
WORLD
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For People, For Nature, Forever
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PEOPLE. NATURE. TOGETHER.

World Wildlife

In July 2020, we shared a collection of stories that showcased WWF's ongoing commitment to inclusive conservation.

On the following pages, you will find stories from the past year that highlight WWF's collaborative approach to conservation, which is grounded in the benefits nature provides to people and the role of communities as stewards of their own land and water.

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AN EYE ON THE FUTURE

At the start of WWF's 60th anniversary year, reflections from our president and CEO on the future of conservation.

By Carter Roberts

THIRTY YEARS AGO, my first job in conservation was marking the boundaries of a modest wetland system in the southern Berkshires. I was deploying traditional tools of conservation: mapping species, negotiating land deals, and fundraising from communities and governments to make it all work. A simple, durable formula that worked for small-scale conservation.

Whether bringing in crops with farmers, sitting in barns listening to landowners, or sorting land-use conflicts, the work rested on working with people to keep intact a place that defined their lives and their community. Relationships mattered more than anything, and I spent untold hours just listening.

When I joined WWF 17 years ago, it was clear I had entered a whole new world of conservation—profoundly complex and global, with diverse local leaders from 100 countries striving to accomplish conservation at a different scale, from the entirety of the Northern Great Plains, to the length of the Mekong River, to the sweep of coral reefs in the southern Pacific. It required deploying a far more complex array of tools to keep vast ecosystems intact, and it included addressing climate change, the design of infrastructure, the production of food, the financing of nations, and more.

The scope was mind-boggling. Early in my tenure, I helped develop one phase of the largest conservation project in the world, the Amazon

Region Protected Areas project. We worked in collaboration with many others to build and finance a network of parks in the Amazon more than one and a half times the size of California. During the past 20 years, WWF has also systematically built programs to certify sustainability efforts around the commodities—such as shrimp, palm oil, and timber—most related to habitat destruction. And we've worked with the world's most influential companies to set and achieve science-based targets for emissions reductions, water efficiency, and removing deforestation from their supply chains.

Our ability to monitor the changes affecting our planet has grown exponentially, and now shows us with exquisite clarity that while we've made progress on some fronts, we need to evolve our work and up our game to stem the loss of nature and the acceleration of climate change.

Reflecting on what I've learned over the past 30 years, I keep returning to five key lessons that I believe provide essential guidance as we look at what we need to deliver in the years to come.

1. LOOK AT THE WHOLE

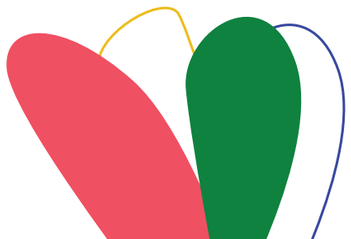
The first time I visited the Amazon with Tom Lovejoy, my friend and a noted scientist, he gave me a simple but profound piece of advice: Look at the whole. By which he meant the whole ecosystem—the entire Amazonian forest and the entire Amazonian watershed. Because only by understanding the entirety of a landscape can you act to keep the whole functional and intact.

In the Amazon, that means understanding the hydrological cycle that provides rainwater to one of the largest agricultural economies in the world. It means understanding the needs of hundreds of Indigenous groups, the economics of soy and beef production, and the different options for infrastructure schemes that seek to connect this region with the world.

A fancy term for looking at the whole is "system-level thinking"—connecting the dots between disciplines, whether that's economics, ecology, political science, business, or anthropology. Only by considering every aspect of a place, or every aspect of a global pandemic, or every aspect of climate change, can one best discern the interventions essential to keeping the whole intact.

Future conservation leaders will be gifted at system-level thinking—not just experts in one area, but experts at connecting the dots *between* disciplines. That's where the good stuff lies, and where the most effective solutions will be found.

While we've made progress on some fronts, we need to evolve our work and up our game to stem the loss of nature and the acceleration of climate change.



2. MOVE FROM FOOTPRINT TO INFLUENCE

We've always pressed individuals and institutions to lighten their footprint—to reduce the impact on the planet of their own choices and behaviors. We've made progress along those fronts. But it's clear that if we are going to reach the speed and scale of the solutions we need, we must go beyond our own footprints and use the greatest sources of influence we have to move our partners, our friends, our consumers, and voters in the direction that the planet needs them to go. In short, we need to move the world. And I've learned that influence rests on each of us identifying our own particular "superpower" or ability to look beyond our own footprint and move whole sectors or nations or populations toward sustainability in all that they do.

As a global retailer, Walmart's superpower lies in engaging its suppliers in efforts to improve the sustainability of product supply chains. For example, Walmart's Project Gigaton initiative, developed in collaboration with WWF, is designed to challenge suppliers to take action to reduce greenhouse gas emissions, drive forest conservation efforts, and more. And The Coca-Cola Company's superpower is seen in their influence on water use by their global network of bottlers, and in their deployment of world-class marketing and communications to inspire partners and communities to see and use water differently.

Conservationists of the future will more consistently press individuals and institutions to look beyond themselves, to take ownership of solving the larger problems beyond their own four walls, and to have the courage to use their influence to move the rest of the world in the right direction.

3. GOVERNMENT STILL MATTERS—A LOT

The environmental movement exploded in the 1960s with a bang of sweeping regulations on water, air, species, and pollution. But over the past three decades, that movement has increasingly focused on markets, corporate initiatives, technological innovation, and philanthropy—essentially the whole world of "non-state actors"—to drive cultural and market-based change.

But it is becoming abundantly clear that community- and market-based solutions can thrive and endure only in the context of well-informed government regulations and programs—and that those programs must respect the rights and territories of people and incentivize market-based solutions to reach the scale we need.

Increasingly we are seeing civil society, funders, and corporations stand up and call on governments to enact and enforce regulations that create clear, consistent rules of the road. Those rules must insist on sustainability—whether they're regulations banning the destruction of nature, establishing a price on carbon, guaranteeing the right of communities to clean water, or shutting down the illegal trade in wildlife that continues to give rise to global pandemics like COVID-19.

I predict that, more and more, we will build integrated strategies that combine our corporate and community partnerships with more pointed government engagement—to scale up our work, to establish solutions, and to protect and support initiatives so they can endure over the very long term.

4. PUT PEOPLE AT THE HEART OF EVERYTHING

Scientists and nations have set a goal of expanding protected areas to reach 30% of the planet by 2030. Every initial study of what that requires points to the vital importance of the sovereign lands and reserves of Indigenous peoples, as well as the need to ensure that the world supports them in safeguarding those lands.

Knowing this, it is clear that we must acquire greater depth and discipline in community-based conservation. Indigenous and local people must have a pivotal role in the design, execution, and evaluation of conservation projects. This imperative builds on existing tools—like community consultations, efforts to foster gender equity, education and health initiatives, and consent and grievance mechanisms—to make sure that we truly, deeply listen to the communities where we work and follow their lead in understanding what they need.

The future of conservation doesn't see the protection of nature and the pursuit of justice as mutually exclusive. They have always been intertwined, and future conservation initiatives will provide in equal measure for the protection of vulnerable people and the protection of vulnerable species.

This vision of an inclusive, people-centered form of conservation requires us to be clear-minded about what the world really needs, and to move forward on all fronts.

5. INNOVATE CONSTANTLY

Ongoing success demands that we remain nimble and aggressive in applying innovation to our work. We've already seen the difference that infrared technologies and drones can make in reducing the illegal trade in species. We know that cellular handheld devices and apps can help connect communities to markets. We've seen how the thoughtful analysis of big data can make connections and share information and solutions across countries, and how blockchain and long-term contracts can translate corporate commitments into real shifts in bringing genuinely sustainable products to market.

Fostering a culture of innovation and experimentation also requires embracing the importance of failure. We must fail fast and often if we are to realize real change at a level that matters.

THIRTY YEARS LATER, I could not be more motivated and excited about what the next 10 years will bring. I cannot think of a field more significant to the future of our world. This vision of an inclusive, people-centered form of conservation requires us to be clear-minded about what the world really needs, and to move forward on all five of these fronts.

But more than anything it requires us to be constantly learning so that we can build the culture, skill sets, and partnerships needed to navigate the complexity not only of nature, but also of economies, governments, and technology, in order to safeguard the glittering array of people and species with whom we share this planet.

What could be more important than that? Ⓦ

Chela Umire, Zenaida Teteye, and Israel Fajardo, members of La Chorrera Indigenous community, conduct ecosystem service assessments of the forest surrounding the Predio Putumayo Indigenous Reserve in the Colombian Amazon.

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NATURAL ALLIES

Indigenous peoples and local communities play a crucial role in protecting biodiversity and keeping forests intact. Only by acknowledging and respecting their traditional roles, territories, and rights can we thwart biodiversity loss and address the climate crisis.

Story by Teresa Duran

AROUND THE WORLD, Indigenous peoples and local communities are the custodians of huge swaths of intact habitats—forests and fens, marshes and mangroves—that harbor an estimated 80% of the world's biodiversity and store about a quarter of above-ground carbon.

But like natural areas everywhere, these lands and waters are under threat, as is the traditional knowledge that has guided generations in maintaining their integrity. Roads and logging trucks, natural gas pipelines and mines gnaw at the fringes of ancestral territories and carve scars through ancient woods and grasslands, decimating native plants and animals and endangering the cultures of native peoples. At the same time, the communities themselves put pressure on natural resources as they attempt to meet basic needs and better their lives, particularly in places where other livelihoods are scarce or nonexistent. Where opportunities lack, young people, in particular, often leave.

And more often than not, the peoples' rights to determine the future of their own territories are in jeopardy.

But in the gap between threat and conservation lies opportunity. "Indigenous peoples and local communities," says Judy Oglethorpe, senior director of innovative conservation approaches at WWF-US, "hold a lot of future conservation in their hands."

If WWF supports communities as they defend their rights and interests, pursue sustainable livelihoods and

development, and continue to effectively steward their own territories, she says, then they would be strengthened in playing their fundamental role in safeguarding the world's natural heritage.

COMMUNITY OWNERSHIP

The importance of Indigenous and community conservation is nowhere more evident than in efforts to stem deforestation. Indigenous peoples alone are custodians of a quarter of the Earth's land surface, including well over a third of remaining intact forests. That also makes them crucial champions for climate solutions, says WWF-US vice president and deputy lead for forests Josefina Braña Varela.

"Without directly engaging the people who live in the forests, those who are making the decisions that keep forests standing, we're never going to be effective in conservation efforts," says Braña Varela.

The ability of those communities to keep their forests standing often hinges on the concept of community ownership. In some places, Indigenous peoples and local communities are able to secure tenure—legal recognition of their rights to ancestral lands. But in many other places, they are not. Fewer than half of all countries have legal frameworks in place to enable Indigenous or community ownership, and even where frameworks exist, communities often struggle to navigate their sometimes extreme complexities. Helping to create those frameworks and supporting communities to make use of them by documenting their territories and claiming their rights are cornerstones of WWF's work.

"The concept of community ownership can be understood on a continuum," explains Althea Skinner, WWF-US lead specialist for socially inclusive conservation, "from formal to customary land tenure. But community ownership also has a broader meaning. In light of the stake that communities have in their historical territories, ownership is about ensuring that they are in the lead—and have the resources and capacities they need—to sustainably manage the ecosystems on which they depend."

Regardless of how formalized their tenure is, "the goal is to move communities along the spectrum from access and use to control and decision-making," she says. "The more decision-making power communities have over land and resources, the better they are able to steward them."

A CONTINUUM OF SUPPORT

Supporting Indigenous and local communities as they move along that ownership continuum means recognizing that conservation and development—helping

SOUTH AMERICA

THE PEOPLE Bora, Muinane, Ocaina, and Uitoto Indigenous peoples
THE PLACE Predio Putumayo Indigenous Reserve, Colombia
WWF'S SUPPORT Strengthening Indigenous decision-making and governance

Roughly 3,000 people live in and around La Chorrera, a town in Colombia's Predio Putumayo Indigenous Reserve. When the leaders of the territory gather here, in the traditional long-house meeting place known as a *maloca*, some must travel three days by boat. In this remote community, the Indigenous organization Azicatch and WWF are working together to catalog the territory's forest-based resources and create an environmental management plan to safeguard them for the future.

Hunting and fishing provide sustenance here, with families also tending one or two traditional *chagras*—small agricultural plots within the forest. "The fact that they live in their territory, and use it in the traditional ways, is what has kept these places healthy," says WWF-Colombia's Pia Escobar Gutiérrez, who manages WWF's relationships with Indigenous organizations in the Amazon and leads the WWF team that works with Azicatch in La Chorrera. The over 14 million-acre territory is more than 90% intact.

But Escobar Gutiérrez says threats to the forest are "just around the corner," including large oil and mining projects and young people losing their culture's traditional knowledge.

To survey the forest, Azicatch assembled a technical team made up of representatives from the Bora, Muinane, Ocaina, and Uitoto peoples. The team included people trained in map reading and the use of GPS. Particular attention was paid to the inclusion of elders and women.

The team cataloged and analyzed key habitats, plants and animals, cultural sites, and "spaces of use," says José Jesus Zafiama Piñeras, a biologist representing the Uitoto people. "A space of use is a place where we go to collect or gather what we need. It could be a chagra, or a settlement, or the river itself."

Chela Umire, who represents the Muinane people, says it's important to "get to know the whole area of the Muinane territory, to be able to preserve it and be able to say, 'We are here. This is what we have. We haven't destroyed it, and we have looked after it.'"

Preserving traditional knowledge is at the heart of the effort. "If there was no forest, we would lose all that knowledge," says Zafiama Piñeras. "It would disappear from the minds of our children. What will we tell them about if we don't have these forests?"

"We are here. This is what we have. We haven't destroyed it, and we have looked after it."

— Chela Umire, member of La Chorrera Indigenous Community

LEFT TO RIGHT: COMMUNITY GROUP IN LA CHORRERA, COLOMBIA © LUIS BARRETO/WWF-UK; STUDENTS FROM THE CAPACITY BUILDING PROGRAMME ON INDIGENOUS TERRITORIAL GOVERNANCE © DIEGO PÉREZ/WWF-COLOMBIA; WIZIPAN LITTLE ELK © REDCO

"Territory is the basis of our existence as Indigenous peoples. In this program, we have studied many topics that strengthen us to be able to defend it against threats and protect it from harm."

— Leydi Burbano Santa Cruz, a Quillasinga woman and participant in the Capacity Building Programme on Indigenous Territorial Governance

SOUTH AMERICA

THE PEOPLE Indigenous women, youth, and elders
THE PLACE Brazilian, Colombian, Ecuadoran, and Peruvian Amazon
WWF'S SUPPORT Building capacity for Indigenous territorial governance

Women and young people represent nearly 70% of Indigenous Amazonians, yet historically they have been excluded from leadership. The Capacity Building Programme on Indigenous Territorial Governance aims to change that.

Created by a group of Indigenous organizations, universities, and environmental organizations including WWF, the program provides practical leadership training to Indigenous community members in Brazil, Colombia, Ecuador, and Peru. Of the four students nominated by each community, one must be a woman; one, a young person; one, an elder; and one, a community authority. The combination is based on research and is designed to encourage balanced perspectives, says WWF-Colombia's Maria Fernanda Jaramillo, who works to disseminate knowledge across Indigenous networks. "It works perfectly," she says.

Over the course of a year, students gain practical tools to manage the problems facing their communities. The multidisciplinary curriculum includes Indigenous laws and legal frameworks, territorial and communal governance, financial administration, globalization, and climate change. During the pandemic, students have met virtually; earlier, they convened for in-person instruction every other month and, in the interim, returned home to apply and continue their training with an Indigenous mentor.

The first cohort of students from 20 communities graduated in 2018, and so far the program has worked with more than 30 Indigenous groups.

"We are doing something that has never been done. It shows what is possible when we create … initiatives supporting the environment, people, fiscal responsibility, and Native nation building."

— Wizipan Little Elk, CEO of the Rosebud Economic Development Corporation

NORTH AMERICA

THE PEOPLE Rosebud Sioux Tribe
THE PLACE Rosebud Reservation, South Dakota, United States
WWF'S SUPPORT Investing in Native American cultural and ecological restoration efforts

The Rosebud Economic Development Corporation, Rosebud Sioux Tribe, and Tribal Land Enterprise have partnered with WWF and the US Department of the Interior to establish North America's largest Native American owned and managed bison herd. At 28,000 acres, the Wolakota Buffalo Range will be populated with up to 1,500 animals from public conservation herds managed by the National Park Service and the US Fish and Wildlife Service. Bison, a keystone species of the Northern Great Plains, were nearly driven to extinction in the 1800s.

The aim of returning bison to these tribally owned lands is to revitalize the community's historic cultural relationship with the iconic species while at the same time regenerating the prairie, sequestering carbon, and creating economic opportunity, such as ecotourism.

AFRICA

THE PEOPLE Rural communities
THE PLACE Namibia
WWF'S SUPPORT Supporting community conservancies

"Forming a conservancy will bring about development in our area. I feel good because I believe I'm making a difference for the environment and improving my livelihood."

— Kachana Mukushi, a game guard for the Lake Lyambezi Emerging Conservancy in the Zambezi Region of Namibia

Following Namibia's independence in 1990, new legislation overturned colonial precedent by allowing people to form communal conservancies to manage and benefit from wildlife. In 1998, Namibia's first four conservancies were created; today there are 86, home to one in four rural Namibians and covering almost 20% of the country—the highest percentage of Indigenous and community management in the world.

The conservancies are credited with huge gains for wildlife. Elephants, for example, which numbered only around 7,500 in Namibia in 1995, saw their population grow to more than 24,000 by 2020. And nature-based tourism has fueled economic growth in areas where there are few other options.

WWF has been an instrumental supporter of the conservancies' efforts since the beginning. Today, WWF is part of a network of organizations working with the Namibian Ministry of Environment and Tourism to help communities successfully establish conservancies, manage wildlife, practice good governance, address issues such as human-wildlife conflict, and diversify income-generating options in the wake of COVID-19. WWF also helps women participate in natural resource management and share in its benefits; women now make up 35% of conservancy committee members.

"I mobilize women of our community to integrate them in activities related to climate change. ... All the women in my association have learned new agricultural production practices."

— Victorine Balako, president of *Sala Ozwa*, a women's association working with WWF to improve sustainable agricultural practices

AFRICA

THE PEOPLE Women, Indigenous peoples, and other marginalized groups in Central Africa
THE PLACE Itombwe, Lac Tumba, Salonga, and Virunga landscapes, Democratic Republic of the Congo (DRC)
WWF'S SUPPORT Supporting gender integration and social inclusion in Central Africa

In 2014, as part of a USAID-funded forest conservation project in Central Africa, WWF-DRC began work on a project to promote the rights of women, Indigenous peoples, and other marginalized groups in the communities neighboring WWF conservation program areas. The project, which concluded in 2018, serves as a model of gender and social inclusion across the WWF Network.

WWF-DRC worked to integrate gender at every level of decision-making—national, provincial, and local—and to enable marginalized groups to participate fully in decisions about natural resources.

For example, in Monkoto, a village located in a corridor framed by Salonga National Park, the project educated local women about biodiversity and gender issues and established a literacy center that assisted 475 women in learning to read and write. Villagers later established the Monkoto Women's Environmental Club, which played an active role in raising awareness about sustainable natural resource management in the area.

LEFT TO RIGHT: ANASTASIA SABATA AT CAMP CHOBE, NAMIBIA © GARETH BENTLEY/WWF-US; VICTORINE BALAKO © KARINE AIGNER/WWF-US; KALADHAR BHUGAIN © WWF-NEPAL. HARIYO BAN PROGRAM/SAMIR JUNG THAPA

ASIA

THE PEOPLE Nepali communities
THE PLACE Chitwan-Annapurna and Terai Arc landscapes, Nepal
WWF'S SUPPORT Supporting community-driven climate adaptation

Since 2011, WWF has worked in partnership with the government of Nepal, along with CARE and Nepali partner organizations, on USAID's Hariyo Ban Program, with the aim of aiding local communities and increasing their resilience in the face of climate change. The program, whose name derives from a proverb meaning "healthy green forests are the wealth of Nepal," works across landscapes that cover 40% of the country.

In a society still marked by gender discrimination and the legacy of its outlawed caste system, Hariyo Ban puts special focus on helping the most vulnerable members of a community, including women, marginalized people, and the poorest of the poor. At the heart of these efforts are community learning and action centers, which teach marginalized groups about how to participate meaningfully in, and benefit from, the project.

Hariyo Ban partners spend years building trust with a community—working to help them assess their vulnerability to climate change and develop solutions tailored to their needs, whether that's planting trees to stabilize slopes and improve water supplies, or diversifying crops and improving livelihoods through ecotourism enterprises and activities like beekeeping and growing greenhouse tomatoes. Key to the project are community-driven groups that manage and restore their forests and monitor for poaching and other illegal activities.

"The Hariyo Ban Program supported us in [creating] a coffee plantation that ... has helped 215 households earn more money, because coffee has a higher market value than other crops. The plantation has also helped reduce sedimentation in the lake caused by years of traditional farming."

— Kaladhar Bhugain, chairperson of the Machhapuchhre Uttam Coffee Cooperative

communities sustainably meet their basic needs and improve their living conditions—must go hand in hand. "They're two sides of the same coin," says Skinner.

Nathalie Simoneau, WWF-US lead specialist for gender and social inclusion, agrees. "I think we're really at a convergence point, where everybody's starting to realize that we cannot just work on conservation *or* development," she says. "It needs to be both."

WWF has a decades-long history of intentionally promoting such coupled interventions, says Braña Varela, by working with communities on projects that have both conservation and sustainable livelihood goals, such as ecotourism or non-timber forest products like honey. Increasingly, the organization has been "focused on the important role partners on the ground play in ensuring the long-term health and well-being of people *and* nature."

What's new is the role reversal.

Traditionally, WWF has been a driver of conservation projects. But the roles should be viewed the other way around, according to the ICCA Consortium, an international group of Indigenous and community organizations and federations. Their view is that "it is the custodians ... the concerned Indigenous peoples and local communities who should decide whether and how to include others as supporters in their own conservation endeavors."

Taking a back seat can be a challenge for an organization like WWF. But "there's a mind shift happening," says Oglethorpe. "Communities are the drivers. Decisions should be theirs. Our role is to support and help."

What that support looks like depends on the local context and runs the gamut. Policy support, advocacy, and legal action can aid communities in claiming rights to their territories and having other concerns heard. Research and technical support may be needed in order to document cultural sites and traditional land uses or to monitor territories for poaching or the impacts of infrastructure development and resource extraction. Financing and capacity development help communities pursue sustainable development and create opportunities that can allow young people and others to stay on their lands. Communications support can amplify Indigenous voices in national and international forums.

Of course, the only way to know what communities need is to ask. "We have to take all of their concerns and their ideas into the design of projects," says Simoneau. "We have to engage them from the time we're first thinking about a project, through to the very end. That's how you develop community ownership of a project or an approach.

"We are there to support what communities want and need in order for them to have access in perpetuity to both resources and the right to manage them," she says. "But it needs to come from the community if we want it to be truly sustainable."

"Our focus is on supporting them as they make decisions," says Braña Varela. "We want to contribute what we can to their capacity to independently advocate for themselves."

MEANINGFUL PARTICIPATION

Engaging productively with local people can be challenging, and WWF has made mistakes. Social benefits haven't always been balanced with conservation outcomes, and attempts to involve communities in decision-making have sometimes underestimated the intricacies of their dynamics.

"These situations can be very complex," says Braña Varela. "We have learned that transparency and consent are the only ways forward. Without the consent of the whole community—which requires transparency at every step—we cannot have authentic participation. And we can also create unintended problems that undermine our relationships, as well as the outcomes we are seeking."

"If there isn't meaningful participation of communities, then you're not going to be successful," says Emelin Gasparrini, a WWF communications specialist who has supported Indigenous peoples' engagement in global conferences. "I think that's one lesson that we have learned. So, some of our programs have focused on bringing voices into the process that had previously been excluded … making sure that we listen better and that there's space for them to engage fully and meaningfully."

Conservation has to include the most vulnerable and marginalized members of a community—for example, those with low literacy skills and those who are the poorest, says Simoneau. "They're often the ones who depend most on natural resources and lack the opportunities that wealthier or more educated community members have." Women are often excluded as well.

"There are multiple layers to the work we do," says Braña Varela. "First, there is a very comprehensive strategy of on-the-ground interventions involving the constituents in our partner communities. That work must be coupled with policy and advocacy at the regional, national, and international levels. And then we activate our network and relationships, and use our ability to facilitate conversations to get competing interests to talk to each other and reach a productive outcome.

"Using the breadth of WWF's network, we have woven connective tissue across multiple levels of governance," she says. "And that has earned us a lot of trust from Indigenous peoples, because they know that we're not only investing in a project and leaving after the project ends. We are engaged for the long term, and we help them build the strength and skills to represent themselves."

WWF-Colombia's Maria Fernanda Jaramillo, who works to facilitate knowledge sharing among Indigenous groups in the Amazon, adds: "We put all our efforts and money into helping to connect local to national to international, and into including voices that are usually not there in those discussions, to give the local stakeholders the opportunity to be part of something bigger."

Naturally, making and sustaining those connections take time—conservation is a long game. "Jumping at quick solutions doesn't usually deliver long-term results. Working with communities can take more time and more effort—but it gets us closer to the goal," says Gasparrini.

You can't rush it, says Skinner. "Relationships move 'at the speed of trust.'"

"We believe this forest is ancient, and that it is a family member of the Talang Mamak."

— Fahmi, head of the Talang Mamak village Bukit Tigapuluh

ASIA

THE PEOPLE Orang Rimba and Talang Mamak tribes
THE PLACE Bukit Tigapuluh landscape, island of Sumatra, Indonesia
WWF'S SUPPORT Working to protect and restore forests in customary tribal lands

The Indonesian island of Sumatra suffers one of the world's highest rates of deforestation. Half of the natural forests that harbor tigers, rhinos, orangutans, and elephants have been lost in recent decades—a loss driven largely by the palm oil and pulp and paper industries. Facilitating these twin threats are weak governance and a history of land grabbing. Ancestral lands are often leased to agricultural and mining companies without regard to Indigenous communities' rights to land tenure.

In the area known as Bukit Tigapuluh, or Thirty Hills, WWF and partners are working to protect and restore nearly 100,000 acres of former logging concessions neighboring a national park. By building trust and collaborating with the people of the Orang Rimba and Talang Mamak tribes, who live in Thirty Hills but lack legal ownership of their customary lands, WWF is helping them protect their cultural traditions and forest-dependent livelihoods. WWF experts are using participatory mapping efforts to set aside areas for community land uses, and partnering with local communities to expand alternative livelihoods based on non-timber forest products such as rattan and wild honey.

Quotes featured in this story are pulled from a variety of WWF and partner resources.

FAHMI AND ISONG © NEIL EVER OSBORNE/WWF-US

Isong builds a bamboo ladder on a *sialang*—a kind of tree from which members of the Talang Mamak community in central Sumatra have harvested honey for generations.

GREEN TEAM

MEET THE PEOPLE BUILDING A MORE SUSTAINABLE & EQUITABLE CINCINNATI, TOGETHER

STORY BY MACKENZIE MANLEY • PHOTOGRAPHS BY ASA FEATHERSTONE, IV

PEOPLE OUTSIDE CINCINNATI, a midsized city of hills and valleys, might not readily see it as a national leader in tackling climate change. Yet grassroots organizations and community leaders here have been addressing the crisis for years through on-the-ground efforts, policy, and investments in green innovation.

Amid a global pandemic that has exacerbated existing socioeconomic inequities and climate injustices, that work continues.

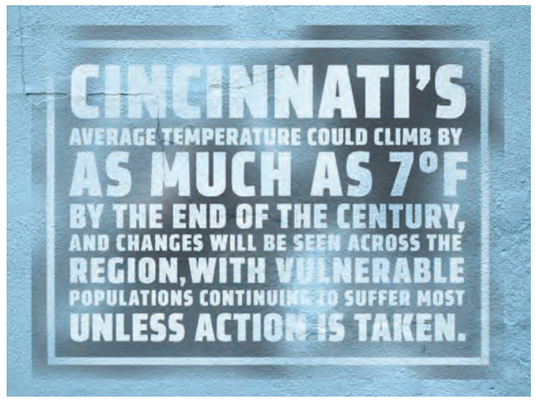
Cincinnati's average temperature could climb by as much as 7°F by the end of the century, and changes will be seen across the region, with vulnerable populations—including lower-income communities and people of color, who are disproportionately impacted by the effects of climate change—continuing to suffer most unless action is taken.

"When we think about climate disruption, in many ways it's a risk multiplier. It takes existing problems and makes them worse," says sustainability coordinator Oliver Kroner, of Cincinnati's Office of Environment and Sustainability (OES). "I think you could say the same thing about the pandemic. If you're on the brink before catastrophe, you're more likely to face hardship.

"When you talk about resilience planning, and how we endure these changes ahead, I think some climate planners see [the pandemic] as an opportunity to learn about future stressors in our communities," he says.

The Green Cincinnati Plan, an OES document adopted by the city council, includes recommendations for reducing greenhouse gas emissions by 80% by 2050. It also outlines an aim for the city government to run solely on renewable energy by 2035. And they're on track: Twenty-eight municipal facilities already run entirely on renewables, and construction of what will be the largest city-led array of solar panels in the country is underway.

This is work that Cincinnati mayor John Cranley has supported, and that local organizers have been working toward for decades. When the US announced its intent to withdraw from the Paris Agreement climate accord in 2017, Cranley condemned the action and signed on to become one of nearly 4,000 CEOs, mayors, college presidents, and other officials to declare support for climate action as part of We Are Still In—an initiative administered by WWF and partners that has, in the wake of the new administration's commitments, evolved into America Is All In.



"Cincinnati was an early signatory, and has been a strong leader from the start," says Kevin Taylor, WWF's senior program officer for cities and climate.

Kroner credits the city's progress to its collaborative approach, noting that the scope of the Green Cincinnati Plan goes beyond the work of the city government, relying heavily on partnerships with over 40 community organizations to deliver on its goals.

CULTIVATING A MOVEMENT

One such organization is Groundwork Ohio River Valley (Groundwork ORV), a nonprofit that centers on environmental justice work.

Co-executive director Tanner Yess says it's "sustainability work with a different angle, which is connecting ... to real-world quality of life issues, especially in neighborhoods that have been left behind by the environmental movement.

"I'm a conservationist, pretty staunch and all that," Yess says. "But ... we [have] to connect with people on the ground. All of our programs are designed with that in mind: to meet people where they're at."

One overcast, chilly afternoon, a group of students from a local public high school converges in Cincinnati's Lower Price Hill neighborhood to install green infrastructure, beautify the community, and plant fruit trees and herbs in a vacant lot. The sound of their shovels hitting rock and soil fills the air, joined by conversation and the occasional question from a passerby. The students are part of Groundwork ORV's Green Team, a program designed to cultivate job skills and a better understanding of the environment where the students live.

The fruit trees, once they're mature, are meant to help provide the community (considered a food desert, and one especially susceptible to climate change) with access to fresh fruit at no cost. Residents will be able to pluck pawpaws, peaches, and apples.

"And we'll add more trees to Lower Price Hill," says Sophie Revis, the program's manager. "As the climate continues to change, Lower Price Hill is poised to get hotter, wetter, and have even worse air quality. Adding these few trees will help a lot to reduce the heat and make the air better to breathe."

The tree planting is done in collaboration with the Common Orchard Project, a program incubated by the Green Umbrella alliance, which works with the Port Authority/Greater Cincinnati Redevelopment Authority to reclaim vacant land as a community asset that provides nourishment and beauty. Studies have shown that vacant lots significantly affect the safety and the health, both physical and mental, of residents whose neighborhoods already lack in resources.

Chris Smyth, the program's director, says they've planted 14 orchards in Cincinnati so far. Sixteen more are planned by the end of 2021—and they'll keep going until they reach 100.

"We can plant not only beautiful things, but also productive things, to add value to neighborhoods," says Smyth. Instead of adding a home or a business, he says, perennial

WALL BACKGROUND © SHARON MCCUTCHEON/UNSPLASH

Clockwise from top left: Bushes that have been trimmed to make room for new trees; Green Team program manager Sophie Revis; signs in an office window; bicycle belonging to Tanner Yess, co-executive director of Groundwork ORV; local artwork; Tanner Yess.

WALL BACKGROUND © BEKKY BEKKS/UNSPLASH

Green Team member Mohagany Wooten helps to clear a vacant lot in Cincinnati's Lower Price Hill neighborhood.

agriculture can "fill some of the gaps in our midwestern Rust Belt cities."

As the hole-digging nears completion, Smyth calls the group over for a lesson in planting young fruit trees.

Listening is 16-year-old Mohagany Wooten, who says she knew little about environmental justice before joining the Green Team. Through the program she has learned not only about broad issues like climate change but also how the environment relates to barriers faced by her own community.

"Lower Price Hill really doesn't have a lot of open green space," she says, "but we do have certain little patches." Wooten says that she thought one space near the bus stop could be used as a community garden, but there were plans to put apartments there.

"It threw me off and put me in the environmental injustice spot, because instead of them trying to put vegetables or something healthy there, they just wanted to put a building there," Wooten says. "There's a lot of abandoned buildings in Lower Price Hill, and I feel that they should probably try to fix them to be better instead of taking away the green spaces."

Many kids in her school, Wooten said, get their work done, try to graduate, and either go to college or get a job—that's the basic plan. But this program instills in students a desire to learn about their environment and apply that knowledge to changing their communities for the better.

One of the best parts of the program, Yess says, is seeing where students go after their time with Groundwork ORV. One Green Teamer, now in his early twenties, went on to run one of the organization's Green Corp Young Adult workforce groups. Of course, not everyone goes on to an environment-adjacent career. But that's not really the point, Yess says. Rather, it's that they understand the impact the work has on their communities and how to direct that knowledge into action.

CREATING CLIMATE-SAFE NEIGHBORHOODS

In this city of old buildings and many renters, low-income residents bear the country's eighth-highest energy burden (the percentage of income a household spends on utility bills). And neighborhoods subject to government-sanctioned racist housing practices in the 1930s and '40s today have fewer green spaces and more heat-retaining surfaces (such as highways) than many other neighborhoods, which puts them at higher risk for extreme heat and flooding.

The effects of having fewer trees in lower-income communities are already being felt: higher rates of asthma, poorer air quality, increased flooding, and more mold. According to Yess, Cincinnati neighborhoods with more tree canopy cover are often 10 to 12 degrees cooler.

Groundwork ORV's mitigation strategies, says Yess, include everything from planting trees "to more intensive green infrastructure policy work. ... We're arming ourselves and citizens with the language that policy-makers use so that they can advocate for themselves."

OES's Kroner says that maps of temperature differences can be used to help inform tree-planting efforts. That's where partnerships like the one with Groundwork ORV are crucial. Beyond "greening" spaces, OES is focused on connecting people with land and democratizing data—helping people better understand what's happening in their own communities and the policies that affect them. OES also looks at energy burden. Because tenants often foot the utility bill, there's no economic incentive for landlords to make energy improvements.

"We're trying," Kroner says, "to deliver energy efficiency to these households that are really paying exorbitant amounts of money just to heat their homes."

He says approximately 60% of Cincinnati's carbon emissions come from its built environment—the city's buildings and how they're powered, heated, and cooled. "A number of our strategies," he notes, "focus on making buildings more efficient, powering them with renewable energy."

GREENER, MORE ACCESSIBLE TRANSPORTATION

Another 30% of Cincinnati's carbon emissions come from transportation and fuel, says Kroner, so OES also looks at electrifying transportation and improving transit choices.

The Green Cincinnati Plan calls for increasing public transit ridership by 25% by 2035, and a recently passed 0.8% sales tax will help fund a more robust transit system. Cincinnati also aims to double the lane miles of bike trails, improve walkability and pedestrian safety, and encourage the transition to electric vehicles.

October 2020 saw the unveiling of Cincinnati's latest Metro bus transit hub, in Northside, the city's second-busiest transfer location. Features include sheltered boarding stops, electronic signs with real-time updates on bus arrivals, and a park-and-ride lot with charging stations for electric vehicles.

The grassroots organization Better Bus Coalition, led by lifelong bus rider and Cincinnatian Cam Hardy, advocated for the hub. A resident of Northside, Hardy says he was "extremely happy" to see the hub come to fruition and is excited for other neighborhoods to open similar hubs.

Hardy's transportation advocacy started when he became fed up with buses breaking down or being late. One night, he took to Facebook Live and asked: "Why is this acceptable?" That led him to being invited on a bus ride with Metro's then-CEO. After learning about policies affecting the bus system and joining forces with other riders, Hardy officially formed the all-volunteer coalition in 2017.

AS PART OF ITS GREEN CINCINNATI PLAN, CINCINNATI AIMS TO

DECREASE HOUSEHOLD ENERGY BURDEN BY 10 PERCENT BY 2023

ELIMINATE NEARLY 7.5 MILLION METRIC TONS OF CARBON DIOXIDE EQUIVALENT BY 2050

ACHIEVE 0 WASTE TO LANDFILLS BY 2035

INCREASE MILES TRAVELED BY PASSENGERS ON PUBLIC TRANSIT BY 25 PERCENT BY 2035

TRIPLE THE ACREAGE OF URBAN FOOD PRODUCTION BY 2023

ENSURE ALL RESIDENTIAL NEIGHBORHOODS HAVE 30 PERCENT TREE COVERAGE BY 2023

MAKE ALL CITY FACILITIES, FLEETS, AND OPERATIONS CARBON NEUTRAL BY 2035

WALL BACKGROUND © ANNIE SPRATT/UNSPLASH

Clockwise from top left: Cincinnati's sustainability coordinator Oliver Kroner; Northside Transit Center; a downtown Metro bus; Cam Hardy at a bus terminal; Green Team members Brittany Brunk, Alicia Hildebrand, Mohagany Wooten, and Nevaeh Rice (left to right) at a tree planting site; gloved hands at work.

"We looked at it as a way to take ownership and have some pride about our transportation system, because we weren't seeing that from anywhere else," Hardy says. Buses lacked investment because ridership was looked down on as a poverty issue, he says, but "it's not just about moving poor people around. It's for the greater good."

The coalition is now advocating for adding cleaner, more fuel-efficient buses to Metro's fleet. For Hardy, a stronger Metro is integral to a more sustainable Cincinnati, and he hopes that as the city recovers from COVID-19 it can give citizens a safer, more effective means of returning to work.

MORE FOOD, LESS WASTE

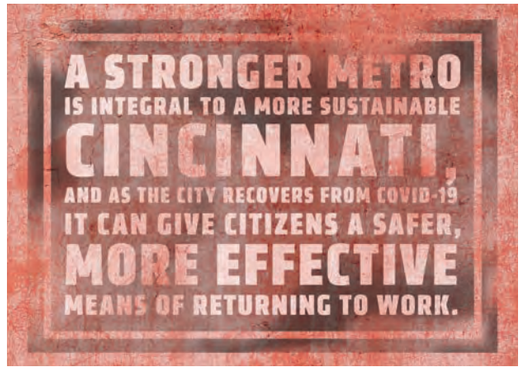
Rebuilding efforts after COVID-19 will reach beyond transportation. The pandemic has also highlighted and exacerbated existing stressors related to food.

According to the nonprofit Feeding America, despite as many as one in six Americans experiencing hunger, roughly 30% to 40% of food produced in the US is thrown away. To address this, Cincinnati-based supermarket retailer Kroger launched a social impact plan in 2017 to help create communities free of hunger and waste. The Kroger Co. Zero Hunger | Zero Waste Foundation is a supporter of WWF's Food Waste Warriors school curriculum. In 2019, Food Waste Warriors audited plate waste in 46 school cafeterias in nine US cities, including Cincinnati.

WWF's Amanda Stone, director of engagement and communications for markets and food issues, notes that food waste is tied to climate change. All of the water, land, and resources that go into producing food are wasted when food is tossed, and all of the emissions embedded in our food as it travels from farm to plate are released for nothing. Most food waste currently winds up in landfills, where it produces methane, a greenhouse gas that contributes to climate change.

The pandemic has had an enormous impact on schools, and as districts move between in-person and remote schooling, Food Waste Warriors' primary focus has been finding ways to support them.

"The most important part … is getting nutritious school meals into the hands of students through a variety of constantly evolving strategies—from more packaged in-classroom meals to curbside pickup and bus-based delivery routes," Stone says. "Our work has shifted to support teachers and education groups on the ground. We've found teachers are eager to help kids explore how food and nature are connected, and how the need to address waste is more important than ever, even from the space of their kitchens at home."



Ryan Mooney-Bullock, the executive director of Green Umbrella, the regional sustainability alliance of Greater Cincinnati, says that the pandemic has increased a sense of urgency around addressing local food system security.

"People are seeing how important it is to have a diverse and flexible food supply chain that includes farms and processing operations of many scales," Mooney-Bullock says. "In 2020, local farmers struggled to get their excess produce to the consumers who needed it most, while food banks struggled to meet increased demand for food. By working to solve disconnections in the food system, we can make sure our region is prepared for future disruptions, whether they are caused by pandemics, natural disasters, or the effects of climate change."

And while there are programs that are attempting to make better use of the food available and get it to the plates of people who need it, it's an area where the city is still learning. For example, Mooney-Bullock says one of Green Umbrella's current projects—Community Voices for Food Movement—is aimed at incorporating the perspectives of the population that experiences food insecurity in designing solutions to food access and nutrition education.

"We are also looking at how we can create better access to local food, and just healthy food in general, in communities that are currently underserved by a full-service supermarket," Mooney-Bullock says. "That might look like increased farmers markets in those places, or some way to effectively distribute fresh food to the corner store or other hubs where people could pick it up."

IN THIS TOGETHER

From planting orchards to building better bus stops, it all adds up to Cincinnati striving to be a more sustainable, equitable city.

"One of my worst fears," Yess says, "and what Groundwork ORV [addresses] so well, is that there's a little Brown or Black child out there in some neighborhood who does not have access to parks, education, recreation—and they could have been the next great conservationist."

Currently, Groundwork ORV has 12 staff, dozens of youth employees all over the tristate area, and many partnerships. Yess says the pandemic hasn't slowed their work, which for the most part takes place outside, in small groups. On the contrary, it has exploded. "We've grown rapidly because the need is so great," he says. The hope is to build the organization to 200 youth employees, or, as he puts it, "a small army of green workers across the city."

Yess says that the word that best evokes what Groundwork ORV does is *restoration*. "And I'm not talking about just land, right? It's heart, mind, body, soul," he says. "It's the process of people and the land connecting. And if you have that connection, the climate change discussion is not an issue."

IN KAZA

EXPANSIVE LANDSCAPES. LIFE-GIVING RIVERS. PEOPLE. ELEPHANTS. WILDLIFE. LEARN WHAT WWF AND FIVE COUNTRIES ARE DOING TO PROTECT IT ALL.

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Securing water for people and species

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Enabling elephant and wildlife mobility

38
Helping rural communities adapt to climate change

Flow Lines

In southern Africa, a confluence of rivers and elephant migration patterns unites five nations around a shared vision for conservation, tourism, and sustainable development

story by Dianne Tipping-Woods
photographs by Patrick Bentley

RIVERS, STREAMS, AND WETLANDS gush, trickle, surge, soak, seep, and filter their way through the Kavango-Zambezi Transfrontier Conservation Area (KAZA), bringing life to Africa's most ambitious conservation landscape. Like the people and wildlife of the region, the waterways here are unique, diverse, and interconnected. The Okavango River (called the Kavango along the Namibia/Angola border) spills into the famed Okavango Delta; the Zambezi thunders over Victoria Falls; and the Kwando slowly meanders between the two, filling Botswana's Linyanti wetlands before joining the Zambezi.

Three bull elephants wade into the Zambezi, en route to an herbaceous meal on the river's islands.

On a cool winter morning, three young lions bask in the warmth of the sun.

"It's thanks to the water that this area has some of Africa's most remarkable natural attributes, from vast herds of elephants to World Heritage sites," says Mike Knight, KAZA transboundary leader for WWF, which helped establish the conservation area in 2011. "It's critically important to make sure that water in the system keeps flowing."

Shared resources are at the heart of KAZA, which is collectively managed for conservation, tourism, and sustainable development by the governments of Angola, Botswana, Namibia, Zambia, and Zimbabwe. (See "Rapid Response," page 30, for information on WWF's direct support to communities who have lost tourism-based income due to COVID-19.) The vision is for conservation to become the region's economic driver, resulting in thriving landscapes where wildlife and human communities coexist.

At 200,000 square miles—roughly the size of France—KAZA is the world's largest transboundary terrestrial conservation area. Along with its chief rivers and their tributaries, it features more than a dozen national parks and a host of other conservation areas—including large tracts of communal conservancies and Indigenous peoples' lands. It also contains rural and urban settlements that are home to 2.5 million people.

More than 220,000 African elephants—half the continent's total population—are the giants of this vibrant landscape. They range over thousands of miles and play a profound role in the ecosystem by dispersing seeds, cycling nutrients, and creating grazing areas for grassland species like buffalos and zebras. KAZA is designed to create space for elephants to move as the rivers do, across borders and between protected areas, and to allow other animals—herbivores like lechwe, roan, and sable antelopes and predators like lions, cheetahs, and African wild dogs—not only to survive but to thrive. "If you secure the environment for elephants, you secure it for other species too," says Knight.

But wild animals can be hard for people to live with; they raid crops, kill livestock, and endanger human lives. Farmers know to scan the areas around their *kraals* (corrals) for predators' tracks, and it is not unusual to see elephant footprints on dusty village paths.

The reality is that KAZA's people and wildlife live together in a sometimes uneasy truce, punctuated by bouts of conflict. Mitigating such conflict, especially with large carnivores and elephants, is key to WWF's efforts here, as are increasing the participation of local communities in natural resource management and contributing to species conservation and transboundary water- and land-use planning.

> "We're not changing our focus from wildlife, but just realizing how key water is to that mission, both for people and the species in the landscape."
>
> — Sarah Davidson, WWF Director of Water Policy

The vision for KAZA is an audacious one. "KAZA represents hope for Africa's elephants," says Knight, "and for all the communities—human, plant, and animal—that depend on healthy natural systems."

A Conservation Opportunity

"Securing space for elephants is going to have a monumental impact on the opportunities that exist for people living in the region," says Knight. But to flourish, elephants need more habitat than KAZA's formally protected areas currently provide. They also need about 40 gallons of water a day to drink. "They're quite simply running out of space, in part because of how humans have carved up and fragmented the land," he says.

That's why much of WWF's work in KAZA focuses on wildlife dispersal areas. (See "Crossing Paths," page 36.) Identified by the member countries, wildlife dispersal areas are strategically positioned tracts of land that connect protected areas so that elephants and other species can travel safely to expand their ranges. One of the most important for elephants is the Kwando Wildlife Dispersal Area, which connects Botswana, Namibia, and Zambia to protected areas in Angola.

Historically, Angola was part of the natural range of southern Africa's elephants, but due to decades of war and poaching, the country's elephants have mostly disappeared. Infrastructure like roads and fences also deters elephants from moving north from Namibia and Botswana.

Although Angola committed to KAZA in 2006, it's only in recent years that a stable political situation and a willing government have made southern Angola "a conservation opportunity that's waiting to take place," says Knight. He estimates that 30,000–60,000 elephants could move into the Angolan portion of KAZA, having a huge impact on their conservation and potentially relieving pressure on northern Botswana, where elephant numbers are high. Angola is also home to the headwaters of the Kwando and Okavango rivers, meaning it is vital to the region's water flows.

Data from collared elephants shows some are already using the Kwando Wildlife Dispersal Area to move into Angola from neighboring countries. One corridor in particular, on the west side of the Kwando River, is "heavily used by elephants and other species," says Robin Naidoo, WWF's lead wildlife scientist. This is partly because the river creates a natural corridor and partly because of a gap in the border fence between Namibia and Botswana. "It's an area of fundamental importance for KAZA's wildlife," he says.

Rapid Response

The COVID-19 pandemic has been a huge setback to wildlife- and tourism-dependent communities in KAZA. After taking stock of the situation on the ground, WWF has responded in meaningful ways.

HEALTH FIRST

The pandemic has had a negative impact on agriculture as well as tourism and hospitality industries in Zambia's Sioma district, part of a vital elephant corridor. Due to these dwindling income streams, many communities couldn't afford face masks or hand sanitizer. WWF-Zambia and the Peace Parks Foundation responded by delivering $22,369 worth of personal protective equipment for communities and frontline health workers to the Ministry of Health in the Sioma Complex of Sesheke District in Western Zambia.

SHARP FOCUS

As tourism-related incomes falter and some rangers are required to shelter in place, illegal trade in wildlife is expected to spike. So WWF-Zimbabwe and the Zimbabwe Parks and Wildlife Authority are implementing and upgrading an automated digital surveillance system in Hwange National Park to gather data from ranger patrols, analyze local poaching trends, and track law enforcement responses—all of which can help control wildlife crime. Additionally, GPS-enabled camera traps allow instant photo messaging from strategic points such as watering holes to a call center, which allows rapid reaction when suspicious movements occur—and reduces the need for face-to-face interactions during the pandemic.

BETTER BASIN HEALTH

The COVID-19 pandemic has highlighted the importance of protecting water sources for both agriculture and human well-being. Improving river basin health not only benefits agriculture but also improves people's access to drinking water, sanitation, and hygiene. With support from USAID and the US Department of State, WWF-Zambia and ACADIR (a partner in Angola) are working with communities on inclusive management of water resources in the Kwando River Basin. At the height of the pandemic, adhering to strict safety precautions, the team continued important training on water management, conservation farming, and climate change adaptation, and also distributed soap and other health and safety materials to help fight the spread of the virus.

"In Portuguese [this part of southeastern Angola] has been called *a terra do fim do mundo*, the land at the end of the Earth," says Antonio Chipita, who works for the Associação de Conservação do Ambiente e Desenvolvimento Integrado Rural, or ACADIR (the Association for Environmental Conservation and Integrated Rural Development), a WWF partner. Chipita describes the area as having some isolated villages, few clinics, fewer hospitals, and very few schools. Most of its residents are subsistence farmers, some of whom moved to the area to escape the worst of the 27-year conflict that began soon after Angola gained independence from Portugal in 1975. Crop yields here are among the lowest in Africa due to poor, sandy soils; most people grow just enough to survive.

Based in the Angolan town of Menongue, Chipita sometimes travels for days on poor roads in this remote area to talk with villagers—many of whom live within Luengue-Luiana National Park—about their challenges, their needs, and their livelihoods.

"We are interested in helping people here have better lives," says Chipita. How do they feel about thousands of elephants potentially moving through their landscape? The views are mixed, he says, adding that villagers have already had conflicts with several elephants, as well as crocodiles, baboons, buffalos, and some predators.

"We don't know what the answers are yet, but we focus on people's needs as a way to start talking about conservation," says Chipita. "People here care about healthcare and food security. Often people say, 'The wildlife is nice, but we're hungry.' You can't argue with that."

Water for Elephants, Water for All

Water, too, is a fundamental concern. In Luengue-Luiana National Park, Chipita says, villagers rely on the Kwando River for water to drink and wash with, for reeds to build with, and for fish to supplement their diets.

But as mighty as the Okavango, Kwando, and Zambezi rivers are, their flows vary in quantity and quality from year to year. Upstream events—droughts, new hydropower dams, pollution, increased extraction—have an impact on the people and wildlife downstream.

People generally cope by shifting their activities to the rivers in the dry season and during droughts, but animals respond in the same way. In the wet summer months, there are natural pans and streams for wildlife to drink from, but in the dry season rivers are the animals' lifelines, too. Take elephants, says Naidoo: "Research clearly shows that water availability is one of the strongest variables for their distribution ... and as human settlements increase along rivers, the points where wildlife can visit the rivers to drink without encountering people become fewer and farther between."

Not surprisingly, human-wildlife conflicts in KAZA often have a link to water. Jess Isden of WildCRU's Trans-Kalahari Predator Programme, a conservation research unit associated with the University of Oxford, studies these conflicts in parts of KAZA. One village where she works in Botswana, for example, is surrounded by protected areas. In the dry season, animals move out of the protected areas and through the village and communal grazing lands to reach water.

"Every village I have worked in has different approaches to and thoughts around wildlife conflict based on their culture and lived experience," says Isden, a coexistence coordinator for WildCRU. But water—and where it flows in relation to people and wildlife—can increase or decrease the potential for conflict. As climate change affects where and how people and wildlife access water, conflicts are likely to grow.

Fishers return to dry land on the Kafue Flats after gathering their nets and catch.

A family of elephants leaves behind tracks in the thick mud of an island in the middle of the Zambezi River.

A pod of hippos naps in the warm winter sunshine; a crocodile rests on the land nearby.

Climate change has other impacts as well. "The changing seasonality of rainfall is a big thing we're seeing in all countries in KAZA," says WWF's Nikhil Advani, who directs climate change projects in KAZA in collaboration with local organizations like ACADIR. He says that getting real data from people who are living with the consequences of a changing climate is critical, adding that in many cases "it's simply devastating livelihoods." (See "Climate Crowd," page 38.) When communities are under this kind of pressure, he adds, their responses can harm biodiversity as they turn to poaching animals for bushmeat and deforesting areas for charcoal production.

"We need to help communities adapt, with a view to helping nature too," says Advani. One way to do that is to increase water access for communities through innovative methods like rainwater harvesting.

Flow On

To keep water flowing for people and wildlife in KAZA will take action at every level, from the local to the national, says Sarah Davidson, WWF's director of water policy. "We need everything from communities using water-saving farming techniques during droughts to neighboring countries collaborating on decisions about shared water resources."

In collaboration with WWF-Zambia and their partners—including the Angolan government, the intergovernmental Zambezi Watercourse Commission, USAID, and the US Department of State—Davidson is looking specifically at the Kwando River. It's one of the least-studied rivers in one of the most strategic areas of KAZA, with not only the potential for elephants to move north along its course into southeastern Angola but also, and perhaps even more important, the vital function of moving water south.

As a first step, Davidson and WWF-Zambia are helping local and regional stakeholders develop a "report card" on the health of the Kwando River Basin; it's an approach that's been successful elsewhere in planning for the wise use of water. She is optimistic that the report card will serve as an informed and inclusive starting point for conversations about the river's future.

"Often, our collective understanding of water centers on drinking water and sanitation, but these cannot be separated from rivers and biodiversity," says Davidson. "We're not changing our focus from wildlife, but just realizing how key water is to that mission, both for people and the species in the landscape."

Davidson emphasizes that the communities living in southeastern Angola are small. "It's not their activities that are threatening the river. It's the larger upstream decisions about how the river is managed that will affect its health."

Perhaps the largest threats are hydropower dams: Angola's hydropower potential is among the highest in Africa. WWF's Evan Freund, who focuses on the impacts of infrastructure on freshwater systems, says that hydropower development in the Angolan headwaters would "absolutely" change the dynamics of the Kwando River, not to mention the Okavango and Zambezi rivers.

He says that to protect biodiversity, to allow people to benefit and coexist in a permeable landscape, and to minimize the human footprint through smart regional planning, stakeholders need to manage KAZA's water as its most fundamental asset.

Wise Development

"The thing to appreciate is that the governments [in KAZA] are trying to figure out how to support an economic growth agenda," says Freund. "If we are going to promote our conservation strategies, we have to think about infrastructure as part of that. Infrastructure is a conservation issue, front and center."

With WWF's support, the Angolan government and the KAZA-TFCA Secretariat are working with small and medium-sized Angolan businesses to look at bankable projects in the tourism, energy, agriculture, and fisheries sectors that will deliver services and support livelihoods without jeopardizing conservation.

In the Kwando Wildlife Dispersal Area, for example, this means making smart decisions about smaller-scale projects linked to zoning and land use. Questions that need to be answered, suggests Freund, include these: Are there better places to plant crops? Can fisheries help offset food insecurity? How do people access markets if the roads are bad? If you must build something, can you make it sustainable and compatible with conservation outcomes?

> "Often people say, 'The wildlife is nice, but we're hungry.' You can't argue with that."
>
> — Antonio Chipita, ACADIR

Solutions that answer questions like these aren't always obvious, says KAZA-TFCA Secretariat executive director Nyambe Nyambe. But he believes "there cannot be conservation success and impact without other sectors, like commerce, fisheries, agriculture, and public health, because only then can we have true ecosystem health."

"That's what makes working on KAZA so exciting," says Neville Isdell, former chair and CEO of The Coca-Cola Company. The longtime WWF supporter and Board member, and former Board chair, invests in people's health in KAZA through the Isdell Flowers Cross Border Malaria Initiative, while helping to rewild conservation areas. "KAZA is designed to care for people, for wildlife, and for habitat. National boundaries do not stop animals, or water, or diseases. We've got to address the issue of human well-being and how that's linked to climate change, and how that in turn is linked to food security and all these other issues in the region."

"Conservation comes through wise development," says WWF's Knight. "For a wildlife economy to work in KAZA, an intact, functioning ecosystem is key."

Crossing Paths

As seasonal waters ebb and flow, the movements of elephants and other wildlife follow. When water sources are more abundant, for example, ranges may expand, but when water is scarce, wildlife can come into conflict with humans and each other. WWF is working hard to understand these movements, to support the continuation of natural systems, to strengthen communities, and to ensure that these vital migrations—across vast areas where people and wildlife must coexist—continue.

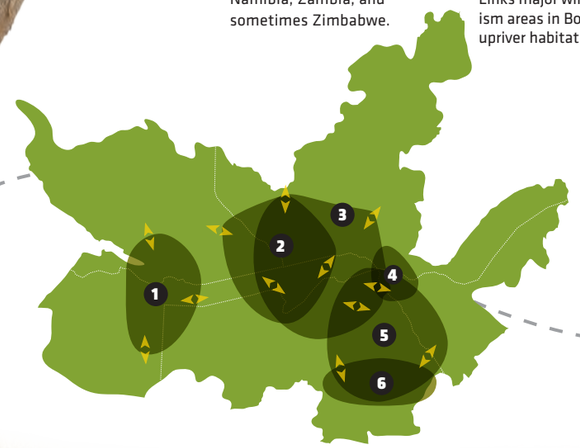
REASSESSING FENCES

Border fences and veterinary fences erected for disease control purposes run between Botswana and Namibia. WWF research suggests these fences are largely impenetrable for female elephants and family units, even as bull elephants cross fences more regularly. WWF is supportive of government efforts that assess whether the realignment or decommissioning of veterinary fences may appropriately balance livestock and wildlife concerns in the transboundary region.

WILDLIFE DISPERSAL AREAS

To facilitate wildlife movement across the region, the five KAZA countries have defined six "wildlife dispersal areas" based on existing and historical animal migration routes. These WDAs are key corridors for allowing wildlife such as elephants to move more freely across the landscape, spurring healthy species population growth and distributing wildlife-dependent economic benefits to more people.

1. **KHAUDUM-NGAMILAND**
   Wildlife moves throughout northeastern Namibia with extensions into Angola and Botswana.
2. **KWANDO RIVER**
   Movements follow the Kwando River through portions of four countries.
3. **ZAMBEZI-CHOBE**
   Seasonal and migratory crossings between Botswana, Namibia, Zambia, and sometimes Zimbabwe.
4. **ZAMBEZI/MOSI-OA-TUNYA**
   Defined by world-famous Victoria Falls. Provides a small but important corridor between Zambia and Zimbabwe.
5. **HWANGE-KAZUMA-CHOBE**
   Follows wildlife corridors from northwest to southeast, hugging the Botswana and Zimbabwe borders.
6. **HWANGE-MAKGADIKGADI-NXAI PAN**
   Links major wildlife and tourism areas in Botswana with upriver habitat in Zimbabwe.



- KAZA boundary
- Country borders
- Major towns
- Rivers
- Roads
- Deltas
- Dams
- National parks

ELEPHANT MOVEMENT PATTERNS

1. A gap in the Namibia-Botswana border fence allows movements of elephants and other species from northern Botswana into Namibia and southern Angola on the west side of the Kwando River.
2. A state forest and community-designated wildlife corridor allow elephants and other species to move between Mudumu National Park in Namibia and Sioma Ngwezi National Park in Zambia.
3. In the wet season, elephants move out of Hwange National Park in Zimbabwe and across an unfenced border into northern Botswana.

Climate Crowd

Crowdsourcing climate data in Zimbabwe

FARMER AND VILLAGE HEAD George Shoko, from Chisuma village near Victoria Falls in Zimbabwe, clearly remembers the last big thunderstorm he experienced. It was 11 years ago, and it caused flooding. Now, he says, there is less rain each year, it falls later than before, and the weather seems hotter.

"We no longer practice rainmaking ceremonies. Survival is uncertain. Some of us have even stopped farming altogether," he observes.

His home in Zimbabwe's Matabeleland North Province lies within the Kavango-Zambezi Transfrontier Conservation Area (KAZA), the five-country expanse that's been formed to protect biodiversity while supporting people who live in the landscape. It is not far from the Zambezi River, but despite the volume of water that flows over Victoria Falls and through the gorge below, it is a water-scarce area, and there is no direct access to the Zambezi River, which lies across the gorge.

"[Around Victoria Falls], people walk between three and 12 miles for water. Sometimes, they encounter elephants on the way. We lost three people in our community last year due to conflict with elephants," says Charlene Hewat, director of the nonprofit organization Greenline Africa Trust. Hewat has been working with WWF to collect data on how people living around Victoria Falls experience climate change. As part of WWF's Climate Crowd program, the effort informs pilot projects to help rural communities adapt, while reducing pressure on biodiversity.

> "A lack of good weather data on Africa in general ... influences our ability to develop suitable climate projections."
>
> — Nikhil Advani, Director for Climate, Communities and Wildlife, WWF-US

According to Nikhil Advani, WWF's director for climate, communities and wildlife, while we know that most of Southern Africa experiences a single rainfall season between October and April, there is a lack of good weather data on Africa in general, and this in turn influences our ability to develop suitable climate projections. However, it's considered very likely that Africa will continue to warm during the 21st century, and there is some confidence in projections suggesting reduced rainfall during Southern Africa's winter months.

"Perhaps of greater importance are observed weather patterns we are already seeing," he says. "As is the case through much of sub-Saharan Africa, seasonality of rainfall is shifting considerably, and this, along with climate extremes such as drought, is likely to have the most significant impact on communities in the KAZA region, including around Victoria Falls."

From the 44 interviews (25 women, 19 men) Greenline Africa Trust conducted, access to water and human-wildlife conflict emerged as two big challenges. Two-thirds of respondents said there was less freshwater, while 61% experienced more frequent conflicts with wildlife, which compete with livestock for water and enter farms and villages in search of food. Insufficient water combined with an increase in the prevalence of pests (reported by 57% of respondents) contributed to crop failure, and many farmers reported selling off livestock they could no longer feed.

As peoples' livelihoods become more vulnerable, they turn to natural resources. A little over a third of those interviewed noted that such coping strategies were negatively affecting the environment. Brick-making, for example, requires large quantities of firewood during the firing process, so it drives deforestation; in turn, the removal of trees contributes to siltation and land degradation along the riverbanks.

"It really is all connected, so trying to reduce all the stressors is important, because we can't control the rainfall. We just have to hope it comes," says Advani.

He's excited by the results of pilot projects implemented with farmers around Victoria Falls to improve crop yields using conservation agriculture and drip irrigation. Other interventions like reforestation and fuel-efficient cookstoves have shown promise in reducing pressure on natural ecosystems.

The Manyika family farm, on a small piece of land about 15 miles from Victoria Falls, suggests what successful adaptation looks like. The family is part of the Inchelela Farmers Network, which, supported by WWF, began supplying hotels and lodges in Victoria Falls with fresh produce this year. In March 2020, when COVID-19 abruptly halted sales, the farmers bartered tomatoes for maize, sorghum, and millet—a practical innovation in a cash-poor economy like Zimbabwe. Stanley Manyika and his wife plan to sell the extra grains later in the year, "when people start running out of food."

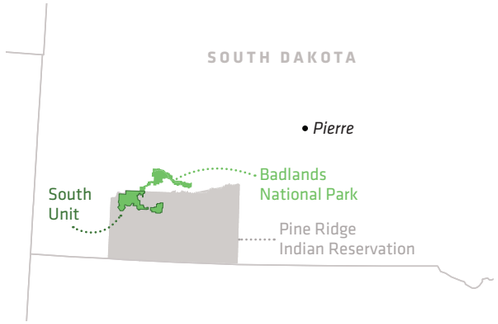
According to Hewat, more farmers are starting to think long term and are investing in their own land and water provisioning to improve their yields.

A long-time conservationist, Hewat says she realized very early on that "if we don't involve communities in conservation in a meaningful way, there is no hope for conservation." And, she says, "access to water is fundamental."

An aerial view of Victoria Falls, also known as Mosi-oa-Tunya, or "the smoke that thunders."

Our Home, Our Story

In September 2020, in the midst of the COVID-19 pandemic, WWF worked with Indigenous leaders and photographer Jason Houston to gather stories from Pine Ridge Reservation in South Dakota. Here, four members of the Oglala Lakota Nation share, through their own words and images, stories from their lives.



MONICA TERKILDSEN

WWF Native Nations liaison and a member of the Oglala Lakota Nation. Monica facilitates Indigenous conservation efforts and works to bring the will of her people to the management of their land.

I AM OF THE GRASS, plants, and trees, the root nation that sways in the winds of the prairie of the Northern Great Plains, storing carbon and returning oxygen to the world above. I am of the soil, that holds the very footprints and knowledge of my ancestors and provides life and vision for me. I am Oglala Lakota, Indigenous to this land, to this space, and I want to share with you the story of this place.

Today, the land base of the Oglala Lakota Nation is roughly 2.7 million acres of pristine grasslands in southwestern South Dakota. Pine Ridge Reservation's land base is the result of many acts that broke and forced together small pieces of Unci Maka, our Grandmother Earth. This is the place of the Wounded Knee Massacre, an attempt to end a way of life and annihilate our circle, our connections, and our homelands.

But look at the lands, the beauty, the colors, and perspectives we share with you through the camera's lens, to uplift our truths in the time of the pandemic. We, as a nation, stand strong and hold tight to our beliefs, protecting our people amidst new policies, shutdowns, virtual connections with inadequate infrastructure, sheltering in place, permitting, confusion, hunger, fear, loss with an inability to mourn, and movement stifled. Hope remains. Despite the circumstances, we share our story.

I want to tell you about the Stronghold Unit, which many call the South Unit, 133,300 acres of tribally owned land within the boundaries of the Pine Ridge Reservation. You might know it as part of the Badlands National Park.

This land was originally small allotments given to tribal members, generally 160 acres for a head of household and 80 acres for a single member. Of course, there was no justice in this land distribution process; how can one own and divide their grandmother? Then came WWII and the US needed a place for practice and training. What better than an Indian reservation? An aerial gunnery range was created through condemnation and eminent domain proceedings, forcibly taken from tribal members, again, and trashed for over 20 years through bombing, training, and target practice. Today there are many places where unexploded ordnance is exposed as the land erodes.

After many years, tribal members were able to purchase lands back, except for the Stronghold Unit. In 1968, Congress wanted 133,300 acres to create the Badlands National Park. With it, Congress expanded National Park Service boundaries outside of the bombing range and drew management lines across individually allotted land, intruding and creating more emotional harm.

Much of my work is an attempt to address that harm by seeking a way forward, with community members speaking clearly about their wants and needs, in a way that honors the land and our history here, and will be beneficial for us all.

We're aware of what's been taken, of the harm that's been done, and we're looking forward. That's why we established the Community Stronghold Working Group and are creating a Declaration of Priorities, with representatives from several of Pine Ridge's districts, to make sure everyone is heard.

With our photos, we hoped to capture this tragic story, to capture the beauty and the opportunities that our nation speaks about, and to share what we wish to pursue within this space. In the past, in the United States we Indigenous people didn't have a voice in what happened to our land. Well, now we do have a voice. So rather than come from a place of oppression, we hope these pages reflect the truth: We are resilient, we have hope, and we have a voice. We seek healing and equity for the members of our nation, Unci Maka, and our connections to each other.

And we choose to have a voice in future decisions about our land.

Learn more about the process of creating this story at worldwildlife.org/NGP2021

Clockwise from top left: A Pine Ridge vista. Fragmented fossil jaw bone and teeth of a three-toed Oligocene horse. Community representative Barry Bettelyoun and WWF staffer Clay Bolt take in a view of the Stronghold Unit during a tour to evaluate possible new land uses. This tribal land is within the boundaries of Pine Ridge Reservation, where the last ghost dance was held and where people retreated from the Wounded Knee Massacre. It is both tribal land and part of the National Parks System. Rachel Two Bulls, daughter of Andrea (see pages 44–45) and a Georgetown University student, participated in the Stronghold tour. *Photographs by Monica Terkildsen*

NICK HERNANDEZ

Founder of Makoce Agriculture, a nonprofit focused on regenerative food systems. *Makoce* is the Lakota word for homeland. Nick received his master's degree in Lakota leadership from Oglala Lakota College. Here, he talks about going on a tour to review uses of the Stronghold Unit.

THE MAJORITY OF THE South Unit is in my district on Pine Ridge Reservation. A lot of tribal members drive by and through it daily to go into the city. Makosica is what it's called—Badlands. A lot of this area is culturally and historically significant due to the relationship we have with the land as local Indigenous people. Everybody has a piece of history connected to this area, and it gets passed down generationally in our storytelling.

This was my first time visiting a lot of those places. The area is being re-reviewed for the reintroduction of buffalo and community use. It symbolizes our reintroduction to a species that we hold so high in our culture and in our life ways. The buffalo provided everything for us, generationally. When we talk about food and food systems, the buffalo is the all-encompassing food system that we are looking at reintegrating back into our Indigenous homelands.

"When we talk about food and food systems, the buffalo is the all-encompassing food system."

For me, it was special to experience that personally, but also to share that with my son. It was a different landscape from where we actually live, just 10 miles down the road. At four years old, kids are sponges, so they absorb a lot. Every time we drive past the Badlands, it's always stuff like, "Hey, do you remember being over there? I remember going to Badlands."

Clockwise from top left: Security shelter near the Stronghold overlook in the South Unit; Hernandez and his son Kai, 4; embedded layers of a rock formation near the overlook; community representatives Monica Terkildsen (left), Hobert Yankton (center), and Barry Bettelyoun (right) gather to eat, plan, and pray before a tour of the area. *Photographs by Nick Hernandez*

ANDREA TWO BULLS

A self-taught painter, photographer, and artist advocate whose work sells across the country. Andrea worked at Singing Horse Trading Post until the pandemic closed down the tourist industry.

I'M ALWAYS JUST LOOKING for beautiful things. When I was younger, I was everywhere. I've hiked every bit of this land, all back up in those hills. If I'm not hunting, then I'm hunting rocks.

Because we grew up here and we've always lived out here, it baffles me why so many people pay money to come and see it. As you get older, you realize that it is ruggedly beautiful and it's unique. It's our backyard, but it's

"It's our backyard, but it's beautiful. We need to protect it."

beautiful. We need to protect it. We need to protect it for our kids, our grandkids.

We would like it left wild. This is where we hunt. This is where we live. We don't want people coming here. Just leave this untouched. Leave it alone.

The Park Service wanted to bring in a heritage center to these lands, to the Red Shirt Table area where I live. They wanted to bring more people. But we said, "No. This is where we hunt, where we live."

They wanted an equestrian center—there were all these ideas. We just said, "No. Don't bring it here. Take it somewhere else. This is where we live."

It's not the money that matters. It's never going to be the money. It's about the area, the wildness of it. You start bringing people in, there go the animal populations next.

Clockwise from top left: Galloping horses in the field beside Andrea Two Bulls' home on Red Shirt Table; thunderheads against the sunset on the way to Singing Horse Trading Post; Andrea's mother Cecelia "Lovey" Two Bulls and nephew Tyler Two Bulls hiking on Sheep Mountain; horses in the snow on the way to the Badlands; rocks and a cicada wing. *Photographs by Andrea Two Bulls*

BAMM BREWER

Private buffalo rancher and founder of a company that processes bison and other wild game. He also founded the Native American Honor Ride, which commemorates cultural history, Crazy Horse, and all US veterans.

I'M NOT THE BEST historian—there are people amongst our tribe who are better—but I do my best with what I know anyway. The youth are the future of our nation. We try to teach them things that our ancestors would teach.

These are five buffalo skulls that we use at our Sundance *[Editor's note: Sundance is a traditional Lakota summer ceremony that the US government had outlawed until the 1970s].* Sundance is very important to us: We

"I'm glad to be a part of this way of life. I hope our ancestors are proud of us."

didn't do it this year because of the pandemic, but I pulled them out as a reflection of prayer, of a year away from our normal ways.

But then I see our buffalo herd with a full moon coming up and it was just a nice purple sky. It was just making it through the winter. When you're able to look out on your own landscape and see buffalo there? It makes you feel like you're doing something. It's something that not all tribal members get to do. We're really lucky to be able to have that scene at the house.

I wish herd management was not as rugged—I wish the buffalo were a little more gentle. But it is what it is. Buffalo are wild, and we got to do what we got to do to get them. We're always improving every year. I'm hoping that one day we'll look back and say, "We used to do it that way, and now we have a gentler way."

I'm glad to be a part of this way of life. I hope our ancestors are proud of us. I know they are.

Clockwise from top left: Burned-cedar signs that Bamm Brewer makes and displays around his ranch and community; Oglala Sioux Tribe Parks and Recreation Authority gathers buffalo for veterinary work and herd management; buffalo skulls being prepared at Holy Buffalo Society Sundance; Bamm's herd of reintroduced buffalo grazes outside of his house on the Pine Ridge Reservation. *Photographs by Bamm Brewer*