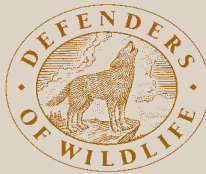


REFUGES AT RISK

**America's
10 Most Endangered
National Wildlife
Refuges
2004**





ABOUT DEFENDERS OF WILDLIFE

Defenders of Wildlife is a leading conservation organization recognized as one of the nation's most progressive advocates for wildlife and its habitat. Defenders uses education, litigation, research and promotion of conservation policies to protect wild animals and plants in their natural communities. Founded in 1947, Defenders of Wildlife is a 501(c)(3) membership organization with headquarters in Washington, D.C., and 480,000 members nationwide.

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REFUGES AT RISK

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America's 10 Most Endangered National Wildlife Refuges 2004

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FOREWORD

Every day we read about some new threat to wild animals and plants. Vital habitat is paved over or plowed up; drought or disease kills birds and fish; invasive foreign species crowd out vulnerable native flora and fauna. A tide of extinctions is threatening to wipe out much of the natural heritage that is our children's birthright.

A key to protecting the web of life, experts agree, is setting aside an array of lands where wildlife conservation takes priority. While much work needs to be done to protect vital habitat, the good news is that we already have the core of such a system here in the United States. These are our national wildlife refuges — more than 540 of them, covering nearly 100 million acres across the country.

The bad news is that many of these refuges are under siege — often from the same problems that bedevil wild animals and plants outside refuges. At Delta National Wildlife Refuge in Louisiana, for example, ducks, pelicans, herons and other birds must fight for space with nearly 180 oil and gas wells — wells that spew waste into the rich marshes and bayous. At the Upper Mississippi National Wildlife and Fish Refuge in Minnesota, bass and other species of fish are so contaminated by mercury from coal-burning power plants that they are unsafe not only for birds to eat, but humans, too.

Most of these challenges aren't new. Defenders assembled a panel of eminent experts more than a decade ago to study the refuge system. In their 1992 report, titled "Putting Wildlife First," the experts concluded "the system suffers from deep-seated problems." "Refuges are threatened from within by resource uses harmful to wildlife and habitats," the group wrote. "External threats such as pollution and watershed degradation make some refuges little more than oases in a desert of urbanized, cropped, overgrazed, overlogged landscapes."

A dozen years later, these threats remain. And new challenges have cropped up in recent years. Witness the repeated attempts by Congress and the Bush administration to open Alaska's Arctic National Wildlife Refuge — the "crown jewel" of the refuge system — to oil drilling.

With threats to wild animals and plants around the world mounting every day, we cannot sit by and watch the only public lands devoted to wildlife protection whither away. There's simply too much at stake — not only for us, but for future generations. To bring attention to the plight of our refuge system, Defenders is publishing this report on the 10 most endangered refuges in the United States.

For this report (the first in a planned annual series), we have examined refuges across the country and chosen 10 based on the following criteria: the magnitude and timeliness of the threat(s); the significance of the refuge to our natural wildlife heritage; the opportunity for action to address the problem; and the refuge's representation of overall threats to the system. Our final list includes not only the Arctic, Delta and Upper Mississippi refuges, but places such as Don Edwards San Francisco Bay in California — where invasive plants are crowding out natural habitat for endangered species — and Pocosin Lakes in North Carolina — where a proposed military jet landing field nearby threatens to destroy the integrity of land that shelters thousands of birds and a significant population of red wolves. The report also includes recommended steps for protecting these refuges.

Our hope is that our annual "Top 10" list and other initiatives will spur long-overdue interest in and support for our wildlife refuge system. If we can't protect wild plants and animals in our national wildlife refuges, where are we going to do it? Clearly, we must start here.

—Rodger Schlickeisen
President, Defenders of Wildlife



Tundra swans. © JIM BRANDENBURG/MINDEN PICTURES

INTRODUCTION

In 1903, astonished by the flourishing bird life at Florida's Pelican Island, President Theodore Roosevelt established it as a national wildlife refuge, the country's first such designation. Protecting places for wildlife, he believed, was akin to saving a cherished cathedral or priceless work of art. "To lose the chance to see frigate-birds soaring in circles above the storm," he later wrote, "or a file of pelicans winging their way homeward across the crimson afterglow of the sunset...why, the loss is like the loss of a gallery of the masterpieces."

Roosevelt's legacy is today a priceless collection of masterpieces – a system of havens that is without parallel in the world. National wildlife refuges are the only federally protected areas where the law requires that wildlife comes first. For more than a century, these refuges have offered habitat, shelter and food sources to an incredible diversity of plants and animals. Today, with more and more species facing extinction, the refuge system has become their last, best hope for survival. Yet many refuges are themselves endangered.

As the country marks National Wildlife Refuge Week in early October, Defenders of Wildlife is releasing its first-ever list of the 10 most endangered national wildlife refuges. The threats to these refuges are examples of the expanding dangers to wildlife nationwide: habitat loss, invasive species, air and water pollution, inappropriate development, funding shortfalls and governmental ne-

glect. Yet these 10 refuges also represent some of the most spectacular landscapes on Earth – living laboratories for biodiversity. Nine of the 10 refuges, for example, have been designated "Globally Important Bird Areas" by the American Bird Conservancy.

Some refuges on the list are familiar, such as the spectacular Arctic National Wildlife Refuge, which is jeopardized by proposed oil and gas drilling. The lesser-known Lower Rio Grande Valley National Wildlife Refuge, by contrast, is threatened by the government's failure to acquire desperately needed land to protect this biologically diverse region. Elsewhere, mercury contamination imperils refuges vital to bird and fish species in the Upper Midwest. The fate of other endangered refuges hinges on the resolution of decades-long debates regarding water use and development rights.

These refuges serve as examples of the power and the possibilities inherent in the National Wildlife Refuge System. In 2003, the refuge system celebrated its centennial – marking 100 years of visionary conservation efforts. Managed by the U.S. Fish and Wildlife Service, the refuge system comprises nearly 100 million acres of diverse natural landscapes, ranging from shorelines and marshlands to deserts and prairies. The more than 540 refuges provide havens for thousands of animal and plant species, many of which would likely be endangered or threatened without such protection. National wildlife refuges offer immense benefits to humans as well, providing unmatched opportunities for bird watching,

canoeing, hiking, hunting, fishing, nature photography and many other activities. By encouraging recreation and tourism, healthy refuges contribute to sustainable local economies and improve the quality of life in America.

More than a century after Roosevelt preserved Pelican Island, the refuge system is more important than ever. Yet Roosevelt's vision and commitment to wildlife protection are sorely lacking among today's leaders. Fewer than 60 refuges – just 11 percent of the entire system – have been established expressly for the protection of endangered animals. And most refuges remain incomplete, are too small, or are too fragmented to maintain viable populations of crucial animals, such as big creatures that need large habitats in which to roam. A chronic funding shortage cripples the refuge system, leaving 200 refuges with no staff at all, and thou-

sands of habitat, research, infrastructure and maintenance projects incomplete.

Defenders of Wildlife is committed to working with federal, tribal, state and local agencies; private organizations; and landowners to protect America's national wildlife refuges and to publicize the threats they face. The 10 endangered refuges highlighted here

are all at a crossroads; the decisions we make now will affect the wildlife and the health of these unique areas for decades to come. If these refuges continue to decline, the vital services they provide to both wildlife and people will be lost.

As the National Wildlife Refuge System begins its second century, Americans have an unprecedented opportunity to strengthen it and build a promising future for wildlife in this country. This list defines the challenges we face in fulfilling that promise.

THE MISSION OF THE NATIONAL WILDLIFE REFUGE SYSTEM

“...to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Aurora borealis above the Brooks Mountain Range.

©PATRICK J. ENDRES/ALASKAPHOTOGRAPHICS.COM

Dominating northeastern Alaska, the Arctic National Wildlife Refuge is the “crown jewel” of the refuge system. At 19.8 million acres, this is the largest wildlife refuge in the United States – and one of the least altered, so far, by human impacts. This vast, pristine ecosystem contains a remarkable variety of landscapes, including lagoons, barrier islands, tundra-covered foothills, mountains, glacial valleys and boreal forests. Wild creatures have ample room to roam here. The refuge’s coastal plain, which Alaska’s native Gwich’in people call “the place where life begins,” is the biological heart of the refuge. Caribou migrate nearly 1,000 miles from their winter habitat near the Brooks Range to their summer calving grounds on the coastal plain – the second-longest overland migration in the world. Other mammals abound as well, including Dall sheep, whales and wolverines, as well as 40 percent of the nation’s denning polar bears. Migratory birds are drawn by the hundreds of thousands to the refuge, feeding and breeding among the marshy wetlands.

THE THREAT

Although Americans have overwhelmingly signaled their opposition to opening the Arctic National Wildlife Refuge to oil drilling, the Bush administration and congressional leaders continue to force the issue. Arctic supporters in Congress, however, have blocked



Polar bear family in the Arctic National Wildlife Refuge.
©STEVEN KAZLOWSKI/PETER ARNOLD, INC.

attempts to open the refuge to harmful development. But the drilling debate is sure to continue.

The ecological impacts of drilling would be catastrophic. Experts note that any potential oil reserves would be difficult to extract from the Arctic coastal plain, requiring companies to build hundreds of miles of pipelines, wells, roads and support facilities. Such development would drastically alter the Arctic landscape and bring toxic pollution and runoff.

Wildlife would instantly be at increased risk of oil spills – oil operations in nearby Prudhoe Bay have a spill a day. What’s more, the extracted oil would likely meet only about six months’ worth of national demand – hardly worth the destruction of one of the world’s wildest places.

If drilling is allowed to proceed in the refuge, some of Alaska’s signature animals – including caribou and polar bears – would find nowhere to den, breed, rest or raise their young.

THE SOLUTION

Congress must pass legislation designating the coastal plain of the refuge as wilderness. There is bipartisan support for declaring the Arctic refuge off-limits for development. Passage of this legislation would put to rest the long struggle over the refuge’s future, permanently protecting this irreplaceable wildlife habitat.

ARCTIC NATIONAL WILDLIFE REFUGE — ALASKA

Oil operation in Prudhoe Bay. ©JOEL W. ROGERS



Arctic National Wildlife Refuge. ©ART WOLFE





An abandoned van near a roadway created by unlawful border traffic. ©JACK DYKINGA



Saguaro cacti in Cabeza Prieta National Wildlife Refuge. ©TOM BEAN

CABEZA PRIETA NATIONAL WILDLIFE REFUGE — ARIZONA

Located along the U.S.-Mexico border in southwestern Arizona, Cabeza Prieta is part of the largest remaining swath of undeveloped Sonoran Desert, one of the most biologically diverse deserts in the world. A lava-capped peak in Cabeza Prieta National Wildlife Refuge gives this 860,000-acre preserve its name – which is Spanish for “dark head.” The refuge is distinguished by its eight ragged mountain ranges and its vast stands of palo verde trees and saguaro cacti. More than 90 percent of the refuge is designated wilderness – the largest refuge wilderness in the lower 48 states. The refuge also shelters the fastest and one of the most endangered land mammals in the Americas – the Sonoran pronghorn.

THE THREAT

By clamping down on traditional points of entry in urban areas, United States border policies have funneled migrants from Mexico into the Arizona desert, with results that are both tragic and destructive. Two summers ago, 14 people died trying to cross Cabeza. High-speed off-road chases between smugglers and the U.S. Border Patrol in Cabeza’s fragile wilderness have left wide paths of destruction. In an attempt to curb ille-

gal border crossings and prevent further deaths, border officials have established permanent camps in the refuge, incongruous with this once-pristine and remote place, but reflecting the intensity of the problem.

These border activities could threaten the already slim chances of avoiding extinction for the endangered Sonoran pronghorn. Recent estimates have put the number of Sonoran pronghorn in southwestern Arizona – the only population left in the United States – at about 30 animals. This shadow of a population cannot withstand the stress and habitat damage caused by dramatic increases in border patrols, smugglers and migrants.

THE SOLUTION

Federal officials must construct a barrier along Cabeza’s border with Mexico, as they have done on adjacent public lands, to keep vehicles from damaging the fragile desert wilderness. Over the long-term, however, the only real solution is to reform the Border Patrol’s policy of funneling migrants into the desert, which has failed to reduce border crossings and has caused environmental degradation.

An endangered Sonoran pronghorn fawn. ©AP/WIDE WORLD PHOTOS



At the mouth of the Mississippi River, Delta National Wildlife Refuge encompasses bayous, marshes and coastal wetlands that teem with wildlife – one reason 19th-century naturalist John James Audubon declared Louisiana his favorite part of the country. The number of wintering waterfowl at the refuge, coming from as far north as the Arctic Refuge, can surpass a quarter-million. Delta is also an essential stopover point for an immense array of migratory songbirds traveling from the south. In the spring, these colorful birds (including warblers, swallows and tanagers) land here by the tens of thousands, desperate for rest after their long flight across the Gulf of Mexico.



Endangered brown pelicans are residents of the Delta refuge.
© MARIE READ/ANIMALS ANIMALS

Delta refuge is a particularly egregious example of these problems, with nearly 180 active wells that have caused several oil spills, gas leaks and spills of toxic, briny water pulled up from under the ground. As part of its review, GAO “found that levels of oil contamination near oil and gas facilities are lethal to most species of wildlife” at Delta refuge.

Even though industry claims the “footprint” of oil and gas facilities is small, these facilities are stomping out the ability of places such as Delta to provide healthy habitat. For example, energy

development brings roads and canals to previously undeveloped areas, resulting in widespread marsh loss and fragmentation. The loss of marshlands – essential habitat for numerous wildlife species and crucial to buffer the coast from hurricanes – is an increasing problem along the Gulf Coast. Recent figures indicate that Louisiana loses an average of 25 to 30 square miles of coastal marshlands each year – more than 80 percent of the nation’s total coastal marsh loss.

THE THREAT

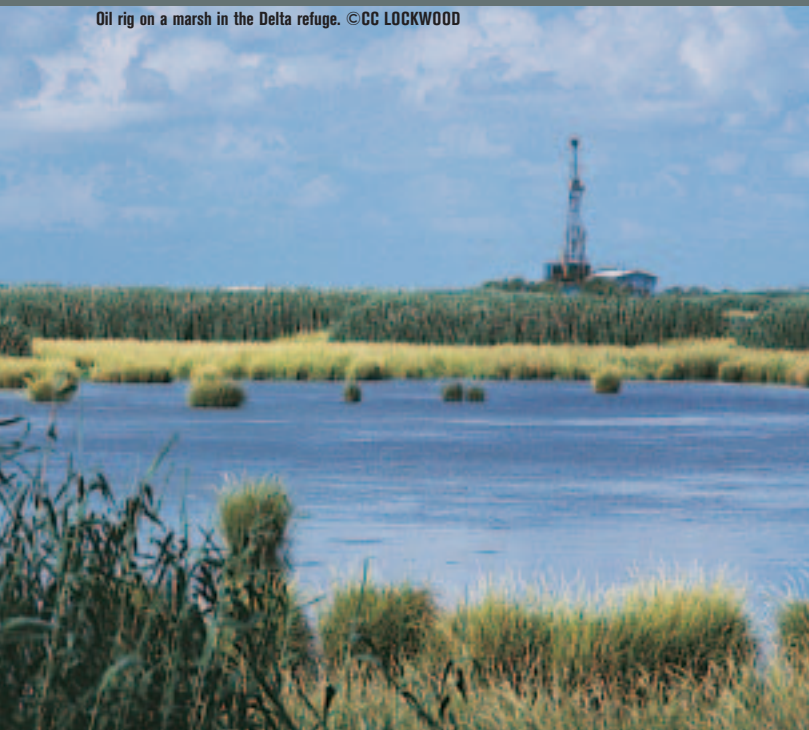
Unlike its threatened cousin, the Arctic refuge, Delta National Wildlife Refuge is already riddled with more than 300 producing and abandoned oil and gas wells. While most Americans want to keep wells out of the Arctic refuge, few know that 105 national wildlife refuges contain more than 4,400 oil and gas wells, including more than 1,800 active wells in 36 refuges, according to a recent U.S. General Accounting Office (GAO) report. In most cases, the drilling is allowed under pre-existing mineral rights that the Fish and Wildlife Service could not acquire. The legacy of this development is that refuges are left with habitat damage, toxic spills and the bill for cleaning up abandoned wells. The GAO report noted that the Fish and Wildlife Service has generally not assessed the cumulative impacts of oil and gas activities on refuges and that the agency lacks the staff and technical training to oversee such activities.

THE SOLUTION

The GAO recommended that the Fish and Wildlife Service take several steps to address energy development issues at Delta and elsewhere, including collecting better data on the extent of the problem and training staff to oversee oil and gas drilling. Although a year has elapsed since the report was issued, none of these steps has been taken. In addition to following the GAO recommendations, the Fish and Wildlife Service should issue new regulations to provide authority to better manage oil and gas development.

DELTA NATIONAL WILDLIFE REFUGE — LOUISIANA

Oil rig on a marsh in the Delta refuge. ©CC LOCKWOOD



Aerial view of Delta National Wildlife Refuge. ©CC LOCKWOOD







A D A

MINNESOTA

WISCONSIN

IOWA

**Upper Mississippi River
National Wildlife
and Fish Refuge**

MISSOURI

ARKANSAS

MISSISSIPPI

LOUISIANA

**Delta National
Wildlife Refuge**

Gulf of Mexico



0 200 mi
0 200 km

Lake Superior

Lake Michigan

MICHIGAN

INDIANA

KENTUCKY

TENNESSEE

ALABAMA

OHIO

WEST VIRGINIA

GEORGIA

SOUTH CAROLINA

FLORIDA

Lake Huron

Lake Erie

OHIO

WEST VIRGINIA

VIRGINIA

NORTH CAROLINA

SOUTH CAROLINA

NEW YORK

PENNSYLVANIA

WEST VIRGINIA

VIRGINIA

NORTH CAROLINA

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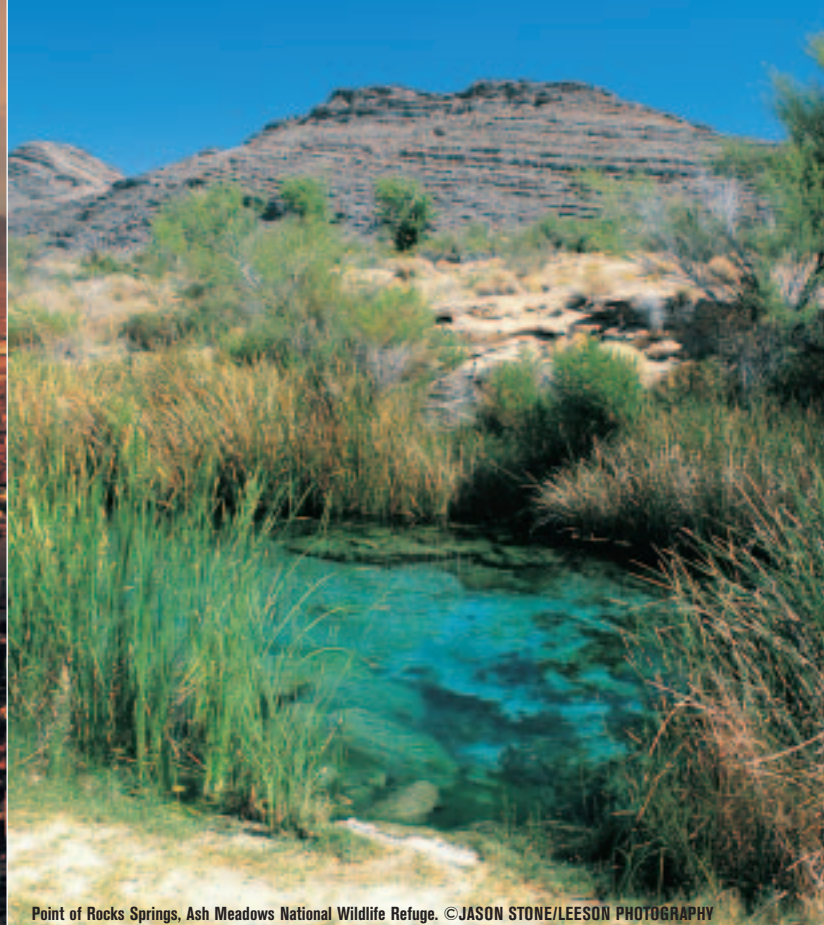
DEL.

**Pocosis Lakes
National Wildlife
Refuge**

ATLANTIC
OCEAN



Las Vegas, Nevada. ©BOB KRIST



Point of Rocks Springs, Ash Meadows National Wildlife Refuge. ©JASON STONE/LEESON PHOTOGRAPHY

DESERT NATIONAL WILDLIFE REFUGE COMPLEX — NEVADA

The enormous but fragile Desert National Wildlife Refuge Complex, only 25 miles from Las Vegas, encompasses four distinct refuges – the Desert Wildlife Range, Ash Meadows, Moapa Valley and Pahranaagat. The 1.5-million-acre Desert Range is the largest refuge in the lower 48 states, encompassing mountain ridges and valleys sheltering a wide array of animal species. The springs and wetlands on these refuges provide oases teeming with wildlife, including many endangered species found nowhere else on the planet. Ash Meadows, for example, shelters at least 24 species found only here, including four species that are endangered. This concentration of endemic species is considered to be the greatest of any local area in the United States.

THE THREAT

The most precious natural resource in the West is water, and this is especially true in the Nevada desert. At the Desert refuge complex, water is essential to the survival of all plant and animal species, from the bighorn sheep to the endangered desert pupfish. Currently, plans by the Southern Nevada Water Authority to develop groundwater sources in and around this complex may literally suck the life from the refuges. The authority is seeking to place wells in the Desert Range and to tap water beneath the refuge.

In a thinly veiled attempt to legitimize the wells, Fish and Wildlife Service leadership has cooperated with the authority, characterizing these as “monitoring” wells, rather than commercial pumping wells. Defenders of Wildlife, the Wilderness Society and other conservation groups are concerned that the “monitoring” wells will soon pave the way for large-scale pumping that would siphon water away from the refuge. The groups are also concerned that the authority has not provided adequate opportunities for public comment on its plans. The closed-door process raises serious questions about the extent to which the refuge will be protected. Again, as with the Arctic refuge, our current political leaders seem willing to ignore the interests of wildlife.

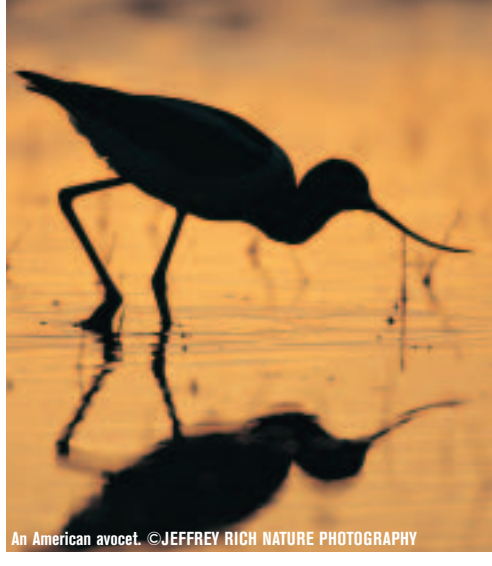
THE SOLUTION

In this arid climate, conservation measures and careful planning should be the primary focus of water managers and urban planners. The local water authority has made the Desert Range a primary target in the development of new water resources, instead of considering it as an absolute last resort. The water authority should focus on water resources that will not destroy wildlife refuges or further imperil already endangered species.

An endangered desert pupfish. ©GEORGE H.H. HUEY



Harried urban dwellers and wildlife alike depend on Don Edwards San Francisco Bay National Wildlife Refuge for solitude and solace in this densely populated area. At about 30,000 acres, this is our largest urban national wildlife refuge, and it is surrounded by 10 million people. Almost three-quarters of all the shorebirds on the Pacific Flyway winter or stop over at this refuge, which also boasts more than 700,000 waterfowl and 30,000 wading birds. Yet this acreage is all that remains of what was once known as the “bay-lands” – a vast system of salt marshes, tidal flats and ponds that teemed with plants and wildlife hundreds of years ago. The refuge is home to 60 percent of the entire California clapper rail population, as well as a significant percentage of the known salt marsh harvest mouse population, found only in the bay’s remaining tidal marshes.



An American avocet. ©JEFFREY RICH NATURE PHOTOGRAPHY

scale of the project and its proximity to urban areas make the restoration a formidable challenge. While there was a big state, federal and private funding push to purchase the salt ponds initially, without significant continued funding, restoration will languish.

The millions of shorebirds that fly through the bay use these salt ponds and tidal flats to gorge themselves before they continue on their long journeys. But at high tide, these birds need to eat and rest on higher ground. Although the approved refuge boundary includes essential upland

habitat, few dollars have been spent acquiring land to fill in those boundary lines. As the Bay Area’s human population burgeons, soon most of this habitat will become subdivisions and office parks.

If the money to complete habitat restoration and protection dries up, so will the ponds that sustain the West Coast’s shorebirds – and the birds may disappear.

THE THREAT

Like many urban oases, this refuge faces complex problems such as invasive species, habitat loss and polluting runoff. The refuge is the site of a massive restoration effort to convert former industrial salt-ponds into more natural salt marshes and saline ponds. The

THE SOLUTION

In the next year, a science advisory panel will recommend a restoration plan for the South Bay, including the refuge. Implementing that plan and completing the refuge acquisition will take continued commitment and funding.

DON EDWARDS SAN FRANCISCO BAY NATIONAL WILDLIFE REFUGE — CALIFORNIA

An endangered California clapper rail perched near garbage in San Francisco Bay.
©MICHAEL SEWELL/VISUALPURSUIT.COM



U.S. Fish and Wildlife Service officer with visitor at Don Edwards San Francisco Bay refuge.
©U.S. FISH AND WILDLIFE SERVICE





Thousands of salmon died in the severely low Klamath River in 2002. ©AP/WIDE WORLD PHOTOS



Ross' geese at Lower Klamath National Wildlife Refuge. ©U.S. FISH AND WILDLIFE SERVICE

KLAMATH BASIN NATIONAL WILDLIFE REFUGE COMPLEX — OREGON, CALIFORNIA

Straddling the Oregon-California border, the Klamath Basin refuge complex comprises six national wildlife refuges tied together by the Klamath River: Klamath Marsh, Upper Klamath, Lower Klamath, Tule Lake, Bear Valley and Clear Lake. The basin once contained more than 350,000 acres of marshlands, lakes, rivers and wetlands, but these have been largely drained and filled for agriculture and development. Today, the six refuges are only remnants of this once-vast wetland network, but they remain critical for wildlife. Eighty percent of the birds in the Pacific Flyway funnel through the basin, whose wetlands draw staggering numbers of ducks and geese – well into the millions. As many as 1,000 bald eagles can be seen flying to and from their winter roosts – the greatest concentration of these majestic birds found outside Alaska. The Lower Klamath National Wildlife Refuge was the first refuge set aside expressly to protect waterfowl, and now is also considered an essential area for snow, Ross', white-fronted, Canada and emperor geese, and more than 20 duck species. Without these refuges we could literally lose the birds of the West Coast.

THE THREAT

Although water is scarce throughout the West, the water shortage in the Klamath River Basin is particularly severe – and the pressures on the refuge complex are mounting. A massive, century-old federal irrigation project has fostered unsustainable farming in the area, depleting water from the region's lakes, rivers and wetlands and upsetting the natural balance of the ecosystem. As a result, the basin has lost 80 percent of its original wetlands.

The federal Bureau of Reclamation's policies for the Klamath River led to as many as 35,000 salmon dying while attempting to reach their spawning grounds in 2002 as the river fell to extremely low levels. The Klamath refuges didn't fare much better. Severed from natural water flows, they are last in line behind irrigation projects – meaning that marshes, wetlands and other resources are dying of thirst.

To make matters worse, thousands of acres within the refuge complex are leased for commercial agricultural operations. Forty-four percent of Tule Lake refuge and 28 percent of Lower Klamath refuge is farmed. Lands that should be set aside for wildlife are being used to grow crops such as potatoes and onions, which have few wildlife benefits. Even though refuge wetlands are supposed to get priority for water flows in times of drought, the refuge's leased farms have won out in recent years. In addition to using precious water resources, farming has also introduced carcinogenic pesticides that have poisoned birds and other wildlife in the Klamath refuges.

THE SOLUTION

The Fish and Wildlife Service will decide this coming year whether to reauthorize the leasing of refuge lands for agriculture. Crops such as onions, sugar beets and potatoes, which are of little or no value to wildlife and require toxic pesticides, should be eliminated from refuges immediately. Commercial agriculture within the national wildlife refuges should be phased out and refuge lands should be returned to their natural conditions. Finally, a more natural water cycle should be restored on lands within the present boundaries of the Klamath Basin refuges.



A pair of bald eagles. ©JOHN ALVES

A rare prairie wilderness in northwestern North Dakota, the Lostwood refuge protects the largest collection of prairie potholes in North America. In the heart of the country's "duck factory," the 4,000 glaciated lakes dotting the refuge provide prime nesting habitats for ducks and geese. The refuge also contains one of the nation's largest tracts of native grasslands, considered America's most endangered habitat. These prairies provide unspoiled breeding grounds for the Great Plains population of the threatened piping plover, as well as other declining grassland bird species such as Baird's sparrow. In all, more than 225 bird species have been recorded at Lostwood, including Canada geese, mallards, blue-winged teal and lesser scaup.



A blue-winged teal flock takes flight. ©BILLMARCHEL.COM

air quality that it violated Clean Air Act standards, according to the U.S. Environmental Protection Agency. The primary culprits are coal-burning power plants in North Dakota and Canada, which spew sulfur dioxide and mercury. Recent studies by the U.S. Geological Survey have found mercury readings off the charts in the refuge's wetlands and wildlife, most disturbingly in migratory birds that will carry the contamination hundreds or thousands of miles away.

Earlier this year, a political appointee at the Environmental Protection Agency allowed North Dakota to change the way it estimates air pollution – effectively relaxing pollution standards and facilitating the construction or expansion of more coal-burning plants in the area.

THE THREAT

The 27,000-acre Lostwood refuge contains more than 5,500 acres of designated wilderness, which should provide protection from outside threats. Yet wilderness designation has not been able to prevent an influx of toxic air pollution that knows no boundaries. In recent years, Lostwood refuge has had such poor

THE SOLUTION

The Environmental Protection Agency should require the state to develop an air-quality plan that reduces emissions. Over the long-term, however, North Dakota should shift its power generation from poor-quality coal to abundant, clean and renewable wind resources.

LOSTWOOD NATIONAL WILDLIFE REFUGE — NORTH DAKOTA

A coal-fired power plant. ©AP/WIDE WORLD PHOTOS



Lostwood National Wildlife Refuge. ©TOM BEAN





An aerial of the Lower Rio Grande and surrounding development. ©AIRPHOTO/JIM WARK



Yucca plants in Lower Rio Grande Valley NWR. ©LARRY DITTO

LOWER RIO GRANDE VALLEY NATIONAL WILDLIFE REFUGE — TEXAS

From the breeding grounds of the Arctic and Lostwood refuges, to the migratory stepping stones and wintering areas of Delta, Don Edwards and Klamath, many refuges are for the birds. Nowhere is this more true than in the southernmost reaches of Texas, where two major migratory pathways collide at the Lower Rio Grande Valley National Wildlife Refuge. The result: More than 480 species of birds have been documented on the refuge – more avian diversity than anywhere else in the refuge system. Add to that about half of all North American butterfly species and the northern ranges of two endangered wildcats – the ocelot and jaguarundi – and 11 distinct biological communities ranging from thorn forests to tidal wetlands. The Lower Rio Grande is truly vital to protecting our nation's natural heritage.

THE THREAT

This crucially important bird hotspot is scattered in fragments along the Rio Grande. The Lower Rio Grande Valley refuge was established in 1979 with the ultimate goal of encompassing 132,500 acres. Twenty-five years later, land for the refuge is still considered a top acquisition priority for the Fish and Wildlife Service, but the purchase of adjacent properties and conservation easements to connect these fragments has been ham-

pered by a shrinking supply of money from the Land and Water Conservation Fund (LWCF).

LWCF is a \$900-million federal fund financed by offshore oil drilling lease receipts. While the administration says it fully funded LWCF in its budget proposal, in reality the amount proposed for true LWCF programs was nearly \$600 million below the authorized level, robbing federal agencies of the ability to complete important land acquisition projects like the Lower Rio Grande Valley. Already, the area surrounding the refuge has begun to succumb to rapid development. In the decade between 1990 and 2000, the surrounding county's population rose nearly 50 percent – and the trend is continuing. Without acquisition funding, this refuge will fail to fulfill its intended purpose of protecting the irreplaceable biological diversity of south Texas.

THE SOLUTION

The President should call on Congress to fully fund the LWCF, and Congress should dedicate LWCF funds to their intended use – state and federal conservation. The Fish and Wildlife Service should aggressively pursue land acquisition funding and seek willing sellers of important habitat within the Lower Rio Grande Valley refuge.

A buff-bellied hummingbird. ©CLIFF BEITTEL



Eastern North Carolina is home to some of the wildest areas left in the eastern United States, and the 113,000-acre Pocosin Lakes National Wildlife Refuge is at its heart. This vast wildness provides habitat for several wild populations of the endangered red wolf, which was close to extinction in the 1960s and was subsequently reintroduced here. Eastern North Carolina also hosts the largest concentration of migrating waterfowl on the eastern seaboard, and the refuge's expansive wetlands support 30,000 tundra swans, 20,000 snow geese, 5,000 Canada geese and tens of thousands of ducks.



A red wolf. ©MICHAEL R. STOKLOS/ANIMALS ANIMALS

the case, the natural quiet and wildlife of Pocosin Lakes remain in jeopardy.

At the same time, Indiana-based Rose Acre Farms is proposing to build an egg factory adjacent to Pocosin Lakes refuge. The four-million chicken laying operations ever built in the United States, and would have grave impacts on the air and water quality and the environmental integrity of the nearby refuges. Experts estimate that the proposed Rose Acre Farms facility will emit 490 tons of particulate matter per year and an alarm-

ing 2,400 pounds of ammonia per day. The facility could transmit diseases to rare and endangered birds and other wildlife in the area. The facility will increase trucking and could potentially require substantial road construction and improvements, further threatening water quality and fragmenting this important habitat. Failing to learn its lesson from the huge pollution problems caused by factory hog farms in the area, the state recently issued a draft permit for the chicken facility, claiming there would be no discharge of pollution into the neighboring streams and wetlands.

THE THREAT

Pocosin Lakes refuge faces the dual looming threats of fighter jets and chickens – developments beyond the refuge's boundary that threaten the wildlife within. An Outer Landing Field (OLF) – located just a mile from the refuge's border – has been proposed to support Navy operations. On top of this OLF, the Navy has proposed designating special-use airspace over Pocosin Lakes and three other refuges. This action would lead to low-level, high-speed flights by military jets. Combined, these two proposals would result in more than 30,000 sorties a year in eastern North Carolina, bringing noise, air pollution and bird strikes to a national wildlife refuge with large concentrations of migratory birds. Defenders and a coalition of other conservation groups recently won a temporary injunction against construction of the OLF. But with the Navy appealing

THE SOLUTION

The Navy must select an environmentally preferable alternative site for its proposed landing field and special use airspace. Responsible agencies should carefully scrutinize the Rose Acre project with the goals of preventing air and water pollution and averting the spread of diseases to birds in the wild.

POCOSIN LAKES NATIONAL WILDLIFE REFUGE — NORTH CAROLINA

A military fighter jet taking flight. ©AP/WIDE WORLD PHOTOS



Snow geese in Pocosin Lakes National Wildlife Refuge. ©AP/WIDE WORLD PHOTOS





Barge traffic on the Mississippi increases erosion and pollution. ©AIRPHOTO/JIM WARK



Sunrise in the Upper Mississippi River National Wildlife and Fish Refuge. ©CLINT FARLINGER

UPPER MISSISSIPPI RIVER NATIONAL WILDLIFE AND FISH REFUGE — MINNESOTA, WISCONSIN, ILLINOIS AND IOWA

As spring approaches and the birds at Delta refuge at the mouth of the Mississippi River head north, many will rest in the backwaters of the Upper Mississippi River National Wildlife and Fish Refuge. The refuge serves as a key stopover for North American waterfowl – as many as 75 percent of the world’s canvasback ducks use the refuge, as well as 60 percent of all tundra swans in North America.

Although most national wildlife refuges support aquatic wildlife, fish are rarely the focus. The Upper Mississippi River National Wildlife and Fish Refuge was the first refuge set aside specifically to shelter fish, and it remains one of the nation’s few designated areas for fish protection. Stretching along more than 260 miles of the Mississippi River and crossing portions of four states, the refuge harbors more than 130 fish species and is the longest wildlife refuge outside Alaska.

THE THREAT

Combine the agricultural runoff of the Klamath refuges, the mercury contamination of Lostwood refuge, the invasive species of Don Edwards San Francisco Bay refuge, the habitat loss of the Lower Rio Grande Valley refuge – and you begin to understand the severity and diversity of the threats facing the Upper Mississippi National Wildlife and Fish Refuge. These threats are not new, but they are cumulative and growing.

Farming, commercial development

and barge traffic on the river have all exacerbated streambank erosion and chemical runoff. Increased sedimentation fills in the riverbed and destroys aquatic habitats. At the same time, invasive species are competing with natives for food sources and habitat. For example, the aquatic plant purple loosestrife is asphyxiating native wetland plants on which waterfowl depend.

Despite these threats, the U.S. Army Corps of Engineers is seeking to continue its outdated and unsustainable practice of building locks, dams and levees on the Mississippi. Even though such practices disrupt the natural flow of the river, the agency is currently looking to replace or extend several locks north of St. Louis.

On top of these persistent threats, the refuge faces new challenges from the public. The Fish and Wildlife Service is currently preparing a management plan for the refuge, and it is being pressured to balance dog walking, camping, boating and other seemingly innocuous uses with its wildlife conservation mission.

A great blue heron in the Upper Mississippi refuge. ©A.B. SHELDON



THE SOLUTION

Of vital importance to the refuge is the Upper Mississippi Environmental Management Program (EMP), a federal effort that funds habitat restoration projects to counter the impacts of dams and flood control. Congress is currently proposing to cut the program’s funding by \$12 million. The EMP must be fully funded if it is to restore islands, wetlands and other habitats essential for so many of the nation’s birds and fish.



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