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American crocodiles are threatened but no longer endangered.



Snowy egret at Chincoteague National Wildlife Refuge in Virginia (Ched Bradley)

This issue of Refuge Update

celebrates the 10th anniversary of the Refuge Improvement Act, which established the mission of the National Wildlife Refuge System: “To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

RefugeUpdate

September/October 2007 Vol 4, No 5

Friends Academy: “This Has Been Extraordinary”



The first Friends Refuge Academy, held July 22-25 at the National Conservation Training Center, brought together 19 Friends representing 24 organizations. For a full identification of those in the photo, please turn to page 24.

Nineteen refuge Friends, representing 24 Friends organizations, became immediately immersed in learning, sharing and networking during the first-ever Friends Academy July 22-25 at the National Conservation Training Center (NCTC). They participated in nearly 25 formal workshops, and took full advantage of planning that put them at the training center during the same week that the Advanced Refuge Academy brought seasoned refuge managers there. The first Academy will be a model for what could well become an annual institution.

One Friends participant drove to West Virginia from California, stopping at 18 refuges on the way. He planned to stop at 17 more on the way home. Another came from Indiana to represent the Friends of Midway Atoll National Wildlife Refuge, whose 300 members come from across the country. These

Friends returned to their refuges knowing more about the complexity of the Refuge System and how refuge managers deal with that complexity on a day-to-day basis.

“I feel I can be more a part of it because I understand more,” said Ann Fournier with the Friends of Iroquois National Wildlife Refuge in New York. “I also took away real confidence in what the Fish and Wildlife Service is doing to protect the refuges. These people are thinking ahead.”

The Value of Face-to-Face Dialogue

The agenda covered everything from strategic planning and law enforcement to habitat loss, invasive species, climate change, land acquisition and water quality. Tom Murray, president of Friends of Florida Panther National Wildlife Refuge, said, “I went from not knowing anything about the Master Naturalists program to having a contact in the Florida. There’s no way to collect

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H. Dale Hall

From the Director Commitment to a Common Mission

In 1997, when the National Wildlife Refuge System Improvement Act became law, I was Deputy Regional Director for the Southeast Region. I remember being excited that the Refuge System would have an “organic” act that would give us a stated mission and a cohesive system like those of other federal public lands systems.

As many of the articles in this *Refuge Update* recall, before the Refuge Improvement Act, the Refuge System was not quite a true “system.” Some units were established as game ranges. Many units had various uses that were inconsistent with each other. In 1997, the Refuge System had more than 92 million acres, but we had no consistent language mandating a common mission or management policy.

Those who have worked for the Refuge System for many years recall a Departmental Directive issued two

years before the Act was passed that delineated guiding principles. However, that Directive was implemented without the basic organic legislation that was needed to define the management of the Refuge System. We all recognized that the Directive wasn’t enough.

Today, we can take pride that the Refuge System truly operates as one unified system. The U.S. Fish and Wildlife Service’s regions approach Refuge System issues in a uniform manner, giving us the management consistency that was absent a decade ago. That consistency has increased our credibility with the American public.

Not everything has been solved with the Refuge Improvement Act, but what has happened since its passage is important. We now have policies on appropriate uses; mission, goals and purposes; and wildlife dependent recreation.

We’ve improved our cooperative working relationship with state governments. We’ve made good progress on writing Comprehensive Conservation Plans for many refuges, and we have a plan to complete all of them by 2012. The scope and availability of wildlife-dependent recreation, mentioned prominently in the Act, has created Refuge System supporters among people who didn’t really understand the value of national wildlife refuges until they visited one.

The key to the success of the Refuge Improvement Act is its importance to our common, stated mission. Together we work to protect the country’s natural resources, and to invest citizens with a greater understanding and appreciation of America’s wild creatures and places. Our unifying ideals are encompassed in the Refuge Improvement Act, and I am happy to join in celebrating an important milestone anniversary. ♦



Geoff Haskett

Chief’s Corner Consistent Vision in Changing Environment

In 1997, the stars seemed to be aligned in just the right way for the Refuge System.

Congress passed the National Wildlife Refuge System Improvement Act with overwhelming bipartisan support. We had budget surpluses that we hoped would allow us to do the job set out by the Refuge Improvement Act. And with the Act’s strong direction, the leaders of the Refuge System gathered at Keystone, Colorado, in October 1998 to chart a future course, ultimately detailed in a document aptly named *Fulfilling the Promise*.

Hundreds of people, assembled as the Promises Implementation Team, got to work implementing the vision that became the central focus and strategic direction of the Refuge System. Then, the focus of the country changed with the explosion that was 9-11. In 2003, the Office of Management and Budget (OMB) used its Program Assessment Rating Tool (PART) to review Refuge System operations and maintenance. They found the Refuge System had not demonstrated that it was achieving results, primarily because we did not have a strategic plan that laid out measurable goals.

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RefugeUpdate

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This newsletter is
published on recycled
paper using soy-based
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Searching for Japanese MIAs at Alaska Maritime National Wildlife Refuge

A team of five Japanese and four Americans spent four days in July digging on Attu Island, part of Alaska Maritime National Wildlife Refuge, in search of burial sites and remains of the Japanese soldiers who died in the only land battle of World War II that was fought on North American soil. The expedition brought forth only a bit of leather and two boots containing small bones.

These remains were returned to the original Attu Island gravesite following a small ceremony conducted by the Japanese. Wildlife refuge specialist Kent Sundseth says the Japanese do not intend to identify specific remains but will use the information to determine whether another expedition and further repatriation efforts are warranted.

Attu Island was captured and occupied by the Japanese in 1942, but American forces swarmed the island a year later in a fierce 18-day battle that left 500 Americans and 2,600 Japanese soldiers dead. Twenty-eight Japanese were taken prisoner. The Japanese were buried on Attu in mass graves.

Shortly after the war, 236 sets of Japanese remains were recovered and reburied at Ft. Richardson, near Anchorage. The Japanese later disinterred these remains, cremated them as part of a religious ceremony and reburied them at the same location. In 1953, eight of the original burial sites were located.

Reciprocity and Respect

Earlier this year, the Japanese government assisted American investigators during a visit to Iwo Jima to search for Americans still missing in action from World War II. The American government then agreed to a reciprocal request from the Japanese. As manager of the Aleutian Islands unit of the Alaska Maritime Refuge, Sundseth wrote the



Jarmin Pass on Attu Island in Alaska Maritime National Wildlife Refuge was the site of a fierce battle between Japanese and American troops in World War II. A delegation this summer searched the area for burial sites. (Kent Sundseth/USFWS)

special use permit for the expedition and accompanied the delegation.

Although heavy equipment was used to dig the original graves, only hand tools could be used now because most of the island is a designated wilderness area. “It was tough, rocky digging,” said Sundseth, “but we knew we were in the right place because the vegetation on the surface was markedly different.” Sundseth says Japanese battle trenches were also visible in the now placid landscape.

Sundseth had no idea what to expect when this expedition began. “It was important to show respect,” added Sundseth, who said the Japanese did indeed want the active participation of everyone in the delegation, including 10 volunteers from the island’s Coast Guard station, which provided housing. Digging on at least one day continued until almost midnight. The group also inspected a peace monument erected by the Japanese

in 1987 as a memorial to soldiers of all nations lost in the North Pacific.

The delegation returned from Attu to Kodiak on July 14 but it wasn’t the last of World War II for Sundseth. He also visited Kiska Island over the summer, a national historic landmark and the only other Aleutian island occupied by the Japanese, where he assisted with an inventory of Japanese firearms and six-inch guns. “Alaska Maritime Refuge is loaded with cultural resources,” explained Sundseth, “and we are especially rich in resources from prehistoric times and World War II.” ♦

Two Years Post Hurricane

Louisiana Refuges Show Signs of Life and Loss

“We’re hanging on and we’re coming back,” says Byron Fortier, supervisory park ranger of Southeast Louisiana Refuges Complex, referring to the continuing recovery from the 2005 hurricane season. Alligator nesting is up eight-fold since last year’s post-hurricane low in Louisiana. Moist soil plants abounded last fall, setting the stage for large numbers of wintering waterfowl and other migratory birds. Fresh water fishing was affected by salt water intrusion and drought following the storms, but anglers have been catching bass and other species in the freshwater impoundments at Lacassine and Sabine National Wildlife Refuges.

All refuges are now open to public access although some facilities at Sabine and Bayou Sauvage National Wildlife Refuges are still being repaired. The visitor center and offices at Cameron Prairie National Wildlife Refuge were open intermittently but are now closed to complete interior repairs. Within the next year, a two-mile stretch of the Bayou Sauvage waterway will be dredged for canoeing and fishing. A bike path at the refuge will eventually be open only to dirt bikes because the asphalt surface required by street bikes was damaged during the storm.

Waterfowl populations are down about 75 percent at Bayou Sauvage National Wildlife Refuge because of the loss of freshwater marshes. In some cases, the storm brought unwanted wildlife – feral pigs to Bayou Sauvage and Big Branch Marsh, an explosion of Chinese tallow at Bayou Sauvage Refuge when the hurricane opened the forest to sunlight.

Slow Recovery at Breton

Long term wildlife impacts have been most severe at Breton National Wildlife Refuge, where the chain of barrier islands was reduced in size and elevation. Before Hurricane Katrina, there were 6,000-8,000 brown pelican nests each year. In 2006, there were only 700 nests



Moist soil plants abounded last fall, setting the stage for large numbers of wintering waterfowl like the roseate spoonbill to return to Cameron Prairie National Wildlife Refuge in Louisiana. (Diane Borden-Billiot/USFWS)

but by this year, there were 3,000 nests. The nest sites are more vulnerable because of the lower elevation. The U.S. Geological Survey is studying the feasibility of restoring the Breton habitat either by mechanical means or through natural regeneration.

At Big Branch Marsh, red-cockaded woodpecker foraging and nesting habitat was affected by the loss of approximately 1,300 acres of forest. Artificial nest cavities were created to encourage the birds, but the number of family groups was down by about a third. It will take 20-30 years for the foraging habitat to recover and double that to recreate suitable nesting habitat.

And Then There Are the People...

It took fifteen months for Fortier to repair the damage to his home from Hurricane Katrina. He spent most of that time living on the second floor and using a kitchen in an adjacent Service trailer. Most staff are back in permanent housing now and Fortier is proud to say none left

the Complex or the Service because of the hurricane.

A heroic effort to rejuvenate the Friends of Louisiana Wildlife Refuges by its president Jim Schmidt brought membership up to 70 from a low of 20 right after the storm. Half the board resigned because of overwhelming personal issues and 75 percent of the first membership mailing was undeliverable six months after the storm. Now Schmidt is organizing “work and play” days, with boat trips to Delta National Wildlife Refuge and other member-only excursions as an incentive.

Visitors are slowly rebounding too. Bayou Sauvage – which once hosted 25,000 to 30,000 visitors a year and closed for a full year after Hurricane Katrina – is back up to 5,000 visitors. “I’m betting the rest will be back as well,” says Fortier. ♦

Kodiak Brown Bears

A Peek Inside Their Genes

by William B. Leacock

The Kodiak Archipelago is home to nearly 3,500 of the most magnificent brown bears in the world.

It is here that Kodiak National Wildlife Refuge was established in 1941, primarily to protect these national treasures.

Kodiak brown bears have long been classified as a distinct subspecies, *Ursus arctos middendorffi*, one of two currently recognized brown bear subspecies in North America.

Recent breakthroughs have allowed biologists to peek at the genes of the Kodiak brown bear to investigate a host of questions. Are concerns about genetic diversity warranted? Does their isolation leave the bears more vulnerable to environmental disruptions, particularly if they have low levels of genetic diversity? Are they really that different from other brown bears? Is there interbreeding between bears on Afognak and Kodiak Islands?

To address these questions, staff at Kodiak National Wildlife Refuge initiated a study in 2004 in cooperation with the U.S. Geological Survey's Alaska Science Center (ACS) and the Alaska Department of Fish & Game (ADF&G). The ACS Conservation Genetics Laboratory examined samples from nearly 300 bears.

Low Genetic Diversity

The study confirmed that brown bears of the Kodiak archipelago have the lowest nuclear genetic diversity of any documented brown bear population in North America. This suggests that the population was probably founded by a small number of bears, and that it has been isolated from populations on the Alaska mainland, probably since the end of the last ice age 10,000-12,000 years ago. Genetic data also suggest that movement of bears between Kodiak and Afognak, the two main islands in the archipelago, is so limited that Afognak's

bruins comprise a distinct population from those on Kodiak Island.

In addition, although all bears are quite capable of traveling great distances, daughters tend to set up house close to their mothers. Males, on the other hand, tend to disperse widely and breed with females from other lineages.

Examination of a gene thought to govern immune response showed extremely low levels of variation of the Kodiak brown bear. This could indicate that Kodiak bears have a limited capacity to fight new diseases introduced to the island. For now, the archipelago's populations are considered healthy and show no physical or genetic signs of inbreeding or decreased fitness.

One of the main motivations for this study was to see if we could use genetic analysis to estimate more accurately the size of the bear population on Afognak, where heavy forest cover makes accurate aerial surveys virtually impossible. Unfortunately, given the low genetic variation we observed, population estimation using genetic tagging is not possible.

Although the patterns of genetic diversity seen in Kodiak bears were a bit unusual, genetic evidence provides virtually no support for the animal's subspecies designation. Nevertheless, Kodiak bears possess unique physical characteristics and, like other isolated populations, will likely diverge from mainland populations over time. Regardless of questions concerning their status as a subspecies, biologists continue to consider the Kodiak brown bear as a population of special value.

Among the world's studied populations, Kodiak brown bears appear to be most closely related to populations in western Alaska, the Alaska Peninsula and Siberia. A more detailed and thorough analysis of brown bear populations within the North Pacific Rim has been initiated in cooperation with the Northern Forum Brown Bear Working Group (http://www.northernforum.org/servlet/content/brown_bear.html). ♦

William Leacock is a wildlife biologist at Kodiak National Wildlife Refuge.



New genetic research suggests that brown bears of the Kodiak archipelago in Alaska have probably been isolated from the mainland since the end of the last Ice Age 10,000 to 12,000 years ago. (USFWS)

Harold Burgess – 33 years Paid, 11,839 Hours Unpaid

Harold Burgess worked for the National Wildlife Refuge System for 33 years across five states. In 1980 he retired. Well, not really.

Over the next 27 years, Burgess donated 11,839 hours to the Refuge System. “That’s the equivalent of having one full-time person work nearly six years,” said Jodi Stroklund, refuge manager for the Santa Ana National Wildlife Refuge in Texas, the beneficiary of many of those volunteer hours. On June 6, Burgess officially retired from volunteer service – and celebrated his 90th birthday.

Burgess remains physically and mentally agile, says Bryan Winton, manager of Lower Rio Grande Valley National Wildlife Refuge in Texas, who learned his way around the refuge by going out with Burgess. Winton was a 35-year-old assistant manager, Burgess an 82-year-old volunteer. “I learned to get out of the office and go get dirty,” said Winton.

Together Winton and Burgess would remove bees from nest boxes. “He was always pointing out where we needed to do work,” recalls Winton. “He knew where roads were that you couldn’t find because they had grown closed. There were always additional work assignments after a day out with Harold...we weren’t always keeping up with things as well as he thought we should.”

Meeting the Trumpeter Swan and J. Clark Salyer

Burgess spent most of his career in the upper Midwest, at refuges like Upper Mississippi River, Lacreek and Squaw Creek, where he is particularly proud of his efforts to restore the trumpeter swan. “I learned about this bird as a student at Michigan State,” says Burgess, “and once I saw and heard the bird, it became a symbol to me. I was always interested in it.” In 2001, he and his wife Ruth were honored for their efforts by the Trumpeter Swan Society, receiving a “standing ovation from my peers, their families and many international swan scientists. We were thrilled.”

J. Clark Salyer II, the first chief of the Refuge System, once called Burgess to his Washington office to find out what was happening at Lacreek Refuge in South Dakota where Burgess was manager. “Salyer was already blind,” Burgess recalls, “but he knew all about Lacreek and remembered every tree and habitat he’d ever seen. He asked lots of questions.”

An avid outdoorsman and supporter of wildlife conservation, Burgess was twice president of the Trumpeter Swan Society; he contributed to the *Breeding Bird Atlas* published by the University of Texas and received numerous awards, including the Department of the Interior’s Take Pride in America Award. He also wrote and self-published a book about his work experience with the Service and plans to write another book about his retirement years.

Volunteering Without the Swans

Retiring to Texas because his arthritis demanded gentler weather, Burgess is feisty when asked about the lack of trumpeter swans in South Texas. “The swans wanted to be there, but Texas wasn’t interested...no one identified the birds or protected their habitat.”

Identifying and counting birds and other wildlife filled many of Burgess’ volunteer hours in Texas. Lower Rio Grande Valley Refuge covers four counties and Winton says there are never enough people to do baseline inventories. Burgess filled that niche, traveling the territory in a refuge vehicle until his eyesight began



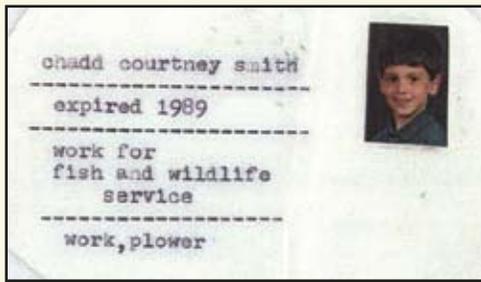
On June 6, Harold Burgess celebrated his 90th birthday and officially retired from volunteer service, having donated more than 11,000 hours to the Refuge System, in addition to 33 years as a full-time refuge biologist and manager. (USFWS)

failing – and then continuing to drive his own vehicle for several more years. “You couldn’t discourage him in any way,” said Winton with a laugh.

“The main thing I found most satisfying was the volunteer work I did with the black-bellied whistling ducks,” recalls Burgess. “That duck is as close to a swan as there is and I am especially partial to swans.”

Burgess says he will continue to help with bird counts. His own life list includes 511 birds in the United States and another 87 recorded while working briefly as a rubber farmer in the West African country of Liberia. He told a local Texas newspaper that he enjoyed volunteering for the Refuge System more than working. “I don’t have any boss. I just go ahead and do it.” ♦

A Man and His Tractor: Saving Shorebirds in Hawaii



“When I manipulate a pond and get a growth cycle with the vegetation I want, then I’m like a kid at Christmas. The birds come very quickly. Every time I go by, I’m counting birds.”

That’s Chadd Smith talking about his work today. But in many ways, Smith, a heavy equipment operator at Kauai Refuge Complex in Hawaii, has been flooding ponds ever since he was a young boy – when he built dikes around the grass in his backyard. His father Carey, a retired regional refuge biologist, recalls that “neighbors then were not too happy with Chadd’s ‘career choice’ because he would run the hose for days to create wetlands in our subdivision.”

The senior Smith also remembers that his son was “always most impressed with the folks who do the real work on refuges – the equipment operators.” In third grade, when he was told to create an identification card for the job he wanted as an adult, the card showed him as a “plover” for the U.S. Fish and Wildlife Service. Twenty-two years later, Smith is living that dream. “I could be working for a construction company, desecrating habitat and building roads and apartment complexes. Now I’m helping to build habitat for native birds. That’s the appeal.”

Passionate about saving endangered shorebirds in his home state of Hawaii, Smith says working as an equipment operator “is as close to biology as I could be without being a biologist,” adding that he’s just “not a college type of person.” He spent two years volunteering full-time at Kauai Refuge before becoming an employee, and his father remembers that “switching from the blue to the brown shirt was his proudest day.”

Bull Frogs and Flap Gates

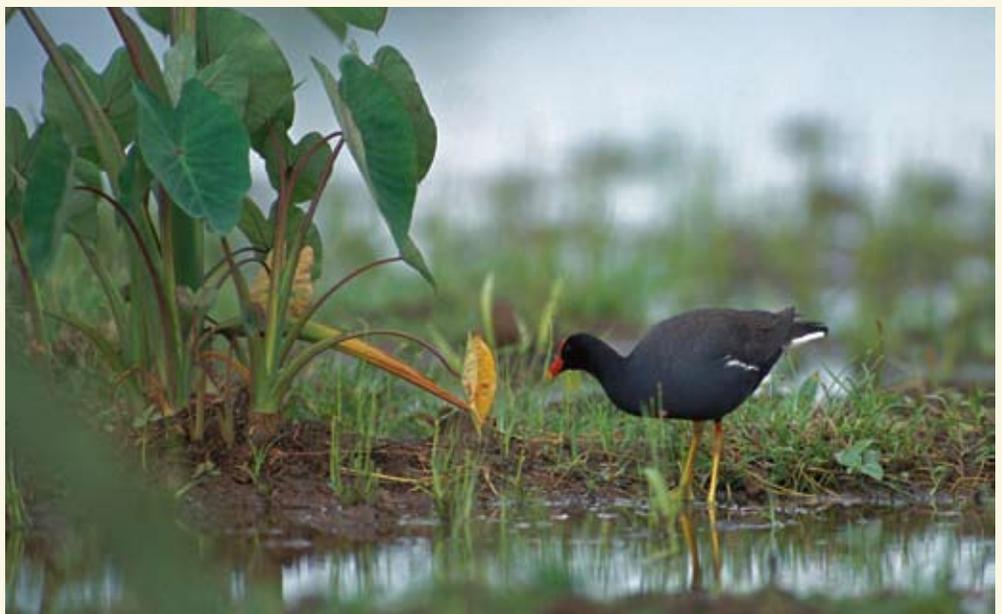
Smith’s workday includes mowing, tilling, controlling invasive species (including feral pigs), preparing fields for native wetland vegetation – and problem-solving. His supervisor, Michael Mitchell (Kauai Refuge deputy manager) says Smith is able to think about the wetland system as a whole and come up with practical ideas to solve problems. He designed a bull frog trap to keep the predators out of nesting areas for endangered water birds like moorhen chicks and stilts. Smith also devised special flap gates for an impoundment unit. A valve on the gate allows tidal water to enter the ponds in addition to fresh water, bringing in brine shrimp for the stilts. Both the bull frog trap and the flap gates have improved fledgling success at Kauai Refuge, according to Mitchell.

Smith was also a key participant in a habitat management planning meeting that normally includes only wetlands experts, biologists and managers. “Wetland management is much an art as a science,” explains Mitchell. “Chadd knows the art. He is not scared to try different treatments. He helps choose the location of management sites and

the rotation schedule for different treatments on those units.”

Mitchell sees Smith’s passion when he goes out long after normal working hours to watch the birds come in. “He gets re-energized seeing the tangible results of his labor.” Living as well as working on the refuge, Smith has also developed good relations with neighboring farmers. There are nine farmers growing taro as a commercial crop on refuge land. “When I go after the feral pigs that eat the taro, I’m helping those farmers,” says Smith, “and their fields provide weeds – native sedges – that are a food source for the shorebirds.”

Mitchell has long been impressed with Smith’s vision and goals for the refuge. Asked about his career objectives during a recent performance review, Smith said that his goal was the removal of waterbirds – the Hawaiian stilt, the Hawaiian moorhen, the Hawaiian coot and the koloa or Hawaiian duck – from being considered endangered, at least on the refuge. “If I could have a full career with the Fish and Wildlife Service and get the native Hawaiian duck off that endangered list,” says Smith, “I’d be happy.” ♦



One of heavy equipment operator Chadd Smith’s career objectives is protection of endangered waterbirds like the Hawaiian moorhen at Kauai Refuge Complex in Hawaii. Hawaiian legend says the moorhen - or ‘Alae ‘ula - brought fire to the Hawaiian people. (John and Karen Hollingsworth/USFWS)

FOCUS . . . *On Refuge*

Diplomacy, Leadership, Compromise

It Took All Three to Make a Law

by Dan Ashe

Not long after joining the U.S. Fish and Wildlife Service in 1995, I walked into the office of then Director Mollie Beattie, now deceased, the evening before she was to testify before Chairman Don Young of Alaska and the House Resources Committee on the subject of organic legislation for the National Wildlife Refuge System. She was scribbling intently. It is, perhaps, my most vivid and lasting memory of her. She was not just rearranging her testimony; she was redefining it, out of deep concern about the House legislation and its attempt to elevate uses (principally hunting and fishing) to purposes of the Refuge System.

She was searching for a way to make the Committee members understand that the purpose of a refuge, and the Refuge System, must be singular – wildlife conservation. She believed that uses, even wildlife dependent uses like hunting and fishing, must be distinct from purpose and subservient to it. That evening, I believe, was the beginning of the successful road toward compromise that became the National Wildlife Refuge System Improvement Act.

Mollie Beattie scripted the political position that refuge uses should not be elevated to refuge purposes, and that any legislation embodying such a concept should be vetoed by the President. For this, she was ridiculed by many members of the House Resources Committee and by many recreational constituencies, some of whom testified in support of the proposed legislation. She lost overwhelmingly in the House of Representatives, but she built a firebreak with the national media, which lambasted the House-passed legislation. Then, she lit a successful backfire with Senator John Chafee of Rhode Island, also now

deceased, who was chairman of the Senate Committee on Environment and Public Works. He became her unflinching ally. The legislation was stymied.

Mollie soon fell ill with cancer and would never resume leadership of this battle. But as she withdrew, she enlisted the passionate support and commitment of former Interior Secretary Bruce Babbitt. As he prepared to testify in the next round before Chairman Young's committee, he also earned distinction in my memory with these words (which I am paraphrasing): *I feel as if I am playing a role in a Kabuki drama. I will fulfill my commitment to Mollie, and I will vigorously deliver this veto threat, but I want you to arrange a meeting with Chairman Young, immediately after my testimony, so that he and I can begin an effort to bridge these differences.*

Bridging the Differences

Kabuki is highly stylized theatre known for the elaborate makeup worn by its performers. I never had opportunity or courage to ask exactly what the Secretary meant, but I understood that he wanted something different. I believe that the Secretary was telling us that he would wear his veto makeup and play his dramatic role temporarily, but that he would not stay this course of conflict without at least trying to bridge the differences. He would not play to a stalemate between the House and Senate.

To those of us who had been engaged in this struggle for several years, the thought of impromptu discussions with Chairman Young seemed almost naïve. Both armies were firmly entrenched and Don Young was commander-in-chief of the opposing forces. To be honest, I was more than a bit relieved when Chairman Young's staff rebuffed the idea of a meeting following the Secretary's



*Arapaho National Wildlife Refuge in Colorado
(Karen Hollingsworth/USWS)*

*“Give us clear vision,
that we may know
where to stand and
what to stand for
– because unless we
stand for something, we
shall fall for anything.”*

Peter Marshall

Improvement Act

testimony. But then serendipity, or fate, or destiny took over.

As we were waiting by the elevator to ride down, the doors opened and there stood Chairman Young, who had left the hearing earlier and was now on his way to the House floor for a vote. I was shocked when Chairman Young immediately and enthusiastically accepted Secretary Babbitt's invitation for negotiations.

The Secretary was insistent that the negotiations be limited to a small and select group, and that the discussions take place in his office. He restricted the Service to two representatives; I was fortunate and honored to join then acting-Director John Rogers. The others included Secretary Babbitt; Deputy Assistant Secretary Donald Barry; Harry Burroughs, majority staff, House Resources Committee; Chris Mann, minority staff, House Resources Committee; Max Peterson and Gary Taylor; Association of Fish and Wildlife Agencies; Dan Beard, Audubon Society; Bill Horn, Wildlife Legislative Fund; and Rollie Sparrow, Wildlife Management Institute.

Secretary Babbitt insisted that we negotiate with just the House – since only they had passed legislation – and that the environmental and recreational interests be limited to only one representative each. These were shrewd decisions, and he instructed the participants that they would be responsible for selling the ultimate product to their larger communities. If the negotiations succeeded, then we would all deal collectively with the Senate.

Personal Focus of the Secretary

The negotiations took place over a period of about six to eight weeks. The group met weekly with the Secretary. He showed no end of patience for discussion, but absolutely no tolerance for posturing. He asked each party to identify the single most important thing that they needed to get from the negotiations. Ours was that the conservation purpose of the Refuge System must be singular and superior. Bill Horn's was that

hunting and fishing have unique status and should not be treated the same as other uses, like grazing and mining. All of a sudden, it seemed that we could reach agreement around the concept of priority public uses that we had earlier outlined in an Executive Order.

I was amazed at how the personal focus and attention of a cabinet secretary could lend an air of seriousness and maturity to the discussions. Issue-by-issue, meeting-by-meeting, disagreements were resolved. For me, it was a subject lesson in the kind of skillful diplomacy that author Daniele Varè called, "The art of letting someone else have your way."

The final deal was cemented during a meeting in the office of Congressman John Dingell of Michigan. Congressmen Young, George Miller of California and Jim Saxton of New Jersey attended. We dodged a few minor landmines but the meeting ended with handshakes and backslaps. A few weeks later, the new legislation passed the House of Representatives, with only one member voting against – Congressman Ron Paul of Texas.

Blue Goose Pin in Center

The Senate was not particularly pleased to be handed a *fait accompli*, but Chairman Chafee proved true to his allegiance with Mollie Beattie and quickly moved the legislation. Despite protestations from a few interest groups – such as utilities and mosquito control agencies, Senator Dirk Kempthorne of Idaho, chairman of the relevant subcommittee, agreed to move the legislation with only a few very minor amendments. Senate Majority Leader Trent Lott of Mississippi agreed to schedule the bill for consideration.

The bill passed and was signed by President Bill Clinton on October 9, 1997, in an Oval Office ceremony that I was privileged to attend along with the Secretary, Director Jamie Clark, Assistant Secretary Don Barry and other dignitaries. We desperately wanted someone who had actually managed a refuge to attend. At the last minute, I

enlisted the help of an old colleague who was then the President's scheduling assistant – Jennifer Palmieri – and we got one more person into the Oval Office. We invited Steve Thompson, now California-Nevada Operations manager, because he, along with others in the then-Division of Refuges, had played an invaluable role. (Ask Steve to tell you the story of his journey into the Oval Office.)

In the Oval Office, there was a small table along the wall next to the President's desk. It had a collection of pins and buttons. I removed the Blue Goose pin from my lapel and laid it carefully in the middle of the collection.

As I recall the events of a decade ago, it seems distant and almost surreal, but it was one of the most intense and rewarding periods of my career. I was in the presence of distinguished public figures and debating issues of incredible importance. Every meeting, and every word in every meeting, was consequential. I witnessed tremendous courage in Mollie Beattie's principled and determined stand. Because of her leadership, we had clear vision and knew where to stand and what to stand for. I saw almost magical diplomacy on the part of Secretary Babbitt. I saw Congressman Don Young accept an adversary's offer made in good faith. I saw enemies in a long battle climb from their trenches, abandon their armaments, and find the path to agreement.

The monument to this effort is a law that continues to guide purposeful stewardship of America's National Wildlife Refuge System. It also reflects the good faith and hard work that the entire Service and all of our friends and partners have invested in implementing this landmark law, which recalls for me Thomas Carlyle's adage that, "Conviction is worthless unless it is converted into conduct." ♦

Dan Ashe is the Service science advisor and a former chief of the National Wildlife Refuge System.

FOCUS . . . *On Refuge*

10 Years of Improvement

Let's Aim for 10 more

by Congressman Jim Saxton

America's National Wildlife Refuge System is the world standard when it comes to wildlife habitat networks. In addition to providing places where flora and fauna can prosper, people can benefit, too. We can hike, fish, canoe and do other outdoor recreational activities. Refuges are also economic engines that generate over \$1.4 billion annually to support local economies.

It indeed is a unique national resource. Ten years ago, as chairman of the House Subcommittee on Fisheries Conservation, Wildlife and Oceans, I had high hopes when Congress passed the National Wildlife Refuge System Improvement Act of 1997.



Swallowtail butterfly at Edwin B. Forsythe National Wildlife Refuge in New Jersey

The Improvement Act gave the Refuge System a clear mission and directed that every refuge be managed to pursue the mission, leading to better overall management that would achieve local, regional, national and international goals. The law required each refuge to produce

Refuges Say Welcome!



Birdwatching at Santa Ana National Wildlife Refuge in Texas (USFWS)

In the early years of the National Wildlife Refuge System, visitors were rare. By the 1920s, some refuges were opened to hunting and fishing. By 1960, the Refuge System was seeing more than 10 million visitors each year and by 2004, the number had climbed to 39 million.

The National Wildlife Refuge System

Improvement Act was the first legislation to state explicitly that compatible wildlife-dependent recreation should not only receive priority consideration in

refuge planning and management, but that it is "directly related to the mission of the National Wildlife Refuge System." The Act is also the first to name the "Big Six" priority public uses – hunting, fishing, wildlife observation and photography, environmental education and interpretation.

Kevin Kilcullen, chief of visitor services for the Refuge System, observes, "We had never articulated through the mission that the purpose of all this conservation is to benefit the American public, and one way to engage them is to give them direct access to refuges with quality programs and nice, safe facilities." Many of them are called Visitor Enhancement Facilities, or VFEs.

Is Your VFE on the List?

The criteria for VFEs were developed four years ago with the first infusion

Improvement Act

a Comprehensive Conservation Plan, via a process that allowed frank and open discussions between the refuge and the public.

Since the passage of the Act, we've made some progress on maintenance funding and volunteer programs. However, our refuges face a number of long-term problems that threaten the health of the Refuge System, such as invasive species.

H.R. 767, the "Refuge Ecology Protection, Assistance, and Immediate Response Act," or REPAIR Act, now before Congress begins to address the invasive species crisis in our Refuge System. The bill would provide voluntary REPAIR grants to states, local governments, regional agencies or individuals to fund the planning, execution and maintenance of projects to remove invasive species on the lands and waters in and adjacent to national wildlife refuges.

Many invasive species problems come from outside the refuge where the native plant communities have been disrupted and invasive species fill the habitat voids. It is very important to integrate measures to control invasive species on and off the refuges.

The Improvement Act paved the way for this type of comprehensive legislation.

We have a lot at risk should we fail to act. There are 548 refuges spread out in every state in the union. Every major U.S. city is within a one-hour drive of a refuge. In beautiful rural southern New Jersey, the Edwin B. Forsythe National Wildlife Refuge is home to seal colonies and designated wilderness areas. It is a refuge in every sense of the word that permanently sets aside habitat amid development pressures.

I hope over the next 10 years we can build upon the successes since the Refuge Improvement Act was enacted. ♦



Congressman Jim Saxton is a senior member of the House Natural Resources Committee.

of money for outdoor kiosks. The House Appropriations Committee staff expected the Refuge System to build 25 kiosks at \$50,000 each with that first one million dollar appropriation. "We built 58 kiosks," said Kilcullen, "because we were efficient, we had design standards, and we enlisted partners like Friends groups, states, local communities, Scouts and chambers of commerce."

VFEs include a range of small facilities, but not visitor centers, exhibits and visitor contact stations. Instead, observation decks, signs, historical resources, kiosks, even restrooms are included if they cost less than \$750,000. This year, refuges identified all VFEs they would like to complete through 2013; the projects are prioritized in the Service Asset Maintenance Management System (SAMMS) and Kilcullen says "we have a five- year construction plan with regular funding."

Trails are another ways to get visitors outside. Surveys indicate that 25 percent of all refuge visitors use the trails. Refuge trails must be accessible if they connect facilities. Today, they also tend to include "sustainable practices" so they require minimal maintenance.

Transportation enhancements coordinator Nathan Caldwell explains that now trails are more likely to be contoured along a hill, with a gentler grade and more attention to the water flow. Planners use soil stabilizers to make an accessible trail that doesn't necessarily have to be paved.

The National Wildlife Refuge System is also an active participant in national trail planning and promotion with groups like The Conservation Fund, American Hiking Society, America's Byways Resource Center and other federal agencies. The Forest Service, for example, purchased three tracts of land to buffer the Florida National Scenic

Trail. The tracts became part of St. Marks National Wildlife Refuge, where they increase the protected acreage for wildlife.

The Refuge System was also a co-sponsor of this fall's 11th Conference on National Scenic and Historic Trails. The conference sought to help participants engage their local communities in sustaining the nation's trails. For national wildlife refuges, this is yet another avenue for fulfilling the Refuge Improvement Act mandate to "ensure that opportunities are provided within the Refuge System for compatible wildlife-dependent recreational uses." ♦

FOCUS . . . *On Refuge*

Alaska's Refuges and the Improvement Act

by Mike Boylan



The danger in looking at Alaska to understand the Refuge System is like looking for a date in a funhouse mirror – the image is pretty distorted. Alaska has just three percent of the

nation's wildlife refuges, but a whopping 80 percent of the acreage. To give a sense of scale, Yukon Delta National Wildlife Refuge is the size of South Carolina.

Alaska's big size has spawned big dreams, and these have touched its refuges. In the 1960s, the state wanted to build a dam and flood an area the size of New Jersey for hydroelectric power. The Rampart Dam project fell through, though, and today the third largest refuge, Yukon Flats, sits where there might have been a reservoir larger than Lake Erie. In 1958, the Atomic Energy Commission wanted to demonstrate the peaceful uses of nuclear power by atom-blasting a harbor at Cape Thompson in today's Alaska Maritime Refuge. Project Chariot was abandoned, but Amchitka

Reflections on the Tenth Anniversary of the Refuge Improvement Act

The Centrality of the Mission

by Robert Fischman

Ten years after Congress enacted the National Wildlife Refuge System Improvement Act, the law remains the most recent organic act for any federal public land system. The envy of other systems, the law provides a hierarchy of preferred uses, comprehensive planning, substantive management criteria and many other elements necessary to conserve public resources.

The most fundamental change wrought by the 1997 law is its systemic goal of conservation. The U.S. Fish and Wildlife Service must “sustain and, where appropriate, restore and enhance healthy populations of fish, wildlife, and plants utilizing . . . methods and procedures

associated with modern scientific resource programs.” This is a very different conception of conservation from the multiple-use, sustained-yield missions that sought to conserve a steady stream of commodities to be extracted from the public lands. It also embraces a broader land and water ethic that extends to plants and habitat rather than the previous, almost exclusive, focus on animals.

A key lesson of conservation biology is that nature reserves need to be interconnected. The 1997 Act reconceived the Refuge System as a “national network” of lands and waters to sustain plants and animals. This realigned the geometry of refuge conservation from linear flyways to a

“The Service now has an affirmative conservation stewardship duty.”

Improvement Act

Island, part of the Aleutian Islands Reservation since 1913, endured three underground nuclear tests, including the largest held in the U.S. in 1971.

It's no wonder that Alaska National Interest Lands Conservation Act (ANILCA) was seen as the salvation of Alaska's refuges. And it's no surprise that the National Wildlife Refuge System Improvement Act clearly defers to ANILCA: "If any conflict arises between any provisions of this Act and any provision of the Alaska National Interest Lands Conservation Act, then the provisions in the Alaska National Interest Lands Conservation Act shall prevail."

It would be an exaggeration to say ANILCA gave birth to the Refuge Improvement Act, but it was certainly present in the delivery room. Three notable examples include the Refuge Improvement Act's consistent direction for Comprehensive Conservation Plans (CCPs), its visionary Biological

Integrity policy, and its innovative Appropriate Uses policy.

New Level of Scientific Sophistication

The Refuge Improvement Act directs that CCPs be developed for each refuge or complex within 15 years, "except with respect to refuge lands in Alaska. . ." This exemption recognizes that Alaska has had CCPs since the 1980s, as required by ANILCA. Still, Alaska refuges have seized upon Refuge Improvement Act guidance to revise their CCPs to address new challenges and opportunities. The Improvement Act adopted Alaska's "Comprehensive Conservation Plans" title as the national standard, replacing variants like "master plan" and "comprehensive management plan" used before the Act.

If the Improvement Act benefited from ANILCA, it reciprocated by patching some holes in the landmark law. For example, among the standard purposes ANILCA specified for each refuge is "to

conserve fish and wildlife populations and habitats in their natural diversity. . ." Regrettably, ANILCA didn't define "natural diversity." However, the Refuge Improvement Act provides direction to "ensure that the biological integrity, diversity, and environmental health of the System are maintained." The subsequent 2001 Policy on Biological Integrity turned ANILCA's "natural diversity" from a stumbling block into a stepping stone by clarifying that biological integrity must "provide for the consideration and protection of the broad spectrum of fish, wildlife and habitat resources found on refuges and associated ecosystems. Further, it provides refuge managers with an evaluation process to ". . . prevent further degradation of environmental conditions and . . . restore lost or severely degraded components."

This policy brought a new level of scientific sophistication to refuge management by considering genetic variation, population levels, keystone

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more complex web of relationships. It challenges the Service to consider how actions on each refuge contribute to or diminish the conservation potential of the System. It provides traction for adapting to the monumental disruptions of climate change.

Meeting the Mission at Minnesota Valley National Wildlife Refuge

But there is more. In an effort to hold the Service accountable to the broad purpose for the Refuge System, Congress imposed a number of path-breaking substantive management criteria. The law requires that the Service maintain "biological integrity, diversity, and environmental health" on refuges. This is the most ecological standard in all of U.S. public land law. It represented a return of the Refuge System to the cutting edge of

conservation after three decades of lagging. The Service policy implementing this standard addresses external threats – those sources of degradation that originate from actions that occur outside of the refuge boundary. Of all the federal public land systems, only the national parks' policies deal as forthrightly with external threats.

One of my favorite examples of how this policy can make a difference in meeting the mission occurred near Minnesota Valley National Wildlife Refuge in 2003-04. Facing construction of a 19,250-seat amphitheater on a tract of land adjacent to the refuge, the refuge staff carefully documented how the amphitheater would project noise, nighttime light and stormwater into the refuge, harming refuge resources and priority public uses. They took measures to ensure that

these concerns were incorporated into the formal environmental impact analysis of the proposed project, and the Service followed the policy's prescription to raise concerns in the context of local land use procedures. The regional director testified in opposition to the project's conditional use permit before the county commission. In the face of the Service's well-documented opposition, which was amplified by the refuge Friends organization, the county commissioners unanimously rejected the permit application.

Stewardship and Restoration

The 1997 statutory mission of the system also includes restoration, where appropriate, of plants and animals. This element is reflected in three unusual obligations. First, the Service has a duty to acquire water rights, the only

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The Refuge Improvement Act's Biological Framework

by Bob Adamcik



Puffins at Seal Island National Wildlife Refuge (USFWS)

The National Wildlife Refuge System Improvement Act provides that disparate refuges be managed in a system-like way to maintain biological integrity, biodiversity and environmental health. The Refuge Improvement Act mandates that the Refuge System monitor status and trends of natural resources, while working

collaboratively with states and neighboring communities. How has the Refuge System approached this framework?

Managing as a System

Managing a diverse system is challenging, yet after a decade of biological effort, the Refuge System has made much progress towards unified approaches to adaptive management, monitoring and research. These are promoted through tools like the *Policy on Habitat Management Plans* and two related handbooks, *Writing Refuge Management Goals and Objectives* and the draft *Identifying Refuge Resources of Concern and Management Priorities*. These, along with other guidance, workshops and training, help field staff identify biological priorities, write and pursue supporting objectives, and develop related monitoring. Further, the Northeast and the Great Lakes Regions created the Biological Monitoring Team, which promotes shared solutions by exploring management and monitoring techniques applied across several stations.

Is the Refuge Improvement Act all Wet?

by Evan Hirsche

Refuge professionals, thousands of refuge volunteers and more than 250 Friends groups work tirelessly to ensure that each one of the 548 refuges across the country is managed for the optimal benefit of America's wildlife. We should all be proud of what we accomplish together. Yet threats from beyond refuge borders – inappropriate development, military maneuvers, mining and fossil fuel extraction – threaten to jeopardize the future of these conservation gems.

A significant challenge facing refuges is the need for adequate quantities of clean

water, the lifeblood of refuge habitat and wildlife. The expanding human footprint, changes in agricultural practices, introduction of non-native species, the need to restore the hydrology of stream and river systems, and concerns for water quality are all reasons to reexamine the priorities and tactics of refuge water resource programs in order to prevent the loss of species and habitat integrity.

As the struggle over clean and plentiful supplies of water rages across the country, refuges are frequently caught in the crossfire. At many refuges, thirsty human communities are siphoning off

Improvement Act

Biological Integrity

Perhaps the most progressive element of the Refuge Improvement Act is the requirement that the Refuge System "...ensure that the biological integrity, diversity, and environmental health of the System are maintained..." The *Policy on Biological Integrity, Diversity and Environmental Health*, completed in 2000, defines these terms and the Refuge System's intentions regarding the "integrity mandate." Among its provisions are protection of extant communities, use of historic conditions for decision making and restoration of native habitats. The Refuge System is now referencing this policy in planning and management, and individual refuges applied it in discussions as diverse as compatibility, wilderness management, environmental education and recreation.

Monitoring Wildlife Trends

The Refuge Improvement Act is clear that the Refuge System must "...monitor the status and trends of fish, wildlife, and plants in each refuge." The challenge is doing so with available resources. Monitoring always needs a context that

gives meaning to interpretation of the results. Also, depending on the scale and detail, it can be one of the most costly and time-consuming activities undertaken.

Since passage of the Refuge Improvement Act in 1997, the Refuge System has attempted to focus on selective, meaningful monitoring that supports management questions, relates to multiple refuges, or supports larger, landscape level efforts, such as monitoring for climate change. An ongoing revision of the *Policy on Inventory and Monitoring* consolidates these philosophies and should be ready for review by the end of the year.

Coordination and Cooperation with Partners

Finally, the Act requires "coordination, interaction, and cooperation" with adjoining landowners and state natural resource agencies. The Refuge System has embraced these responsibilities by ensuring public review of new policies, public notice of compatibility reviews, and a broad scoping process associated with planning activities.

The latter, particularly for comprehensive conservation plans, is open to many interests. Planning teams also work closely with state agencies, interest groups and private landowners around each refuge, a practice reinforced by the many new Refuge Friends groups.

Climate change, invasives and water issues promise new challenges to our implementation of the Refuge Improvement Act during its second decade. Fortunately, the Service's new Strategic Habitat Conservation initiative offers a stewardship model to support us in these challenges. The initiative's landscape perspective incorporates the interests of our partners while maintaining our identity as a land base with unique mandates. We will be able to set collaborative priorities that support our trust responsibilities but promote a Refuge System role larger than that of individual stations. ♦

Bob Adamcik is a wildlife biologist in the National Wildlife Refuge System's Branch of Wildlife Resources.



St. Vincent National Wildlife Refuge freshwater lake in Florida (Jane M. Rohling)

water supplies. At others, waterways are burdened by polluted runoff.

Too Much, Too Little

Refuges within the Desert National Wildlife Refuge Complex, located just outside Las Vegas, are increasingly

stressed by the demands for more and more water to satisfy a rapidly growing population. The Southern Nevada Water Authority has obtained a permit to begin tapping a vast aquifer that directly supplies the refuges, even though experts do not know how much water the aquifer holds or how pumping the groundwater will impact water supplies. A dramatic drop in water tables would harm at least 16 federally listed endangered species and hundreds of others. Opponents argue that no pumping should be allowed in the face of such uncertainty.

While Desert Refuge faces a lack of water, a number of refuges in Southwest Florida must confront an excess of water released from Lake Okeechobee. This fertilizer-laden water, prone to

deadly algae blooms, is poisoning plant and wildlife downstream. But that is not the only problem. Sedimentation has caused cloudy water to cut off light to seagrasses, while there has been a tremendous influx of freshwater into the Caloosahatchee estuary. All of these issues are affecting J.N. "Ding" Darling, Caloosahatchee, Island Bay, Matlacha Pass, and Pine Island Refuges.

As the competition for water grows, refuges face an uncertain future worsened by the difficulties of securing water rights across the country. With water such a crucial resource for refuges, does the National Wildlife Refuge System Improvement Act of 1997 provide the authority and leverage that U.S. Fish and Wildlife Service professionals need

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No Deposit, No Return – My Leadership Journey

by Maeve L. Taylor

I joined the U.S. Fish and Wildlife Service through the Student Career Employment Program (SCEP) in 1998.

It only took a few days at Montezuma National Wildlife Refuge in central New York for me to realize that I had found the right career.

Part of the hook was the SCEP workshop that summer, when I met other SCEPs, learned how the Service works and was inspired by Service leaders like former Chincoteague

Refuge manager John Schroer and Mamie Parker, then special assistant to the director. I was impressed by their

passion, and the fact that they were looking to us for future leadership. Through the employees I met that first summer, I was given the belief that if I stayed with the Service, I could make a difference for wildlife conservation. So I have stayed.

Fulfilling the Promise, which arose after the National Wildlife Refuge System Improvement Act, speaks of every employee having a leadership role, extending the legacy of leadership into the future and developing employee pride. These goals were evident throughout every Service training I encountered. Yet, I learned the most from the challenges that were available for me to conquer, and no one suggested I couldn't try.



Bombay Hook National Wildlife Refuge
in Delaware (USFWS)

SES in the Refuge System: *Implementing a Vision*

The word “leadership” does not appear in the National Wildlife Refuge System Improvement Act, yet leadership is the prime necessity as the Refuge System goes about implementing the concepts and directives encompassed in the Act. Little wonder, then, that *Fulfilling the Promise*, the vision document that came on the heels of the Act, devotes a whole chapter to the subject.

This year, eight U.S. Fish and Wildlife Service employees were selected for the Senior Executive Service Candidate Development Program, which trains top leaders in all federal agencies to motivate people, continually transform government, and achieve results through partnerships and building coalitions. *Refuge Update* posed several questions about the Refuge Improvement Act

and the future of the Refuge System to the three candidates from the Refuge System: Rick Schultz, chief of the Refuge System Division of Conservation Planning and Policy, Todd Logan, regional refuge chief in Alaska, and Greg Siekaniec, manager of Alaska Maritime National Wildlife Refuge. Each answered individually in writing.

How has the Refuge System Improvement Act made a difference to managers – on the ground – in guiding them in management?

Rick Schultz:

The Refuge System Improvement Act provides a strong legal foundation for managing disparate units of the National Wildlife Refuge System in a consistent manner. It directs refuge managers to administer these units to fulfill the

Improvement Act

The early years of my career at Parker River National Wildlife Refuge in Massachusetts coincided with the “Invest in People” program launched by Mamie Parker when she became the new director of the Northeast Region. Opportunities abounded, such as Refuge Academy, the regional Mentoring Program and the regional Leadership Pathways Program – including a month-long detail in Alaska.

The greatest gifts have been my relationships with my mentors. Refuge manager Terry Villanueva at Bombay Hook National Wildlife Refuge in Delaware was so eager to share her experiences with me and guide me through becoming a first time supervisor. My mentor in the Leadership Pathways program was deputy refuge chief Jim Kurth, who showed me how to make decisions that come from both the heart

and the head. Through my work at the refuges I met the most important mentors of all – my co-workers. I found the employees I most wanted to imitate – Gary Burke, Martha Parmenter, Steve Flanders, and so many others – because they worked hard, cared immensely about what they were doing, stood up for what was right and took the time to share their wisdom and advice with me.

“We Are Not Alone”

If you’ve heard Mamie Parker speak, you’ve probably heard her mother’s advice: “No deposit, no return.” One of the most valuable ways we can make that deposit is to invest in future leaders and become partners on a team – where each member feels an important link to the outcome. As Oscar Diaz, refuge manager at Caribbean Islands National Wildlife Refuge, whispered into the Mason jar

during our closing ceremony of Refuge Academy, “We are not alone!”

Nine years after that first summer at Montezuma Refuge, I’m still looking for challenges and taking every chance I can to learn how to be a better leader. The best opportunities are still available to the newest members of the Service. Identify an employee you admire to mentor you. Accept the challenge of a difficult project to see how much you can grow.

Always remember the strength of our Service team. Most employees are here because they love wildlife and wild lands. They are working with you to make a difference. ♦

Maeve Taylor is the regional volunteer, grants, and partnerships coordinator in the Alaska Region.

mission of the System as well as specific purposes for which their individual refuges were established.

The Act was forward looking in directing the Service to complete comprehensive conservation plans for all refuges in cooperation with others including states and local communities. Finally, the Act directs refuge managers to ensure that the conservation purpose of their refuges receives priority over wildlife-dependent public uses and other uses.

Todd Logan:

At the risk of stating the obvious, the Improvement Act led us to develop six foundational policies – compatibility, conservation planning, biological integrity/diversity/environmental health, mission/goals/objectives, appropriate uses and wildlife dependent recreation. Day in and day out, these six policies shape what we do – and don’t do – on refuges.



Rick Schultz



Todd Logan



Greg Siekaniec

Greg Siekaniec:

The Refuge System Improvement Act has afforded managers an opportunity to do something that many of us rarely seem to take time to do. We are charged with taking the time to stop and think about the future of the refuge you are working at and to couple that with being part of a larger conservation system. Each manager has the chance, while developing conservation plans, to think about the future, whether it is inventory and monitoring, facilities, habitat

conditions, relationships with neighbors, conservation strategies with state fish and game offices and other partners, new means of conserving important areas that complement existing habitats, wildlife oriented recreation, or a host of other important issues each refuge faces.

I think one of the most exciting elements of conservation planning is the public involvement process. Developing a plan in the “eyes” of the public will forge new relationships, resolve longstanding

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SES in the Refuge System — continued

controversy, create tensions that need addressing, and set the course for the refuge for an extended time.

Where do you think the Refuge System should be in 10 years?

Rick:

The next 10 years will be very important to the National Wildlife Refuge System. By 2017, the System will continue to benefit from strong support within Congress and within the conservation community. We will be leaders among land management agencies in the use of technology to manage habitats and species. Land acquisition within the NWRS and private land projects completed beyond refuge boundaries will be closely integrated with the Fish and Wildlife Service's Strategic Habitat Conservation initiative and State Action Plans.

Monitoring protocols on System land will be in place which will contribute to our understanding of global warming. We will be leaders among land management agencies in monitoring our carbon footprint and restoring habitats that sequester carbon. In a related effort, we will model the use of energy efficient vehicles, equipment, and buildings. Lastly, we will have a cadre of innovative and creative refuge employees successfully addressing the challenges of 2017 and beyond.

Todd:

It took us 10 years to finalize the foundational policies of the Improvement Act. I hope to see us actually implementing these policies in a systematic way 10 years from now.

Greg:

I think the Refuge System should be a standout in the conservation community in how to engage the public in conservation strategies on and around the refuge. Each refuge should stand as a conservation cornerstone in its own sphere of influence. Our management

and public interactions should radiate outward and influence private and public land administration because we set a conservation ethic that shows respect for the land and people we interact with.

What difference has the Improvement Act made to the people who visit national wildlife refuges, and how do we continue fulfilling the mandate "to ensure that opportunities are provided within the System for compatible wildlife-dependent recreational uses?"

Rick:

The Improvement Act validated the importance of public visitation and citizen support for the National Wildlife Refuge System. Through policies promulgated by the Act, wildlife-dependent public use activities have been increased or improved throughout the System. Through partnerships designed to maximize limited refuge resources, these recreational activities and educational opportunities will become increasingly important as demand for wildlife-dependent recreation also increases.

Todd:

On many refuges, the public has indeed seen increased and/or higher quality opportunities to engage in the priority public uses: hunting, fishing, wildlife observation and photography, interpretation, and environmental education, and maybe even a de-emphasis of some other distracting uses.

To continue fulfilling the mandate, I urge folks to reflect on one of my favorite paragraphs of *Fulfilling the Promise* (page 51): "Some refuges with unusually high visitation can effectively enhance their interpretive and educational programs with visitor centers. However, the focus of most refuge public use facilities and programs should not be on creating more vicarious wildlife experiences, but on getting people in closer contact with refuge habitat and wildlife." I'm a huge fan of the Visitor Facility Enhancement program. Ten

"Each refuge should stand as a conservation cornerstone in its own sphere of influence."

Improvement Act

years from now, I'd like the Refuge System to be known as *the* place with the best trails, boardwalks, boat ramps, canoe trails, fishing docks, observation towers, photo blinds, wildlife drives, hunting blinds, etc.

Greg:

I think visitors now have a basic understanding of what opportunities they will likely encounter as they visit different refuges. Not all experiences will be the same, and some things allowed on one refuge will not be allowed on another, but overall they can expect wildlife dependent recreation on all refuges.

What are the one or two mandates in the Refuge Improvement Act that should receive the most attention in the next decade?

Rick:

Our biological programs need the most attention over the next decade since nearly all we do on national wildlife refuges is based on sound science. Sound science is needed to effectively manage wildlife populations and habitats as well as conduct wildlife-dependent public use activities. Recent experience strongly suggests that the ecological communities in which all refuges reside are also subject to increasing complexity. At a minimum, we need to develop a thorough understanding of the ecological processes that occur on refuges and how outside influences affect our ability to meet refuge purposes.

Todd:

The Act provides a pretty long list of things we shall do. Last, but certainly not least, we shall "monitor the status and trends of fish, wildlife, and plants in each refuge." We need to update our inventory and monitoring policy, and more importantly, implement it.

Greg:

Complete the Comprehensive Conservation Plans for each refuge

and create a network of priority public uses that tell how we are an exceptional system of national wildlife refuges.

Refuge Update also asked each of these leaders to answer one additional question pertaining to his own particular sphere of responsibility.

Rick - *What is the role of leaders at the national level, in the Washington Office, in "saving dirt," as Lynn Grenwalt puts it?*

The primary role of refuge leaders within Washington is to support the programs and activities that occur across the Refuge System. This role includes working with others to advocate for Refuge System policies, procedures and budgets that help address both challenges and opportunities that occur at the field level. In addition, national leaders are uniquely positioned to identify national trends or initiatives that can add value to units of the Refuge System.

Todd - *What is the biggest challenge you face in your region and do you think that is a common challenge throughout the Refuge System?*

I believe the biggest challenge is and will continue to be flat or declining budgets. Despite some promising activity on the FY 08 budget, I'm pretty pessimistic over the long haul. I hope I'm wrong.

On the policy side, motorized access onto Alaska refuges will grow as an issue. The Alaska National Interest Lands Conservation Act (ANILCA) has special motorized access provisions for access to inholdings, traditional activities and subsistence. However, snow machines, ATVs, jet skis/jet boats and even helicopters are very different machines than what could be envisioned when ANILCA was enacted in 1980. I hope we can hold the line. While ANILCA provisions are unique to Alaska, marketing nationwide has convinced many hunters that hunting can't be done



without an ATV or fishing without a 200 HP bass boat. There may be a time and place for these vehicles, but not on most national wildlife refuges.

Greg - *How do you help Service employees feel that what they are doing every day is connected to what's happening on refuges in the rest of the country?*

I have always maintained that even as we make what are seemingly inconsequential decisions we need to reflect for a moment on whether it will compromise another refuge or program in some unintended way. We often discuss why we have standards, why we create common policies, why we strive to look similar, so I guess I'm always trying to convey "why" it's important that we behave as a system of conservation units. It makes each refuge stronger and it makes the system stronger. I encourage personnel to interact with staff from both the regional offices and other refuges while considering issues, while issuing a permit or considering a compatibility decision – a good decision that benefits all refuges, not just one, is not only processing it right but is the right process. ♦

e-Learning: Engage Volunteers in Invasives



In collaboration with the Center for Invasive Plant Management, the Refuge System has designed its first online training course for volunteers and Refuge Friends groups interested in fighting invasive species -- the single greatest threat to the Refuge System, according to the National Wildlife and Refuge System's Threats and Conflicts database. An estimated two million acres of refuge lands are infested with invasive plants, yet only 280,000 acres have been treated.

For three years, beginning in 2003, Congress has appropriated \$1 million annually to engage volunteers in managing invasives on refuges. Some of the funding has been used to develop the online training. The new Web site (<http://www.fws.gov/invasives/volunteersTrainingModule/index.html>) includes video, text and photos that give not only background about the Refuge System, but also the science and management of invasive plants and strategies to attract volunteers for work that takes special stamina and dedication.

The online, self-study course comes complete with quizzes. Among its other elements are a thorough but simplified explanation of Integrated Pest Management (IPM), a link to the Department of the Interior's IPM policy, and a discussion of how invasive plant control is included in a refuge's Comprehensive Conservation Plan. There are also links to many government and private Web sites dealing with invasives.

Next year, a more in-depth online course is planned to help refuge staff with invasive plant management and how to integrate volunteers.

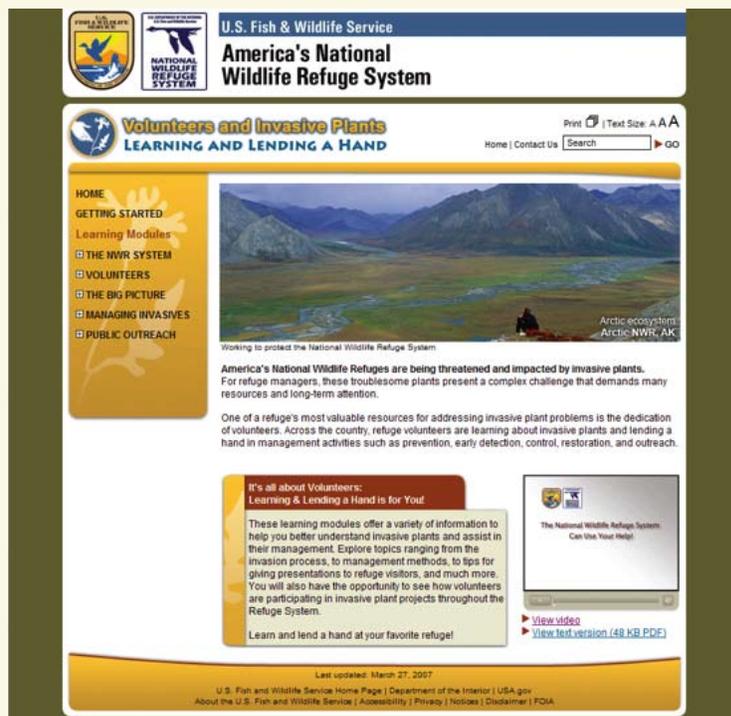
"I've been repaid for every moment I've worked," said Steve Sutter, a volunteer since 2001 at Minnesota Valley National Wildlife Refuge. In a personal story recounted online, Sutter says he appreciates returning to a spot where he helped inventory purple loosestrife and seeing that 90 percent of the invasive is gone.

The Refuge System partnered with The Nature Conservancy, the National Wildlife Refuge Association and the U.S. Geological Survey in 2003 to train volunteers in using hand-held GPS devices to map invasives on national wildlife refuge. "We needed an orientation to invasive control that would be as standardized as possible," said Jenny Ericson, national invasives volunteer coordinator.

"We want volunteers to be able to engage their communities on the issue of invasives," said Ericson. "The online training provides practical

tools for educating local groups about the importance of preventing and controlling invasive plants, such as a PowerPoint presentation that can be downloaded and customized for different locations. Volunteers can be our greatest advocates in the fight against invasive species."

Congressional appropriations have also been used for competitive grants for invasive species projects that directly involve Friends groups and volunteers. Such grants also often require training -- now readily available online with the new course. ♦



The Refuge System's first online, self-study course helped train Refuge Friends and volunteers to fight invasive species. It includes a thorough but simplified explanation of Integrated Pest Management, among other elements.

Know Your Birds: On TV and In Costume

“The theme music is superb, the bird of the month fun and the closing readings charming.”

Ann Berry, Birdwise viewer

With such unvarnished praise, who needs Neilson ratings? The program eliciting this viewer’s accolades is *Birdwise*, a monthly half-hour feature that is broadcast on local access cable television in Thurston County, Washington. *Birdwise* combines the talents and expertise of Nisqually National Wildlife Refuge, Black Hills Audobon Society and a variety of local birding experts.

The curator of a local museum provided segments on bird anatomy. The owner of a local Wild Birds Unlimited store offered backyard birding tips. One program included segments on the mating practices of birds, tips on bird baths and the 20th annual summer lecture series at Nisqually Refuge. The “sponsor” in May was the white-crowned sparrow and the bird of the month in July was the osprey.

Regulars include Phil Kelley, avian forecaster and Featherman, who points out birds and behavior to be seen in the coming month. Kelley augments his Feather Report with a weekly bird count and field trip into the Nisqually Delta on the refuge. Sheila McCartan, visitor services manager at Nisqually National Wildlife Refuge Complex, gives the monthly roundup of birding news and events. There is also a regular educational feature from biologist Burt Guttman, a member of the Black Hills Audobon Society and professor emeritus at The Evergreen State College.

“There were all these shows about fishing,” McCartan said in describing the origins of *Birdwise*, “we thought there would be an interest in birds and birding.” Tim Sweeney, who volunteers at Thurston Community Television, produces the show which is hosted by Nisqually Friends member and birder



Nisqually National Wildlife Refuge in Washington helps produce a monthly birding program called Birdwise on the local public access cable television channel. (Tim Sweeney/Birdwise)

Tom Schooley. Since April 2006, the program has been produced once a month and airs twice a week for the entire month.

Judge’s Choice Award

Earlier this year, the Alliance for Community Media gave *Birdwise* a judge’s choice award in the Best of Northwest Video category, prompting producer Sweeney to quip in his blog, “While *Birdwise* didn’t win the top prize, the Honorable Mention in the informational program category is not bad given we were using shows from last year when we barely knew what we were doing.” The Web site (<http://birdwise.blogspot.com/>) offers everyone the opportunity to post comments or view the programs online.

“It’s a nice outreach project that does not cost us any money,” concludes McCartan, “It takes a little bit of our time and it’s reaching a lot of people, including people who can’t get out.”

Create a Shorebird

McCartan is also proud of another outreach initiative at nearby Grays Harbor National Wildlife Refuge. The refuge has no permanent staff even though environmental education is part of its mission. With funding from Grays

Harbor Audobon, Weyerhaeuser, the local school district and Friends of Nisqually, McCartan and an Americorps volunteer developed a shorebird program that was first offered to schools in 2002. For the past two years, Americorps volunteer Jacki Schwindlein has expanded the program’s reach so much that two Americorps volunteers are coming this fall to keep up with demand.

Schwindlein tells 8 to 13 year old students that Grays Harbor Refuge is the fourth largest stopover for shorebirds in the Pacific flyway. She asks children to flap their arms until they get tired and Schwindlein asks, “Could you do that for two to three days straight?” The children give up in about two minutes.

Youngsters also have a chance to try on the different adaptations that enable birds to make that long journey – a vest made of down, air sacs, long beaks to reach into the mud for food, long pointed wings to fly those long distances. Schwindlein’s enthusiasm for her subject rubs off on the kids. After a microscope workshop at the annual Grays Harbor Shorebird Festival, one young girl told Schwindlein, “This is so much fun. When I grow up, I want to be a scientist.” ♦



Americorps volunteer Jacki Schwindlein at Grays Harbor National Wildlife Refuge in Washington helps a student don shorebird adaptations. (USFWS)

Around the Refuge System

Wyoming

National Elk Refuge is launching the second year of *Journals and JPGs: Seasons on the Refuge*, an



Second graders at National Elk Refuge in Wyoming show off the journals they created during an environmental education program called Journals and JPGs: Seasons on the Refuge. (USFWS)

environmental education program for second graders. Students come to the refuge three times during the school year for classroom lessons and field experiences that bring together art, writing and science. Several local art and conservation groups are project partners. During each field trip, students use both journals and digital cameras (purchased through a Nature of Learning grant) to record their experiences. “Everybody’s journal turned out different because we all have different imaginations and nobody thinks the same,” said second grader Mataya. Journals and photographs were showcases for a parent open house at the end of the school year.

Colorado

The Environmental Protection Agency honored Rocky Mountain Arsenal National Wildlife Refuge with a 2007 Notable Achievements Award for Land Revitalization. The award recognizes the exceptional effort involved in cleaning up more than 13,000 acres of

land. The cleanup will be finished in 2011. Rocky Mountain Arsenal was built in 1942 to manufacture chemical weapons and was later leased to Shell to make agricultural chemicals. Located just outside of Denver, the Arsenal is one of the nation’s largest environmental cleanup sites and is also the largest contiguous open space in the Denver metropolitan area. Since 2004, more than 30,000 people have visited the refuge.

Rocky Flats National Wildlife Refuge has become the 548th refuge in the National Wildlife Refuge System. The Department of Energy completed cleanup of the former nuclear weapons site in 2005. Earlier this

year, Rocky Flats was removed from the national list of Superfund sites. The Comprehensive Conservation Plan for the refuge calls for a gradual increase in public use over the next 15 years with conservation efforts focused on native tallgrass prairie. The refuge mission also includes protection of habitat for the Preble’s meadow jumping mouse, an endangered species.

South Carolina

Waccamaw National Wildlife Refuge has just opened its new Cox Ferry Lake Recreation Area. The area features bird watching, hiking, kayaking, canoeing and fishing. Eventually, a boardwalk will lead visitors onto an island within a wetland area. Funding for the area began with a Conservation Award from the Bass Pro Shop in Myrtle Beach. Additional donations came from the National Fish and Wildlife Foundation, Anheuser Busch and the City of Conway. Centex Homes donated engineering and design services as well as construction crews

to build a weather shelter and kiosk. “We feel very fortunate to have had the contributions of so many local and national partners,” said refuge manager Craig Sasser.

Oklahoma

The U.S. Fish and Wildlife Service recently released 260 alligator snapping turtles into the waters of Tishomingo



Grant Graves, son of Tishomingo National Fish Hatchery manager Kerry Graves, holds one of 260 alligator snapping turtles recently released into the waters of Tishomingo National Wildlife Refuge. (USFWS)

National Wildlife Refuge. A species of special concern in Oklahoma, the only viable population had been at Sequoyah National Wildlife Refuge, where Tishomingo National Fish Hatchery has been rearing the snapping turtles in captivity and releasing them into the wild. The illegal market in the food and pet industry as well as pollution and overharvesting have drastically

reduced the number of these turtles in southern Oklahoma. This new group was confiscated from a commercial breeder in Arkansas.

After the health and genetics of the turtles were tested to make sure they were compatible with Oklahoma's turtles, they were released into the Washita River watershed, which is within their historic range. All of the turtles were marked for future identification and several now have sonic transmitters on their shells. Tishomingo Hatchery and researchers at Oklahoma State University will track the turtles' movement over the next two years.

Ohio

Ottawa National Wildlife Refuge has been named an Important Bird Area by the Ohio Audubon Society. The designation came on International Migratory Bird Day when the refuge celebrated the opening of its new \$3.6 million visitor center. The three-story visitor center is quite a step up from the original hunting lodge that once served as refuge headquarters. Energy saving features include gas-filled windows for added insulation and a geothermal climate-control system that uses water from a 20-foot-deep pond to regulate indoor air temperature. The facility also features an exhibit area highlighting bird migration and a muskrat hut to teach kids (and adults) about these furry marsh residents.

Maryland

Patuxent Research Refuge received an interesting call recently from a man in Fairfax, Virginia, who had just rented a storage unit and discovered some items that had been on loan from Patuxent since 1970. The items included a framed letter with two molted whooping crane feathers. The letter had been signed by E.H. Dustman, director of Patuxent at the time, who is now 90 and living in Virginia. The feathers were on loan to the General Services Administration. Now they are being sent to Mark Madison, Service historian at NCTC for "debugging." The returned items are "testimony that values and honesty still

mean something," said visitor services manager Nell Baldocchino, who noted that the individual "took the time to track us down and mail these artifacts back to us."

In Memoriam

Eugene Kridler died of heart failure last May near his home in Sequim, Washington. He was 87. During a U.S. Fish and Wildlife Service career that stretched from 1952–1979, Kridler served at Bowdoin, Salton Sea, McNary, Klamath Basin, Sacramento and Malheur Refuges. He was also the first Service employee to be permanently stationed in Hawaii. His efforts there led to the creation of 10 new refuges in the Pacific Islands. Kridler was particularly skilled in capturing and banding birds. By 2004, he had banded 100,500 birds of 310 species.

A dedicated volunteer with the Rhode Island National Wildlife Refuge Complex died unexpectedly last year. In his 30s at the time of his death, **Stuart Keeble** was an avid birder and led bird walks at Trustom Pond National Wildlife Refuge. Keeble's family, the refuge Friends group and refuge staff created a dozen birding backpacks that will be on loan at the refuge in Keeble's memory. Each monogrammed pack includes binoculars and guide brochures. The project prompted another family to provide funding for backpacks at Sachuest Point National Wildlife Refuge in Rhode Island to honor a family member.



Birding backpacks are on loan at Trustom Pond National Wildlife Refuge in Rhode Island in memory of Stuart Keeble, an avid birder and dedicated volunteer who died unexpectedly last year. (Janis Nepshinsky/USFWS)

Chief's Corner

— continued from pg 2

That and much else have changed in the decade since passage of the Refuge Improvement Act.

Today, we have a 12-part Strategic Plan for the Refuge System. We have a new database system – the Refuge Annual Performance Plan – that tracks and measures our progress. In May, we got passing marks from OMB during our PART review.

Yet, those achievements hardly begin to paint a picture of the Refuge System 10 years after passage of the landmark Refuge Improvement Act.

We welcome and orient nearly 20 percent more people than we did in 1997. As the country has become more ethnically diverse, visitors find refuge brochures and Web sites in Spanish, Russian and other languages as we reach out to those whose native countries have nothing that equals the Refuge System. Land acquisition has slowed, yet we have added 35 refuges since passage of the Refuge Improvement Act. When the U.S. Fish and Wildlife Service earlier this year identified the areas it wants to be recognized for excellence, the Refuge System was among its six priorities.

In every state, national wildlife refuges connect people with nature, implementing the Refuge Improvement Act's mandate. In every region, national wildlife refuges are involved in extraordinary habitat work, from the largest tallgrass prairie restoration at Neal Smith Refuge in Iowa to the nation's largest salt marsh restoration at San Francisco Bay Refuge in California.

The National Wildlife Refuge System is both a powerful conservation tool and a collection of national treasures. That hasn't changed in the decade since passage of the Refuge Improvement Act. That will not change in the decades to come. ♦

Friends Academy—continued from pg 1

that information without the face-to-face dialogue we had here.”

“This Friends Academy reaffirmed that Friends groups appreciate help in become as effective as possible,” concluded Trevor Needham, national Friends coordinator. “A lot of light bulbs went off during the week.”

Friends heard from each division within the Refuge System and from some of the nonprofit conservation organizations that are part of the Cooperative Alliance for Refuge Enhancement (CARE). They also heard a presentation by Emilyn Sheffield, chair of the Department of Recreation and Parks Management at California State University/Chico on “Changing World, Changing Wildlife” (see *Refuge Update* May-June 2007).

Despite long hours at formal sessions, the Friends never seemed to lag for enthusiasm. One evening, they spent

two hours brainstorming ways to help organizations meet challenges like building membership, raising money and raising the profile of the Refuge System. “You always hear about doing more with less,” commented Kathy Woodward with Friends of Great Swamp National Wildlife Refuge in New Jersey, “but now we realize how much less.”

The personal reflections of Lynn Greenwalt, who worked on five refuges before becoming director of the Service from 1973 to 1981, put current goals and even the Friends groups themselves in perspective. He recalled when environmental education was considered outside the scope of refuge responsibility. Likewise public use, which changed from “people are a pain and a bother” to a Service that employs people whose specialty is effective public use.

To an appreciative and newly inspired audience, Greenwalt said the Friends represent “an incredible potential that is just beginning to be revealed.” ♦

Friends Academy Participants

Back row:

Leslie Calhoun (Black Bayou Lake), Mark Hufford (National Wildlife Refuge Association), Ellen Gabel (National Fish and Wildlife Foundation), Marie Springer and daughter Mary (Wallkill), Ralph Gilges (Bon Secour), Bev Arnoldi (Willapa), Trevor Needham (national Friends coordinator), Darlene Moegerle (Midway Atoll), Ann Fournier (Iroquois), Marion Sansing (Noarubee), Nancy Menasco (Red River), Robb Jess (refuge manager Ding Darling), Sue Hix (Sherburne), Norman Penner (Tualatin), Marty O'Connor (Blackwater), Tom Murray (Florida Panther)

Front Row:

Barbara Volkle (Assabet River), Joan Patterson (Potomac River), Lacey Blue-McLean (Chassahowitzka), Kathy Woodward (Great Swamp), Tim Anderson (Seal Beach), Gary Tucker (Visitor Services, Southeast Region), Sally Webb (Okefenokee), Dan Dziekonski (Tennessee) (Matt Poole/USFWS)

Alaska's Refuges and the Improvement Act—continued from pg 13

species, and other factors in light of historic conditions. For Alaska, the Policy on Biological Integrity emerged just as refuge managers were calling for back-up to explain “natural diversity” in the face of state efforts to expand predator control for wolves and bears. The new policy helped managers resist predator control on refuges by invoking a rigorous scientific review, including factors such as historic population fluctuations, harvest rates and age-sex ratios as prelude to NEPA compliance and other constraints.

Raised the Bar

The Refuge Improvement Act also closed an old loophole by replacing “wildlands-oriented recreation” on refuges with a higher standard for compatible “wildlife-dependent recreation”. A little-known new standard also empowered managers to identify a use as inherently not appropriate for the Refuge System and

pre-empt the compatibility process. The Appropriate Uses Policy was published June 2006. Its ink was barely dry before it was tested at Alaska Peninsula Refuge when a local air taxi operator sought a permit to fly fishing clients into the refuge by helicopter.

ANILCA ensures traditional access to Alaska refuges by small airplanes. Helicopters have been permitted on refuges when airplane access was insufficient – e.g. search and rescue – but never for recreational access. After a rigorous review in light of the new policy, the refuge manager found such helicopter use not appropriate and denied the permit request. The manager’s decision was appealed to the regional director but upheld and the permit denied.

The Refuge Improvement Act has raised the bar of refuge management. From

more rigorous scientific standards of the biological integrity policy to the heightened efficiency of the Appropriate Uses Policy to the improved consistency and accountability of CCPs, the Refuge Improvement Act gifted all refuges, including Alaska’s, with improved management tools.

Since 1903, through strategic habitat acquisition and courageous decisions by myriad managers in far-flung corners of our country, the National Wildlife Refuge System continues to provide the best homes for our nation’s wildlife, including the animals and plants of Alaska. We’ve spent a century building this house; it’s only fitting that the Refuge Improvement Act now gives us the ultimate home security system. ♦

Mike Boylan is refuge supervisor for those refuges in the southern part of Alaska.

Searching for the Silver Lining of Black Duck Wings

by Dane Cramer, Paul Castelli and Christopher Williams

The American black duck remains a spectacular sight on the salt marshes along the Atlantic coast. Any winter salt marsh scene is illustrated with a show of black ducks floating effortlessly against an icy backdrop.

Researchers from the University of Delaware in partnership with Ducks Unlimited, New Jersey Division of Fish and Wildlife, Edwin B. Forsythe and Cape May National Wildlife Refuges and Black Duck Joint Venture have launched a two-year study aimed at understanding the habitat and food requirements of wintering black ducks. The study will complement a similar study recently completed around Wertheim National Wildlife Refuge in New York and one currently underway around Chincoteague National Wildlife Refuge in Virginia.

Finding answers on a flyway scale will enable managers to more effectively anticipate waterfowl habitat needs and determine priority areas for restoration and protection. The New Jersey research is also supported by the New Jersey Waterfowlers Association, the Atlantic Coast Joint Venture and the New Jersey Duck Stamp Committee.

New Jersey is a pivotal area for black ducks. According to a mid-winter inventory coordinated by the U.S. Fish and Wildlife Service, nearly half of the Atlantic flyway's population winters in New Jersey. Along the Atlantic flyway, New Jersey approximates the center of the ducks' wintering range. Even in the face of habitat loss and development, the population has managed to stabilize to the north. To the south, populations continue to decline.

The majority of ducks is found on the coastal salt marshes of numerous state-owned wildlife management areas and two national wildlife refuges, Edwin B. Forsythe and Cape May. These two

refuges currently protect over 57,000 acres of habitat in southern New Jersey. The habitat is vital to the success of black ducks but also provides essential wintering habitat and crucial stops along migration routes for hundreds of thousands of birds that rely heavily on the rich coastal habitat.

Building a Bioenergetic Model

The study will collect multiple pieces of information to build a bioenergetic model. To determine habitat



University of Delaware graduate student Dane Cramer cradles one of the black ducks he is studying. (USFWS)

availability and usage, we summarized information about wetland habitat across southern New Jersey from the National Wetlands Inventory data. We attached radio transmitters to female black ducks to monitor their movements around the clock, from winter through late spring, identifying habitat areas that are most important.

We also assembled time-energy budgets by determining the percentage of birds in a flock engaged in nine predefined

activities: feeding, loafing, sleeping, comfort (preening and wing stretching), agonistic (bothering other ducks), courtship, swimming, walking and flying. Finally, biologists are estimating the availability and utilization of foods such as snails, clams and seeds. This effort, across the landscape, provides an estimate of food energy available as well as any associated depletion rate. Crop surveys from harvested black ducks then verify food usage, food preference, and the possibility of any shift in food source as resources become depleted. The final result will be an estimate of the amount and types of habitat required to support and maintain projected population goals.

“We are very supportive of this cooperative research investigation. It will further our understanding of natural resources and strengthen refuge management decisions,” says Kevin Holcomb, refuge biologist at Edwin B. Forsythe Refuge.

Increasing the quality of habitat in New Jersey may have direct impacts on the health of hens returning to breeding grounds and could result in increased production, potentially curbing the current downward population trends. Managers hope to combine data from all three studies to insure that population goals set for black ducks are realistic. Data will also be used to support wetland protection policy changes aimed at protecting black duck habitats. ♦

Dane Cramer is a graduate student at the University of Delaware. Paul Castelli is a research scientist at New Jersey Division of Fish and Wildlife. Christopher Williams is an assistant professor of wildlife ecology at the University of Delaware.

Reflections on the Tenth Anniversary—continued from pg 13

affirmative trust mandate of its kind in U.S. public land law. Because instream flow problems in refuges are generally caused by upstream users outside of the refuge boundaries, this provision supports the commitment to abate external threats.

Second, the 1997 statute requires the Service to “monitor the status and trends” of animals and plants in each refuge. This biological monitoring duty will prompt development of an essential, yet chronically missing, element of adaptive management. Adaptive management requires feedback about the consequences of decisions in order to adjust them continually. Public land management generally lacks a research component that adequately evaluates the success of predictions.

Third, the Service now has an affirmative conservation stewardship duty. This looks to the future when the system will face problems not specifically addressed in the current law. While it will initially be used as a shield to defend protective actions, it may ultimately be wielded as



Blackwater National Wildlife Refuge in Maryland (Karen Hollingsworth/USFWS)

a sword to advance the restoration goal and the mission to maintain biological integrity, diversity, and environmental health. To succeed, refuges must go beyond abating threats and lead through example to demonstrate what good land use is for a watershed or region.

The Challenge and Potential of Purpose

Notwithstanding its systemic purpose, the 1997 law retained the disparate purposes for which individual refuges were established. The Service still faces a tremendous challenge in orchestrating the hodgepodge of refuges

into a coherent network for continental conservation. The refuges do not yet fully cohere into a system that is more than the sum of its parts. The web remains frayed and patchy.

The Refuge Improvement Act is a call to action that will be remembered as farsighted as Theodore Roosevelt’s 1903 proclamation of the “preserve” on Pelican Island. The traditionally shy Service is poised to provide leadership in the tremendous land use challenges facing our fragmented landscape. The manifestation of the mission on-the-ground can inspire neighbors to join in urgent conservation projects. The Refuge System under the 1997 statute can be more than just the national network of nature. It can be the polestar for reformed resource management throughout the world. ♦

Robert Fischman is a law professor at Indiana University—Bloomington and the author of The National Wildlife Refuges: Coordinating a Conservation System through Law (Island Press 2003).

Is the Refuge Improvement Act all Wet?—continued from pg 15

to ensure the necessary quantities? The short answer is yes... and no.

Few refuges have federally reserved water rights, and the overwhelming majority operates under state water laws with water rights granted by the states. Although the Act does not create new water rights, it does require that the Secretary of the Interior “acquire, under state law, water rights that are needed for refuge purposes” and “assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the System.”

While this directive to the Secretary is clear, ultimately the Refuge System must have adequate funds to meet this obligation. The Western Water Policy Review Advisory Commission reported in 1998 that the Service has inadequate

funding to access and document the water uses and needs on refuges and recommended development of a program to “improve data collection and analysis for use in defense of refuge water rights” and “increase the efficiency and effectiveness of existing water management.”

Until the Administration requests and Congress substantially increases appropriations for purchasing water rights, the Secretary will simply be unable to comply with the law.

In the meantime, it is the responsibility of those who care about refuges to defend refuge water needs. Some refuges have already benefited from citizen action. Tennessee and Cross Creeks National Wildlife Refuges may be spared drastically reduced water volume and its disastrous

effects on wildlife as a result of intervention by the National Wildlife Refuge Association and others who stopped “rider language” in the Water Resources Development Act that would have extended high water levels in upstream Lake Barkley.

If we do nothing about water quantity, many of this country’s most beautiful and biologically diverse lands will cease to exist. Refuge supporters around the country need to look around them, acknowledge and understand the problem, and do what they can to assure that refuge habitat and wildlife have a voice in the clamor for the clean water we all need in order to survive and thrive. ♦

Evan Hirsche is president of the National Wildlife Refuge Association.

American Crocodile Makes a Comeback



Crocodile Lake National Wildlife Refuge, Everglades National Wildlife Refuge and Turkey Point Nuclear Power Plant provide sanctuary to the 1,400-2,000 American crocodiles residing in South Florida and the Florida Keys (Al Sunshine).

by Steve Klett

When the American crocodile was federally listed as an endangered species in 1975, fewer than 300 animals remained in South Florida and the Florida Keys. Today, the U.S. population is estimated at 1,400 to 2,000 individuals, prompting the U.S. Fish and Wildlife Service to reclassify the species as “threatened”. So what has caused this rather dramatic turnaround over the last 30 years?

The continued recovery can be attributed to several factors. The “endangered” listing provided much needed protection and helped focus attention and resources on the plight of the crocodile. As a result, hunting and illegal take were curtailed, and critical wetland habitat was protected from development.

The Service designated critical habitat on portions of the Everglades, Biscayne and Florida Bay and the Florida Keys from Elliott Key south to Long Key. The Service must be consulted regarding any proposed development within this area to insure that there is no net loss in habitat and that development does not jeopardize the species.

Establishment of the 6,700-acre Crocodile Lake National Wildlife Refuge on North Key Largo in 1979 was another important step. The refuge, along with Florida Power and Light (FP&L) and Everglades National Park have protected and preserved most of the important remaining wetlands habitat within their boundaries. Protection of nesting habitat in particular is vital for recovery.

The croc population is fluid, with animals moving back and forth among Everglades National Park, Florida Power and Light’s Turkey Point Nuclear Power Plant, and Crocodile Lake Refuge. Based upon a count of nesting females, there could be up to 150 animals on the refuge, excluding hatchlings, at any given time.

Nesting in the Shadow of a Nuclear Power Plant

Crocodiles are attracted, in increasing numbers, to the 80-plus miles of cooling canals at the Turkey Point Nuclear Power Plant, where they nest on the banks of the canals. To improve nesting habitat, FP&L has constructed a number of small fresh water ponds on top of the canal banks. Nesting females prefer to nest along the banks of these small ponds

because they provide the less brackish water needed by hatchlings. Unlike the adults, croc hatchlings do not do well in the saltwater cooling canals. Shortly after hatching, the young are removed from the confines of the small ponds by FP&L staff and placed in larger tracts of wetlands adjacent to the canals where they continue to grow and later disperse to available habitat outside the facility.

Historically, crocodiles probably did not nest on the refuge. However, a failed development project in the 1970s, with its abandoned canals and associated levees, provided an excellent site for nesting crocodiles. Because this nesting area is artificial, it must be continually maintained to provide proper nesting conditions.

Over the years, refuge volunteers have helped enhance and maintain nesting habitat by removing invasive vegetation on key nesting areas. The refuge also plans to build up portions of the levees that have eroded and install culverts across a series of breaches in the levees to permit access by the trucks and heavy equipment needed to control invasive vegetation on a larger scale.

The crocodile population has increased because the work has been a cooperative effort of many federal, state, and local government agencies as well as volunteers, organizations and private companies. Their work has ranged from population monitoring to law enforcement to habitat management.

The American crocodile must be recognized for its resilience. It has survived in one form or another for 200 million years. Its ability to adapt and persevere is amazing. As long as we continue to provide protection to this magnificent creature and its habitat, the American crocodile will take care of the rest. ♦

Steve Klett is refuge manager of Crocodile Lake National Wildlife Refuge in Florida.

Bird Call

Snowy Plovers

Rare snowy plovers were seen nesting in North Dakota over the summer. Snowy plovers are a species of concern in the state, and North Dakota is not typically within breeding range. Long Lake National Wildlife Refuge manager Paul Van Ningen and Carol Aron, biologist with the Bismarck Endangered Species office, found snowy plovers and piping plovers on the refuge in late June. Van Ningen and his son Aaron verified that the nest was being incubated by a pair of snowy plovers.

Both male and female snowy plovers attended the nest and aggressively defended it, including feigned injury displays by the female and vertical jumps by the male to lure away both human intruders as well as additional showy and piping plovers.

Snowy plovers are smaller and lighter in color than their piping plover cousins, which have had more than a dozen nests at Long Lake Refuge this year. "Adding the four snowy plover nests makes this quite a year," Van Ningen noted. All the nests were located in a one-mile stretch of shoreline habitat. Both plover species move frequently as the habitat changes seasonally from bare to full vegetation. ♦



A female snowy plover feigns injury as a ruse to protect her nest. Four rare snowy plover nests were seen at Long Lake National Wildlife Refuge in North Dakota in June. (Aaron Van Ningen)

Send Us Your Comments

Letters to the Editor or suggestions about *Refuge Update* can be e-mailed to RefugeUpdate@fws.gov or mailed to *Refuge Update*, USFWS-NWRS, 4401 North Fairfax Dr., Room 634C, Arlington, VA 22203-1610.



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