

TEETERING

South Africa's Blue Swallows in trouble



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Kaapsehoop, a charming village in the mountains of South Africa's Mpumalanga Province, is synonymous with the Blue Swallow *Hirundo atrocaerulea*. Throughout living memory, this iconic grassland species has graced the rolling hills that provide the backdrop to the village, and generations of birders have flocked here to witness the metallic-blue swallows diving into sinkholes and aardvark burrows to attend to their chicks.

But no longer. Since the summer of 2008–09, not a single Blue Swallow has been recorded breeding at Kaapsehoop. The grasslands, sinkholes and aardvark burrows are still there, but the swallows have gone.

The disappearance of the swallows from Kaapsehoop is not unique, or even particularly unusual. In 2002, Mpumalanga was home to an estimated 26 pairs of this Critically Endangered species. A decade later, the corresponding number is just four pairs. To make matters worse, the downward spiral of the Blue Swallow population in Mpumalanga echoes events for this species elsewhere in South Africa.

The Wolkberg range, a jumble of soaring peaks and misty kloofs, towers above the Lowveld town of Tzaneen and the idyllic mountain hideaway of Haenertsburg. This is an area of seemingly endless grassland, riddled with caves and sinkholes. Most of it is formally protected and, theoretically at least, the Wolkberg should be a stronghold for the Blue Swallow. The birds bred here until the early years of the 21st century, yet they are no longer there. Occasional sightings around Haenertsburg are still reported, but these birds seem to be individuals on migration. The great irony of the Blue Swallow's disappearance from the Wolkberg is that it has taken place despite the region being largely unaffected by the habitat loss that has occurred elsewhere; indeed, this is the largest formally conserved area of Blue Swallow habitat left in South Africa.

Why have recent years been so unkind to South Africa's Blue Swallows? The short answer is that we simply don't know. Historically, the conversion of grassland to agriculture and forestry has been a key contributor to the species' decline, but the recent population crashes have taken place in the absence of major habitat loss. The disappearance of the birds from sites like Kaapsehoop and the Wolkberg indicate

that other factors are behind the collapse. It is possible that the swallows are being affected by events taking place far from their breeding sites. One recent study flagged the potential for air pollution from urban centres (such as Johannesburg) interacting with chemicals emitted by pine plantations to produce compounds that impair the waterproofing of the swallows' plumage and negatively affect their ability to forage in misty weather.

Part of the answer undoubtedly lies in the fact that, in South Africa, the Blue Swallow has become an island species. Formerly unbroken tracts of grassland have become fragmented into 'islands' of suitable habitat surrounded by a 'sea' of plantations and agriculture. As David Quammen eloquently explains in his book *The Song of the Dodo*, island species are inherently vulnerable to unpredictable strokes of misfortune, such as extreme weather events and outbreaks of disease. A small, isolated Blue Swallow population is far more likely to be pushed over the edge into extinction than is a large population spread over an extensive area of suitable habitat. It is easy to imagine, for instance, the Kaapsehoop swallows being decimated by an unseasonably late cold front soon after they completed their spring migration from Central Africa, with their body stores depleted by the long and arduous journey. A century ago, sites of such localised extinctions would have stood a good chance of being recolonised, but the small size and fragmented nature of today's populations make this eventuality extremely unlikely.

Another possibility is that the survival of fledglings in their first year of life has decreased to the point that breeding populations are no longer being replenished. ▷



■ Wintering site
■ Breeding site

Facing an uncertain future... South Africa's Blue Swallow population has declined sharply in the past few years, leaving conservationists scrambling to prevent the local extinction of this iconic grassland species.

SOLVING THE RIDDLE OF THE BLUE SWALLOW'S TROUBLES IS MADE MORE DIFFICULT BY THE LACK OF INFORMATION SURROUNDING MANY FUNDAMENTAL ASPECTS OF ITS NATURAL HISTORY

Even seemingly small reductions in habitat quality along migration routes, for example, may prove to be an insurmountable challenge for young birds at a time in their life that is energetically stressful. The decreased survival of juvenile birds in a species that has a generation length of only three years could easily be the reason for the loss of small, fragmented populations from the breeding grounds, as has been occurring in South Africa and Swaziland in recent years.

Solving the riddle of the Blue Swallow's troubles is made more difficult by the lack of information surrounding many fundamental aspects of its natural history. Even the 'fact' that individual birds return to the same nest site in successive seasons has not yet been verified; with one possible exception, there have been no recoveries of ringed individuals. In this regard at least, there is light at the end of the tunnel. It is now feasible to remotely identify individuals flying into particular nest sites using passive integrated transponder (PIT) tags, the same rice-grain-sized devices used to microchip domestic pets.

During the summer of 2011–12, a team from the Endangered Wildlife Trust (EWT) started PIT-tagging Blue Swallow nestlings in KwaZulu-Natal. From late 2012, nest sites will be monitored for returning birds by positioning a PIT-tag reader near the burrow entrance to record the identities of any tagged individuals flying to the nest. The value of this long-term project extends far beyond simply establishing whether individuals return to the same nest site in successive seasons. It will, for instance, also yield vital information on cooperative breeding in the swallows by identifying individuals other than the parents that may be involved in raising young.

Another problem facing conservationists is that very little is known about the Blue Swallow's migration routes. As far as we know, birds that breed in South Africa, Swaziland, Zimbabwe, Malawi and southern Tanzania all spend the winter in seasonally flooded grasslands around Lake Victoria, at sites such as Sango Bay in Uganda. However it remains unclear, for example, whether birds from the South African breeding grounds use the same wintering sites as Zimbabwean birds.

A stable-isotope project led by the late James Wakelin (see *Africa – Birds & Birding* 14(5): 36–40) has shed some light on this question, revealing that birds from different breeding grounds are distinguishable on the basis of the biochemical

Below Blue Swallow nestlings in KwaZulu-Natal are currently being microchipped in an effort to identify the individuals using a particular nest in successive years.

Below, right Ian Little from the Endangered Wildlife Trust checks a nest site for breeding activity.

Opposite Going, going, gone? Unless the current decline in the South African population is halted, we will soon need to travel to the Eastern Highlands of Zimbabwe to see active Blue Swallow nests.



IAN LITTLE



TANYA SMITH





Identifying the routes taken by Blue Swallows migrating between their breeding and wintering grounds is critical for the species' conservation.

signatures of their feathers. When the isotope ratios of feathers from seven swallows caught by Wakelin at Sango Bay in 2005 were analysed, the data suggested that four of the birds originated from the breeding population in South Africa/Swaziland and a further two belonged to the Malawian/Tanzanian breeding population. Future studies involving analyses of more feathers from wintering birds will hopefully allow us to better understand the connections between various breeding and non-breeding sites.

Knowing where specific breeding populations spend the winter months will be a key element in solving the riddle of the species' decline. But we also need to know the exact routes that migrating swallows follow between their breeding and wintering areas, because factors along migration routes could also be instrumental in the recent decline. The most significant obstacle in this regard is the swallow's small size. Whereas satellite transmitters are currently available for large-bodied groups such as flamingos, waterfowl and large raptors, even the smallest transmitters are too big and heavy to mount on a swallow-sized bird. But there is glimmer of hope: a Polish company is manufacturing

devices that weigh just 1.3 grams and use GPS signals to log the position of an animal at regular intervals. These data can then be downloaded from distances of up to about 20 metres. While 1.3 grams is still too heavy for a 13-gram Blue Swallow to carry, hopefully these devices will become smaller and lighter. Perhaps by the end of the decade it will be feasible to attach such a device to a Blue Swallow and download detailed tracks of its north- and southwards migration when it returns the following season.

WHAT DOES THE FUTURE HOLD FOR THE BLUE SWALLOW? OF ALL ITS MAJOR RANGE STATES, SOUTH AFRICA IS BY FAR THE ONE WHOSE POPULATION SEEMS TO BE MOST IN PERIL

In March 2012, representatives from nearly all the Blue Swallow's range states met in KwaZulu-Natal. The goal of the workshop, which was funded by the FitzPatrick Institute, was to take stock of the current status of the swallow and update the Species Action Plan that was formulated at a similar meeting a decade earlier at Kaapsehoop. The data presented by the delegates reiterated the precarious state of the South African and Swazi populations and confirmed that the species' strongholds are the eastern Zimbabwe highlands, the Nyika Plateau in northern Malawi and the highlands of south-western Tanzania.

A key issue to emerge from the workshop is that the Tanzanian refuge, which comprises a vast area of grassland and holds a sizable number of the swallows, is facing a massive threat in the form of extensive forestry developments that are being planned for the region. This is a mirror image of what happened to the once-extensive mist-belt grasslands of Mpumalanga and the KwaZulu-Natal Midlands.

It also emerged from the workshop that the species' nesting behaviour differs significantly across its range. Whereas birds from South Africa/Swaziland, Zimbabwe and Malawi build their nests almost exclusively in sinkholes and aardvark burrows,

the Tanzanian birds nest in buildings and under bridges, in much the same manner as other swallow species. Interestingly, this behaviour has also recently been documented at a site in Zimbabwe, with a pair of swallows nesting indoors in a busy kitchen.

The review of the species' current status also underscored how little is known about the population in the Democratic Republic of Congo (DRC). The swallows are thought to breed in the Marungu highlands, west of the southern reaches of Lake Tanganyika, and Upemba National Park in the far south-east. The wintering area for these birds seems to be the Lendu plateau in north-eastern DRC, across the border from Uganda. These DRC swallows, which it is suspected represent a geographically discrete sub-population, are intriguing in that they seem to use much the same type of habitat on their wintering grounds as they do when breeding, namely mid- to high-altitude grasslands. All the other sub-populations breed in montane grasslands, and their wintering habitat consists of seasonally flooded grasslands interspersed with forest patches at lower altitudes in the area surrounding Lake Victoria.

What does the future hold for the Blue Swallow? Of all its major range states, South Africa is by far the one whose population seems to be most in peril. With fewer than 40 nesting pairs and 100 individual birds remaining, we have very little room in which to manoeuvre, and the next few years will determine the fate of this majestic little bird in South Africa. Realistically, it seems highly unlikely that the Mpumalanga population will survive the next five years. Although the KwaZulu-Natal population is stable at present, the disquieting fact is that until very recently the same was true in Mpumalanga, and we have no way of predicting if or when the same inexplicable declines will begin among the KwaZulu-Natal birds. In this regard, the recent extinctions at Ngome in northern KwaZulu-Natal and the Blinkwater Nature Reserve in the Midlands are extremely concerning. Unless we are able to identify the precise causes of recent population declines and implement urgent conservation interventions, it is highly likely that the Blue Swallow will be the third species (after the African Skimmer and Egyptian Vulture) to become regionally extinct within the borders of South Africa. □

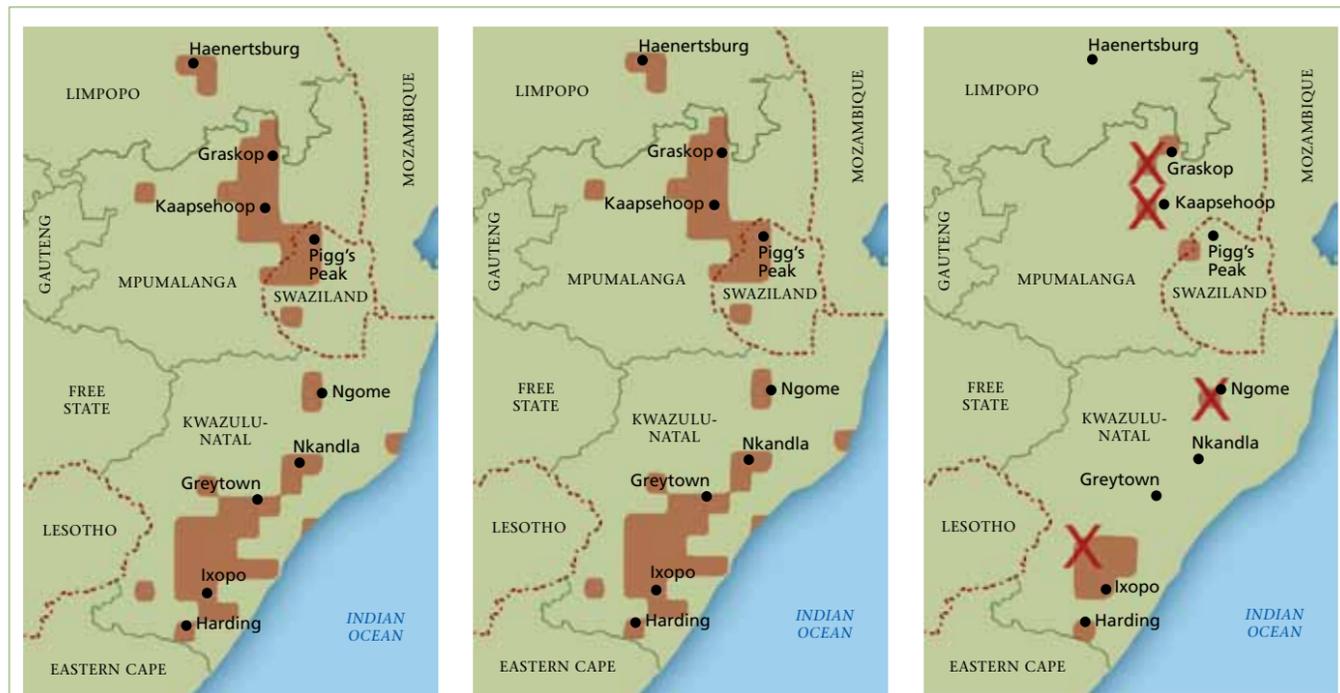


Artist Bruce Clements began sculpting at the age of six and he continues to work in bronze in his professional career. He was taught by and has worked with some of South Africa's top artists, and photographs of his sculptures have appeared internationally in newspapers and magazines, and on websites. He is inspired by the technical aspect of any artistic challenge and his work as a foundryman has proved invaluable.

Clements, who is gaining a reputation as a specialist in sculpting endangered species, donates half the proceeds from the sale of his work to the conservation of the species concerned.

This bronze sculpture forms part of a limited edition of 90, which represents the estimated number of Blue Swallows left in South Africa. Each sculpture is mounted on an oiled teak base (recycled railway sleeper) and sells for R3 000. The proceeds will go to the Endangered Wildlife Trust's Blue Swallow conservation project.

For orders or more information, contact Bruce Clements on +27 (0)83 434 1886 or e-mail bruceclements@hotmail.com, or Dr Ian Little, Manager: Threatened Grassland Species Programme, Endangered Wildlife Trust, on +27 (0)84 240 7341 or e-mail ianl@ewt.org.za



Distribution in South Africa of the Blue Swallow in the 1800s (left), 2005 (centre) and 2012 (right). Red crosses indicate local extinctions that have taken place since 2005. Data for the 1800s and 2005 from Evans & Bouwman (2010), *Bird Conserv. Int.* 20:1–15.