

# JUSTLY BIODIVERSE:

Nature's Lifeline for the  
Health of All Communities



Endangered Species Coalition  
Special Report 2021



# I N T R O D U C T I O N

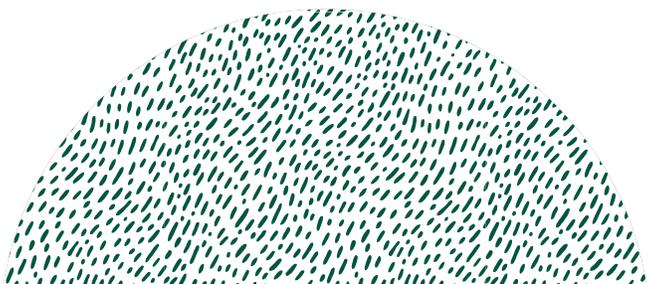
COVID-19, Ebola, SARS, and other zoonotic diseases make it clear that when we endanger biodiversity, we endanger ourselves. Zoonotic diseases, caused by pathogens transmitted from animals to humans, are rising, accounting for 70 percent of emerging infectious diseases. They are increasing because we are cutting down more forests and trading in more wildlife. The root origin of many zoonotic diseases is our unsustainable relationship with biodiversity. Large populations of people are coming into contact with wild animals, and their pathogens are spilling over. Our reliance on healthy biodiversity is not just about avoiding diseases.

Biodiversity is our life-support system. We breathe, eat, drink, sleep, play, and live on a natural planet. The United Nations declared that failing to protect biodiversity is a human rights issue. Each of us is part of biodiversity's web of life, yet some people compartmentalize nature as something separate from us.

The mainstream environmental movement contributed to this disharmony. Early white voices for the environment largely framed conservation as protecting "untrammelled" wilderness and conserving biodiversity hotspots. Yet, this movement has violated human rights. Indigenous Peoples were stripped of their treaty rights on new public lands; Black people were segregated in southern national parks. Our focus on wilderness excluded and often continues to neglect communities—Black, Indigenous, Latino, and low-income—who suffer from the denuding of nature in cities, including the biodiversity that visits patios and city parks. As a mainstream, white-led environmental organization, the Endangered Species Coalition acknowledges its role in perpetuating an exclusive vision of what conservation is, and is taking action to shift that vision, internally and externally.

A holistic view of biodiversity—big and small, human, and non-human—has never been more needed. The biodiversity extinction crisis is a train coming straight at us. The policies to protect U.S. biodiversity rest disproportionately on the Endangered Species Act. We have relatively few federal laws, policies, or practices to conserve wildlife outside of the Endangered Species Act. The Endangered Species Act has been under constant attack by the oil and gas industry, the pesticide and agriculture industry, developers, and the National Rifle Association (NRA), among others. These are also some of the same organizations and industries contributing to environmental injustices across the country and beyond.

Throughout the United States, specific communities suffer disproportionately due to biodiversity loss, sometimes in a targeted manner. The founders of the environmental justice movement understood the connection between the loss of biodiversity and the injustice faced by communities. During the first nationwide





environmental justice conference, the People of Color Environmental Leadership Summit in DC in 1991, the first adopted principle was “Environmental Justice affirms the sacredness of Mother Earth, ecological unity and the *interdependence of all species*, and the right to be free from ecological destruction.”

Yet, the environmental movement has not articulated how biodiversity loss impacts communities, and therefore, the role the Endangered Species Act can play in communities where environmental racism impacts individual health. This report attempts to offer a fuller view. We make the case that not only does the loss of imperiled species and habitats impact all of us, but it particularly hurts, low-income communities and communities of color, first and worst. COVID-19 is a prescient example. This virus stemmed from our unsustainable relationship with nature and resulted in uneven impacts—communities of color, especially Black, Indigenous, and Latino communities, have been hurt at the greatest rate.

We also need a holistic view of what biodiversity protection looks like. The report provides only a small sampling of the communities of color who are at the forefront of biodiversity protection. Greater awareness and respect are needed for the wisdom and innovative approaches brought by communities of color in protecting nature. And we must advocate to enhance the strength and sovereignty of those communities to support their approaches to saving species.

The report details 12 benefits of our natural planet for all people. It describes disproportionate impacts of biodiversity loss to low-income and communities of color in contrast to white communities. Finally, it gives examples of some of the imperiled species and habitats that play heightened roles in supporting each benefit.



We hope that readers will enter into this conversation with us. Help us to learn, identify, and find other linkages.

Our goals for the report are to:

- Call on influential, white-led environmental groups to help uncover how biodiversity loss is an environmental justice issue.
- Support communities working for environmental justice, particularly Black, Brown, and Indigenous communities in securing greater biodiversity protections,
- Persuade policymakers that biodiversity loss has significant environmental justice implications.

We hope that readers will enter into this conversation with us. Help us to learn, identify, and find other linkages. We have made a series of policy recommendations and look forward to engaging with you to identify other approaches to secure a just, biodiverse planet.



# A C K N O W L E D G M E N T S

## Acknowledging contributed knowledge and experience

In addition to acknowledging the experiences of individuals and communities fighting against and experiencing environmental injustice which we speak of in our report, ESC has benefited from multiple reviewers, writers, and contributors to this report from varying communities and individuals. In publishing this report, we are endeavoring to do no harm and be as specific as possible when talking about communities. ESC recognizes there is often disagreement and change within groups about the proper language reflect respect and equity, and we have worked to be intentional and careful about our choices in this report. We have leaned heavily on the diverse and experienced perspectives of individuals and organizations working in the environmental justice and equitable communications field to guide our language and approach. We are grateful for the time and knowledge that they have shared with us to improve this report, and are delighted to be sharing and continuing our learning, with you as our respected readers.

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S E C T I O N O N E

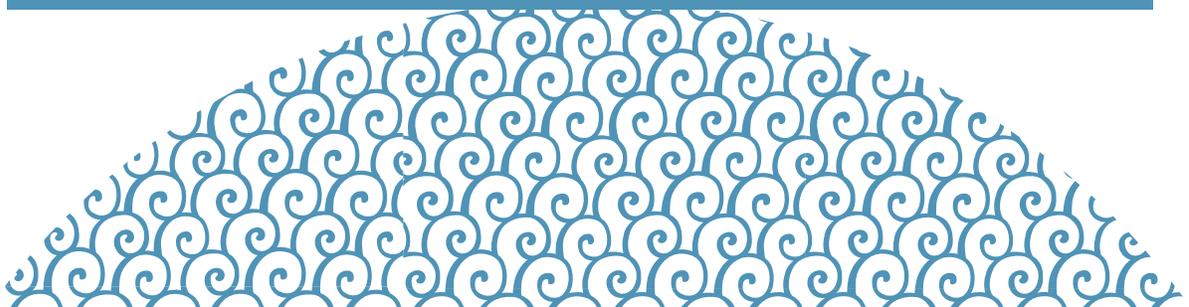
# CLEAN AIR

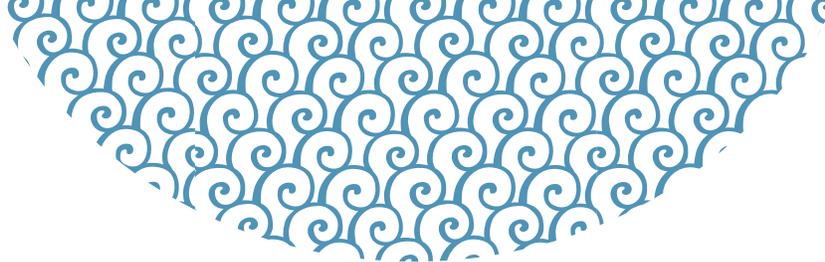


Los Angeles's Council District 15—I experience the daily struggles of frontline community members in the district with the most active oil wells in the largest urban oil field in the United States and the public health effects toxic air has on the predominantly black and brown families who live in CD15. I have the privilege of working with community-based organizations as part of STAND-LA that actively works on developing policy changes to establish a 2,500ft health and safety buffer around active oil wells and shutdown idle oil ones and in turn implement alternative sustainable energy sources that allow families to breathe and thrive.

## Bayoán Rosselló Cornier

Senior Program Manager in Liberty Hill Foundation's  
Environmental Health and Justice Department





## Biodiversity for All

**B**reathable air is an invisible, essential requirement for life. Earth's atmosphere is a thin, pale blue band separating our planet from the black void of space. At a molecular level, the air we breathe connects us across time to all beings which have lived and are alive today on our planet. Plants simultaneously create breathable air and provide exceptional pollution buffering by removing airborne pollutants from the atmosphere; in 2010 alone, plants removed an estimated 22.4 million tons of U.S. air pollution. The value of air pollution removal by trees in urban parks is \$3.8 billion. Trees cool air temperatures, reducing emissions and ozone formation.

## Community Impacts

U.S. air quality has historically been compromised, with significant, troubling issues of unequal access to clean air. As of 2019, over 110 million people in the United States, or roughly  $\frac{1}{3}$  of the total population, resided in counties with levels of pollution harmful to health; other studies indicate the number of individuals living with unhealthy particulate pollution and high ozone reaches as high as 45.8 percent of the U.S. population.

Many communities of color experience higher rates of airborne pollution and are at a higher health risk from exposure. Latino and Black communities, in particular, have demonstrated increases in exposure to fine-particulate matter compared to non-Latino white communities. Particulate matter causes increased hospitalizations and deaths from diseases related to exposure. Nitrogen dioxide (NO<sub>2</sub>) negatively affects the human respiratory system and is present in racially diverse communities at a 38 percent higher rate than that of white communities. Nationally, due to environmental racism, Black people have an asthma rate of more than 10 times that of white people. And there is an explicit racial 'pollution inequity' between those who produce pollution, largely white-led corporations, and those who are exposed to it, disproportionately low-income communities and communities of color.

Access to green space is critical in mitigating air pollution impacts, though not all people have the same access. Proximity to parks is a major factor in reducing heart disease. Green spaces in cities remove carbon pollution while providing cooling shade, offsetting urban heat island and climate change effects. Yet unequal access to natural areas, including urban parks, means that low-income and communities of color are least likely to live near green space—their available parks are  $\frac{1}{2}$  the size of those in majority-white locations and up to five times as

Many communities of color experience higher rates of airborne pollution and are at a higher health risk from exposure.

crowded. As a result, white people are more likely to live in healthier communities and, in turn, have longer life spans.

### Species & Habitats In Peril

Planting and caring for native, pollution-resistant, and long-lived trees can provide marked benefits in air quality. Evidence suggests that restoring tree cover to the continental United States would result in an average 27 percent reduction in air pollution. The American elm (*Ulmus americana*) was one tree that was particularly widespread and suited to the urban environment, but it has been largely eliminated due to the introduced “Dutch elm disease.”

Nature-based solutions, or *bioremediation* tactics, provide exceptional benefits in reducing harm from airborne pollutants. Microscopic algae in marine and freshwater systems produce 50-80 percent of the planet’s atmospheric oxygen while absorbing carbon and other air pollutants. Innovative technologies, such as photosynthetic algae ‘curtains’—which when mounted over buildings, take in polluted air, remove pollutants, and release clean air—are one of the many biological solutions that can improve air quality.



S E C T I O N T W O

# CLEAN WATER



Our waterways are a key battleground in the defense of not only our most iconic and endangered species, but in the fight for equity and justice as well. The fact that Black, Brown, and poor communities in the U.S. are least likely to have access to swimmable, fishable, and drinkable water illustrates the importance of bridging clean water work focused on water quality and ecosystem health with public health. By prioritizing the well-being of Black, Indigenous, Latinx, Asian, Pacific Islander, and other historically marginalized communities, access and proximity to clean water not only becomes an environmental justice issue, but a human rights issue, too.

## Eloise Harris

Community Engagement Director, Puget Soundkeeper Alliance





## Biodiversity for All

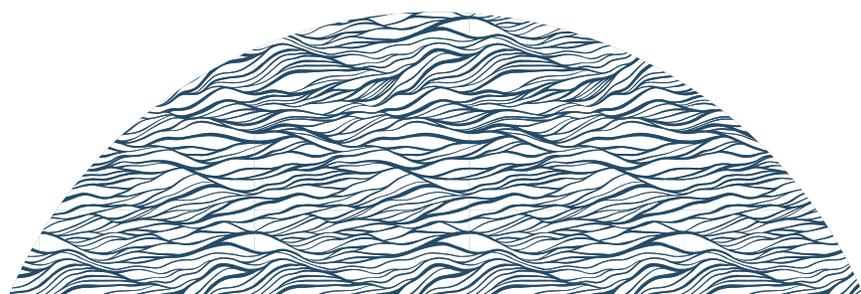
**F**rozen in a snowfall's flakes, flowing over a mountain creek's shimmering rocks, steam rising in sunlight through an awakening forest is water. Water sustains. Our blood is composed almost entirely of water. The Earth itself is made up of 71 percent water, yet a mere 2.5 percent is fresh, and of that, 68 percent is frozen. The United Nations identifies water as a basic human right and Indigenous communities have encouraged and connected the call that "water is life."

**In the United States, at least 2 million people live without running water.**

Biodiversity increases our access to water. A handful of large U.S. cities rely on nature's filtering to provide clean drinking water. New York City protects three lakes and a watershed for its supply. If it used a human-made filtration system, the city would need \$10 billion for a filtration plant and \$100-plus million annually to operate it. Yet, while nature provides water, a system as large as this one includes human-made reservoirs—the creation of which displaced communities in upstate New York, evicting people from their farms, flooding homes, relocating cemeteries, and threatening livelihoods. Some upstate communities continue to harbor resentment for the environmental injustice inflicted upon them in the name of establishing a water supply for New York City. An equitable approach must be used in securing our water supply.

### Community Impacts

In the United States, at least 2 million people live without running water. In Appalachian communities, people are harmed by mountaintop mining as waterways are contaminated. Mountaintop removal eliminates up to 800 feet from mountain peaks and enables otherwise inaccessible coal seams to be mined. Rocks are blasted and tons of debris created, leading to devastating ecological and health effects. In 2012, the Environmental Protection Agency (EPA) estimated that this rock waste buried 2,400 miles of waterways, greater than the Mississippi River's length.





Mountaintop removal pollution runs into streams and rivers, creating a toxic brew of heavy metals and cleaning chemicals, contaminating billions of gallons of freshwater; this, together with mining's air pollution, leads to 1,200 more deaths annually in nearby Appalachian communities. Well water at nearby homes has turned orange or grey and smells of sulfur and contains manganese, iron, and lead.

### Species & Habitats In Peril

Nature-based solutions—that enhance nature and address social challenges using the consensual application of local and Indigenous ecological knowledge—are increasingly used to resolve water pollution. Examples include structures like bioswales and catchment basins—which are depressions planted with vegetation to prevent stormwater from running off into waterways. Instead of allowing oil debris, chemicals, fertilizers, and other toxins from entering waterways, bioswales absorb and filter up to 80 percent. Local, native plants are often used.

Animals likewise play a critical role. Adult mussels and oysters filter 15-50 gallons of water per day. Though many of the United States' 300-plus mussels are endangered, scientists hope that mussel farms can clean our waterways. Meanwhile, the Bronx River, or Aquehung as it was known by the first inhabitants of the area, holds spiritual significance and served as a key source of food and water for the Weckquaesgeek and Siwanoy people. Through the expansion of settler colonialism and the establishment of mills along the Bronx River, it became a toxic dumping ground that is now being revitalized by the reintroduction of oyster reefs. The reintroduction has improved water quality and provided wave buffering from storms.

S E C T I O N   T H R E E



MEDICINES  
& DISEASE  
CONTROL



Human activity is increasingly threatening this richness [plant and animal biodiversity] and with it, our ability to cure many diseases and relieve the enormous human suffering they cause. We need to greatly expand our investigations of natural compounds before the species that make them are lost...But we need to do so ethically, with deep care and respect for the organisms we are studying, and sustainably, so that our investigations do not threaten their survival.

-Medicines from Nature, Chapter 4, pp.160-161

Chapter authors: David J. Newman, John Kilama,  
Aaron Bernstein, and Eric Chivian



## Biodiversity for All

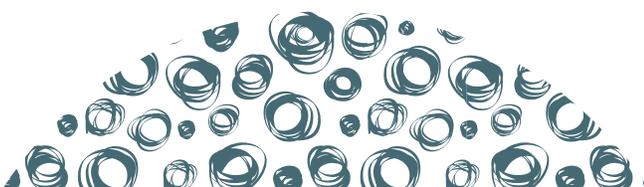
**F**orests, grasslands, and other habitats are a treasure-trove of cures. Nearly 50 percent of medicines approved from the 1980s to 2012 were plant-derived, including 70 percent of cancer treatments. We rely on plant-based drugs, such as the heart medicine Digitalin—from foxglove (*Digitalis spp.*)—to the antimalarial Quinine—from Cinchona tree bark (*Cinchona spp.*)—to penicillin—from fungi (*Penicillium*).

We also rely on biomimicry, copying nature to innovate medical treatments. Scientists imitated slug mucus to develop surgical glue and studied mosquitos to create less painful needles. Intact biodiversity also prevents disease outbreaks. Infectious diseases have risen since the mid-1980s, and 70 percent are zoonotic, meaning that they originate from animals, including the current Covid-19 virus.

## Community Impacts

Every human being has a right to high-quality health care. However, U.S. health disparities, including racial and ethnic bias in diagnosis and treatment, impact health care access, quality, and outcomes for low-income, racially and ethnically diverse communities. Research has shown that racism is a public health threat. Persistent racial discrimination and environmental racism create chronic stress that increases inflammation, leading to higher risks of cancers, heart disease, and other illnesses. Covid-19 death rates among Black communities are nearly two and a half times greater than proportionate to the population, and Black and Latino individuals are 4.7 times more likely to be hospitalized compared to white individuals—a consequence of structural inequalities in healthcare. Black and Latino communities, in particular, need access to quality, affordable medicines, and healthcare.

Medicines derived from traditional knowledge have faced colonial exploitation. Bioprospecting companies, those that seek to create medicinal drugs and biochemicals from plants and animals, have essentially stolen traditional medicines by patenting them without Tribal or community consent or compensation for their intellectual property. Indigenous Peoples are also struggling to source medicinal plants that they have harvested for millennia. Overharvesting is the second leading cause of biodiversity loss. As the popularity of traditional medicines spreads beyond communities, commercial exploitation takes hold and medicinal plants are overharvested. For instance, the Lakota tribe, among others, use the plant Osha (*Ligusticum porteri*)—known as mathó tháphéžuta in Lakota—to cure





and ease poor circulation, fevers, bronchitis, and sinus infections. The plant was once common, but as commercial collecting continues, certain plant populations disappear, the Osha plant is already imperiled in Utah and critically imperiled in Wyoming.

### Species & Habitats in Peril

Slow growing, with shaggy bark, smooth, flat needles, and gelatinous red fruit, Pacific yew (*Taxus brevifolia*) is a conifer in old-growth forests from Northern California to Southeast Alaska, where it survives for centuries. Loggers considered Pacific yew to be a nuisance tree, left to rot or burn. On the slopes of Loowit (Mount Saint Helens) in the 1960s, botanist Dr. Arthur Barclay collected Pacific yew needles, twigs, and bark as part of the National Cancer Institute's plant collection and screening for anti-cancer properties.

The tree's lifesaving, anti-cancer properties led to the development of Taxol—an "Essential Medicine" to treat breast, ovarian, and other cancers. Its value for Taxol resulted in elevated prices and poaching, along with calls for protection. Synthetic Taxol was quickly developed from Pacific yew, a tree species, preventing its extinction. The Pacific yew is an example of the value of adopting a precautionary approach in caring for ecosystems to discover their unforeseen medical benefits.

Every human being has a right to high-quality health care.



# Wildlife Trade: The Time for Reform Is Now

When conservationists give presentations about the threats posed by wildlife trade, they usually include an obligatory slide about public health. Wildlife trade, they point out, is a perfect conduit of zoonotic disease, including ones that could lead to the next pandemic. Almost always, the slide comes and goes without further discussion.

Around the world, millions of individual animals of thousands of species are legally and illegally traded each year. The conditions they are often subjected to—stress, crowding, and contact with multiple species—create a perfect Petri dish for disease emergence. This threat is not hypothetical. In 2005, scientists reported in *Emerging Infectious Disease* that outbreaks resulting from wildlife trade had cost billions of dollars in global economic damage since the mid-1990s. In a 2007 *Ecohealth* paper, researchers

# RACHEL NUWER

predicted that increasing rates of international wildlife trade would cause the probability of global epidemics to escalate dramatically in the coming years.

This threat can be lessened. Limits could be placed on which species can be traded and how, and countries can commit to enforcing anti-wildlife trafficking laws. Such change has been slow to come, however. During the 2003 SARS epidemic, China shut down some wildlife markets, but within a year, the trade was back up and running.

SARS-CoV-2, which almost certainly originated through wildlife trade, dwarfs any pandemic seen in the past 100 years. In its enormity, though, it offers us a chance to reform our approach to wildlife trade. If Covid-19 is not motivation enough to finally tackle this most obvious of threats, then perhaps nothing is.

S E C T I O N F O U R

FOOD

—

SUBSISTENCE  
HUNTING,  
FISHING &  
GATHERING



Western thought reinforces the idea that, through science and technology, we can pick and choose the parts of the environment we want to protect—adapting nature to our human needs rather than acknowledging that we ourselves are also a part of the landscape being impacted. We know that water systems with lots of diversity in them are better systems. They provide us with essential benefits like sustenance—wholesome fish and seafood. As we destroy legions of plant and animal species, we are essentially throwing into chaos and waste so many interconnected parts of the whole.

## Fred Tutman

Patuxent Riverkeeper



## Biodiversity for All

**N**ature shapes human culture, and the rich diversity of human cultures carries pathways and connections to landscapes, plants, and animals. Subsistence activities are intrinsically tied to nearby resources. And people particularly from rural communities across the country rely on hunting and fishing to supplement their food supply. Southeastern Indigenous tribes link subsistence practices, including foraging, hunting, farming, and fishing to a sense of accomplishment, creation of intergenerational community, and personal and cultural resilience. For instance, Alaskan inland Dena'ina retains extensive knowledge of native plants, including seasonal identification, growing locations, and culinary, medicinal, and practical uses.

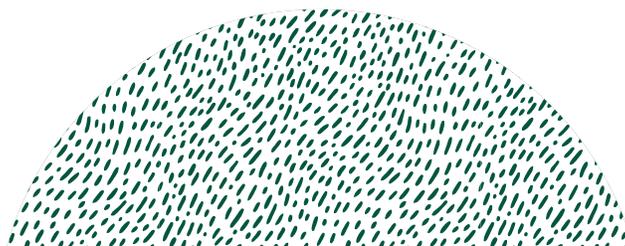
Meanwhile, urban subsistence foraging is growing as a way to reconnect people in cities to local knowledge of natural abundance, seasonal cycles, and stewardship practices. Examples include plant collection for basketry and other crafts, natural dye collection, and food resource gathering. There has also been a move toward re-creating forest gardens—woods with plant-based foods, such as oaks with acorns used for flour and bread.

**Tribal members of the Columbia Basin who frequently consume salmon are at a staggeringly increased risk of cancer—up to 50 times greater due to contamination of the river.**

## Community Impacts

The Columbia Basin is the homeland of the Nez Perce Tribe, Nimipuu Peoples, the Confederated Tribes of the Umatilla Indian Reservation, The Confederated Tribes of the Warm Springs Reservation of Oregon, and the Confederated Tribes and Bands of the Yakama Nation. Salmon are fundamentally and intimately woven into the needs, lifeways, values, and spiritual practices of the Tribes. For

**Specific Indigenous communities referred to as southeastern “Inland Tribe” and “Coastal Tribe” are not disclosed to respect community privacy.**



centuries, Celilo Falls, or Wy-am, was the site of Indigenous fisheries and a cultural crossroads. The roaring water fell in foaming currents over dramatic rock formations. Chinook salmon (*Oncorhynchus tshawytscha*) made the passage to inland spawning sites, renewing their remarkable freshwater-to-saltwater-to-freshwater life history. Yet this sacred space was inundated by Celilo 'Lake' as the Dalles Dam backed up the river in 1957. Indigenous culture was disrupted at the root; today more than 250 reservoirs and 18 dams exist along the Columbia River and Snake River. Previous estimates indicated a harvest of 5 million salmon annually; in the mid-1990s, the returns plummeted to just 30,000 and Columbia Chinook salmon became listed as endangered.

Today, the Columbia River is contaminated by toxic pollutants. Tribal members of the Columbia Basin who frequently consume salmon are at a staggeringly increased risk of cancer—up to 50 times greater due to contamination of the river. Contemporary Yakama and Lummi Nation Tribes are calling for the removal of the dams along the Columbia, just as the Winnemem Wintu Tribe seeks the removal of a dam blocking salmon migration in California. Tribal communities across the Americas fight for the removal of dams that impact tribal resources and livelihoods—the damage caused by Columbia River dams is part of a global systemic issue.

## Species & Habitats In Peril

For the Anishinaabe peoples, whose traditional territory spans the Great Lakes region and extends well into Canada, *manoomin*, or wild rice, is infused in the cultural legacy of place; wild rice marked the location of the lands which became their territories. The Anishinaabe people remain culturally linked to wild rice, harvesting rice with techniques that span generations. Some experts can identify the exact body of water from which the rice has been harvested through taste and texture alone. The cultural practices connected to wild rice and the grain itself are placed at risk by water pollution, invasive species, and genetic contamination. Significantly, the White Earth Band of Ojibwe declared the 'Rights of Manoomin' in 2018, which states the rights of wild rice to experience clean water, be free from the harms of climate change and genetic modification, and other rights to ensure the species' survival and health.



S E C T I O N F I V E

FARMING AND  
RANCHING  
SUPPORT

—

POLLINATORS  
AND  
BENEFICIAL  
SPECIES



The protection of wild pollinators and the stewardship of managed hives are central to our operations at Soul Fire Farm. By implementing Afro-indigenous practices like polyculture, agroforestry, and no-till we have seen a dramatic increase in our pollinator biodiversity.

## Leah Penniman

Farm Manager Soul Fire Farm



## Biodiversity for All

Often, the first animal thought about upon hearing ‘pollinator’ is the honeybee—a non-native bee. Butterflies, bats, bees, flies, moths, beetles, and birds reflect the extraordinary variety of native U.S. pollinators. Animal pollinators co-evolved with plants in an explosion of interdependent relationships. Humans also depend on pollinators—Three out of four of our key food crops and flowering plants are pollinated by animals. Globally, these pollinators contribute \$500 billion to food production. Native bees are more efficient local pollinators than honeybees, visiting flowers in cool and wet conditions, foraging for longer periods, and staying close to specific plants.

Farms not relying on biodiversity to control weeds and insects, rely on toxic pesticides, the use of which increases the hazards of working.

Many farmers, particularly organic farmers, also rely on animals, such as native birds, to control insect pests and weeds. Other species help to control rodents. Black-footed ferrets (*Mustela nigripes*) prey on prairie dogs—an agricultural pest. Farmers also benefit from the water retention, soil tilth, nutrient cycling, and erosion control that biodiversity provides.

## Community Impacts

In 1910 14% of U.S. Farmers were Black, today that percentage is 1.3. The decline in Black farming is largely due to racial discrimination by The United States Department of Agriculture (USDA). Black farmers have been excluded from federal subsidies, denied necessary operating loans and been misrepresented by falsified USDA data. This has resulted in a loss of Black income and farmlands which is also a blow to biodiversity. Afro-Indigenous sustainable farming methods are deeply rooted, inherited practices for many Black farming families. Some Africans were specifically targeted for enslavement to exploit their agricultural expertise. The famous Black agricultural scientist, George Washington Carver, established the key organic technique of cover cropping through his work. Supporting Black farmers and their traditional farming practices supports sustainable agricultural methods that benefit pollinators and biodiversity.

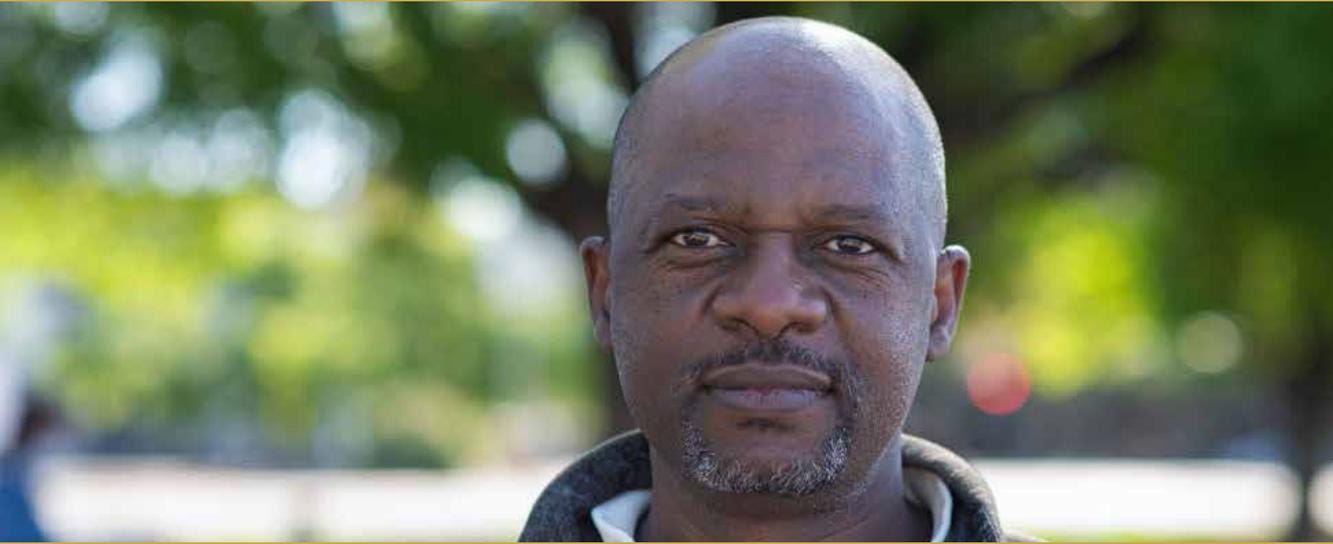




Farms not relying on biodiversity to control weeds and insects, rely on toxic pesticides, the use of which increases the hazards of working in agriculture. Much of the U.S. farmworker labor force is made up of undocumented immigrants from Mexico, who have limited protections from worker abuse, and from the health impacts of environmentally damaging farming practices. Workers may be sprayed by pesticides or exposed when entering fields too soon after pesticide application. They may not receive adequate resources even when required by law—pesticide ingredients and application information in Spanish—or have access to water for handwashing and protective gear. They may be exposed to wind-carried pesticides, known as pesticide drift. Diseases linked to pesticides include cancer, asthma, developmental disorders, congenital or learning disabilities, and reproductive harm. In contrast, farmworkers on climate-smart farms operating in harmony with biodiversity are much less likely to be exposed to toxic pesticides and substances. Regenerative agriculture focuses on building soil health by using composting, cover crops, and through diversifying plant species. These methods allow both people and species to thrive.

### Species & Habitats In Peril

From the unique relationship between the endangered elderberry longhorn beetle (*Desmocerus californicus dimorphus*) and elderberry plants (*Sambucus spp.*) to the amazing specialization of yucca moths (*Tegeticula* or *Parategeticula spp.*) pollinating Joshua trees (*Yucca brevifolia*), many animal-plant relationships are intertwined with one species unable to exist without the other. These unique relationships are threatened by habitat loss, pesticide use, and the climate change crisis. And humans are directly affected. The endangered rusty patched bumblebee (*Bombus affinis*) pollinates crops like blueberries, cranberries, and tomatoes. And more than 300 species of fruits, including mangoes and bananas, are pollinated by bats, such as the endangered lesser long-nosed bat (*Leptonycteris yerbabuenae*). Conserving native pollinators and plants alike by restoring and creating habitat is vital for the irreplaceable relationship between humans and pollinators.



Global Gardens is a land-based urban agriculture training program that offers land, infrastructure, outstanding farming, and marketing training to refugee farmers at three incubator farm sites. The program supports 11 farmers including one mushroom grower on 14 acres that provide fresh produce for their families and sell through markets, Community-Supported Agriculture (CSA) and wholesale programs. In 2020, farmers have 250 CSA customers. Thirteen farmers participated in the wholesale program supplying 22 customers with weekly deliveries. Global Gardens also supports one community garden with 105 community garden plots and 100+ gardeners.

# RABIOU MANZO

Farming provides connections to home countries, builds a sense of community here, and provides significant supplemental income for the farmers. Many refugees were farmers as a career path back home. Here revenues supplement primary income, increases access to fresh food, and provides familiar ethnic produce varieties. Community with refugees from other countries helps improve their English and become integrated members of the larger community. The program also works to empower farmers' decision making and representation to promote equity and opportunities among all farmers. The program has enabled farmers to contribute to and become an important part of the Boise food system while gaining physical and mental health benefits.

One farmer has a condition requiring regular dialysis. Farming allows him the flexibility for medical appointments, and he grows sufficient produce for his family and sells some to add to their modest income. One senior refugee is comparing gardens to her life. She said if her plants survive, there is life in her.

S E C T I O N   S I X

# PROTECTION FROM CLIMATE CHANGE

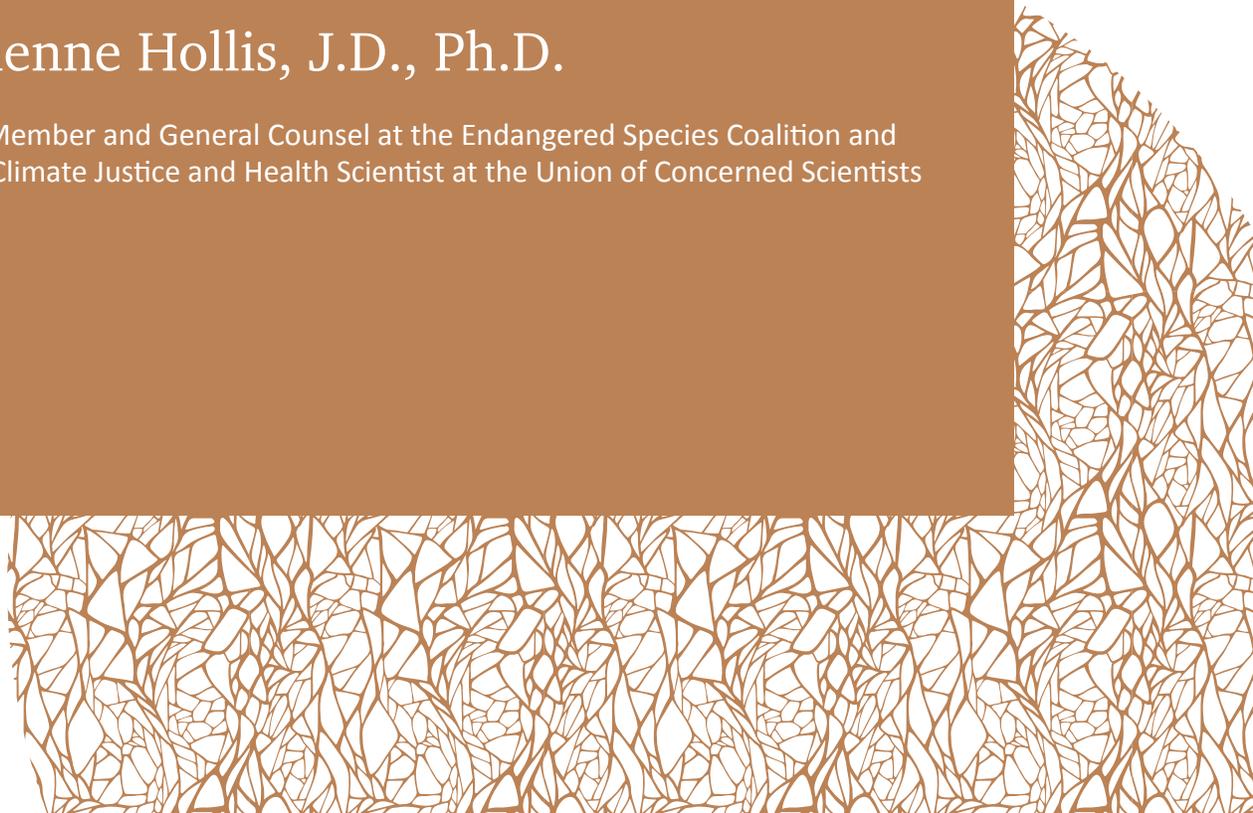




Disproportionate exposures to environmental contamination and the adverse impacts of climate change affect communities of color first and worst. The underlying reason for these disparate impacts is historical racism. To address these inequities and create resilient, thriving communities, we must address the paucity of environmental protections, including biodiversity protections. If we do not, climate change will continue, leading to extreme weather events like coastal and chronic flooding, sea level rise and increased temperatures, and people and the planet will continue to suffer.

## Adrienne Hollis, J.D., Ph.D.

Board Member and General Counsel at the Endangered Species Coalition and Senior Climate Justice and Health Scientist at the Union of Concerned Scientists



## Biodiversity for All

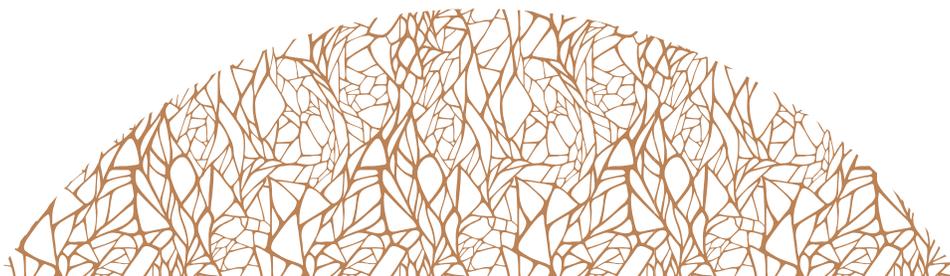
Lashed by superstorms, seared by wildfires, and scalded by rising temperatures, the climate crisis ravages communities. By protecting biodiversity, people can buffer themselves from the worst consequences of a warming planet. Healthy, biodiverse ecosystems can mitigate climate change by absorbing carbon and can help communities adapt to climate change impacts.

Forests absorb greenhouse gases; therefore, ending deforestation, preserving forests, and restoring native trees is essential to capture atmospheric carbon. Increasing forest cover is key to limit warming. Researchers are calling for an increased percentage of protected natural forests, prioritization of fast-growing tropical plantings, regeneration of degraded forests, and limits on tree plantations. Other habitats also mitigate carbon or adapt to climate change, including grasslands, marine ecosystems, and estuaries, where fresh and saltwater mix.

## Community Impacts

Climate change places coastal populations and cities at extreme risk. Recent studies indicate that major global cities, including U.S. locations such as New Orleans and Miami, will experience displacement of an estimated 150 million people by 2050 due to sea-level rise as cities become inundated at high tide. Many coastal U.S. cities lack climate-smart building codes, infrastructure, or finances to protect their communities. The climate crisis's physical stressors to people include difficulty accessing water, food, and other resources; displacement and dislocation, including climate refugee status; and long-term climate stress-related illnesses. Those most vulnerable to the impacts of climate change are low-income communities, communities of color, women, and youth. Many of these communities are also fighting against institutionalized discrimination and lack of access to resources, which magnifies the difficulty of adapting to climatic impacts. The growing concept of climate justice acknowledges that discrimination experienced by these communities must be addressed within climate solutions in order to successfully adapt and arrest the warming climate.

For young people, experiencing climate change leads to psychological and physical consequences. Witnessing current impacts takes a toll on the mental and bodily health of young people. Youth express a sense of despair and anxiety about how negative changes in the environment will shape their futures, making them uniquely vulnerable. Polling conducted in 2019 found that 57 percent of teens described feeling scared about climate change. The health consequences are far-reaching, from trauma associated with consuming media about the





## Coastal dunes protect communities from flooding, storm surges, sea-level rise, and hurricanes.

climate crisis to direct experiences of climate change-related violence and social disruption.

### Species & Habitats In Peril

Many ecosystems provide significant adaptation benefits. Estuaries provide natural defense from coastal erosion and the devastating effects of hurricanes. Yet, these landscapes are themselves at risk from climate change due to reduced inflow of freshwater from drought, along with climate-related changes to sea level, water temperature, and ocean currents. Seagrasses, though also imperiled, absorb carbon and wave energy. Coastal dunes protect communities from flooding, storm surges, sea-level rise, and hurricanes. Mangrove forests and coral reefs provide protection as “natural infrastructure” against severe weather impacts, particularly by absorbing wave energy and reducing wave heights. In fact, mangroves along the Gulf Coast of Florida and Texas coast can reduce wave heights by some 66 percent. And coral reefs can buffer wave energy by up to 97 percent. This not only minimizes erosion, it also cuts flood damage costs in half. Yet, mangrove and coral reef habitats are increasingly threatened.

A recent report by the Intergovernmental Panels on Climate Change and on Biodiversity and Ecosystem Services emphasizes the importance of addressing climate change and biodiversity loss as mutually supporting goals. Policies targeting both issues must be intersectional. To save our climate we must save the species that make up our reefs and mangroves, while centering those who rely on them for survival. And to save critical species we must address our planet’s warming climate and the inequity which allows it to continue.



Over the last 3 years, the climate crisis has caused me to rethink almost every decision I make—what I eat, how I shower, my work, what I buy—and has transformed my values and world-view. I make these small changes in the hope that we can avoid the most devastating global impacts, and fight this impossible timeline where each passing day is already too late.

Growing up in the suburbs at the top of Lake Washington, I never saw the environmental impacts of climate change firsthand. Our neighborhoods were surrounded by little forests and creeks, and I still wake up to the sounds of white-crowned sparrows when I

# CHLOE YEO

visit home. Through the years, developers have replaced the land with townhouses and apartments to meet the demand of Seattle transplants. While intense wildfire seasons and drier summers have become more common, the most visible changes have been in human adaptation, like meeting neighbors who moved for the weather or buying a family air conditioner for the first time.

I spent months stressing about creating less waste and lowering my emissions before I understood that collective action had a significantly greater impact than me refusing a straw at brunch. In organizing together, the climate justice community has given me strength and newfound hope that we can have a livable future beyond humans adapting to a warming planet. It is exhausting and impossible to fight climate change on your own. But by working toward a resilient, thriving future, together, we can actually have a fighting chance.

S E C T I O N   S E V E N

# RED FLAGS FROM NATURE





Environmental justice advocates understand that the harms imposed by fossil fuel-based, toxic pesticide production and use disproportionately affect people of color. Many people of color live in frontline communities near petroleum and pesticide manufacturing plants, and work in hazardous and inhumane agricultural conditions. Furthermore, the impacts of pesticide use and exposure are ubiquitous and contribute to dramatic declines in biodiversity, with grave consequences for the environment, economy, and society. By protecting vulnerable communities of black and brown people, from toxic pesticide poisoning, we also protect endangered species at greatest risk—including mammals, bees and other pollinators, fish and other aquatic organisms, birds, and the soil microbiome.

## Akayla Bracey

Science and Regulatory Manager  
Beyond Pesticides

## Biodiversity for All

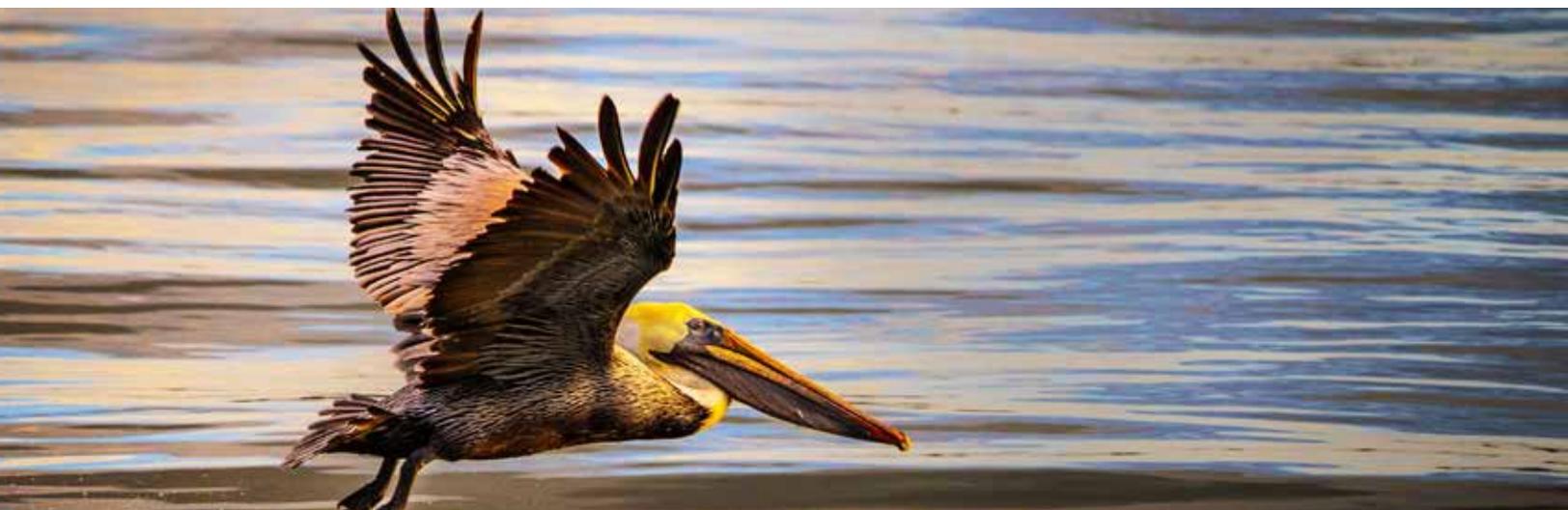
Natural systems function as a “canary in a coal mine”—signaling environmental harms, particularly toxins, which may impact humans. For instance, decades ago, incubating bird eggs were cracking under the weight of parent birds. Chicks failed to hatch, spiraling populations of brown pelicans, bald eagles, and peregrine falcons toward extinction. The culprit was invisible, colorless, persistent, and long-lasting, a toxic chemical compound known as DDT (dichloro-diphenyl-trichloroethane).

Saint Louis, Michigan—a small, rural community with 22 percent of the population living below the poverty level—was hit by two chemicals.

An insecticide developed in the 1940s, DDT kills insects harmful to farming. DDT is a Persistent Organic Pollutant (POP) initially produced after World War II. POPs spread globally and remain in the ecosystem, moving up through the food chain and impacting humans and wildlife alike. Close observation of DDT led Rachel Carson, a biologist and author of *Silent Spring*, to document the problems with pesticides and call for safe alternatives. Seeing the negative effects on wildlife, scientists realized that DDT could also impact humans, even causing cancer. DDT was banned in 1972, but its impacts linger.

### Community Impacts

Rural areas particularly need nature’s early warning system—their limited health care services could allow public health problems related to toxic pollution exposure to go undetected. Saint Louis, Michigan—a small, rural community with 22 percent of the population living below the poverty level—was hit by two chemi-

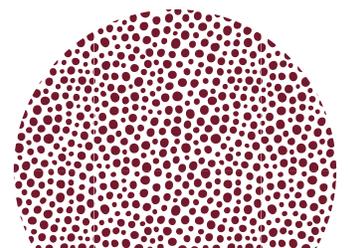


icals. First, the notorious 1973 Michigan Chemical (Velsicol Chemical Corp.) poisoning disaster, in which the fire-retardant polybrominated biphenyl (PBB) was mistakenly added to livestock feed. This grave error went undetected for over a year—an estimated 9 million Michiganders consumed PBB-laced products and many thousands of livestock were poisoned and died. More than 50 years later, incidences of cancer and reproductive and hormonal diseases remain elevated in that community.

Michigan Chemical also produced DDT, which it ineffectively stored underground after the plant's closure following the PBB fire-retardant disaster. Decades later, tens of millions of gallons of DDT contaminated wastewater continued leaking into the Pine River, a 103-mile-long river in the Lower Peninsula of Michigan. Now the former plant is a Superfund site—a site requiring long-term clean-up of highly hazardous toxins. As of 2020, it lost its clean-up funding under the Trump Administration's Environmental Protection Agency (EPA).

## Species & Habitats In Peril

Dramatic, glacially carved waterways frame the land and waters of the Salish Sea in the Pacific Northwest Washington State and British Columbia. It is a rich ecosystem home to southern resident orca (*Orcinus orca*), a critically endangered, biologically and culturally remarkable whale. Southern resident orca inhabited the Salish Sea for 5,000 years and have shared a strong relationship with the region's Indigenous peoples. Indigenous practices have supported the region's health for centuries. Indigenous activism continues to defend the ecosystem and orcas from exposure to coal development and tar sands oil pipelines. Despite this history of care, the Salish Sea ecosystem is under threat, and the population of southern resident orca hovers at just over 70 individuals. As apex predators with high body fat, orcas are particularly vulnerable to toxins—such as DDT, PCBs, dioxins, highly toxic environmental pollutants, and fire retardants—that move up through the food chain. Starving whales metabolize fat resources, a survival strategy that paradoxically releases toxins—with devastating consequences, including reduced life expectancy, reproductive failure, inter-generational toxic transfer, and nervous and endocrine system damage. In 2002, a deceased transient orca had such a high chemical concentration that her carcass was technically toxic waste. Up to half of the orca populations globally are at risk of extinction because of POPs. Southern resident orcas serve as an urgent alarm for the health of all forms of life since those same toxins are also within our bodies. The threats to the southern resident orca are reflective of the threats to the region's people who rely on the Salish Sea for sustenance, particularly the Indigenous tribes in the region.



S E C T I O N   E I G H T

WELL-BEING

—

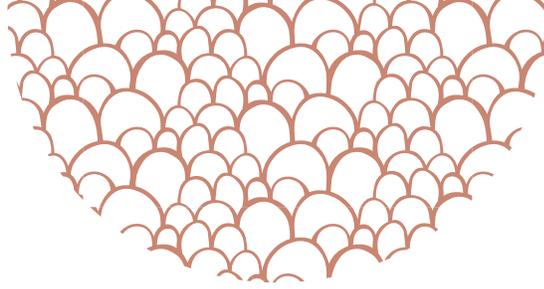
PHYSICAL,  
MENTAL &  
EMOTIONAL  
HEALTH



After returning from Iraq, where I served as a sniper with the US Army 1st Infantry Division, I sought the outdoors to escape the noise and distractions of the city. It took me days to adjust to the pace of the wilderness, but I found an encounter with wildlife always accelerated my transition. I'm proud to know we still have wild spaces where animals live unmolested by the modern world that I also fled to find peace of mind. The places where endangered species thrive represent the "land of the free" that I took an oath to defend. If it wasn't for the restorative power of our protected lands, I wouldn't have survived returning to civilian life.

## Garrett Reppenhagen

Executive Director at Veterans For Peace, Cavalry Scout Sniper,  
U.S. Army 1st Infantry Division



## Biodiversity for All

Jostling down a crowded city sidewalk in the shadows of tall buildings. Passing storefronts laden with advertisements. Sidestepping construction barricades. Absorbing discordant sounds—music, drilling, sirens. A city’s hustle and bustle can overwhelm our senses. Human-made city spaces without access to nature have a measurable, negative outcome on our memory, impulse control, and the quality of our physical and emotional health. Being exposed to different natural spaces, on the other hand, has a measurable positive impact on memory, attention control, and the ability to switch between thinking about two different concepts.

Nature is imbued with ‘soft fascinations’—intriguing, beautiful, compelling, mysterious, and surprising sights, sounds, and other sensory experiences—which support our ability to feel refreshed and creative. People who spend 120-plus minutes per week in nature report increased health and well-being; additionally, green space exposure is linked to fewer diseases, including obesity, diabetes, and cardiovascular disease. Patients with dementia demonstrate an ability to reconnect to their former abilities when engaged in nature. There is even evidence that being exposed to nature, including pocket parks—small urban parks, community gardens, and greenways—enables us to heal faster.

Access to nature can serve as a mental and emotional health intervention.

## Community Impacts

Every facet of the criminal justice system has racial inequities. Mass incarceration in the United States reflects deeply problematic, systemic issues of racial and social injustice, including systemic biases and inequalities in issues such as sentencing, stereotyping, poverty, and unemployment. While we have under 5 percent of the global population, incarcerated U.S. people account for 20 percent of the world’s prisoners—regrettably, the U.S. is the global incarceration leader.

A person’s experience of nature in prison is starkly limited. In super-maximum-security facilities, a distant square of sky through a cell window may be the sole opportunity to engage with nature. Those who are incarcerated are often already

experiencing higher rates of mental and physical disease, placed at greater risk of health problems; and family members and communities experiencing hyper-incarceration are burdened with intergenerational health consequences. Access to nature can serve as a mental and emotional health intervention. Conservation projects for those who are incarcerated create opportunities for them to raise threatened and endangered plants and animals for habitat restoration and participate in associated scientific research. These opportunities provide a connection to future education and employment while supporting a sense of changemaking outside the prison system.

### Species & Habitats In Peril

In Chicago, Illinois where the first skyscraper was created, innovations in green design have unfolded recently, including green cityscape walls and roofs. Sparked by a 1995 heatwave that killed over 700+ people, the city mobilized for green spaces to reduce urban areas that are significantly warmer than outlying areas. The resulting project was a green roof garden at Chicago City Hall. By 2013, Chicago's green roofs covered more than 5,500,000 square feet. Green roofs provide numerous human health benefits—reducing air temperatures, lowering energy needs, preventing polluted runoff, and improving mental health. Green roofs have the potential to increase biodiversity in urban settings too, if designed appropriately. And the possibility that these spaces could support urban corridors for wildlife deserves further investigation.





# Outdoor Healing Justice: a Solution to a Complex Problem

Mass incarceration's impacts extend beyond incarcerated people. Research and policy overlook familial impacts. There are 5+ million U.S. children of incarcerated parents (COIP), including 477,000 in Texas. There are more COIP than children with juvenile diabetes, but few COIP support structures exist. I started the Charles Roundtree Bloom Project, a COIP outdoor healing justice program in San Antonio to address mass incarceration impacts on children by (re)connecting them to nature. Knowing intimately the effects of an incarcerated parent and after discovering the outdoors as a healing space, I wanted to create a communal healing space for COIP by facilitating outdoor experiences and culturally relevant environmental education, so they envision new individual, community, and global possibilities.

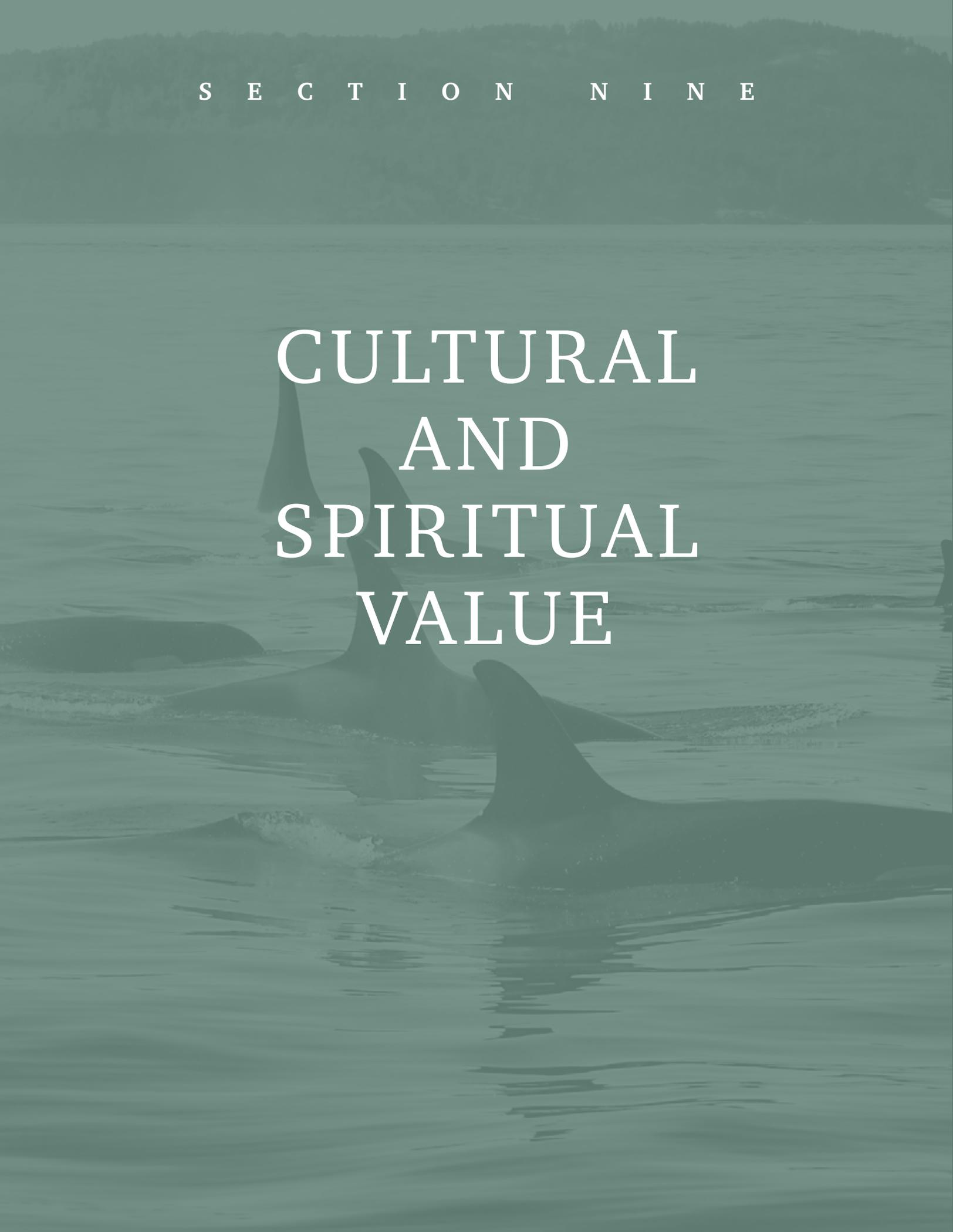
# KI'AMBER THOMPSON

Systemic consequences of an incarcerated parent include: social and emotional challenges, critical health outcomes, housing instability, financial hardship, lower educational opportunities and outcomes, and changing caregivers, including foster care. Parental incarceration is an adverse childhood experience (ACE)—events that increase childhood trauma risks. The trauma of being separated from incarcerated parents combined with a lack of support and stigma from others increases depression, anxiety, and other mental health risks and decreases educational achievement.

Greenspace proximity leads to lower stress and reduced depression and anxiety, while nature interactions improve cognition for children with attention deficits. Access to nature is a human right and necessity and can have positive effects on COIP health and wellbeing. However, low-income youth of color have less nature access. In the Bloom Project, (re)connecting youth to nature heals: our relationship to the planet, ourselves, and our relationships with one another. The earth is our ally, comrade, and healer in creating spaces where we can breathe.

S E C T I O N N I N E

CULTURAL  
AND  
SPIRITUAL  
VALUE





The Indigenous understanding has its basis of spirituality in the recognition of the interconnectedness and interdependence of all living things—a holistic and balanced view of the world. The environment is a Senate, conscious entity suffused with spiritual powers through which the human understanding is only realized in perfect humility before the sacred whole. This concept for living in balance and harmony has specific words in Native language.

## Rebecca Adamson

Founder of First Peoples Worldwide and First Nations  
Development Institute and Endangered Species Coalition  
Board Member

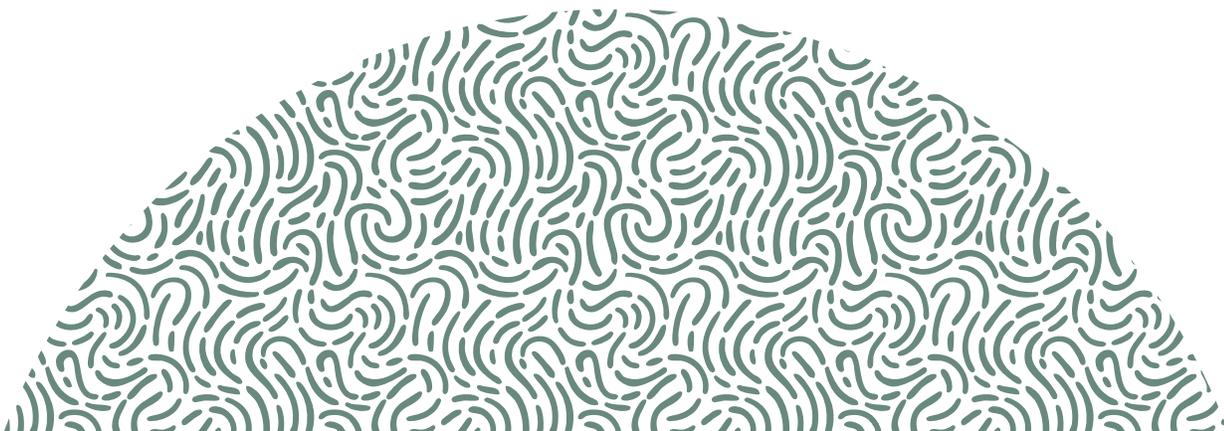


## Biodiversity for All

**T**ranscendent moments in nature—watching butterflies flutter from flower to flower in a park; finding joy in local birds’ perching and feeding antics at backyard feeders; the surprise at glimpsing a fox or coyote as we hike on an urban trail. Experiences like these mark us with wonder, awe, and connection to nature. The relationship between nature and the experience of sublime spectacle overlaps the boundaries of science, spirituality, and religious faith. Spiritual practices of many faiths center on sacred respect for nature. Many religions take a conservation stance and encourage members to protect biodiversity. The Dalai Lama has called on Buddhists to end participation in the illegal wildlife trade. Indonesia’s leading Muslim clerical body issued a fatwa—a call to action—to end global wildlife trafficking. And Pope Francis, the head of the Catholic Church, published an encyclical entitled *Laudato Si’: On Care For Our Common Home*—a letter to Catholic practitioners calling for moral and social transformation. It prioritizes ecological protection and the movement away from inequitable, environmentally harmful capitalist systems. For many communities and individuals, bearing witness to ecological decline is an experience that evokes a constellation of feelings. The emotions of experiencing biodiversity losses include profound grief, fear, anxiety, anger, hopelessness, and an emotional state that is difficult to characterize—solastalgia. Coined by Professor Glenn Albrecht, the meaning of the term in his words is “... the pain experienced when there is recognition that the place where one resides and that one loves is under immediate assault . . . a form of homesickness one gets when one is still at ‘home.’ ”

## Community Impacts

Historical and current religious persecution, with systemic mistreatment and even acts of violence against religious minorities, is widespread and ongoing around the world. In the United States especially, the destruction and disrespect for Indigenous customs, practices, and sacred sites reverberate as a pattern of violent suppression of Indigenous spiritual beliefs and activities continues a legacy of historical trauma and spiritual oppression. Colonialism misapprehends Indigenous spiritual beliefs—by comparing or placing Indigenous perspectives within Western religious structures and disregarding the diversity of spiritual beliefs across Tribes and peoples.





Many religions take a conservation stance and encourage members to protect biodiversity.

The theft of Indigenous artifacts for illegal sale, such as the more than 5,000 objects from the Four Corners region seized in 2009, persists in locations such as Bears Ears, where contemporary Navajo and Ute communities engage in cultural land use and report vandalism, looting, and destruction at their sacred sites. Pipelines, mining, and mega-projects such as those at the US-Mexico border, where a wall is being built have irreparably damaged cultural sites, burial grounds, and ancestral lands, as well as disrupted migration of wildlife.

### Species & Habitats In Peril

Some plants and animals have cultural and spiritual value to those who are in relationship with them. The Hopi Tribe, the Blackfoot Tribe, and the Northern Arapaho Tribe of the Wing River Reservation are among those that ascribe significant cultural value to the grizzly bear. The Anishinaabe people whose territory extends from the Great Lakes, well into Canada, have a deep spiritual connection to wolves. Many of the Lummi people consider orca to be members of their family. Too often, Indigenous Nations have been cut out of decision-making about species with whom strong reciprocal relationships are held and which support tribal communities and benefit the entire ecosystem.

S E C T I O N T E N

# RECREATION FOR ALL





The reality is that the demographics of this country in 2050 will be very different than they were in 1950, which provides a need and opportunity to value the diversity of communities in the way we value biodiversity. Grounding the work through inclusive and equitable approaches may also be different than the way it was done before. Rather than that being a cause for concern, it can be a set of solutions to add to any conservation success and honor a public lands system which by definition needs to be accessible to an ever-increasing diverse public. This is a key reason for the founding of Latino Outdoors and why I continue with this work.

**José G. González**

Founder, Director Emeritus Latino Outdoors

## Biodiversity for All

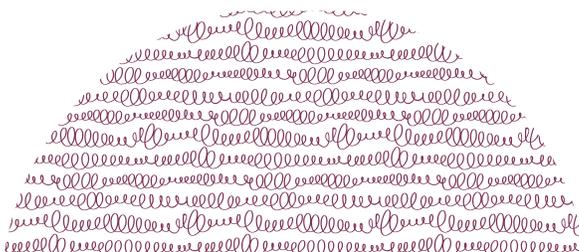
Walking through the city park in fall, feeling the crisp air, seeing the changing light pass through the multi-hued leaves overhead. Paddling a canoe through an urban riverscape, watching birds gracefully swimming, as daily cares subside. The warm light melts anxieties carried from everyday life. The outdoors has a remarkable power to provide us with solace in an overwhelming world marked by the climate crisis, the Covid-19 pandemic, and racial injustices.

Outdoor recreation allows individuals to explore passions, pursue hobbies, bond with people, and create friendships. Kids are twice as active outdoors. And activity can improve self-esteem and mood. It is not a surprise that more than 140 million Americans (along with the many individuals who are not American citizens) make outdoor recreation a priority in their lives. These experiences are the right of all people.

## Community Impacts

Not all groups experience access to and participation in outdoor recreation equally. Due, in part, to a long history of segregation in public outdoor spaces, racist beliefs about the interest in outdoor recreation by people of color persist. Yet, despite the unequal access and stereotyping, love for the outdoors is universal. In a recent survey of people of color who are registered to vote, 70 percent said they participate in outdoor recreation and the programs offered on public lands.

For groups traditionally excluded from outdoor spaces, threats to personal safety are a concern grounded in history and still experienced today. For Black people in the United States, white people's physical and psychological legacy of oppression and violence are enduring barriers to participation in wilderness experiences. Acts of racism in recent years—such as the multi-racial Washington family followed and harassed by a mob, who then trapped them at their camping location by intentionally blocking the roadway with trees they felled, or Christian Cooper, the Black Central Park birder, who had law enforcement called on him under the pretense that he threatened a woman—underscore the deeply infused racial bias embedded in perceptions and ideas of who 'should' be present within the landscape. For LGBTQIA+ individuals, participation in outdoor activities presents a spectrum of concerns, from gendered gear options to questions of visibility and acceptance, to concerns about safety in isolated wilderness environments where fellow recreators may be unsupportive of one's identity.



Due, in part, to a long history of segregation in public outdoor spaces, racist beliefs about the interest in outdoor recreation by people of color persist.

### Species & Habitats In Peril

Some of the habitats and species that are most valued for outdoor recreation are also the most imperiled. Many of our largest and most treasured national parks are under siege from climate change and other threats, such as invasive species, poaching, and pollution. One of the most popular U.S. destinations for outdoor recreation in public lands and waters is Florida—with more than 90 million visitors participating in outdoor recreation annually. A prime activity is wildlife watching via scuba diving and snorkeling. Yet, two species foundational to Florida's coral reefs—Elkhorn (*Acropora palmata*) and Staghorn (*Acropora cervicornis*) corals—are endangered. These corals are not the only imperiled species that are particularly beneficial to recreation. There are more than 45 million U.S. bird watchers. And yet, even birds that are considered common in the United States—from Baltimore orioles (*Icterus galbula*) to Dark-eyed Juncos (*Junco hyemalis*)—have drastically declined.



S E C T I O N   E L E V E N

OPPORTUNITIES  
AND  
ECONOMY



I didn't work in the toxic industries of my native Texas. Instead, thanks to the courageous and visionary leadership of Interior Secretary Stewart Lee Udall and his outreach to my historically black university, I spent 35 years in the National Park Service, serving in various positions conserving our natural resources. I worked my way up from a seasonal park ranger at Grand Teton National Park to the Director of the National Park Service. I would hope we will stop allowing disparate treatment of communities of color and relegating some of our fellow citizens into toxic jobs. We must therefore recommit ourselves to cultivating and providing employment opportunities that are in harmony with the great outdoors and the preservation of our natural heritage.

## Robert Stanton

former Director of the National Park Service  
and Endangered Species Coalition Board Member

## Biodiversity for All

**N**ature inspires human systems, including organizations and businesses, to function efficiently and economically and maintain life-sustaining values. Many vital economic activities including agriculture, medicine, fisheries, tourism, energy production, and more rely on healthy, diverse natural systems. All people are wholly dependent on the health of ecological systems for every aspect of our lives, including our livelihoods and economic well-being.

Federal investment in ecological projects connects natural and economic health. The Civilian Conservation Corps, for example, was undertaken during the Great Depression and included hiking trail creation and tree plantings to mitigate Dust Bowl impacts brought on by drought in the Great Plains. Today, outdoor recreation alone accounts for 7.6 million jobs and \$887 billion in consumer spending annually, supporting county, state, and national economies. Companies recognize that “going green” has economic benefits. Transformative economic change can transition business models from policies that harm societies and the environment to systems that prioritize biodiversity conservation.



## Community Impacts

Instead of being offered benevolent economic opportunities, communities of color are often subjected to “environmental extortion”—the assertion that only polluting facilities in their communities can bring jobs. Polluting industries expose residents to toxic pollutants and are facilitated in doing so by institutionalized environmental racism. The intentional exposure of people of color to unhealthy environments at significantly higher rates than white communities or the denial of access to healthy and nurturing environments to communities of color is environmental racism. A growing network of environmental justice groups advocates against racist environmental policies and structures. In Birmingham, for instance, People Against Neighborhood Contamination (PANIC), the Right to Breathe Caravan, the Greater Birmingham Alliance to Stop Pollution (GASP), the Birmingham chapter of Black Lives Matter, and others have advocated against environmental pollution. They decry the lack of action around decades of indus-





All people are wholly dependent on the health of ecological systems for every aspect of our lives, including our livelihoods and economic well-being.

trial pollution from North Birmingham's 35th Avenue Superfund site—contaminated with lead, arsenic, and other carcinogens.

Economic environmental racism can take other forms. In Hawaii, colonization resulted in extraordinary changes to the landscape, including forest destruction for the sandalwood trade and sugarcane plantations. The Indigenous Hawaiian worldview is grounded in intergenerational land stewardship, wherein the land is an embodied relationship threaded through all aspects of physical and spiritual culture. Through the introduction of non-native species and displacement of Indigenous Hawaiians, colonization disrupted this deep relationship by superimposing foreign economic structures.

### Species & Habitats In Peril

The economic value of wildlife-related outdoor experiences on U.S. Bureau of Land Management lands, created over \$1 billion in wages in 2016. In 2011, bird-watchers reflected 20 percent of the U.S. population and generated 660,000 jobs. The positive impacts of wildlife-centered recreation are especially felt in rural communities, where fewer opportunities exist. On national wildlife refuges, the economic benefit from non-consumptive activities accounts for 86 percent of recreation expenditures; in 2017, wildlife refuge visits generated \$3.2 billion for local communities. Refuges simultaneously provide vital habitats for endangered species, such as whooping cranes.

Charismatic species also generate dollars. The reintroduction of gray wolves to the Yellowstone National Park increased economic activity in surrounding towns by more than \$35 million by the mid-2000s. The reintroduction of red wolves in the Great Smoky Mountains and eastern North Carolina would likely generate an additional \$170 million for surrounding communities. Even a well-designed wolf center can increase economic opportunity. In 1995 The International Wolf Center in Ely Minnesota reported that nearly 25% of visitors came to the area to visit the Center specifically, resulting in an additional 1.2 million dollars added to the local economy.

S E C T I O N   T W E L V E

# CREATIVITY & BEAUTY

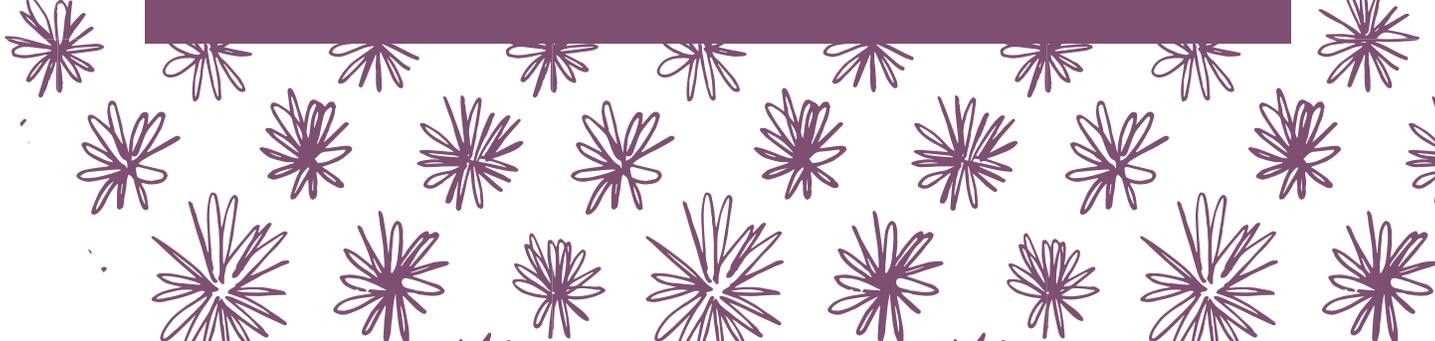
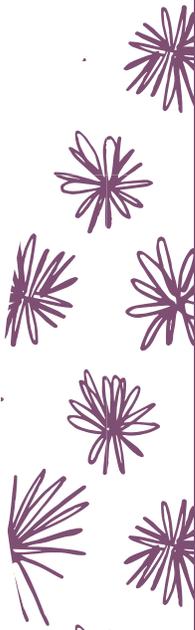


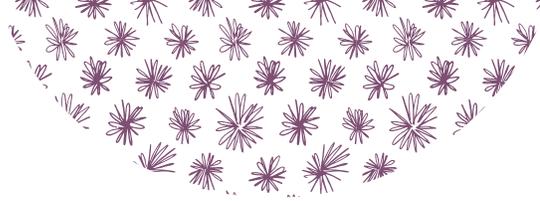


As an artist whose central goal is to re-awaken our connection to the natural world, I see a special role for artists in making the invisible, visible. Whether this be communicating the urgency of the climate and extinction crisis, or illuminating our deep reliance on a healthy biosphere, I look to the natural world’s “strategies of beauty” for inspiration—hoping to echo a fragment of nature’s complexity, diversity and interconnectedness in my artistic practice.

## Jenny Kendler

Environmental Artist and Activist



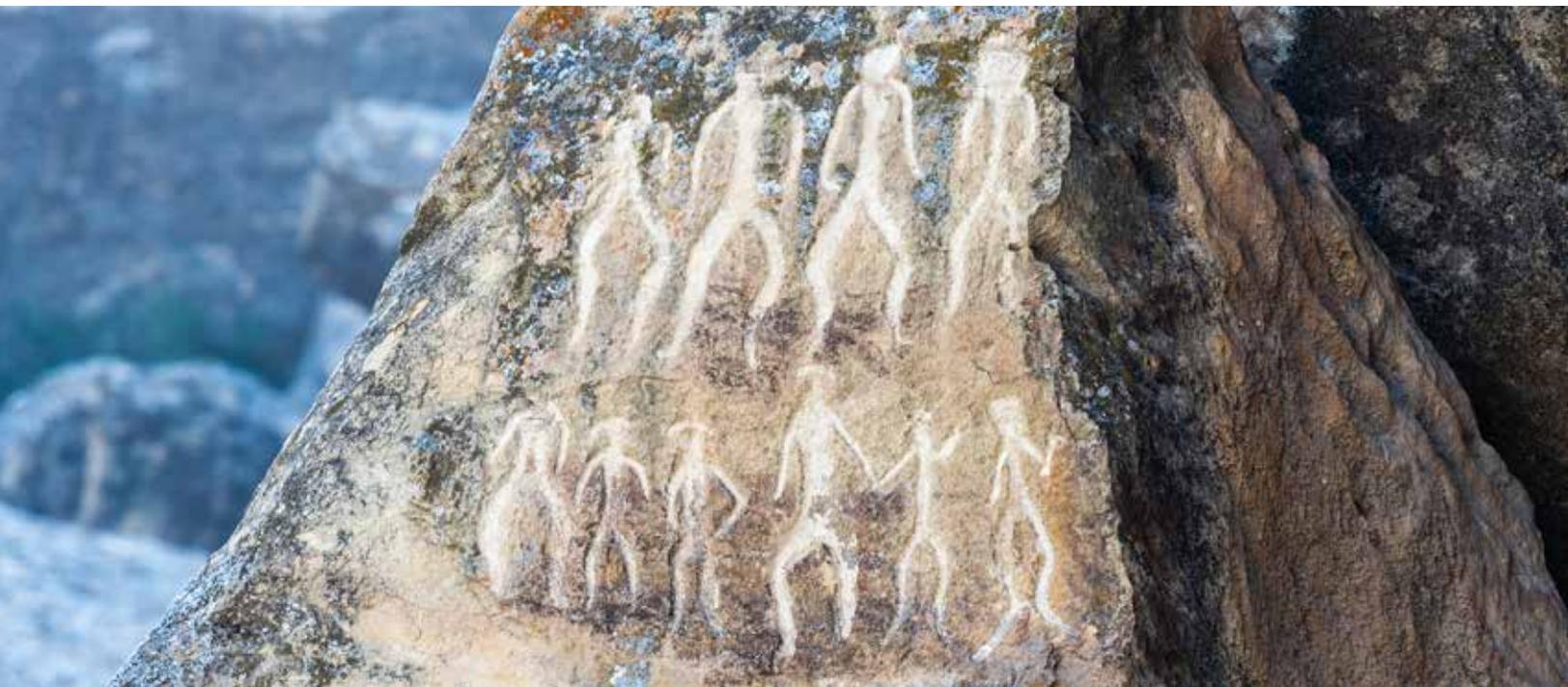


## Biodiversity for All

**B**urnt yellow light on the cave wall. Red ochre and black carbon lines animate the rock surface, revealing figures—humans, bison, elk, horses—evoking centuries-old relationships between people, place, and nature. Rock art—petroglyphs and pictographs—demonstrate the universal human connection to creative practice. The expression of the natural world’s beauty is fundamental to our humanity.

Nature provides a depthless reservoir of inspiration. Profound experiences, including a sense of awe, are elicited by experiences of beauty in the natural world. According to the Biophilia Hypothesis, coined by E.O. Wilson, humans innately respond to the natural world. Immersed in nature, children instinctively use sand, shells, sticks, and rocks to create ephemeral art. Through the ages, nature has inspired artists. Beginning in the 1960s and 1970s, artists, known as land or Earth artists, were moved to celebrate our connection to the diversity and range of ecosystems and species on Earth. Their work is made in the landscape that inspires them to use the materials of the Earth to create sculptures.

Nature provides a depthless reservoir of inspiration. Profound experiences, including a sense of awe, are elicited by experiences of beauty in the natural world.



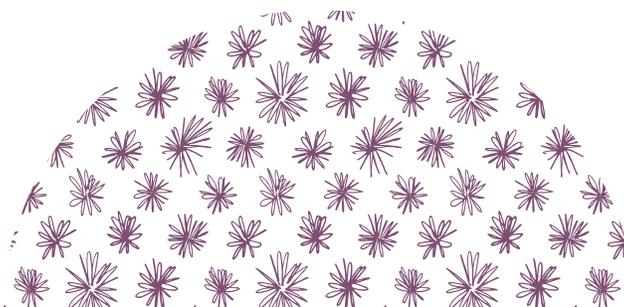
## Community Impacts

Settlers forcibly relocated, contained, and removed Indigenous Peoples to claim their land. This dismantled Indigenous culture, including aesthetic and spiritual practices; within Indigenous communities, 'art' is not separate from spiritual and practical life but rather foundational to daily life. By denying access to traditional natural spaces, plants, and animals intimately tied to creative cultural lifeways, colonists exerted control and fragmented culture.

The continued relegation of contemporary Indigenous artists reinforces a stereotype that Indigenous Peoples in the United States exist in a prior, static time. Today, irreplaceable Indigenous cultural heritage, such as petroglyphs, pottery, dwellings, and other artifacts are at risk. One of the most egregious recent threats to Indigenous culture goes hand in hand with the loss of protections for nature. In 2016, President Obama created Bears Ears National Monument after years of advocacy by five tribes—the Navajo Nation, Hopi Tribe, Ute Indian Tribe, Ute Mountain Ute Tribe, and Pueblo of Zuni. Following intense lobbying by a uranium company, the Trump Administration slashed the Monument protections by 85 percent in 2017. Native American Rights Fund filed a lawsuit to secure the tribes' cultural heritage.

## Species & Habitats In Peril

The silence is extraordinary, in the green-yellow light cast on the fallen needles beneath ancient cedar trees. With layered, grey-red bark and drooping, aromatic deep green needles, red cedar (*Thuja plicata*) can grow 200+ feet and live 1,000+ years. Pacific Northwest Tribes consider cedar to be the 'tree of life,' providing resources, including wood to create items central to tribal culture—canoes, bentwood boxes and dwellings, and bark to make clothing and regalia. These traditional relationships to the cedar tree as life-giver remain vibrant today. Cedar trees serve an important architectural structure within forests, as a food source for species including deer, elk, and bear, and habitat for threatened and endangered species like marbled murrelet and northern spotted owl. Yet these old-growth forests are imperiled by illegal logging, driven by global demand for timber products.

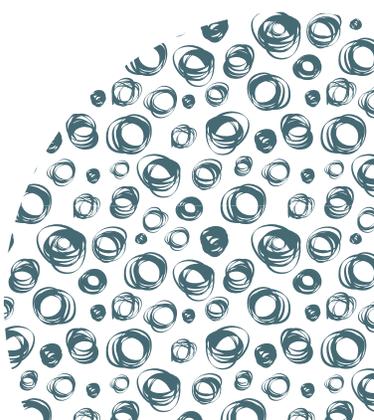


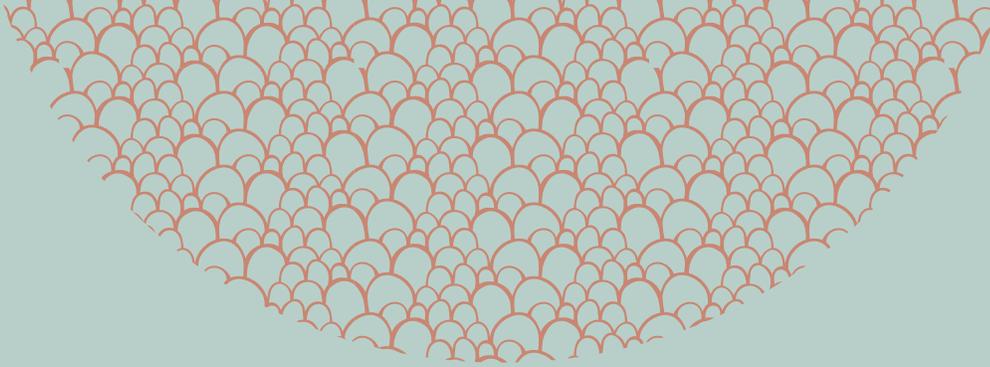
# R E C O M M E N D A T I O N S

## Recommendations: Securing A Justly Biodiverse Planet

These recommendations are a compilation of policy approaches advanced by wildlife and environmental justice groups. These are just a starting point. We encourage you to offer additional solutions. Tag @endangered on Twitter, visit the Endangered Species Coalition on Facebook, and @endangeredspecies-coalition on Instagram, and include the hashtag #justlybiodiverse.

- Implement greater co-management with Indigenous Peoples of our federal lands. There is less or no biodiversity loss on lands managed by Indigenous Peoples. People of color have also been forced out of ancestral homes due to systemic racist lending and other inequitable policies. New models—such as the Santa Ana, CA community land trusts—ensure development oversight is controlled by residents.
- Fully commit to the federal government’s obligation to engage with Indigenous tribes on a government-to-government basis. Cement the call to ensure that Indigenous Peoples have free, prior, informed consent (FPIC) over decisions that affect Tribal people and lands. Follow through on the federal government’s affirmation that tribal treaty rights and tribal land sovereignty will be honored, particularly as they relate to natural and cultural resources on public lands.
- Strengthen pesticide regulations to safeguard farmworkers and their communities. Follow the advocacy of United Farm Workers, Farmworker Justice, Earthjustice, labor, and community health groups that have petitioned the U.S EPA to ban the use of chlorpyrifos. Restore environmentally- and culturally significant resources and infrastructure on public lands.
- Restore native plants and habitats; connect wildlife habitats to restore wildlife corridors; and improve water quality, fish habitat, connectivity, and stream flows.
- Fully fund federal agencies and federal grant programs to support agencies, tribes, public universities, and small businesses to implement biodiversity conservation and restoration projects.
- Address the circumstances that led to the COVID-19 global pandemic. Policies should serve to stop the overexploitation of natural resources and wildlife.
- Undertake native tree planting programs in communities working for environmental justice, following the lead of the community itself in its identified needs and preferences.

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- Accelerate the use of equitable planning to secure green infrastructure solutions that address equity issues in building “green infrastructure” as a buffer from climate change.
  - Address systematic bias and inequalities in health care. Implement a holistic ‘One Health’ approach, which acknowledges the interrelationships between humans, animals, plants, and the natural systems we depend upon for survival. Create hospital gardens to speed the recovery of patients. Implement ethical practices in bioprospecting for medicines, including benefit-sharing agreements with local communities that require the informed consent of members.
  - Shift the economy to justly create green, regenerative jobs that are centered on racial, economic, environmental, and intergenerational wealth and justice to guarantee more equitable futures for all workers in low-income communities and communities of color.
  - Work, including equitable grantmaking with communities to establish new parks, refurbish existing parks, community gardens, forest gardens, and other open spaces to improve outdoor recreation opportunities and food access, particularly for low-income communities and communities of color.
  - Safeguard strong policy implementation of the Endangered Species Act (ESA), as well as the National Environmental Policy Act, the Clean Water Act, the Clean Air Act, and other environmental laws. Numerous Administrations—from George W. Bush’s to Donald Trump’s—and Members of Congress—from Richard Pombo to Rob Bishop—have attempted to undermine the ESA and other environmental laws and policies. These regulatory rollbacks must be overturned. Foundational environmental protections must be strengthened.
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# JUSTLY BIODIVERSE: Nature's Lifeline for the Health of All Communities

Find our report and our bibliography with all of our citations at:  
[endangered.org/justlybiodiverse](https://endangered.org/justlybiodiverse).

