travel log

MIGRATION OF THE WOODLAND KINGFISHER

TEXT **WARWICK & MICHÈLE TARBOTON**
PHOTOGRAPHS **WARWICK TARBOTON**

A clamorous chick being fed. After fledging, the young remain dependent on their parents for food for about four weeks.

WE LIVE in a retirement village, Kokanje, on the outskirts of Modimolle in Limpopo Province. This area, in the foothills of the Waterberg, is well-wooded savanna and it supports a healthy population of Woodland Kingfishers *Halcyon senegalensis*, a bird that is present for only five months of the year but is nonetheless one of the region's iconic species.

EVERY YEAR the first Woodland Kingfishers arrive here within a day or two of 11 November and they leave in late March. After the initial flurry of chasing and calling, pairs quickly settle down to breed. Most nest in woodpecker or barbet holes, or in artificial nest boxes, but in nearby Modimolle we have also found several pairs nesting in holes under house eaves, in metal poles and one, surprisingly, in a Lesser Striped Swallow nest.

Nine pairs nest on the Kokanje property – an area of 100 hectares – and to our delight three years ago one of these, a colour-ringed pair, moved into a nest box under the eaves of our house. The box, originally intended for bushbabies, has seen the kingfishers raise three broods so far; the green-ringed male has been present for each of the past three years and his red-ringed mate for the most recent two.

Although the sexes look alike, we quickly learned that they can be distinguished by calls (the female does not utter the loud trilling call but instead gives a more muted version of it) and by their behaviour (she's more reticent, less approachable, and inclined to go walkabout at times, leaving the male to feed the chicks). And, in the weeks preceding egg-laying, she is fed by the male. We've established at a couple of nests that the incubation period lasts for 17 to 18 days, whereas the nestling period is more variable, ranging between 21 and 28 days. Given the relatively long nesting cycle and the short period when the kingfishers are present, pairs only produce one brood a year, and they are only likely to re-lay if they lose a clutch early on. Three eggs is normal, and from this not more than two young are typically raised. Male and female share the incubation, changing shifts every 40 to 70 minutes, while on particularly hot days the eggs are left unattended for about a third of the day. Both parents brood and feed the young and the nestlings become increasingly vociferous with age, often revealing their presence by their constant rasping.

From our experience of these birds returning to the same nest, and from the great successes being made in micro-tracking technology in Europe and North America, we put the proposal to Craig Symes, associate professor in natural sciences at the University of the Witwatersrand, that here >

right *In almost all instances, three eggs were laid and the sexes shared equally in their incubation.*

opposite *Males aggressively defend their nesting areas, viciously attacking other would-be hole-users in particular. We witnessed one killing a bush squirrel, another killing a female Bennett's Woodpecker and, in another instance, the kingfishers commandeered a barbet nest and evicted the nestlings.*

was a potential geolocator project to be done, possibly for the first time, on an intra-African migrant.

Craig was much taken by the idea and secured the funding for eight of these expensive little devices to be purchased from Biotrack in the UK. The geolocator weighs a mere 0.9 grams and is attached to the bird's back with thin Teflon straps that loop under each wing, the bird carrying it much like a backpack. Josef Heymans, an experienced bird-ringer living in Modimolle, joined the project as the primary catcher of the birds and within a couple of weeks we had attached a geolocator to each of four pairs at Kokanje.

The geolocators do not emit a signal as other tracking devices do but instead store the information on a microchip which then has to be recovered from the bird when it returns in order to retrieve the data for downloading. Geolocators have been used with remarkable success on a range of small Palearctic migrants, from Common Swifts and Common Cuckoos to Red-backed Shrikes and Whitethroats, and in each case the results have provided illuminating new information on the winter movements of these birds. To get the data, though, requires retrieving the backpack.

Our male and female were two of the subjects in this effort and they were caught and fitted with backpacks while they were still attending fledged chicks near our garden. From monitoring the birds we >

above *Slight plumage differences as seen here in green-male (left) and red-female (right) allow one to distinguish individuals in some pairs but not others.*

left *Weighing just 0.9 grams, the geolocator is carried like a backpack on the bird, attached with thin Teflon straps looped under the wings.*

opposite *When no food demands are being made, the breeding kingfishers often perch quietly in a tree near the nest, sometimes just sitting and watching, sometimes, as seen here, maintaining their plumage.*

above *Wing flashing, accompanied by loud calling, is common behaviour early in the season when the kingfishers are securing mates and nest sites.*

opposite, inset *In the last week before fledging, the chicks spend much time peering out of the nest awaiting the arrival of their next meal.*

opposite, right *Our garden pair had it all: a predator-proof and weather-proof nest site with a customised perch from which to make the final approach.*

could see that the geolocators, apart from causing some initial irritation, resulted in no long-term discomfort or handicap. The male attended one chick (colour-ringed blue) and this duo remained in the general nest area for 47 days post-fledging: this was the last date when blue-ring, now fully independent, was seen. Red-female, accompanied by the second fledgling, moved further away and it was less easy to track their movements. Green-male remained for another three weeks after his fledgling had left before making his departure on the night of 31 March.

Now began an impatient wait for their scheduled return to Kokanje on 11 November. It was the blue-ringed chick which arrived first, on 13 November, and it was seen and photographed in a garden in Kokanje, just 230 metres from its birthplace. Unfortunately that and the next day were the first and last times it was seen.

In our absence from Kokanje during much of November and part of December it was reported to us that red-female was first seen, inspecting our under-the-eaves nest, on 2 December, while green-male first appeared at this nest on 17 December. They were both caught and their backpacks removed soon after this, and between 28 and 30 December they laid a clutch in the nest.

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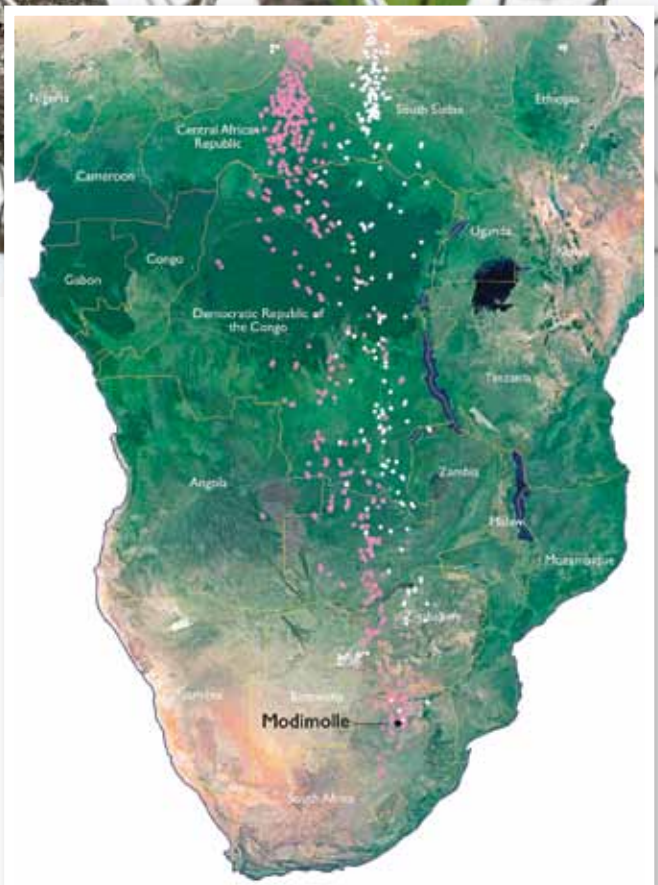
Regrettably, none of the six other birds carrying backpacks was relocated, despite our close surveillance of at least 20 known nest sites in and around Kokanje. The nests of two of these pairs were taken over by early-arriving unringed pairs of kingfishers and it is perhaps because the previous year's occupants only arrived later and had to find nest sites elsewhere that we lost track of them.

The data retrieved from the geolocator consists of daily readings of the time of sunrise and sunset, and the combination of sunrise/sunset time, and day- and night-length for each 24-hour period provides a means of calculating the approximate longitude and latitude on each day. For this calculation, prior on-site calibration is required and so, for a month before the birds left, time of local sunrise and sunset and associated weather conditions were monitored daily in Kokanje. Clear sunrises and sunsets give sharper transitions between light and dark (and more accurate readings) than when conditions are overcast, and Marita Beneke and Emil Gryffenberg in Kokanje helped greatly with getting this information.

Interpreting the data is beset by juggling with these and other variables and here we were significantly helped by Chris van Zyl, a retired civil engineer who lives in Kokanje, who elucidated the effects of equinoxes, clock drift, solar refraction and more, and Glen Fowler from Biotrack UK, who talked us through pitfalls in interpretation. The project, of course, has involved and been adopted by a much wider community: members of the local Bosveld Bird Club assisted (their logo is the Woodland Kingfisher), Lieb Liebenberg made many customised nest boxes for the birds so that the nestlings can be easily removed for ringing, Jan Griesel did the intricate job of threading and tying the Teflon straps, and so on. >



above *The respective journeys across Africa of the female (pink dots) and male (white dots). Each dot represents a geolocator reading; the scatter of dots is not the result of a zigzag route but rather the lack of accuracy of the technique.*

top *These nest boxes made from plastic piping, with a side entrance and set horizontally, have proved popular with the kingfishers.*

What came to light is, in our eyes, fascinating. As the map plotting their journeys reveals, both birds ended up in war-torn countries north of the equator: green-male in South Sudan, and red-female in Central African Republic, about 500 kilometres to the west of him. Both crossed the rainforests of the Congo Basin on their journey and both settled in semi-arid/moist savanna transition environments, the northern counterpart of their habitat in South Africa. The male's northward journey took about three months, his return a little more than a month.

Intriguingly, these kingfishers share their northern destination with the northern race of the Woodland Kingfisher *H. s. senegalensis*, which nests in the same area and in the same months that the southern race birds are there as non-breeders. *H. s. senegalensis* only makes a short southward seasonal movement to the equator, whereas our birds, *H. s. cyanoleuca*, make a 3 500-kilometre journey from the non-breeding range to their nesting area in the south. How does one explain that arrangement?

Given the relative success of this initial effort, there is no doubt going to be an escalation in the use of geolocators to track the movements of our intra-African migrants. Craig has secured another batch of the loggers from Biotrack and they have been fitted to a second cohort of Woodland Kingfishers this year. The possibility of extending the project to other migrants such as the Violet-backed Starling or locally breeding European Bee-eaters, is being considered.

In the meantime we now wait for 11 November to see if green-male and red-female survive another 7 000-kilometre winter journey to the tropics and return to their nest-log outside our bedroom window. ◆