

SOS

STATE OF THE SYSTEM

An Annual Report On the Threats to
the National Wildlife Refuge System



2005 FOCUS:

Beyond the Boundaries

Featuring the top six threatened and top six rescued refuges

Unless we act now to protect lands and waters
surrounding our nation's refuges,
we may lose our magnificent wildlife heritage





The mission of the National Wildlife Refuge Association (NWRA) is to protect, enhance and expand the National Wildlife Refuge System, lands and waters set aside by the American people to protect our diverse wildlife heritage.

The NWRA works with decision-makers in Washington, DC, to help the Refuge System better fulfill its wildlife conservation mission. We promote community support for refuges by providing the more than 160 refuge Friends volunteer organizations with the tools, information and resources to make a difference. And we work to educate the public about the importance of protecting Teddy Roosevelt's unique conservation legacy.

Our diverse national membership includes current and retired U.S. Fish and Wildlife Service professionals, members of refuge Friends organizations, refuge volunteers and other conservation-minded citizens.

To learn more about the NWRA or become a member, please visit our website at www.refugenet.org, or write:

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SOS

STATE OF THE SYSTEM

Beyond the Boundaries

EVAN HIRSCH

Our National Wildlife Refuge System is under siege. While refuge professionals and tens of thousands of refuge volunteers and more than 160 Friends groups work to ensure that each of the 545 refuges across the country is managed to secure the needs of America's wildlife, threats from beyond refuge borders—inappropri-

ate development, competing water interests, mining and fossil fuels extraction, military maneuvers and other harmful activities—threaten to jeopardize the very future of these conservation gems.

This report highlights recent research that reveals the magnitude of these threats, and uses stories from six individual refuges to tell the story. In addition, we review six refuges that have turned threats into opportunity; refuges that are now better off having developed creative partnerships with adjacent landowners and galvanized the support of surrounding communities.

Finally, we offer five recommendations to Congress and the Bush Administration that, while strengthening the conservation mission of our national wildlife refuges, aid in the broader conservation of species on private, state and other federal lands, a vital requirement if we are to conserve our wildlife heritage for the benefit of future generations of Americans.

The National Wildlife Refuge Association urges Congress and the Administration to implement or support the following measures to ensure the long-term integrity of our national wildlife refuges:

- 1) Strengthen incentives for private landowners to practice conservation through more funding of federal programs that reward landowners for habitat protection.
- 2) In partnership with states and private landowners, conduct a thorough evaluation of habitat conservation needs on lands and waters that are adjacent to refuges and that connect refuges and other conservation areas.
- 3) Allocate adequate funding for direct land purchase to add high-priority habitat to the Refuge System.
- 4) Allocate adequate funding for state wildlife grants which will help to conserve important wildlife habitat outside refuge boundaries: at least \$85 million next year.
- 5) Implement strategies to protect fragile coastal and island refuges from the devastation of shipwrecks and oil spills.

Please see the closing section of this report for more information.

2005's Top 6 Threatened Refuges

Stone Lakes NWR, CA	9
Alaska Maritime NWR, AK	10
Desert NWR Complex, NV	11
Pocosin Lakes NWR, NC	12
Horicon NWR, WI	13
White River NWR, AR	14

2005's Top 6 Rescued Refuges

Sacramento NWR Complex, CA	16
Minnesota Valley NWR, MN	17
Lake Umbagog NWR, NH	18
Tensas River NWR, LA	19
Red Rock Lakes NWR, MT	20
Lower Rio Grande Valley NWR, TX	21



EVAN HIRSCH

For more than 100 years, the National Wildlife Refuge System has protected lands and waters that are critically important to imperiled wildlife of all kinds.

But new research finds that refuges are increasingly isolated and squeezed by sprawl, improper development, and some types of agriculture. Their space limited, their water supplies threatened, surrounded by construction and highways—many refuges struggle to maintain the havens of habitat that endangered species urgently need.

Unless we act now to conserve land and water around refuges, the Refuge System's ability to protect wildlife will be in jeopardy. The genius of this uniquely American approach to conservation will be squandered. Our wildlife heritage will be lost.

Our refuges are the best hope for species conservation in America—but they can't go it alone...

Refuges Have Proved Their Value— Now, They Need Our Help

Since 1903, the National Wildlife Refuge System has boosted populations of migratory birds and provided needed habitat to wildlife species of all kinds. The Refuge System contains 545 refuges and 3,000 waterfowl production areas located throughout all 50 states and several U.S. territories. Our refuges provide homes for 700 bird species, 220 mammal species, 250 reptile and amphibian species, and more than 200 kinds of fish.

Refuges have proved their utility and value in protecting habitat and conserving wildlife. They also provide recreational opportunities that bring pleasure to millions of people and contribute economically to countless communities.

But new research finds that refuges are woefully ill-equipped to do their job in the face of growing human populations and demands for resources. They've become

islands in a landscape that is managed for a host of reasons other than wildlife. In fact, refuges are surrounded by a higher density of agriculture, subdivisions, and other human activity than the average continental U.S. landscape.

At some refuges, vital water supplies are being siphoned off by thirsty human communities. At others, waterways are burdened by polluted runoff from industry and agriculture. Throughout the country, refuges are increasingly surrounded by housing developments—often, the marketing brochures tout the proximity of the refuge as a reason to buy! One refuge in California has subdivisions built right up to its eastern edges, and there’s even a subdivision built on land within the refuge’s planned boundaries.

While the refuges serve as biological hubs of protection, lands outside refuge borders buffer the refuges from development and also provide additional resources for

many wild species. If we as a nation want the refuges to succeed in their mission of conserving species, we must find ways to make these adjacent lands safe for wildlife.

“It Came From Beyond!”—Protecting Refuge Buffer Zones Is The Key

Activities occurring beyond the refuge borders pose many threats to the refuges—yet, these lands are key to the Refuge System’s success in ensuring the future of America’s wildlife. The answer is not to circle the wagons. Instead, the refuges must reach out to surrounding communities and landowners and encourage land uses that will enhance—not threaten—the wildlife protections provided by the Refuge System. Private lands are estimated to protect roughly one-half of the most important wildlife habitat in the United States. It’s imperative that private landowners get involved and make a commitment to conservation.



Built within the Stone Lakes NWR acquisition boundary, this clubhouse is part of a subdivision known as Stone Lakes Community. Such development is threatening to stymie the refuge’s attempts to connect isolated parcels and eventually acquire its planned total of 17,600 acres. | Photo by Evan Hirsche

Why Are The Refuges Vulnerable?

First, wild animals don't recognize refuge boundaries. The species the refuges are designed to protect—waterfowl, elk, wolves, songbirds, manatees, fish, and hundreds more—often leave refuge lands and waters to search for food in adjacent areas.

Second, such threats as chemical pollutants don't recognize refuge borders, either. When a subdivision, agricultural operation, or other human activity moves in next door, the refuge can experience reduced water supply, diminished water quality, increased risk of invasive species, and other consequences.

As long as the properties around a refuge remain in their natural state, these two vulnerabilities are less troublesome. But new research shows that the nation's wildlife refuges are increasingly surrounded by human activity hostile to wildlife movement. One refuge had to fight a proposal to build a huge amphitheater right outside its boundary, which would

have blasted loud music, crowd noise, and bright lights directly into the refuge during summer evenings.

Typically smaller and at lower elevations than national parks and forests, refuges protect the heart of important ecosystems. And they occupy sites that have better soil quality and higher productivity for vegetation—adding up to greater diversity of wildlife. The good news: refuges protect ecosystems that are not protected by other conservation lands. The bad news: refuges are located in areas that are experiencing increasing pressure from human activity.

Our Refuges Are Too Small, Too Dispersed, Too Pressured

- Nearly 20 percent of refuges are smaller than 1,000 acres. These refuges protect habitats that are crucially important. But many are just too small even for the home ranges of the species they were established to protect.

ABOUT THE RESEARCH

Information in this report is taken from:

- *Opportunities for the National Wildlife Refuge System to Provide Greater Conservation Benefits for Threatened and Endangered Species* by Robert P. Davison, Northwest Field Representative, Wildlife Management Institute, in Goble, D., J.M. Scott and F. Davis, eds. *Endangered Species Act at 30: Challenges and Prospects*. Island Press.
- *National Wildlife Refuge System: Ecological Context and Integrity* by J. Michael Scott, Thomas Loveland, Kevin Gergely, James Strittholt, and Nancy Staus, published in the *University of New Mexico School of Law Natural Resources Journal*, Fall 2004, Vol. 44, No. 5.

Other research projects have rung alarms about the future of America's wildlife habitat:

- The U.S. population increased by 32.7 million people between 1990 and 2000, to a total of 281 million, the largest 10-year population growth in the history of the country. A report prepared for the Surdna Foundation notes that more people will heighten "already pressing issues of resource depletion, air and water pollution, waste disposal, and environmental quality."
- Sprawl actually leaps ahead of human population growth. Research sponsored by the National Wildlife Federation, Smart Growth America, and NatureServe found that, while the human population has increased

by 75 percent since 1955, the amount of land covered by urban and suburban development is estimated to have increased by nearly 300 percent.

- The Brookings Institution estimated in December 2004 that our nation will need to build approximately 60 million new residential units by 2030. In other words, about 40 percent of all residential units that will exist in the U.S. in 2030 will have been built after 2000. Current trends suggest that much of this construction will take place on previously open lands.
- Private forests constitute nearly 60 percent (about 430 million acres) of America's total forest land, providing wildlife habitat among many other functions. The rate of conversion of private forest land to developed uses reached a million acres per year in the 1990s. In "Forests on the Edge," a report from the U.S. Forest Service on housing development in private forests (May 2005), researchers estimate that an additional 23 million acres of private forest lands in net may be lost by 2050. More than 44 million acres of private forest across the conterminous United States could experience substantial increases in housing density by 2030.
- The Environmental Working Group analyzed data on drilling and mining in and near 147 refuges in the Western states and found a steady 50-year decline in the number of pristine areas remaining. Lands within five miles of fully 78 percent of the Western refuges have been mined, drilled, offered to, or otherwise controlled by mining, oil, and gas interests.



EVAN HIRSCH

Although the Endangered Species Act provides the authority to establish refuges for listed species, only 59 refuge units have been set up since the law's enactment in 1973. These ESA units have a median size of little more than 1,000 acres. While some are integrated into larger landscapes, others are isolated from natural lands and waterways.

- Nearly 40 percent of refuges have greater than 50 percent human-impacted landscape cover within 5 to 40 miles. Put more simply, many refuges are surrounded by housing, agriculture, minerals development, or other activities that put wildlife at risk. What's more, many refuges are composed of multiple small parcels of land that are not connected, increasing the problems of habitat fragmentation.
- Many endangered or threatened species are not even found on the refuges—including more than 40 percent of all listed mammals, birds, and reptiles; 75 percent of listed fishes and amphibians; and about 85 percent of listed plants and invertebrates. Plants and invertebrates may not have the appeal of deer or bears, but they are essential to the functioning of entire ecosystems.

EXPERT PERSPECTIVES

We have a problem but we also have an opportunity. Refuges can become the catalysts for conservation efforts beyond their boundaries, serving as demonstration areas for land management that conserves wildlife and habitat. There's no reason refuges can't stimulate the use of the conservation provisions of the Farm Bill, for example, or the various programs of the Interior Department. The refuges could provide one-stop shopping for all the federal conservation efforts. If you look at refuges as islands of intense conservation within the larger landscape, there's an opportunity for them to provide leadership and to help adjacent landowners integrate their conservation efforts."

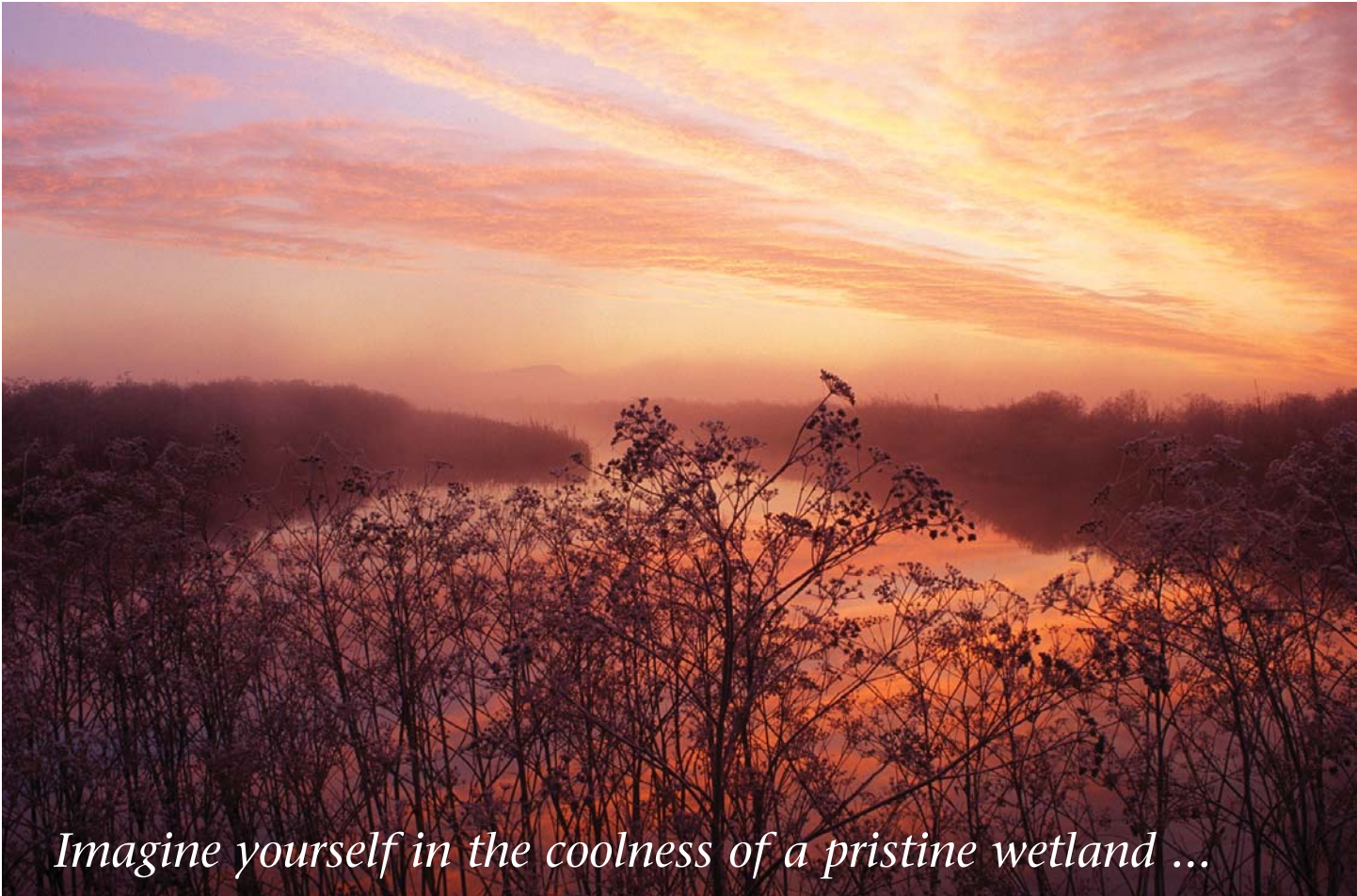
Robert P. Davison

Northwest Field Representative, Wildlife Management Institute; author, *The Role of the National Wildlife Refuge System in Conserving Threatened and Endangered Species*

As a nation, we have to ask ourselves, what is the American conservation landscape going to look like in 50 or 100 years? Researchers and agency managers can provide information, but they can't answer the question. It has to be answered by the American public. ... The nation's conservation landscape is also the recreation landscape. This is where we hunt and fish, watch wildlife, and hike with the grandkids. This is where America goes to relax. We must create a vision of the future, shared by ranchers, farmers, recreationists, developers ... all have a stake in the outcome. On the 200th anniversary of the refuges, what will the system look like? What will it contain? And who will make it happen?"

J. Michael Scott

Leader, Idaho Cooperative Fish and Wildlife Research Unit; senior scientist, U.S. Geological Survey; professor, University of Idaho; co-author, *National Wildlife Refuge System: Ecological Context and Integrity*



EVAN HIRSCH

Imagine yourself in the coolness of a pristine wetland ...

2005's Top 6 Threatened Refuges

... calm and quiet except for the calls of the many birds that make their home here.

Suddenly, the peace is interrupted, the birds driven to startled flight by the sound of a jet aircraft taking off. Or maybe it's the back-up beep on a truck at a construction site just beyond the trees.

Perhaps the safety of the refuge is threatened by something more insidious, something you can't see. The water flowing by may be slowly filling with poisonous effluents from a far-away plant. Or the water flow itself may be disappearing as nearby communities siphon off their own supplies.

Throughout the country, our nation's wildlife refuges confront threats to their ability to conserve wildlife. The threats vary from place to place, and so do the available solutions. But in every case, the conclusion is the same: we must look beyond the refuge boundaries to provide adequate habitat for wildlife.



*Refuge at the Crossroads***Stone Lakes National Wildlife Refuge****Near Sacramento, California****Current area: 6,200 acres****Authorized final area: 17,600 acres****6,000 visitors annually**

Located in the San Joaquin-Sacramento Delta and the 100-year floodplain, the Stone Lakes NWR provides vital feeding and resting grounds for migratory birds on the Pacific Flyway and protects habitats that are rapidly disappearing in California's Central Valley: grasslands, wetlands, riparian, oak forest, and agricultural lands. In the 10 years since the refuge was established, nearby Sacramento and its surrounding counties have grown at staggering rates—up to 20 percent annually. As what was once open country around the refuge lands fills with tract houses and strip malls, Stone Lakes NWR is struggling to



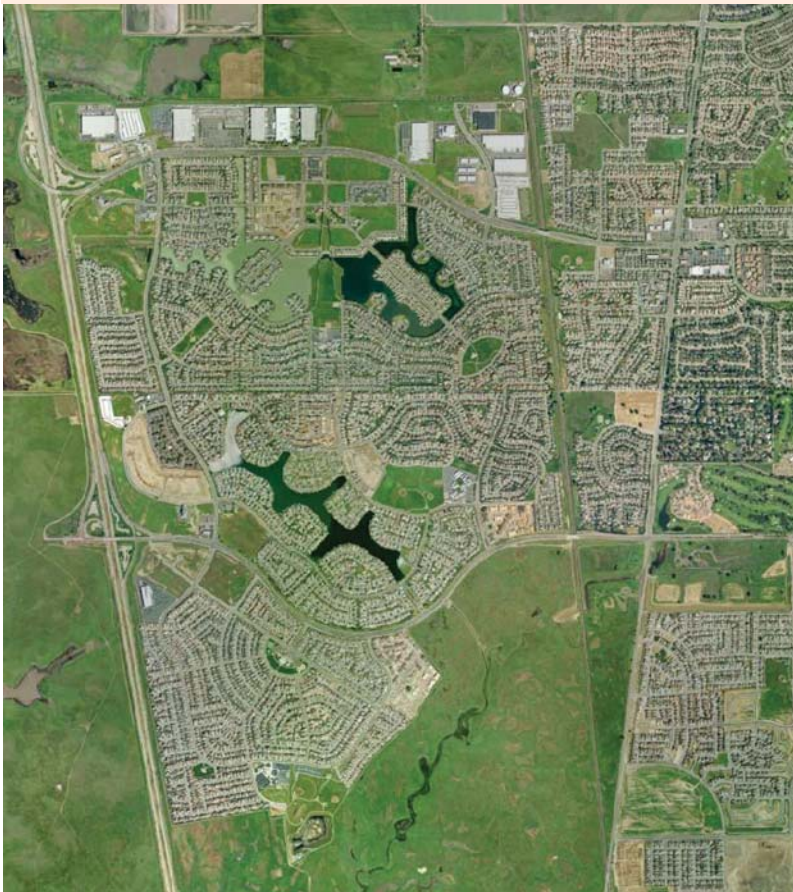
New housing development runs right up to the Stone Lakes NWR boundary. The land to the left of the road is the refuge. | Photo by Evan Hirsche

connect its isolated parcels and acquire its planned total acreage of 17,600 acres.

Developers have already bought up lands within the approved refuge boundaries, and one 460-acre subdivision was built within the boundary in 1999. And now this frenzied development has reached the refuge doorstep: the newly incorporated city of Elk Grove—the second-fastest growing city in the United States among cities of 100,000 people or more—directly abuts the refuge's eastern border. More development at the gates means the refuge will confront diminished water quality, invasive plants and other human-caused disturbance.

More people also means more refuge visitation. Refuge manager Tom Harvey welcomes the interest in the refuge, but the demand for access “creates a tension between restoring habitats and allowing wildlife to rediscover these new areas versus opening them to visitors.” When habitats have been restored, wildlife usage has increased.

There are “glimmers of hope,” says Harvey, in the onslaught of development. Some area farmers who opposed establishing the refuge now appreciate its utility as a buffer between agricultural lands and urban encroachment. (One of the most vocal opponents subsequently sold his farmland to the refuge.) In fact, traditional farming practices on the lands around the refuge benefit species such as the Swainson's hawk, greater sandhill crane, and many other migratory birds. Still, Stone Lakes has its work cut out as development closes in on this key migratory and wildlife corridor.



Subdivisions in Elk Grove, California, encroach on Stone Lakes NWR. The development below the curved road was built within the refuge acquisition boundary. | Photo by USFWS

*Shipwrecked***Alaska Maritime National Wildlife Refuge****Headquartered in Homer, Alaska****Area: 4.9 million acres****Includes the volcanic islands of the Aleutians and the seabird cliffs of the Pribilofs****Traveling between its farthest points would equal traveling from Georgia to California**

On December 8, 2004, a Malaysian freighter called the *Selendang Ayu* lost power and drifted aground on the Aleutian Island of Unalaska in the Bering Sea. The ship broke in half, spilling an estimated 335,000 gallons of heavy fuel onto waters and beaches, mostly within the Alaska Maritime National Wildlife Refuge. In addition to the tragic loss of six crewmembers' lives, this



When the *Selendang Ayu* crashed, it split in half, spilling 335,000 gallons of crude oil and 60,000 tons of soybeans. | Photo by Michael Edenfield

was the worst oil spill affecting U.S. waters since the 1989 Exxon *Valdez* accident.

One of the most biologically important areas in the U.S., the Alaska Maritime refuge is spread over most of the state's 47,300-mile coastline, from the Arctic to the southeast panhandle. Its seashores provide nesting habitat for some 40 million seabirds. The *Selendang Ayu* was on the busy Great Circle Route, the shortest trans-Pacific route for many freighters, which takes them from the Gulf of Alaska to the Bering Sea and then back into the north Pacific. The freighter ran aground in an especially sensitive area accessible only by boat and helicopter.

The oil spill caused the immediate closure of an economically important crab season and continues to threaten commercial fish and shellfish stocks. Several thousand dead seabirds have been recovered and more deaths are likely among the refuge's bald eagles, black oystercatchers,

rock sandpipers, and glaucous-winged gulls. Native red foxes, a major scavenger of the oiled birds, face an uncertain future. And the oil poses yet another danger to already declining populations of Steller's sea lions, northern fur seals, and sea otters. Furthermore, a thick layer of the ship's cargo of 60,000 tons of soybeans now covers beaches and the seabed, smothering the organisms that support the entire food chain. Damage assessment and clean-up are still underway, and the ultimate injury may not be fully quantified for years.

The Shipping Safety Partnership, a coalition formed in response to the *Selendang Ayu* disaster, includes Alaska Oceans Program, Aleut Corporation, Aleutian Pribilof Island Association, Bering Sea Fishermen's Association, World Wildlife Fund, Alaska Marine Conservation Council, local citizen advisory councils, and many others. The group recognizes that, with some 2,900 ships annually traversing the Great Circle Route, future accidents are not a matter of 'if' but 'when' and 'how many' and seeks to use the lessons from the *Selendang Ayu* tragedy to minimize the number and impact of subsequent shipping disasters. Two of the main improvements the Partnership will advocate are to use available technology and equipment to track vessels in real time and to strategically position rescue tugs to assist disabled ships.

"We had loss of human life, substantial environmental injury, and costs of two hundred million dollars or more," says Rick Steiner, professor, University of Alaska Marine Advisory Program, and Partnership facilitator. "For a few million dollars, we could have prevented this catastrophe."



Spilled soybeans block access to the feeding grounds of crested auklets and other species at Alaska Maritime NWR. | Photo by USFWS

*Las Vegas "Big Gulp"***Desert National Wildlife Refuge Complex****Mojave Desert, southern Nevada****Area: 1.6 million acres****Includes the largest National Wildlife Refuge in the continental United States****68,000 visitors annually**

Established to preserve Nevada's desert bighorn sheep, the three species of pupfish and other endangered species, the Desert NWR Complex includes four units, one of which, Desert NWR, is the largest in the contiguous United States.

More than 1,300,000 acres within Desert NWR were proposed for federal wilderness designation in 1974, and since then the refuge has been managed to retain its primitive character. Its southern boundary lies about a half-mile from the northern boundary of Las Vegas, whose metropolitan area is growing by 3,000 to 4,000 people per month.

In the quest to find ever more water for Las Vegas, the Southern Nevada Water Authority has obtained a permit

to begin tapping the vast aquifer that underlies land from western Utah through eastern and southern Nevada to Death Valley in eastern California.

Water experts don't know how much water the aquifer holds or precisely how the groundwater pumping will affect water supplies throughout the Mojave Desert, the "driest, most brittle desert in the U.S.," says Dick Birger, who manages the refuge complex. Life here is difficult enough, but the region is also in the grip of what some experts say is the worst drought in 500 years.

The water authority is required to monitor the impact of pumping on the aquifer, but opponents, including farmers, ranchers, and county commissioners, argue that no pumping should be allowed in the face of such uncertainty. Retired University of Nevada, Las Vegas, professor Jim Deacon points out that a regional groundwater model developed by the U.S. Geological Survey showed that if the SNWA project were the only source of groundwater removal, substantial declines could be expected in discharge at all springs on the refuge. According to Deacon, virtually all spring dependent species in the region would be threatened, and perhaps driven to extinction.

At a hearing reported in the Las Vegas Sun, Deacon said the pumping could dramatically drop water tables and that at least 16 federally listed endangered species and hundreds of other species of concern could be affected. "Unfortunately, pumping effects on springs can be undetectable for over 100 years. By the time effects are measured, it will be impossible to reverse them in time to save the biota those springs have been supporting for about the last 3 million years."

And with Las Vegas' continued growth, its demand for water shows no signs of slowing.



These desert bighorn sheep could lose their water supply to a rapidly growing Las Vegas. | Photo by USFWS

*Collision Course***Pocosin Lakes National Wildlife Refuge****Headquartered in Columbia, North Carolina****Pocosin: Indian word meaning "swamp on a hill"****Area: Pungo Unit, 12,000 acres; Pocosin Lakes****Unit, 98,000 acres****34,000 visitors annually**

Jet aircraft is the last thing you want around if you're trying to maintain a peaceful sanctuary for a variety of mammals, reptiles, and birds.

Yet just such a sanctuary, Pocosin Lakes NWR, is threatened with construction of a military outlying landing field (OLF) on a 30,000-acre site in Washington and Beaufort counties, less than five miles outside the refuge boundary. To practice for landings on aircraft carriers, U.S. Navy pilots flying Super Hornet jet aircraft would use the OLF for more than 31,000 "touch and go's"—continuous take-offs and landings—annually.

The disturbance of construction, the ongoing noise of aircraft, and the high risk of collision with birds make this proposed airfield a multiple menace. At particular risk is the tundra swan, with its spectacular seven-foot wingspan, and the gregarious snow goose. These species use the refuge over the winter months, when their populations peak at about 24,000 and 70,000 respectively.

What's more, birds often leave the refuge to feed in



FA-18 Super Hornets like this one would make more than 31,000 practice landings a year near Pocosin Lakes NWR. | Photo by U.S. Navy

adjacent croplands. The OLF will displace some of these family farms, forcing the birds to fly farther—and through the air space used by the military—to find food. "We don't know what the impact will be on the migratory bird resources," says refuge manager Howard Phillips.

The proposed OLF has drawn fire from opponents including a dozen federal, state, and regional agencies; some 35 county and town governments; and nearly 60 private organizations, including several farmers' and hunters' groups. "It's the closest thing I've ever seen to universal opposition to anything," said Phillips.

Beginning in January 2004, several of the opponents began a legal battle against the OLF charging that the U.S. Navy failed to adequately perform the legally required review of the environmental impacts.

Since then, the case has gone back and forth between a federal judge and the U.S. Court of Appeals. On May 19, 2005, the 4th Circuit Court of Appeals upheld the federal judge's injunction against OLF construction. "At some point the Navy must acknowledge it made a mistake in choosing this site for a landing field," said one of the plaintiff's attorneys, "a fact the rest of the world appears to understand."



The thousands of tundra swans that winter at Pocosin Lakes NWR would be threatened by noise and possible collisions with aircraft using the proposed landing field nearby. | Photo by Pocosin Lakes NWR

*Right Technology, Wrong Place***Horicon National Wildlife Refuge**

Southeastern Wisconsin — encompasses the northern two-thirds of Horicon Marsh

Area: 21,400 acres

**Designated a Wetland of International Importance and a Globally Important Bird Area
406,000 visitors annually**

Most environmentalists support wind power as a clean, quiet, and sustainable alternative to burning fossil fuels to generate electricity. But not when the windmills have the potential to devastate an internationally recognized bird population.

Horicon NWR was established in 1941 after citizens rallied to protect Wisconsin's Horicon Marsh, which was being ravaged by human encroachment. At 32,000 acres, Horicon is the largest freshwater cattail marsh in the nation. The refuge encompasses two-thirds of the marsh, and the state government manages the southern third. Up to one million Canada geese visit the refuge each fall—as many as 300,000 birds at a time.

Forward Energy LLC is proposing to build 133 turbines (windmills) on 32,000 acres near the refuge. Proponents argue that the project will help boost energy

independence, provide income to farmers who allow the windmills on their property, and preserve farmland from residential development.

Should Forward receive the final permits, windmills some 400 feet high will operate within 2 miles of the refuge boundary, their giant arms circling in the airspace where the birds come and go. In fact, hundreds of sandhill cranes have been seen using the fields where the turbines are planned. The windmills also pose potential danger to a colony of bats living in an abandoned mine south of the project area as they fly into and out of the marsh to feed on insects.

"There's no way for birds to fly through the turbines. They're too concentrated, plus they're huge," observes Harold Steinback, president of the refuge Friends group. "The irony," he says, "is that these towers will produce seven tenths of one percent of the power used in Wisconsin."

The coalition of groups opposing the project argue that relevant research on bird behavior in and around the refuge is available but has not been adequately considered in assessing the potential impacts of the project. These opponents contend that wind farms are highly appropriate in some places—but not so close to Horicon.



Horicon NWR's birds would be threatened by dozens of 400-foot-high turbines at a proposed wind farm nearby. | Photo by Jack Bartholmai

*Giant Sucking Sound***White River National Wildlife Refuge****Headquartered in St. Charles, Arkansas****Area: 160,000 acres****90 miles of the White River lies within the refuge****150,000 visitors annually**

The White River NWR protects a 90-mile stretch of bottomland hardwood forest in the floodplain of Arkansas' White River. More than 350 lakes and ponds provide oases to migratory birds, salamanders,



The vital waters of White River NWR face siphoning by a powerful pumping station. | Photo by Ray Paterra

mink, beavers, bald eagles, black bears, and other species.

Before the refuge was established in 1935, rice had already become an important crop in the region. Rice is a thirsty plant, requiring much more water than soybeans or other crops. To support rice farming, a major aquifer had been tapped at rates far beyond its ability to recover. More recently, a second aquifer was tapped to keep up with demand. By the 1980s, it became clear that groundwater resources

would be depleted in the not-too-distant future.

Enter the U.S. Army Corps of Engineers and the Grand Prairie Area Demonstration Project. The first part of the project—uncontroversial and well underway—is building reservoirs and water recovery systems on the farms.

The second part is highly controversial. To supplement water supplies during irrigation, the Corps plans to build a pumping station capable of sucking water out of the river and sending it to the reservoirs at a rate of more than 1,600 cubic feet per second—up to 100 billion gallons a year—which, according to the Corps' own study, will harm the habitat and leave the wildlife to contend with up to 40% - 50% water reduction in some zones at certain times of the year

Through a series of environmental assessments, lawsuits, and appeals, opponents have argued that by pulling huge quantities of water from the river, the pumping sta-

tion and subsequent projects will benefit a small number of farmers to the detriment of the entire ecosystem. Despite results that predict harm to wildlife habitat, the Corps counters that the admittedly rushed and incomplete studies it has conducted indicate that the river will adapt.

Enter the ivory-billed woodpecker, just when construction was to begin on the pumping station. On April 28, 2005, researchers announced the first confirmed sighting of an ivory-billed woodpecker since 1944. The location: Cache River National Wildlife Refuge, White River NWR's sister refuge near the pumping station site. Known as the "Lord God Bird," the species had been thought extinct. The availability of protected habitat allowed the dramatically colored woodpecker with its three-foot wingspan to survive, to the delight of millions of Americans. Announcement of the sighting electrified the conservation community. The Corps was asked to halt work on the pumping station, although construction has since begun.

"The White and Cache refuges are in a very flat basin," says David Carruth, attorney and president of the Arkansas Wildlife Federation. "From high point to low point, it's mostly a two- or three-foot difference across three miles. If you start taking a half-foot of water, you're going to affect perhaps thousands of acres. There never has been a study of what will happen when they de-water this ecosystem."

The legal battle over the pumping station will continue. "I think the Corps will finally lose," says Carruth. "It's simply going to cost the ecosystem and the taxpayer in the process."

RICE CUTS BOTH WAYS . . .

At White River NWR, the loss of water to rice farming is an extremely serious threat to the ecosystem this refuge was established to protect. At the Sacramento NWR, which begins our next section, rice farming around the refuge is helping to maintain wetlands, which have almost disappeared in California because of galloping human development. Rice is a threat in one place and a boon in the other—illustrating the complexity and local uniqueness of threats to the refuges. No single solution applies, and that's why NWRA advocates a range of programs that can be adapted to local needs. With appropriate support from the federal government, refuges can work cooperatively with their neighbors to protect our nation's wildlife treasures.



EVAN HIRSCH

When people work together to protect wildlife refuges...

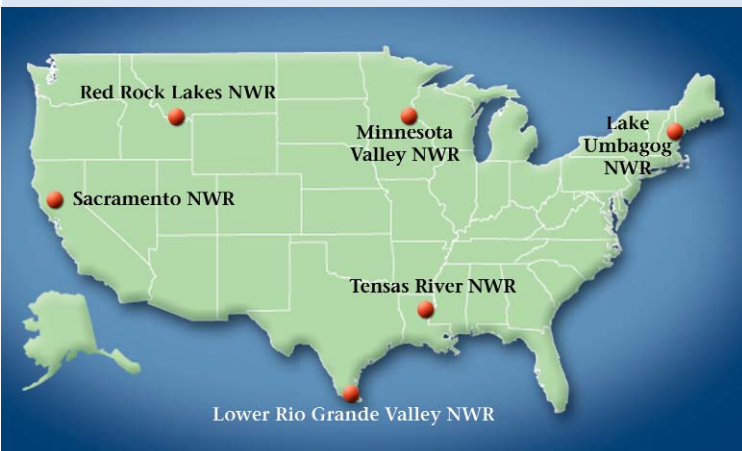
2005's Top 6 Rescued Refuges

... the results are impressive, helping not only wild plants and animal species but also the countless numbers of people who find their own kind of sanctuary in these places of natural beauty.

The following pages chronicle how the people who love and care for six particular refuges in the system came together to solve problems. In some cases, they united to ward off immediate threats. In others, people cooperated to add lands to refuges or ensure that surrounding lands support the refuges' conservation mission.

These compelling stories demonstrate that our refuges can be protected and enhanced, if we have reliable and adequate public funding, public-private cooperation, and citizen action.

These success stories are important also because there will always be threats—new proposals and schemes that will endanger the refuges. We will need such stories to provide practical models and serve as inspiration in the inevitable struggles ahead.



Symbiotic Relationships

Sacramento National Wildlife Refuge Complex

Near Sacramento, California

Area: 35,000 acres in five refuges, plus nearly 30,000 acres of conservation easements

Refuges and surrounding area used by nearly half of the migratory birds on the Pacific Flyway
110,000 visitors annually

From the bird's eye view, the Sacramento NWR Complex often looks like a cluster of islands in the sea. The refuges are almost entirely surrounded by rice farms, where the lands are flooded a good eight months of the year.

The flooding has been a boon to pintail ducks, American bitterns, swans, and many other wetland-dependent species. Although current bird populations are a fraction of their historic peaks (sometimes reaching tens of millions), the refuges and the surrounding rice lands are providing good habitat for millions of birds.

In the spring, rice growers flood their fields and then plant the rice seed. Beginning in late summer, the farmers begin to drain the water from the fields in preparation for a fall harvest. Historically, the farmers would burn their fields after the harvest was completed to remove the rice stubble and minimize the risk of plant disease. But in the early 1990s, in response to air quality problems, California



Great egrets benefit when rice farmers flood their fields. | Photo by Evan Hirsche

adopted legislation requiring phase-out of the burning. Farmers began flooding the harvested fields so the water could hasten decomposition of the rice stubble. This post-harvest flood water remains in place until spring, when the cycle begins again.

Over many decades, wild bird populations have meshed into this growing cycle. In the spring, egrets,

herons, and other wading birds find crawfish, frogs, and other prey in the flooded fields. As the rice grows into lush vegetation, waterfowl will bring their broods for the protective cover and the insects in the water. When the farmers begin to drain the water for harvest, many birds will take advantage of the concentration of prey species where water collects in low-lying areas. In the winter, the fields are re-flooded and the "waste grain" that fell to the ground during harvest is a bonanza for arriving migratory waterfowl. Farmers appreciate that the birds trample the stubble, speeding decomposition, and deposit natural fertilizer.

When it comes to providing adequate habitat, "the refuges can't do it alone," says Greg Mensik, deputy refuge manager. "The state wildlife areas, the private wetlands, the rice lands, no one can do it alone. But in combination, these lands create a mosaic of habitat that supports the greatest number and diversity of wetland-dependent species."



Sacramento National Wildlife Complex is surrounded by rice fields. | Photo by USFWS

Deaf Heron

Minnesota Valley National Wildlife Refuge

Less than 10 miles from downtown Minneapolis Visitor Center is one mile east of the Mall of America
 Current area: 14,000 acres in eight units
 300,000 visitors annually

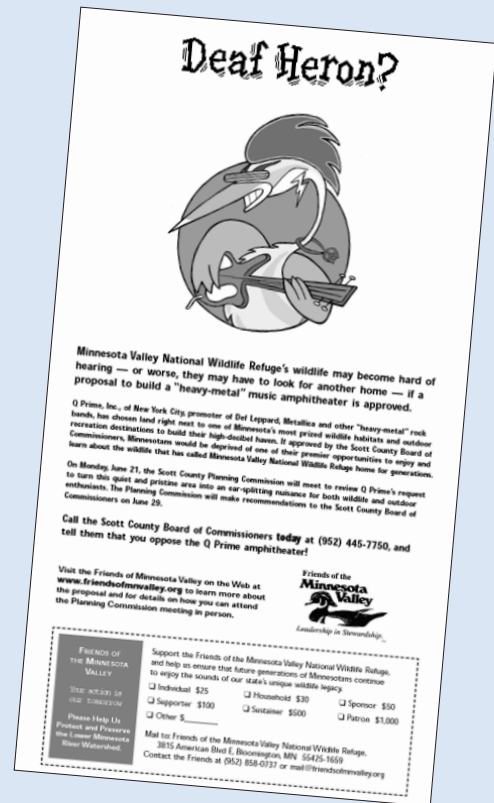
In 1999, a New York City-based corporation asked the commissioners of Scott County, Minnesota, for a permit to build an amphitheater that would attract more than three quarters of a million people a year and feature “heavy metal” rock bands like Metallica and Def Leppard.

The proposed location: a 112-acre site within 300 yards of Louisville Swamp in the Minnesota Valley NWR.

Located along the Mississippi Flyway, the Minnesota Valley NWR provides habitat for dozens of bird species, including great blue herons and great egrets, as well as red fox, and leopard frog. At the time the amphitheater was proposed, bald eagles had established a new nest site in Louisville Swamp.

Opposing the project were the U.S. Fish and Wildlife Service, township governments, businesses, and a coalition of conservation organizations led by the Friends of the Minnesota Valley. This coalition mounted a vigorous campaign, including community organizing, legal action and a full-page ad in local newspapers urging citizen action. As a result of these efforts, large numbers turned out for the public hearing and spoke against the construction of the amphitheater, citing the impact of the noise and light pollution, and the increased human and vehicular traffic.

In addition, the attorneys who represented project



The National Wildlife Refuge Association and Friends of the Minnesota Valley ran an ad opposing the amphitheater.

opponents contended that the amphitheater would violate a host of state and county land use and environmental regulations.

Rick Schultz, then refuge manager and now chief of the conservation division of the National Wildlife Refuge System, testified, “As urban centers redevelop, as suburban areas become urbanized, and as rural areas transform themselves into bustling pockets of a vibrant economy, special places like Minnesota Valley National Wildlife Refuge are needed for solitude, for quiet times, and to rejuvenate the human spirit.”

In 2004, after lengthy public debate, the county board denied the permit request, and project opponents gave a sigh of relief. Still, this ill-conceived proposal illustrates the vulnerability of the refuges. Lori Nelson, executive director of the Friends of Minnesota Valley, notes that refuges and Friends groups “will increasingly be dealing with local planning issues. We often think of national and state conservation campaigns, but more battles will be fought at the level of the township, city, and county.”



Louisville Swamp in the Minnesota Valley NWR would have faced a heavy-metal rock music amphitheater. | Photo by Rick Schultz

*Economic By Nature***Lake Umbagog National Wildlife Refuge**

Headquartered in Errol, New Hampshire
Current area: 25,000 acres (federal, state, and conservation easement lands)
Lake Umbagog has more than 50 miles of shoreline
70,000 visitors annually

When a national wildlife refuge was proposed for Lake Umbagog, one of the chief opponents of this federal intrusion was a gas station owner in Errol, New Hampshire. Then, after the refuge became listed on maps, he noticed that a lot more visitors were traveling to the area and buying gas and supplies from him. When he saw the economic benefit of the refuge to his community, he became a refuge supporter and eventually served a term as chairman of the refuge Friends group.

Lake Umbagog illustrates the value of respecting diverse interests in protecting habitat for wildlife. The refuge was born of a partnership among the U.S. Fish and Wildlife Service (FWS), the states of New Hampshire and Maine, private conservation groups, and timber companies.

"FWS would normally set a boundary and attempt to acquire land within that boundary," explains Paul Casey, refuge manager. "Instead, we set a boundary and worked out what each of the partners would do within that area. Certain lands are owned by the refuge, certain lands are in the states ... if any of the land within the boundary becomes available, one of the partners will give it whatever level of protection they can." For example, the first major land purchase, three miles of lake shore that was scheduled for subdivision, was made by the state of New Hampshire because there were no federal funds at the time the land became available. A private group,

the Society for the Protection of New Hampshire Forests, owns an island in the lake.

Casey gives the timber companies particular credit for adopting logging practices that help protect habitat and for selling to the refuge or putting conservation easements on potentially lucrative lake shore.

Now, the diverse refuge lands are managed as a cohesive unit by the Refuge System and state authorities, dividing tasks such as campground operations. Who does what makes little difference to the ospreys, common loons, bald eagles, great blue herons, hooded mergansers, and dozens of other species that depend on this habitat. "The process has been very inclusive and very see-through. Not everybody's opinion was acted upon, but everybody felt like they were heard," says David Houghton, executive director of New Hampshire Audubon and NWRA board member. "And we've been very respectful of local traditions," working with those who depend on timber and snowmobiling for their livelihood.

The refuge partners hope to protect additional lands, but "the big obstacle will be money," says Houghton. "Land may come for sale, but if it's immediate, what if the federal government doesn't have the money? Are there state dollars? Private dollars?"



Bald eagle nestlings thrive at Lake Umbagog NWR. | Photo by USFWS/Bill Hanson FPL

*Breathing Easier***Tensas River National Wildlife Refuge****Northeastern Louisiana****Area: 67,000 acres****Protects one of the largest continuous blocks of bottomland hardwood forest left in the Lower Mississippi River Valley****72,000 visitors annually**

In the Lower Mississippi River floodplain, more than 17 million acres of forest have been lost to timber harvest and agriculture since the early 1900s. The Tensas River NWR was established in 1980 to stave off further losses. Now, the refuge is protecting additional lands through an innovative partnership involving business, government, and conservation interests.

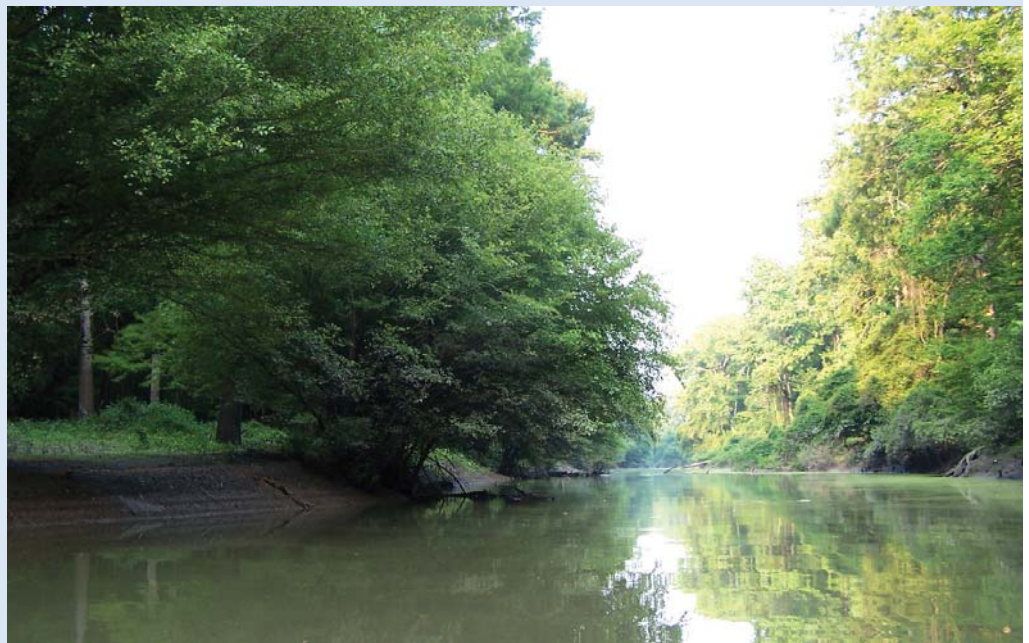
In the fall of 2004, the U.S. Fish and Wildlife Service added to the refuge more than 2,200 acres purchased from the Trust for Public Land, which had bought the land from a timber company. The strong support of the Louisiana Congressional delegation was instrumental in securing federal monies, which came from the Land and Water Conservation Fund and the Migratory Bird Conservation Fund. Entergy Corporation, a New Orleans-based energy producer, paid more than \$1 million to help fund the purchase, reforest the property with native trees, and provide funds to maintain the new forest. The 2,200 acres connect two units within the refuge, providing an important corridor for the threatened Louisiana black bear, rare forest-breeding birds, waterfowl, and other wildlife. This transaction is the first in a multiyear project that will eventually add 11,000 acres to the refuge, 8,600 of which will be reforested.

Through their respiration, the trees will sequester (trap) atmospheric carbon dioxide, a "greenhouse gas" that is emitted when fossil fuel is burned to produce electricity. In exchange for adding to the forestlands, Entergy will be in a position to claim "carbon credits" for offsetting its

power plant emissions if the federal government begins to regulate greenhouse-gas emissions in the future.

"Carbon sequestration partnerships have enabled us to restore thousands of acres of habitat in a fraction of the time that it would have taken under normal circumstances," says Jerome Ford, refuge manager. "The reforested areas provide a true benefit not only to wildlife species, but man as well."

A similar arrangement launched a brand new refuge in northwest Louisiana. Red River National Wildlife Refuge was established in 2002 with 600 acres purchased by The Conservation Fund with help from Entergy. Entergy reforested the land with 180,000 native trees and funded an



Businesses, government and conservationists are working together to protect land at Tensas River NWR. The refuge is home to black bears and other wildlife. | Photo by Lindsay Coldiron/Tensas NWR

endowment for its management.

The refuge has acquired nearly 10,000 acres from different energy companies since then, often with conservation organizations playing a role as well as buying lands outright, and manages lands under conservation agreements with the owners. "If we continue to use electricity, companies that produce it will put carbon into the atmosphere," says Brett Hunter, refuge manager. "But here's a program where we can restore old agricultural land and put trees on the ground to sequester the carbon."

*Shared Vision***Red Rock Lakes National Wildlife Refuge****Centennial Valley, southwestern Montana****Area: 50,000 acres****One of the few marshland wilderness areas in the country****10,000 visitors annually**

Red Rock Lakes NWR lies just north of Montana's rugged Centennial Mountains, providing a high-elevation wetland-riparian haven for trumpeter swans, peregrine falcons, wolverines, moose, and other species. This valley was homesteaded long ago, but the refuge lands are now largely restored to their natural state.

As private agricultural land is rapidly being subdivided for housing in other parts of Montana, the area around Red Rock Lakes is gradually being protected. In part, the isolation of this valley and the harshness of the winters have kept development at bay around Red Rock Lakes. But more significant has been the U.S. Fish and Wildlife Service's concerted efforts to buffer Red Rock Lakes with large areas of land managed for conservation.

Several years ago, the Service approached the landowners in the Centennial Valley about working together on a problem of mutual concern: invasive weeds. Up to that time, many of these third- and fourth-generation Montanans were uncomfortable about federal initiatives. "Our biologist spent about five years, working with the refuge staff, and developing trust and credibility with these landowners," explains Gary Sullivan, who manages FWS's Realty program in Montana. "We worked together on stream and habitat projects and grazing systems to fight the noxious weeds. It was like putting a face on the federal bureaucracy."

Once the ice was broken, FWS and The Nature Conservancy began to approach landowners about conservation easements—voluntary agreements between willing landowners and FWS (or a private organization) that restrict the development that can take place on the property. For the most part, the restrictions allow the landowners to continue their current ranching activities and their

lifestyle. Easements can be sold or donated.

These deeply rooted Montana families saw that agricultural lands in other parts of the state were rapidly being converted to housing developments. "We offered them an opportunity to work with us on protecting the agricultural landscape and also providing habitat for critters outside the refuge," says Sullivan.

FWS is currently authorized to purchase easements on 42,000 acres around the refuge and has obtained ease-



Ranchers and conservationists are working together at Red Rock Lakes NWR to protect land and wildlife, such as these moose, both on and off the refuge. | Photo by Evan Hirsche

ments on 16,000 acres, using monies from the federal Land and Water Conservation Fund. The Nature Conservancy has purchased or received donated easements on about 20,000 acres. Eventually, both organizations hope to protect the majority of private land surrounding Red Rock Lakes as well as some private tracts that exist within the refuge.

"It was the noxious weeds that got us started," says Sullivan. "That gave us the opportunity to sit down at the kitchen table with the family and ask 'are you interested in maintaining your way of life and helping the habitat in perpetuity? If so, here's the program for you.'"

*Focus on Conservation***Lower Rio Grande Valley National Wildlife Refuge****Headquartered in Alamo, Texas****Area: 90,000 acres currently; 132,500 acres planned****Site of the planned World Birding Center (conservation, education, ecotourism)****20,000 visitors annually**

The Lower Rio Grande Valley NWR follows the last 275 river miles of the Rio Grande to the Gulf of Mexico. Refuge residents include ocelot, Kemp's ridley turtle, and 14 other federally threatened or endangered species and 57 state-protected species.

The refuge safeguards this treasure by working with a wide range of partners to obtain and connect tracts of habitat. Because much of this region is in agricultural production, the refuge has a cooperative farming program that replants farmland to native habitat. Currently, the refuge manages 115 tracts totaling 90,000 acres, and these tracts complement adjacent lands managed by the state, Audubon, The Nature Conservancy, private landowners,

and the neighboring Santa Ana and Laguna Atascosa NWRs.

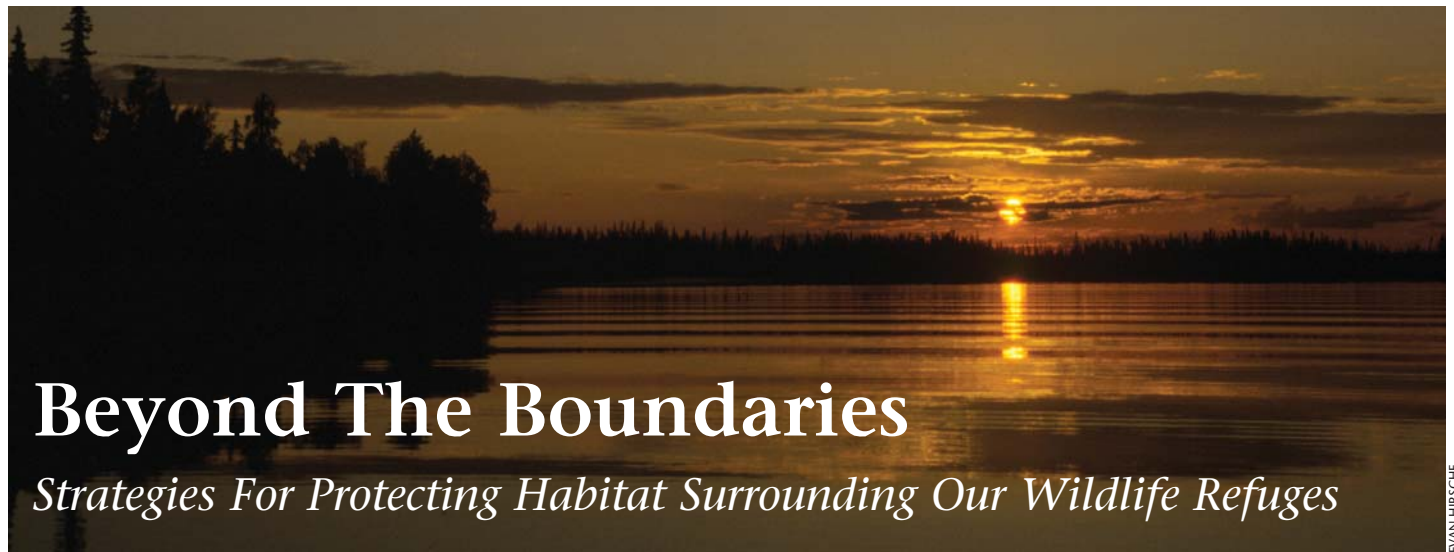
Through the Valley Land Fund, ranchers and wildlife photographers have joined regional and national business interests to promote a wildlife photo contest that draws attention to the natural treasures of the Lower Rio Grande Valley NWR. The biggest prize-money event of its kind in the world, the contest generates enough funds to cover the prizes and to buy and rehabilitate habitat.

The refuge has also succeeded in obtaining federal funds for land purchase. John McClung, president of the Friends of Santa Ana, explains, "Appropriations Committee members like Senator Kay Bailey Hutchison have many legitimate competing interests for every dollar the federal government has, so they must make very difficult choices about how to responsibly allocate taxpayer dollars. Senator Hutchison is willing to pursue environmental projects because she understands that when wildlife benefits, so does the local economy through ecotourism."

Increasingly, ecotourism is becoming a "bright spot" for this and other economically depressed areas.



Ecotourism thrives at Lower Rio Grande Valley NWR. Prize money from a local photo contest supports protection of adjacent lands. | Photo by USFWS



EVAN HIRSCH

Beyond The Boundaries

Strategies For Protecting Habitat Surrounding Our Wildlife Refuges

To maintain adequate wildlife habitat, our national wildlife refuges must look beyond their boundaries. Most often, that means private lands, although many refuges abut federal and state land. The National Wildlife Refuge Association urges decision-makers in Washington, DC to embrace five broad strategies to engage private and government land managers in doing what's right for wildlife.

One: Strengthen incentives for private landowners to practice conservation

Many private landowners are conservation-minded people who will practice good stewardship if they can afford to do so. Other landowners may not feel strongly about conservation, but they care about finances and may be persuaded to do the right thing if the financial incentives are appropriate. There are a number of federal programs that reward landowners for practicing conservation—these programs deserve our strong continued support:

- The U.S. Fish and Wildlife Service “Partners For Fish And Wildlife” Program provides technical and financial assistance to private landowners to voluntarily restore wetlands and other habitat on their land. Since this program began, hundreds of thousands of habitat acres have been restored, many of the projects located near national wildlife refuges. The Service has trouble keeping pace with landowner demand for this program, reporting that many states have waiting lists to participate. The NWRA supports the enactment of federal legislation (S. 260 in the Senate and H.R. 2018 in the House) to codify the Partners program within the U.S. Fish and Wildlife Service.
- The Conservation Reserve Program (CRP) provides technical and financial assistance to eligible farmers and

ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. The Natural Resources Conservation Service (NRCS) provides technical and financial support to help landowners with their wetland restoration efforts, with the goal of achieving the greatest wetland functions and values, along with optimum wildlife habitat, on every acre enrolled in the program.

- The Wetlands Reserve Program (WRP) is a voluntary program offering landowners the opportunity to protect, restore, and enhance wetlands on their property. Funded through the Commodity Credit Corporation and administered by the Farm Service Agency, with the U.S. Department of Agriculture (USDA) NRCS providing technical assistance, the CRP helps farmers and ranchers comply with federal, state, and tribal environmental laws and encourages environmental enhancement.
- The U.S. Department of the Interior’s Cooperative Conservation Initiative (CCI) allocates matching funds for resource conservation projects implemented by partnerships of private citizens and public agencies. In addition to funds for “Partners For Fish And Wildlife,” CCI funds are available through the Private Stewardship Grant Program, the Landowner Incentive Program, and the Coastal Program, and as Cooperative Conservation Challenge cost-share grants. The NWRA encourages CCI funds such as the Challenge Cost Share Program, as long as these funds do not come at the expense of Refuge System base funding.
- Our federal tax laws provide incentives to landowners who protect their land from development. Conservation easement programs should be expanded to encourage the protection of more land for habitat.
- Joint Ventures, administered by the U.S. Fish and

Wildlife Service through its Division of Bird Habitat Conservation, is a program that coordinates wetland-dominated, bird-conservation partnerships that deliver on-the-ground conservation for all birds. Since the program's inception in the late 1980s, Joint Venture partners have leveraged over \$2.3 billion in public and private funding to protect, restore, and enhance over 8 million acres of habitat across the continent. The Joint Ventures often operate by using funds generated through the North American Wetlands Conservation Act (NAWCA) and, more recently, through funding from the Neotropical Migratory Bird Conservation Act. These programs all deserve continued support and expansion, especially where they benefit improving habitats near refuges.

Two: Do more homework

When the U.S. Fish and Wildlife Service considers acquiring land for a refuge, it should work with other federal agencies, states, tribes, non-governmental organizations, and the scientific community to determine how the lands and waters being acquired will contribute to meeting national conservation goals.

In May 2005, refuge managers, biologists, and others from the Refuge System were joined by leaders from refuge Friends groups and representatives from state agencies and nonprofit conservation groups in attending a "Conservation in Action Summit" in Shepherdstown, WV. These diverse stakeholders, more than 250 individuals, gathered to develop a priority list of actions needed to help refuges. One of the top resulting priorities is to establish "Ecoregional Collaborative Planning/Habitat Goals." To identify lands most in need of protection, refuge supporters need to look at conservation from a larger, regional, perspective. Then the diverse stakeholders must work together to use available conservation programs and other tools to protect those crucial lands.

Three: Protect more land

The federal government should allocate adequate funding to purchase high-priority lands and conservation easements. The Refuge System land acquisition backlog is currently estimated at \$4 billion. According to the U.S. Fish and Wildlife Service's Land Acquisition Priority System (LAPS), as of 2004 about 15.4 million acres remain within approved refuge boundaries.

Across the country, willing sellers are standing by to work with the FWS. Unfortunately, the Service has neither the funding or resources to handle these land acquisition opportunities. At a minimum, \$100 million per year should be allocated toward Refuge System land

acquisition. Even at that rate, it would take at least 40 years to acquire these priority lands, a period of intensely mounting pressure to develop rather than protect those same lands.

Four: Allocate more dollars for state wildlife funding

The federally funded State Wildlife Grants Program currently calls for states to develop statewide conservation action plans that integrate federal, state, local and private lands, helping to ensure adequate contiguous habitat and appropriate management for wildlife. Program grants support projects to restore degraded habitat, reintroduce native species, develop partnerships with private landowners, and collect useful data. These state-based plans can dovetail with the Comprehensive Conservation Plans (CCPs) that all refuges are required to produce, thus further complementing the mission of the National Wildlife Refuge System. NWRA urges that Congress appropriate at least \$85 million for this program next year.

Five: Reduce the threat of shipping disasters

Many refuges are located on coasts or islands, exposing them to the threat of contamination and degradation from shipping accidents. Shipwrecks can spill the vessel's fuel as well as the cargo, which may be various forms of oil, toxic chemicals, food commodities, or other materials with the potential to devastate coastal areas. These incidents can also result in harmful invasives being released, such as rats or certain insects that can ravage an ecosystem.

NWRA calls for three immediate reforms:

- Position rapid-response infrastructure (tug boats, for example) near national wildlife refuges and other environmentally sensitive areas that have shipping traffic or oil and gas activity nearby.
- Provide additional staff and resources for the National Wildlife Refuge System dedicated to oil and gas issues.
- Implement vessel-tracking technology in all U.S. waters.

These five broad strategies are first steps designed to address the most urgent problems facing the future of our National Wildlife Refuge System. These recommendations focus on lands beyond refuge boundaries. Since our wildlife refuges are increasingly threatened by conditions outside their borders, we must resolve to take action now. The National Wildlife Refuge Association offers this set of practical solutions for refuges that are well within our nation's capabilities. All we need now is to act — for the wildlife, for ourselves, and for future generations.



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