WING BLING

Keeping track of raptors

TEXT BY ANDREW JENKINS

Across much of southern Africa, the large savanna raptors such as Tawny and Martial eagles, Bateleurs, and a slew of vulture species, have been steadily disappearing from private farmland for the past 150 years. Conventional wisdom maintains that this is either because these birds are branded as predators of young sheep and goats and are consequently shot or trapped as vermin, or because they are accidentally poisoned in the vicious toxic war being waged by small-stock farmers on their arch-enemies, the jackal and caracal. Either way, the resulting unnaturally high rates of mortality are supposedly to blame for the receding distributions of our eagles and vultures. But what hard evidence has ever been put forward to confirm this relationship, and what quantitative support do we have to show for the decades of concerted effort to save these embattled raptor populations, mainly by cultivating empathy for them in rural communities and discouraging the indiscriminate use of poisons by over-zealous farmers?

MARK ANDERSON

SONJA KRUEGER

The answer to both these questions is 'very little'. We have no better understanding now of the ecology of natural versus inflated death rates in big eagles or the demographic effects of poisoning incidents on vulture colonies than we did in the 1960s and '70s. This is not to say that the raptor gurus of the past were necessarily wrong or that the conservation path they forged was a pointless dead-end. But the reality of our present situation is that many of our raptor populations are continuing to decrease, and we are seemingly no closer to knowing why this is happening, let alone devising a solution to turn the tide.

THE PROBLEM

The primary obstacle is ignorance: we suffer from a lack of reliable, comparable and relevant information with which to practise effective raptor conservation, and are woefully ignorant of even the most basic workings of our raptor populations. Not surprisingly, therefore, we are in the dark when it comes to understanding how key factors, such as survival, mortality and fecundity, are influenced by potentially controlling aspects, such as poisoning and persecution, as well as issues like habitat loss, food limitation and climate change.

In 2006, I attended conservation workshops on the Bearded and Cape vultures, which highlighted for me the nature and severity of this problem. Both workshops were convened because numbers of the two species are thought to be dropping precipitously, and both were attended by many of the doyens of African vulture biology, each of whom brought a wealth of experience and wisdom. Yet what struck me most forcibly about these gatherings was that even when dealing with two of our best-known large raptor species, both of which have been the subject of many dedicated scientific studies, we don't yet have the demographic facts needed to plan an effective conservation strategy for either.

In the Bearded Vulture meeting, we tried to develop a computer-generated numerical 'model' for the remaining southern African population, in a bid to forecast the future for this species in our region. Obviously, if we could have produced a reliable model, this would have been a huge step forward. But these statistical tools are only as good as the raw data they are fed, and we ended up having to use data essential for our model from published studies of captive-bred, reintroduced Bearded Vulture populations in Europe, simply because we do not have the baseline information required for our own birds. Hardly an ideal way to make critical conservation decisions!

MARK ANDERSON

Above *Sonja Krueger and her research team at Ezemvelo KZN Wildlife have recently made exciting progress in their efforts to shed light on movements and survival in young Bearded Vultures. Here, a juvenile sets off on the next chapter of its life, all of which will be carefully monitored by Sonja as the satellite transmitter on the bird's back relays critical information back to her.*

Right *Vaal-Gariep African Fish-Eagle number 12 (VG12) is measured and has samples taken, just after being fitted with wing tags and before being replaced in its nest.*

Previous page *A patagial (wing-tagged) African White-backed Vulture warms up in the Northern Cape sun.*

THE SOLUTION

If we concede that a lack of good demographic data is one of our more significant failings, then surely we need to take the necessary steps to remedy this? For starters, we need to adopt a more structured, quantitative approach to raptor research in general. Happily, the newly formed Birds of Prey Working Group (BoPWG) of the Endangered Wildlife Trust, born from a merger of the former Raptor Conservation and Vulture study groups, has gone a long way towards achieving this change in attitude, and has already established a much better organised and more focused core of raptor enthusiasts, spread across the region. This includes an active band of ringers, whose work helps to provide answers to population-level questions.

But the use of numbered, SAFRING rings is really about recovering information from dead birds. We need to go further than this if we want to turn the corner fully: we need to derive information from living raptors, to learn about the trials and tribulations of individual birds, and to piece the data together to build reliable models of functioning populations. In essence, we need to institute a programme of well-conceived and well-managed marked-bird studies which will enable us to follow individuals throughout their lives, discover how they disperse, when, where and how successfully they breed, how they are affected by environmental variation, and how, where and when they die.

The good news is that there are a number of practical, efficient and often relatively cheap ways to carry out this kind of work. Less encouraging is that marking studies require from researchers tenacity, continuity, wide coverage and follow-up, and plenty of time in order to yield meaningful dividends. These constraints probably explain why so little of this work has been done, and why past efforts have failed to persist into the present.

The practical problems associated with maintaining long-term studies are probably even more relevant now than in the past. The long delay in returns on the investment of funding and effort required to set up a marking study is an increasingly unattractive prospect for scientists operating in a system which requires almost instant, published results. But if we fail to start up and maintain these studies now, it is likely that in another 10 years we will find ourselves facing even more critical conservation thresholds, and again bemoaning the absence of the vital data required to take effective remedial action.

DIFFERENT MARKING METHODS

Cheap and cheerful

There are two basic approaches to marking raptors, with very different practical and cost implications. Both require that free-flying or nestling birds be secured and handled, and this should always be done with the utmost care. Thereafter, the simplest and cheapest method is to use conspicuous, unique markers which are attached to as many birds in the study population as possible.

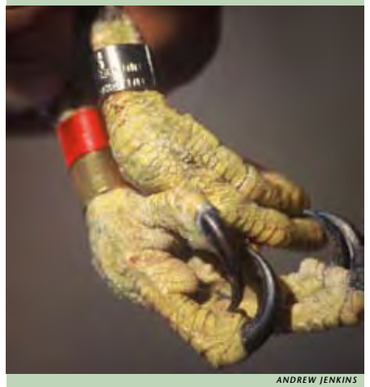
These markers may be combinations of brightly coloured plastic or metal leg rings or, less commonly, plastic patagial (wing) tags, attached by a pin punched through the patagium (an inert flap of skin which runs along the leading edge of the wing). In both instances, colour coding may be supplemented by boldly engraved alpha-numeric codes. Raptors are good options for this sort of work because, in general, they are quite large, conspicuous, relatively easy to locate and they can comfortably carry fairly large rings or tags which are clearly legible.

Once a reasonable number of birds have been marked, the emphasis shifts to searching for and recording them. There is a premium on getting regular and accurate re-sightings of as many ▷

How can you contribute?

Always keep a look out for marked raptors. Should you see one, even if you can't identify it, take the time to accurately record as much as you can about the bird, its colour markings and where you saw it. If possible, use your binoculars (or, ideally, a spotting scope) to check the details of the marking, even if the bird is perched close by. With colour-ringed birds, remember to look at both legs, and to accurately record the leg (left or right) and the order of the rings (preferably read top to bottom), remembering that there should always be a metal SAFRING ring included in the total combination. With patagial (wing-tagged) birds, remember to ascertain the colour of the tag/s; if there is only one tag, be sure to record on which wing it is and carefully note the four-character alpha-numeric code.

If possible, photograph the bird and take a GPS reading of your location and report your sighting either to the relevant biologist working on the species in question (see page 48), André Botha of BoPWG (*andreb@ewt.org* or 082 962 5725) or the SAFRING offices at the University of Cape Town, tel. (021) 650 2422. Try to report your sighting as soon as possible – there may be an opportunity or a need to relocate the bird.



ANDREW JENKINS

The impressive talons of a female Peregrine Falcon, complete with an individually unique colour-ring combination. This bird – red/gold right, SAFRING metal left – was ringed as an adult on a territory just north of Cape Town and was killed in a collision with a car just over three years later. During that time, she remained on the same territory, paired with the same, marked male, and successfully raised seven young.

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birds as possible, for as long as possible. This is where the birding public comes in. Marked-bird studies often stumble at this point because of a lack of assistance and input from a broader audience. Obviously, more eyes out there looking and reporting translates into more accumulated information and, ultimately, a more accurate demographic profile. Therefore, it is essential to publicise marking studies as widely as possible, and to encourage the birding community and the public to look for marked birds and report sightings.

High tech, high price

The other possible option for getting accurate information on how populations work is to use some form of tracking device. In the past, this would have involved the use of radio transmitters but, increasingly, modern biologists are opting for the greater ease and accuracy offered by high-end, GPS-linked satellite trackers, and even instruments which are linked to the domestic cellphone network.

Tracking studies usually focus on the spatial and habitat requirements of the particular animal, but if enough birds are fitted with tracking devices that are sufficiently long-lasting (some of today's models can remain functional for up to five years), this technique can be used to quickly generate amazingly detailed information on lifespan, breeding success and where and how birds die, simply because each tracked individual is under constant surveillance.

The big limitation here is cost. Radio telemetry is labour intensive, and satellite trackers and the tracking process are very expensive, so even the best-funded projects can usually only afford to track tens of individuals at best. Therefore, while this approach may provide rapid and in-depth demographic data, these may be unreliable because they are sourced from only a small sample of the population being studied.

Satellite tracking is also constrained by the size of the devices currently available, which are mostly too big and heavy for use on any but the larger, wider-ranging birds. However, given the rate at which this technology is developing, it seems likely that small, cheap, long-lasting satellite trackers will soon be available, completely revolutionising the way we study animal populations.

WHERE ARE WE NOW, AND WHERE ARE WE GOING?

Only a handful of the existing marked-raptor studies in southern Africa have been operational for any length of time but, encouragingly, with the resurgence of the BoPWG and a more quantitative approach to raptor work in the region, a number of new projects are getting under way.

Some of the older, established projects include my own work on the ecology of Peregrine Falcons on the Cape Peninsula, which has involved colour-ringing of both adult and nestling falcons in this population since 1997. In that time, I've marked more than 350 birds, some of which have been seen as far as 800 kilometres away, although the majority of re-sightings have been from within a 20- to 30-kilometre radius of the Peninsula.

I'm particularly interested in contrasting the fates of urban-living falcons with those that spend most of their time in the mountains, and in measuring the effects of climate and habitat change on the dynamics of this rapidly expanding population.

Other species which are already the subjects of long-term colour-marking studies are the Southern Pale Chanting Goshawk, Black Harrier, Black Sparrowhawk and Rock Kestrel.

The newer, marked-raptor projects are all associated with a BoPWG initiative to start wing-tagging vultures, largely driven by the group's manager, André Botha. After careful preliminary research on the practicalities of tag application, product durability, visibility and risk to the tagged birds, a number of rehabilitated White-backed Vultures and one Hooded Vulture were tagged and released in the Lowveld towards the end of 2005. Since then, customised variants of these tags have been used on a wide variety of vultures by a number of research teams throughout the region. Although the number of tagged vultures in the environment is still relatively low (about 700), there have already been well over 1 400 re-sightings, many by members of the public, which have added significantly to our understanding of the regularity and extent of movements by these birds.

Meanwhile, the use of state-of-the-art satellite- and cellphone-tracking devices on small numbers of Cape Vultures in Namibia and in the Magaliesberg, and on Bearded Vultures in KwaZulu-Natal, is adding marvellous real-time detail to these spatial pictures and, in time, crucial demographic data will accumulate. In practical terms, the information potential of these techniques for vultures would seem to be both limitless and vitally important for the birds' future conservation.

Almost as a by-product of all the activity around wing-tagging of vultures, a couple of large eagle projects have also included tagging as part of their standard field protocols. For example, next time you are fishing on the banks of the Vaal River or paddling the rapids of the Breede River in the Western Cape, keep a lookout for wing-tagged African Fish-Eagles. Any you see have contributed blood and feather samples to studies of chemical pollution in these two catchments. These are being run by Mark Anderson and the Northern Cape conservation authorities on the Vaal, and by Adam Welz and me along the Breede. At present, the wing-tagging is simply a useful and logical adjunct to our respective pesticide studies but, as the two projects progress, we will be building a unique understanding of the complexities of fish-eagle populations.

These are just some of the research avenues currently being explored in our efforts to get to grips with raptor populations. While we don't necessarily want every other vulture or eagle you see to be carrying a big, ugly patagial tag, or every falcon or hawk to be wearing a 'bangle' of colour-rings, we do need to selectively increase the numbers of marked raptors, and we actively encourage you – the eco-conscious, bird-friendly public – to look for them and report your sightings.

Perhaps soon we will have colour-marked or even satellite-tracked populations of Bateleurs and Tawnies and Martials, and we will be working towards conclusive explanations for their range contractions and dwindling numbers on private land. With the recent big push to tag vultures, it's possible that we have already taken the first vital steps towards ending what could be termed 'The African Vulture Crisis', a more gradual and discrete process of demise than its Asian equivalent, but possibly no less calamitous if we continue trying to prevent it without hard demographic data at our disposal, and a real understanding of its root causes. □

ANDREW JENKINS (2)

Top *Three newly colour-ringed Peregrine nestlings in a pensive mood on their nest ledge in the Cape Peninsula.*

Above *A pair of colour-ringed Peregrines 'discuss' the pros and cons of breeding in a Pied Crow nest on a building in suburban Cape Town. Both birds were less than two years old when this photograph was taken, and their rather premature relationship was not to last. The female left soon after and took up with a different male, at a more 'upmarket' location on the Peninsula mountain chain.*

Report your sightings

In all instances, sightings of colour-ringed or wing-tagged birds can be reported to the SAFRING offices at the University of Cape Town on tel. (021) 650 2422, or to the researchers involved in individual projects.

These include:

COLOUR-RINGED PEREGRINE FALCONS
Please report any sightings of birds to me (*andrew.jenkins@uct.ac.za* or 082 959 9238). In addition, I would welcome any information you can provide on the sex of the bird – females are bigger and bulkier and, as a rule, adult females have coarser barring and browner-grey backs than adult males.

COLOUR-RINGED BLACK SPARROWHAWKS
Ann Koeslag (*koeslag@discoverymail.co.za* or 072 357 0909).

SOUTHERN PALE CHANTING GOSHAWKS
Report sightings of birds with coloured rings engraved with alpha-numeric codes to Gerard Malan (*malang@tut.ac.za* or 083 332 1589).

COLOUR-RINGED OR WING-TAGGED BLACK HARRIERS
Rob Simmons (*rob.simmons@uct.ac.za* or 082 780 0133).

WING-TAGGED VERREAUX'S EAGLES
Lucia Rodrigues (*signet@mweb.co.za* or 083 325 8881), or André Botha of BoPWG (*andreb@ewt.org* or 082 962 5725).

WING-TAGGED AFRICAN FISH-EAGLES
Mark Anderson (*manderson@half.ncape.gov.za* or 082 788 0961), Adam Welz (*wetclaws@yahoo.com* or 073 162 3887) or André Botha of BoPWG (see above).

WING-TAGGED CAPE, WHITE-BACKED AND OTHER VULTURES
André Botha of BoPWG (see above).