

YOU'VE GOT BRAINS

MAYA SCHONENBERGER

The diversity of the national parks is vast: high and low, wet and dry, cold and hot. Yet climate change is an oddly unifying concept. Warmer temperatures melt ice, but also cause tiny colorful plants that live inside coral animals to abandon their hosts, a phenomenon known as "bleaching."

By including Glacier National Park's high peaks and Biscayne National Park's brain corals into a single piece, the artist acknowledges both the differences and the commonalities evident in America's national parks.

Melting glaciers and bleached corals are both very visible realities to me, whether hiking and skiing in mountains or snorkeling the waters of a coral reef.

Maya Schonenberger

ENCROACHMENT

ANDREA F. HUFFMAN

Unlike temperate hardwood forests that soak up excess atmospheric carbon in the summer, only to release it in the form of fallen leaves in the autumn, mangrove forests and seagrasses like those in South Florida's national parks, and saltmarsh plants found at Point Reyes, Cape Cod, and Assateague National Seashores are far more efficient at permanently sequestering carbon underwater. This so called "blue carbon" has the additional advantages of shoreline stabilization in the face of rising seas while also benefiting fisheries and tourism.

Mangroves are one of the most unique ecosystems on the planet. Both a bridge and a barrier between salt and fresh water habitats, mangroves are the nurseries of the ocean, allowing fish to raise their young in the safety of their complex root systems. Like many other natural habitats, the mangroves are increasingly surrounded by uncontrolled urban sprawl. Concrete now encroaches on some of the most amazing natural spaces on our planet, while the residents of these concrete communities are alarmed at the sight of wild creatures "encroaching" on their safely guarded neighborhoods, threatening their sterile environment.

Andrea F. Huffman



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ALL BUT LOST

MELANI K. BREWER

The Schaus swallowtail butterfly is critically endangered, all but lost except for small breeding populations on islands in and around Florida's Biscayne National Park...and one in a laboratory at the University of Florida. Climate change has played a significant role in its demise. Drought disrupts their lifecycle which is closely tied to the onset of the rainy season in South Florida. Increased intensity of tropical storms has threatened their hardwood hammock habitat, and introduced exotic ants prey on their eggs.

We must address climate change and do our part to correct it.

Melani K. Brewer

END OF EDEN

BOBBI BAUGH & JOHN LEWIS

Timber cutting at the edge of Olympic National Park; excess fertilizer pouring into traditionally nutrient-starved Everglades National Park; and land surrounding Grand Canyon National Park narrowly averting uranium exploration and prospecting: the Eden-like beauty of national parks is often threatened from outside park boundaries.

Inspired by Hieronymus Bosch's Garden of Earthly Delights from the 16th century, we created End of Eden. In the original triptych, the first panel depicts a pastoral, innocent landscape. This is the origin of the fountain at the top of the piece. In the final panel, Bosch depicts a hellish existence of burning ruins...the source of the nightmarish images at the bottom of our piece.

In between these extremes is the subject of the work: human folly. We departed from Bosch's original to critique contemporary behaviors that are capable of destroying natural resources.

The unifying element is water. It descends from heaven and fills the fountain, from which it flows freely and abundantly. Misguided human behaviors gradually deplete the water until there is almost nothing left...less than a single thimbleful.

In the beginning was the water, then mankind, then...?

Bobbi Baugh & John Lewis



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ACID RAIN FALLS ON THE JUST AND UNJUST ALIKE

SHARON BUCK

In addition to unmatched scenery, good, clear air is responsible for many of the spectacular photos of national parks found in family vacation albums. But low level air pollution, the result of automobile exhausts, power generation and manufacturing, can impact air quality...and vistas, sunsets and memories.

Air pollution is shrinking scenic views, damaging plants, and degrading high elevation streams and soils in the Great Smoky Mountains. Pollutants fall to the ground as acid rain as well as dry particles clouding water. Since 1948, visibility has decreased from park overlooks by as much as 80 percent in summer and 40 percent in winter. The whitish haze of pollution washes out color and obscures features in the landscape, unlike the natural mist clouds of the Smokies. The polluted left hand side of this quilt contrasts with the bright realm of nature on the right.

Sharon Buck

WINGS OF FIRE

MELANI K. BREWER

Animal migrations can take on epic scales. National parks like Alaska's Kobuk Valley, Cape Krusenstern and Bering Land Bridge play crucial roles in caribou migration. Canada's Point Pelee National Park provides a gathering place for monarch butterflies preparing to cross Lake Erie to Ohio's Cuyahoga Valley National Park. Even on a smaller scale, animals migrate from higher to lower elevations as the seasons change. With later winters and earlier springs, many of these animals may receive the wrong cue to start migrating, putting them in danger of being someplace where conditions are just not right for their arrival.

There are fewer and fewer monarch butterflies making their annual migration. A changing climate has in fact endangered their migration. Drought and rising temperatures cause their eggs to dry out and reduce the amount of nectar in flowers of the milkweed plants. And there are fewer milkweed plants which the monarch larvae depend on for survival. How long before the gentle flight of the monarch disappears? How long before we realize that climate change is a reality? How long before we do something about climate change?

Melani K. Brewer



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BLEACHING CORAL AND BLOOMING JELLYFISH

SHARON BUCK

Coral reefs can be found in national parks in South Florida, the Caribbean, Hawai'i and the territories in the Pacific. Warming seas can cause the tiny algae that live inside the coral animal and provide most of its nutrition to abandon their host, effectively starving them. Increased carbon dioxide in the ocean can change the chemistry of the water, acidifying it and making it difficult for animals who rely on calcium for their shells to carry on. Some have speculated that these same conditions, though, may favor a closely related group of animals, the jellies.

The left side of my quilt shows bleaching coral and dead seafloor while the right shows a healthy reef and thriving sea fans. The upper water is filled with a bloom of small jellyfish.

Sharon Buck

AT WHAT COST

NANCY BILLINGS

Where does an individual's responsibility lie when considering questions of a changing environment? Are humans part of the ecosystem, or separate from it? Are we caretakers or "entrepreneurs," dominating and using the resources around us for short-term gains? The Iroquois believe that every decision should be made with thoughts not of the current generation, but the seventh generation. Individual decisions may seem insignificant but can add up incrementally.

"At What Cost" is the question we should all be asking ourselves about how we are contributing to the global warming effect on our atmosphere. What is our role and responsibility in the safety and preservation of our natural resources for our children, grandchildren and beyond? Are we being accountable leaders and teachers for future generations?

Nancy Billings



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AIR

KAROL KUSMAUL

Horse-drawn plows, hand-cranked cotton gins and spinning wheels: idyllic reminders of a simpler time, all replaced by increasing levels of mechanization epitomized by the mills of Lowell National Historical Park in Massachusetts. In the early 1900s, Lowell, the first successfully planned industrial city in the United States, was filled with smokestacks belching pollutants into the air...a situation that, repeated over and over in many other localities, and combined with automobile exhausts, large-scale agriculture and other contributors, has led to significantly higher concentrations of greenhouse gasses in our atmosphere, resulting in a steadily warming planet.

When the air we breathe is tainted by pollutants, corrective action is required, and urgently. It's simple. If it's so bad you need a mask, it's too bad. This is a critical issue for humanity as well as for creatures and other forms of life here on earth.

Karol Kusmaul

PINK LADIES

MELANI K. BREWER

Pink lady slippers are endangered wildflowers in Great Smoky Mountains National Park. Shorter, warmer winters due to climate change disrupt mechanisms that tell plants when to bloom. When temperatures rise, the lady slippers bloom earlier. Changes in the amount of water available to them also affect blooming. Sometimes these changes stop blooms from forming at all.

At some point our climate will be too hot for these plants to survive. We must address climate change before it is too late.

Melani K. Brewer



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GINKGO:

EXTANT OR EXTINCT?

CANDICE L. PHELAN

Although ginkgo trees are typically thought of as Asian, the fossil record at John Day Fossil Beds National Monument in Oregon shows that ginkgo trees existed there some 14 million years ago. Where did they go? They were extirpated (made locally extinct) by a changing climate. The earth's climate DOES change, and the geologic and fossil records clearly show that. The current concern about climate change stems from the rapidity of that change. The amount of carbon being put into our atmosphere over the past 150 years is over 300 times greater than it was prior to that period, and almost all scientists believe it is the result of increasing industrialization.

Ginkgo biloba, a "living fossil", has survived for at least 270 million years and is the oldest known deciduous tree. In autumn, its legendary fan shaped leaves turn deep saffron and, almost in unison, fall to the ground below to form a magical, golden carpet. Will this strong, beloved tree from China, that has endured much since the Permian era, survive global warming?

Candice L. Phelan

CALL ME AL

SANDRA T. DONABED

In 1973, the American alligator was listed as endangered due to habitat loss and hunting. Fourteen years after being fully protected, alligator populations were once again sustainable, and they were removed from the list...one of the greatest success stories of the Endangered Species Act. Today, over 1500 plants and animals are listed as threatened or endangered in the United States. For many, national parks are their final refuge.

We depend on our environment as it decides if we survive or go extinct. This 150 million-year-old species, when albino, has a survival rate of only 24 hours in the wild due to direct UV radiation and inability to blend in without pigmentation. Climate change could change our environment leading us to share the albino's predicament.

Sandra T. Donabed



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TROUBLED TIMES

LINDA J. EADS

Rising sea level and melting ice are among the most recognizable impacts of climate change for many people, but the impacts are broad and varied. The diversity of resources found in national parks means that hardly a park exists that does not feel those impacts in some way.

Three weather conditions impacting planetary change in my community are emphasized within this textile art. The swirling vortex reflects turbulent and destructive tornadoes, the blazing fire reduces clean oxygen supply, and the rising sea level threatens our beachfront neighborhood. As a resident of Miami Beach, Florida, I am experiencing more tornado alerts, have difficulty breathing when Everglades National Park is annually on fire, and the rising sea level each full moon night puts our roadways several feet under water. The City of Miami Beach recently proactively hiked storm water fees 84% to help protect the community from rising seas.

Linda J. Eads

CARBON FINGERPRINT

BARBARA W. WATLER

Meeting in Copenhagen in October, 2014, the Intergovernmental Panel on Climate Change (IPCC) stated that the "warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, and sea level has risen." They also stated that the human influence on the climate system is clear.

This quilt represents the carbon fingerprint of each person living on our planet. We are all contributing to global warming by excessive demands for more and more energy usage. Surely we can still live a good life while using smaller amounts of carbon-producing energies. Reduce current energy consumption and turn this black carbon fingerprint into the green print of healthy growth.

Barbara J. Watler



RISING TIDE: WE HAVE BEEN WARNED

SUZANNE EVENSON

Over 20% of America's National Parks can be characterized as "ocean and coastal." As the polar ice caps melt, sea levels rise worldwide. Warmer water also takes up more space than cold water, adding further to a rising sea level. Many of these coastal parks protect buildings like lighthouses, bridges, forts, homes and monuments...perhaps none of which are as iconic as the Statue of Liberty and Ellis Island. While most buildings will not be covered by water in our lifetimes, rising seas can weaken foundations and other aspects of infrastructure, threatening the existence of places that tell our story as a nation.

The Intergovernmental Panel on Climate Change estimates that the rise in sea levels could be as much as 3 feet by 2100. Florida's beautiful expansive coastline is especially vulnerable to the degree by degree rise in the earth's average temperature. In this scenario the houses in my neighborhood are nearly submerged. Unheeded warnings and calculations are barely visible beneath the murky water. The debris of inaction floats to the surface, birds watch from above and the setting sun is reflected in the rising tide.

Suzanne Evenson



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ARCTIC OZONE HOLE

JAYNE B. GASKINS

Can individuals really make a difference when it comes to large global problems? Evidence suggests that indeed they can.

Two major holes form in the ozone shield during the winter and heal over in the summer. They are triggered by reactions involving chlorofluorocarbons (CFCs) and related molecules produced by industries. The largest is over Antarctica and a smaller one (so far) is over the Arctic. If the smaller hole is allowed to grow to the size of the one over Antarctica it could expose over 700 million people, wildlife, and plants to dangerous UV levels. Fortunately, the Montreal Protocol, an international treaty to ban the manufacturer of CFCs, has lessened the impact and the holes appear to be shrinking.

Jayne B. Gaskins



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WE LEFT MORE THAN FOOTPRINTS

MINDY MARIK

Increasing temperatures cause increased evaporation and drying. Drought impacts many national parks. At Bandelier National Monument in New Mexico, cattle grazing denuded the landscape of its native grassland vegetation and wide-spaced trees. Fire-sensitive piñon and juniper trees became established in their place. Without a protective grass cover, runoff from intense summer thunderstorms eroded the thin exposed soil surface. Enter a changing climate—one that brings drought conditions—and the stage is set for soil erosion, flash flooding and raging wildfire....all of which can have devastating impacts on archaeological sites that tell the story of 10,000 years of Ancestral Pueblo and Spanish history.

As a result of our wasteful use of freshwater, the environmental footprint we leave is having a devastating effect on our rivers and streams.

Mindy Marik

THE LAST RESORT

MARY RHOPA LA CIERRA

From the mighty Mississippi and Colorado to the smaller Cuyahoga and Schuylkill, rivers provide drinking water, hydroelectric power, recreation and inspiration. Even when parts of a river are protected in a national park (as these are), pollutants from upstream and runoff from cities and agriculture within the river's watershed can foul the water. Dams change the flow rate, impacting wildlife and limiting the river's "usefulness" for paddlers.

How much longer will we have lakes and rivers for recreation? Global warming can cause our ability to use our rivers and lakes for recreation to decrease. As the surface water heats, the air exchange slows down, depleting the oxygen in the water and creating dead zones. Dead zones are unable to support animal and plant life.

Mary Rhopa la Cierra



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DENIAL

GABRIELE DiTOTA

National Seashores like Assateague, Cape Cod and Point Reyes are among the most visited of all national parks. Beaches at these parks are often primary economic drivers for local communities as millions head to them each summer for fun in the sun. But rising sea levels and damage from increasingly strong storms threaten the infrastructure that makes beach visits possible. Maintaining roads and parking lots is time-consuming, stressful and very expensive.

Our rising oceans will change our shorelines and we need to move beyond the stage of denial. We have foolishly built homes at the water's edge and in flood plains: homes that are or will be in jeopardy. We build dikes to hold back the water, but Mother Nature is a powerful force and we are fighting a losing battle. What is needed is a sober look at how we are detrimentally affecting the environment and a commitment to change so that we can stall the progression of our melting icecaps and glaciers.

Gabriele DiTota

LAST LEAF

LINDA S. HOFFMEISTER

In places like Great Smoky Mountains, Shenandoah and Isle Royale National Parks, gypsy moth caterpillars chew on the leaves of hundreds of species of native plants. At Catocin Mountain Park in Maryland and Gettysburg National Military Park in Pennsylvania, the hemlock woolly adelgid sucks sap from hemlock trees, causing early leaf drop and complete defoliation. Non-native plants like the tree of heaven (introduced to the US from China over 200 years ago in Philadelphia), or the melaleuca (introduced to suck water from "useless" Florida swamps) decimate ecosystems in and out of national parks while wasting taxpayer dollars in the removal process. Is the "Last Leaf" something to be feared... or cheered?

Nature and its environment have always been a major part of who I am and what I stand for. For many years I have been very alarmed about our environment with all of the pollution of our air, water and the earth. It is my hope that this exhibit will have far reaching effects on the public, governing bodies and industrial companies on the urgent need to correct these issues for future generations.

Linda s. Hoffmeister



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REFLECTING CURRENTS

MARIANNE R. WILLIAMSON

In 1969, the Cuyahoga River in Northeast Ohio was so polluted that a floating oil slick on its surface caught fire. Today, the river is the namesake and centerpiece for a national park. The turnaround in the river's condition could be attributed to a new environmental awareness from the 1970s through today...recognition that natural resources are not invulnerable, but they can be resilient when people balance stewardship of those resources with use.

During the 19th century the Schuylkill River and many other rivers were dammed and forests were cut at an astounding rate. During the 21st century higher average temperatures lead to hotter days and, in general, to longer and hotter heat waves. Warmer temperatures exacerbate the effects of water and air pollution resulting in negative impacts on our health and environment. Our behavior is reflected in our water.

Marianne R. Williamson

WHERE WILL WE GO?

GRETCHEN P. JOLLES

Climate change impacts wildlife in surprising ways. Increased fire activity in many western parks can destroy habitat. Increased storm intensity can flood islands and drown endangered butterfly larvae at Biscayne. If tiny shelled animals that live on blades of seagrass cannot manufacture their shells, the nutritional value of eating those grasses decreases, affecting large grazers like sea turtles and manatees. What happens when a tiny pika in Montana's Glacier, Washington's North Cascades or Colorado's Rocky Mountain National Parks migrates up a mountain to find cooler, more favorable conditions, but then reaches the peak?

We see the drama of the out of control blazes in the parks on our televisions, but seldom are we close enough to see those who are displaced. Where do they go?

Gretchen P. Jolles



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THE ANSWER IS BLOWING IN THE WIND

DÉDA MALDONADO

Conflicting values are inherent in the very idea of national parks. How does one preserve, yet allow for use as well? Clearly, some uses of parks are quite compatible: hiking a trail at California's Point Reyes or Montana's Glacier has little impact on either the park or others' enjoyment. But what about wind turbines offshore from Assateague Island National Seashores? Clean energy that does not put additional carbon into the atmosphere is good, but what about the view from nearby national parks? How does that come into play?

How can we cut our use of dirty fuels? How much pollution shall we breathe?

The answer, my friend, is blowing in the wind.

Déda Maldonado

WILDFIRE

DEON LEWIS

In the summer of 1988, wildfires scorched one-third of Yellowstone National Park's 2.2 million acres, partly as a result of many years of full-on fire suppression. While fire policy has changed since the 1970s, decreased moisture levels and snowpack resulting from a warming planet will likely make Yellowstone's annual fires more intense and more frequent. Still, in some of the areas "destroyed" in 1988, one can hardly tell that there ever was a fire there.

While fires are a natural part of many ecosystems, environmental, economic and social impacts from wildfires in the United States have been steadily increasing over the past decade. These fires not only consume forest and rangeland vegetation, but can also adversely impact wildlife habitat, recreation and tourism, water quality and supply, and property values, not to mention the effect on human health. I wanted to depict the ravenous effect of wildfire on the tranquillity of the environment.

Deon Lewis



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IS IT SAFE?

GABRIELE DiTOTA

Fifteen miles from Lake Clark National Park and Preserve in Alaska, a proposed open-pit mine threatens air quality, water quality and quality of life for Nondalton Village. The people of the village rely on subsistence hunting and fishing for their livelihoods, and have done so for a century. The proposed mine could severely impact those activities, threatening the food security of the Deena'ina people. Salmon and other fish constitute the largest part of this harvest.

We are so trusting that the food we purchase is safe to eat. But is it safe? Fish are harvested from waters polluted with mercury, PCBs, and a multitude of chemicals that may cause or promote cancers, attention deficits, neurological impairments and other illnesses and conditions. My hope is that this piece will be a call to action for each of us to do our part to fight to keep our waters clean, for ourselves, for the next generations and for the good of the planet. We shouldn't have to ask if it is safe!

Gabriele Di Tota

ABLAZE

MARIANNE R. WILLIAMSON

In Colorado's Rocky Mountain National Park, forest dynamics rely heavily on a healthy regime of fire and regrowth. Disturbances to that regime (fire suppression or prolonged drought, for example) throw the dynamics out of balance. Shorter, milder winters result in greater reproduction and survival rates of mountain pine beetles whose feeding habits cut off moisture supplies to the tips of pine branches, turning them to dry, easily-ignited "matchsticks." Trees killed by beetle infestations will eventually fall, setting up the potential for intense fires that can have devastating impacts on both people and ecosystems.

As the world is heating up, signs such as prolonged droughts, severe wildfires and less snowfall are very visible in many of our National Parks. Higher spring and summer temperatures and earlier spring snowmelt or no snowmelt at all, result in forests that are hotter and drier for longer periods of time providing a prime condition for wildfires.

Marianne R. Williamson



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