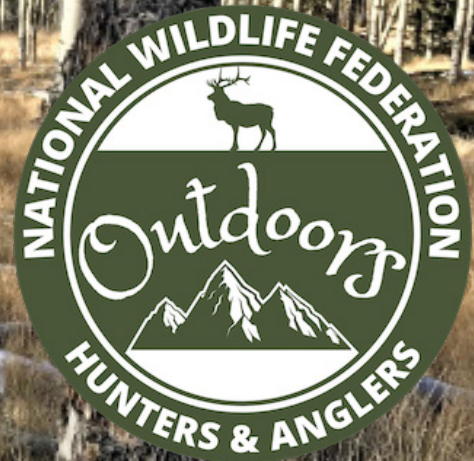




# A Hunter's & Angler's Guide to Climate Change:

## Challenges, Opportunities & Solutions





## **For most hunters and anglers, our ability to hunt and fish goes far beyond simple hobbies. We try to live in places in close proximity to great hunting and fishing.**

For most hunters and anglers, our ability to hunt and fish goes far beyond simple hobbies. We try to live in places close to great hunting and fishing. We travel on our vacations to hunt and fish. Our community is made up of other hunters and anglers. It's a way of life, something that defines who we are. When we hear the words "climate change", we may cringe a bit. We know it is such a massive, complex problem, with the potential to negatively impact our way of life. The fact is, hunters and anglers have as much to lose as anyone due to climate change.

Climate change is already impacting fish and game species in numerous ways. Warming temperatures and decreasing snowpack are causing low flows and warm water temperatures in streams and lakes. Forests are drying out earlier in the year, leading to less forage for big game species and longer and more intense wildfire seasons.

Ash and fire debris threaten streams by inundating fish habitat, leading to suffocation and damaged spawning areas. Extreme events associated with climate change, like heavy rainstorms and stronger hurricanes, are causing flooding, pollution pulses into waterways, and coastal erosion. They also harm fisheries and wetlands important to waterfowl. Longer warm seasons are also aiding in the proliferation of disease and parasites that affect wildlife. Examples include heavy tick infections in ungulates, West Nile virus in upland game birds, and the spread of blue tongue disease.

Whether it is the drying up of our favorite duck swamps, wildfire that closes down our best elk spots, degrading ocean conditions that cripple our salmon and steelhead pursuits, or flooding in our beloved whitetail bottoms, we know that it isn't a matter of if, but when, climate change will find our favorite spots and change our sporting lives.

The bad news is that, climate impacts are accelerating and the problems are becoming more complicated to tackle. The good news is, we still have a fighting chance, and hunters and anglers are the best ones for the job. This report examines important sporting landscapes, the issues they face, and what we can do to address climate change, while at the same time improving habitat and improving hunting and angling. **The time to sit on our hands has passed.** We need to be the leading advocates for smart policies that turn the tide and conserve our sporting traditions.

Let's meet the challenges and carry on our long-standing conservation traditions of creating better outcomes for fish and wildlife. Future sportsmen and women will thank us for it. Please read this report and determine how you can engage. Then jump in where you can!

-Aaron Kindle,  
Director of Sporting Advocacy, NWF



*It isn't a matter of if but **when** climate change will find our favorite spots and change our sporting lives.*



# The Situation

Climate change has arrived in every nook and cranny, every holler and hunting camp, every fishing hole and every duck blind. There's no two ways about it - things are changing and it's affecting our ability to hunt and fish.

Ask nearly any sportsman and sportswoman you meet on the street if they are seeing the impact of climate change. They certainly have stories. They will tell you of ducks that used to arrive during the season that no longer show up. They will tell you of old days when

deep snows in the mountains didn't melt all summer but are now gone in May. They will tell of species they love being replaced in their favorite spots by invasive species and non-natives that are better able to adapt to changing conditions. They will tell you of lifelong hunting spots being closed and severely damaged due to wildfire. They will tell you places where they used to fish all day in trout streams where now they must stop in the early afternoon, or not fish at all because water temperatures are too tough on the fish.



# These stories are not fictional

Hunters and anglers from across the country are witnessing first-hand the effects of a changing climate. They are seeing what it means when temperatures rise an average of 2 degrees Fahrenheit over the past 50 years. They are seeing the very troublesome outcomes for the lands and the waters that sustain the fish and wildlife we so love to pursue.

The problems are becoming so severe that a group of more than 40 leading sporting organizations drafted a [climate statement](#) in February of 2021 calling on decision makers to address climate change, and specifically to utilize natural climate solutions - restoring and enhancing ecosystems to create more resilient landscapes and sequester carbon all while creating better fish and wildlife habitat.



It is clear that we must use all tools in the toolbox to get a handle on the increasing problems climate change is posing. The most logical, cost-effective and sustainable solutions are often those that harness and augment the power of natural systems and restore developed and degraded landscapes and waterways. And even better, these types of solutions improve hunting and fishing. These solutions are often referred to as “natural infrastructure”.

# What is Natural Infrastructure & Why is it Important for Hunting and Fishing?

Natural and nature-based solutions, also known as natural infrastructure or green infrastructure, refer broadly to natural systems - such as wetlands, forests, and floodplains - which provide essential services and benefits to society, such as flood protection, erosion control, and water purification. These solutions capitalize on the ecosystem service functions, like flood water absorption, that natural systems inherently provide.

By harnessing these ecosystem services, communities can implement natural infrastructure solutions to address specific resilience problems. Natural and nature-based solutions can provide a multitude of risk-reduction services, often referred to as natural defenses, to reduce risks to lives, property, and communities overall. Importantly, nature-based solutions improve and restore habitat, which improves hunting and fishing opportunities.

## Nature Improves Resilience to Climate Change

To learn more, visit [www.nwf.org/naturalsolutions](http://www.nwf.org/naturalsolutions)

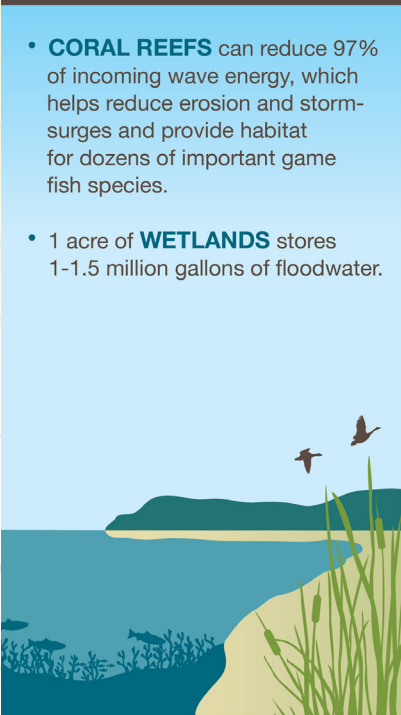


- **CORAL REEFS** can reduce 97% of incoming wave energy, which helps reduce erosion and storm-surges and provide habitat for dozens of important game fish species.
- 1 acre of **WETLANDS** stores 1-1.5 million gallons of floodwater.

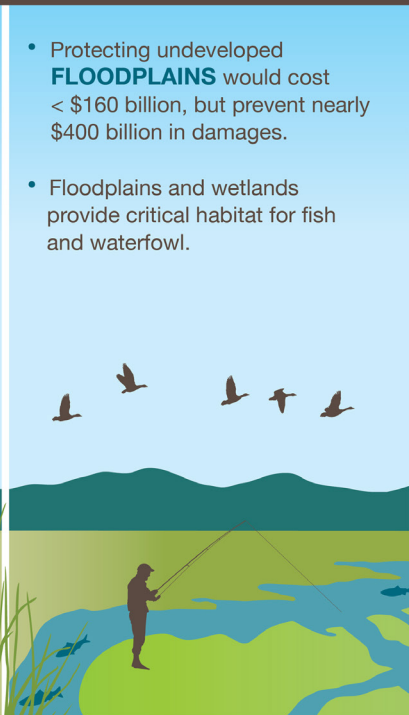
- Protecting undeveloped **FLOODPLAINS** would cost < \$160 billion, but prevent nearly \$400 billion in damages.
- Floodplains and wetlands provide critical habitat for fish and waterfowl.

- Ecological **FOREST** management can protect drinking water supplies and mitigate wildfire risk.
- Over 1/2 of the nation's water supply comes from **FORESTS**.

- **URBAN TREES AND GREEN SPACES** absorb stormwater and provide habitat for wildlife and sporting opportunities close to cities.



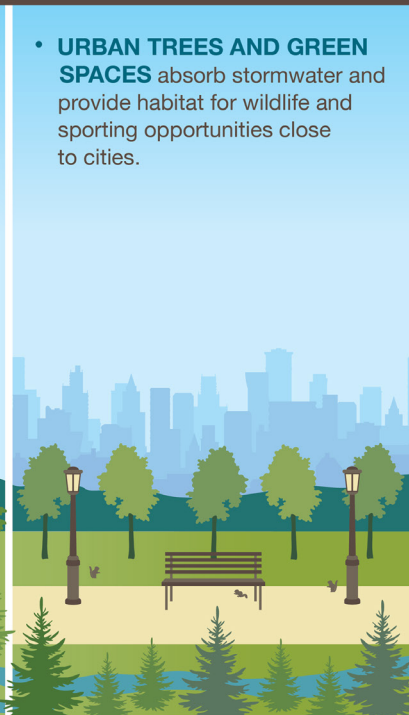
Coastal Ecosystems



Floodplains



Forests



Urban Forests

These approaches utilize existing or restored natural systems for their risk reduction benefits. An example of a natural solution would be a wetland conservation project which preserves an existing wetland that provides natural flood control for a surrounding neighborhood. In addition to accomplishing the goal of reducing flood risk, this project would also provide co-benefits like additional wildlife and fish habitat, carbon sequestration services, recreational opportunities for the community, and improved water quality. Alternately, nature-based approaches mimic the risk reduction function of a natural system but are designed and constructed by people and can utilize natural or manmade materials.

## U.S. Forests as Natural Climate Solutions

To learn more, visit [www.nwf.org/naturalsolutions](http://www.nwf.org/naturalsolutions)



- Forests and forest products represent the **LARGEST CARBON SINK** in the U.S.
- Every year, forest land, harvested wood products, and urban trees **OFFSET MORE THAN 11%** of U.S. greenhouse gas emissions.
- Forests provide **CLEAN AIR, FISH AND WILDLIFE HABITAT**, recreation, traditional and cultural uses and provide ample hunting and fishing opportunities.
- National Forests Service lands contribute **OVER \$11 BILLION TO THE U.S. ECONOMY** and sustain nearly 150,000 jobs.
- National Forests Service lands are **THE LARGEST SOURCE OF MUNICIPAL WATER** supply in the U.S., serving over 60 million people and supplying habitat for the vast majority the nation's coldwater fish species.



Additionally, natural and nature-based solutions can be effective when combined with traditional hazard mitigation techniques. For example, a series of voluntary buyout property acquisitions of repetitively flooded structures along a river could be paired with a floodplain restoration project to maximize benefits. A project like this can completely eliminate flood risk to the acquired structures, while also reducing the risk to the surrounding community by restoring and managing a natural floodplain, providing greater flood storage and water absorption capabilities. Another example would be restoring a wetland between the river and the levee to provide additional flood storage capacity, further reducing flood risk to neighboring communities.

# Natural Climate Solutions on Agricultural Lands

To learn more,  
visit [www.nwf.org/naturalsolutions](http://www.nwf.org/naturalsolutions)



Fully implementing **CLIMATE-SMART AGRICULTURE PRACTICES** could remove as much as 100-200 million metric tons of carbon dioxide annually by 2050 and enhance habitat for dozens of fish and wildlife species.

**IMPROVED GRAZING MANAGEMENT**  
on a 500-acre ranch can sequester 208 metric tons of CO<sub>2</sub> equivalent each year.

**ROTATIONAL GRAZING**  
can increase pasture profitability, water storage, and wildlife habitat.

**COVER CROPS**  
help reduce soil erosion and can increase crop yields.

**SOIL MANAGEMENT PRACTICES**  
could remove over 2 gigatons of CO<sub>2</sub> from our atmosphere by 2050 (equal to emissions from burning 225 billion gallons of gasoline).

**BUFFER STRIPS**  
help improve water quality and enhance wildlife habitat.

With a vulnerable environment due to climate change, shifts in baseline conditions, and more frequent and severe storms, the need for adaptable hazard mitigation and resilience solutions will only grow. Traditional grey solutions, such as a cement retaining wall, are designed to a specific level of protection, and require costly maintenance to remain effective. Once conditions exceed that grey structure's mitigation capabilities, it may no longer be effective or may require a costly redesign to remain effective under new conditions. Grey infrastructure can also exacerbate erosion and further degrade the nearby environment. A more adaptable alternative could be a natural stream bank stabilization technique that could incorporate natural plantings, downed trees, and rocks to naturally stabilize the bank to reduce risk, increase

groundwater recharge, provide increased ecologically valuable habitat, and increase aesthetic and recreation values of the river. A natural stream bank stabilization can also be designed to have multiple layers of protection that can adapt and grow, continuing to function and reduce risk with future varied changes in water levels, and improve conditions for fish and wildlife. In general, natural and nature-based solutions can be designed to fit local risk reduction needs, adapt to future conditions, and enhance the environment based on site specific requirements and local ecosystems.

The following examples detail important sporting landscapes, the issues they face, and the natural climate solutions the sporting community can pursue that will improve hunting and fishing.



# The Mississippi River Basin

The Mississippi River Basin, the river itself, and its delta create a world class collection of waterways, swamps, wetlands and forests that support myriad populations of fish and game. The Mississippi River system's importance cannot be understated. Flowing through 32 states and two Canadian provinces for more than two thousand miles, and draining more than one million square miles of America's heartland, it's no stretch to say that the Mississippi River is a sporting gem like no other. This is perhaps why it has so many nicknames including the "Father of Waters," the "Big Muddy," "Ole Miss", and the "Great River".

Anglers can pursue more than 300 fish species in the basin while hunters seek dozens of waterfowl species and dozens of terrestrial game species. If it's an American species that can be hunted or fished, it's likely you'll find it in the Mississippi River Basin. The river provides a blue ribbon of life and creates critical migration corridors for North American waterfowl and other bird species by serving as the centerpiece of the Mississippi River Flyway. In addition to its value for migratory birds, the river provides habitat for almost all of the wild crawfish sold in Louisiana. Sport fish, including trout, walleye, sauger, small & largemouth bass, catfish, bluegill, and crappie are part of the river's rich aquatic life. The iconic white-tailed deer are found in every state in the basin, along with many other important game species such as turkey, moose, and alligator.



Ensuring the health and vitality of fish and wildlife and their habitats is critical to maintaining the robust sporting traditions in America's heartland. To conserve these great places and opportunities, the sporting community will need to step up and lead the efforts on climate change. Fortunately, there are many ways we can help while improving hunting and fishing.

# Current Climate Change Impacts in the Mississippi River Basin

Fish and wildlife are sensitive to the changing climate just as humans are, and are threatened by changing precipitation patterns and flooding, heatwaves and drought, and shifts in seasonal events due to climate change. As a river that historically supported timber, textile, and farming industries, the Mighty Mississippi has already been subject to deforestation and loss of rich prairie habitat along its mainstem banks spanning 10 states.

[Climate impacts](#) are compounding these existing issues and creating the need to act sooner rather than later.

More frequent high-heat days and milder winters in the basin have also begun to throw off mating and migration patterns for wildlife and allowed increased numbers of pests to persist throughout the year. Later spring freezes are stressing vegetation and leaving wildlife with limited resources at unexpected times during the season. Increased flooding from intense weather events causes sediment and agricultural runoff to pollute the river, degrading aquatic habitat, especially for fish that are sensitive to changes in water level and temperature. And further, a complex system of dams and levees are keeping the sediment from making it to the delta. The sediment provides the material to keep the delta healthy and resilient from flooding and hurricanes.

There are numerous impacts from years of mismanagement and misunderstandings about what the river needs. Fortunately, we now know a lot more about how the system operates and we have the opportunity to restore many of its key functions. Restoration efforts can help combat climate change and create more resilience against its impacts. Examples include restoring wetlands to help slow the flow of water, filter out pollutants, and cool waters emanating from roadways and parking lots that are too hot for aquatic organisms; replanting streambanks to shade waterways, keep water temperatures in check, and help slow floodwaters; and restoring nearby prairies to support upland birds, store carbon, and provide habitat for native species. Climate-smart efforts like these (and many others) will not only begin to address climate change in the area but they will also improve habitat and bolster fish and wildlife populations, which in turn will create more opportunities to hunt and fish - a win-win for the Mississippi River and for hunters and anglers.

By investing in the planning and construction of ecosystem restoration and protection projects, including blue carbon ecosystems, we can mitigate the impacts of climate change, promote community resilience, and allow wildlife to thrive.





## **A Natural Infrastructure Solution in the Mississippi River Basin: The Mississippi River Restoration and Resilience Initiative**

**Based on the highly successful Great Lakes Restoration Initiative, the Mississippi River Restoration & Resilience Initiative (or “MRRRI”) directs the U.S. Environmental Protection Agency (EPA) to work with federal, tribal, state, and local entities to improve the health of the Mississippi’s water and ecosystems, increase its resilience to natural disasters, protect and restore wildlife habitat, and more. The legislation requires the EPA to create an action plan to guide the implementation of MRRRI, which must be developed with public input and regularly updated. MRRRI also provides grants for restoration projects in cities, towns, and tribal nations along the Mississippi River, with dedicated investment in communities that have borne the brunt of environmental degradation. Rep. Betty McCollum (D-MN) introduced the bill in June 2021, with original co-sponsors from a number of Mississippi River states:  
Rep. Bennie Thompson (MS-02), Rep. Cori Bush (MO-01), Rep. Steve Cohen (TN-09), and Rep. John Yarmuth (KY-03).**

**From the bill text MRRRI will support projects that:**

**“(i) protect or restore naturally occurring hydrologic, geomorphic, and ecological functions and processes, including the restoration or rehabilitation of wetlands, in stream habitats (including through reconnection of side channels and backwaters), living shorelines, or upland habitats; “(ii) remove or modify structures such as culverts, levees, and dams to restore natural hydrology or restore the form, function, or processes of rivers, streams, floodplains, wetlands, or coasts; ...Along with numerous other provisions. Learn more [HERE](#)**

## **Albertine Kimble is a passionate advocate for restoring wetlands in her home state of Louisiana and is featured in a documentary called “Last Call for the Bayou”.**

No one needs to tell Albertine Kimble that climate change is having an impact on the lands and waters around her home on the east bank of the Mississippi River an hour south of New Orleans. Last year she was forced to evacuate six times because of hurricanes that came barreling across the Gulf of Mexico. “Our summers are becoming hotter and every year the hurricanes are more frequent and intense.” Still, she says, she’d never live anywhere else because she loves the way of life.



Kimble started duck hunting when she was 11 years old – after she convinced her grandfather that girls should be allowed to hunt. Since that time, she has seen dramatic changes in the wildlife habitat and the wetlands that surround her. “I’m watching them disappear before my very eyes. It’s killing me. The marshlands and wetlands around me look like a wasteland. Ultimately no wetlands mean no wildlife and no people.”

The Mississippi Flyway – a migration route used by more than 300 species of birds as they travel back and forth from Canada to the Gulf of Mexico – passes right over Kimble’s home. She says she almost never sees mallard or gray ducks anymore. “I’ve seen a drastic decline in ducks since 2015. It’s all gone downhill since then.”

Kimble says she’s very concerned about the negative impact that humans are having on

Louisiana’s ecosystems that support wildlife. “We’re working against Mother Nature. People don’t seem to care about our planet.”

She has started speaking out, making documentaries, and giving tours of these impacted areas on her airboat. She is hopeful that the restoration efforts currently underway in Plaquemines Parish to rebuild barrier islands and rehabilitate the marshlands will help prevent future hurricane damage and will bring back native wildlife. She knows that restoring such natural infrastructure is expensive but she hopes that

leaders in Congress realize that it’s vital to do so. “We have a serious emergency here. This area isn’t just important for the people who live here. Being at the mouth of the Mississippi, our parish is the gateway to the nation. We are vital for the shipping industry and seafood industry. Restoration is going to be key to our very survival.”

***“I’m watching them disappear before my very eyes. It’s killing me. The marshlands and wetlands around me look like a wasteland. Ultimately no wetlands mean no wildlife and no people.”***

# Case Study: The Mississippi River Delta - A Damaged Landscape in the Heart of “Sportsman’s Paradise”... But Hope is on the Horizon.



The Mississippi River Delta in Louisiana is disappearing rapidly. The current rate of loss is approximately a football field every one hundred minutes. Land and marsh are disappearing so rapidly, even recently updated Navionics cards will often show dry land where a few weeks later there's open water. The loss, which began when levees cut off the Mississippi River from the marsh, combined with natural compaction and sinking of muddy river soils, was exacerbated when canals cut for oil exploration allowed saltwater intrusion to kill vegetation and is hastened by worsening storms and sea level rise.

While the national news coverage shows hurricane damage, flooding, and the “dead zone”, sportsmen see a rapidly declining estuary to support redfish, speckled trout, largemouth bass and other popular sportfish. They see marsh which once teemed with teal, gadwall, and pintail transition to more open water with less desirable species such as dos gris (blue-bills) before finally joining the open expanse of the Gulf.

The good news is we can reverse the trend. [Vanishing Paradise](#) is a coalition of hunters and anglers working with sportsmen from across the country to support restoration efforts in the Mississippi River Delta. The coalition seeks to educate, advocate, and support projects that help people and wildlife, along with hunters and anglers. The following are three projects Vanishing



# River Reintroduction into Maurepas Swamp

Not too many sportsmen and women outside Louisiana will recognize the name Maurepas Swamp, but most duck hunters should. Maurepas served as the backdrop for *The Duckmen of Louisiana*, featuring Warren Coco and Phil Robertson. This was one of the premier mallard wintering areas in the Mississippi Flyway, but that now seems a distant memory.

An exciting project, near Garyville, Louisiana, will [channel fresh water and sediment from the river](#) to benefit the river reintroduction into Maurepas Swamp. Dominated by bald cypress and water tupelo trees, this swamp is one of the largest forested wetlands in the nation. However, levees constructed along the river and the closure of Bayou Manchac have isolated the area from spring floods that once provided vital fresh water, nutrients and sediment. This, along with higher salinity levels, has left the swamp in a state of rapid decline – trees are dying, and young trees are not growing to replace them. The river reintroduction into Maurepas Swamp project will benefit the swamp by reconnecting it with the river, preventing further loss and the conversion to open water, and push back against future increases in salinity due to sea level rise.

Increased fresh water and nutrient input in the Maurepas Swamp will help prevent further conversion of swamp to open water and combat saltwater intrusion into the more than 100,000 acre [Maurepas Swamp Wildlife Management Area](#) which offers opportunities for sportsmen to hunt white-tailed deer, ducks and

## Bay Dennesse

Bay Dennesse is a relatively small project in the Mississippi River Delta, but it is a shining example of what is possible in delta restoration and the importance of partnerships on the ground. The Bay Dennesse Delta Water Management Project has recently enhanced 2,500 acres of marsh in Plaquemines Parish.

In a few short months, this project constructed earthen terraces within open water to help trap sediment from the river, increase submerged vegetation, and provide habitat for birds. Willow trees were waist high two months after terrace construction.

While new land took root relatively quickly, this joint effort by Vanishing Paradise, Ducks Unlimited, North American Wetlands Conservation Council, and Louisiana's Coastal Protection & Restoration Authority, is the culmination of two years of planning, design and on-the-ground work.

## Mid-Barataria Sediment Diversion

Where Bay Dennesse is relatively small, the Mid-Barataria Sediment Diversion will be the single largest ecosystem restoration project in US history. This approximately \$3 billion project will positively impact up to 60,000 acres. Located on the west bank of the river near Myrtle Grove, the brackish and freshwater wetlands in the area are highly degraded due to saltwater intrusion, decreased fresh water supply, alterations to the natural flow of water in the area and a lack of sediment input. This project will reconnect the river to the Barataria Basin and divert sediment and fresh water to build new land, maintain existing marshes and increase habitat's ability to persist in the face of rising sea levels and recover from storm events.

By building new land and helping to sustain the existing wetlands, this project will restore and enhance critical habitat for fish, ducks and other wildlife in mid-Barataria Basin. This project will also help to sustain the Barataria Landbridge, which protects freshwater habitat in the upper part of the basin that provides recreational opportunities for hunters and anglers, including the 30,000 acre [Salvador/Timken Wildlife Management Area](#) and the 20,000 acre [Jean Lafitte National Historic Park and Preserve](#). These are precisely the type of projects the sporting community should get behind and are excellent examples of “natural infrastructure” and “nature-based” climate solutions.

# The Pacific Northwest

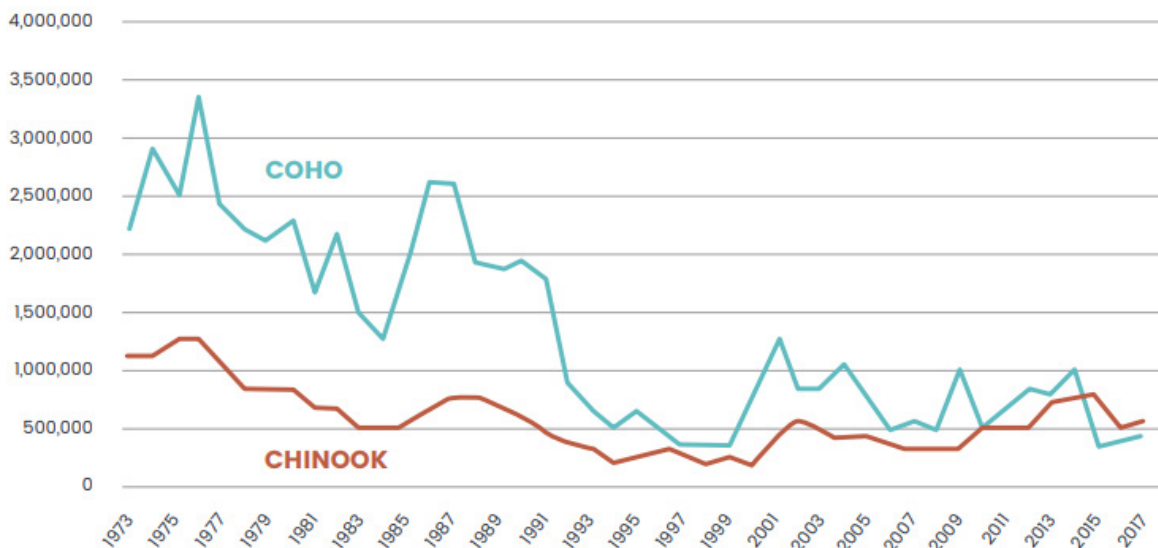
The Pacific Northwest states offer a cornucopia of fish and wildlife, and fishing and hunting opportunities, including the opportunity to pursue America's most iconic species like salmon, bear, and elk. Most hunters and anglers know about these opportunities but are less familiar with the issues that are contributing to species declines and reduced sporting opportunities. As we're seeing this year (2021), record drought and heat waves are exacerbating nearly every ecological issue. From low flows and wildfires to invasive species and melting glaciers, things are likely to get worse before they get better, and hunters and anglers need to lead the charge to a more sustainable, resilient future for the Northwest's fish and wildlife.

When we think about the Pacific Northwest, salmon and steelhead immediately come to mind. Once a salmon and steelhead haven, states like Idaho, Washington and Oregon now only host a small fraction of their historical numbers.



Many factors have led to this moment, with climate change certainly being one of them. Salmonids in the Pacific Northwest are at a crossroads. Populations have been declining for decades as Tribal communities and sportfishing enthusiasts have agonizingly watched runs dwindle to historic lows. Climate change has played an increasing role in stressing salmonids through creating better conditions for wildfires in salmon watersheds, acidifying the Pacific Ocean, and warming freshwater rivers.

## THE DECLINE OF SALMON FISHING IN WASHINGTON



Data Source: Washington Department of Fish and Wildlife. Data is for hatchery and wild coho and Chinook salmon caught (tribal and non-tribal) in the state's rivers and the ocean as reflected on sport catch record cards and commercial landings.

**Don Sampson, chief of the Walla Walla Tribe and member of the Confederated Tribes of the Umatilla, has been working to restore watersheds in the Pacific Northwest for more than two decades.**

**“Salmon are our lifeblood. They’re part of our sacred ceremonies. They renew us. They renew everything,” says Don Sampson, climate director for the Affiliated Tribes of Northwest Indians, a consortium of 57 Tribes in the Pacific Northwest. “Unfortunately, we’re facing a salmon crisis right now because of climate change.”**

**As a hunter and angler, Sampson has witnessed first-hand the devastating impacts that climate change has had on the lands, waters, wildlife, and Indigenous people of the Northwest. “For 20 years we’ve seen snowpack decline and that affects the spring waters that allow chinook salmon and sockeye to migrate up river. We’ve also had lethal water temperature where the sockeye die from the heat.”**

**And the impacts aren’t just limited to aquatic species. “We’re seeing catastrophic fires that are 5 or 10 times greater than in the past. The fires destroy habitat for elk, moose, caribou, and bighorn sheep. We depend on these species for food and for our ceremonies.” Sampson says that hunters in the Pacific Northwest are also seeing bluetongue disease in white tail deer, which is nearly always fatal. The disease is exacerbated by the drought conditions in the West. “Five years ago, we hadn’t seen bluetongue disease. Last year we lost 93% of the deer in one part of our reservation because of bluetongue.” He says climate change has been devastating for subsistence hunting and fishing in the Northwest.**

**Sampson has long been advocating that dams need to be removed so that rivers can be restored. He is now broadening his plea, asking elected leaders to make significant investments in conserving and restoring**



**watersheds, forests, migration corridors and other areas of natural infrastructure. “Elk, deer, cougar, bear – they can’t be isolated on reservations like we were. They have to have connections to migrate from one area to the next, especially as they are being impacted by climate change.” He is pleased that Congress is poised to invest in natural infrastructure to combat climate change. He hopes that in the future, federal land managers will look to Tribal communities as a model for conserving forests and grasslands. “Indigenous people have some of the best wildlife habitat in the world because we’ve protected it and restored it. We have traditional knowledge that we use to manage our resources so that our lands and watersheds remain healthy, even as the climate is changing.”**

**Intensifying the effects of climate change, a series of dams along the Lower Snake River have further decimated historical salmon runs, blocking access to high-quality habitat and raising water temperatures by slowing the natural flows in reservoirs. These impediments turn what used to be a four-day trip for juvenile salmon from their birthplace to the ocean into a forty-day journey. This further increases opportunities for predation and for succumbing to high temperatures and other stressors.**



## **The Columbia Basin Initiative: A Bold Plan for Salmon Recovery, Northwest Jobs, and Clean Energy**

- **Advance salmon recovery, clean energy, agriculture and economic opportunity regionwide.**
- **Direct investment in fish-friendly power generation projects and commodity transport infrastructure to replace the lower four Snake River dams.**
- **Provide water quality improvements in the Columbia Basin, Puget Sound, and Washington and Oregon coasts.**
- **Honor treaties with Northwest tribes and designates Columbia Basin States and Tribes as Co-Equal partners in fish management.**
- **Fund restoration of salmon in currently blocked areas in the upper Columbia and upper Snake rivers.**
- **Modernize essential energy and infrastructure in Idaho, Washington, and Oregon.**
- **Provide incentives to remove select fish-blocking dams in the Columbia Basin.**
- **Increase tourism and recreation opportunities.**
- **Revitalize salmon habitat through watershed partnerships.**
- **Address salmon fisheries infrastructure backlog.**

## **Our best chance for true recovery**



Removing the lower Snake River dams would alleviate several of the worst issues and restore access to historical habitat and the coldest remaining waters at higher elevations. Their removal would offer an immediate boost for robust salmon recovery. The [Columbia Basin Initiative](#) proposes to do just that. Introduced by Rep. Mike Simpson (R-Idaho), the initiative is a bold, ambitious, and multipronged approach to restoring salmon and steelhead runs in the Pacific Northwest. The recovery plan lays the groundwork for removing four lower Snake River dams, replacing the hydroelectricity provided by the dams, and increasing the renewable development in the region. This means good paying jobs, salmon recovery, and reduced emissions - a true win-win, and another example of a climate resilience project that will benefit hunters and anglers.





# Grasslands

There are few landscapes more interwoven into the heart of America than our vast grasslands. Lewis and Clark coined this expansive ecosystem “America’s Eden.” Many of us know it as The Great Plains. These grasslands once extended over a thousand miles from Illinois to Wyoming and over two thousand miles from Canada to Texas. These important landscapes are home to native upland birds including several that hunters like to pursue such as sharp-tailed grouse, prairie chickens, pheasants, and bobwhite quail.

The amazing array of American grasslands also includes much of the Prairie Pothole Region of the northern plains, often called America’s Duck Factory. Millions of ducks and geese pass through each spring and fall. Part of the central flyway for migrating birds, these critical lands provide vital breeding and stopover habitat for thousands of waterfowl species including pintails, mallards, gadwall, blue-winged teal, Northern shovelers, canvasbacks and redheads.



But the outlook for American grasslands has become bleak. They are suffering from years of neglect, overuse, and from simple ignorance of their values. Now only small patchworks of grasslands remain. Nearly three-quarters of America's tallgrass, mixed grass, and shortgrass prairies are now gone. The loss of habitat has resulted in a decline of plants and wildlife species, many of which are now on threatened and endangered lists. In fact, over 75% of grassland bird species are in decline. Grassland game birds, like quail and prairie grouse, are some of the most rapidly declining species in the country due to widespread habitat loss.

Conversely, healthy, well managed, working grasslands not only provide forage for livestock, but they also provide valuable wildlife habitat, particularly for grassland birds, as well as other highly valuable ecosystem services. And, not only do grasslands provide important habitat for wildlife and forage for livestock, but they also play a critical role for our climate. The long, deep roots of native grasses hold the soil in place and sequester large amounts of carbon into the soil.

When grasslands are plowed under and converted to cropland or to development, carbon that has been stored in the soil dissipates into the air, adding to already increasing levels of carbon dioxide in the atmosphere. Avoiding grasslands conversion, incentivizing sound stewardship, and the restoration and preservation of native grasslands for landowners, and restoring grasslands overall are more great examples of nature-based climate solutions that provide benefits for farmers, and for hunters and anglers. Fortunately, the value of grasslands is becoming more understood and the sporting community is becoming more engaged in crafting solutions. A collaborative effort crafted, in large part, by the sporting community is the North American Grasslands Act.



**Laura Mendenhall is a wildlife biologist, avid hunter, and co-host of a podcast that explores conservation and public lands issues in Kansas.**

Laura Mendenhall didn't start hunting until her early 20s. She says she grew up a hardcore vegetarian, but shortly after she graduated from college she read "The Omnivore's Dilemma" and began thinking about ways she could eat more locally. Hunting and fishing seemed like an ideal solution.

Her first harvest was diving for abalone off the coast of California. "It was an amazing experience. Unfortunately, you can no longer fish for them because the kelp forest has been so degraded that the fisheries are closed."

Mendenhall, a wildlife biologist and mother of two, now lives back in her home state of Kansas and enjoys hunting turkey, waterfowl, doves, and deer with her husband, a lifelong hunter. "We hunt all the meat we eat. We never buy it at the grocery store."

Mendenhall says it's clear that climate change has had a negative impact on the grassland ecosystem. For the past nine years, she has been working with threatened or endangered species and she says climate change has had a significant impact on all of them. "I'm always thinking of the ecosystem as a whole. If one or two species are impacted, ultimately that impacts everything."

Case in point: she recently read a study about grasshoppers in the tallgrass prairie which showed that the increase in carbon dioxide in the air has caused grasses to grow taller but less nutrient-dense. "That means that grasshoppers can't grow as large and that's going to impact the entire food web."



Mendenhall has become passionate about enlisting the hunting and angling community to speak out about the importance of habitat conservation and restoration. She is the co-host of "The Flatlander Podcast," – a joint project between the Kansas Wildlife Federation and the Kansas Department of Wildlife and Parks. Featuring stories about hunting, wildlife, and the growing threats to public lands, Mendenhall hopes the show will spur the sporting community to become more active in conservation.

"Hunters and anglers are the stewards of our lands and waters. We know the landscapes the best. We're the ones interacting most intimately with these lands. Hunters can sometimes be a quiet bunch, so my mission in life is to help hunters and anglers find their voice politically. We all have a role to play in helping to conserve wildlife habitat."

***"We all have a role to play..."***

# THE NORTH AMERICAN GRASSLANDS CONSERVATION ACT



The National Wildlife Federation is working with partners including Pheasants Forever/Quail Forever, Theodore Roosevelt Conservation Partnership, Backcountry Hunters and Anglers, and National Deer Association to propose new legislation to conserve and restore America's grasslands and sagebrush steppe. Dubbed the North American Grasslands Conservation Act, the legislation is a long-term solution that would kickstart the restoration and conservation of America's grasslands, as well as aid the wildlife and communities that depend on them. The North American Grasslands Conservation Act would create a landowner-driven, voluntary, incentive-based program to conserve and restore our native grasslands while supporting ranchers, farmers, Tribal Nations, sportsmen and women, and rural communities. This solution is modeled after one of the most successful conservation programs in American history: The North American Wetlands Conservation Act (NAWCA). NAWCA was signed into law in the 1980s when waterfowl numbers were in sharp decline. Because of collaborative action sparked by the act, waterfowl have since increased by 56 percent. Significant investments in grasslands through passage of the North American Grasslands Conservation Act would achieve a number of benefits: reverse the downward spiral of bird populations; improve management to benefit livestock and wildlife; increase water resources; increase carbon storage; create jobs in primarily rural communities; reduce rangeland fires; and control cheatgrass and other invasive species.

To learn more and get involved, go to:

[www.ActForGrasslands.org](http://www.ActForGrasslands.org)

# Florida

Florida is an angler's paradise where one can explore over 7,000 lakes, 25,000 river miles, and more than 2,000 miles of coastline. The list of popular marine sport fish is long: tarpon, snook, redfish, wahoo and mahi-mahi. Largemouth bass, black crappie, bream, and peacock bass are popular freshwater species. Fishing alone generates more than [\\$7 billion dollars per year in economic output](#). Florida's waters are also home to abundant waterfowl, including numerous species which migrate to the area to spend their winters. However, many ducks no longer migrate so far south due to changing weather patterns and warmer temperatures. This has reduced or eliminated many waterfowl hunting opportunities.

Unfortunately, Florida's ecosystems are facing incredible pressures, many of which center around one key resource: water. Mismanagement results in toxic algae blooms, seagrass die-offs, and fish kills in estuaries swamped by nutrient polluted freshwater due to overdevelopment and other human causes. At the same time, places like the Everglades and Florida Bay are not receiving the amount of clean freshwater needed to maintain a healthy ecosystem.

This history of mismanagement is being compounded by the very real impacts of climate change, rising temperatures, and the increasing frequency of severe storms that will result in more turbid shallow lakes and the decline of freshwater sport fishing. Sea level rise and the resulting coastal habitat loss and ocean acidification is forecasted to negatively impact both

production and access to the fisheries, and to waterfowl habitat.

We can still turn the tides in a positive direction with the adoption of climate adaptation measures like catch limits and changes in fishing methods, as well as revamping farming practices to curb pollution. But by far, the intervention with the broadest positive impact is large scale ecosystem restoration for both freshwater and marine habitats. Sporting voices have been at the forefront in Florida with many guides and other outdoor-related businesses sounding the alarm and providing tangible and lasting solutions.



## **Travis Thompson is a Florida fishing and waterfowl guide, a radio talk show host, and an ardent conservationist.**

Travis Thompson is a 5th generation Floridian and comes from a long line of hunters and anglers who have relied on fish, birds, and deer for food. Over the past 30 years, Thompson says he's seen tremendous changes on Florida's landscapes and waters because of climate change – particularly in and around the Everglades. “For one thing, we just can't keep up with the invasive plants here – they now grow year-round and are a direct result of climate change.” He points to just one example – water hyacinths – which double in growth every 7 days and block out light so aquatic species can't survive.

For Thompson, hunting and fishing aren't just recreational pastimes, they're his way of life. As a waterfowl hunting and fishing guide, he is fearful about how much wildlife habitat has degraded. “We're losing habitat every day. Sea levels are rising. Quicker runoff means that water isn't being filtered by wetlands. It's all a recipe for disaster. We're putting too many pressures on an ecosystem that is fragile to begin with.”

Thompson also runs several youth programs, where he takes kids out in nature and teaches them about wildlife conservation. “We used to go out and watch grand passages of birds – sometimes 150 flying overhead. We just don't see that anymore. We especially don't see ducks like we used to.”

These drastic changes in habitat – in just his lifetime—have spurred Thompson to do all he can to educate other hunters and anglers about what can be done.



**“We all have an active role to play because if changes aren't made, there will be more and more pressure on our wild areas and we may see species completely wiped out.”**

On a personal level, he's decided to use lead-free shot and reduce the amount of plastic he uses. But he also says it's important to engage elected officials to invest in restoration of natural infrastructure. “I've spent a lot of time with our political leaders talking about why it's critical to restore the greater Everglades ecosystem. We don't have time to waste. If we don't invest in these areas now, they're going to disappear.”

Fortunately, there are several projects under way with many more in the planning stages that can combat climate change and mitigate current impacts, while also restoring fish and wildlife habitat. In many cases, these projects are being led by the sporting community.

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***“We don't have time to waste. If we don't invest in these areas now, they're going to disappear.”***



## Kissimmee River Restoration

At the headwaters of the Everglades, the [Kissimmee River Restoration Project](#) is one of the most visibly successful Everglades restoration projects, exhibiting improvements that sportsmen and women can appreciate. The construction phase of the project took over 20 years and restoration has seen reestablishment of river flow, elimination of organic deposits, emergence of desirable native river vegetation, reformation of sandbars (habitat for shorebirds and invertebrates),

and dissolved oxygen has increased six fold. Largemouth bass and sunfish populations have rebounded and several species of ducks have returned to the area. All told, the project restored 40-square-miles of river floodplain ecosystem, 20,000 acres of wetlands, and 44 miles of river channel into a resilient river ecosystem. The monumental success of this project has helped drive the conversation and build support for more downstream Everglades restoration efforts.

## Daylighting and Restoring McCoys Creek

McCoys Creek, a tributary of the St. Johns River in Jacksonville, has been prone to flooding during severe weather events due to development within the floodplain. A local environmental trust, Groundwork Jacksonville, Inc. was awarded a grant to complete permitting and design plans to enhance fish habitat and passage in the

creek. The project will remove an 850-foot culvert and daylight the stream, creating 4,000 feet of open channel, 11 acres of tidal marsh, and 5.5 acres of open water habitat to provide ecological, recreational, and flood mitigation benefits to the Jacksonville urban landscape.

## Oyster Reef Restoration in Pensacola Bay

The [Pensacola East Bay Oyster Habitat Restoration Project led by the Nature Conservancy and partners](#) started with a splash in the summer of 2021 as the initial limestone boulders were placed in the water which will form the basis of 33 new oyster reefs along 6.5 miles of shoreline in Santa Rosa County--historically an oyster rich habitat that has been in decline.

The reefs will help to restore oysters to the bay, which will bring benefits to the marine ecosystem and bring back the historic oyster fishery. Water quality will improve as an adult oyster can filter 50 gallons of water per day. The new reefs will support all manner of marine life from forage fish to sport and commercial fish populations.



# The Everglades

## AN AMERICAN WILDLIFE HAVEN HOPING FOR A LIFELINE



America's Everglades once covered some three million acres – a shallow “river of grass” slowly flowing from headwaters near the center of the state all the way south through what is now Everglades National Park and Florida Bay. Although more than half of this ecosystem has been lost, the Everglades remains a national treasure that draws tens of thousands of anglers to fish the bass-filled waters of Lake Toho and Lake Okeechobee or the crystal-clear waters of Florida Bay every year. Over 8 million Floridians rely on the Everglades for their drinking water supply. It's also the first line of defense against hurricanes, floods, and storms.

Although the bipartisan [Comprehensive Everglades Restoration Plan](#) was signed into law over 20 years ago, Everglades restoration has suffered significant delays. We have seen all too frequently the very real public health, economic, and environmental cost of these continued delays, including the toxic algal blooms in Lake Okeechobee and along Florida's coasts, killing fish and wildlife and canceling charters, tours, and vacations.

The Army Corps of Engineers and the State of Florida have a detailed roadmap to complete Everglades restoration - the [Integrated Delivery Schedule \(IDS\)](#). Congress now has a major opportunity to change the pace of restoration by fully funding all federally authorized projects on the IDS. A \$5 billion investment now will save taxpayers nearly \$2 billion in the long term, alleviate the pressure on annual appropriations, and bring critical restoration projects online more quickly, accelerating the ecosystem benefits of restoration.

The Comprehensive Everglades Restoration Plan involves constructing and maintaining a suite of resilience-building water infrastructure projects that remove barriers to water flow. These projects are designed to clean water, store it, and then send water south, mimicking the way water once flowed through the ecosystem. This includes projects like the Everglades Agricultural Area Reservoir, which will reduce the damaging discharges from Lake Okeechobee and send more clean water south to Florida Bay. Collectively, these projects will rehydrate the Everglades and Florida Bay, safeguard drinking water, reduce wildfires, and protect and restore South Florida's world-class fisheries. And, they will give water managers the flexibility they need to store, clean, and manage water levels during droughts, hurricanes, and floods.

# Additional beneficial projects in important sporting landscapes

The United States is full of important and iconic landscapes known and utilized by all types of hunters and anglers. From urban wildlife refuge fishing trips to backcountry big game hunts, we are lucky to have so many great opportunities to carry out our traditions.

Beyond the aforementioned landscapes, there are several more that deserve mention and will certainly benefit from the same types of restoration, wildlife connectivity, and resilience projects. Below are a handful of examples with the benefits that will be realized by conducting climate smart activities and investment.

## McKenzie River, OR



The McKenzie River is the sole source of drinking water for over 200,000 Americans, and home to some of the best fly fishing in the Willamette Valley. Spring Chinook Salmon, Columbia River Bull Trout, Rainbow Trout, and Mountain Whitefish all live in the McKenzie River. Oregonians and tourists alike canoe and kayak on the river, and use nearby trails for hiking and biking. The McKenzie is also threatened: from more erosion and sediment, and nearby climate-fueled wildfires. Populations of cold-water fish species, like salmon and trout, are also

particularly vulnerable to climate change, because it can warm the cold, clean waters they require. Natural infrastructure, however, has helped protect the river.

[A local wastewater commission's program](#) has planted 10,000 native trees and shrubs along the riverbank, creating a water quality buffer to cool the water and protect fish species. The natural infrastructure solution was also \$8 million cheaper than traditional "gray" infrastructure (like storage chillers or lagoons).

## North-central Montana

One of the most popular hunting regions in the state now uses a low-tech method to improve wildlife habitat by imitating one of nature's best ecosystem engineers: beavers. Beaver dam analogs (also known as BDAs) help expand the diversity of flora and fauna across the prairie by slowing water and encouraging prairie streams.

These projects can help mitigate the effects of climate change. For example, beaver dams (analog or not) create ponds that store water during drought, thereby making it available to thirsty wildlife in places where before there would have been no water.



## Northeastern Offshore Wind Energy

Offshore anglers have first-hand experience with the impacts of climate change as they have seen warming waters, species like black sea bass migrating north, rising sea levels, and fish consumption advisories from mercury contamination.

Responsibly developed offshore wind power is America's best untapped energy source that can address climate change while creating artificial reef structures that attract fish and their prey.

While fisheries studies are ongoing at America's first offshore wind farm off of Block Island, Rhode Island, many area [charter captains and anglers have reported positive fishing experiences](#) since the foundations were installed in 2015. Research from nearly three decades of offshore wind development in Europe has found significant marine life activity around the turbine bases. Scientists have seen up to four tons of mussels at just one turbine, and an overall increase in marine biomass in the areas where offshore wind power has been developed in the North Sea and English Channel.

The Biden Administration has committed to developing enough offshore wind energy to power 15 million homes by 2030 and coastal states are working to make that vision a reality. While this is new to U.S. waters, offshore wind turbines have been spinning elsewhere in the world for nearly three decades.

This proven technology can be developed with stringent wildlife protections in place every step of the way and holds great potential for the U.S. to produce electricity right where it is most needed, mitigate climate change, and create good-paying jobs.



## Coronado National Forest, AZ

In the aftermath of the 2017 Frye Fire in Arizona's Coronado National Forest, populations of native Gila trout survived the burn, but when the monsoon season approached they were facing additional threats from flooding of toxic ash and debris from the burn scar. Arizona biologists rescued dozens of the rare species that year and recovery efforts were successful in 2019.

Unfortunately, with the prolonged drought and extreme heat, the endangered trout remain under threat. The fish are resilient and have been able to adapt to the cycles of drought and fire over the last 500 years, but we are witnessing a new normal and need to take more active measures to restore natural infrastructure like healthy riparian areas that will help protect the fish from future fires and prolonged drought. Successful riparian improvement efforts have occurred in New Mexico to improve habitat

but more investment is needed to ensure a healthy population into the future. Natural infrastructure projects, such as replacing old and damaged culverts so Gila trout can access more stream segments and colder water, and replanting of riparian areas and burned forests to reduce runoff and cool the surrounding landscape, are prime examples of projects that will help Gila trout and make their home waters more resilient to warming temperatures.



## Monongahela National Forest, WV

For a span of ten years, the [Monongahela National Forest in West Virginia](#) underwent reforestation—over three million trees planted across nearly 5,000 acres of land. The benefits are substantial: a revival of critical red spruce habitat in this region offers wildlife domain for over 24 species of neotropical migratory songbirds, as well as countless other bird species that use this region as stopover points. As the forest grows and matures, other key species will settle within the restored ecosystem like Appalachian cottontail, snowshoe hare, white-tailed deer, black bear, wild turkey, and ruffed grouse.

# Climate solutions: Five climate-forward policies that hunters and anglers can learn and advocate for now

From hurricanes to wildfires and harmful algal outbreaks to increasing disease and degraded habitat, climate change is cranking up the intensity and frequency of natural disasters and taking its toll on the habitat and wildlife that hunters and anglers rely on. Now is the time for us to implore our decision-makers to tackle climate change, create economic

opportunity, and uphold our sporting traditions – through restoration of habitat and investments in our nation’s energy, transportation, and natural infrastructure systems. These activities will not only address the impacts but also improve habitat, grow fish and wildlife populations, and create new hunting and fishing opportunities.

## Create climate-resilient habitat and communities by protecting and restoring natural infrastructure.

Infrastructure is more than just roads and bridges. It also includes natural systems that provide essential services for people, wildlife, and industry: our forests and floodplains, our grasslands and coasts. Safeguarding human and wildlife communities - as well as America’s investment in the built environment - from increasingly damaging climate impacts requires investments in nature, and in natural infrastructure. Restoring natural infrastructure will enhance hunting and fishing by improving habitat, and it will improve conditions and opportunities closer to towns and cities, which will make it easier to hunt and fish

for more Americans. Natural infrastructure is often more effective and less expensive than traditional “hard” infrastructure. Plus, it provides numerous co-benefits: habitat for fish and wildlife, recreation opportunities, as well as clean air and water. Healthy natural infrastructure also absorbs more carbon-dioxide from the atmosphere than it releases, a huge climate benefit. The National Wildlife Federation is advocating for Congress to pursue an aggressive agenda of direct investment, tax incentives, research, and other measures to support and expand natural infrastructure.



## **Invest in wildlife-friendly clean energy and energy efficiency, especially in communities that depend on traditional energy sources.**

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■ Serious efforts to address climate change require investments in clean energy, energy efficiency, and a resilient and modern electric grid. This energy transformation is essential if we want to protect the lands, water, and species we depend on—now and into the future. We need to use every tool in the toolbox to tackle climate change - investing and deploying clean energy and increasing energy efficiency are some of the most effective and powerful tools we have. As we make the transition to cleaner energy sources, such as on and offshore wind

and solar, it is essential that these energy sources are developed in a responsible way to minimize and compensate for potential effects on wildlife and wildlife habitat. The National Wildlife Federation is particularly focused on catalyzing new clean energy investments in communities that depend heavily on coal, oil and natural gas. Deploying energy efficiency and clean energy projects in these communities will support transition away from fossil fuels while sparking investment in U.S. communities that need it the most.

## **Accelerate climate-informed reforestation & restoration on national forests.**

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Our national forests provide millions of acres of diverse habitat and unique hunting and angling opportunities. They also play a critical role in supporting clean drinking water, reducing greenhouse gasses, absorbing carbon, and strengthening the adaptive capacity and resilience to wildfires and other climate-related impacts. Scientifically informed restoration and reforestation of our national forests is crucial if we want to conserve our forests now and into the

future. The National Wildlife Federation is advocating for additional funding for the U.S. Forest Service and Bureau of Land Management, including passage of the REPLANT Act, to ensure proper wildlife and fisheries habitat management, ecosystem restoration, wildfire management, capital improvements, and more. These measures will improve habitat for innumerable fish and game species and benefit hunters and anglers.



## **Conserving intact forests, grasslands, and coastal ecosystems that store carbon.**

**This one is simple. Healthy, intact habitats, such as wetlands, dunes, reefs, forests and floodplains, provide much more protection against the power of climate-change-fueled storms and flooding than developed areas. These natural areas also provide communities with cleaner water and air, pollutant filtration, healthy wildlife**

**habitat and myriad hunting and fishing opportunities. These areas are also more resilient to the potential effects of climate change and store large amounts of carbon. Simply by keeping the most intact areas intact, we are already mitigating climate impacts and offering refuge to thousands of fish and wildlife species.**

## **Revise the Civilian Conservation Corps to help tackle climate change and put Americans back to work.**

**U.S. federal lands have some \$20 billion in deferred maintenance needs, and states have tens of billions of dollars more. Modeled after the Civilian Conservation Corps from the Great Depression era but structured to meet contemporary needs, a revised Civilian Conservation Corps could help fix this backlog, while helping conserve at-risk fish and wildlife species**

**and tackling climate change. Projects could focus on work like wildfire risk reduction, coastal flooding management, degraded lands reclamation—and could create millions of immediate jobs for the demographic groups and regions acutely affected by the current economic downturn.**



# Call to Action

Now is the time for decision makers to invest in our nation's infrastructure - to put Americans back to work restoring ecosystems, building more resilient landscapes and waterways, reducing harmful emissions, and preserving our sporting traditions.

We can tackle climate change by restoring habitat in rivers and wetlands while helping waterfowl and fisheries. We can make landscapes more resilient to climate impacts by restoring prairies and enhancing habitat for upland birds, pronghorn, and bison. We can help keep streams cool and clean by replanting forests and mitigating fire potential. These things will improve habitat and address climate change - a win-win. But we must shift our focus from "something needs to be done" to "getting it done."

As we have throughout American history, we must carry on our tradition of stepping up at every critical juncture on behalf of American fish and wildlife conservation and lead the charge to combat climate change. We are the best messengers - we have tried and true field experience, a deep understanding of fish and wildlife and what they need to thrive and survive, and we have the moxie to tackle big jobs and achieve the outcomes we want. It is critical that we use these skills to attack perhaps the biggest threat to our sporting heritage any of us will ever know.

The next handful of years will determine whether or not we can stem the tide and save people and wildlife from the worst outcomes of climate change. To make this happen, we need to do two main things: get educated and get engaged.



## Hunters and anglers can take these steps today:

- » **Tell your climate stories** – you have one or know someone who does. Don't let these stories sit on the backburner. Tell them while they matter and help others understand the need to act.
- » **Get engaged in restoration efforts.** There are multiple organizations out there right now doing the hard work of planting streambanks and native grasses, restoring ponds and wetlands, planting trees in degraded forests, and generally trying to make life better for wildlife.



- » **Educate yourself on climate change and its impacts to fish and wildlife and then use that knowledge to advocate for proactive policies.**
- » **Learn the conservation policy aimed at addressing the impacts of climate change and get engaged with organizations, like the National Wildlife Federation, that are dedicated to passing these laws and getting them implemented.**
- » **Talk to your decision-makers.** Tell them how climate change is affecting your sporting pursuits and how you want to see action to curb emissions, conserve pristine landscapes and waterways, and restore degraded areas.



# Our Opportunity

It is obvious our sporting traditions are threatened. The opportunity to fish for trout in Western rivers is dwindling. The opportunity to hunt robust duck populations in the Southeast is slipping away. The opportunity to fish for brook trout in the Northeast and Upper Midwest is becoming a thing of the past. And the ecosystems in Alaska that have always supported so many excellent hunting and fishing opportunities are changing right in front of our eyes. These unfortunate realities join a growing list of declining opportunities to do what we love.

The only question left is, what do we want to do about it? Do we want to meet the challenge like pushing over a saddle to glass the next ridge or do we want to say it's too hard and let opportunity slip away? Do we want to let social pressure keep us quiet even though we know undoubtedly that inaction means the eventual doom for our sporting pastimes?

The answer is clear. We can and we must be leading voices to promote and implement strategies, policies, and good ideas that combat climate change, and that save hunting and fishing for generations to come. This publication is about spurring conversations in our community - opening the doors to solutions cut from the sporting cloth that both addresses climate change and enhances hunting and angling opportunities - and paving the way for a fish and game-filled future with ample opportunities to pursue them.

The chance to do all these things is right here in front of us. Now it's up to us to make it happen. We hope you'll join us!

For more information go to [www.nwf.org/GameChanger](http://www.nwf.org/GameChanger)



*We can and we must be leading voices to promote and implement strategies, policies, and good ideas that combat climate change, and that save hunting and fishing for generations to come.*

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