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YEAR OF THE BIRD

CODE BLUE

A team of seabird specialists aims to save the African Penguin—one bird at a time.

BY JOCELYN C. ZUCKERMAN
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ALEXIA WEBSTER

INTENSIVE CARE
A veterinarian treats an African Penguin rushed to SANCCOB's Seabird Rescue Centre in Cape Town, South Africa, just minutes earlier.

THOUGH IT HAS LONG BEEN ILLEGAL TO HARVEST THEIR EGGS, AFRICAN PENGUINS STILL FACE PLENTY OF CHALLENGES.

ON THE MEND
Intern Damaris Hillig preps a dose of medicine for a juvenile African Penguin, or "blue"—so named for its blue-gray plumage. Left: A group of blues shake off after a daily swim.

THE PATIENT LAY SILENT ON THE operating table, feathered head propped on a rolled-up towel, flippers inert by its sides. A seal had ripped a three-inch swath of skin from the African Penguin's neck, leaving bloody bone and cartilage exposed, and Natasha Ayres, a veterinarian with the Southern African Foundation for the Conservation of Coastal Birds (SANCCOB), was determined to close it up as quickly as possible. "Unfortunately, I don't have a lot of skin to work with," said Ayres as she squirted saline into the wound, dislodging a pale-beige blob of fat. The anesthetic machine hissed rhythmically as she proceeded to maneuver a needle in and out of the flesh, tying off the sutures as she went. She felt around the bird's webbed foot and, having located a vein, swabbed with alcohol before inserting a fine needle. Securing an IV drip with a tiny bandage, she transferred the two-foot-tall patient to a towel-lined crate set beneath a heat lamp.

It wasn't yet noon on a Wednesday in January, but already the Seabird Rescue Centre, located in Cape Town's Table Bay Nature Reserve and one of three facilities run by SANCCOB, had seen its share of drama. In addition to the degloved penguin, there'd been a dead pigeon delivered in a wicker basket by a semi-hysterical neighbor, and a cormorant that a park ranger had rescued from the middle of a busy road. Less than an hour earlier, another African Penguin had stopped breathing in one of the center's swimming pools, reducing the British intern overseeing it to tears.

Even on a calm day, the stakes at SANCCOB are high, particularly where African Penguins are concerned. In the last century, populations of *Spheniscus demersus*—the only penguin species endemic to the African continent—have decreased by about 98 percent, to approximately 21,500 breeding pairs today from more than a million at the beginning of the 1900s. (Some 16,000 of those make their homes at the southern tip of South Africa; the rest live along the coast of neighboring Namibia.) The International Union for the Conservation of Nature classified the African Penguin as endangered in 2010, and a few months ago, a South African conservationist told me that the situation facing the birds, the most rapidly declining of the world's 18 penguin species, was arguably more urgent than that confronting the continent's beleaguered rhinos.

Though it has long been illegal to harvest their eggs (once a prized item on European dinner tables) and to remove their guano for use as fertilizer (thus denying them nest-building material), African Penguins still face plenty of challenges. Not just seals, but sharks and orcas also prey on the birds in the water, while local dogs, wild cats, and mongooses seek them out on land. Kelp Gulls swoop down into penguin colonies and snatch up their eggs and chicks. A few decades ago, oil spills began posing an additional threat. Some 30 percent of Middle East oil exports to Europe and the Americas now travel around the southern tip of Africa, where stormy conditions mean that mishaps are all too common. In 2000, the *MV Treasure* sank between nearby Dassen and Robben islands, both then home to sizable African Penguin colonies, and spilled an estimated 1,300 tons of oil. Over 12 weeks, SANCCOB staff and thousands of volunteers treated some 19,000 oiled penguins and helped relocate another 19,500 to unsullied waters several miles away. In 2016, a spill led to 92 oil-shellacked penguins and 61 chicks being treated at the center.

Now an urgent new crisis has emerged. In an issue of *Current Biology* published last year, British ecologist Richard Sherley detailed how a combination of overfishing and climate change has led to a major reduction of juvenile African Penguins. Over the past few decades, commercial fishing has drastically reduced local populations of sardines and anchovies in locales once fished by the birds. More recently, increased ocean salinity and higher water temperatures have led spawning aggregations of those fish to move eastward. While adult African Penguins have learned to adjust their feeding habits accordingly and swim farther east, the younger birds have failed to do so. Following their instincts to seek out waters characterized by low surface temperatures and a high presence of chlorophyll-a—once signs of copious forage fish—they now find themselves in the company mostly of nutritionally inferior jellyfish and gobies.

Working with researchers from SANCCOB and from the governments of Namibia and South Africa, Sherley, a fellow at the University of Exeter, found that as many as 31 percent of young African Penguins were perishing largely as a result of this "ecological trap." Breeding numbers were 50 percent lower than they would have been had the juveniles moved with their food source. If the trend continues, Sherley said, it could spell disaster for the species. SANCCOB's mission to save every African Penguin, then, has become more critical than ever.

FINALLY, LIKE TIMID TODDLERS AT THE BEACH, THE PENGUINS BEGAN GRADUALLY TO VENTURE IN.

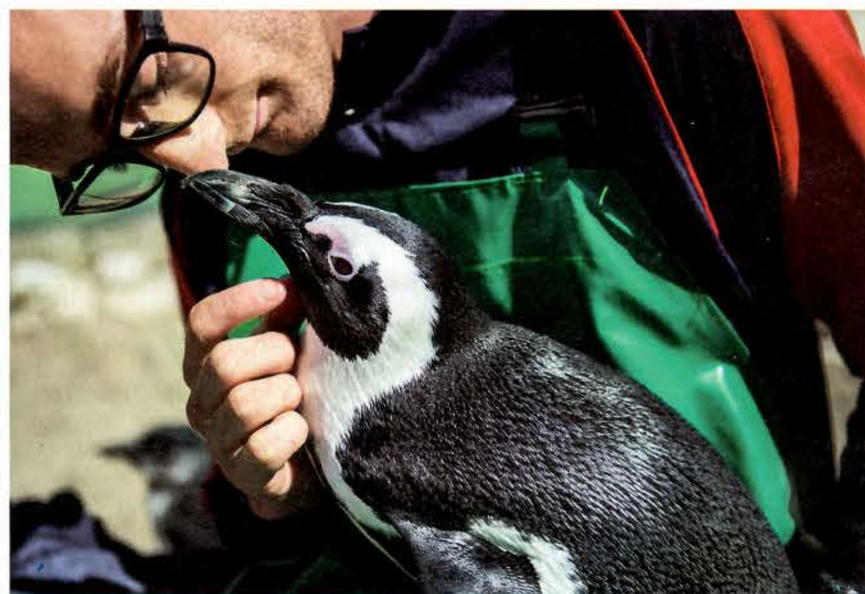
ON ANOTHER BRIGHT SOUTH African summer morning, I drove away from Cape Town's boutiques and ethnic restaurants and cruised past the cranes and Maersk containers of the sprawling industrial port, arriving at SANCCOB in time for the regular 8 a.m. meeting. An administrator doled out the day's assignments to the 25 or so staff and volunteers gathered around: Some were to hose down rubber mats and the plastic crates that serve as makeshift chairs and desks; others would defrost fish or prepare formulas and medications. Within minutes, the expansive outside area, comprising three large pools and pens of various sizes—all protected by mosquito netting strung high overhead—buzzed with activity. The odors of fresh fish and ammoniac guano mingled in the air.

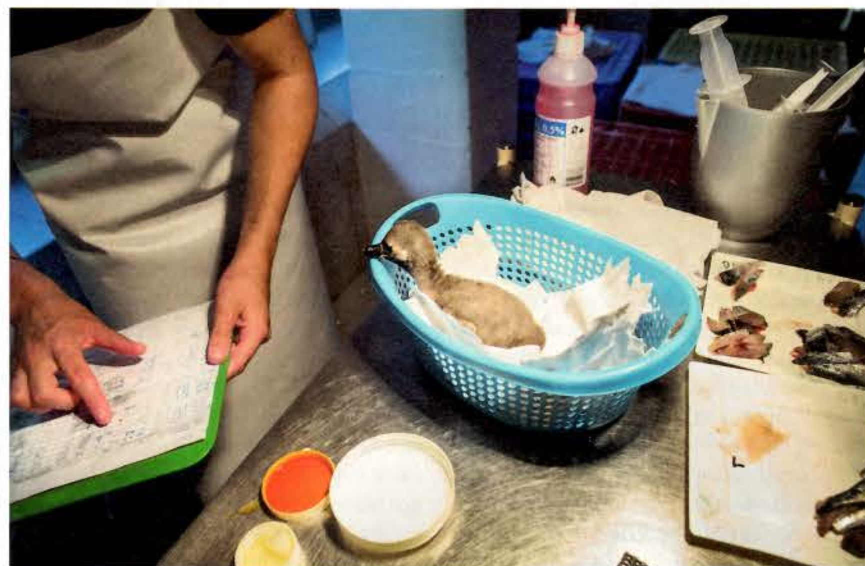
In the facility's lagoon area, penguins zipped across the aqua-green water in a sort of side stroke, bottom fins vertical, top ones flapping away. Others lazed on the bleached-out boulders, or stood around upright, pecking at their stomachs and twisting their necks 180 degrees to access parts of their backs. (In the wild, such preening would be done by a mate.) When the birds swim underwater, their dark feathers absorb sunlight, while their pale undersides, some dappled with freckles, provide camouflage from predators below.

Seabird rehabilitator Peter van der Linde, outfitted in green vinyl overalls, sat amid a huddle of penguins handing out sardines. Most of the birds in the lagoon, he explained, were permanent residents, unfit for life in the wild on account of an injury or other condition. Among them was a Northern Rockhopper, who, with her fabulous crest of wispy feathers, was clearly the belle of that ball. A sleek cormorant took in the scene through astonishing cornflower-blue eyes. "They're quiet today," van der Linde said of the penguins, "but often they're very vocal. One will start up and all the others will kick in after him." A spirited girl named Nona *was* attempting to make herself known, braying loudly—they don't call them "jackass penguins" for nothing—before planting herself on the bench next to van der Linde. "She likes people, and that's why we can't let her go," he said, nuzzling her neck. He walked off to feed a different group of birds, and Nona dismounted with a stiff-legged hop—penguins have knees, but they aren't much good at using them—and waddled off in hot pursuit.

Although the work at SANCCOB, which was founded in response to an oil spill 50 years ago, still revolves around rescuing and rehabilitating individual seabirds, its mandate has expanded to include measures to increase the greater South African penguin population. In 2006, the organization established a Chick Bolstering Project, part of a government-supported Biodiversity Management Plan, to hand-rear birds for eventual release into the wild. Most of the population when I was there—some 220 birds—consisted of "blues," juvenile penguins whose fluffy down had given way to a blue-gray plumage. They would have arrived in October or November as eggs or chicks, having been abandoned by molting parents. Here again, climate change is to blame.

Whereas mating season has traditionally taken place at the beginning of the year, after the adults have completed their molting and returned from feeding, these days birds confused by warmer water and air temperatures may breed so late in the year that the stages overlap. At the tourist hotspot Boulders Beach, home to one of the region's two main penguin colonies, I'd seen sleek adult couples tending chicks and eggs, as would be expected. But there were also oversized, scraggly-looking birds that had yet to change their feathers. Because molting birds can't enter the water to fish, they are unfit to tend to any young. From February through July, rangers affiliated with the two government-managed colonies collect abandoned eggs and chicks and transport them to one of the SANCCOB facilities. Adult penguins found nesting outside of the protected colonies—whether on golf courses, in residential gardens, or along the roadside—get returned and their eggs are also brought to SANCCOB, which these days admits 600 to 900 of them every year.





MEAL TIME
Seabird rehabilitator Peter van der Linde nuzzles a long-term resident named Skipper. Bottom: A young penguin awaits its meal at the center's Chick-Rearing Unit.

Corlie Hugo, the ecological coordinator for the colony at Stony Point, told me that climate abnormalities are taking a further toll on the birds. "We've had incidences where we get 100 to 200 milliliters of rain overnight," she said. "It used to be that amount over a week." The water has flooded chicks out of nests. In other instances, cold spells have seen baby birds freezing to death. It helps, Hugo said, that African Penguins, who mate for life and take turns incubating their typically two-egg clutches, make uncommonly good parents. One morning after a recent hard rain, Hugo had come across a mother penguin sitting atop a flooded nest. "Her feet were blue from the cold, but she sat on those chicks the whole time. I've never seen animals—or humans!—so dedicated."

Before entering the domain of Romy Klusener, who oversees Table Bay's Chick-Rearing Unit, I stepped into a pan of bleach and slid on a pair of loaner clogs. She drew the blinds and carefully removed a tennis ball–size ovoid from one of three incubators, transferring it to a cardboard box. Draping a towel over our heads, we bent over the box and she proceeded to shine a flashlight onto the round end of the egg. Such "candling" enables her to see what's happening inside and helps indicate when an egg might hatch. "It's one of my favorite parts," Klusener said, "to come into this quiet environment and

Continued on page 50

A NEW START
Stony Point field ranger Nomveleli Nkantini encourages penguins to venture into the water. Bottom row: A freshly hatched chick; a staffer uses a flashlight to check an egg's growth.

watch them do their little dance."

An egg will usually begin to crack, or "star," at 38 days, at which point Klusener will relocate it to a hatcher. Within two or three days, the chick will use its egg tooth to break through the shell. "It's tiring work," she said. "They'll work, have a bit of sleep, then try again." If, after 48 hours or so, the chick still hasn't emerged, Klusener will lend a hand with a pair of sterile forceps. The chicks get probiotics and water five hours after hatching and begin their feeding regimen—a diluted blend of fish, vitamins, brewer's yeast, and cod-liver oil administered via rubber tube and syringe—after 24 hours. "It gets very stressful," Klusener admitted. "You've got 30 hatchlings. You need to make sure your hygiene level is high, high, high. They have to be fed every three hours. A chick can be healthy now and two hours later it can be dead."

Clearly, working at SANCCOB isn't for the faint of heart. In addition to the pressure that comes with stewarding a species threatened with extinction, the center's staff and volunteers must manage the often strong personal feelings they develop for the undeniably adorable birds. Tears, and borderline burnout, often come with the job. But it pays off: In 2016, 85 percent of chicks hatched at SANCCOB returned to the ocean, and research shows the hand-raised penguins fare similarly to those raised in nature.

I HAD PLANNED ONE OF MY VISITS to Table Bay to coincide with a "release day," the occasion when birds deemed ready for life in the wild are driven to Boulders Beach or Stony Point and set free before the waves. By 9 a.m., Klusener was busy helping rehabilitation manager Nicky Stander to prepare for the penguins' exit. Sporting a neoprene sleeve against their sharp beaks ("those things are like gold," Stander said of the garments), she picked up each penguin "football-style"—one hand at the back of the head and the other under the stomach—and, wedging the bird between her thighs, opened its beak using her fingers and inserted a five-inch sardine head-first. "This is extremely stressful to them," she said. Still, it's important that the inexperienced hunters are well-fortified before heading into the unknown. After being hosed down to remove any excess fish oil or scales, the birds stood shaking themselves dry, a shimmering flash mob in the sun.

Stander later enlisted Kirsty MacSymon, a bird rehabilitator wearing clear plastic goggles and neoprene sleeves, to prep the releasees for final departure. As MacSymon called out an ID number from one of the hospital tags affixed to the penguins' flippers, Stander retrieved the corresponding file card and ran through a stethoscope read and head-to-beak measurement. Hospital tags were clipped, implanted microchips (for ongoing research and monitoring) read, and green-lit birds deposited in an adjacent pen.

"Uh oh, they've got wind of what's going on," Stander said as the last six birds huddled in a far corner. "You're going home, guys!" reassured intern Jo Loman. In the end, 13 of the expected 14 birds passed muster, one of them having tested positive for an infected sore on the bottom of its foot. The condition, called bumblefoot, is the result of too much time spent on concrete. (That bird would be treated and released later.) The penguins were packed, two to a ventilated cardboard box, and loaded into the back of a station wagon.

Our little convoy drove east from SANCCOB, past some of post-apartheid South Africa's ever-growing shantytowns, and then climbed up over a mountain range, the Indian Ocean sparkling below. Signs warned of rockslides and advised against feeding the baboons, and the sweet smell of fynbos, the indigenous vegetation of the Cape, filled the car. We descended into Betty's Bay, a flat little hamlet of houses in sherbet peach and lemon, and then pulled up before a Flintstones-worthy scene of giant rocks and sun-bleached turrets. Several hundred penguins stood or lounged on the windswept rocks, as tourists with cameras and backpacks observed from a raised walkway. "Look at the size of him!" exclaimed one over a particularly chubby fellow right on the verge of a molt. Fat brown ropes of kelp, like rubber hoses, littered the sand, and furry, guinea pig–like dassie rats poked around in the brush.

The driver backed the station wagon down to the shore and gingerly removed the boxes, lining them up some eight feet from water's edge. Loman and a few Stony Point rangers assembled behind the boxes, then opened the lids and slowly turned them on their sides. "Go! Go! Go!" Loman urged. The penguins stuck warily close. Finally, like timid toddlers at the beach, they began gradually to venture in. One waddled down and fell face-first into a breaking wave, then flapped confidently out to open water. Another began to walk in but turned abruptly and hurried back out, flippers half-extended. Then he reversed himself, plunked down, and was carried out by the tide. Eventually, the whole gang swam out beyond the cove and was met, incredibly, by a group of adult birds that had materialized out of nowhere like a pre-arranged welcoming party. A half hour later, Loman located two blues that had integrated with some of the grown-ups on the rocks. "They're looking around like, 'Where am I?'" she said. "They're so confused. 'There's no fence! Where's the fence?'"

In the half-century of its existence, SANCCOB has treated more than 95,000 seabirds, including some 1,500 African Penguins every year. Though the birds' future continues to hang precariously in the balance, a few recent developments offer some cause for hope. Last December the Namibian government announced a three-year closure of its sardine fishery in order to allow the stock to recover. In January Sherley and his colleagues published a paper in *Proceedings of the Royal Society B* finding that small-scale fishing closures around breeding colonies of African Penguins resulted in modest but important population benefits for the birds. The South African government has agreed to continue such closures on an experimental basis and is considering whether to implement permanent ones—along with the introduction of a spatial component to its overall fisheries-management system—at a meeting later this year. Armed with research to back such moves, the leaders of both countries could find the political will to establish permanent protected zones and even build new colonies at sites where key fisheries remain intact—an approach that has worked with Australia's Little Penguins. In the meantime, the dedicated staff and volunteers of SANCCOB will continue in their dogged stewardship, bird by precious bird. Ⓐ

Jocelyn C. Zuckerman *last wrote "Oil Barrens" in the Fall 2016 issue of* Audubon.

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