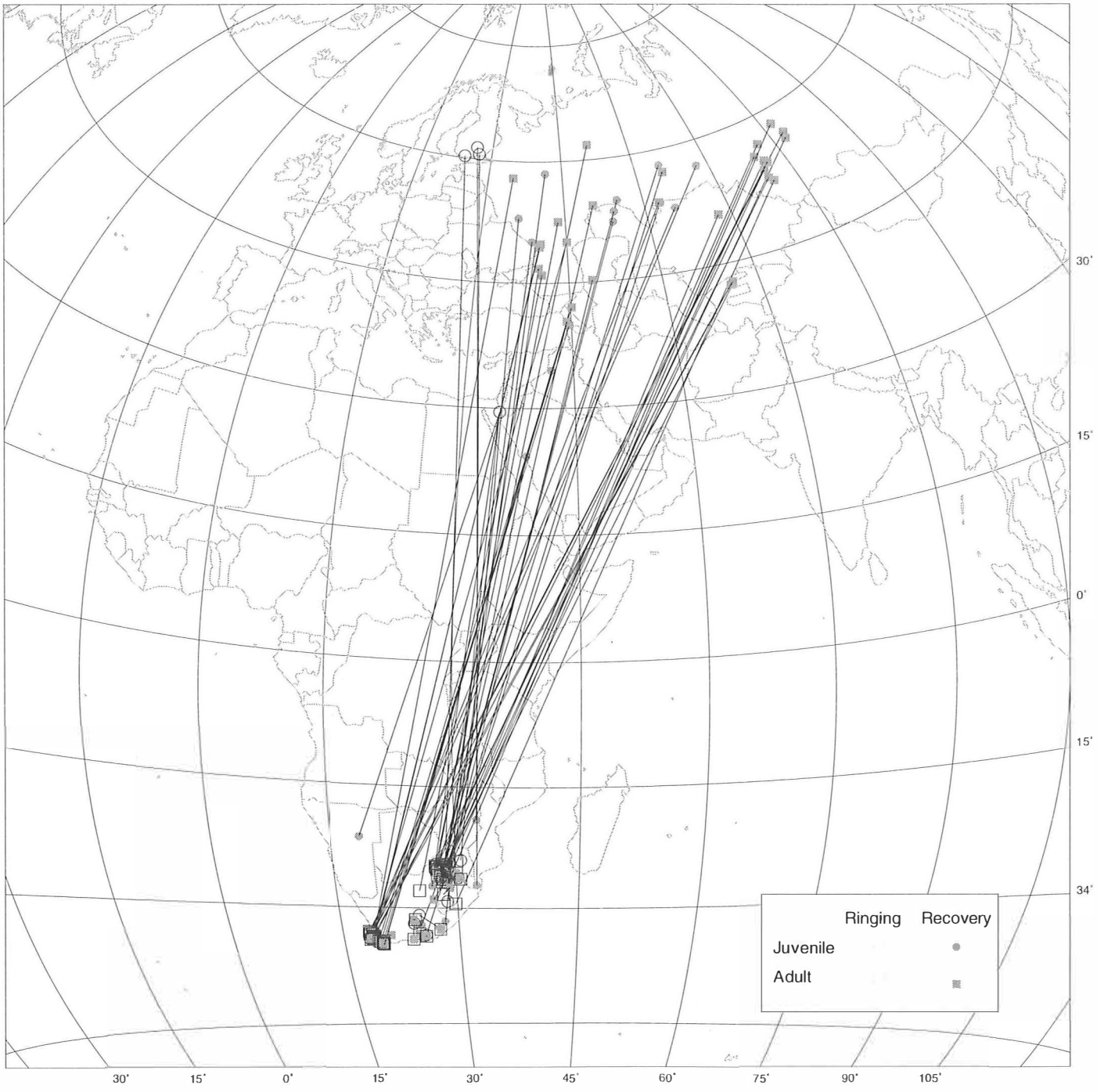




Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
65703702	Ad	U	07/12/67	3323S 1823E	10/07/70	5654N 9308E	2y 7m 2d	12224	Unknown
65704910	Ad	U	23/12/67	3421S 1940E	15/02/79	3955N 4440E	11y 1m 24d	8647	Trapped
64601325	Ad	U	28/11/68	3431S 2001E	24/12/75	3429S 1954E	7y 0m 25d	11	Road casualty
65704931	Ad	U	13/01/69	3312S 1831E	21/02/78	3313S 1832E	9y 1m 8d	2	Broken leg
711033	U	U	06/12/74	2453S 2729E	21/09/77	6153N 5112E	2y 9m 16d	9878	Unknown
816068	Imm	U	02/03/75	2544S 2815E	20/12/83	5440N 5508E	8y 9m 19d	9302	Collided with wires
768512	Imm	U	04/02/78	2628S 2848E	20/01/85	2628S 2848E	6y 11m 18d	0	Broken wing
769022	Ad	U	17/12/78	2643S 2859E	15/05/80	5818N 9206E	1y 4m 28d	11097	Shot
770911	2Y	U	07/11/82	2519S 2736E	27/11/88	2519S 2736E	6y 0m 21d	0	Road casualty
787427	Imm	F	05/02/96	3326S 2540E	15/08/96	5334N 6303E	0y 6m 9d	10322	Shot

STEPPE BUZZARD

Ringing & recovery sites



Forest Buzzard

Buteo trizonatus

Formerly thought to be an isolated population of the East African Montain Buzzard *Buteo oreophilus*, this bird is now treated as a full species, endemic to South Africa, though there are still authorities who prefer the earlier arrangement (e.g. Del Hoyo *et al.* 1994).

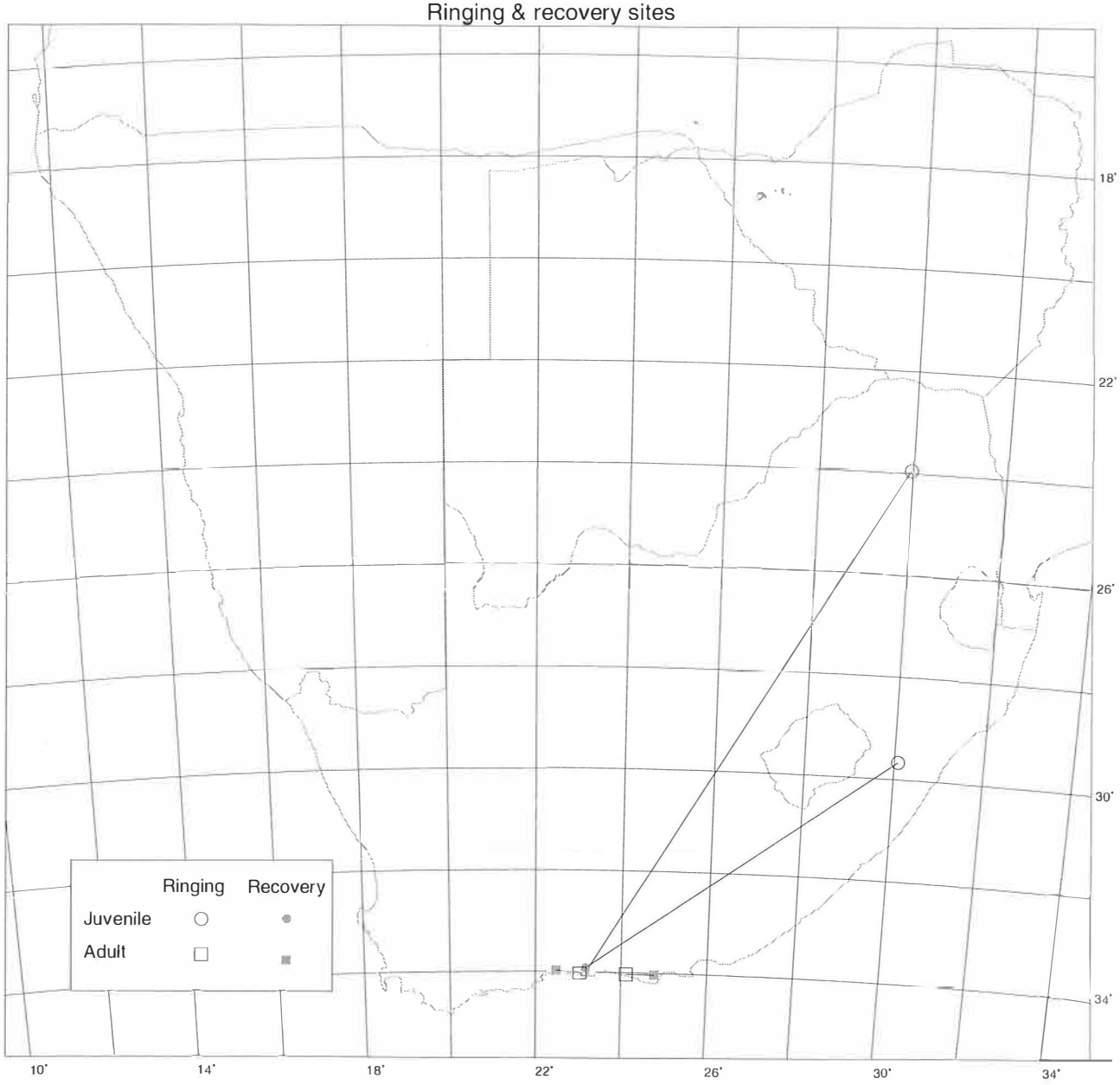
This buzzard frequents patches of Afromontane forest and is also found in commercial plantations of pines, eucalypts or wattles at Afromontane levels (which range from 1700 m at 23°S to sea-level on the southern littoral). The atlas map shows a discontinuous distribution from the Soutpansberg range of the Northern Province to the southern coastal belt; this probably represents its historic range, although some local expansion must have taken place with increasing afforestation of mistbelt grasslands (ASAB I: 210–211). Although Brown *et al.* (1982) and other authorities have considered the Forest Buzzard to be a localized and sedentary species, Tarboton & Allan (1984) suggested, in the absence of confirmed breeding records from the former Transvaal and the concentration there of winter sightings, that is was a nonbreeding migrant to that part of South Africa.

SAFRING records indicate that 35 Forest Buzzards have been ringed, most as free-flying birds on Balchatri traps, and many of these along the 'Garden Route' between Mossel Bay and Port Elizabeth. Two of the four recoveries come from within this region. The remaining two recoveries, however, have provided dramatic confirmation that the breeding nucleus of this species is in the Knysna–Tsitsikamma forests of the Garden Route.

These two long-distance recoveries are among the most significant of the records in the SAFRING databank, and are all the more remarkable for having been derived from such a small sample of birds ringed. Together with observational data, they support a scenario of young and subadult birds dispersing from their breeding area along the southern littoral to spend the nonbreeding season in scattered, distant areas of Afromontane forest and adjacent commercial plantations, perhaps to return seasonally to the parent population.

FOREST BUZZARD

Ringing & recovery sites



Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
64601493	Ad	U	17/07/68	3420S 2302E	28/10/68	3358S 2229E	0y 3m 12d	51	Unknown
748758	U	U	17/01/75	3402S 2407E	29/12/78	3402S 2446E	3y 11m 11d	60	Unknown
K08547	2Y	U	17/07/85	2357S 2958E	12/05/92	3402S 2309E	6y 9m 26d	1302	Hit by motor vehicle
762187	Imm	U	08/07/87	2940S 3005E	21/08/89	3355S 2310E	2y 1m 14d	806	Killed by unknown predator

Jackal Buzzard

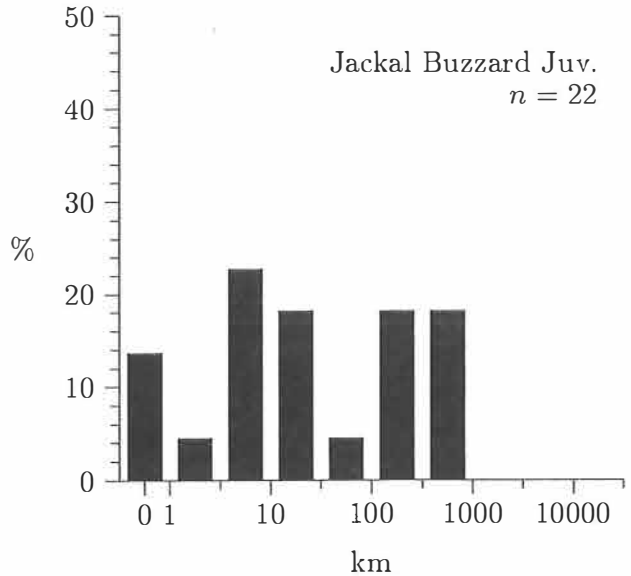
Buteo rufofuscus

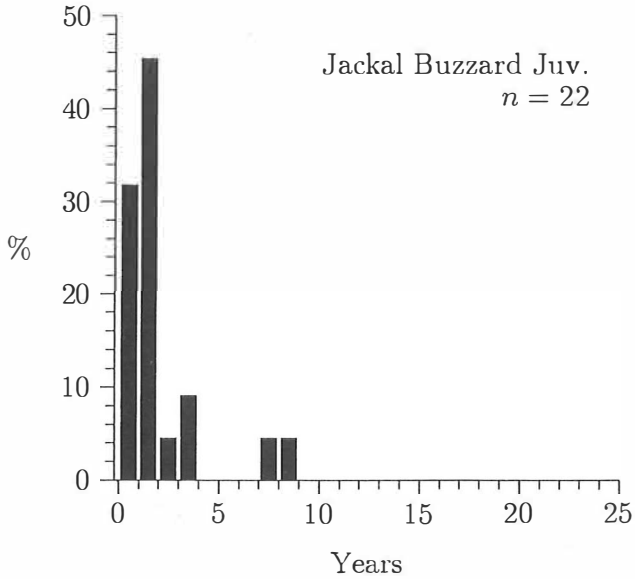
The Jackal Buzzard is endemic to southern Africa, where the core of its distribution lies in the mountainous southeastern region embracing Lesotho, KwaZulu-Natal and the Eastern Cape; its range extends northwestwards into Namibia (ASAB1: 212–213). It favours mountainous or hilly country throughout its range.

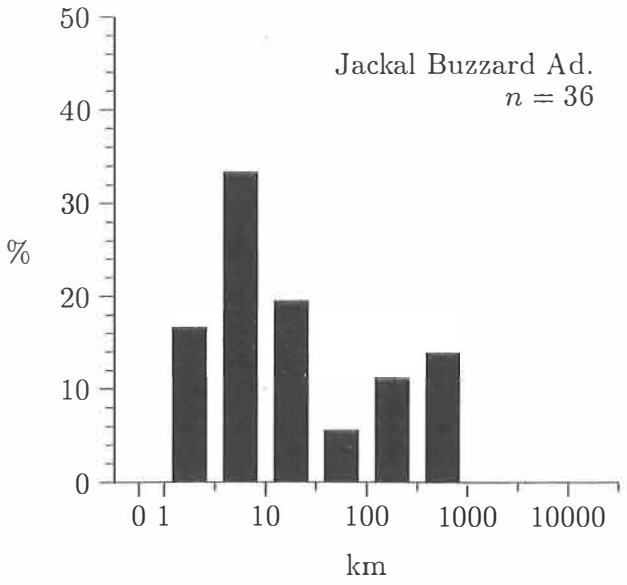
Its habit of perching on telegraph poles alongside roads has made it a frequent target of Balchatri ringers; 796 birds have been caught and ringed and retraps (controls) are not uncommon. A selection from the 58 records in the SAFRING databank are provided in the table.

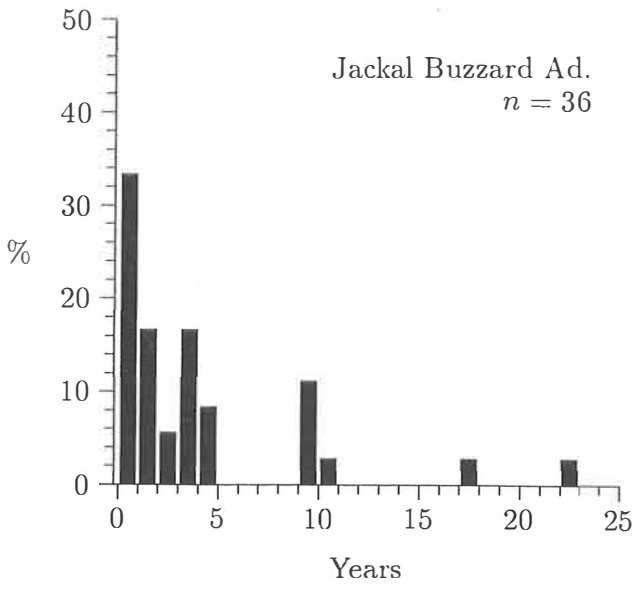
Steyn (1982) stated that adult Jackal Buzzards are resident, but that juveniles appear to wander widely. The recovery data indicate that the situation is not quite as clear cut; adults evidently move too, as shown by the distance histogram. In the data-set of known-age birds (excluding two records of the same relocated individual), 22 recoveries were from immature birds (all age groups from juvenile to birds in their third year) and 33 were from adults; 55% of adults and 40% of immature birds were recovered less than 10 km from where they were ringed after lapses of up to 22 years, while 32% of immatures and 15% of adults were subsequently found more than 200 km from their respective ringing sites. There is no seasonal pattern to these movements and Mendelsohn (ASAB1: 212–213) has suggested that they are primarily nomadic and that those not involving juvenile dispersal may be due to fluctuations in the availability of rodent prey.

Reported causes of death of 37 birds were as follows: vehicle collisions and road casualties (10), drowning (8), shot (5), collisions with wires or fences (4), accidentally or intentionally trapped (2), and poisoned (2). The oldest bird, at over 22 years (912647 in the table), was competently aged and sexed as an adult female when ringed, and was found freshly dead on a road within 2 km of the ringing site. Aside from the interesting site fidelity, this bird can be assumed to have been at least 25 years old at the time of its accidental death. The elapsed-time histograms provide a general overview of mortality with age, in which the distributions of young and adult birds are each in keeping with normal expectations.



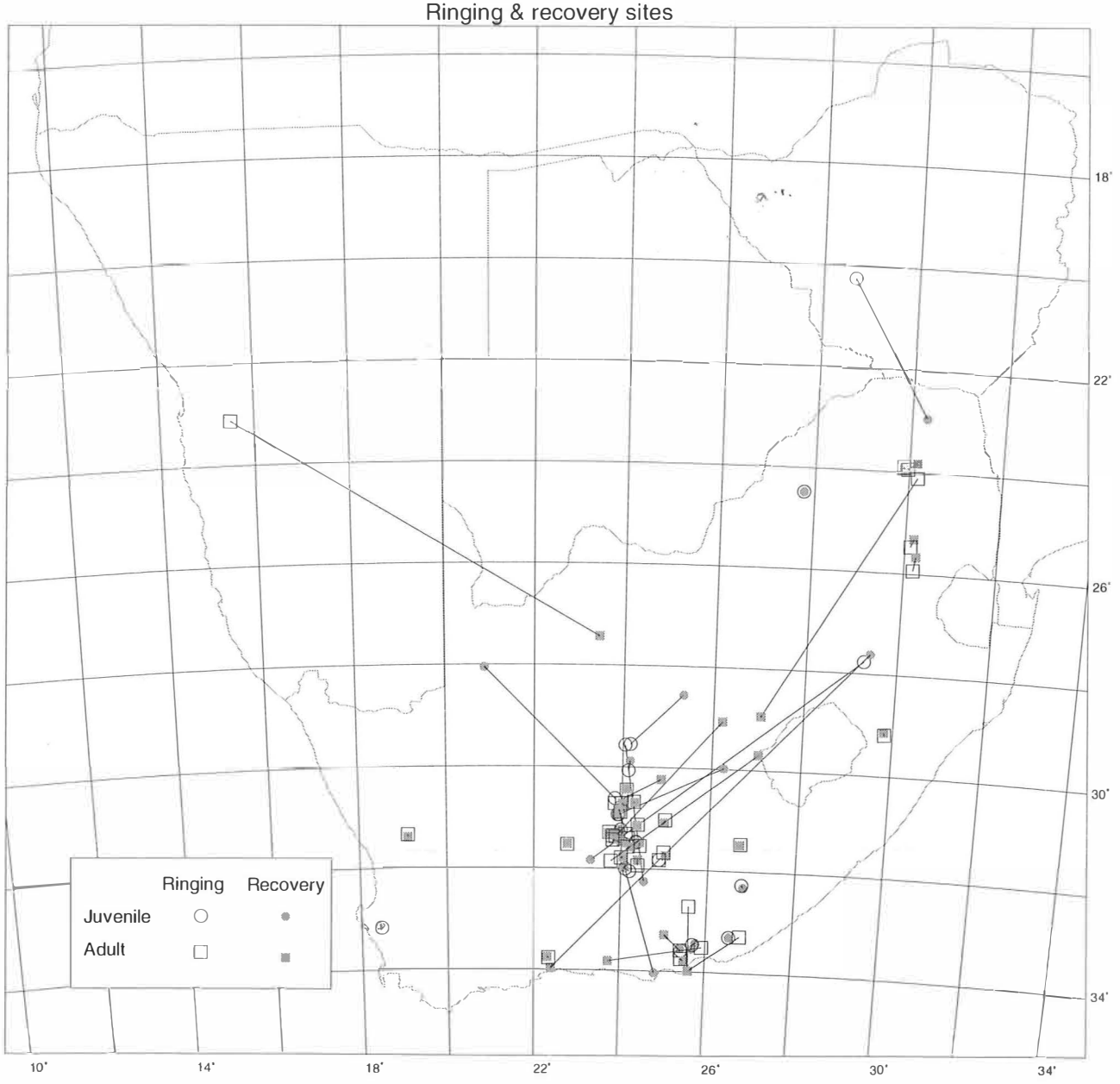




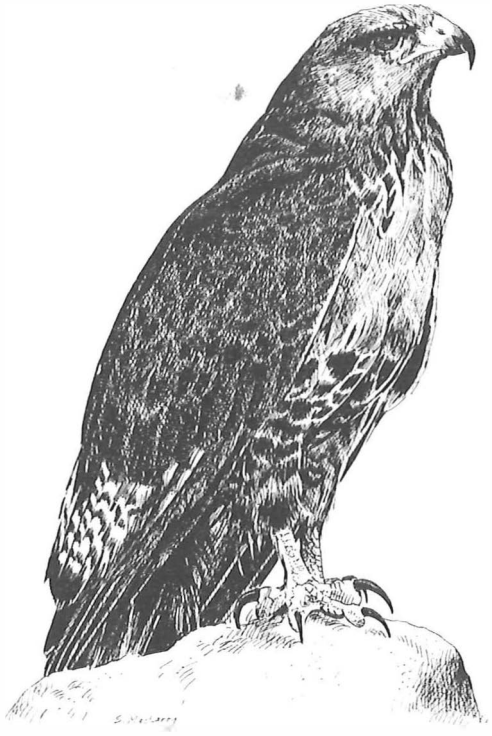


JACKAL BUZZARD

Ringing & recovery sites



Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
821953	Ad	F	06/04/75	3027S 2406E	17/02/93	3026S 2405E	17y 10m 14d	2	Controlled
912647	Ad	F	20/05/75	3041S 2416E	15/07/97	3042S 2417E	22y 1m 26d	2	Road casualty
729112	Ad	U	20/04/78	2307S 1530E	09/07/79	2726S 2326E	1y 2m 19d	931	Controlled
830517	2Y	F	26/07/82	2015S 2840E	29/09/83	2256S 3019E	1y 2m 4d	344	Shot
732230	1Y	U	20/03/83	3149S 2452E	02/10/83	2737S 2944E	0y 6m 13d	640	Unknown
843467	Ad	U	10/09/83	3108S 2422E	18/08/94	3109S 2421E	10y 11m 8d	2	Road casualty
843497	Ad	M	08/10/84	3121S 2348E	21/08/94	3121S 2352E	9y 10m 12d	6	Road casualty
809916	1Y	M	15/04/90	3200S 2406E	19/10/91	3402S 2449E	1y 6m 4d	236	Shot
959927	2Y	F	30/12/91	3037S 2350E	10/06/92	2803S 2053E	0y 5m 11d	404	Drowned
841888	2Y	M?	24/04/93	2746S 2916E	14/07/95	3150S 2318E	2y 2m 20d	732	Road casualty



Augur Buzzard

Buteo augur

This handsome bird has an extensive range in the mountainous parts of the Afrotropical region, from Ethiopia south through East Africa, Malawi and eastern Zambia to Zimbabwe, where it is a locally common resident in areas such as the Matobo Hills (ASAB1: 214–215). There is also an isolated population in Namibia and neighbouring southern Angola, which Mendelsohn (ASAB1: 214–215) predicted will prove to be taxonomically distinct.

Because of its comparatively restricted distribution, the Augur Buzzard has not often featured in ringers' species lists. A total of 59 birds has been ringed from both populations and there has been one recovery. This was of an adult male, ringed 65700818 in the Matobo Hills (20°32'S 28°27'E) of southwestern Zimbabwe on 22 January 1977, and subsequently recovered at the ringing site on 7 April 1984, a lapse of 7y 2m 14d. The date of recovery was known only to the nearest week and the bird was allegedly killed by local hunters.

Lizard Buzzard

Kaupifalco monogrammicus

The Lizard Buzzard is well named. I once watched one trying to catch a large Blueheaded Lizard *Agama atricollis* on the trunk of a *Terminalia* tree. From a low branch of a neighbouring tree, the raptor would make a gliding swoop at the lizard, which would merely scuttle to the far side of the trunk as the bird approached. Eventually the hawk feinted one way, then changed direction to successfully grab the lizard as it moved to the opposite side of the trunk. On the return flight to its perch, however, the bird lost its one-footed grip on the lizard which, after falling to the ground, promptly scuttled back to its own tree. The buzzard then spent another 40 minutes trying in vain to recapture its prey and had not given up when I moved on.

The Lizard Buzzard is the sole member of a genus that is endemic to sub-Saharan Africa. It is generally widespread in moist woodlands, which are its preferred habitat. It reaches the southern limits of its range in the northern and eastern parts of southern Africa, where its highest abundance is in *Brachystegia* woodland in Zimbabwe and its most southerly extension is to about 29°S in northeastern KwaZulu-Natal; Mendelsohn (ASAB1: 216–217) provided a succinct account of what is known about its status, distribution and movements in southern Africa. The total of ringed birds is 366; these have yielded 13 recoveries and controls, 10 of which are featured in the table.

Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
63503857	Ad	M	06/07/69	2527S 3056E	15/02/78	2527S 3057E	8y 7m 11d	2	Electrocuted
64500316	U	U	25/01/70	2549S 2844E	12/07/71	2523S 2908E	1y 5m 16d	63	Controlled
602834	Ad	U	02/09/72	2413S 2756E	05/08/73	2410S 2750E	0y 11m 2d	12	Controlled
658059	Ad	U	04/03/89	2409S 2750E	26/07/92	2408S 2742E	3y 4m 23d	14	Emaciated
663739	Ad	F	13/07/89	2357S 3016E	26/07/89	2436S 3105E	0y 0m 13d	110	Collided with telephone wires
K07734	Ad	F	05/08/89	2411S 2752E	14/02/92	2413S 2741E	2y 6m 10d	19	Injured, broken leg
658099	Ad	U	24/05/90	2427S 2725E	02/08/92	2430S 2725E	2y 2m 10d	6	Controlled
660631	Ad	U	08/01/94	2730S 3240E	22/06/95	2732S 3241E	1y 5m 13d	4	Collided with window
670970	Ad	U	06/07/96	2356S 2758E	23/12/97	2350S 2755E	1y 5m 18d	12	Road casualty
663763	Ad	F	24/06/97	2356S 2955E	07/11/97	2353S 3030E	0y 4m 14d	60	Drowned

Black Sparrowhawk

Accipiter melanoleucus

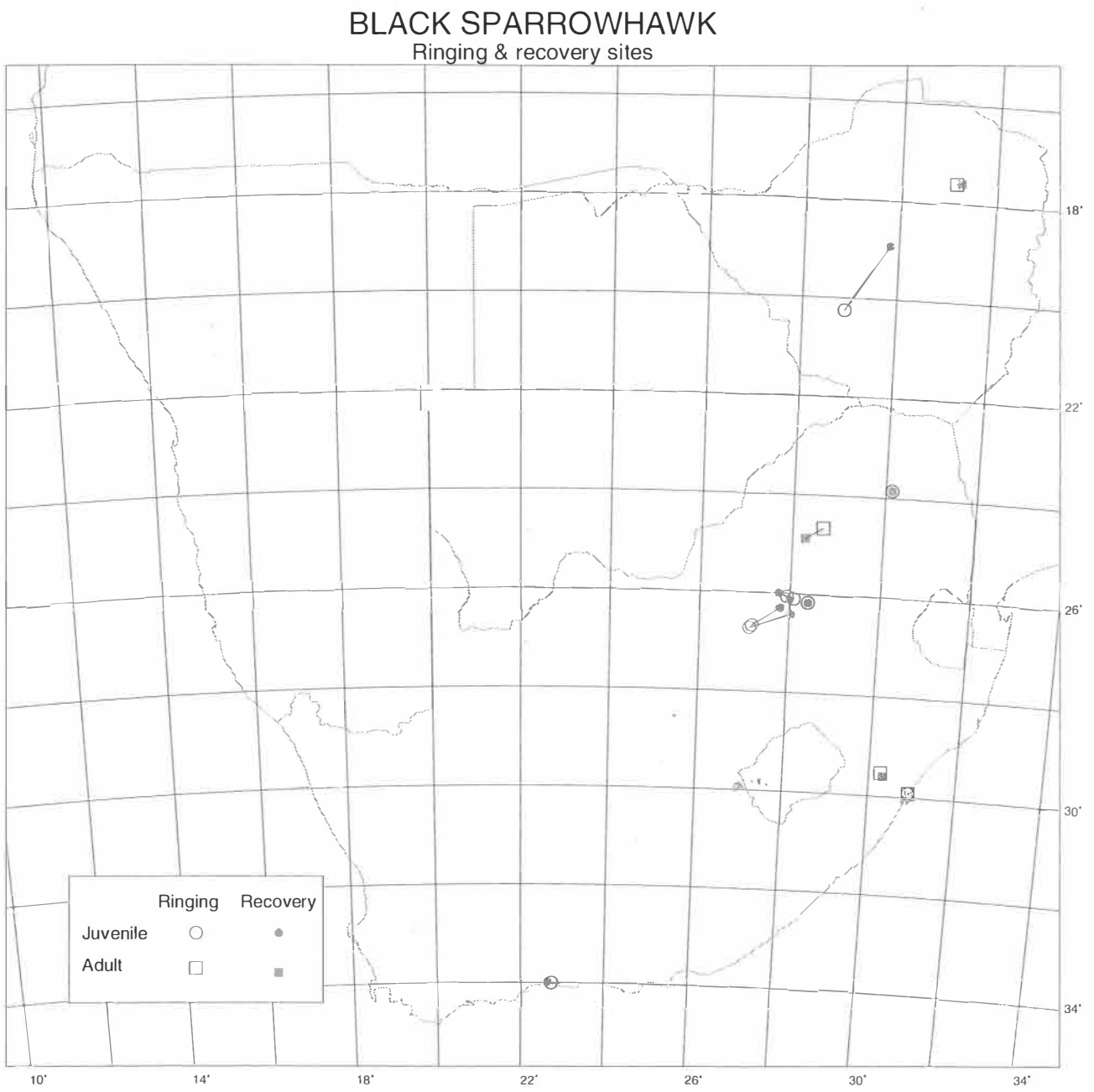
This is the largest of Afrotropical accipiters, closely approaching the size of the European Goshawk *Accipiter gentilis*. Like its Palearctic counterpart, it is at home in forests, but also makes use of the wider variety of woodland habitats available in Africa. In southern Africa it is found mainly in the eastern part of the subcontinent with highest reporting rates from KwaZulu-Natal; it extends sparsely along the southern coast westwards into the fynbos of the Western Cape winter rainfall area. It has exploited the commercial afforestation of grasslands to locally expand its range into previously treeless regions (Tarboton & Allan 1984; Allan & Tarboton 1985; ASAB1: 224–225).

There have been 13 recoveries from 101 birds ringed, but three are of 'rehabilitated' birds whose ability to fend for themselves in the wild may have been compromised (one was found in very emaciated condition and had probably died from starvation). Details of the remaining 10 recoveries are given in the table.

Although most adult Black Sparrowhawks are thought to be resident (Steyn 1982) they are known to wander on soccasion (Brown *et al.* 1982) and some atlas records from sites in the Karoo confirm vagrancy (ASAB1: 224–225). One of the recovered birds was a known adult when ringed, so these records do not contribute to this debate. One of the juveniles (58607906) does provide evidence of dispersal, but the majority of the mapped records indicate a sedentary habit.

Most of the reported causes of death were from shooting. There is no doubt that the Black Sparrowhawk can be a threat to free-range chickens but, as pointed out by Steyn (1982), this point is belaboured in textbooks because its preferred prey comprises doves and pigeons (67%–80%) and francolins (12%–13%). Chittendon (1985) classified it as a 'seldom offender'. To most poultry farmers, however, even one chicken lost to a raptor is one too many. A consequence of the dominant cause of death in these recoveries is that little has been learnt about the potential longevity of Black Sparrowhawks. Readers may have noticed, incidentally, that the two oldest birds in this data-set were both ringed on the same day and recovered on the same day 4y 0m 5d later. The records were rechecked because of this improbable circumstance, but were found to be correct.

Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
A138	U	U	15/10/50	1736S 3108E	28/06/51	1735S 3115E	0y 8m 13d	13	Shot
58607906	Juv	U	28/11/59	2014S 2854E	16/04/62	1855S 2949E	2y 4m 18d	175	Shot
55304903	N	U	05/08/61	2640S 2710E	10/08/65	2618S 2747E	4y 0m 5d	74	Unknown
63503703	N	U	05/08/61	2643S 2707E	10/08/65	2625S 2802E	4y 0m 5d	97	Unknown
58607508	Juv	F	06/04/62	2606S 2805E	16/04/62	2608S 2759E	0y 0m 10d	11	Unknown
55304446	N	U	30/09/62	2610S 2824E	15/01/63	2610S 2824E	0y 3m 16d	0	Shot
58506956	Juv	F	30/12/65	3400S 2245E	10/01/66	3359S 2239E	0y 0m 11d	9	Shot
600611	Imm	M	18/11/72	2351S 3008E	30/09/73	2351S 3008E	0y 10m 12d	0	Shot
762067	Juv	F	26/09/76	2604S 2756E	15/12/79	2600S 2745E	3y 2m 18d	20	Unknown
847453	Ad	F	15/03/88	2932S 3016E	15/05/88	2936S 3019E	0y 2m 0d	9	Shot



Little Banded Goshawk

Accipiter badius

This little accipiter, also known as the Shikra in Tropical Africa and Asia, occurs widely in woodlands of sub-Saharan Africa (Brown *et al.* 1982). In southern Africa it ranges broadly south to 26°S and sparsely to about 29°S in the Northern Cape and in northeastern KwaZulu-Natal (ASAB1: 226–227). It feeds extensively on lizards (Tarboton 1978) but small birds form a regular part of its diet, as do insects such as grasshoppers and termites (Steyn 1982).

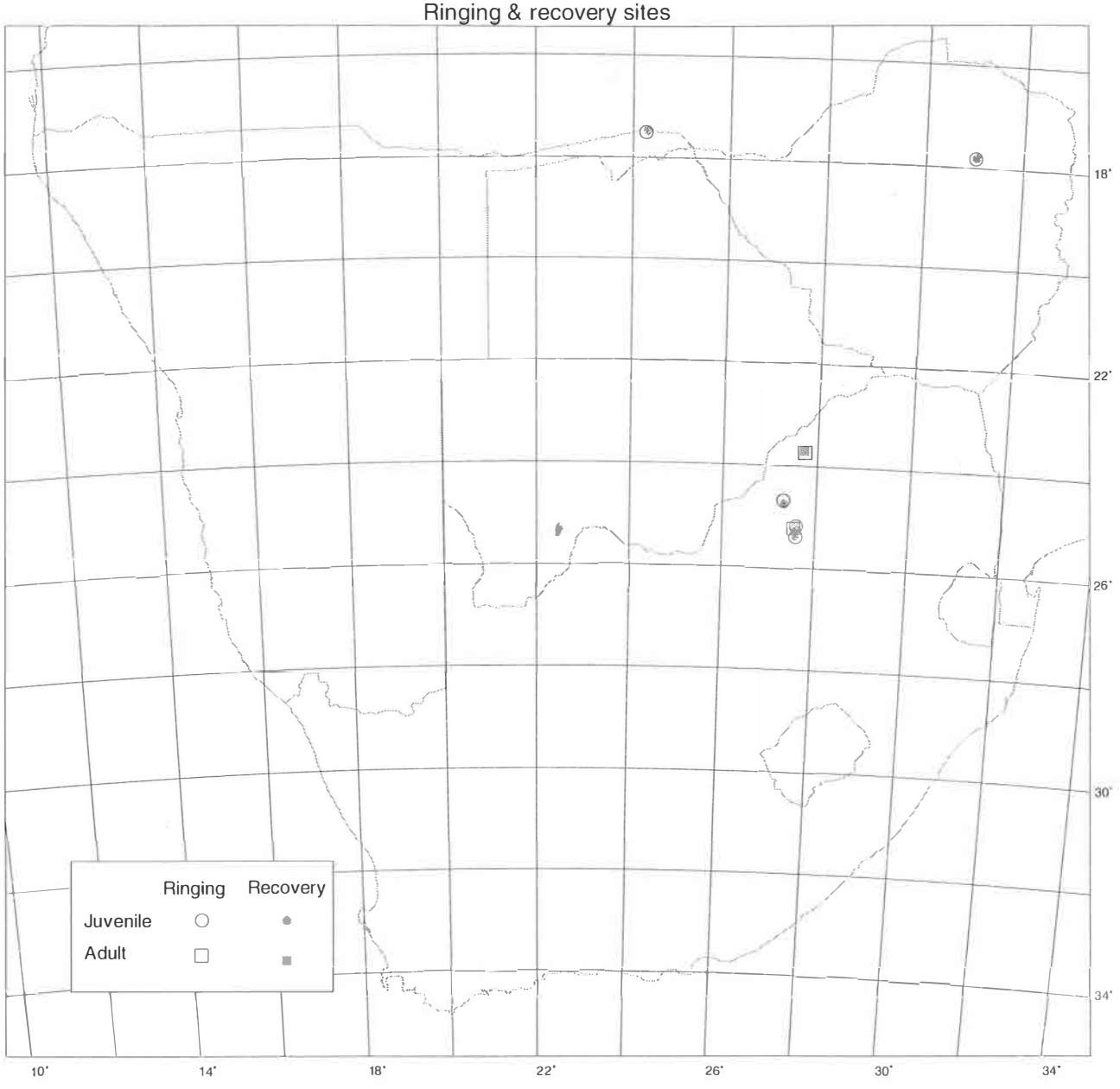
There have been three recoveries and four controls from the total of 289 birds ringed, as detailed in the table.

These records suggest that the species is sedentary in the regions where it was ringed. Schmitt *et al.* (1982) recaptured seven of a ringed sample of 68 Little Banded Goshawks, and reported that the mean distance moved from the ringing site by these birds was 2.4 km. But they also found, from road counts, that densities of Little Banded Goshawks in their study area (in the bushveld northwest of Pretoria) during the months March to August were, on average, 8.5 times higher than during the remaining months of the year. They concluded that adult as well as immature birds were involved in these influxes. Atlas reporting rates for this species were also higher in late summer and early winter (ASAB1: 226–227), but the origins of these visiting birds have yet to be determined.

In the context of these influxes it is noteworthy that all the birds ringed and subsequently recovered or controlled were originally captured during late March to July, and the recovery/recapture dates were in May, July, August and October, with no bird more than 8 km from where it was ringed. From this one might deduce either that all the birds were residents, or, if visitors, that they showed strong fidelity to their respective capture site areas.

LITTLE BANDED GOSHAWK

Ringing & recovery sites



Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
63411239	Imm	M	20/07/71	1749S 3101E	21/08/71	1748S 3102E	0y 1m 1d	3	Shot
513132	Juv	F	29/03/75	2510S 2736E	15/07/79	2512S 2734E	4y 3m 17d	5	Control
511625	Juv	U	31/05/75	2441S 2718E	28/05/76	2445S 2719E	0y 11m 28d	8	Control
562122	Ad	U	28/05/76	2343S 2744E	25/08/77	2341S 2743E	1y 2m 28d	4	Collided with wires
533377	Imm	U	05/05/78	2523S 2736E	06/07/80	2522S 2735E	2y 2m 2d	2	Control
533381	Ad	F	11/06/78	2513S 2733E	13/05/79	2511S 2736E	0y 11m 1d	6	Control
515925	Imm	U	16/07/88	1731S 2416E	18/10/88	1729S 2418E	0y 3m 3d	5	Unknown

Gabar Goshawk

Micronisus gabar

A fierce little raptor which, though formerly placed with the chanting goshawks in the genus *Melierax*, behaves much more like an accipiter, as its current generic name implies. In KwaZulu-Natal I have seen members of a mixed foraging flock of passerines drop out of the trees like stones to take cover in the tangled grass and shrubs below when a Gabar Goshawk flew low overhead.

This species is widespread in the Afrotropical region, especially in Acacia woodlands (Brown *et al.* 1982), and is common in the northern half of southern Africa, extending sparsely farther south into the semi-arid areas of the Little Karoo and Eastern Cape in *Acacia*-dominated riverine communities (ASAB1: 230–231).

There have been three recoveries from 239 birds ringed in southern Africa. Two juveniles ringed in the former Transvaal in 1970 and 1985 were recovered dead of causes unknown (according to the reports received) at distances of 20 km after 25 days and 44 km after 3m 19d. The third, a male in its first year, ringed in the Kalahari Gemsbok National Park on 15 February 1990, was found drowned in a sheer-sided farm reservoir 18 months later and 288 km distant from the ringing site. This third record provides the first information on the range of juvenile dispersal. Adults are thought to be sedentary in southern Africa (ASAB1: 230–231).

Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
63413103	Juv	U	09/07/70	2633S 2536E	03/0870	2633S 2548E	0y 0m 25d	20	Unknown
D10707	Juv	U	27/04/85	2441S 2903E	15/08/85	2442S 2837E	0y 3m 19d	44	Unknown
663418	1Y	M	15/02/90	2525S 2037E	02/09/91	2736S 1903E	1y 6m 16d	288	Drowned

Pale Chanting Goshawk

Melierax canorus

The Pale Chanting Goshawk, widely referred to by raptorphiles as the PCG, is almost endemic to southern Africa, with less than 5% of its range extending into southern Angola (Brown *et al.* 1982). This statement is valid, however, only if the Eastern Chanting Goshawk *Melierax poliopterus* of the arid northeastern parts of the Africa is viewed as a full species and not as a subspecies *M. c. poliopterus* of the southern African bird.

In southern Africa, the main distribution of the Pale Chanting Goshawk is in the drier portion of the subcontinent west of 26°E, but it occurs as far as 30°E in the Limpopo River basin. It is a conspicuous species because of its preference for exposed perching sites, and is abundant in the dry interior regions of the Karoo and the Kalahari (ASAB1: 232–233). Its use of roadside telephone pole-tops as perch sites has made it the second most-common quarry of Balchatri trap users; 2761 birds have been ringed and there are 84 recoveries and controls in the SAFRING databank. An informative selection of these is provided in the table.

It is noteworthy that the oldest bird recovered (738232) was ringed as an adult, so it can be assumed that the potential lifespan of this species can extend into the third decade. Cause of death was established in 45 of the recoveries; of these, one third were due to road casualties (birds struck by vehicular traffic) and 31% were shot, mainly by landowners. Some 16% died from aerial collisions with wires or metal structures; this figure is probably conservative because death from injury from unknown cause was recorded for a further seven birds. The Pale Chanting Goshawk, though catching most of its prey on the ground, is nevertheless an accomplished hunter of small birds and quite capable of pursuing and capturing them on the wing (Steyn 1982). Pursued prey may seek shelter in bushes or other places and the PCG that died in a collision with a windmill (761501 in the table) was probably in pursuit of flying prey. Other known causes of mortality include drowning (9%), trapping (7%) and poisoning 4%).

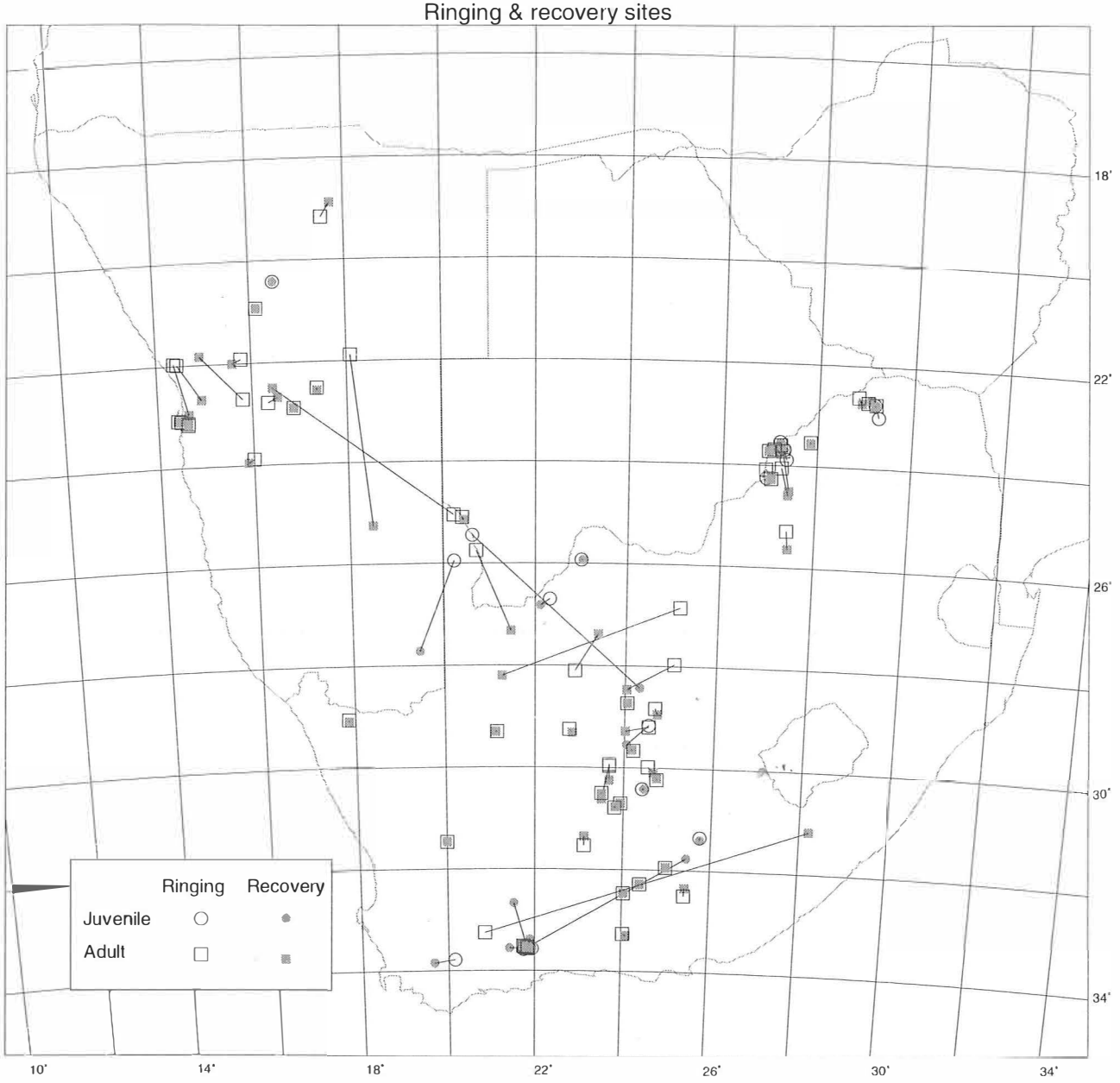
The histograms for distance moved between ringing and recovery sites show that most Pale Chanting Goshawks are sedentary; 55% of adults and 44% of juveniles were recovered or recaptured less than 10 km from the site of ringing (the data-set includes 23 young birds ringed as nestlings or free-flying birds up to their second year, and 58 adults). Adults appear to be as prone to move long distances as young birds; 21% of young moved more than 50 km from their ringing sites, compared with 24% of adults. As shown in the map, there is no obvious pattern to long-distance movements, which might be undertaken because of dwindling prey availability.

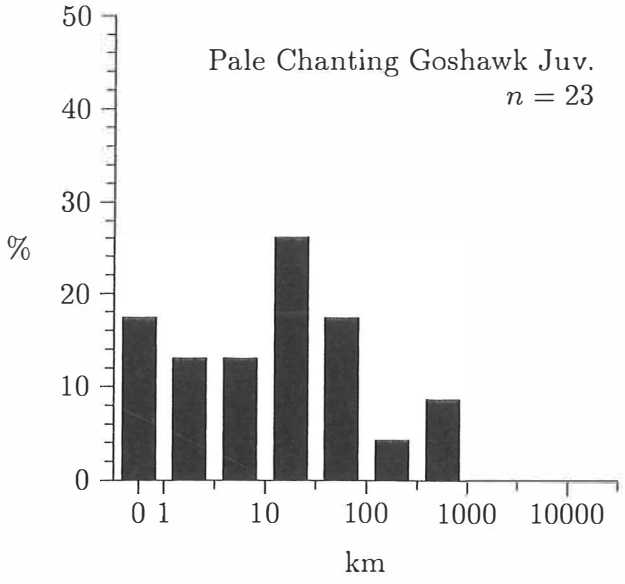
Malan (ASAB1: 232–233) pointed out that the SAFRING records for Pale Chanting Goshawks show that females tend to move farther (average 282 km) than males (average 39 km). There is no unequivocal explanation for this, and there is obviously still much to learn about the cause and significance of movements in this species.

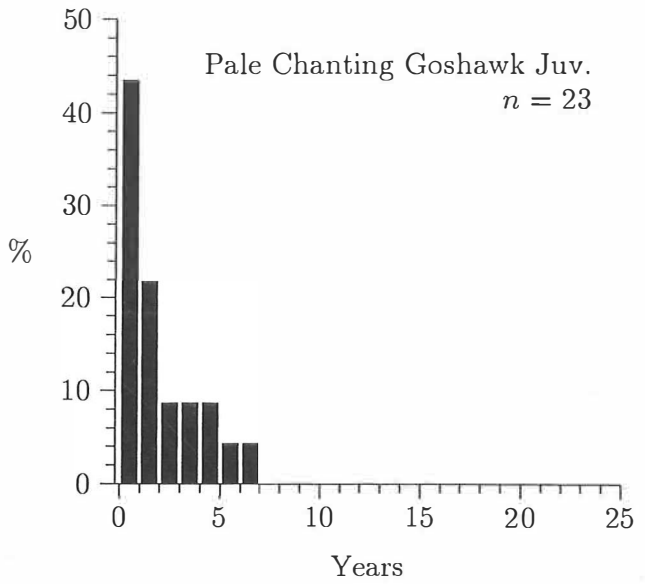
Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
64601288	Ad	U	27/06/69	3315S2051E	28/12/69	3110S 2813E	0y 6m 1d	731	Unknown
738232	Ad	M	08/06/75	3047S 2348E	28/06/96	3046S 2349E	21y 0m 21d	2	Unknown
761501	Ad	U	20/06/76	3132S 2307E	23/09/86	3121S 2307E	10y 3m 3d	20	Collided with windmill
755871	Ad	F	14/08/76	2651S 2510E	22/12/80	2812S 2116E	4y 4m 8d	413	Injury
810166	Ad	F	12/11/77	2153S 1805E	17/01/83	2515S 1830E	5y 2m 5d	377	Injury
784868	Ad	F?	15/08/88	3331S 2144E	23/03/96	3331S 2144E	7y 7m 7d	0	Road casualty
846934	1Y	U	30/09/89	2527S 2038E	14/07/90	2826S 2419E	0y 9m 13d	493	Unknown
914164	Ad	F	17/11/89	2545S 2043E	24/01/92	2719S 2128E	2y 2m 7d	190	Drowned
840656	Ad	F	06/08/90	2503S 2014E	28/11/92	2230S 1626E	2y 3m 23d	479	Unknown
784170	N	F?	22/12/90	3334S 2147E	21/04/91	3146S 2527E	0y 3m 29d	397	Unknown

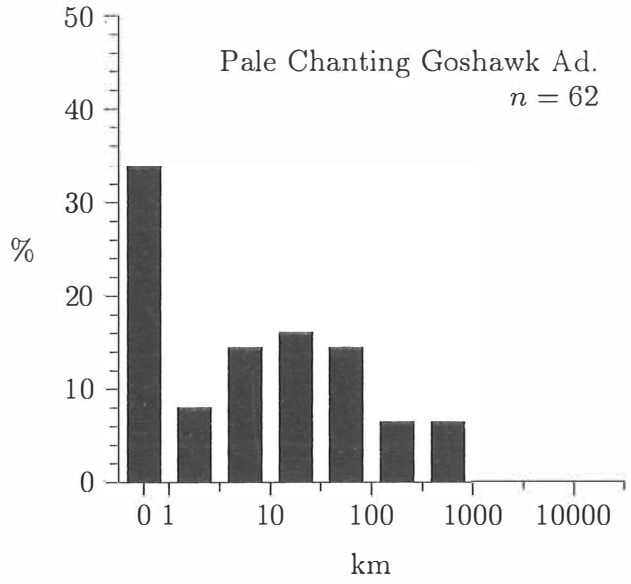
PALE CHANTING GOSHAWK

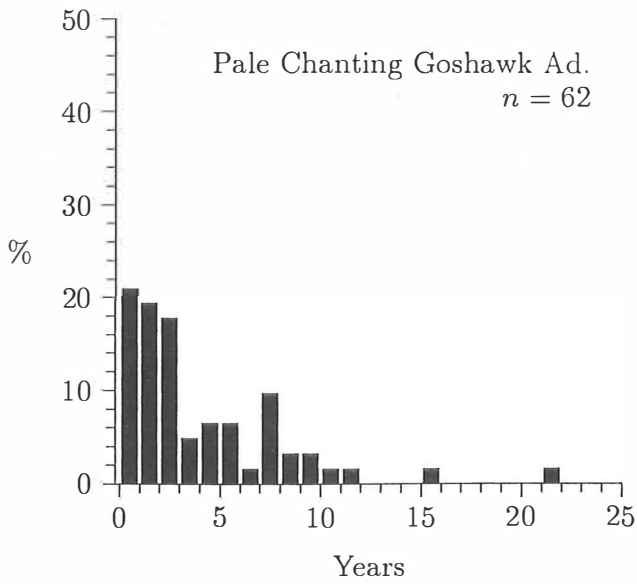
Ringing & recovery sites











Dark Chanting Goshawk

Melierax metabates

The Dark Chanting Goshawk is a woodland bird, widespread in Africa and extending outside the Afrotropical region to southwestern Morocco and to southern Arabia (Brown *et al.* 1982). In southern Africa it is found in the north and northeast, from the Caprivi eastwards through northern and eastern Botswana to Zimbabwe and the northern and eastern bushveld of South Africa south to Swaziland (ASAB1: 234–235). There is some marginal overlap with the Pale Chanting Goshawk *Melierax canorus*, but where this occurs the two species are usually separated by their habitat preferences (Steyn 1982). It is suspected that movements by some of the population may take place in dry years (ASAB1: 234–235).

The number of Dark Chanting Goshawks ringed in southern Africa totals 296 birds, many of these caught as free-flying individuals in recent years. There are 12 recoveries and controls in the SAFRING database; 10 are listed in the table.

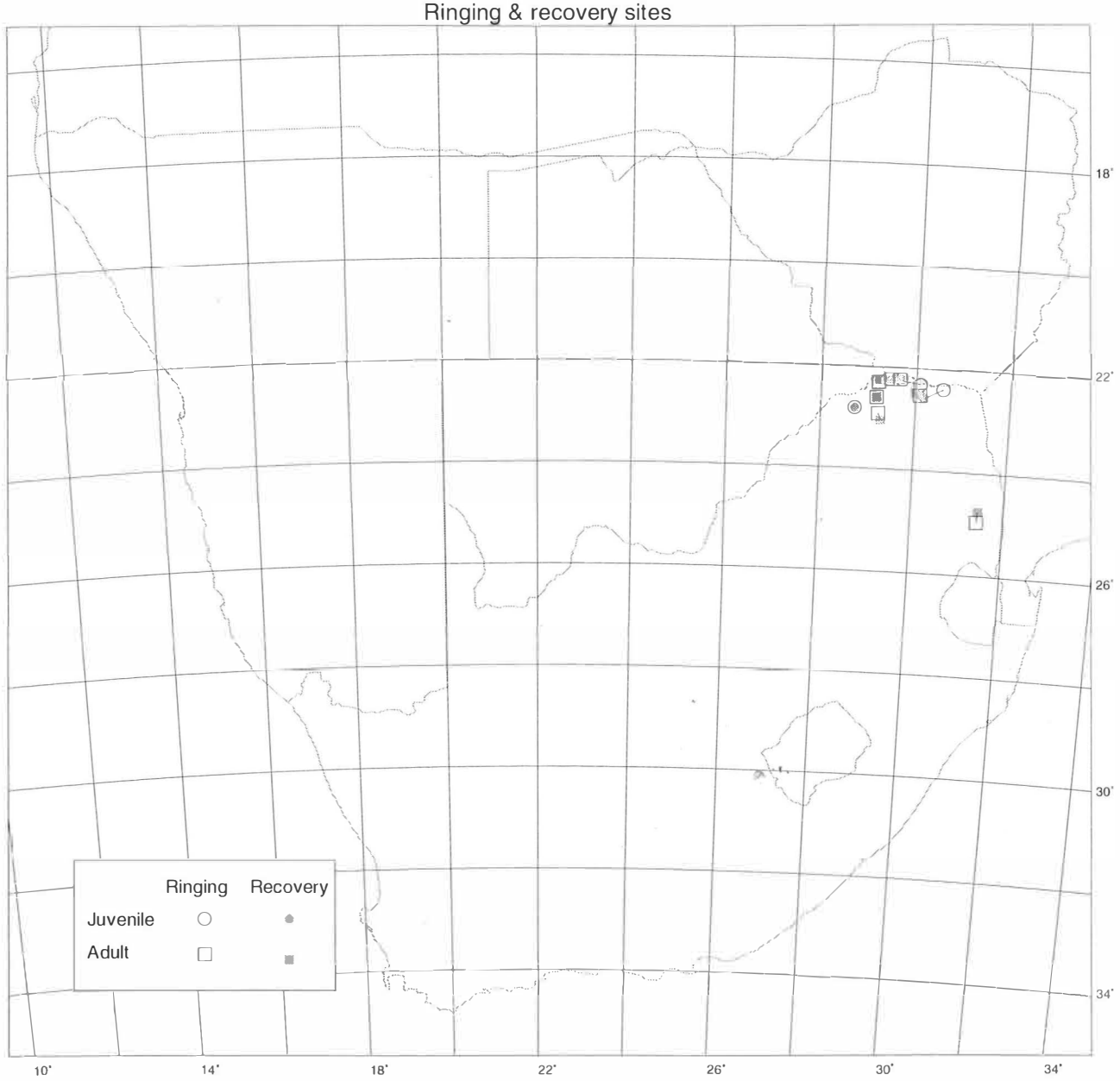
These recoveries, as shown on the map, are indicative of a sedentary habit, with some dispersal by young birds. Many more records will be needed to test the ideas about local movements in this species.

The causes of death revealed by these records are three in number, trapping, shooting and drowning. Although the sample is small, it is perhaps noteworthy that, unlike the Pale Chanting Goshawk, Dark Chanting Goshawks have not yet been reported killed on roadways. Lapsed times from ringing to recovery or recapture are low because most of the birds at risk have been ringed in recent years.

Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
732950	1Y	U	31/12/75	2224S 3034E	14/08/76	2235S 3010E	0y 7m 14d	46	Unknown
766411	Imm	U	13/07/77	2219S 3005E	28/07/78	2213S 2919E	1y 0m 15d	80	Drowned
785834	Ad	F?	13/03/93	2214S 2928E	01/05/95	2214S 2927E	2y 1m 18d	2	Controlled
785843	1Y	F?	04/04/93	2249S 2843E	22/06/96	2249S 2843E	3y 2m 18d	0	Trapped
785844	Ad	F?	04/04/93	2236S 2910E	15/11/95	2236S 2910E	2y 7m 11d	0	Unknown
785565	Ad	U	22/01/94	2457S 3126E	07/02/95	2445S 3127E	1y 0m 16d	22	Injury
K13668	Ad	U	02/04/94	2214S 2927E	30/12/96	2213S 2930E	2y 8m 29d	5	Controlled
K13670	Ad	U	02/04/94	2232S 3005E	10/05/96	2229S 2959E	2y 1m 8d	12	Unknown
784440	Ad	U	17/03/95	2218S 2912E	12/10/95	2215S 2913E	0y 6m 26d	6	Drowned
671010	Ad	F?	22/11/95	2255S 2913E	20/08/97	2303S 2916E	1y 8m 28d	16	Shot

DARK CHANTING GOSHAWK

Ringing & recovery sites



African Marsh Harrier

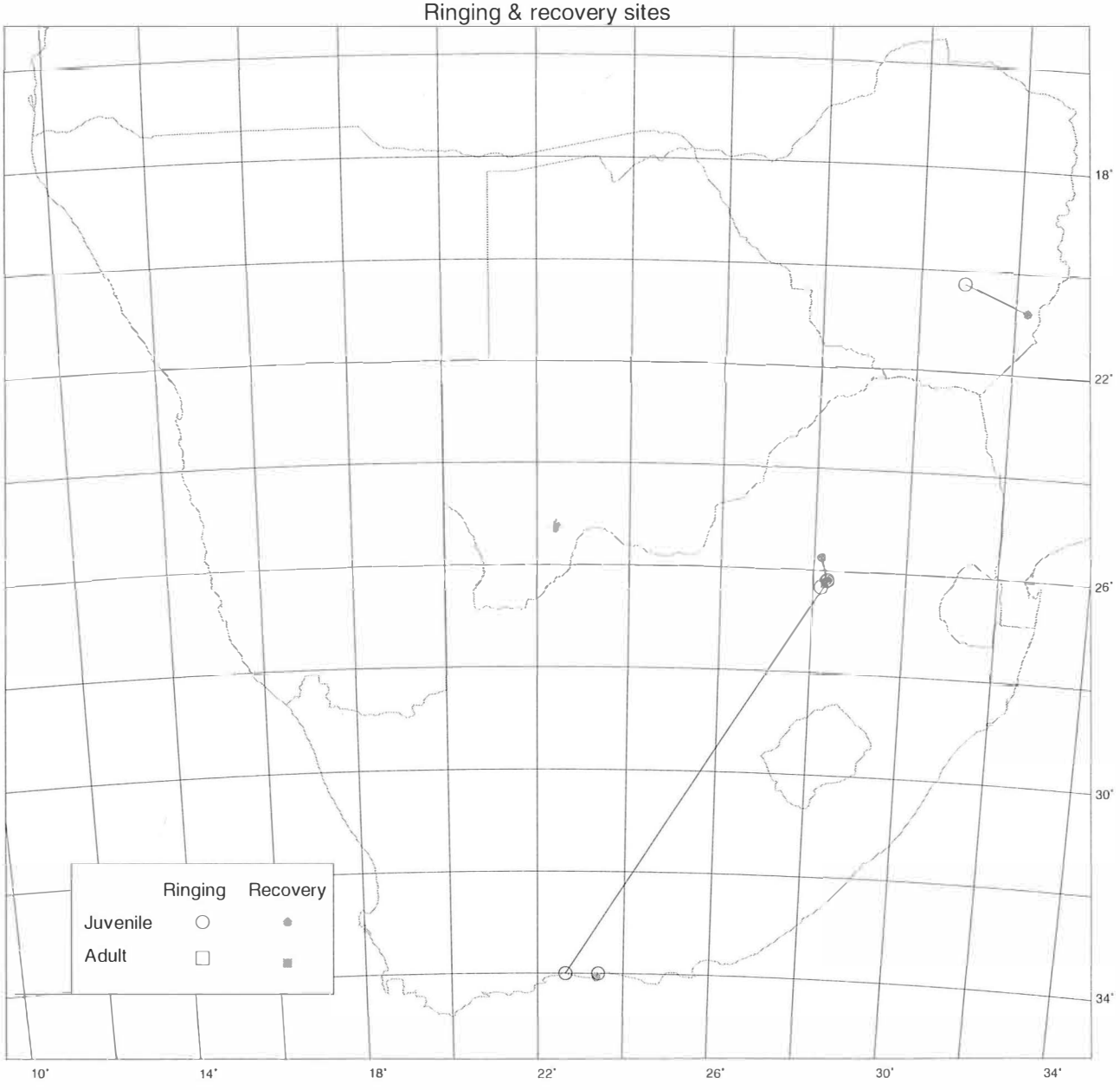
Circus ranivorus

The African Marsh Harrier ranges from Uganda southwards through East Africa to southern Africa, where it is concentrated in extensive wetland regions such as the Okavango Delta in northern Botswana and KwaZulu-Natal; it extends also along the southern littoral to the Western Cape (ASAB1: 236–237). It was earlier classified as a subspecies of the European Marsh Harrier *Circus aeruginosus*, but unlike that species the African Marsh Harrier is sexually monomorphic (Brown *et al.* 1982). 137 birds have been ringed, and these mostly as nestlings, because the free-flying bird, though susceptible to a pole trap, is not easily captured by the methods normally employed by raptor ringers, given its favoured habitat and hunting technique. There have been five recoveries.

As is evident from the map, immature birds are capable of striking dispersal (or of nomadic wandering, as Simmons (ASAB1: 236–237) termed such movements). Notwithstanding its comparatively widespread distribution in southern Africa, the African Marsh Harrier is experiencing extensive loss of its specialized wetland habitat, and there is consensus that it should be classed as a 'vulnerable' Red Data species (Steyn 1982; Boshoff *et al.* 1983; ASAB1: 236–237).

AFRICAN MARSH HARRIER

Ringing & recovery sites



Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
58601401	N	U	04/11/61	3400S 2325E	29/10/62	3404S 2322E	0y 11m 24d	9	Shot
58500713	Juv	U	31/01/63	2611S 2818E	05/07/63	2545S 2809E	0y 5m 3d	50	Unknown
58509441	Juv	M	26/12/70	2619S 2810E	10/07/71	2613S 2815E	0y 6m 13d	14	Unknown
636304	Juv	U	17/06/73	2016S 3055E	18/12/74	2047S 3215E	1y 6m 1d	150	Unknown
656460	N	M?	03/11/84	3400S 2239E	09/06/85	2611S 2819E	0y 7m 5d	1025	Illness or injury

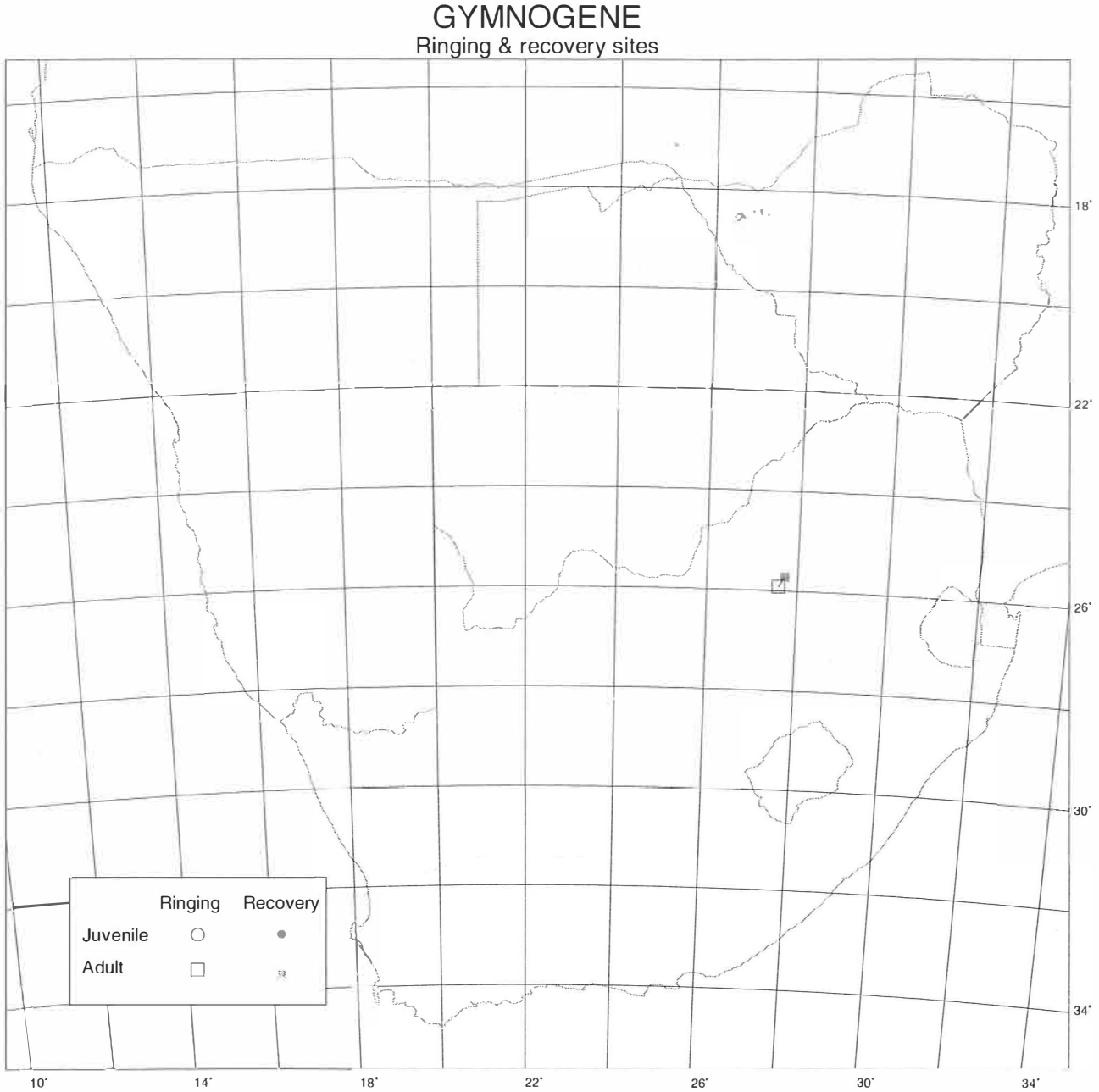
Gymnogene

Polyboroides typus

This rather peculiar raptor is widespread in sub-Saharan Africa, where it is alternatively known as the African Harrier-Hawk (a name that reflects the indecision of its originators). It is a bird that favours the moister woodlands and avoids arid areas. It is remarkable for the double-jointedness of the tibial-tarsal joint which has a forward flexion of 150° and a rearward flexion of 40°, and can also enable the leg to move sideways at this joint (Burton 1978). This adaptation promotes a remarkable dexterity which enables the Gymnogene to extract nestlings of hole-nesting species or from suspended enclosed nests such as those of weaverbirds *Ploceus* spp. (Steyn 1982).

In southern Africa its distribution shows a largely peripheral pattern, extending around the moister margin of the atlas region, from the Kunene River (sparse) to the Okavango (common) and thence throughout Zimbabwe in miombo woodland, down through the Limpopo River basin and the eastern lowveld of South Africa into KwaZulu-Natal and southwestwards around the coast hinterland, becoming sparser again in the winter-rainfall area of the Western Cape (ASAB1: 244–245).

It is a solitary species, and its habits do not make it easy to capture. No more than 23 birds have been ringed in the 50-year history of SAFRING, and there has been one recovery. This was of a bird of unknown age and sex, suggesting that it was possibly a rehabilitated bird. It was ringed (810213) at Hekpoort (25°55'S 27°35'E) in the Magaliesberg range on 25 October 1988 and found incapacitated by injury on 25 September 1990, after 1y 10m 30d, at Wolhuterskop (25°43'S 27°43'E), 26 km from its ringing (or release site). This single record at least supports the statement of Steyn (1982) that it is a resident species which wanders about locally in the nonbreeding season.



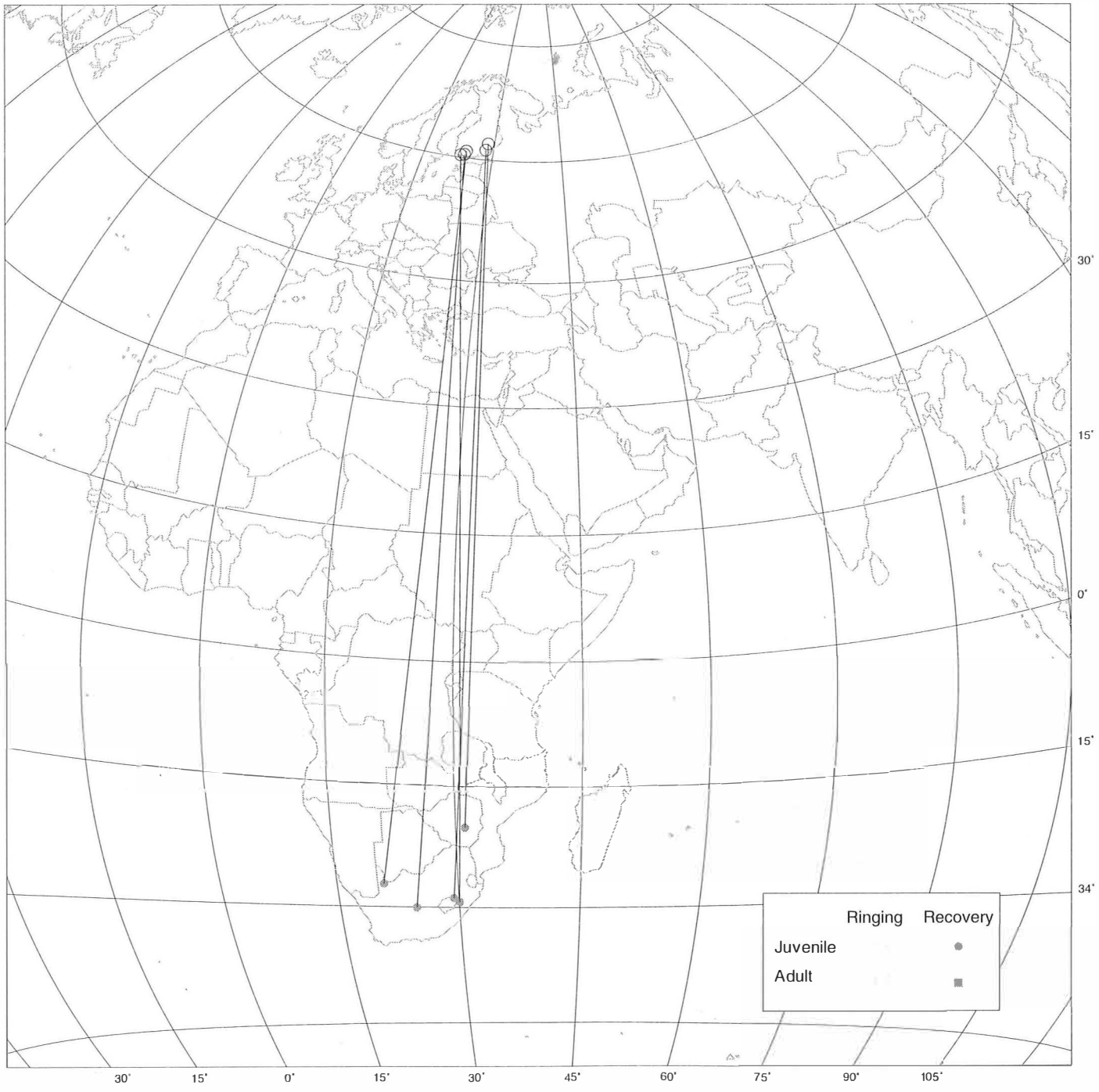
Osprey

Pandion haliaetus

No Ospreys have been ringed in southern Africa, but the species is included here on the strength of five recoveries of Finnish-ringed birds between June 1973 and October 1990 (see table). These recoveries have already been published and discussed in a comprehensive review of ring recoveries of Fennoscandian Ospreys in African non-breeding areas (Saurola 1994).

There is a sixth recovery, that of a Swedish-ringed Osprey found in Zimbabwe, which was not reported to SAFRING, but which is shown by Saurola (1994) and mentioned also by Boshoff (ASAB1: 246).

The date of recovery of M6660 was known only to the month, and the bird had been adjudged dead for up to 30 days. It nevertheless attests to the fact that some first year migrant Ospreys may 'overwinter' in southern Africa. Of particular interest is the penultimate record M20113, one of two selected by Saurola (1994) as examples of recoveries allowing estimation of the speed of migration. The bird carrying M20113 was ringed as a nestling by Saurola. It hatched on 6 June 1983 and was still in the nest in Häme, central Finland, on 27 August. Its provisional date of recovery was 7 October, which means that the maximum time



needed to complete the journey of 9817 km was 40 days. The recovery date, however, was accurate only to the nearest week, and the bird was not freshly dead; it could have been dead for anything from one to three weeks. So an arrival date at the recovery site of not later than 1 October is a reasonable estimate. This date increases the average speed of travel of this bird from the 245 km/day estimated by Saurola to over 297 km/day. The recovery area is also noteworthy. It is one of the most arid parts of South Africa, a region where the only water this unfortunate young Osprey could have found in thousands of square kilometres at that time of the year would have been in farm watertanks. The record was interesting in another respect, in that the ring arrived at SAFRING with the Osprey's tarsus and foot still inside it, the postal authority having conveyed the noisome package safely and without complaint.

Reviews of the status and distribution of the Osprey in southern Africa are provided by Boshoff & Palmer (1983) and Boshoff (ASAB1: 246).

Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
M6660	N	U	06/07/72	6203N 2833E	15/06/73	2003S 3107E	0y 11m 9d	9132	Unknown
M9775	N	U	07/07/76	6018N 2303E	15/11/83	2919S 3002E	7y 4m 9d	9985	Found sick or injured
M18377	N	U	08/07/82	6025N 2351E	01/11/84	3003S 2438E	2y 3m 25d	10059	Found injured
M20113	N	U	16/07/83	6051N 2406E	07/10/83	2708S 2050E	0y 2m 22d	9787	Drowned
M29231	N	U	06/07/90	6114N 2817E	16/10/90	2848S 2923E	0y 3m 11d	10011	Alive but exhausted

Peregrine Falcon

Falco peregrinus

The African Peregrine is considered to be a small-sized subspecies *F. p. minor* of this most cosmopolitan of all falcons. In southern Africa it is a sparsely distributed resident species and breeding pairs are largely restricted to areas where sheer cliffs provide nesting and roosting sites and vantage points for hunting (Jenkins 1994; ASAB1: 250–251). Throughout its southern African range it is sympatric with the somewhat larger and less-specialized Lanner Falcon *Falco biarmicus*. A comparison of numbers of breeding pairs of these two species in the former Transvaal indicated that Lanner Falcons outnumbered Peregrine Falcons there by eleven to one (Steyn 1982). If one assumes that two related species with similar habits are equally prone to capture by bird ringers, then the numbers of each species ringed can be taken to provide a rough measure of comparative abundance. In the case of the Lanner and Peregrine Falcons, the ringing totals are 621 and 91 birds respectively, or 6.8:1. The Peregrine, however, has been the subject of special attention by some conservation authorities and captive breeding programmes, so the ringing total for this species may be biased upwards, and the ratio consequently too small.

There are 14 recoveries in the SAFRING databank, some of which are from captive-reared (marked with an asterisk) or rehabilitated birds, but not of which have been flagged as such in the records.

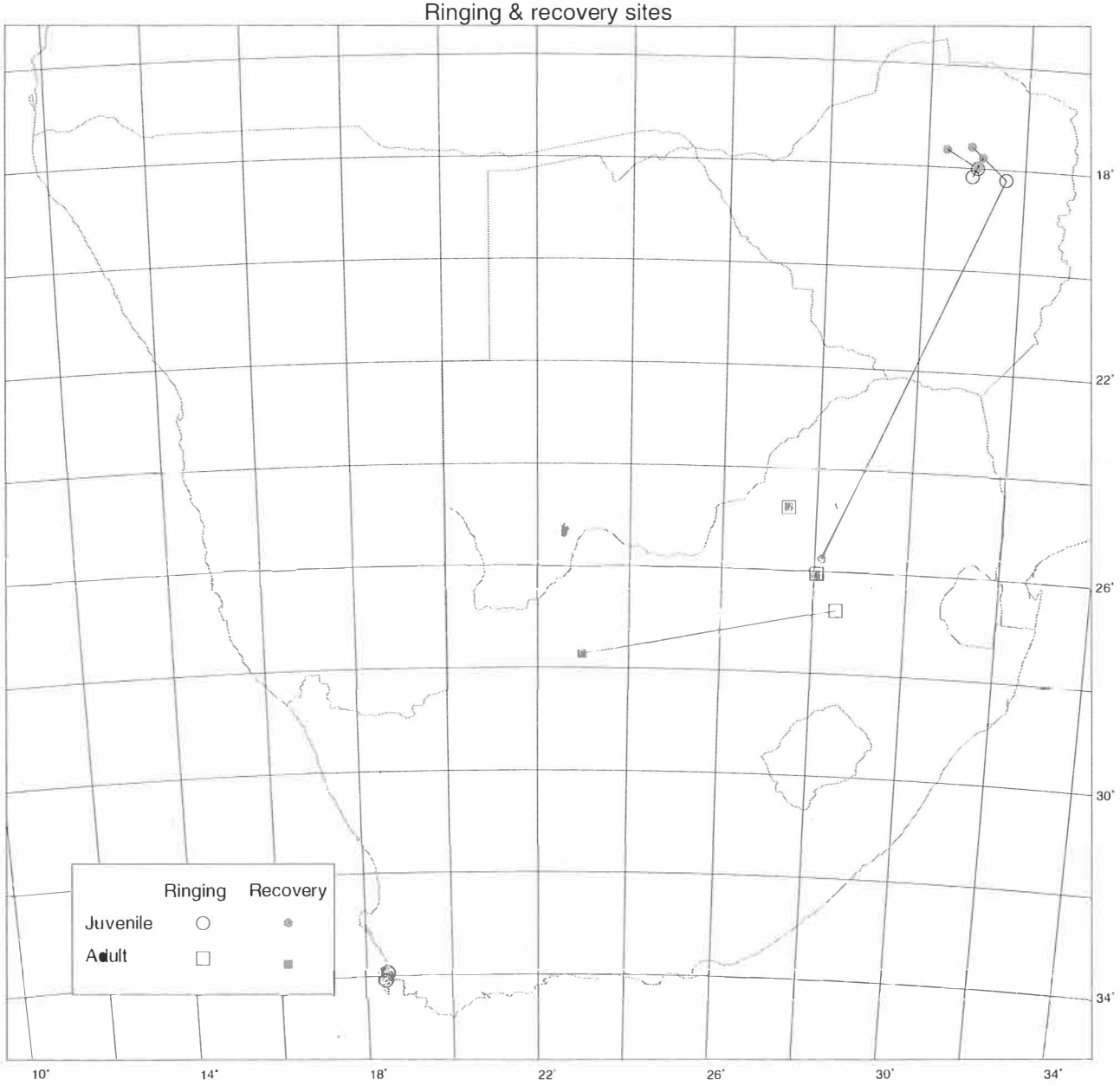
Most of the movements are by young birds, with the exception of 664158. The number of Peregrines recovered alive but injured is proportionally greater than in other recovery sets, but information about nature and causes of injuries is lacking.

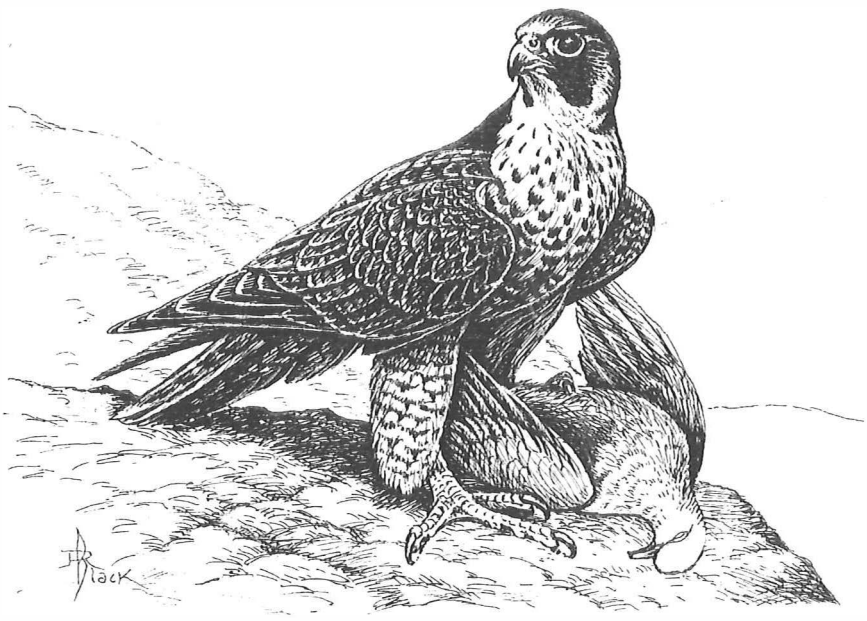
Small numbers of Palearctic Peregrine Falcons *F. p. calidus* migrate to southern Africa in summer (ASAB1: 250–251). There are no recoveries of ringed birds of this subspecies, but a female *calidis*, fitted with a satellite-tag while on southwards migration through Saudi Arabia, was tracked to the Western Cape, where it spent the summer (Jenkins & Stephenson 1997).

Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
58505619	N	U	31/10/89	1800S 3101E	20/08/90	1747S 3107E	0y 9m 19d	26	Injury
K12902	N	M	18/11/89	3357S 1831E	26/02/90	3357S 1830E	0y 3m 9d	2	Unknown
*58505624	Juv	M	07/11/90	1812S 3137E	27/03/91	1735S 3053E	0y 4m 18d	104	Unknown
K06514	Imm	U	10/11/90	1810S 3055E	23/12/94	1756S 3102E	4y 1m 13d	29	Injury
64503952	1Y	M	25/10/91	1800S 3101E	20/11/94	1739S 3023E	3y 0m 26d	78	Unknown
664158	Ad	M?	22/03/92	2645S 2830E	28/01/93	2743S 2300E	0y 10m 8d	554	Shot
785058	Ad	M	11/07/93	2446S 2724E	23/09/93	2445S 2724E	0y 2m 13d	2	Injury
666988	N	M	04/11/93	3355S 1830E	30/08/95	3354S 1823E	1y 9m 25d	11	Injury
829037	Juv	F	10/11/95	1812S 3137E	27/02/96	2545S 2809E	0y 3m 18d	912	Unknown
*829044	Juv	F	28/11/95	1800S 3101E	22/12/95	1800S 3101E	0y 0m 24d	0	Drowned

PEREGRINE FALCON

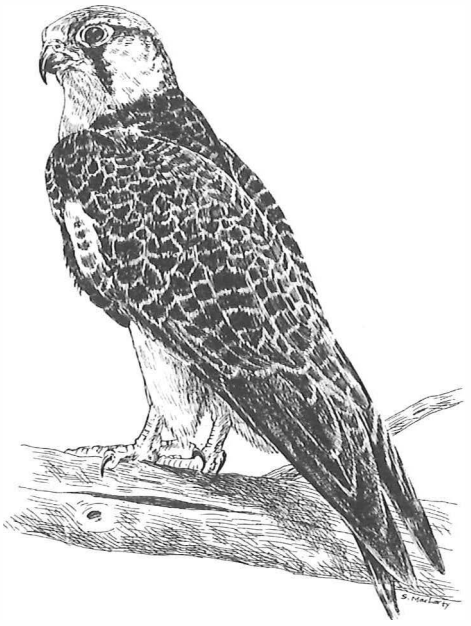
Ringing & recovery sites





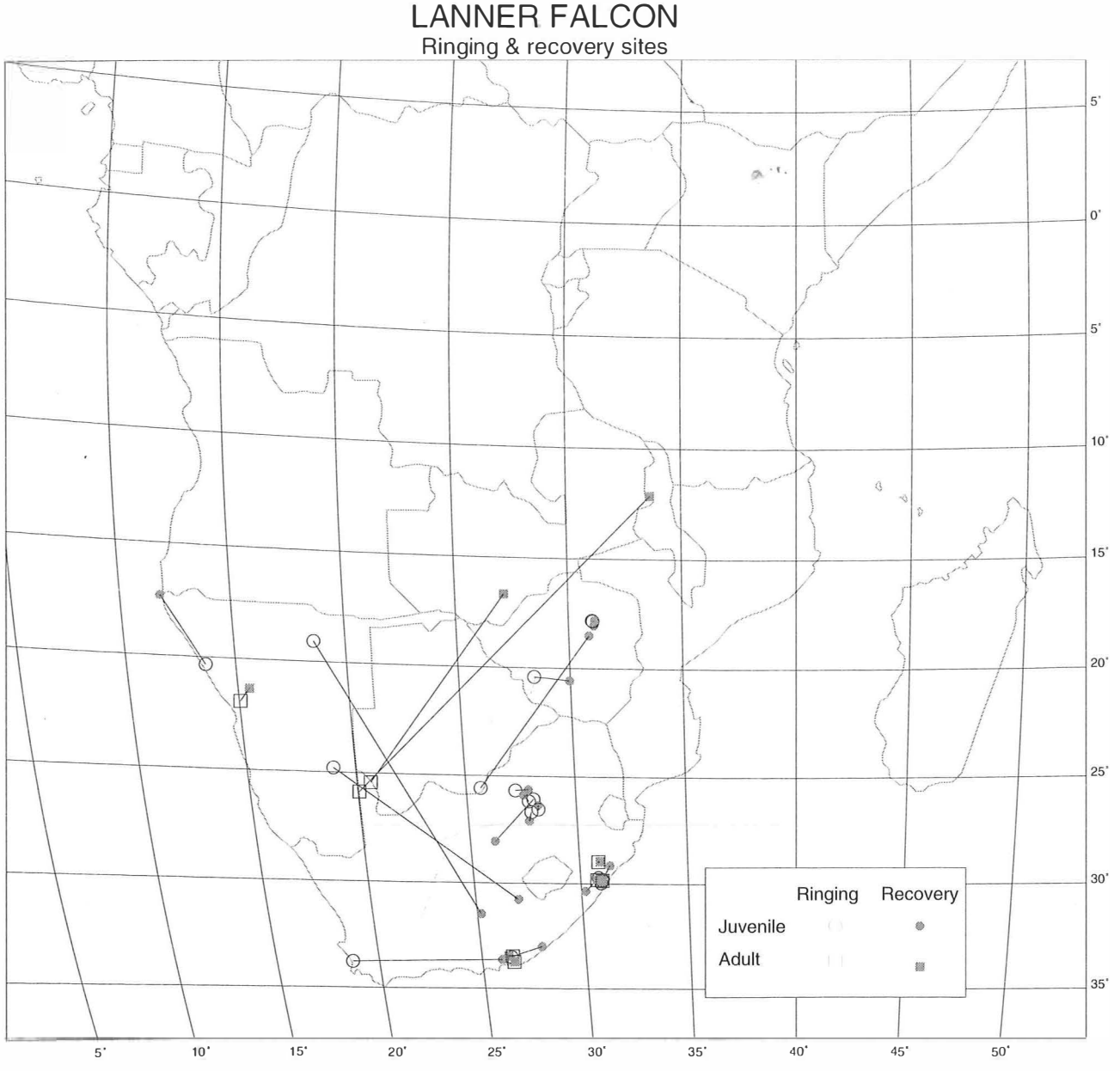
Lanner Falcon

Falco biarmicus



The Lanner Falcon occurs throughout much of Africa (including the Sahara Desert) and is found also in southeastern Europe and the Arabian Peninsula (Del Hoyo *et al.* 1994). Although similar in size and general appearance to the Peregrine Falcon *Falco peregrinus*, it exhibits much more versatility in hunting techniques. Different populations adopt different hunting strategies to efficiently capture whatever prey animal is most abundant in their area, be it lizards in the Sahara, ground squirrels in Ethiopia, or quelea finches in Namibia. Insects, reptiles, small mammals (including bats), or birds may rank as important dietary components in different regions.

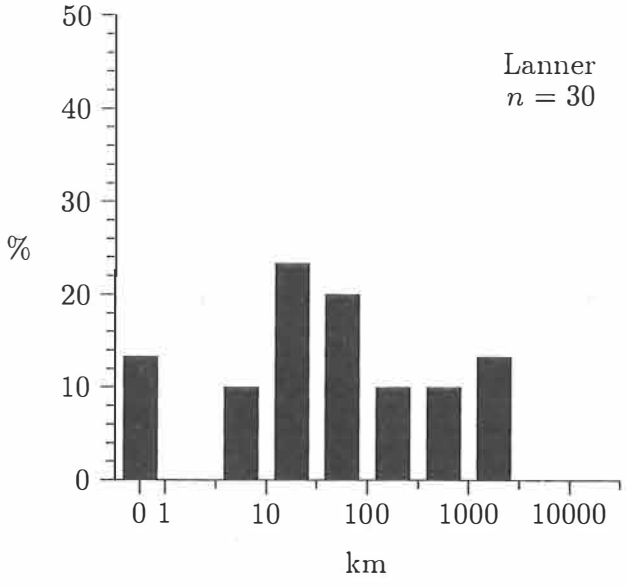
The Lanner is a facultative migrant, readily vacating an area or region in reponse to local food shortages (ASAB 1: 247–249). It is widely used for falconry, especially in North Africa and Arabia (Etchecopar & Hüe 1967) and, contrary to popular myth, is every bit as accomplished a flier as the Peregrine Falcon (Brown 1970, p. 131).

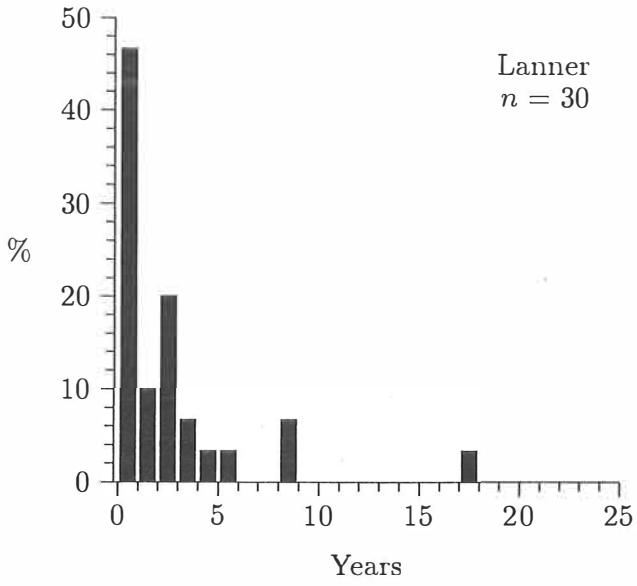


The Lanner is widespread in southern Africa where it is most abundant in the southeast, especially KwaZulu-Natal (ASAB1: 247–249), probably because the deeply incised river valleys in the region of the Natal monocline provide an abundance of cliffs for breeding, roosting and hunting sites (Jenkins 1994). Falconers in KwaZulu-Natal do not easily find a locality where a manned Lanner can be flown free without it being promptly harrassed by a local territorial pair of Lanners (A. Neale pers. comm.). It is not attracted to a Balchatri trap, and though it can be caught efficiently in a dugaza net, there are few ringers in southern Africa who use this technique. As a consequence, 621 birds have been ringed in the history of the scheme, many of these as nestlings, but a return rate in excess of 4.6% has yielded 30 recoveries. The map plots illustrate the extent and multidirectional nature of movements, some of which are from arid or semi-arid localities to moister regions. Using atlas data and road transect counts in addition to ring recoveries, van Zyl *et al.* (1994) suggested that Lanner Falcons concentrate in the east of South Africa during the breeding season and move into the drier western region during the nonbreeding period. The ring recoveries are too few to illustrate the hypothesized seasonal east–west–east movements, but it is evident from the map that the majority of movements plotted were undertaken by immature birds, and may represent postnatal dispersal rather than seasonal migration.

Reported causes of mortality are most numerous (seven records) for aerial collisions with other objects (including road vehicles and aircraft) and for injuries (five), probably sustained in flight accidents. Trapping and shooting each accounted for three birds, while one case of drowning and one case of electrocution have also been reported.

The longest elapsed time from ringing to recovery is provided by ring 64503272 (second in table of recoveries) and represents a genuine longevity record because the bird (which was ringed as a nestling) was recovered alive but fatally injured.





Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
730153	N	U	11/09/72	2025S 2823E	16/10/80	2034S 2958E	8y 1m 5d	166	Unknown
64603272	N	U	22/09/72	1748S 3102E	20/10/89	1802S 3107E	17y 0m 28d	27	Injury
600516	Imm	F	27/05/74	2604S 2803E	20/09/74	2803S 2609E	0y 3m 25d	290	Collided with wires
766262	Imm	M	22/01/78	2448S 1859E	13/10/82	3046S 2701E	4y 8m 21d	1031	Unknown
K02042	Ad	M	10/03/79	2552S 2004E	09/05/79	1208S 3339E	0y 1m 30d	2087	Unknown
658702	Imm	U	11/12/89	1905S 1835E	02/02/90	3128S 2511E	0y 1m 23d	1528	Injury
648026	Juv	M	16/04/90	3346S 1842E	31/07/95	3337S 2558E	5y 3m 14d	672	Unknown
K12126	Ad	M	07/03/91	2526S 2038E	30/06/92	1640S 2710E	1y 3m 3d	1187	Trapped
784680	Juv	F	24/06/95	3330S 2625E	01/07/97	3259S 2756E	2y 0m 8d	152	Unknown
787280	Imm	U	02/09/95	2535S 2540E	10/06/97	1830S 3056E	1y 9m 8d	953	Collided with road vehicle

Rock Kestrel

Falco tinnunculus

This southern African race *F. t. rupicolus* of the Old World Common Kestrel is widespread in the subcontinent, where it is most abundant in western Namibia, southern and western South Africa and in Lesotho. It is commonly found in mountainous areas, especially when breeding, but also occurs in flat country and in many habitats; atlas data confirm its association with 21 vegetation types (ASAB1: 264–265).

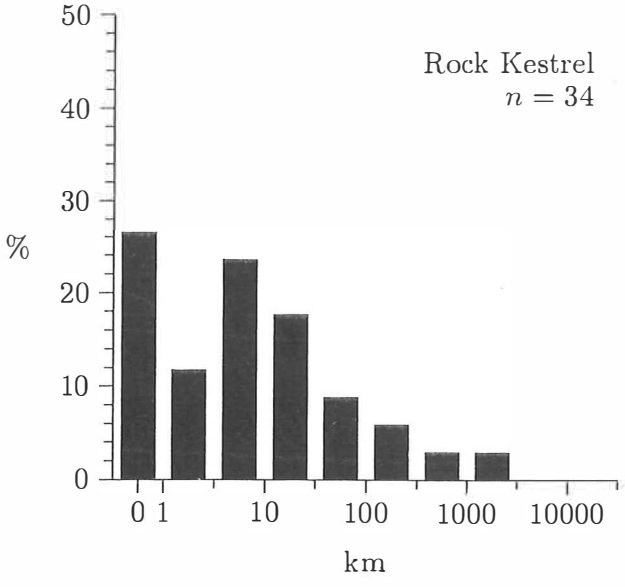
Usually solitary or in pairs, it hunts by hovering or from perches and regularly uses telephone lines or poles as svantage points. This habit has made it an easy target for raptor ringers, the total of birds ringed being 1259. These have so far yielded 35 recoveries and controls.

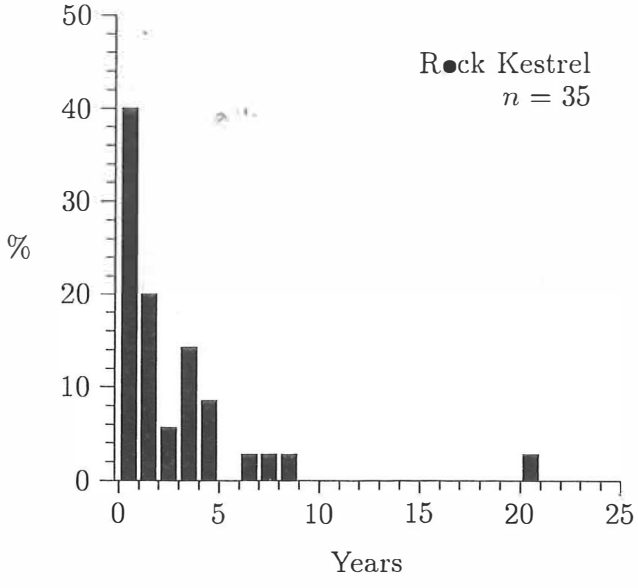
Van Zyl *et al.* (1994) used the results of a detailed analysis of atlas records to postulate a northerly and easterly movement in the winter months of southwestern breeding populations of Rock Kestrels. The ring recovery data to date are far too few to provide evidence for or against this hypothesis.

Most ring recoveries are serendipitous, but the long-distance one (first in the table) was notably so, because the likelihood of the ring being found in its final resting place was extremely small. But an employee of the Rossing Uranium Mine took his girlfriend for a jeep ride in the desert and noticed, in the waste of trackless dunes, something glinting in the sun. Closer inspection showed it to be ring number 530777, half buried in the sand, together with the intact skeletal remains of the tarsus and foot.

Causes of death of nine of 31 Rock Kestrel recoveries were unknown. Rankings of the remainder were as follows: Injury (cause unspecified) 8, road casualty 7, drowning 5 and shooting 2.

In the histogram for time elapsed from ringing to recovery, the 20-year-old recovery contained no information regarding the status of the bird when found; it was a rehabilitated juvenile when ringed and released, and could have been dead for a long time when found.

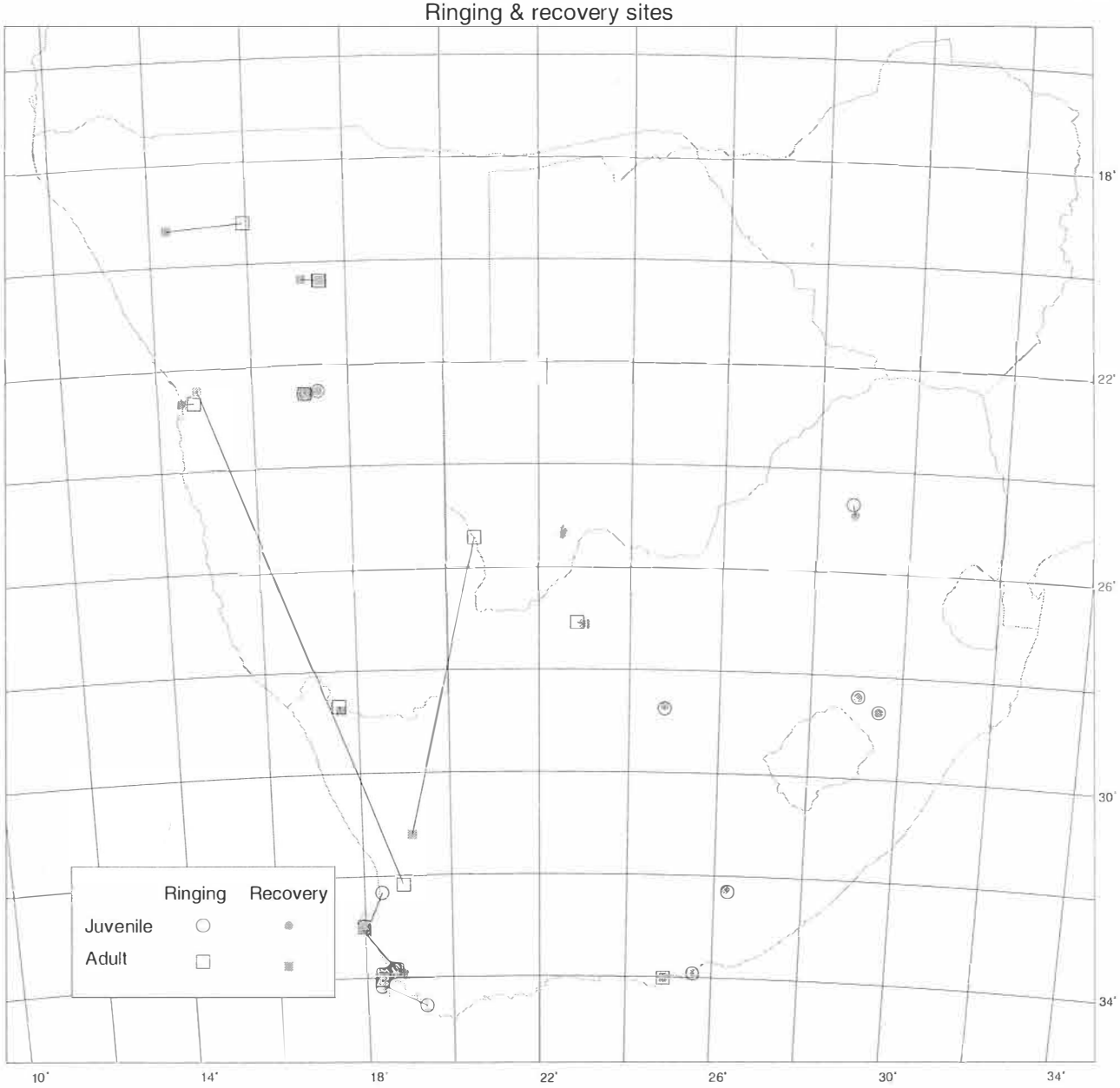


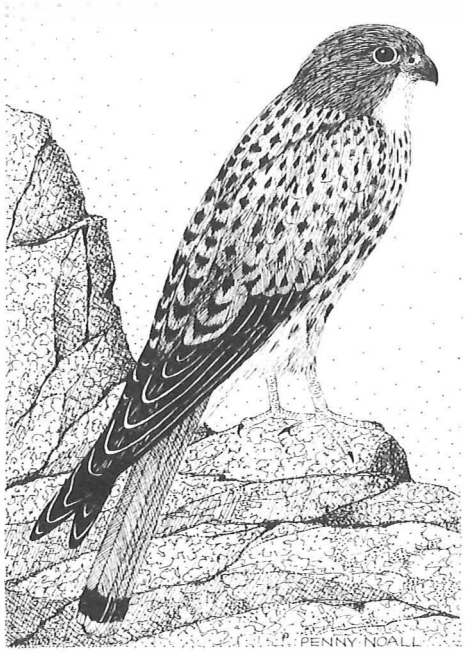


Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
530777	U	U	17/07/76	3211S 1854E	10/08/84	2225S 1450E	8y 0m 24d	1158	Unknown
531286	N	U	22/02/84	2234S 1704E	19/10/87	2232S 1715E	3y 7m 26d	19	Control
582217	Ad	M	29/03/88	2022S 1727E	21/09/95	2020S 1705E	7y 5m 23d	38	Drowned
581908	Ad	F?	22/06/88	2234S 1705E	04/08/94	2232S 1706E	6y 1m 12d	4	Unknown
663352	Ad	U	26/07/90	3351S 1842E	02/08/96	3112S 1907E	3y 7m 5d	660	Drowned
577771	Ad	F	28/07/92	2841S 1735E	24/04/95	2846S 1737E	2y 8m 26d	10	Injury
578275	Ad	U	22/08/93	3300S 1758E	10/10/97	3302S 1755E	4y 1m 19d	6	Road casualty
588447	N	M?	24/10/93	3410S 1820E	18/02/98	3409S 1825E	4y 3m 26d	8	Road casualty
587350	U	F?	14/11/93	3401S 2453E	09/11/96	3401S 2453E	2y 11m 26d	0	Road casualty
63414705	Imm	F	27/12/95	2845S 2447E	13/02/97	2842S 2447E	1y 1m 18d	6	Shot

ROCK KESTREL

Ringing & recovery sites





Greater Kestrel

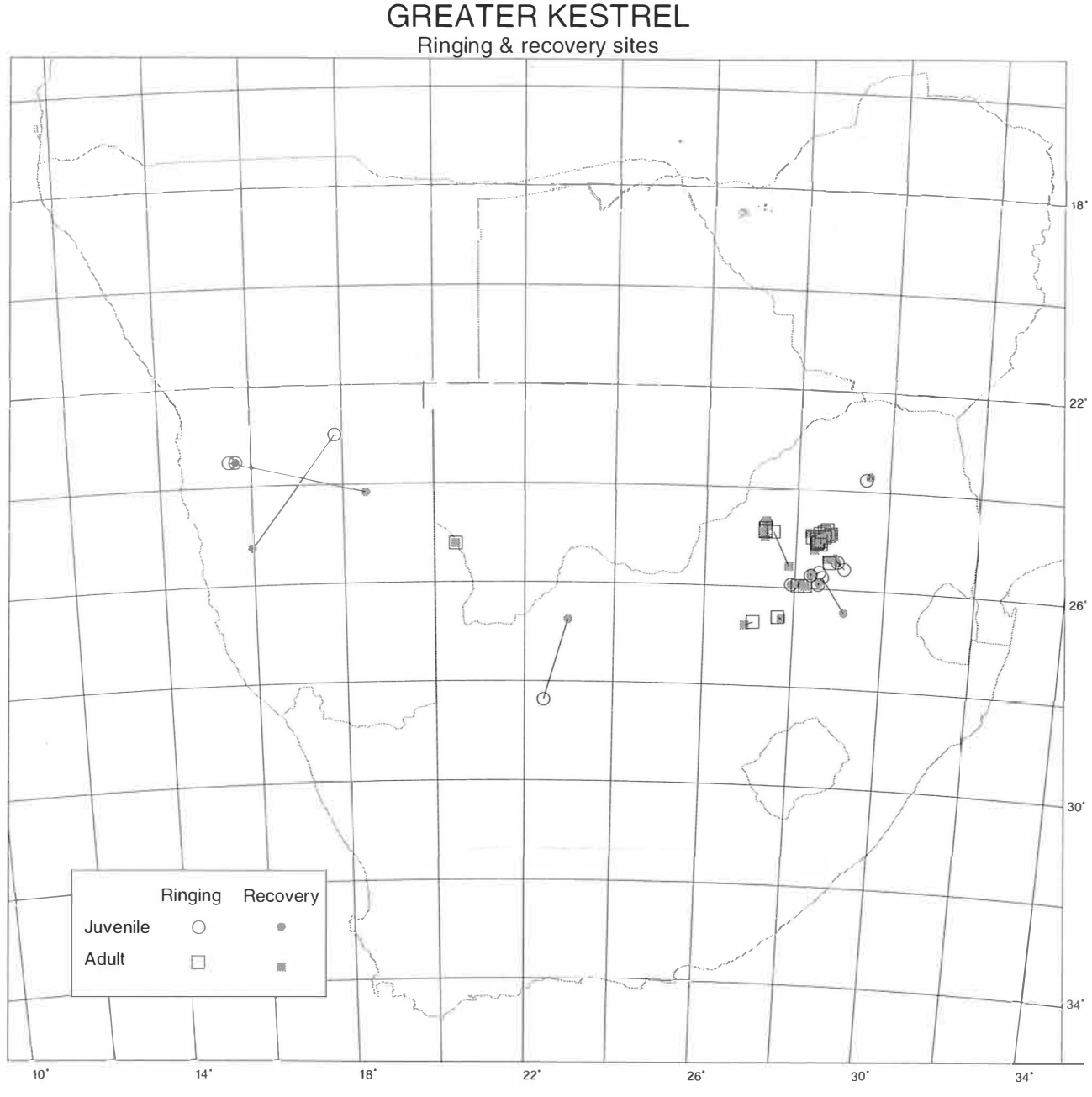
Falco rupicoloides

Aside from two separate populations in East Africa, the main portion of the Greater Kestrel's range extends southwards from Angola and southern Zambia into Namibia, Botswana and the drier parts of South Africa, mainly west of 30°E. The centre of its abundance is in the Kalahari of Botswana (ASAB1: 266–267). It is essentially a species of open country with sparse cover, and it avoids woodlands or habitats where vegetation height exceeds about 0.5 m (Steyn 1982).

It is a solitary hunter, perching on the highest available vantage point. In desert and semi-desert areas, the most common (and often the only) such vantage points are roadside telephone poles. It has received much attention from raptor enthusiasts and 1755 birds have been ringed. The SAFRING databank contains records of 22 controls and 24 recoveries of a total of 43 individual birds.

The mapped records indicate site fidelity in the east and movement in the west. After a long-term study of Greater Kestrels near Pretoria, Kemp (1984) reported that fidelity to mate and to territory lasted for many years. In the more arid regions of Namibia, however, road counts showed that populations of this species were more nomadic, adjusting quickly to local rainfall conditions (Brown *et al.* 1987; ASAB1: 266–267).

In the table, the third record (632154) is of a bird ringed as an immature in the Waterberg district of the Northern Province. Prior to its death (by shooting) it was twice retrapped at the same locality, on 19 October 1975 (3y 8m 12d) and on 26 January 1983 (10y 11m 20d). In the fourth record (643107), an adult female ringed on 8 May 1975, also in the Waterberg district, was initially retrapped 6 km from the ringing site on 29 February 1976 (9m 23d).



Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
604612	N	U	06/09/69	2330S 1531E	20/01/70	2410S 1830E	0y 4m 13d	312	Drowned
63514985	3Y	F	30/12/70	2544S 2821E	21/04/76	2541S 2821E	5y 3m 21d	6	Road casualty
632154	Imm	M	06/02/72	2454S 2843E	19/02/83	2455S 2842E	11y 0m 13d	3	Shot
643107	Ad	F	08/05/75	2451S 2836E	24/03/85	2513S 2824E	9y 10m 16d	45	Control
647779	Ad	F?	24/05/75	2505S 2827E	26/01/86	2504S 2827E	10y 8m 2d	2	Control
636778	Ad	U	14/06/80	2453S 2729E	06/11/81	2534S 2751E	1y 4m 23d	84	Injury
632226	Ad	U	25/01/83	2453S 2831E	03/10/86	2453S 2829E	3y 8m 8d	3	Drowned
636395	Juv	U	16/07/83	2300S 1750E	15/11/85	2515S 1558E	2y 4m 1d	314	Drowned
657719	Ad	M?	02/06/85	2557S 2804E	20/03/91	2554S 2807E	5y 9m 17d	7	Collided with wires
5H01441	Imm	F?	08/02/94	2822S 2226E	29/01/95	2645S 2258E	0y 11m 20d	187	Drowned

The cause of death in six of the 24 recoveries was unknown. Of the balance, six birds were recovered owing to incapacitation from sickness or injury, five were shot, four were drowned, two collided with aerial wires and one collided with a road vehicle.

In general, ringing records corroborate what is known or deduced from observational data and give an indication of the common causes of mortality. The data-set is not yet large enough, however, to estimate survival rates (which may differ between eastern and western populations), and the potential longevity of the Greater Kestrel is unlikely to be indicated by any of the current records.

Lesser Kestrel

Falco naumanni

The Lesser Kestrel is a Palearctic migrant to southern Africa, arriving in November, peaking in numbers in January-February and departing during March. The visiting populations concentrate in the moister eastern regions of South Africa, especially the highveld grasslands, and extend southwards through the grassy Karoo with some birds reaching the Western Cape (ASAB 1: 268–269).

The breeding range of this species extends from the Iberian peninsula and Algeria to about 90°E, with an isolated population in eastern China (Moreau 1972; Pepler *et al.* 1994), but the origins of the populations visiting South Africa are known only from the recovery here of two birds bearing rings from the Moscow Ringing Centre. One of these was ringed in the Stavropol region, north of the Caucasus Mountains in Russia, and the other in the Chokpak pass of Kazackstan. These two ringing sites bracket a region between 45°E and 70°E, but the Chokpak bird, an adult ringed in September, was probably on autumn passage and could have come from farther east in Asia.

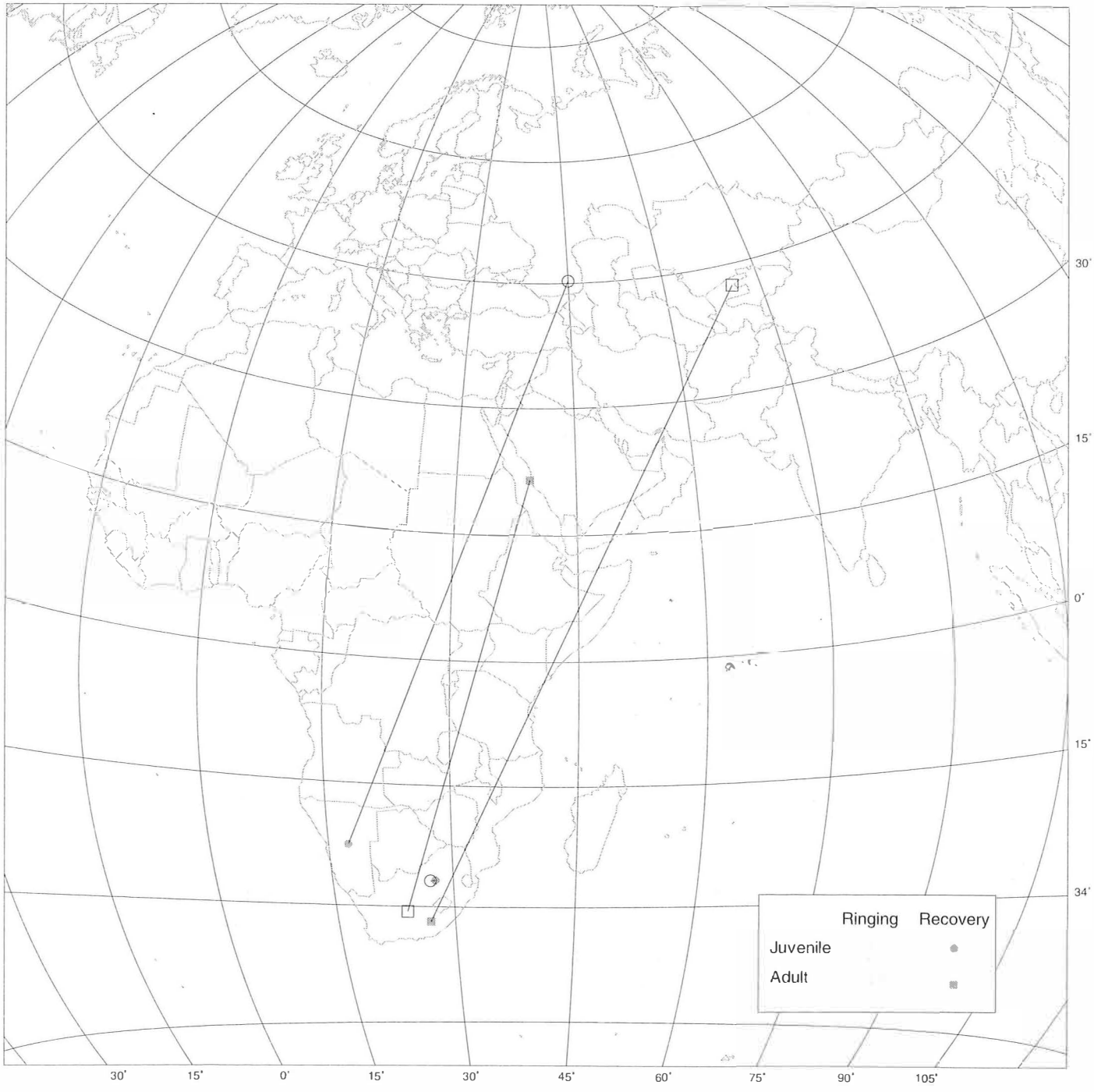
Because Lesser Kestrels prey almost entirely on insects (Steyn 1982), they are not attracted by mouse-baited Balchatri traps and, up to June 1996, 215 birds had been caught and ringed. Almost a quarter of these were caught in the late summer of 1994 when a severe storm incapacitated a few score Lesser Kestrels near their communal roost in De Aar in the Northern Cape. They were rescued and sheltered by a local raptor ringer; 48 birds recovered and were released after being ringed. Prior to this there had been one recovery (A03824) of a locally-ringed bird (see table). On 11 November 1997 a registered letter, bearing the gold-embossed coat of arms of a Prince of the Kingdom of Saudi Arabia, arrived at SAFRING. It contained a ring (588252) from one of the De Aar Lesser Kestrels, with the information that the bird had been found 150 km from Jeddah. Unfortunately no date of recovery was given (or subsequently supplied in response to a written request), but the recovery is nevertheless a valuable one, indicating a point on the route flown by Lesser Kestrels between their breeding and nonbreeding areas (see map).

Financial stringency and inflation (with a concomitant steep rise in postal costs) in the newly-independent states of the former USSR has resulted in a marked drop in ring recovery reports from these areas to the Moscow Ringing Centre (I. Kharitonova pers. comm.). There is thus little prospect of recoveries of South African-ringed Lesser Kestrels in their breeding haunts being reported in the short term.

In record 588252 the actual recovery date is not known; the date used in that of the postmark on the envelope of the finder's letter.

LESSER KESTREL

Ringing & recovery sites



Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
A03824	Juv	M	28/03/58	2645S 2710E	15/12/58	2642S 2748E	0y 8m 19d	63	Storm
M211241	Ad	M	18/09/75	4231N 7038E	24/11/75	3153S 2652E	0y 2m 6d	9401	Bad weather
PB002026	Juv	U	06/06/83	4517N 4500E	04/03/84	2229S 1727E	0y 8m 29d	8035	Shot at airport runway
588252	Ad	M	03/03/94	3039S 2401E	21/06/97	2130N 3912E	3y 3m 19d	6021	Unknown

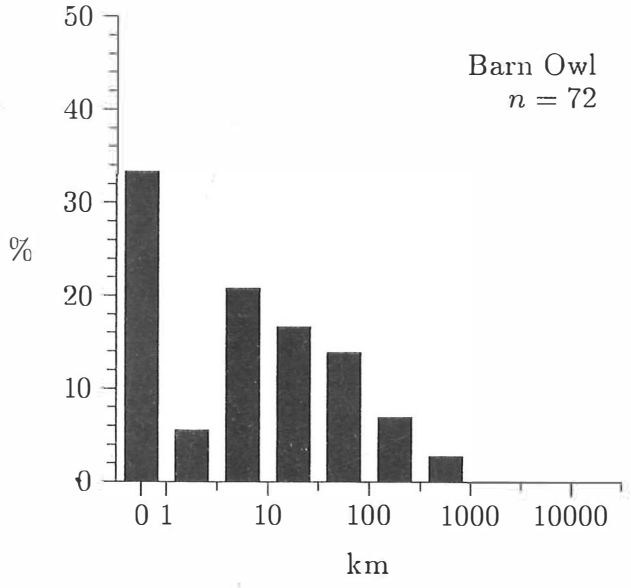
Barn Owl

Tyto alba

This almost cosmopolitan species needs no introduction. In southern Africa it is widespread, with increasing abundance on a south-to-north gradient, and the largest atlas reporting rates were in woodland habitats in the northern parts of the subcontinent where large trees such as Baobabs *Adansonia digitata* provide many nesting sites (ASAB1: 574–575).

1124 Barn Owls have been ringed in southern Africa, but a significant number of these have been rehabilitated birds. There are 73 recoveries in the SAFRING databank; at least 33 of these are positively known to have been of 'rehabilitees'. The survival rate of 'rehabilitated' Barn Owls which are not 'hacked back' is very low and most die of starvation.

Adult Barn Owls were considered to be resident by Steyn (1982); 'resident' does not necessarily mean 'sedentary', and nomadic movements undertaken by some Barn Owls may be in response to changes in availability of rodent prey (ASAB1: 574–575). Most of the records in the table of recoveries provide examples of postnatal dispersal, which in some cases involve movements of hundreds of kilometres.

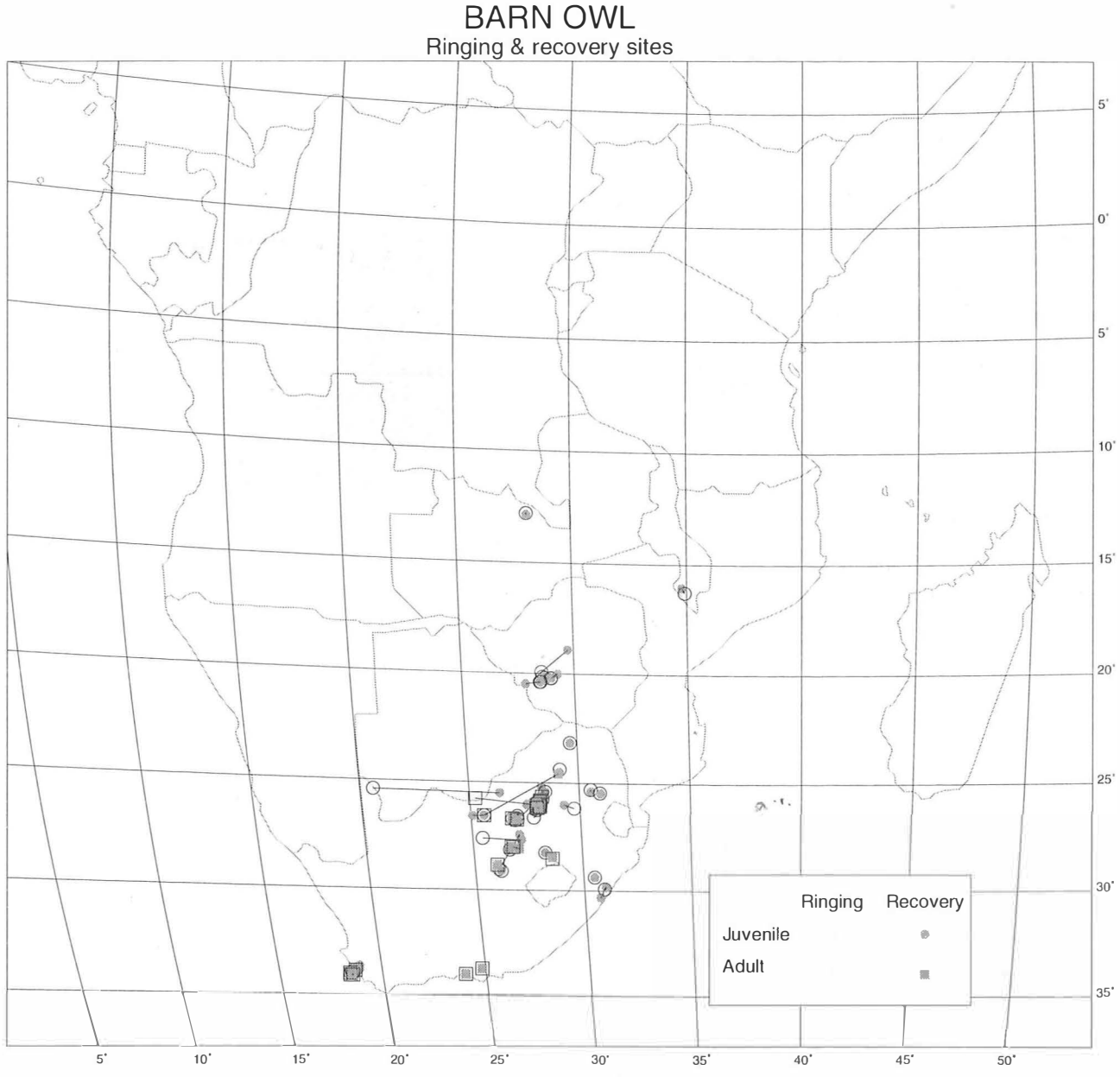


There is no predominant factor causing mortality in normal wild birds; shooting (2), drowning (2), cat kill (1), road casualty (1) and accidental trapping in human artefacts (3) summarize the rather paltry information received from the finders of dead ringed Barn Owls.

One recovery involved a train of events which the SAFRING staff irreverently dubbed 'the saga of the mad priest'. It started when a young Barn Owl, ringed at Nchalo in Malawi, sought shelter in a church some 27 km from the ringing site. The first intimation of the event came in a letter from the Department of Foreign Affairs, stating that the Trade Attaché at the South African Embassy in Malawi had received a claim for damages to a church, allegedly caused by an owl from Pretoria. In response to a request for more information, the priest vouchsafed that an owl had flown into his church and had remained inside, evading capture and messing on pews and hymnals. It was nevertheless obvious that he must have laid hands on the bird, for how else could he have seen the Pretoria address on the ring? Yet he seemed reluctant to disclose the number of ring. Further investigation revealed that the man of the cloth had been economical with the truth, for the real damage occurred when he went after the unfortunate owl with a shotgun and ventilated the roof from the inside!

The map and histogram include data from all the recoveries, including rehabilitated birds.

Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
64508063	N	U	25/05/67	2736S 2527E	15/08/67	2740S 2714E	0y 2m 21d	176	Unknown
59702963	N	U	29/07/67	1956S 2833E	15/09/69	1855S 2945E	2y 1m 18d	169	Unknown
717985	Imm	U	11/11/71	3400S 1832E	09/06/73	3348S 1855E	1y 6m 28d	42	Accidentally trapped in human artefact
65700712	N	U	22/05/72	2023S 2830E	25/01/80	2029S 2749E	7y 8m 4d	72	Unknown
742744	Ad	U	29/05/74	2633S 2536E	27/05/80	2435S 2905E	5y 11m 29d	412	Unknown
732156	Juv	U	13/12/74	2616S 2802E	16/06/78	2615S 2755E	3y 6m 3d	12	Road casualty
K08989	N	U	04/10/88	2525S 2037E	03/01/94	2530S 2623E	5y 2m 30d	579	Drowned
661246	N	U	20/03/92	2637S 2752E	09/06/92	2617S 2816E	0y 2m 20d	54	Unknown
K15085	Imm	U	12/08/95	2643S 2707E	16/09/96	2544S 2812E	1y 1m 5d	154	Unknown
K16828	N	U	05/04/97	2610S 2944E	29/11/97	2601S 2917E	0y 7m 25d	48	Storm



Pearlspotted Owl

Glaucidium perlatums

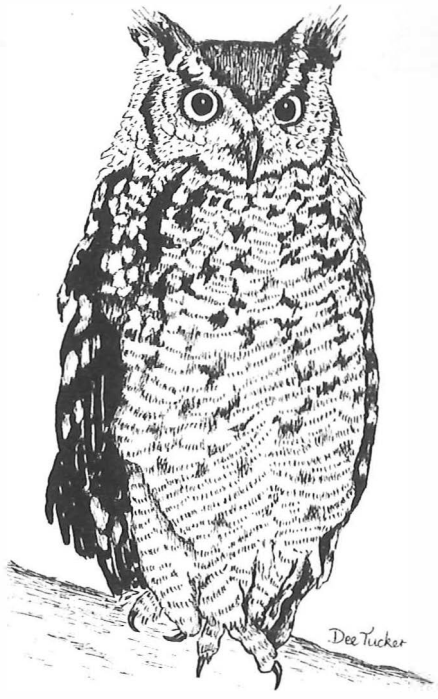
The Pearlspotted Owl is a savanna woodland species with a wide Afrotropical distribution (Fry *et al.* 1988). In southern Africa it is not known to occur south of the Orange River (almost 30°S at its most southerly point in the Northern Cape), and is at its most abundant in Botswana, the bushveld of northern South Africa (ASAB1: 586–587).

With 283 birds ringed, this is the third most-ringed owl in southern Africa, after the Barn Owl *Tyto alba* and Spotted Eagle Owl *Bubo africana*. It is not an owl of built-up areas, and in view of its diminutive size it is surprising that there has been even one recovery. This was of an adult of unknown sex, ringed (582213) in the Namib-Naukluft National Park (24°05'S 16°09'E), Namibia, on 12 May 1988, and found drowned in the watertank of the Ranger's station at Zais (24°09'S 16°02'E), 14 km from the ringing site, on 21 February 1990, 1y 9m 11d after being ringed. Another Pearlspotted Owl, ringed (63401227) near Windhoek (22°30'S 17°06'E), Namibia, on 19 November 1966 of unspecified age was controlled at the ringing site on 20 July 1968, 1y 8m 1d after being ringed.

Pearlspotted Owls are not known to undertake regular seasonal movements but may emigrate from drought-striken regions (ASAB1: 586–587).

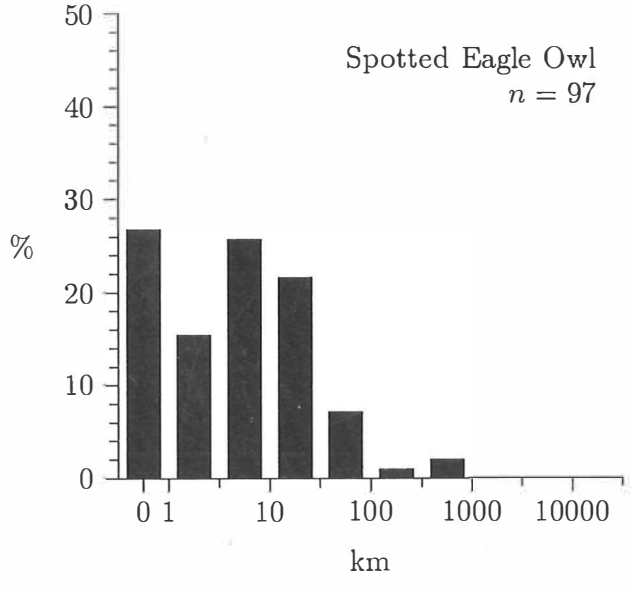
Spotted Eagle Owl

Bubo africanus



The Spotted Eagle Owl is probably the most widespread owl in Africa, occurring everywhere except in the lowland rainforest regions and parts of the northeast of the continent (Fry *et al.* 1988). In southern Africa it is likewise very widespread, being found in all atlas vegetation types, avoiding only the Namib sand sea and most of Lesotho (ASAB1: 592–593). It is often most common in rocky areas, but is not normally found within evergreen forest or in open, flat grassland (Steyn 1982). It has adapted well to built-up areas, nesting on the ledges of buildings and, during its nightly hunting forays, regularly perching on the tops of chimneys which amplify its soft 'hoo-hoooo' call for the delight (or concern) of anyone occupying the room with the fireplace.

In the countryside it commonly uses roadside telephone poles as vantage points in crepuscular periods and many birds have been caught on Balchatri traps. The total of Spotted Eagle Owls ringed is 1051, and the SAFRING databank contains 97 recoveries. Because of the numbers of chicks taken from the nest by children or found 'lost' and subsequently ending up in rehabilitation centres, at least 39 of the recoveries are of artificially reared, rehabilitated or relocated birds. Most of these are unable to fend for themselves when released and contribute to an artificially high recovery rate (9.2%). The selection of recoveries in the table does not include (so far as the records indicate) those of artificially reared and/or rehabilitated birds.



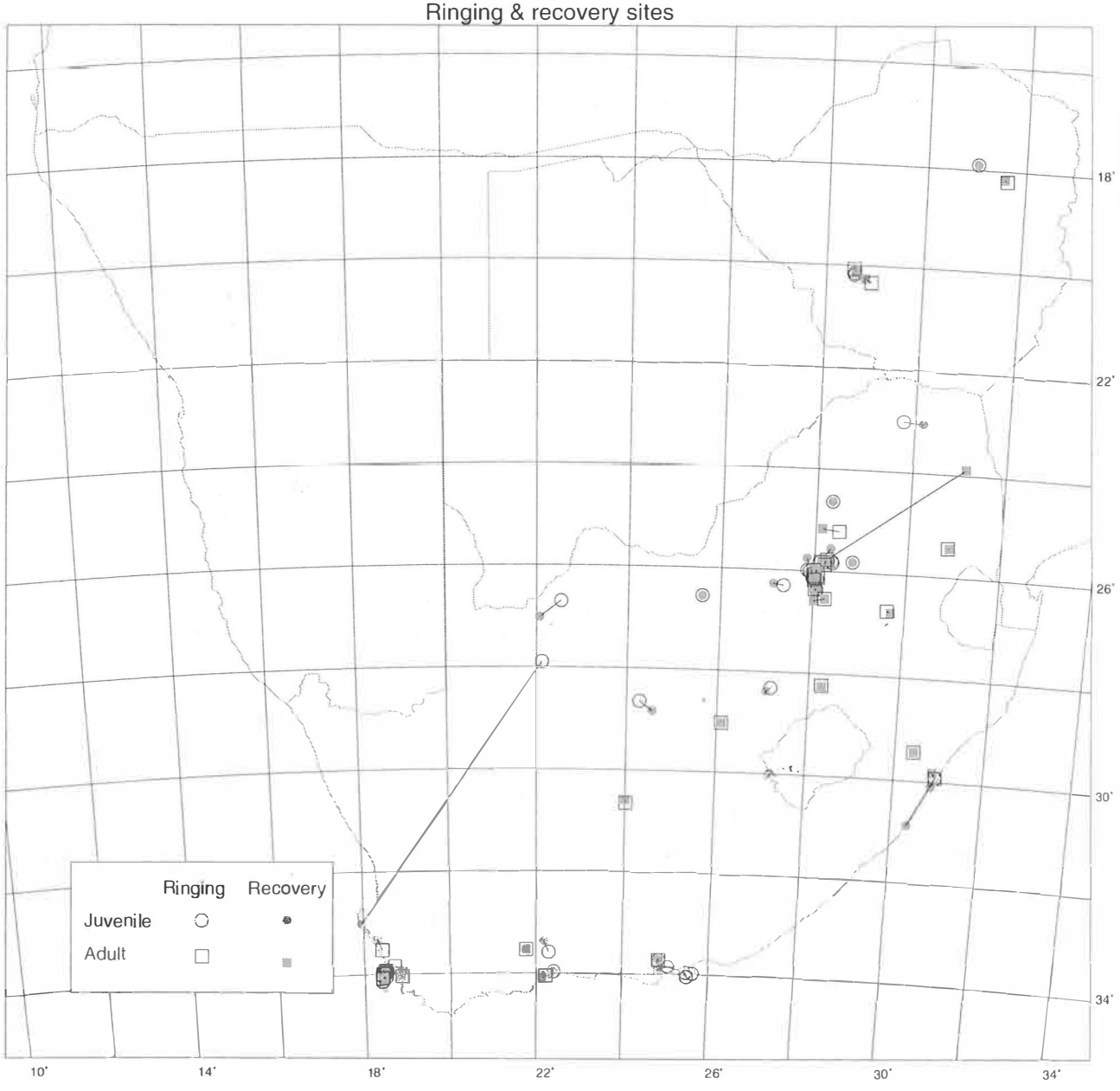
The most commonly reported causes of death (all records) were injury (24) and road casualties (18). It is likely that many of the injuries were victims of collisions with road vehicles. Young Spotted Eagle Owls are especially prone to this (pers. obs.; R.K. Brooke pers. comm.). One recovery (820792) was telephoned to SAFRING by a Cape Town suburban train driver. He reported that the owl 'attacked' his train, colliding head-on with it; the bird was presumably dazzled by the train headlight. The driver noted the spot and (very commendably) subsequently searched for and found the corpse. Other reported causes of death were electrocution (3), drowning (2) and chicks killed for food (2).

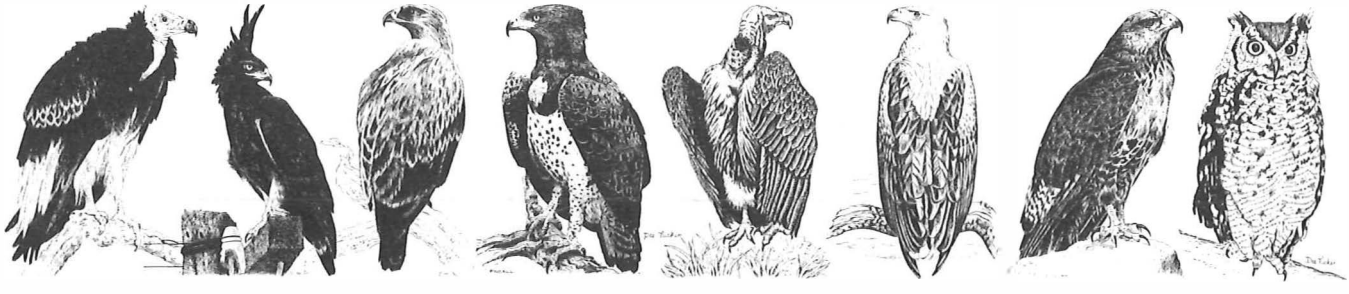
Spotted Eagle Owls are known to aggregate in areas of abundant prey, but do not indulge in regular movements in southern Africa (ASAB 1: 592–593). The potential for postnatal dispersal is well illustrated by record 859497, which moved 695 km from Posmasburg in the Northern Cape to Saldanha Bay in the Western Cape, only to be run down on the road before it had the opportunity to partake in the promotion of gene flow.

Ring number	Age	Sex	Ringing date	Ringing coordinates	Recovery date	Recovery coordinates	Elapsed time	Dist (km)	Cause of death
52401804	Ad	U	24/11/57	2604S 2801E	23/03/68	2603S 2801E	10y 3m 28d	2	Unknown
54613930	Juv	U	27/06/65	2819S 2710E	18/02/72	2823S 2704E	6y 7m 22d	12	Collision
830603	Ad	U	16/01/81	2608S 2805E	08/10/84	2600S 2805E	3y 8m 22d	15	Unknown
820792	N	U	09/10/89	3357S 1831E	23/11/89	3356S 1832E	0y 1m 15d	2	Collided with train
729483	N	U	03/11/89	2550S 2823E	03/03/91	2545S 2812E	1y 3m 8d	21	Control
821101	Ad	U	02/02/90	2552S 2813E	18/06/96	2548S 2814E	6y 4m 15d	8	Road casualty
850476	N	U	19/11/94	2642S 2232E	21/06/95	2701S 2204E	0y 7m 1d	58	Road casualty
850497	Juv	F?	20/12/94	2754S 2207E	10/08/95	3301S 1757E	Oy 7m 20d	695	Road casualty
801749	N	U	15/11/96	3335S 2217E	15/02/97	3322S 2210E	0y 3m 1d	26	Unknown
856696	Ad	U	10/08/97	3332S 1825E	21/11/97	3320S 1819E	0y 3m 12d	24	Road casualty

SPOTTED EAGLE OWL

Ringing & recovery sites





References

Allan, D.G. & Tarboton, W.R. 1985. Sparrowhawks and plantations. In: Proceedings of the Birds and Man Symposium. Bunning, L.J. (ed.), pp. 167–177. Johannesburg: Witwatersrand Bird Club.

ASAB1. See Harrison *et al.* (1997).

Ashton, H. 1979. SAFRING – how it all began. Safring News 8: 2–6.

Boshoff, A.F. 1993. Density, breeding performance and stability of Martial Eagles *Polemaetus bellicosus* breeding on electricity pylons in the Nama-Karoo, South Africa. In: Birds and the African Environment: Proceedings of the Eighth Pan-African Ornithological Congress. Wilson, R.T. (ed.), pp. 95–104. Tervuren, Belgium: Musée Royal de l'Afrique Centrale.

Boshoff, A.F. & Palmer, N.G. 1983. Aspects of the biology and ecology of the Osprey in the Cape Province, South Africa. Ostrich 54: 189–204.

Boshoff, A.F., Vernon, C.J. & Brooke, R.K. 1983. Historical atlas of the diurnal raptors of the Cape Province (Aves: Falconiformes). Annals of the Cape Provincial Museums (Natural History) 14: 173–297.

Brown, C.J., Paxton, M.W. & Heinrichsen, I. 1987. Aspects of the biology of the Greater Kestrel in SWA/Namibia. Madoqua 15: 147–156.

Brown, L. 1970. African birds of prey. London: Collins.

Brown, L.H., Urban, E.K. & Newman, K. (eds). 1982. The birds of Africa. Vol. 1. London: Academic Press.

Burton, P.J.K. 1978. The intertarsal joint of the Harrier-Hawks *Polyboroides* spp. and the Crane Hawk *Geranospiza caerulescens*. Ibis 120: 171–177.

Chittendon, H.N. 1985. A review of raptor persecution in southern Africa with special regard to farming coummunities. In: Proceedings of the Birds and Man Symposium. Bunning, L.J. (ed.), pp. 309–320. Johannesburg: Witwatersrand Bird Club.

Davies, R.A.G. 1994. Black Eagle *Aquila verreauxii* predation on Rock Hyrax *Procavia capensis* and other prey in the Karoo. PhD thesis, University of Pretoria, Pretoria.

de Kock, A.C. & Watson, R.T. 1985. Organochlorine residue levels in Bateleur eggs from the Transvaal. Ostrich 56: 278–280.

Del Hoyo, J., Elliott, A. & Sargatal, J. (eds). 1994. Handbook of the birds of the world. Vol. 2. Barcelona: Lynx Edicions.

Etchécopar, R.D. & Hüe, F. 1967. The birds of North Africa. Edinburgh: Oliver & Boyd.

Fry, C.H., Keith, S. & Urban, E.K. (eds). 1988. The birds of Africa. Vol. 3. London: Academic Press.

Gargett, V. 1977. A 13-year population study of the Black Eagles in the Matopos, Rhodesia, 1964–1976. Ostrich 48: 17–27.

Gargett, V. 1990. The Black Eagle. Johannesburg: Acorn Books.

Hall, D.G. 1992. A 16-year study of Longcrested Eagles in the Nelspruit District, South Africa. Gabar 7: 15–20.

Harrison, J.A., Allan, D.G., Underhill, L.G., Herremans, M., Tree, A.J., Parker, V. & Brown, C.J. (eds). 1997. The atlas of southern African birds. Vol. 1: Non-passerines. Johannesburg: BirdLife South Africa.

Herholdt, J.J. & de Villiers, D.J. 1991. Breeding success and population density of the Bateleur *Terathopius ecaudatus* in the Kalahari Gemsbok National Park. Gabar 6: 3–6.

Jenkins, A.R. 1994. The influence of habitat on the distribution and abundance of Peregrine and Lanner Falcons in South Africa. Ostrich 65: 281–290.

Jenkins, A.R. & Stephenson, A. 1997. From Arctic tundras to African dunes: Siberian Peregrines in southern Africa. Africa – Birds & Birding 2(4): 62–68.

Kemp, A.C. 1984. Preliminary description of the dynamics of a Greater Kestrel population. In: Proceedings of the Second Symposium on African Predatory Birds. Mendelsohn, J.M. & Sapsford, C.W. (eds), pp. 141–150. Durban: Natal Bird Club.

Mendelsohn, J. 1986. Recoveries and Palaearctic origins of Steppe Buzzards ringed in South Africa. Safring News 15: 37–41.

Meyburg, B.-U., Mendelsohn, J.M., Ellis, D.H., Smith, D.G., Meyburg, C. & Kemp, A.C. 1995. Year-round movements of a Wahlberg's Eagle *Aquila wahlbergi* tracked by satellite. Ostrich 66: 135–140.

Moreau, R.E. 1972. The Palaearctic–African bird migration system. London: Academic Press.

Mundy, P.J. 1996. Weight loss of stainless steel rings on Hooded Vultures. Safring News 25: 74–75.

Mundy, P., Butchart, D., Ledger, J. & Piper, S. 1992. The vultures of Africa. Johannesburg: Acorn Books.

Pepler, D., Martin, R., Fouche, F. & van Hensbergen, B. 1994. Radionuclide analysis of Lesser Kestrels *Falco naumanni* and the origins of populations overwintering in southern Africa. Ostrich 65: 122–126.

Piper, S.E. 1993. Mathematical demography of the Cape Vulture. PhD thesis, University of Cape Town, Cape Town.

Rowe, E.G. 1947. The breeding biology of *Aquila verreauxii* Lesson. Ibis 89: 387–410 & 576–606.

Saurola, P. 1994. African non-breeding areas of Fennoscandian Ospreys *Pandion haliaetus*: a ring recovery analysis. Ostrich 65: 127–136.

Schmitt, M.B., Baur, S. & von Maltitz, F. 1982. Mensural data, moult and abundance of the Little Banded Goshawk in the Transvaal. Ostrich 53: 74–78.

Snyder, J.P. 1982. Map projections used by the U.S. Geological Survey. U.S. Survey Geological Bulletin 1532.

Steyn, P. 1982. Birds of prey of southern Africa. Cape Town: David Philip.

Tarboton, W.R. 1978. Breeding of the Little Banded Goshawk. Ostrich 49: 132–143.

Tarboton, W.R. & Allan, D.G. 1984. The status and conservation of birds of prey in the Transvaal. Transvaal Museum Monograph 3.

Tyson, P.D. 1986. Climatic change and variability in southern Africa. Cape Town: Oxford University Press.

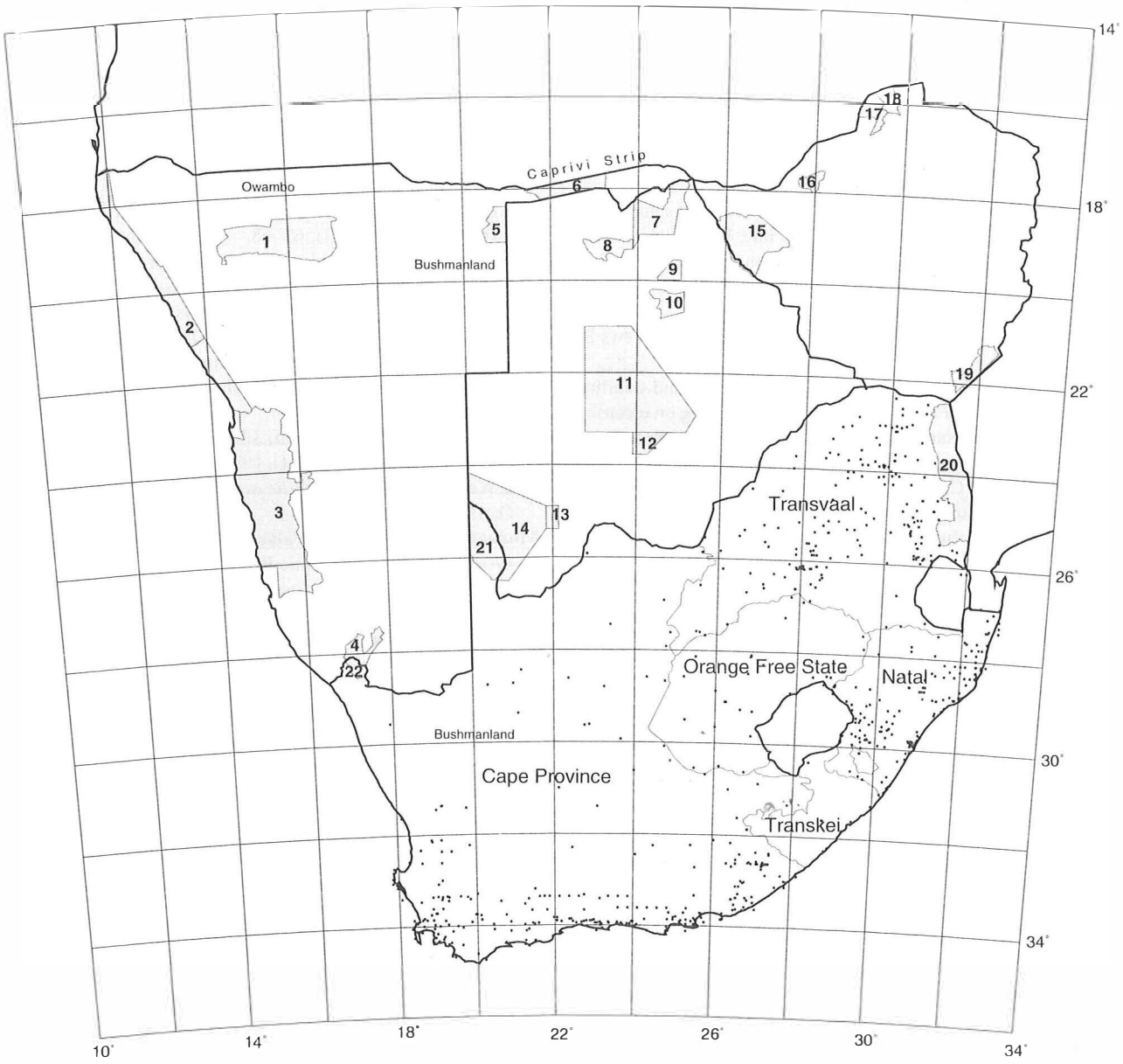
Underhill, L.G., Prŷs-Jones, R.P., Harrison, J.A. & Martinez, P. 1992. Seasonal patterns of occurrence of Palaearctic migrants in southern Africa using atlas data. Ibis 134 Suppl. 1: 99–108.

Underhill L.G. & Oatley, T.B. 1994. The South African Bird Ringing Unit: 21 years of service and research. South African Journal of Science 90: 61–64.

van Zyl, A.J., Jenkins, A.R. & Allan, D.G. 1994. Evidence for seasonal movements by Rock Kestrels *Falco tinnunculus* and Lanner Falcons *F. biarmicus* in South Africa. Ostrich 65: 111–121.

Watson, R.T. 1986. The ecology, biology and population dynamics of the Bateleur Eagle *Terathopius ecaudatus*. PhD thesis, University of the Witwatersrand, Johannesburg.

Watson, R.T. 1990. Population dynamics of the Bateleur in the Kruger National Park. Ostrich 61: 5–12.



Map of southern Africa showing national boundaries and the pre-1994 boundaries of South African provinces. Large protected areas are numbered (see table below); the positions of smaller protected areas in South Africa are indicated with dots.

1. Etosha National Park
2. Skeleton Coast Park
3. Namib-Naukluft Park
4. Ai-Ais Hot Springs and Fish River Canyon
5. Kaudom Game Reserve
6. Mahango Game Reserve
7. Chobe National Park
8. Moremi Wildlife Reserve
9. Nxai Pan National Park
10. Makgadikgadi Pans Game Reserve
11. Central Kalahari Game Reserve
12. Khutse Game Reserve
13. Mabuasehube Game Reserve
14. Gemsbok National Park
15. Hwange National Park
16. Chizarira Game Reserve
17. Mana Pools Park
18. Chewore Park
19. Gona-re-zhou National Park
20. Kruger National Park
21. Kalahari Gemsbok National Park
22. Richtersveld National Park

Map of southern Africa showing national boundaries and the post-1994 names and boundaries of South African provinces.

What to do if you find a ringed bird

- ❑ If the bird is dead, remove the ring, flatten it with a pair of pliers, and stick it to sheet of paper of cardboard. Record as much information as seems relevant: date, place, condition of bird (freshly dead to long-dead), and the cause of death, if this is obvious, or whatever other circumstances point to the cause of death.
- ❑ If the bird is alive and well, read the ring number and write it down carefully, and double-check before releasing the bird. Provide supporting information as for a dead bird.
- ❑ If you see a bird with colour rings (or any other form of colour mark), record the colour combination carefully; bear in mind that colours fade with time, and that one of the rings will usually be a metal ring.

In all cases, report the information, together with your name, address, phone number or email address to:

SAFRING, University of Cape Town, Rondebosch, 7701 South Africa. Phone (021) 650-2421 or (021) 650-2422; fax (021) 689-7578; email safring@maths.uct.ac.za

You will be informed when and where the bird was ringed. The species of the bird was determined by the ringer, so it does not matter if you cannot identify it. Every ring recovery represents a piece in our understanding of bird population dynamics, and ultimately helps improve the conservation of birds.