

Conserving the Future

Wildlife Refuges and the Next Generation



The National Wildlife Refuge System
U. S. Fish and Wildlife Service
Department of the Interior

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All quotes featured in this vision document are from keynote addresses given at the *Conserving the Future* conference in Madison, Wisconsin from July 11-14, 2011.



Mission Statement

*The mission of the
U.S. Fish and Wildlife Service
is working with others
to conserve, protect,
and enhance fish, wildlife,
plants, and their habitats
for the continuing benefit
of the American people.*

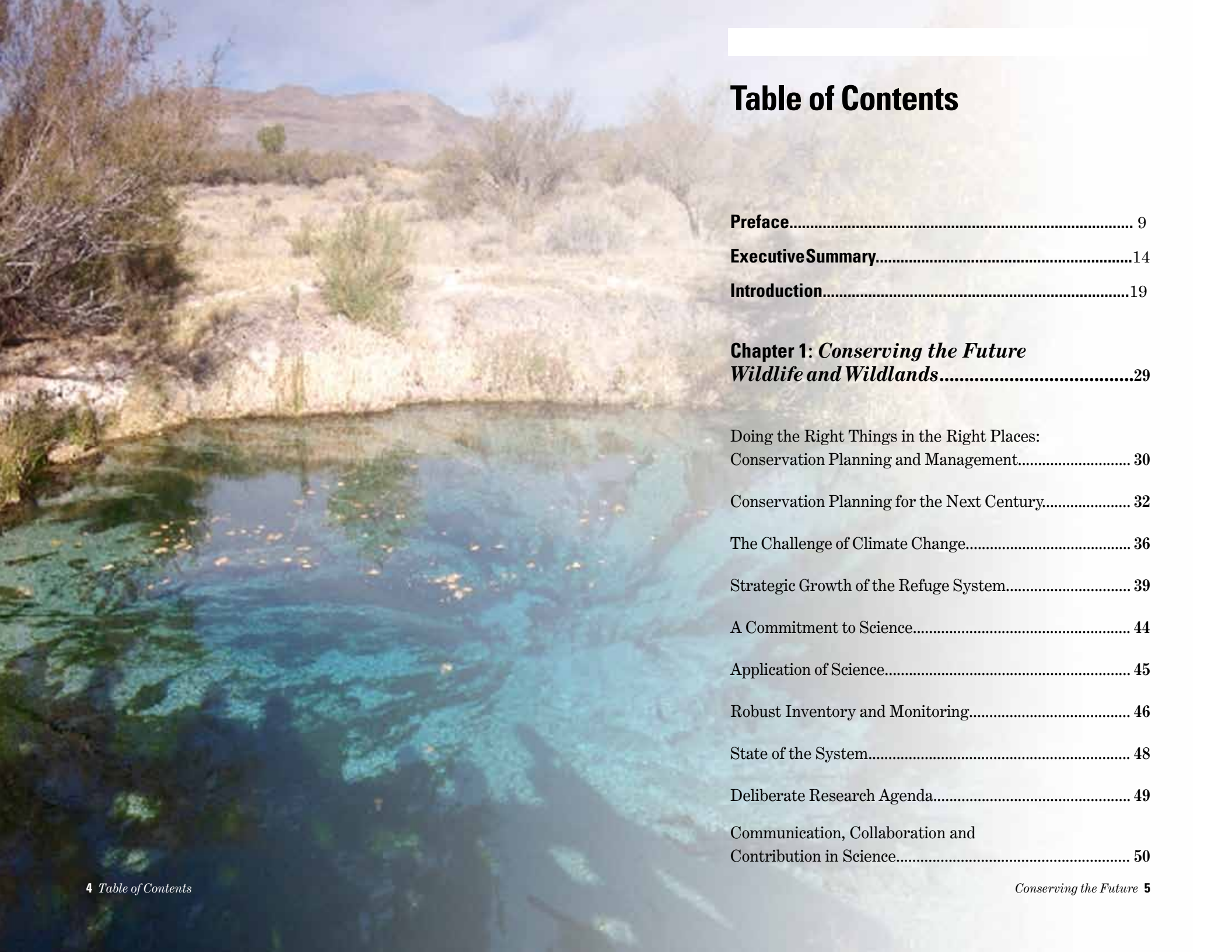


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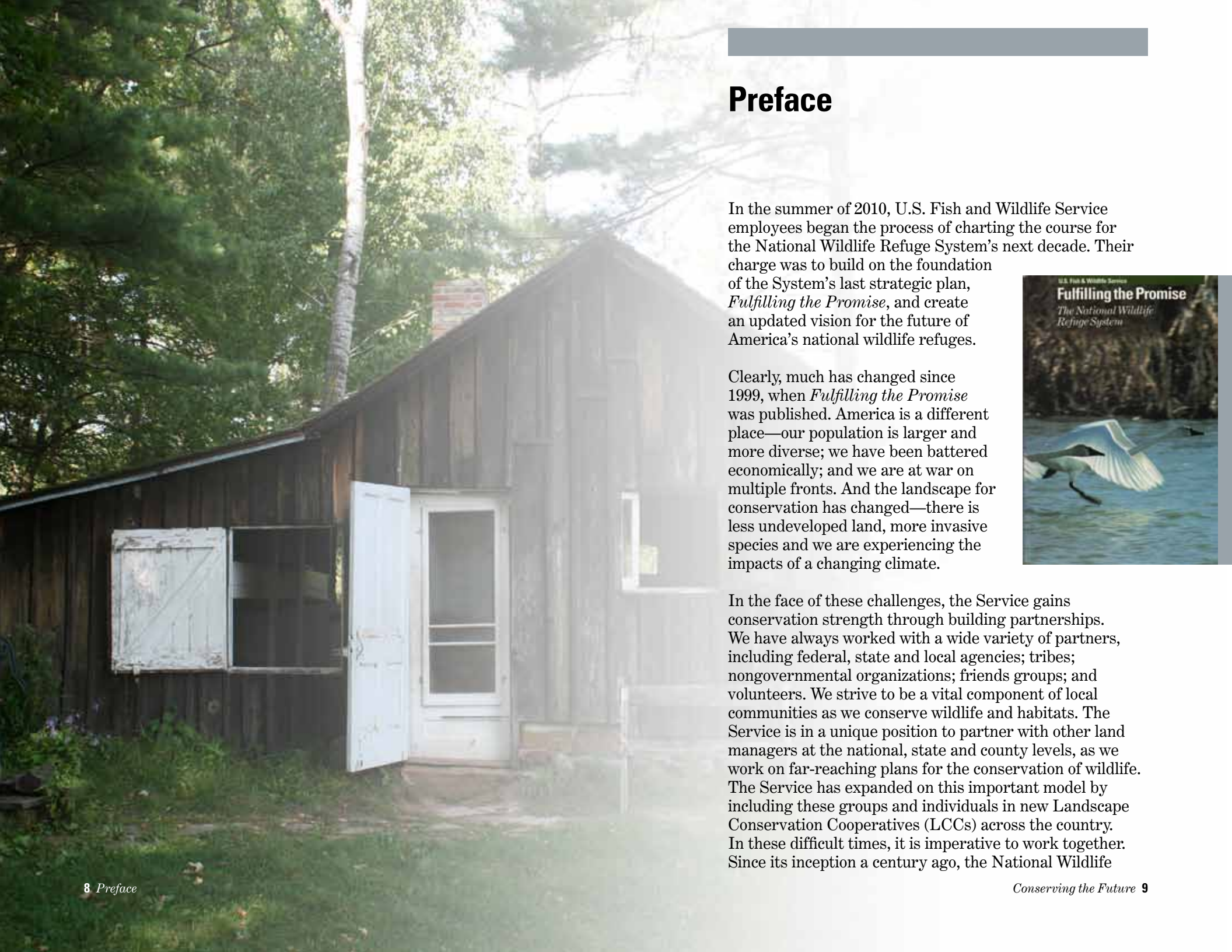
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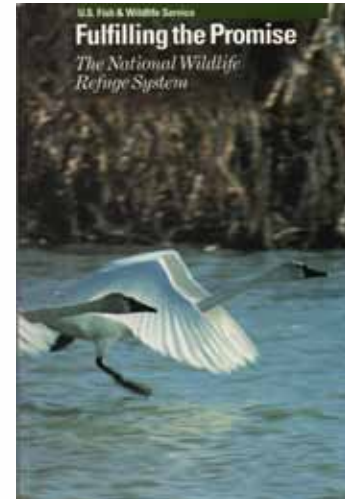


Preface

In the summer of 2010, U.S. Fish and Wildlife Service employees began the process of charting the course for the National Wildlife Refuge System's next decade. Their charge was to build on the foundation of the System's last strategic plan, *Fulfilling the Promise*, and create an updated vision for the future of America's national wildlife refuges.

Clearly, much has changed since 1999, when *Fulfilling the Promise* was published. America is a different place—our population is larger and more diverse; we have been battered economically; and we are at war on multiple fronts. And the landscape for conservation has changed—there is less undeveloped land, more invasive species and we are experiencing the impacts of a changing climate.

In the face of these challenges, the Service gains conservation strength through building partnerships. We have always worked with a wide variety of partners, including federal, state and local agencies; tribes; nongovernmental organizations; friends groups; and volunteers. We strive to be a vital component of local communities as we conserve wildlife and habitats. The Service is in a unique position to partner with other land managers at the national, state and county levels, as we work on far-reaching plans for the conservation of wildlife. The Service has expanded on this important model by including these groups and individuals in new Landscape Conservation Cooperatives (LCCs) across the country. In these difficult times, it is imperative to work together. Since its inception a century ago, the National Wildlife



Refuge System has worked closely with the conservation community to conserve and restore species and habitats. We will continue to work with a growing roster of partners in the future.

We have worked especially closely with state fish and wildlife agencies in planning and administering the Refuge System, relying both on the authority and the expertise these agencies have in managing fish and wildlife. The National Wildlife Refuge System is both a product and a component of the North American Model for Wildlife Conservation and embodies the two core concepts of wildlife held in the public trust and managing sustainable populations.

Working together to create a renewed vision for the Refuge System makes sense, too. More than 100 people from across the Service created a draft vision document and—with the help of our partner in this process, the National Wildlife Refuge Association—posted it on the web, and asked for your comments, suggestions and ‘bold ideas.’ We asked Service employees, other state and federal agencies, tribes, conservation agencies and private citizens concerned about conservation for help. And you responded. We received more than 10,000 comments.

Many of the comments and ideas we received were specific to the Refuge System and, where appropriate, we incorporated them into *Conserving the Future*. Many of the other comments and bold ideas transcend the Refuge System and even the Service; however, they are important issues for the entire conservation community to discuss.

The forum in which to promote these ideas is America’s Great Outdoors (AGO) initiative, a 21st century conservation and recreation agenda.

The AGO initiative is a grassroots approach to protecting our lands and waters and connecting all Americans to their natural and cultural heritage. Developed in part via listening sessions throughout the nation, the AGO initiative seeks to empower all Americans to share in the responsibility to conserve, restore and provide better access to our lands and waters to leave a healthy, vibrant outdoor legacy for generations to come. These listening sessions generated many bold ideas.

We are crafting *Conserving the Future: Wildlife Refuges and the Next Generation* just as the ambitious plans for implementing AGO are beginning. This presents us with an incredible opportunity to realize our vision of working beyond our borders, reinvigorating established partnerships, increasing wildlife dependent uses, and diversifying and expanding our constituency. The time is right to build on the conservation legacy of the North American model, using the momentum of the Refuge System’s vision process and the grassroots approach of AGO.

Our response to your comments and bold ideas that transcend our traditional responsibilities – or the responsibilities of any single entity – is straightforward. Yes, we will step forward. We volunteer to lead where appropriate, follow when we should, and catalyze and energize this effort to conserve and restore America’s great outdoors. But we will only succeed if the entire conservation community and all Americans who love the great outdoors step forward, too. America’s Great Outdoors initiative strongly reinforces the need to increase participation in outdoor recreation and to attract new participants. There is an unbreakable bond between traditional users, such as anglers and hunters, and the Refuge System because these users depend on healthy fish and wildlife populations and habitats, and their activities are directly related to the System’s mission. We are committed to working with state fish and wildlife agencies, hunters and anglers to increase wildlife-dependent recreational uses on public



lands (Recommendation 17). We hope all will join together in conserving America's great outdoors.

Vision: The Service will enhance its close relationship with the state fish and wildlife agencies. We will coordinate with them on management of fish and wildlife within the Refuge System and on establishing population objectives. We will strive to increase hunting and fishing opportunities to a diverse constituency. We will also be a catalyst to find common ground with other refuge supporters with the goal of expanding the conservation constituency for the benefit of healthy wildlife and habitats for future generations.

What follows in this document represents the Service's vision for how the Refuge System can contribute in this larger context. It is written primarily for Service

employees and our close friends and partners, to both inspire them to greater achievements and to guide them on their way. But it is also intended for a broader audience, as demonstrated in the repeated acknowledgement of the landscape context and partnerships throughout every section of this work. In every page of this document, you will see yourself. Whether you are from another federal agency, a tribe, a

state, a conservation organization or a concerned citizen, we need you to help us conserve America's wild things and wild places.





U.S. Fish & Wildlife Service

Executive Summary

For the past 18 months, the National Wildlife Refuge System has worked to create a vision that will guide the management of the Refuge System during the next decade and beyond. *Conserving the Future* is built on the foundation and inspiration of *Fulfilling the Promise*. This new vision seeks to not only further the System's mission, but also to raise the Service's profile in the broader national conservation effort. Consistent with our guiding legislation, *Conserving the Future* embraces bold, new ideas to realize the full conservation potential of the National Wildlife Refuge System.

The conservation landscape has changed, the playing field has changed and the stakes have changed. Human demands on the environment combined with environmental stressors are creating an urgent need for conservation choices. The scale of issues and challenges we face is unprecedented and impacts us all; no single entity has the resources necessary to address these challenges on its own. *Conserving the Future* acknowledges that strategic, collaborative, science-based landscape conservation – along with effective public outreach, education and environmental awareness – is

the only path forward to conserve America's wildlife and wild places. This document articulates the Refuge System's role in this effort: leading when appropriate and supporting our partners when able.

We recognize all of our conservation partners, and explicitly acknowledge the unique and valued relationship, expertise, and authority of state wildlife agencies in managing fish, wildlife, and their habitats associated with the Refuge System. We also recognize that we must identify opportunities to engage new constituencies to help us meet our mission.

Conserving the Future was developed by Service employees in partnership with stakeholders through a transparent public process. Although focused on the Refuge System, this process catalyzed a national discussion on conservation that transcends the Refuge System. Several recurring themes emerged: relevance to a changing America, the impact of a changing climate, the need for conservation at the landscape scale, the necessity of partnership and collaboration, and the absolute importance of scientific excellence. These themes are woven throughout the document.



Conserving the Future: *Wildlife and Wildlands*

contains the foundational elements of our conservation design and delivery. Our vision is to embrace a scientific, landscape-level approach to conserving, managing and restoring refuge lands and waters, and work to facilitate conservation benefits beyond our boundaries. Simply put, we are a piece of the puzzle and we hold to the highest principles of scientific excellence to inform our conservation decisions and actions. We offer a series

of recommendations: embrace a landscape approach, look through the lens of climate change, strategically grow the Refuge System, work in partnership to leverage resources and benefits, and report on the condition of wildlife and habitat to the American people and embrace high standards of scientific integrity and transparency.

A Connected Conservation Constituency

is the people piece. Without the support of the American public, our actions—however well intended—will fall short. We seek to make wildlife conservation more relevant to American citizens and foster their engagement in and support of the National Wildlife Refuge System. As with our land protection efforts and management actions, we will be most effective in this

area by both working with our traditional partners and by embracing new ones. Our recommendations include expanding community partnerships; encouraging volunteerism; embracing urban America; telling the conservation story in new ways with the help of technology; enhancing opportunities to connect people and nature; and embracing, elevating and holding our interpretation and environmental education programs to the highest scientific standards.

Leading Conservation

into the Future is devoted to leadership and organizational excellence, and includes an explicit challenge to the entire Service to be self-critical and continually strive to maximize conservation delivery and demonstrate excellence in the stewardship of public funds. We also recommend deliberately developing a diverse, inclusive, competent and caring workforce that will commit to conservation, embrace the responsibility of public service, and succeed in realizing this in effective, efficient and innovative ways. We must develop a workforce that embodies our Guiding Principles and demonstrates those principles in our daily activities and interactions.



The challenges are immense
and our quality of life
is at stake.

The path is set before us:

It is time to act.

Introduction

The slaughter of the birds of Pelican Island was more than Paul Kroegel could stand. The destruction of those magnificent birds for the fleeting vanity of fashion stood in stark contrast to the ancient ritual of generation after generation of wild birds nesting and fledging and living throughout those reaches of the Florida peninsula.

The situation was urgent; the colonies were on the brink of destruction. Kroegel patrolled Pelican Island's shores with his shotgun trying to safeguard the nesting birds. He talked to anyone who would listen, trying to rally support for the protection of the birds and this special place. He had the ear of some prominent ornithologists and they knew another man with a passionate interest in birds, the young President Theodore Roosevelt.



In a story that would be repeated many times over the next century and beyond, the passionate advocacy of a single citizen responding to an urgent conservation need succeeded. On March 14, 1903, President Roosevelt established Pelican Island as the first national wildlife refuge. Over the course of his presidency, Roosevelt established 53 refuges, from Key West's mangrove islands and sand flats to Flattery Rocks along the Washington Coast. He also established our nation's first waterfowl refuge, Lower Klamath, in 1908. A new concept, protecting a system of wild lands for wildlife, was born.

More than a century later, the National Wildlife Refuge System has grown to become the world's most extensive network of public lands and waters dedicated to the

conservation of wildlife. From the Arctic to the Caribbean, the Atlantic to the Pacific, America's 555 national wildlife refuges and 38 Wetland Management Districts are present in every state and territory; and they provide important habitat to more than 700 species of birds, 220 types of mammals, 250 varieties of reptiles and amphibians, more than 1,000 species of fish and uncounted invertebrates and plants. They sustain nearly 300 of the nation's more than 1,300 endangered or threatened species; and have played a key role in the recovery of several species, including the bald eagle, Aleutian Canada goose, brown pelican and American alligator. We celebrate these successes and honor those who built the foundation of American conservation.

From the very beginning, America's fish and wildlife depended on the support and concern of hunters and anglers. By the start of the 20th century, national expansion and development had taken a severe toll on America's wildlife. Hunters and anglers first sounded the alarm that fish and wildlife were being exploited, and they hounded lawmakers to enact legal protections. Gaining strength in numbers, they formed conservation organizations and helped pass legislation that resulted in a lasting future for fish and wildlife. Central to this success was the development of the North American Model for Wildlife Conservation, which emphasizes protecting sustainable populations of fish and wildlife, and holding these species in a public trust.

The legislation advocated by hunters and anglers is the

foundation for wildlife conservation; it establishes sound management principles and provides funds to carry out management. Over the last 75 years, the hunting and angling conservation community supported passage of specific legislation that formed the foundation for fish and wildlife conservation efforts today. The American system of conservation funding is collectively supported by the Federal Aid in Wildlife Restoration Act, and the Federal Aid in Sport Fish Restoration Act. These programs have provided more than \$10 billion for on-the-ground conservation activities benefitting species that use refuge lands. Also, nearly 98 percent of every Migratory Bird Hunting and Conservation Stamp (also known as the Federal Duck Stamp) dollar is spent directly on purchasing land for the Refuge System. Nearly \$25 million is raised annually and more than \$750 million has been generated during



“To be successful, we will need the continued support of our state fish and wildlife agency colleagues. Our conservation partners’ support will be critical, as it always has been. And we need our Friends groups, now more than ever.”

— Dan Ashe, USFWS

the past seven decades, largely from waterfowl hunters. Recreational boaters have joined hunters and anglers in contributing to the American system of conservation funding. These funds have contributed to facility development, such as boat ramps, allowing access for the continuing benefit of the American people. Let these conservationists who gave voice to the needs of wildlife, and crafted a means to serve those needs, act as a model for all current and emerging refuge partners.

The role of hunters and anglers in conserving wildlife and habitat is timeless. And so too is the importance of conservation organizations that tirelessly advocate for

The National Wildlife Refuge System Improvement Act of 1997 is our guiding legislation and embodies our commitment to compatible wildlife-dependent recreational uses of the system: hunting, fishing, wildlife observation, photography, interpretation and education. The act also reaffirms our commitment to working with our refuge neighbors, conservation groups and state counterparts.

non-game species, international conservation, wilderness areas and land protection. We recognize the fundamental role of conservation groups in helping to enact legislation that has led to healthier functioning ecosystems and increased biodiversity across North America. The Service is both a wildlife management and conservation agency, and refuges have been established for both purposes; migratory waterfowl production and endangered species protection. We will continue to work with hunters, anglers, state agencies, and conservation organizations that support consumptive and non-consumptive uses alike to conserve, protect and enhance fish, wildlife and plants and



“Every one of us makes a difference every day. Everyone has a role to play.”

— Dr. Jane Goodall

nowhere stronger than in the field, and on refuges. No matter the logo on their shoulders, state and federal wildlife managers roll up their sleeves together. They assist each other with prescribed burning and fighting wild fires. They patrol and enforce conservation laws together. They maintain roads, water control structures and enhance habitat. They belong to the same scientific and professional organizations and collaborate on studies and research. Increasingly, they are joined in many of these

their habitats for the continuing benefit of the American people. Growing up together during the 20th century, conservation organizations and state and federal wildlife agencies continued to work and learn together, building off each other’s strengths, and providing all Americans with lasting access to the beauty and enjoyment of our fish and wildlife legacy.

Today, this partnership between state and federal agencies is

efforts by conservation and environmental organizations. All work together to restore wetlands, grasslands and forests. Together they teach the next generation the skills and traditions of the great outdoors including hunting and fishing, hiking, canoeing and camping. And together they will share with a new generation their pride in the care of a well taken shot with gun, bow or camera, and the joy that comes from experiencing the ways of the wild.

While the Refuge System’s benefits to wildlife are measured in many ways, refuges play crucial roles in human communities, too. By protecting wetlands, grasslands, forests, wilderness and other natural habitats, refuges improve air



“Have the courage to think radically...what would you do if you weren’t afraid?”

— Dr. Rick Coleman, USFWS

and water quality, relieve flooding, improve soil quality and trap greenhouse gases that contribute to global warming. In addition, by attracting visitors who come to hunt, fish, take photos or observe wildlife—visitors who spend money at nearby businesses—national wildlife refuges generated more than \$1.7 billion in economic activity and created 27,000 private sector jobs in local communities alone, according to a 2006 study. Most important, in an increasingly urban and high-speed world, these islands of natural beauty offer Americans priceless places to soothe or stir the soul, educate the mind, and invigorate the body.

In its second century, the Refuge System must tackle unprecedented challenges. At the root of these challenges is the increasing consumption of natural resources, which has caused loss, degradation and fragmentation of habitat around the world. Habitat loss is largely responsible for the current extinction event, in which Earth may lose half of its species in the next 100 years. Another challenge is the

spread of invasive, non-native plants and animals, which, in many places, out-compete native organisms in ecosystems once thought outside their range. Climate change is also a significant challenge to conservation efforts. As the globe warms, sea levels are rising, coastal wetlands are disappearing, flooding and droughts are increasing, habitats and seasons are shifting and other changes are occurring that are changing the definition of what is considered 'normal.' The growing evidence of the decline of the world's marine communities is a striking reminder that our impact is felt in even the most remote places on Earth.

Along with these environmental challenges, profound changes are taking place in the fabric of America. The population of the United States has increased more than 14 percent since 1998, and citizens are becoming increasingly concentrated in cities. By 2050, the U.S. population is projected to grow to almost 400 million. The country is also becoming more racially and ethnically diverse. Groups that have historically been considered minorities are projected



"We must tell our stories with the heart of a poet and the facts of a scientist as we engage Americans in the stewardship of our land."

— Greg Siekaniec, USFWS

to be the majority by 2042. The nation is also aging. By mid-century, the number of Americans 65 and older will double to more than 80 million people. Social changes have also been profound. The rapid spread of technology and the rise of the internet and social networking have changed the way Americans interact with each other and the outside world, and how they spend their

free time. The result is that people are less connected with America's great outdoors, and many fail to see the link between the natural world and the food they eat, the water they drink and the air they breathe. While environmental

threats still resonate on some level, many citizens feel that conservation threats are a distant concern.

The Service needs to respond to these challenges and trends, both by developing better ways to sustain wildlife and by seeking to understand our citizens and how conservation is vital to their lives. Fortunately, we have a long history of successfully overcoming challenges and changes. From responding to market hunters and the plume trade, pollution, natural disasters and climate change, Service employees have learned to adapt and grow, and continue to meet their mission of protecting wildlife and habitat.

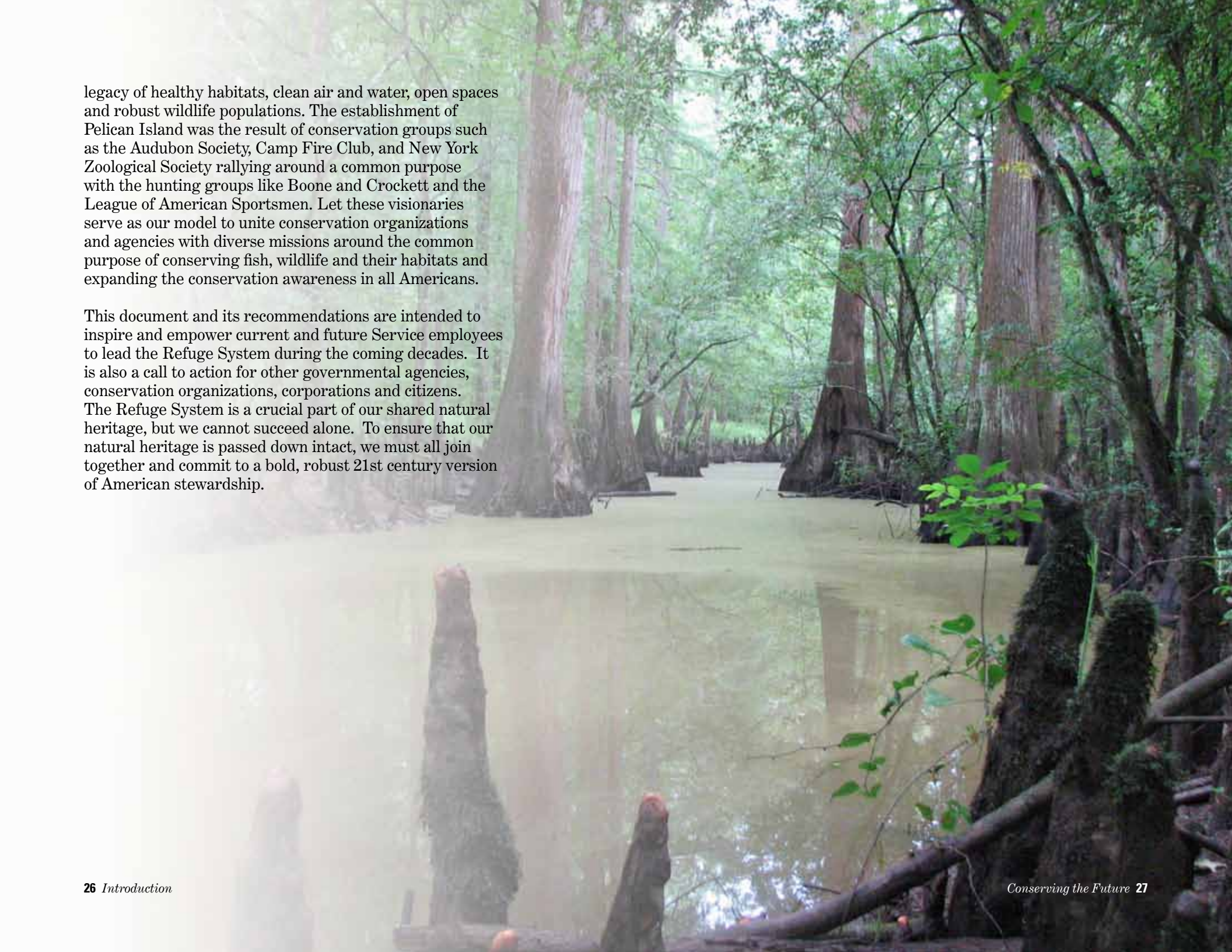


Despite the challenges, there are many opportunities. The number and variety of people, organizations and agencies that took time to comment on this vision document provide evidence that the public cares about the environment, wildlife and the future of the Refuge System. People still have an instinctual connection to nature, and are drawn to it when provided with the opportunity. Improvements in science and technology have not only given us a clearer understanding of the challenges before us, they have allowed us to better see where we can make a difference. And our conservation partners have never been better equipped or motivated to work with us to take on these challenges.

"It's ambitious, it's inspirational, and more important, it's doable."

— Dr. Deborah Rocque, USFWS

Given the magnitude of the challenges before us, especially the current need to balance many competing priorities, we need help from both our traditional and emerging partners who want to ensure that future generations receive a

A photograph of a swampy forest, likely a cypress swamp. The scene is dominated by large, ancient trees with thick, reddish-brown trunks and dense green foliage. In the foreground, a body of water reflects the surrounding trees and sky. The water is calm, creating clear reflections of the trees and the sky. The overall atmosphere is serene and natural.

legacy of healthy habitats, clean air and water, open spaces and robust wildlife populations. The establishment of Pelican Island was the result of conservation groups such as the Audubon Society, Camp Fire Club, and New York Zoological Society rallying around a common purpose with the hunting groups like Boone and Crockett and the League of American Sportsmen. Let these visionaries serve as our model to unite conservation organizations and agencies with diverse missions around the common purpose of conserving fish, wildlife and their habitats and expanding the conservation awareness in all Americans.

This document and its recommendations are intended to inspire and empower current and future Service employees to lead the Refuge System during the coming decades. It is also a call to action for other governmental agencies, conservation organizations, corporations and citizens. The Refuge System is a crucial part of our shared natural heritage, but we cannot succeed alone. To ensure that our natural heritage is passed down intact, we must all join together and commit to a bold, robust 21st century version of American stewardship.



Chapter 1:

Conserving the Future

Wildlife and Wildlands

The National Wildlife Refuge System has more than a century of success in conserving some of our nation's most cherished natural treasures: wildlife and wild places. But a host of challenges threatens to undermine that proud legacy. These challenges cross political and organizational boundaries, and thus no single government agency or organization can tackle them alone.



To ensure that future generations enjoy wildlife in its natural habitats—and benefit from the clear air and clean water that these habitats help provide—Americans from all walks of life, both inside and outside government, must work together. In the preface to this document we committed to being a catalyst for action in conserving and restoring America's great outdoors and connecting people with their natural and cultural heritage. This will be a collaborative enterprise far broader than the responsibility of Service employees for stewardship of the Refuge System. It is absolutely essential that the entire conservation community comes together and tackles the complex and large-scale threats we face. The Refuge System will be fully engaged in the effort to conserve America's great outdoors, leading when we can, and following when we should.

We also recognize that conservation cannot wait; we must take action and articulate the contribution of the Refuge System to the conservation of America's great outdoors. Our actions must be informed by strong principles and

a clear vision. To help preserve the ecosystems that preserve us, we must undertake immediate but thoughtful, scientifically-based and proactive conservation planning, design and delivery in the management of America's national wildlife refuges.

Vision: We are caring stewards of the world's premier system of lands and waters dedicated to the conservation of fish, wildlife, plants and the healthy, resilient habitats that sustain them. We are catalysts and leaders for conservation, known and trusted for scientific excellence, professionalism and commitment to partnerships and public service.

Doing the Right Things in the Right Places: Conservation Planning and Management

The expansive new challenges we face from environmental stressors such as climate change and increasing fragmentation of wildlife habitats demand that we take an adaptive, broad, landscape-level approach to our conservation actions. Such an approach requires that we tap into the knowledge base of our neighbors and partners to help identify conservation priorities. We will address these issues using State Wildlife Action Plans, other federal agency plans and conservation organizations' strategic plans.

The Service works closely with state fish and wildlife agencies, recognizing our shared authority and responsibility for managing fish and wildlife on national wildlife refuges. This federal-state partnership, grounded in mutual respect and shared



"In conservation science, as in so much of our vision, we will not succeed alone. We intend to be both strong leaders and strong partners."

— Greg Siekaniec, USFWS

priorities, is essential to effective conservation work. We must build on this important relationship, widen our perspective beyond the boundaries of refuge, state and nation, consider the impacts our actions have on species that regularly cross borders (such as migratory birds), and determine how we can help meet international conservation goals. The larger consortium of partners gathered by LCCs will also contribute to our planning efforts. Through the LCCs, we are adding scientific capacity to do better biological planning and conservation design that will inform our land protection strategies and improve conservation delivery.

For such an adaptive, landscape-level approach to succeed, it must be based on quantifiable conservation objectives, including population objectives for target species. This will allow us to clearly identify the purpose and judge the relative priority of a project, determine how it fits in with the efforts of others, measure the success of our efforts, and adapt and improve our work over time.

Vision: We embrace a scientific, adaptive, landscape-level approach to conserving, managing and restoring refuge lands and waters, and work to project conservation benefits beyond our boundaries.

In the past, we focused largely on what happened within our refuge boundaries, in isolation from the landscapes around them. Today, we realize we must view and manage refuge lands as pieces of fabric woven into a landscape-level tapestry of conservation. We must engage our neighbors, conservation partners and surrounding communities in creative conservation strategies to achieve our collective

Landscape Conservation Cooperatives (LCCs) are public-private partnerships that transcend political and jurisdictional boundaries and take a collaborative, scientific approach to managing wildlife, habitats and cultural resources.

<http://www.fws.gov/science/shc/lcc.html>

species – and ecosystems – management goals. In addition, our conservation strategies should advance hemispheric partnerships to conserve migratory birds, wide-ranging animals and marine mammals.

We must collaborate effectively with a wide array of partners to leverage resources, avoid duplication of effort, and collectively develop and implement mutually beneficial solutions. This collaborative landscape-level approach applies equally to our long-term planning efforts and to our day-to-day management decisions. While we are already working “beyond the boundaries” in many places, including internationally, we must do better. Taking this broader approach will allow us to identify potential threats and conflicts and develop innovative solutions to those challenges. It will also allow us to share best practices and capitalize on opportunities. This mindset will also encourage our employees on the ground to work with local landowners, nearby communities and other conservation partners and strengthen community ties.

Conservation Planning for the Next Century

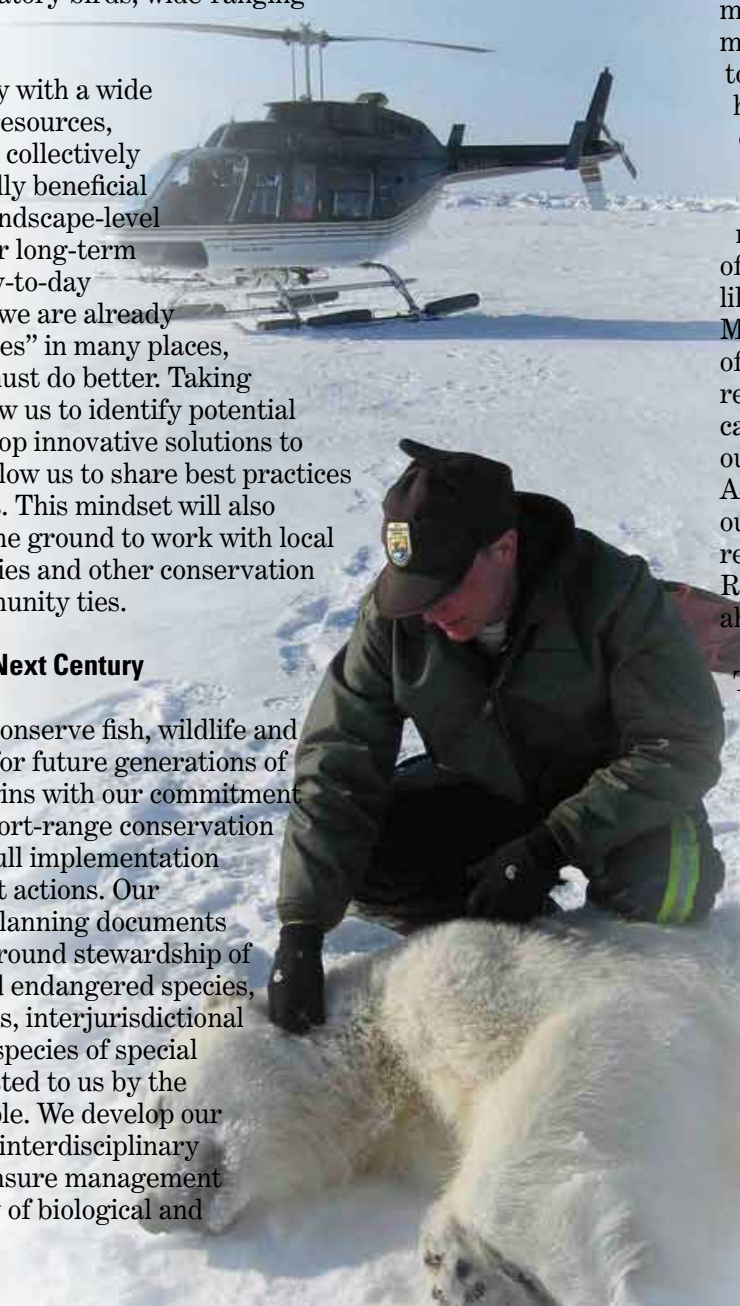
Our ability to conserve fish, wildlife and their habitats for future generations of Americans begins with our commitment to long- and short-range conservation planning and full implementation of management actions. Our management planning documents guide on-the-ground stewardship of threatened and endangered species, migratory birds, interjurisdictional fish and other species of special concern entrusted to us by the American people. We develop our plans using an interdisciplinary approach, to ensure management

activities address the diversity of biological and socioeconomic issues we face.

During the past decade, more than 50 million acres of new marine national monuments in the Pacific have been added to the Refuge System. The Service now has stewardship responsibilities for some of the most important coastal, marine ecosystems in the world. We must build capacity to do the science and management required to be good stewards of these marine national monuments, much like we have in places such as the Alaska Maritime National Wildlife Refuge. Threats of coral bleaching and ocean acidification require us to study these sensitive areas carefully. We must work closely with our partners at the National Oceanic and Atmospheric Administration and other scientific institutions who share our interest in exploring and caring for these places. The responsible stewardship of the coastal, marine units of the Refuge System is one of the great challenges of the decade ahead.

The key strategic tool we use to guide our work on each refuge is the Comprehensive Conservation Plan (CCP). Congress mandated the completion of such plans in the National Wildlife Refuge System Improvement Act of 1997. We’ve learned a great deal from the first round of preparing these plans. Some CCPs successfully created visions for dealing with complex issues such as sea-level rise caused by climate change, while others were caught in controversy and barely maintained the status quo.

We now have a great opportunity to improve upon our planning legacy by incorporating a new vision and set of conservation strategies in the next generation of CCPs. This new vision requires that we keep several principles in mind. First, the new plans must integrate the conservation needs of the larger landscape (including the communities they support) and ensure that we function as a “System.” Second, they must be flexible



enough to address new environmental challenges and contribute to the ecological resiliency of fish and wildlife populations and their habitats. Third, the plans must be written so those who read them will clearly understand what is expected and be inspired to take action to become a part of our conservation legacy. Fourth, they should explore ways to increase recreational opportunities, working closely with regional recreation, trails and transportation planners to leverage resources that make refuges more accessible to the public.

Secondary to the CCP, but still a key component for strategic management and planning on refuge lands, is the habitat management plan (HMP). The HMP “steps down” the direction in a CCP to provide specific guidance for managing the lands and waters under our stewardship. An HMP uses the best available scientific information and ecological principles; develops habitat goals, objectives and management strategies to conserve wildlife populations; addresses ways to better protect areas with special designation status (such as wilderness, marine protected areas and public-use natural areas); considers a range of management strategies; uses adaptive management; and relies on peer review to provide credible assessments of our actions.



“America is changing. We must connect with communities around the wildlife refuges that we have been entrusted with. The habitats we manage are intertwined and connected to the greater landscape. Thus, we have to connect.”

— Cynthia Martinez, USFWS

Each year about 3.5 million acres of refuge lands and waters are actively managed under these plans—but there are another 5.7 million acres in need of ongoing habitat management, and an additional 3.5 million acres in need

of restoration. We must develop new habitat management plans that implement our policies on biological diversity, integrity and environmental health, along with our climate change strategic plan. We need to scrutinize our farming programs, looking to restore natural habitats where possible and reduce carbon emissions. We need to continue to advocate for fire policy that does not focus exclusively on hazardous fuels reduction in the wildlife-urban interface, but also includes other important aspects of healthy landscapes and watersheds.

By following the adaptive management process, we will identify each refuge’s contribution to the larger conservation effort undertaken by a multitude of conservation stakeholders. We will describe the vision for the refuge’s future, determine appropriate management direction to achieve desired scientifically based goals and objectives, and analyze the impacts of proposed actions on the wildlife we manage. We will seek and respond to public input throughout our process. We will monitor the success of our management actions to ensure we are achieving our goals and objectives, and revise our management direction, as needed, to adapt to changing environmental conditions, new biological and social information, and new objectives.

Adaptive management:

A deliberate, science-based process for decision-making in the face of uncertainty. This approach treats management actions as experiments, and uses the outcomes of those experiments to inform and improve future actions. Because it is based on a continual learning process, adaptive management improves long-term management outcomes.

Recommendation 1: *Incorporate the lessons learned from our first round of CCPs and HMPs into the next generation of conservation plans, and ensure these new plans view refuges in a landscape context and describe actions to project conservation benefits beyond refuge boundaries.*

The Challenge of Climate Change

The Earth's climate is changing at an accelerating rate that has the potential to cause abrupt changes in ecosystems and increase the risk of species extinction. Climate change transcends the Service and the National Wildlife Refuge System and poses one of the largest conservation threats of the 21st century.

Climate change has very likely increased the size and number of wildfires, insect outbreaks, pathogens, disease outbreaks and tree mortality in the interior West, the Southwest and Alaska. In the aquatic environment, evidence is growing that higher water temperatures resulting from climate change are negatively impacting cold- and cool-water- adapted populations across the country. Rising sea levels have begun to affect fish and wildlife habitats, including those used by shorebirds and sea turtles that nest on coastal national wildlife refuges. Ocean acidification and coral bleaching represent major threats to marine life in more than 50 million acres of refuge waters and beyond.

We acknowledge climate change is a crosscutting theme as we continue to work with the conservation community to develop and implement conservation strategies. We also recognize that a changing climate interacts with other ongoing environmental threats and stressors such as destructive fires, water shortages, invasive species and disease transmission. The Service is committed to taking a holistic approach to assessment and management that accounts for interactions between climate change and other stressors.

Our mandate to conserve and manage Refuge System

lands and waters to maintain biological integrity, diversity and ecosystem health requires us to support ecological resilience and provide fish, wildlife and plants with opportunities to adapt to climate-changed landscapes. Wilderness will be a key part of our understanding of climate-mitigated changes. Large, unfragmented wilderness areas will support ecosystem resiliency and species adaptation, and be a source of valuable baseline



“More change has taken place on the land, in the air; the wildlife - the fabric of life, and certainly in the ocean in the 20th century than during all preceding human history put together.”

— Dr. Sylvia Earle, oceanographer

data as the climate changes. But it is not enough to respond to this most urgent conservation challenge. The Service is working in partnership with state fish and wildlife agencies and other federal partners on a national fish, wildlife and plant climate-adaptation strategy. The National Wildlife Refuge System must contribute significantly to this emerging strategy through its land protection, land management, inventory, monitoring and research efforts.

Strategies that will enhance ecological resilience and provide opportunities for fish, wildlife and plants to adapt to climate change include maintaining or restoring the ecological integrity of existing refuges and other protected areas, enhancing linkages and connectivity among protected areas, buffering core protected areas, such as wilderness, with conservation efforts on private working landscapes, identifying and protecting climate refugia, and ensuring adequate representation, size and redundancy of ecological communities in the collective conservation estate. The Refuge System must contribute to all of these efforts.

The Service developed a strategic plan for responding to climate change in 2010. This far-reaching and visionary

Ecological resilience:

The capacity of a system to resist and recover from natural or human-caused disturbances. Resilient systems can maintain their essential structure in the face of floods, fires, pest outbreaks, pollution and other stressors.

plan emphasizes reactive approaches in the short term. Although planning and management at the refuge and landscape scale will continue to be important, we must recognize that, over time, a changing climate may transform these areas into new habitats, new ecosystems and new landscapes. If the Refuge System is to continue to fulfill its mission, we must undertake a comprehensive assessment of the challenges that climate change poses. Such an assessment will allow us to better understand the vulnerability of ecosystems and plant and animal populations to environmental change. As this occurs, the Service should shift to a more proactive approach to conserving and managing refuge lands and waters.

Targeted restoration will also be necessary in many wildlife refuges to bring altered landscapes back into balance. Restoration efforts should create landscape-level habitats or habitat complexes capable of supporting viable populations of target species; be resilient to short-term climate fluctuations and long-term climate change; restore as many ecosystem processes as possible on the landscape; integrate partnerships with other agencies, groups and private landowners; and integrate with future acquisition efforts.

The Refuge System also needs to quantify and reduce its overall carbon footprint. Refuge system operations and facilities generate heat-trapping gases and have other impacts on the environment and wildlife. The Service's stewardship of the Refuge System

should provide cutting-edge leadership in reducing carbon emissions and implementing sustainable, green business practices. Our plans should include prioritizing land restoration activities that effectively sequester carbon.

Recommendation 2: *Develop a climate change implementation plan for the National Wildlife Refuge System that dovetails with other conservation partners' climate change action plans and specifically provides guidance for conducting vulnerability assessments of climate change impacts to refuge habitats and species as well as direction for innovation in the reduction of emissions and improved energy efficiency on federal lands.*



Strategic Growth of the Refuge System

The National Wildlife Refuge System Improvement Act provides clear direction to the Service to “plan and direct the continued growth of the System in a manner that is best designed to accomplish the mission of the System, to contribute to the conservation of the ecosystems of the United States, to complement efforts of States and other Federal agencies to conserve fish and wildlife and their habitats, and to increase support for the System and participation from conservation partners and the public.”

The Service's land protection strategies in the future must be cutting edge and visionary, placing refuges in the context of landscape conservation. We must consider how established and future refuges, other protected areas and working landscapes can function collectively to conserve fish, wildlife and their habitats for future generations. This is key to the effort to conserve America's great outdoors. The Service is committed to being an active partner, leader and catalyst in this effort.

Strategic growth of the Refuge System requires creating a portfolio of prioritized acquisition sites based on an adaptive management strategy. To create our land protection portfolio, we need to define the Refuge System's

role in working with others to achieve wildlife population objectives, assess the status of current habitat protection efforts, evaluate which entity is best positioned to undertake the long-term management of protected lands and prioritize the conservation gaps. The Refuge System's role in filling some of these conservation gaps will include protecting existing habitat to safeguard against future losses, as well as targeted restoration to strategically grow the conservation estate. These efforts should be forward-looking and keep the future needs of wildlife in mind. This assessment and gap analysis must be done both through the lens of the System's statutory obligations—habitat protection efforts required to fulfill migratory bird treaties and endangered species recovery plans, for example—and more broadly through a consideration of existing and future wildlife needs across the landscape—habitat corridors, lands and waters that wildlife need to adapt to a new climate regime and ecological communities missing from the conservation estate.

Recommendation 3: *Undertake a rapid top-to-bottom assessment of the status of all Refuge System land protection projects and complete a report that will inform development of a plan for the strategic, future growth of the Refuge System.*

Our approach to planning future growth of the Refuge System will be enhanced by the new scientific capacity for biological planning and conservation design being developed by LCCs. Land protection efforts must focus on representation of ecological communities in protected areas, the redundancy of protection, adequate size of protected areas and the connectivity of protected areas. Conservation in the future must include the important roles of working ranches, farms and forests, as well as privately owned recreational properties with conservation provisions that can link and buffer protected areas.

After the Refuge System completes its comprehensive assessment, we will ensure that our habitat protection priorities are transparent and based on an objective analysis of both wildlife requirements and the need to

conserve large landscapes and a full spectrum of ecosystem types. Land protection will be prioritized nationally using the best available science, and reflect contributions toward achieving national, regional and species-specific goals and objectives. Our land protection efforts will be adaptive, changing to keep pace with the science and immediacy of new threats. This effort will also be integrated with



our partners' programs, recognizing the potential to leverage protection efforts to achieve mutual conservation goals.

The future growth of the Refuge System will be guided by the following priorities: habitats to fulfill the goals and objectives identified in threatened and endangered species recovery or habitat conservation plans; habitats to fulfill the goals and objectives identified in national bird, anadromous and interjurisdictional fish, and marine mammal management plans; habitats that are unique,

“You cannot have landscape conservation without landscape conversation...these landscapes are fragile, but we have the people that have the passion, the heart to make change.”

— Jim Stone, Blackfoot Challenge Chairman & Partner

rare, declining or under-represented in existing protection efforts; climate refugia as identified by LCCs; and modifications to existing refuge boundaries to adapt to climate change as identified in the second generation of CCPs. We will develop a conservation planning tool to align with these priorities and principles of conservation biology.

We must also carefully consider our investment strategies as the System grows. We must balance the need to complete high-priority protection at existing refuges with the opportunities presented by new protection projects. We will stretch dollars by using easements when appropriate, while also considering the important recreational

opportunities provided on refuges where we own the land. These questions point to the importance of the LCCs' increased scientific capacity in biological planning and conservation design to understand and evaluate projects and identify the most important ones. They also highlight the need for effective inventory and monitoring to assure the ongoing success of our protection and management.

Recommendation 4: *Ensure future land protection efforts are based on explicit priorities, rigorous biological planning and conservation design that support achieving quantifiable conservation and population objectives that are developed in cooperation with state fish and wildlife agencies.*

We recognize that habitat conservation and restoration efforts go beyond the boundaries of the Refuge System and require partnerships. We are committed to working with other programs throughout the Service and we look to new partnerships with other local, state and federal governmental agencies, conservation organizations, and private landowners

to achieve shared conservation goals.

We can accelerate conservation in priority areas by working strategically with the U.S. Department of Agriculture's Natural Resources Conservation Service and Farm Service Agency to better access and target Farm Bill dollars. Many

conservation programs in the Farm Bill fund land protection through conservation easements and long-term rental contracts as well as restoration of forests, wetlands, grasslands, riparian buffers and other wildlife habitats. With the urgent need to both buffer conservation lands and connect them, we must aggressively pursue these and other opportunities to leverage habitat restoration and protection efforts—recognizing that, in many cases, outright acquisition of crucial habitat by the Refuge System is neither possible nor preferable.

The Service's Partners for Fish and Wildlife (PFW) program can help the Refuge System achieve these goals. In some regions, the objectives of PFW are well-coordinated with the Refuge System's objectives and help leverage the benefits of national wildlife refuges, waterfowl production areas and conservation easements across a landscape. PFW biologists are fully conversant with Farm Bill and other federal, state and conservation organization conservation programs, and help private landowners choose the most appropriate and effective conservation tools available. In addition, the partners program often works to accomplish Refuge System goals by helping to restore high-priority habitats on private lands and then perpetually protecting them with conservation easements. This model of cooperation and shared objectives should be expanded nationwide.

Recommendation 5: *Use all of the Service's conservation tools, especially Partners for Fish and Wildlife, to work nationwide to project conservation benefits beyond refuge boundaries, leveraging resources through partnerships with other governmental agencies, conservation groups and private landowners and achieving mutually shared and scientifically sound restoration and protection goals around refuges.*



A Commitment to Science

The Refuge System has always relied upon science to inform its actions. From bird-banding studies in the early 20th century to modern-day satellite imaging, we have collected and analyzed data, and used that information to guide conservation actions. But our ability to implement science has been uneven, hampered by various combinations of lack of staff, funding, clear objectives and organizational change. When we lack science capacity, it has a debilitating effect on our conservation work. Our credibility as professionals and as an organization is based on our scientific expertise and objectivity. To ensure our future success, we must enhance our science capacity to support refuge management.

While we acknowledge the challenges, we recognize and affirm the primary role science plays in all of our work. Our commitment to scientific excellence permeates and transcends the Refuge System. We demonstrate this commitment by applying relevant science to all aspects of refuge management, and developing new methods of utilizing science to build conservation models, set habitat and population objectives, strategically plan the growth of the Refuge System, design conservation delivery actions, and measure our success. We also strive to expand the application of science within the Refuge System beyond biological sciences and include physical, social, historical and cultural sciences in our programs and management. And we are beginning to examine how we can apply adaptive management



“Our level of scientific accountability must be higher in these times of increased expectations...all employees, not just biologists, must be well-versed in science.”

— Dr. Gabriela Chavarria, USFWS

to our visitor services, law enforcement, fire, and even administrative functions.

The Refuge System is committed to four foundational elements for conservation science: apply science to refuge management; complete robust inventory and monitoring; develop deliberate research agendas; and expand communication, collaboration and contribution within the Service and among our partners. Our dedication to these principles helps maintain our credibility, ensures conservation efficacy and promotes our leadership in the conservation community.



Vision: We are committed to a culture of scientific excellence, adhering to the highest standards of integrity and transparency, and are viewed as valued contributors to the broader scientific community.

Application of Science

Refuge management decisions must always be made in a scientific context. Science-driven management decisions use better information, improve efficiency, reduce uncertainty, and increase our ability to solve complex problems and adapt to changes in populations, habitats and systems. We must gather and integrate data from our robust inventory and monitoring efforts and directed research on refuges and use these data to inform our management decisions. Equally important, we must use these data to learn from our experiences and continually improve our conservation delivery through adaptive management. Grounded in this way, our management efforts will have impacts beyond the boundaries of our refuges and integrate with landscape-scale habitat conservation frameworks.

Recommendation 6: *Provide each refuge with access to resources to fully implement the principles of adaptive management.*

Robust Inventory and Monitoring

Most wildlife refuges do not currently have a comprehensive baseline inventory of the fish, wildlife and plants that live there. This poses a challenge to the delivery of effective conservation, which requires an understanding of the abundance and distribution of species and their interactions with the habitat across space and time. It also requires the ability to detect trends and project shifts in these relationships brought about by environmental change. Understanding these complexities and anticipating management impacts will require robust inventory and monitoring approaches.

There is no better place to monitor environmental change than in wilderness. The Refuge System includes at least 20 million acres of wilderness, about 22 percent of lands within the nation's National Wilderness Preservation System. This wilderness includes some of the largest and most intact landscapes in the country. Because wilderness areas emphasize natural conditions, they can serve as baseline or reference areas to be compared with similar ecosystems undergoing active management. Natural processes predominate without



“Look closer. You’ll see more than meets the eye.”

— Alesha Ouren, age 10,
Prairie Wetlands
Learning Center Student

human intervention in wilderness areas, making these areas an important component in a national strategy for monitoring long-term ecological change, such as climate change.

In 2010, the Service launched a national effort to increase the collective ability to inventory and monitor wildlife and habitats and inform conservation within the Refuge System. For this effort to succeed, it must have several elements. First, it must be institutionalized and purpose-driven, with clear goals. Second, although each refuge will have its own unique inventory and monitoring needs, it must be coordinated on both the regional and national levels, so data are comparable and useful in determining the status and trends of key species on broad geographic scales and timeframes. Third, it must encompass not only animals and plants, but other natural systems such as soils, air and water quality, and water quantity.



Collecting consistent wildlife and habitat data on refuges is critically important, but it is only the first step. Data must be analyzed, explained and reported. This information will be crucial not only in informing refuge management and policy decisions, but also in contributing to the knowledge of the broader scientific and conservation communities. We must use information management tools to make our data readily available to these communities. Through these efforts, we can provide vital information for State Wildlife Action Plans and other conservation partners' planning efforts, inform eco-regional planning efforts through the LCCs and others, and actively promote collaborative conservation. Additionally the availability of the data, analysis and transparency of the applications will help us both educate and demonstrate accountability to the public.

Recommendation 7: *Institutionalize a purpose-driven, nationally coordinated effort to inventory and monitor wildlife and habitats to obtain data that inform planning and management decisions; and develop a state-of-the-art data management system that can be integrated with the broader scientific community and key partners.*

State of the System

Among the benefits of a more systematic and robust inventory and monitoring program and the associated sharing of information is that it allows identification of status and trend data on a regional or national scale. Our inventory and monitoring program should regularly publish this information in a report that focuses on the fish, wildlife



and plants the Refuge System is charged to conserve. This “State of the Refuge System” report should assess factors such as:

- a) the current condition and observed trends of natural resources on refuges within the context of overall conservation of our nation’s fish, wildlife and plants;
- b) the major challenges currently facing the Refuge System;
- c) expected future trends and their associated implications for potential changes in mission, roles and responsibilities;
- d) current organizational capabilities compared to current and projected future needs.

“We must work collaboratively. Partners ranging from other Service divisions, state and local agencies, organizations, and the landowners all need to be engaged. While more difficult and challenging, the end result is certainly vastly improved and a more comprehensive product.”

—Charlie Pelizza, USFWS

We do not envision this report as a decision document, but rather as a tool to stimulate thought and discussion about how the Refuge System can best continue to contribute to the conservation of the nation’s fish, wildlife, and habitat in the future. The goals of the report should be to further collaboration on improving the condition of the Refuge System, highlight and celebrate successful programs underway, and encourage strategic approaches to adapting to changing conditions.

Recommendation 8: *Create a new, quadrennial report on the state of the Refuge System starting in 2015, as part of an effort to report on the status and trends of wildlife and habitat in the System and ensure that all data gathered are easily accessible and shared widely among the Service, the scientific community and the public.*

Deliberate Research Agenda

To date, much of the scientific research taking place on refuges has not been coordinated or guided by an overall strategy. We must do a better job of articulating and guiding our research so that it is both relevant and contributes to management decisions. To help set a deliberate research agenda, we must routinely and openly identify and challenge the assumptions that influence our management decisions. We must then determine which of those assumptions are the most significant and least certain, and elevate those as research priorities. We must fully engage our partners in setting our research agenda so that we can identify common priorities, coordinate our efforts and share the costs. A focused research agenda will not only inform management decisions across the System, it will also contribute to the broader body of science.

Recommendation 9: *Develop and clearly articulate a research agenda for the Refuge System that is management-oriented and grounded in the testing of assumptions, with the explicit purpose of reducing uncertainty in our planning and management decisions.*

Communication, Collaboration and Contribution in Science

Just as we cannot overcome the management challenges of the future alone, neither can we overcome the scientific challenges alone. We must embrace communication and collaboration in all fields if we are to achieve our goals.

In the realm of conservation science, that means we must both lead and be strong partners. If we coordinate research and monitoring projects with our partners and communicate the results to the conservation community, we will improve our ability to leverage assistance; enhance our opportunities to share ideas, plans and strategies; and maximize our chances to capitalize on shared interests and opportunities.

We must build shared inventory and monitoring efforts; combine our scientific and technical capabilities with others; and work more closely with business, industry, conservation organizations, academia, private landowners, interested citizens and, in particular, with our state, federal and tribal partners. To conserve, restore and manage our nation's wildlife, we will actively coordinate and communicate both within the Service and among stakeholders. We will encourage coordinated research in all fields—including the social sciences, where researchers can utilize our refuges as outdoor laboratories to benefit both the refuge and the broader body of knowledge. We will search for new partners while we seek to renew and reinvigorate existing partnerships. Equally important, we will commit to communicating effectively, helping the public and our partners to understand and appreciate our stewardship of refuge lands and waters.

Recommendation 10: *Become a major contributor to the scientific community by sharing information and data; publishing scientific findings; participating in professional societies; and engaging with local, regional and national organizations and communities to solve conservation problems.*



Chapter 2:

A Connected Conservation Constituency

America is a different place than it was a century or even a decade ago. Our society is more ethnically and culturally diverse, increasingly urban and older—and Americans strive to not only accommodate diversity, but celebrate it. We have moved far away from our agrarian roots, with 80 percent of Americans now living in urban or suburban areas.

Though nature may seem farther away, and we struggle to explain the mystery of its benefits, many agree that time in nature is vital to our health and mental well-being, and helps nourish our sense of wonder, imagination and curiosity. The psychological, ecological and economic amenities that nature provides are a boon for Americans from all walks of life, including those who may never visit a national wildlife refuge. As we work to keep pace with a changing America, we recognize that more Americans will appreciate nature and refuges “virtually.”



Today’s conservation challenges are far too big for any one agency or organization to surmount—they require all of us to take steadfast action together. As leaders, partners and role models in conservation efforts, we seek to inspire others to work with us —so that together we can leave a legacy of abundant and healthy wildlife and wild lands for future generations of Americans to enjoy.

Though our fundamental mission is wildlife conservation, we recognize that to be successful we must inspire the

American people to connect with their wildlife heritage and participate as stewards of the System. As an integral part of local communities, refuges are great places to build a broader conservation constituency. Refuges work with schools, civic groups and individuals to share our passion for the environment and our mission. We must push ourselves to reach out to those who are yet unfamiliar with who we are and what we do. Part of our mission is ensuring that all our citizens benefit from refuges, and this helps sustain strong support for the Refuge System. Our goal must be to inspire all Americans to become part of a conservation constituency.

Vision: Engage the American people, so that we better understand their expectations and they are increasingly aware of the National Wildlife Refuge System and its role in conservation.

Public Stewardship

The growth of the refuge volunteers and friends groups during the past 30 years has been a remarkable achievement of public involvement and stewardship. Volunteers of all ages and abilities now provide a wide array of vital services on refuges: Working side by side with Service staff, they greet the public and teach the young; they clear trails and control invasive species; and they provide biological expertise with precision and enthusiasm. If a job needs doing on a national wildlife refuge, chances are good that a volunteer is ready to help. The Refuge System could not function without the 1.3 million hours of work that our almost 40,000 volunteers contribute every year. The Refuge System has similarly been fortified by the active



“Whether you are with the Fish and Wildlife Service, a state agency, an NGO, or a Friends group, you are on the front lines of conservation.”

—Evan Hirsche, President, National Wildlife Refuge Association

involvement of friends groups. These locally established, nonprofit citizen organizations have many different names, but they all share our passion for wildlife and our love of wild places. They are a refuge’s best ambassador in the community—sharing knowledge with their neighbors and standing firm when fish and wildlife are in peril. They epitomize the idea that all conservation is local.

Recommendation 11: *Develop and nurture active and vibrant friends groups or community partnerships for every staffed refuge or refuge complex.*

The Refuge System must continue to build on these successful citizen partnerships and take advantage of the opportunities that an active baby boom generation provides. A large generation of skilled and motivated people is moving into retirement and looking for new challenges and ways to continue to contribute to their communities. Demographers also tell us that these ‘boomers’ love the outdoors. We have what they need.

Many refuge volunteer programs have been limited by a lack of refuge staff to recruit, train and supervise volunteers. Refuge System staff growth will likely not keep pace with the needs, but if we accelerate the development of a more self-directed and self-perpetuating volunteer program, there is no limit to the work we can accomplish. Who better to recruit and train volunteers than a retired human resources manager? Who better to work alongside a refuge biologist and help with a new system-wide biological inventory and monitoring effort than a retired researcher? Who better to help us develop a school partnership than a retired teacher? They have what we need.

The National Wildlife Refuge Association and other partner organizations, as well as our local friends groups, can help us develop a new model of a self-sustaining volunteer workforce. With training and mentoring, we can continue to build a Refuge System that meets the needs of wildlife while filling lives with purpose. Refuge management will continue to evolve as a shared responsibility between the Service and the public.

Recommendation 12: *Develop a national strategy for recruiting, coordinating and supporting a more self-sustaining volunteer corps, while creating new opportunities for community involvement in implementing refuge priorities.*

An Urban Refuge Initiative

The Refuge System now spans the continent and reaches across oceans, providing safe homes for our nation’s fish, wildlife and plants. But despite our broad geographic reach, we face challenges in connecting with all Americans. We struggle to remain relevant to urban citizens who have competing priorities and few outside experiences; we strain to find ways to connect with young Americans who are technologically fluent but deficient in nature experiences, and we toil to recruit and retain a more inclusive workforce that reflects the diversity of America.

While there are several national wildlife refuges close to large cities, most refuges are in the wilder corners of America, beyond easy reach for most people living in our largest metropolitan areas. Though some cities are now expanding into the countryside – changing once ‘rural refuges’ into ‘urban refuges’ – it is not likely that many new national wildlife refuges will be established near our largest cities. To help an urban America continue to benefit from its wildlife heritage, we propose an urban wildlife refuge initiative that relies more on partnerships and collaboration than on the traditional refuge establishments.

This new initiative will have three major parts. First, it will establish measures to help existing urban wildlife refuges define and achieve excellence. The Service is fortunate to have many refuges near urban centers and several at the heart of some of our largest cities, including San Francisco, Philadelphia, Minneapolis, New Orleans, Denver and Washington, D.C. But we have never articulated the extraordinary opportunities and expectations we have for these refuges to reach urban audiences. Before we can achieve excellence in these or other urban centers, we must

define excellence. We will convene a summit of our existing urban refuge managers to help describe and measure success.

The elements of excellence might include the following: successful urban school partnerships reaching a diverse student population; full integration with urban green-space planning; a wide array of volunteer opportunities; youth employment and internship opportunities; information that helps people connect with the entire Service; objective evaluation of the various education and outreach activities; and a robust interpretive effort that inspires the imagination and engages the public through multiple media. Once we have defined excellence and analyzed gaps in our existing efforts, we will focus our resources to achieve excellence in each urban refuge.



“We need to configure a landscape that gives wildlife a chance to adapt.”

—Greg Siekaniec, USFWS

Second, the new initiative will create urban presences for the Refuge System. Fortunately, most large cities have excellent parks and nature areas; these provide a huge opportunity for the Refuge System to establish an urban presence through cooperation and partnerships. We will offer our urban partners technical assistance with habitat and wildlife management activities, help with establishing wildlife education efforts, help with conservation employment opportunities for urban youth and help with giving their urban population knowledge of, and access to, the Refuge System.

Third, the new initiative will reach cities of various sizes. We will establish refuge partnerships in a sampling of cities ranging from large to midsize, from old to young and

growing. Each region will seek to establish at least one or two new urban refuge partnerships, in a measured and coordinated way so that cities of many shapes and sizes are represented. Over time, we will share the successful elements of these efforts and expand them to other urban centers.

We are also mindful that reaching citizens of diverse ethnicities involves connecting not just with urban areas, but also with rural communities. For example, many refuges in the South could develop an African-American constituency, while in other parts of the country, we could



reach out to tribal and Hispanic communities. While our overarching goal is to build broad awareness and support for our national wildlife refuges, engaging these rural constituencies is vital to the success of landscape conservation strategies. Rural areas can also serve as a pipeline for Service professionals who have a fundamental connection to, and appreciation of, the natural world.

“Bring unconventional partners into our fabric of interest. Ultimately people might then care about wilderness.”

—Majora Carter, Executive Director,
Sustainable South Bronx

Recommendation 13: *Create an urban refuge initiative that defines excellence in our existing urban refuges, establishes the framework for creating new urban refuge partnerships and implements a refuge presence in 10 demographically and geographically varied cities across America by 2015.*

Getting the Word Out

Refuges are home to some of the nation’s most treasured, iconic and rare wildlife and wilderness. They are important

assets to the communities around them, evoking a deeply meaningful sense of place and generating both economic and environmental benefits.

The diverse habitats in refuges directly or indirectly provide such essential and irreplaceable benefits as clean air and water, reduced erosion and flooding, pollination of crops, and many other ecological services. The value these ecosystem services provide on a global basis is approximately \$33 trillion per year; more than half the global gross domestic product. Recreational use on wildlife refuges generated almost \$1.7 billion in total economic activity just to local economies in 2006. In addition, property values surrounding refuges are often higher than equivalent properties elsewhere. These and other economic benefits of wildlife refuges are undeniable.

Yet the economic and environmental benefits of refuges are neither well understood nor widely appreciated. The Refuge System remains largely unknown to most Americans. Even those who visit a refuge property may not realize that they are at a national wildlife refuge, that the U.S. Fish and Wildlife Service manages it or that it is part of a system with breadth and mission. Before Americans can support that mission, they must have opportunities to experience, care for and value the land that we manage on their behalf. The land must become, as Aldo Leopold expressed it, something people “can see, feel, understand, love or otherwise have faith in.”

If we want broad support, communicating what we do, and why, is as important as doing it. We must articulate and promote the benefits as well as the opportunities offered by refuges and the importance of conservation—especially

Ecosystem services:

The benefits people get from nature. These are generally divided into four categories: provisioning services (such as food and water); regulating services (such as flood and disease control); cultural services (such as spiritual renewal and recreational opportunities); and supporting services (such as crop pollination and nutrient cycling).

in fresh venues such as city parks, community centers, shopping malls and other public gathering spaces. Many national wildlife refuges are successfully collaborating with community groups and are a consistent and fully integrated presence in their communities. We must replicate such models and improve communication with nontraditional audiences to determine how refuges can better serve their interests and whet their appetites for wildlife experiences. Wherever we find Americans interested in preserving our natural or cultural heritage, undertaking citizen science, volunteering their services or participating in healthy outdoor activities, we must engage them as stewards of our land and waters.

Vision: Every employee is fluent in the ecological and societal benefits of the System and is a tireless ambassador to all Americans.

We are all ambassadors for the Service and the Refuge System. Employees need to be not only experts in their specialties, but familiar with the mission and goals of the System as a whole—and both willing and able to articulate the many benefits and accomplishments of refuges to the community at large. But to be truly effective ambassadors, we need a clear and consistent message that is understandable, memorable and effective in building an engaged and informed conservation constituency. Fostering the development of citizen conservationists with strong connections to America's great outdoors is an ambitious undertaking, but to remain relevant to a changing society, we must engage people, inform them about natural places and inspire them



“Technology is the key to getting ‘generation next’ back outside.”

—Michael Gale, USFWS

to visit. To do this, we must have an integrated, long-term communications strategy.

Such a communications strategy must identify key audiences, develop and test messages that resonate with those audiences, and create benchmarks for measuring success. It must ensure that a professional and positive Refuge System brand is promoted at all times, and that this brand is consistent and recognizable not only across communications platforms—publications, websites and signs, for example—but also in publicly visible infrastructure such as facilities and uniforms. While much of the work on refuges involves active management, we should strive to provide the public with a ‘natural’ and welcoming experience that promotes the impression that these are unspoiled havens for wildlife.



In developing a communications plan and promoting its brand, the Refuge System can and should take advantage of the expertise and resources available in both traditional partners—such as hunters and anglers, and the rest of the conservation community—and in nontraditional partners such as corporations and marketing firms. In this way, the Refuge System can leverage its limited resources and tap into both the experience and marketing muscle of the nongovernmental and corporate worlds—helping to get the message out about America's “hidden treasure.”

Recommendation 14: *Create a strategic communications plan that educates the public about our mission and accomplishments, and creates a positive, professional ‘brand’ for the System.*

America is a wired nation, and an increasing number of people are relying on smart phones, tablets and other

electronic devices to gather information and communicate with one another. The Refuge System cannot rely solely on posted signs, printed brochures or interpretive kiosks to orient and educate the public. We need to fully utilize electronic communications tools— such as websites, social media and mobile applications—to invite and prepare people to visit refuges, give them up-to-date information on what is happening there and develop a greater appreciation for natural values—even if they are unable to visit a refuge. Modern communications tools are not only valuable for external communications, but they also facilitate internal communications. The Refuge System can increase productivity by adopting communication tools that facilitate the exchange of experience, knowledge and ideas among staff, and with practitioners and specialists from other areas and organizations. At present, such “communities of practice” are often isolated from each other by regional or administrative barriers. These barriers must be broken down. Sharing knowledge is a fundamental strategy for adapting during periods of rapid change.

Recommendation 15: Develop integrated mechanisms for using web-based and other emerging technologies to store and share data, communicate within the System, and inspire and educate visitors and the public.

The Outside Connection

Spending time outdoors is good for both our spirit and our health. Recreation and relaxation in nature reduces stress and anxiety, promotes learning and personal growth, nourishes the imagination, and provides mental and physical restoration. Direct experiences in the outdoors often lead

to a commitment to, and involvement with, stewardship of our shared natural legacy. The Refuge System’s wildlife dependant uses promote getting outside and experiencing nature. Americans must learn anew that national wildlife refuges not only provide essential habitat for wildlife, but they also are beneficial and relevant places for people. We must actively encourage and provide new opportunities for people of all ages and backgrounds to connect with nature by visiting their national wildlife refuges, personally or virtually.

Vision: Refuges are welcoming, safe and accessible for visitors, with a variety of ways to enjoy, learn about, appreciate and help conserve America’s wildlife.

Conservation law enforcement has been the first step in effective refuge management since Paul Kroegel patrolled the nesting bird colonies at Pelican Island more than a century ago. A top priority for the Refuge System must be to adequately staff refuges with sufficient officers to protect wildlife and habitat and make refuges safe places for staff and visitors. If refuges don’t provide for basic public safety and resource protection, they won’t be successful in accomplishing their purposes and the mission of the Refuge System. If efforts to reach new visitors are successful in drawing a larger and more diverse audience to refuges, they must first and foremost feel safe. Refuge law enforcement officers are on the front lines in making refuges safe and visitors feel welcome. They are often the most visible ambassadors to the visiting public. Although we have made progress in modernizing refuge law enforcement during the past decade, much work remains to be done to complete needed reforms.



The National Wildlife Refuge System Improvement Act of 1997 identified the “Big 6” wildlife-dependent recreational uses of the system: hunting, fishing, wildlife observation, photography, interpretation and education.

Recommendation 16: Conduct a new, independent analysis of refuge law enforcement to measure progress and identify needed improvements.

The National Wildlife Refuge System provides some of the finest outdoor recreational opportunities in the world. Indeed, more than 44 million people visited national wildlife refuges in 2009. Most of these visitors came for the wildlife-dependent recreational opportunities for which refuges are commonly known: hunting, fishing, wildlife observation, photography, environmental education and interpretation. The Refuge System Improvement Act gave these wildlife-dependent recreational uses priority over other uses on national wildlife refuges.

The Refuge System has a steadfast commitment to, and long-standing conservation partnership with, America's hunters and anglers. This partnership has protected millions of acres, restored and enhanced land and waters throughout the nation, and provided continuing opportunities for these sporting traditions. Refuges must continue to work with state conservation organizations to provide new hunting and fishing programs, and will expand efforts to provide special opportunities for children and those with disabilities.

The Wildlife and Hunting Heritage Conservation Council and the Sport Fishing and Boating Partnership were established under the Federal Advisory Committee Act to provide guidance on our policies that support these types of recreational activities. Working with these councils, we can continue to expand our wildlife-dependent constituency by creating innovative programs that engage underrepresented users in the Refuge System.

Recommendation 17: The Service will work closely with state fish and wildlife agencies to conduct a review of its current hunting and fishing opportunities, especially opportunities currently offered for youth and people with disabilities. Based on this review, the Service and states will work cooperatively to prepare a strategy for increasing quality hunting and fishing opportunities on national wildlife refuges.

There are myriad opportunities to expand wildlife-dependent recreation on refuges. One is by working with traditional conservation partners to market and promote refuge visitation, improve access, and encourage young people and other novices to take up hunting, fishing, wildlife observation and photography. Another is by forming and enlarging partnerships with interested groups such as the birding community to provide strategic advice on increasing birding opportunities in the Refuge System.



“Thanks to the efforts of hunters and anglers and other conservationists, we now have extensive public lands, including National Wildlife Refuges, that support abundant fish and wildlife populations that belong to all of us as a people. This is the heart of the North American Wildlife Conservation Model.”

—John Kennedy, Deputy Director,
Wyoming Game and Fish Department

This has worked successfully with the Refuge System Birding Initiative, and we should expand upon this model.

We must also look for ways to build relationships with people who have not had traditional links to wild lands and wildlife, and encourage them to visit refuges. One way to do that is to remove language barriers. Adding bilingual staff and multilanguage signage on wildlife refuges will not only make those who do not speak English feel more welcome, but will expand the reach of our interpretive and educational programs. Another way to encourage visitation is to remove physical barriers.

Refuges should work with local communities to facilitate transportation for seniors and people with disabilities. We must also retrofit existing facilities so they comply with Americans with Disabilities Act standards and the Universal Trail Assessment Process. Refuges should also train staff to relate to and assist people with special needs.

In the end, promoting our relevance to the lives of Americans is about access. People care about what they know and what they can experience. Wildlife refuges should be accessible to all, regardless of their location or physical abilities.

Recommendation 18: *Support and enhance appropriate recreation opportunities on national wildlife refuges by partnering with state fish and wildlife agencies, other governmental bodies, conservation organizations and businesses; and by updating relevant policies and infrastructure.*

Often described as the “front porch of the Service,” the Refuge System provides an incredible opportunity for Americans to meet the Service. The



“We need to educate our publics. It’s fundamental to nurturing a strong land ethic and critical to developing people’s appreciation and participating in decisions affecting wildlife and habitat conservation. We must act now.”

—Wendi Weber, USFWS

a national network of conservation lands. Through the use of interpretation, the Refuge System can create a personal, emotional connection with visitors.

While some refuges have developed strong interpretation programs, the Refuge System as a whole has not yet capitalized on this powerful tool. The National Association for

Interpretation has developed standards and best practices that should guide the Refuge System. Our interpretation program should do the following: inspire the imagination of visitors by increasing their enjoyment and understanding of wildlife refuges; be delivered in multiple formats utilizing technology to maximize effectiveness; reach multiple audiences – connecting with people of any age, ethnicity, gender, culture, class and lifestyle; and include an evaluation component that helps us gauge the effectiveness of our efforts. By expanding opportunities to experience a wildlife refuge through a well-built interpretation program, we can meet the diverse needs of visitors and show visitors the place that wildlife refuges hold for them.

Recommendation 19: *Develop an interpretation strategy that builds upon current Service standards and guidelines, takes advantage of multiple modes of delivering messages, reaches diverse audiences, and measures the effectiveness of our programs in partnership with key government agencies, the National Association for Interpretation and other professional organizations.*

Environmental education can be a key tool that provides people a deeper understanding of their ecological place in the natural world, offers a clear understanding of the benefits of the Refuge System and other protected areas, and provides an avenue to promote an ecological conscience in future conservationists. Our education programs are also pathways to articulate nature’s benefits and demonstrate tangible contributions to community schools. Environmental education is fundamental to nurturing a strong land ethic in the next generation and is a critical part of developing people’s appreciation of, and participation in, decisions affecting wildlife and habitat conservation.

Recommendation 20: *Develop an environmental education strategy that inventories existing efforts, identifies priorities for investment of staff and funds, and outlines basic standards for all refuges.*

Chapter 3:

Leading Conservation into the Future

The National Wildlife Refuge System faces an uncertain future. Society and landscapes are changing; threats to fish, wildlife and their habitats are escalating; federal budgets are uncertain; and pressures on employees are mounting. With these challenges, the organization needs leaders who can embrace change and innovation, anticipate opportunities, remain transparent and take calculated risks. These leaders must be adaptive and visionary, inspiring employees and partners to exceed what is necessary and seek what is possible. They must possess agility, passion and exceptional communication skills, and they must be skilled in the use of technology. And these leaders must be committed to developing the next generation of conservation stewards.



The leaders of tomorrow also need to embrace and extol the fundamental principles on which the Service is based. These include integrity, fairness, hard work, openness, collaboration, workforce diversity and service to the American people. Equally important, they need to demonstrate and instill in others the Service's commitment to being stewards of a sacred trust, and embody the land ethic of Aldo Leopold, which holds that people must respect and value as equals the animals, plants, soils and waters that are part of their communities.

Vision: Our workforce is diverse and inclusive, shares a passionate conservation ethic, and works together as a cohesive whole.

Organizational Efficiencies

Healthy organizations are continually changing, learning from the past and striving to find new ways to achieve their missions. Since the 1940s, the U.S. Fish and Wildlife Service has done just that, growing from an original five to its present eight geographic regions to accommodate the Service's growing responsibilities.



Regional boundaries have also expanded and contracted through the years. States such as Virginia, Missouri and Iowa have been shifted to new regions and then shifted back. Functions similarly changed through the years. Predator and rodent control activities, for example, were moved out of the Service and into the Department of Agriculture. Within the Service, programs and authorities have shifted from headquarters to regions, and between assistant directors and offices. For example, the Service's law enforcement program has been through several realignments. Many

“Do not be afraid. History tells us over and over again that we can have great successes in difficult times if we have a clear vision; if we have strong leadership.”

—Jim Kurth, USFWS

other organizational changes occurred, each the result of management seeking improvement in efficiencies and effectiveness.

Organizational change and realignment is inevitable and healthy. In this time of budget challenges, we must take a fresh look at our organizational structure to see if it still makes sense. Our goal must be to align our resources to efficiently deliver on our mission and effectively serve the American people, while staying as lean as possible. Among the questions we must ask: With the benefits of advanced communication technology, does the current headquarters-region-refuge structure still make sense? Do we need eight assistant regional directors, and eight regional program branches? Are there support functions that can be shared among regions? Are there elements of the past area-office concept that make sense today? Are there benefits to managing as a system by having similar organizational alignment in the field, regions and headquarters office? Can we reduce redundancies by having regions share programmatic expertise? How can we realign to find synergy and efficiency so that conservation planning and design efforts are integrated and our conservation delivery most efficient? Since refuges need to work beyond their boundaries, should they have the organizational reach of the Partners for Fish and Wildlife staff? These and other questions deserve serious consideration. The time is right for a new generation of leaders to find ways to better manage refuges as a system, while increasing our organizational efficiencies.



Recommendation 21: Assemble an evaluation team consisting of Service and Refuge System leaders to report to the Service Directorate on opportunities for organizational realignments or programmatic efficiencies.

Succession Isn't Just for Habitats

Several decades ago, the Service recognized the need to diversify its workforce. Capitalizing on the cadre of women with biological backgrounds and training, the Service became a more inclusive workforce. Today, however, we still do not reflect the diversity of America. We are an overwhelmingly white and aging organization that struggles with being relevant in this rapidly changing society. We acknowledge and celebrate different cultural values and recognize the importance of a workforce that resembles the community in which it exists.

We recognize that the Service will not reflect the diversity of the country by simply setting diversity targets. We must engage and prepare a diverse group of qualified and enthusiastic professionals that want to make the Service and the Refuge System their life's work. We have made progress toward this goal with our student and youth programs, but we need to do better. We must look to our new urban wildlife refuge initiative and national and regional offices located in urban centers as ways to recruit



"You said you wanted a connected conservation constituency...I'm here with a message really to say that the millennial generation is ready take up these challenges."

—Juan Martinez,
Children & Nature Network

and prepare young people from diverse backgrounds for a career in refuges. We must be adaptive and flexible to recruit a workforce that reflects society. In so doing, we aim to not only enhance public support for the Refuge System, but to ensure a workforce of the best and brightest minds.

We recognize that diversity in education, discipline, skills and background is also important. As we transition from an older to a younger workforce, we

must look for ways to transfer knowledge from senior staff. As part of this succession, we will value diversity of people and skills to create a culture of inclusivity.

Recommendation 22: *Within the next 10 years, make our workforce match the diversity in the civilian labor workforce. Recruit and retain a workforce that reflects the ethnic, age, socioeconomic and cultural backgrounds, and language diversity of contemporary America.*

Leadership

In *Fulfilling the Promise*, a detailed history of leadership in the Refuge System and several specific issues and solutions were set forth. While some of these recommendations have been implemented, little progress has

been made on others—and in some cases, due to economic and other challenges, we have actually lost ground. The economic downturn and associated housing crisis have made mobility in the workforce a daunting challenge. Aggressive workforce planning efforts, required to address reduced budgets, have resulted in fewer entry-level management positions.

We do not need to rewrite *Fulfilling the Promise*, nor reiterate the leadership challenges and recommendations that are essentially unchanged in 13 years. Instead, we must re-commit to the timeless principles of leadership set forth in that document and build from that foundation.

Recommendation 23: *Revisit Fulfilling the Promise and seek innovative ways to address the recommendations therein to reinvigorate our commitment to leadership development.*

Successful leaders focus on what they can do, what they can contribute and how they can make things better regardless



of the circumstances in which they find themselves. This inner focus, self-awareness and confidence drives leaders to accept increasingly greater challenges.



“The challenge lies before us—to be the conservation leaders that are needed today and to create conservation leaders of tomorrow.”

—Rebekah Martin, USFWS

We must equip our workforce at every level with the tools necessary to be effective leaders. To do so, we must provide them with the mindset, skills, experiences, abilities and confidence to know that everyone can make a difference in our organization and in the greater conservation cause.

This does not mean we all must aspire to rise to the top. It does mean that we must aspire to do the absolute best we can in whatever circumstances we find ourselves. We must create an environment where every employee can succeed and contribute regardless of their grade,

organizational position or geographic location.

The Refuge System deserves excellence in leadership. We have admittedly lamented at times that Refuge System employees don't either aspire to or attain higher levels of responsibility in the Service; but leaders focus on what they can do. What we can do, and what we must do, is prepare our employees to be leaders in every job they hold.

Recommendation 24: *Develop and mentor Refuge System employees so they are fully equipped to accept the responsibilities of leadership at all levels in the Service.*

A Renewed Commitment to Our Guiding Principles

One of the most important responsibilities of our leaders is to articulate the principles that guide our work, to teach these principles to new employees and ensure they are followed. As a generation of our leaders retires, we need to ensure that our guiding principles, or core values, set forth more than a decade ago are handed down to the next generation of leaders and employees.

Among these principles, one of the most significant but difficult to define is Aldo Leopold's land ethic. In his classic book *A Sand County Almanac*, Leopold devotes a chapter to laying out his vision of the land ethic. In it, he offers a sharp counterpoint to the then-prevailing view of absolute human dominion over nature. He places humans not at the top of a natural resources pyramid, but in a circle with wild animals, plants and other elements of the natural world.

Leopold writes, “A land ethic of course cannot prevent the alteration, management, and use of these resources, but it does affirm their right to continued existence, and, at least in spots, their continued existence in a natural state.”

We reaffirm our commitment to our guiding principles and introduce a new principle to highlight our commitment to science.

Guiding Principles

We are land stewards, guided by Aldo Leopold's teachings that land is a community of life and that love and respect for the land is an extension of ethics. We seek to reflect that land ethic in our stewardship and to instill it in others.

Wild lands and the perpetuation of diverse and abundant wildlife are essential to the quality of the American life.

We are public servants. We owe our employers, the American people, hard work, integrity, fairness and a voice in the protection of their trust resources.

Management, ranging from preservation to active manipulation of habitats and populations, is necessary to achieve Refuge System and U.S. Fish and Wildlife Service missions.

Wildlife-dependent uses involving hunting, fishing, wildlife observation, photography, interpretation and education, when compatible, are legitimate and appropriate uses of the Refuge System.

Partnerships with those who want to help us meet our mission are welcome and indeed essential.

Employees are our most valuable resource. They are respected and deserve an empowering, mentoring and caring work environment.

We respect the rights, beliefs and opinions of our neighbors.

We are a science-based organization. We subscribe to the highest standards of scientific integrity and reflect this commitment in the design, delivery and evaluation of all of our work.



Mission Statement

The mission of the National Wildlife Refuge System is 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.



A Final Call to Action

Conserving the Future was written by you and for you—the next generation of conservation leaders. It is one more chapter in the story of the National Wildlife Refuge System. This story began when the last century was new with a few small marks on our nation's map, staking a claim for the future of wildlife. This story is built upon the idea that the preservation of America's fish and wildlife must be a part of our shared future. This tale has always been one of optimism, innovation and vision. Now this story compels you to add your own chapter and take your place among a long line of conservation heroes.

Which challenges will you accept, and which future will you make?



Acknowledgements

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Conserving the Future: Wildlife Refuges and the Next Generation



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Page 14: USFWS. *Ernest Greenwalt, refuge manager at Wichita NWR near Cache, Oklahoma, uses portable radio in 1948. Toni Westland, refuge manager at J.N. “Ding” Darling NWR sends a text with a volunteer and energy efficient vehicle.* (top)

Page 14: USFWS. *Warden Paul Kroegel, with pelican on Pelican Island.*

Page 15: USFWS. *Ira Gabrielson, first director of the Fish and Wildlife Service, aiding in a migratory waterfowl survey. Recovery efforts for pelicans after Deepwater Horizon oil spoil.* (bottom)

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Page 22: USFWS. *A heron at the USGS National Wetlands Research Center in Louisiana.*

Page 23: Sandra Noll, c/o NWRA. *Moose and Calf in Kenai NWR in Alaska.*

Page 24-25: Kathleen Schleener, USFWS. *Visitor in an all-terrain wheelchair.*

Page 24: Roger Smith, c/o NWRA. *Sky glowing behind cypress trees in Norubee NWR.*

Page 25: USFWS. *Spider web.*

Page 27: V. Adams, Texas Parks & Wildlife Department. *Kitchen Creek drains into Caddo Lake just north of Caddo Lake NWR.*

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- Page 29:** Nick Miller, Creative Commons. *Prairie violet at Neal Smith NWR.*
- Page 30-31:** USFWS. *Partners for Fish and Wildlife Program staff meet with individual private landowners.*
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- Page 32-33:** Karyn Rode, USFWS. *Biologist tranquilizes polar bear near Arctic NWR.*
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- Page 38:** George Gentry, USFWS. *Fish and Wildlife Service worker driving large equipment at J.N. "Ding" Darling NWR.*
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- Page 41:** USFWS. *Bald eagle.*
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- Page 44-45:** USFWS. *Bison at the National Bison Range in Montana.*
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- Page 46:** Tom Koerner, USFWS. *A silvery blue butterfly feeds on a milk vetch plant in the Dakota Grassland Conservation Area.*
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- Page 56-57:** Lou Kellenberger. *"Nature's Classroom" environmental education building at St. Marks NWR.*
- Page 57:** USFWS. *John Heinz NWR, with Philadelphia in the background.*
- Page 58-59:** Lamar Gore, USFWS. *Kayaking at Rachel Carson NWR in Maine.*
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Page 60: USFWS. *USFWS Director Dan Ashe “tweeting” from a social media station with a youth volunteer at the Conserving the Future conference.*

Page 61: Steve Hillebrand, USFWS. *Wildlife photographers at Cape Romain NWR.*

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Page 65: USFWS. *Fly fishing at Kenai NWR in Alaska.*

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Page 70-71: USFWS. *Ash Meadows NWR in Nevada.*

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Page 71: Ian Shive. *Yellow flowers and a shed by the water at Don Edwards NWR.*

Page 72-72: Steve Hillebrand, USFWS. *The sunset over the Chincoteague NWR.*

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Page 74-75: USFWS. *Mt. Cleveland, Chuginadak Island.*

Page 74: Cynthia Martinez, USFWS. *Marcus Young working hard at Moapa NWR.*

Page 76-77: Tom Koerner, USFWS. *Dakota Grasslands Conservation Area.*

Page 78-79: USFWS. *Castle Rock in California.*

Page 80-81: Ian Shive. *Refuge manager looking at the stars in Guadalupe-Nipomo Dunes NWR at night.*

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This visual is designed to graphically capture the diverse concepts, constituencies, and ideas in the Conserving the Future vision. Achieving this renewed vision for the National Wildlife Refuge System will require breaking down the barriers to communication in our efforts to connect our visitors to the natural world on national wildlife refuges. Download this visual and other graphics from the Conserving the Future conference online at <http://www.AmericasWildlife.org/vision>. Alchemy: The Art of Transforming Business is a business strategy consulting firm with graphic illustrators with offices in Denver and London.

