Winds of change ...

Documenting changes in the birds of the southwestern Cape

I was excited to be asked to write an account of how the birds of the southwestern Cape have changed for the 75th anniversary of the Cape Bird Club. It offered the chance to update François van der Merwe's delightful account of "Our ever-changing bird life", written for the club's 50th anniversary in 1998 (*Promerops* 233, Supplement:45-50). François described the gains and losses to the region's avifauna as agriculture and other human activities transformed much of the region over the last few centuries. A key theme of his account was the many new bird species that reached the Cape in the 20th Century. The *Atlas of the Birds of the South-western Cape* (Hockey et al. 1989, Cape Bird Club) listed 92 species whose ranges or populations had probably increased since 1900, compared to only 30 species whose ranges or populations had decreased since 1800. Bird populations may alter through changes in their ranges, their density, or a combination of the two. This article discusses changes in the birds of the southwestern Cape (hereafter SW Cape), loosely defined as the area south of the Olifants River and west of the Breede River.

Arrivals...

New arrivals are perhaps the most obvious changes to a region's avifauna. Almost all the birds that colonised the SW Cape over the last century or so were species from the more mesic, eastern parts of South Africa that extended their ranges westward following large-scale landscape changes in the region. By adding trees to formerly treeless areas, converting shrublands to croplands and building thousands of farm dams, we increased the diversity of birds. Some arrived so long ago, and are now so well established, that most birders today don't realise they are relative newcomers to the region. For example, Cattle Egrets and Blacksmith Lapwings were first recorded from the SW Cape in the 1930s. They were followed in the 1940s by the Glossy Ibis, and more recently by Little Swifts, African Goshawks, Hadeda Ibis and Black Sparrowhawks. Others, like the Blue Crane, arrived even earlier

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Cattle Egrets colonised the SW Cape in the 1930s; atlas data suggests their numbers are now decreasing

when much of the Overberg was cleared for agriculture during the 19th Century.

This trend has continued over the last few decades. Fork-tailed Drongos were largely confined to the Overberg, rarely straggling to the Cape Peninsula in the 1980s, but are now found throughout the region. Other species that arrived in the SW Cape during the first Southern African Bird Atlas Project (SABAP1), which collected data up to 1992 (Harrison et al. 1997, BirdLife South Africa), have continued their westward expansion. Amethyst Sunbirds had their western limits around Swellendam in SABAP1, but have since spread west to the Cape Peninsula and surrounds. Southern Grey-headed Sparrows reached the eastern fringes of SW Cape in the 1983, and now occur throughout, and Brown-backed Honeybirds were first recorded from the Overberg in 1986, and are now regularly seen west to the Cape Peninsula.

Since then, additional species have become established in the region. There are two historic records of Goliath Heron from the Agulhas Plain, but it was probably only ever a vagrant to the region. It now occurs in small numbers at several large wetlands, where it has benefited from the introduction of alien fish species. Red-billed Queleas also have colonised the region; the only historic record was from Zeekoeivlei in 1946,

when there was a massive irruption of quelea farther north. Red-billed Queleas have expanded their range and population thanks to their exploitation of cereal croplands, and it was probably just a matter of time before they colonised the SW Cape. They were first reported breeding in the Breede River Valley in 2009 (Oschadleus 2015, *Ostrich* 86: 295–296).

Another species that has been steadily expanding its range south and west is the African Palm Swift, thanks to the planting of palms in towns and gardens. Although it is still uncommon in the SW Cape, it has been recorded at least locally throughout much of the region.

Cinnamon-breasted Buntings also have arrived from farther east. Although this species was not considered to be expanding its range in SABAP1, it has benefited from poor soil conservation measures, which create the open habitat patches it favours. It too is now fairly well established in the Overberg, and is becoming increasingly regular farther west. One species that has invaded from the north is the Red-eyed Bulbul, which has colonised the lower Olifants River Valley, with stragglers reported south to around Tulbagh and the Koue Bokkeveld.

A more localised new arrival is the Red-billed Firefinch, which occurs in the Breede River Valley around Robertson and Bonnievale. Interestingly, there are now a few records of Village Indigobirds from the area, suggesting that their brood parasite is tracking this range expansion. It is unclear whether this isolated firefinch population, which is some 200 km west of its range in the Great Karoo, arrived naturally or became established from escaped cage birds. Escapees certainly account for Cape Town's burgeoning population of Bronze Mannikins, which was first reported in Newlands-Rondebosch in 2016 and has since spread to surrounding suburbs. Other urban escapees that appear to be expanding in Cape Town's northern suburbs include Red-headed Finches and a hybrid blend of lovebirds. It will be interesting to see how these new additions to the region's avifauna fare over the longer term. Birders can play an important role in reporting new invasions, because early detection is crucial for effective management, should action be deemed necessary.

...and Departures

Demonstrating that a species has gone extinct takes a lot more effort than detecting a new arrival. Despite this caveat, it appears that no species has completely disappeared from the SW Cape in the last few decades. However, a few species such as Black Stork, Half-collared Kingfisher and Painted Snipe have become much less common and may be close to being functionally extinct. Historically, Wattled Crane, Bald Ibis, Eurasian Bittern and Bearded, Lappet-faced and Egyptian Vultures have all been lost from the region.

Other species thought to be extinct in the SW Cape a few decades ago have since been rediscovered. The Grass Owl is now known from several sites on the Agulhas Plain, and probably was overlooked in the past. Small numbers of Kori Bustards have returned to the coastal plain north of Lambert's Bay and the few recent records of African Finfoot may represent new arrivals from farther east.

Kori Bustards were extinct in the SW Cape but have recolonised the area between the Olifants River and Lambert's Bay

Indeed, it is clear that some species' fortunes wax and wane over time. The 50th anniversary review highlighted the spread and subsequent contraction of the Acacia Pied Barbet in parts of the SW Cape. Its numbers have continued to decrease on the west coast over the last few decades, perhaps due to a shortage of suitable nesting sites linked to ongoing control of invasive Acacias. The Swee Waxbill is another example. It probably arrived in the SW Cape in

the 1920s, and bred on the Cape Peninsula from the 1930s to the 1950s. Then its range contracted east, and it is only since the 1990s that it has again become common west of the Overberg. On the Peninsula it has spread from its initial foothold in the Constantia-Kirstenbosch region, and now occurs throughout, including the northern suburbs. The Fulvous Whistling Duck is yet another example, having arrived and even bred in the SW Cape on and off since the 1950s, but has yet to establish a lasting presence. Perhaps its recent influx will finally succeed where previous incursions have failed. Other irruptions have been more short-lived, such as the African Openbills in 2009/10. As global change accelerates, we might expect more influxes of birds from outside their traditional ranges.

The Numbers Game

Gross changes in species' ranges are fairly easy to detect, but what about population-level changes within the region? Ideally, we need repeated counts or density estimates to infer such changes, but there are few count data for most bird species in the SW Cape. The main exceptions are breeding seabirds and coastal birds. John Cooper and Rob Crawford initiated regular counts of breeding seabirds in the 1970s and 1980s, building on Bob Rand's pioneering counts in the 1950s. As a result, we have a good idea of how our local seabirds are faring. I won't go into detail here; suffice it to say that numbers of African Penguins and Bank and Cape Cormorants breeding in the SW Cape have fallen by more than half over the last few decades, and Cape Gannets by some 20%, mainly due to competition with fisheries for food, although Cape fur seals, other predators, and diseases such as avian cholera and avian influenza also contribute to their woes. By comparison, numbers of Kelp Gulls and Great White Pelicans have more than doubled over the same period, thanks largely to human-generated food subsidies. Numbers of Greater Crested Terns also have increased substantially, possibly benefiting from reduced numbers of Palearctic migrant terns.

For coastal birds, the Western Cape Wader Study Group conducted a baseline count of birds along the SW Cape coast in 1980 (Ryan et al. 1988, *Bontebok* 6: 1–19). Repeat counts in 2010 showed catastrophic decreases in most migrant shorebirds, with numbers of Sanderlings and Curlew Sandpipers falling by more than 90%, and Ruddy Turnstones and Grey Plovers by more than 50% (Ryan 2012, *Austral Ecology* 38: 251-259). Regular counts at Langebaan Lagoon show the same trend for less common species such as Red Knot. Only the Common Ringed Plover appears to be maintaining its population. The decreases in migrant shorebirds have occurred throughout the SW Cape, irrespective of the levels of human use of the coastline, suggesting that the reasons for their collapse lie elsewhere in their ranges. The loss of migrants has been offset by increases in resident coastal birds, especially ibises, Egyptian Geese, Blacksmith Lapwings and Cape Wagtails. Numbers of African Oystercatchers also more than doubled thanks to reduced disturbance following the ban on driving on beaches and increased food availability resulting from the spread of the invasive mussel *Mytilus galloprovincialis*.

Numbers of African Oystercatchers have increased thanks to improved protection and greater food availability

Citizen science projects collect count data for waterbirds (CWAC, Coordinated Waterbird Counts) and large terrestrial birds (CAR, Coordinated Avifaunal Roadcounts). Some CWAC sites in the SW Cape have been counted each summer and winter for decades, and have documented dramatic changes in bird communities (e.g. at Strandfontein Sewage works, see Kalejta-Summers et al. 2001, *Ostrich* 72: 80–95). However, such changes are often site-specific, relating to local changes in water quantity and quality, obscuring broader-scale

patterns. The BIRDIE Project (*https://birdie.sanbi.org.za*) is developing indices of change across all wetlands, and the trends for most species across South Africa are not encouraging. However, this process is ongoing and trends are not yet available for sub-regions in the country, so I have relied on atlas data to give an indication of changes in wetland birds within the SW Cape.

CAR count data commenced in 1993, and have been used to assess changes in several species of conservation concern. For example, Hofmeyr et al. (2014, PLoS One 9(5): e96772) used CAR data to help understand the apparent decrease in Secretarybirds throughout much of South Africa, including in large, protected areas such as Kruger National Park. CAR data have shown how numbers of Blue Cranes increased in the SW Cape until 2010, then started to decrease, whereas numbers of Southern Black Korhaans have decreased throughout the SW Cape. Such counts are invaluable for identifying species that require active conservation measures, but for most terrestrial birds we have to rely on atlas data to assess how their populations are faring.

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CAR counts confirm that Southern Black Korhaans have decreased throughout the SW Cape

Inferring Population Changes from Atlas Data

For the SW Cape, we have 11 years of SABAP1 data from 1982 to 1992, because they include the results from the Cape Bird Club's atlas from 1982 to 1986 as well as the SABAP1 data collection period from 1987 to 1992. SABAP1 data can be compared with 16 years of SABAP2 data, which commenced in mid-2007 and is ongoing. But first we need to discuss some of the limitations of atlas data. SABAP only lists species found in an area, with no estimate of their abundance, and so we use changes in the 'reporting rate' (the proportion of lists containing a given species) as a proxy for changes in abundance. This could be problematic for very abundant species. For example, numbers of Common Buzzards have decreased dramatically over the last three to four decades. In the 1980s there was one on virtually every roadside pole in the Overberg; now you are lucky to see one on every 20th pole. But are they still common enough to be found on most summer atlas lists? The answer is no – the reporting rate in SABAP2 throughout the Western Cape is barely half that in SABAP1, and the comparison map on the SABAP website (https://sabap2.birdmap.africa) is overwhelmingly red throughout the SW Cape. Worryingly, its reporting rate has continued to fall throughout SABAP2.

Unfortunately, comparisons are further complicated by changes in the temporal and spatial resolution between the two atlas periods (Brooks et al. 2022, *Ostrich* 93: 223–232). SABAP1 reported bird occurrence monthly at a quarter degree grid scale (15 x 15 minutes, roughly 28 x 23 km), whereas SABAP2 records birds over at most 5 days at the 'pentad' scale (5 x 5 minutes, or roughly 9 x 7 km). The longer time period in SABAP1 increased the chances of recording rare species, although this bias has been offset to some extent by only using 'full protocol' lists to estimate reporting rates in SABAP2. This requires observers to bird for at least 2 hours in a pentad, and to try to visit all habitats. The implications of the increased spatial resolution of SABAP2 data are even more challenging to interpret. In order to compare reporting rates between the two atlas periods, SABAP2 data are pooled across all nine pentads within each SABAP1 quarter degree square (QDS). This effectively assumes that species are distributed more or less evenly across the larger area, which is clearly not always the case.

This problem is best illustrated by birds that are confined to the coastline. Consider a QDS that

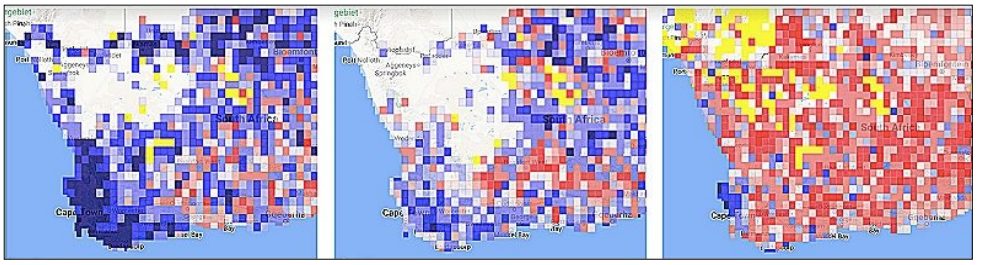
only has coast in one of its nine constituent pentads. If sampling effort is similar across all nine pentads, a coastal species will have a much lower SABAP2 reporting rate at the QDS scale than in SABAP1, even if there is no change in its population. This effect is visible in comparison maps for species such as African Oystercatchers and Kelp Gulls whose populations have increased substantially since the 1980s, yet they still have many QDS in the red. Fortunately we don't need to rely on atlas data to infer trends in numbers of coastal birds, but the same problem applies to other localised species with specific habitat requirements such as Cape Rockjumpers.

Restricting comparisons to within SABAP2 avoids these complications. However, the shorter time scale means that only very rapid population changes are likely to be detected, especially given the variable coverage among pentads. And there is a further methodological issue. Around 2015, most atlassers started recording their lists using the mobile phone app BirdLasser. This greatly improved the efficiency of data capture and increased the number of atlassers and atlas records. But, it also resulted in, on average, shorter lists than the pre-BirdLasser era, potentially influencing reporting rates, especially for less common species (Lee and Nel 2019, *African Zoology* 55: 155–160).

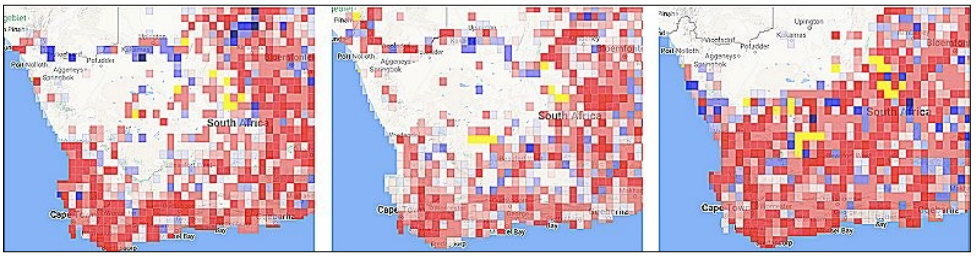
Winners and Losers

Bearing these caveats in mind, what do atlas data tell us about how bird populations are changing? They are most useful for discerning trends in the more common species. Looking at SABAP1 vs SABAP2 comparison maps, you can see at a glance how consistently a species is increasing (blue) or decreasing (red) across a region. However, I also compared reporting rates at a provincial level, both between SABAP1 and SABAP2, and within SABAP2. Here I mostly highlight species that show a consistent increase or decrease across these metrics.

Starting with waterbirds, reporting rates of Egyptian Geese and White-faced Whistling Ducks have increased across the SW Cape, whereas Maccoa Ducks and Southern Pochards have decreased. Black-necked and Great-crested Grebes have generally decreased, whereas Little Grebes, Red-knobbed Coots and Common



Hadeda Ibis | Fiscal Flycatcher | Rock Kestrel



Cattle Egret | Hamerkop | Pied Starling

Changes in reporting rates between SABAP1 AND SABAP2 for six common species, with increases shown in shades of blue, and decreases in shades of red. Yellow squares indicate QDSs with insufficient data.


Peter Ryan

Reporting rates of White-faced Whistling Ducks have increased across the southwestern Cape

Moorhens show little change. Among ibises, massive increases in Hadeda Ibis are evident throughout, and Glossy Ibis also have increased in most areas. Sacred Ibis have increased strongly in Cape Town and adjacent agricultural areas, but decreased in more arid areas. Yellow-billed and Little Egrets have decreased throughout the SW Cape, but perhaps surprisingly Cattle Egrets have decreased across South Africa. Both Pied and Giant Kingfishers also are red across much of their South African range, but most alarming is the Hamerkop, which has decreased across the country, and its reporting rate has continued to decline throughout SABAP2.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Atlas reporting rates for Hamerkops have fallen across South Africa

Migrant shorebirds at inland wetlands have fared little better than those along the coast, with decreases across the region for Ruff, Little Stint, Greenshank, and Wood, Common, Marsh and Curlew Sandpipers. The only good news for these species is that their declines appear to have stabilised, with, if anything, modest increases in reporting rates within SABAP2. This conclusion is supported by counts of migrant shorebirds along the SW Cape coast, which differed little between 2010 and 2020 (PGR unpubl. data). However, the White-winged Tern is a migrant in real trouble, with ongoing decreases during SABAP2 despite its already greatly reduced reporting rates compared to SABAP1. Some resident shorebirds also appear to be decreasing, although nowhere near as quickly as the long-distance migrants. Comparison maps for Kittlitz's Plovers, African Snipe and even Blacksmith Lapwings are predominantly red throughout most of the SW Cape, but none matches the rapid decrease in Crowned Lapwings in the vicinity of Cape Town. It remains a mystery why this once common bird, that could breed on virtually every sports field, has disappeared from the area.


Peter Ryan

Crowned Lapwings have virtually disappeared from around Cape Town

Among raptors, atlas data are not very useful for discerning trends in rare species, but they show striking changes among the more common species. (See Little and Navarro 2019, *Ostrich* 90: 139–143 for a discussion of the impact of the invasion of Black Sparrowhawks on African Goshawks and Rufous-breasted Sparrowhawks.) As already noted, reporting rates have fallen for Common Buzzards, whereas Jackal Buzzards have increased in the SW Cape, despite being

the raptor most often killed by colliding with wind turbines (Perold et al. 2020, *Ostrich* 91: 228 -239). Yellow-billed Kites also are increasing in most of the SW Cape, but are faring less well farther east. Black-winged Kites are in trouble across most of South Africa, as are Rock Kestrels, except in the Swartland, where they appear to be increasing. The Lesser Kestrel is another long-distance migrant on the decrease, but European Honey Buzzards are becoming more regular. Responses are mixed for owls, although overall reporting rates have generally decreased.

As expected, Pied Crows have shown marked increases across the SW Cape since SABAP1, second only to Hadeda Ibis in terms of the absolute increase in reporting rate. Their increases have been even more striking in the central Karoo, but they are decreasing farther east. White-necked Ravens appear to be more or less stable, whereas Cape Crows might be decreasing slightly. Among ground-dwelling birds, Southern Black Korhaans are not the only species to have decreased substantially; White Storks, Grey-winged Francolins, Ground Woodpeckers, and Namaqua Sandgrouse also have decreased throughout the SW Cape. Cape Turtle Doves have decreased in some areas, especially around Cape Town, whereas Red-eyed Doves and Tambourine Doves have generally increased in the SW Cape. But one of the most surprising changes is the widespread decrease in Laughing Doves across most of South Africa.

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Laughing Doves appear to be decreasing across South Africa

Among aerial insectivores, most swifts appear to be decreasing, with only White-rumped, Common, and Palm Swifts showing more blue than red. Swallows and martins are more of a mixed bag, with perhaps the most worrying splash of red being for Brown-throated Martins in the southern Karoo. A suite of arid country species has shown marked decreases around the margins of the Western Cape: Pale-winged Starling, Chat Flycatcher, Pririt Batis, Karoo Chat, Black-headed Canary, and Cinnamon-breasted and Namaqua Warblers. Mountain Chats, Grey Tits, Layard's Warblers and Fairy Flycatchers have decreased more widely across the SW Cape, as have Grey-backed Sparrow-Larks, Cape Long-claws, Burchell's Coucals and Red-chested Cuckoos.

It's not all doom and gloom. Many forest birds are either holding their own or increasing their ranges, and several species associated with scrubby, forest-edge habitat have increased throughout much of the SW Cape: Fiscal Flycatcher, Bar-throated Apalis, Karoo Prinia and Streaky-headed Seedeater. Other species show particularly strong gains in the highly transformed agricultural landscapes of the Swartland and Overberg: Spur-winged Goose, Red-billed Teal, Blue Crane, Red-capped and Large-billed Larks, African Pipit, Capped Wheatear, Red Bishop, Cape and Masked Weavers, and Cape Canary. Common Starlings also have increased in these areas, but decreased elsewhere. By comparison, Wattled and especially Pied Starlings have decreased throughout most of South Africa.

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Pied Starlings appear to be decreasing throughout their range, except along the eastern escarpment from the eastern Free State to Mpumalanga

One of the most worrying messages from my exploration of the atlas data for the Western

Cape is the low ratio of winners to losers. Comparing SABAP1 and SABAP2, around 50 species have increased their reporting rate by at least 10%, 40 have remained constant, and over 250 have decreased by 10% or more. A similar pattern emerges if you look at the absolute change in reporting rates, with roughly five losers for every winner. The pattern is less dramatic for comparisons within SABAP2, but losers still outnumber winners by at least 50%. These results have to be treated with caution given the methodological limitations of atlas data, but they definitely give cause for concern. It seems that we have crossed over a threshold of impact, and the addition of new bird species to the SW Cape highlighted in the 50th anniversary review is now being offset by ongoing decreases in many of the region's bird populations. The increasing dominance of a few species at the expense of many others is a common pattern globally, and one that we should try our utmost to redress.

I hope that this review demonstrates the value and importance of participating in long-term monitoring projects such as SABAP, CWAC, and CAR. In addition, I strongly encourage birders to start tracking bird populations in a systematic way. Select a fixed route round your local patch, and count/estimate the numbers of birds you see in each habitat on a regular basis. Such counts can be captured in BirdLasser or eBird. In addition to getting a much better understanding of your local birds, and how their numbers fluctuate in relation to environmental signals, you will contribute to our knowledge of global change and help to highlight species in need of conservation action.

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