SAVING KENYA'S VITAL WETLANDS:

Revolutionizing Agriculture for Diverse Wetlands and Resilient Communities

International Crane Foundation

How do you secure Kenya's beloved Grey Crowned Cranes, sitatunga, and other threatened wildlife that depend on healthy wetlands and agricultural landscapes for their survival?

Photo by Kabelo Adan

By improving the livelihoods and resiliency of the people who share their working lands with wildlife, through innovative agricultural solutions such as climate-friendly crops, vertical gardens, enriched buffer zones, and much more.

Photo by Rich Bellruss

Kenya's Vital Wetlands

A Crucial Resource . . .

Kenya's wetlands are a critical part of the nation's water security, economic prosperity, and biological heritage.

The wetlands of Kenya cover only 3-4 percent of the nation's total landmass, roughly 14,000 square kilometers. Even so, they provide vital ecological services to the nation including drinking water, groundwater recharge, filtration of pollutants and sediments, flood control, fuel for cooking, building materials, fish, vegetables, herbal medicine, and grazing lands, while also supporting a rich biodiversity and sequestering carbon to fight climate change.

Managed sustainably, Kenya's wetlands can bolster climate resilience, support thriving wildlife populations, and promote economic productivity.

. . . In Jeopardy

Despite their economic and ecological importance, Kenya's wetlands are degrading under the combined pressures of a surging human population, over-utilization of wetland resources, and poor agricultural practices in the surrounding catchment.

Kenya is one of the most populous countries in Africa, with an estimated 56 million people living there in 2024 and a projected population of nearly 100 million by 2050. In their efforts to grow enough food for themselves and their families, farmers in the catchment increasingly encroach on wetlands, and rely on intensive agricultural practices that increase soil erosion, reduce soil fertility, and increase water runoff—leading to lower yields and productivity and increased vulnerability to droughts on their farms.

Cranes at Risk

With its halo of golden-brown feathers surrounding a striking head of white, black, and red, the singular and beautiful Grey Crowned Crane has long been viewed as a "symbol of wealth, good fortune, and longevity." The ecological and cultural importance of the species is deeply embodied in Kenya, where Grey Crowned Cranes adorn the emblems of the Nairobi County Government, the University of Nairobi, and Kisii University. These magnificent birds—and the wetlands on which they depend—are also significant at the local level. In the Kalenjin community, for instance, the Grey Crowned Crane is revered as the custodian of newborns and serves as the totem of the Moi clan.

Unfortunately, Kenya's love for cranes has not resulted in safer conditions for Grey Crowned Cranes and the wetlands they need. Formerly abundant in Kenya, Grey Crowned Cranes are now classified as globally Endangered on the IUCN Red List of Threatened Species, and the Kenya population has decreased to only 12,000 birds, far fewer than in the past.

In their struggle to survive, Grey Crowned Cranes call on us to commit to healthy wetlands—for cranes, people, and all species.

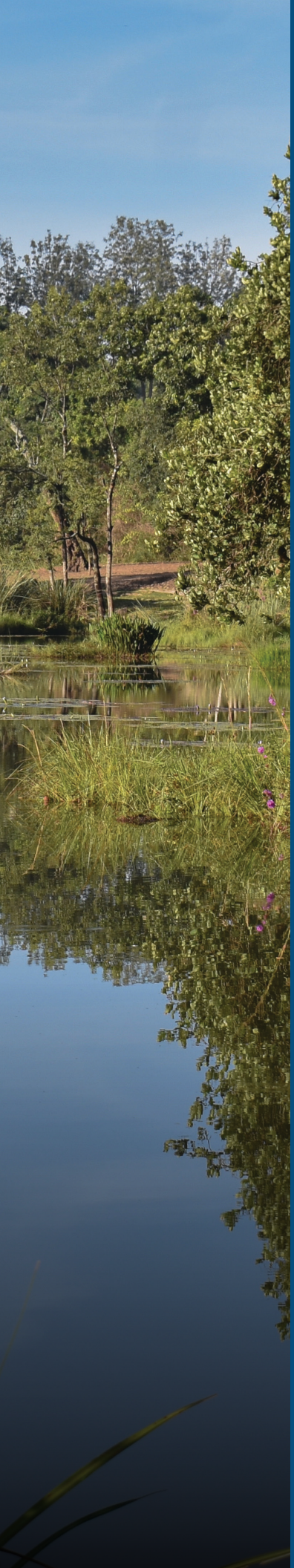
Cranes depend on healthy wetlands to feed, roost, and raise their chicks. The health of crane populations is an indicator of the overall health of the wetlands. Healthy wetlands—those with minimal agricultural encroachment and well-managed catchments—provide safe drinking water and abundant resources for communities. Healthy wetlands also have minimal disturbance for cranes and other wildlife, giving them room to breed and increase their numbers.

The most immediate threat to wetlands comes from agricultural encroachment into the wetlands and degradation of their catchments. Facing greater competition for space and shrinking harvests, Kenya's farmers have been forced to convert wetlands to agriculture or encroach on the wetlands to meet their livelihoods. When wetlands are drained and converted to agriculture, the loss of breeding habitat displaces cranes and other wildlife into surrounding lands.

Moreover, as communities increase their dependence on wetland resources, cranes come into more frequent contact with people, livestock, and dogs, which causes them to become increasingly stressed. As the cranes spend more time watching out for potential threats, they spend less time nesting and caring for chicks, which reduces their reproductive success. The theft of crane eggs for food and capture of cranes for illegal wildlife trade have also slowed population growth.

When cranes abandon degraded wetlands to feed on agricultural lands, they come into conflict with farmers who seek to protect their crops. Cranes on farms may be beaten or killed by angry farmers, inadvertently poisoned by pesticides, or killed through collisions with fences and powerlines.

Photo by Rich Beilfuss



Restoring Kenya's Wetlands

An Integrated Plan

To secure wetlands for people and wildlife in Kenya, we must address both the prevalence of poor agricultural practices in the catchment and the root causes of those practices—namely the socioeconomic factors that have forced people to encroach on the ecosystem to preserve their own livelihoods.

That is why the International Crane Foundation—in collaboration with local governments, community groups, and other organizations throughout Kenya and around the world—commits to conservation strategies that focus on the agricultural productivity and well-being of the people who share their lands with cranes and wetlands.

We are implementing our Vision with a particular focus on promoting community-based conservation of cranes and key habitats and countering illegal trade and domestication. Kenya is one of the most important breeding strongholds for the species, and our signature work includes integrating sustainable livelihoods with wildlife-friendly, sustainable, climate-smart agriculture and spring source protection points, while also restoring the ecological integrity of wetlands, their buffer zones, and their catchments.

Recognizing that successful conservation efforts are the product of deep cooperation and two-way learning between communities and conservationists, we ground all our initiatives in sound scientific principles and insights gathered from people in daily contact with cranes.

The interface between agriculture and conservation is a critical element in the global conservation agenda. Acting as ambassadors for critical wetland ecosystems, cranes warn us of ongoing ecological crises and give us cause for celebration when conservation approaches are working well.

Together, the International Crane Foundation and Kenyan farmers are developing innovative conservation approaches that provide people with nutritious food, natural resources, and clean water—and give cranes the space and resources they need to thrive.

Innovative Agricultural Practices for

Small-Scale Farmers

Agriculture is at the heart of our wetland restoration efforts in Kenya.

Photo by International Crane Foundation

We work with large-scale farmers on policy engagement, sustainability incentives, and land-use negotiations to provide cranes with safe spaces for foraging, flocking, roosting, and breeding.

At the community level, we work with small-scale farmers on innovative approaches to a healthier, more sustainable "agriculture 2.0." Building on information gathered from farmers at meetings, one-on-one interviews, and community gatherings in and around the catchment area, we are working with local growers to implement agricultural practices that preserve the wetlands, protect cranes, and provide for people.

On farms throughout Kenya, the International Crane Foundation is helping growers maintain and improve soil fertility, reduce erosion, boost yields, and improve the quality and market value of their produce—all while reducing human impact on the wetlands.

Napier Grass Fodder

Faced with poverty and competition for space, small-scale farmers in the catchment have often been forced to harvest plant matter from the wetlands to feed their livestock. Such harvesting degrades the wetland and disturbs nesting cranes, affecting the incubation and rearing of chicks. On trips into the wetlands, people may also step on vulnerable crane eggs or even remove them from their nests to eat or sell on the illegal wildlife market. At the same time, soil erosion from poor agricultural practices has led to decreased fertility on farms and further degradation in the wetlands, as they are filled with sediment, chemical fertilizers, and pesticides from the surrounding catchment via runoff.

Planting Napier grass—a native, perennial species well-adapted to the catchment ecosystem—

addresses both problems at once by providing a ready source of cattle feed while also binding soil to prevent further erosion.

Following a successful rollout in Rwanda, we are expanding our Napier grass program to Kenya by showcasing the benefits of growing Napier grass for local farmers, providing seedlings and tools, and training residents on fodder production and management. As more households make the switch from harvesting the wetlands to growing their own feed, the wetlands are given a much-needed chance to recover, while farmers gain more nutrient-dense soil for their crops.

Vertical Food Gardens

With competition for space at an all-time high and soil fertility decreasing, farmers in the catchment are forced to choose between two options to grow enough food for their families—either expand onto the wetlands at the expense of crane populations or find a way to get higher yields from their existing acreage. Enter vertical farming, a powerful tool for growing more food on less land.

Vertical farming involves growing crops in stacked layers, and using artificial growing systems such as hydroponics, aquaponics, or other methods of soilless agriculture to multiply the amount of food that can be produced in each area. According to Dr. James Altland, a research horticulturalist with the Application Technology Research Unit in Wooster, Ohio, USA, "Vertical farming also uses much less land. For some crops, 10 to 20 times the yield can be obtained per acre in vertical farming compared to open-field crops."

In Kenya, we are helping catchment farmers build vertical gardens that make the most of limited space, removing the need to encroach on the wetland, boosting crop production, and providing families with nutritious food.

Mushroom Farming

The oyster mushroom has become an unexpected hero in the story of rural economic empowerment—intimately connected to the conservation of Endangered Grey Crowned Cranes and the wetlands they call home.

While traditional farming focuses on beans, Irish potatoes, and sorghum, these crops take months to harvest and can push farmers toward unsustainable practices that damage crane habitats. For $31 worth of mushroom spawn (the starter material), farmers can generate more than $125 in mushroom sales within the first

Photo by Zeneb Musiimire

three months—more than double what another crop may yield in much less time. In addition to providing a reliable source of income that does not require extensive land or put pressure on wetlands, mushrooms also provide another source of protein that has been adopted into local diets.

Through our mushroom-farming program—piloted in Uganda and now expanded into Kenya—we partner with farming groups to diversify agricultural opportunities throughout rural communities in Nandi County. We currently support 40 households engaging in mushroom farming in Nandi County, with plans to expand the program to support 420 households in seven counties by 2035.

Conservation Tillage

In hilly areas like the catchment, intensive agricultural practices can aggravate the tendency for soil to erode from the hillsides to lower-elevation areas, such as Kenya's wetlands. This results in decreased soil fertility for farmers and increased runoff in the wetlands, harming both people and animals.

Raised beds—above-ground containers in which vegetables can be grown—can help farmers on sloped land reduce soil erosion by moving some of their vegetable production out of the ground, without sacrificing overall yields. The resulting improvements in soil quality also help trap more water in agricultural areas by reducing drainage, further improving yields in planted areas.

Photo by International Crane Foundation

Photo by Sara Gavney Moore

Photo by International Crane Foundation

In Kenya, we are helping farmers build and maintain raised beds to improve their own productivity and reduce the amount of runoff in the wetlands.

Chemical-Free Compost

Although they have come to rely on industrial fertilizers and pesticides to boost crop yields under difficult conditions, farmers in the catchment are wary of the effects these agrochemicals may be having on the quality of food produced in the area.

Anecdotal evidence suggests that the taste and nutritional value of local produce, dairy, and other products have declined as the use of agrochemicals has risen, with some long-time residents reporting less enjoyment from their food, poorer health overall, and a drop in the quality of milk and tea produced in the catchment over the last several years. Use of agrochemicals has boosted production at the expense of flavor and nutritional value.

Organic composting, by contrast, allows farmers to access the benefits of industrial fertilizers without the potential loss in food quality.

In place of these agrochemicals, we are working with local farmers to promote the use of high-quality livestock compost as a safe, organic fertilizer—which has the added benefit of improving the health of vital microorganism populations in the soil. We are encouraging farmers to save green cuttings that would normally be discarded as trash and instead convert this valuable plant matter into soil-protecting mulch. By covering their soil with mulch produced on their own land, farmers increase water retention in their soil and reduce the growth of harmful weeds among their crops.

Photo by International Crane Foundation

Enriched Buffer Zones

Kenya's "buffer zones"—formerly forested areas immediately around the wetlands which once offered a wide array of valuable ecosystem services—have become degraded and will require time and human effort to recover. Recognizing the importance of these areas, Kenyan lawmakers have implemented regulations prohibiting intensive agricultural practices within the buffer zones.

Unfortunately, facing the pressure to expand and viewing the buffer zones as wasted potential farmland, local small-scale farmers routinely ignore these regulations. By continuing to use harmful agricultural practices in these areas, they continue the degradation process and delay the recovery of the buffer zones, negating their ability to protect the wetlands.

Working alongside local farmers and community organizations, we have developed an approach to buffer-zone planting that allows farmers to legally grow valuable products on the land while reducing impact on the nearby wetlands.

In these "enriched buffer zones," farmers plant indigenous or well-adapted fruit trees rather than traditional commercial crops. We also supply participating farmers with bee hives that provide pollination services.

Making these changes allows farmers to harvest lucrative products like Hass avocados and honey for resale, without harming the health of the land. Moreover, by planting crops that place a minimal burden on the buffer zone ecosystem, farmers gain access to a wide variety of ecological services that would otherwise be disrupted by intensive agricultural practices, such as pollination by bees, microclimates that can continue producing even during periods of drought, and increased soil fertility and moisture retention.

As a result, farms participating in the enriched buffer zone program are both more profitable and more resilient to climate change.

Greater Profitability for Farmers

These innovations in small-scale agriculture also offer farmers a stronger position in the market. By weaning off agrochemicals and other intensive agricultural practices, farmers can sell delicious, nutritious, organic food—in other words, a higher value product.

The International Crane Foundation is helping farmers in the catchment generate more income by creating healthy, organic products that are better for consumers and more profitable for producers.

Reducing Wetland Competition and Conflict

Communities need water and land to thrive—as do Endangered crane populations. When people and cranes depend on the same wetland areas for water and food, they can come into conflict, putting crane recovery at risk.

We work with farmers to reduce reliance on wetlands for clean water and shield crops from wildlife-inflicted damage, decreasing encroachment and protecting vulnerable cranes.

Protected Springs

In rural Kenya, up to 60 percent of communities lack access to piped, clean water. These communities depend on the wetlands and springs for water—and are making more frequent visits to the wetlands as their water needs grow. The additional activity causes established watering areas to become dirty more quickly than usual, creating a vicious cycle as people push farther into the wetlands in search of clean water.

To help reduce the number of water-gathering trips in the catchment, we are helping these communities install and maintain protected springs, which don't require pipes or other centralized infrastructure to provide clean water. With a reliable source of water close to home, farmers and their families feel less pressure to take water from the wetlands, leading to less encroachment and a healthier wetland ecosystem. For many communities, such protected springs offer the first reliable sources of clean water in living memory.

Photo by International Crane Foundation

Human-Wildlife Conflict

Crane-driven crop damage is a serious problem for catchment farmers. Crops eaten by displaced cranes cause significant economic losses for farms close to crane habitat. Farmers, needing to protect their livelihoods, can feel pressure to drive cranes off their land. Meanwhile, large-scale farmers are incentivized to use unsustainable growing methods on their lands, putting pressure on cranes.

The rice fields of Ahero in Kisumu County, for instance, serve as foraging and flocking sites for cranes—and are a center of conflict between cranes and local farmers, who must regularly contend with crop damage caused by wildlife.

We are committed to finding genuine, mutually beneficial solutions to this problem. Learning directly from affected communities we determine when, where, and how cranes and granivore bird species such as weavers, larks, and pigeons are most likely to damage crops. Through policy engagement, sustainability incentives, and land-use negotiation, and direct work with affected farmers, we reduce harm to crane populations while also protecting crop yields.

Championing Cranes and Wetlands Across Kenya

To increase national support for cranes and wetlands for the well-being of all Kenyans, we are telling the important stories of wetland restoration and crane conservation through media and communications channels, in-person events, and educational initiatives.

Communications

Through advertisements and appearances on TV and radio, we are spreading the word about the importance of the wetlands to Kenya's future. In addition, by partnering with places of worship and other gathering spaces, our staff speak directly with communities about the close relationship between ecological conservation and the issues that are most important to them.

Events

By sponsoring cultural events and celebrating environmental days such as World Wetlands Day (2 February) and World Environment Day (5 June) every year, we create inviting spaces where people learn important messages about conservation and crane population health.

Through our popular Crane Festivals, brass band concerts, and road shows featuring arts demonstrations, plays, and dance recitals, we attract many different audiences and bring key stakeholders together to learn about the importance of the wetlands and the cranes that depend on them.

Sport for Conservation

Tapping into the growing "sport for conservation" movement, we regularly facilitate football matches, marathons, and other sporting events as opportunities to raise awareness about the importance of conservation in general and the wellbeing of cranes in particular. These events have been particularly helpful in appealing to youth audiences.

Education by Crane Custodians

Our nationwide team of volunteer Crane Custodians regularly hosts talks and gatherings to educate communities about the importance of cranes and their wetland and catchment habitats.

Photo by International Crane Foundation

Research, Monitoring, and Adaptive Management

To ensure our interventions are informed by sound science, we work closely with teams of dedicated scientists and volunteers to track and monitor management practices, agricultural innovations, and the health of crane populations in and around the wetlands and their surrounding catchments. By gathering and analyzing this data, we gain a clear picture of the situation in the catchment, allowing us to design and refine conservation strategies that address the most critical issues for people and cranes.

Local Knowledge

By monitoring breeding pairs of cranes through the Survey 123 mobile phone app, Crane Custodians provide our scientists with vital information about reproductive rates in particular areas, which in turn allows scientists to update programming as needed to meet restoration goals.

Scientific Research and Monitoring

Our scientists employ long-term research techniques to track the growth and movement of crane populations over time. Together with key partners throughout Kenya, we support a countrywide Crane Census and ringing initiative, which has already provided critical insight into hatching rates and locations, as well as population dispersal patterns. Research teams hope to refine these insights even further by upgrading to electronic tracking systems soon.

Our team in Kenya learns, adapts, and improves upon its work through adaptive management frameworks, employing tools like Miradi software and the Conservation Standards to plan, monitor, and evaluate projects. This iterative approach allows the team to address gaps and refine strategies based on real-time ecological and social data.

Our adaptive process is informed by clear impact metrics and ongoing community feedback. Our team tracks ecological indicators such as increases in breeding pairs and fledging rates of Grey Crowned Cranes at key sites. Community-related metrics include participation in conservation activities, adoption of sustainable livelihoods, and involvement in awareness events like the Crane Festival. Environmental improvements such as wetland restoration, wetland health, and spring source protection are also monitored. These metrics collectively provide evidence of success and guide continuous process improvements.

Sustainable Farms and Wetlands:
A Vision for the Future

Goals for Kenya

The International Crane Foundation envisions expanding these initiatives over the next decade to reach 450,000 small-scale and commercial farmers who share their lands with the Grey Crowned Crane in Kenya.

We have been actively training farmers in climate-smart agriculture through our Farmer Field School (FFS)—a hands-on, participatory learning platform that empowers small-scale farmers with climate-smart and agroecological farming techniques. In FFS, farmers learn through practical experience and experimentation in their fields, fostering skills such as soil and water conservation, organic fertilization, eco-friendly pest control, and innovative garden setups like vertical and pyramid gardens. This approach helps farmers maximize space, boost crop production, enhance family nutrition, and maintain year-round food security, all while creating an environment that supports local biodiversity, including crane populations.

In Kenya, Farmer Field School focuses on training farmers not only in modern, sustainable agricultural practices, but also in conservation of wetlands critical for crane breeding. We facilitate community field days and support trainers who help propagate these techniques to wider community groups. Topics covered include composting, use of bio-pesticides and bio-fertilizers, kitchen gardens, and spatial optimization strategies to increase yields while protecting wetlands, balancing food production with environmental sustainability.

Besides improving agricultural productivity and household nutrition, Farmer Field School strengthens community resilience and environmental stewardship. Farmers gain practical knowledge that supports sustainable livelihoods without encroaching on fragile wetlands, thus reducing conflicts with the Endangered Grey Crowned Crane and other wildlife. The program promotes landscape-level conservation by integrating crane habitat protection with climate-smart agriculture, contributing to both community well-being and biodiversity conservation in rural Kenya.

In 2023, 661 farmers participated in training sessions across 15 localities, starting from an initial 70 farmers trained in climate-smart practices. In 2024 and 2025, we've reached 380 farmers through the Farmer Field School approach. As these farmers now share their skills and experience with other farmers, the impact will multiply. Based on our results in Rwanda—where similar efforts scaled from 449 farmers to more than 20,000—we are confident we will reach our 10-year goal for Kenya too.

Photo by Neema Obiero

Alignment with

National and International Initiatives

Our impact aligns with the economic and climate resiliency goals of the Government of the Republic of Kenya, as expressed in the government's Kenya Vision 2030 and National Climate Change and Response Strategy planning documents, respectively.

Photo by Rich Beilfuss

Our integrated plan for wetland conservation in Kenya also aligns with international goals to address the global poverty, climate, biodiversity, and freshwater crises.

For instance, the plan advances many of the objectives outlined in the United Nations' 17 Sustainable Development Goals including:

- **No Poverty, Decent Work and Economic Growth**

  By helping small-scale farmers increase crop yields and generate income by selling lucrative products, the integrated plan for the wetlands is reducing poverty in the catchment—thereby addressing one of the root causes of wetland encroachment and degradation.

- **Climate Action, Life Below Water, Life on Land**

  Working alongside local communities to develop sustainable agricultural and husbandry practices that protect the wetlands—and benefit the cranes and people that depend on them—the integrated plan for the wetlands is empowering the people of the catchment to increase climate change resilience and safeguard biodiversity.

- **Good Health and Wellbeing, Clean Water and Sanitation**

  By encouraging agricultural practices that reduce the need for industrial agrochemicals and prevent runoff and soil erosion into the wetlands, and by supplying spring source protection points, the integrated plan is empowering Kenyan farmers to keep local water sources clean and provide nutritious, healthy food for their communities.

The plan also advances key targets outlined in the Kunming-Montreal Global Biodiversity Framework.

Our Partners

To achieve these goals, we will continue our work with the Kipsaina Cranes and Wetlands Conservation Group (our long-term partner of more than 30 years); the Kenyan government, including Kenya Wildlife Services and other local authorities; county governments of Trans Zoia, Uasin Gishu, Nandi, Kisumu, and Homabay; the Wildlife Research and Training Institute; the National Environment Management Authority; CANCO (our current housing partner); Crane Conservation Volunteers; the National Museums of Kenya; Thrive for Good; and other research and agricultural organizations and universities to ensure we all follow climate-smart, regenerative agricultural practices.

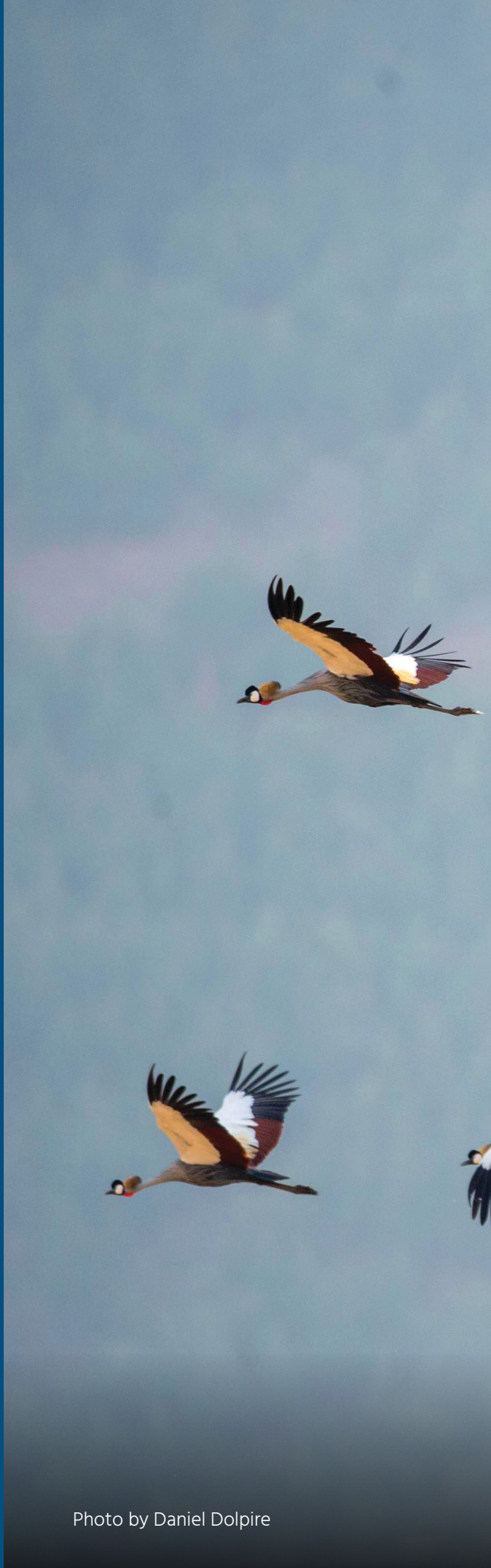


Photo by Daniel Dolpire

The Wetlands Restored: A Vision for the Future

Kenya's cranes are calling us toward a future in which people, cranes, and diverse wildlife thrive in healthy wetlands.

In this future, flocks of Grey Crowned Cranes glide overhead, dance in clear shallow waters, and sing their beautiful songs each morning. Breeding pairs nest and care for their young without fear of human encroachment. As their numbers soar, Kenyans and visitors alike marvel at their striking beauty.

Meanwhile, small-scale farmers and the communities they feed reap the benefits of innovative agricultural practices that boost soil fertility while protecting the wetlands. These pioneers grow a variety of fruits, vegetables, and grains in the ground, in raised beds, in vertical farming structures, and in enriched buffer zones—profiting from the sale of highly marketable specialty products while providing their families and neighbors with nutritious, delicious food.

This beautiful future is very possible. To realize it, we need only hear the raised voices of our crane friends—and respond in kind.