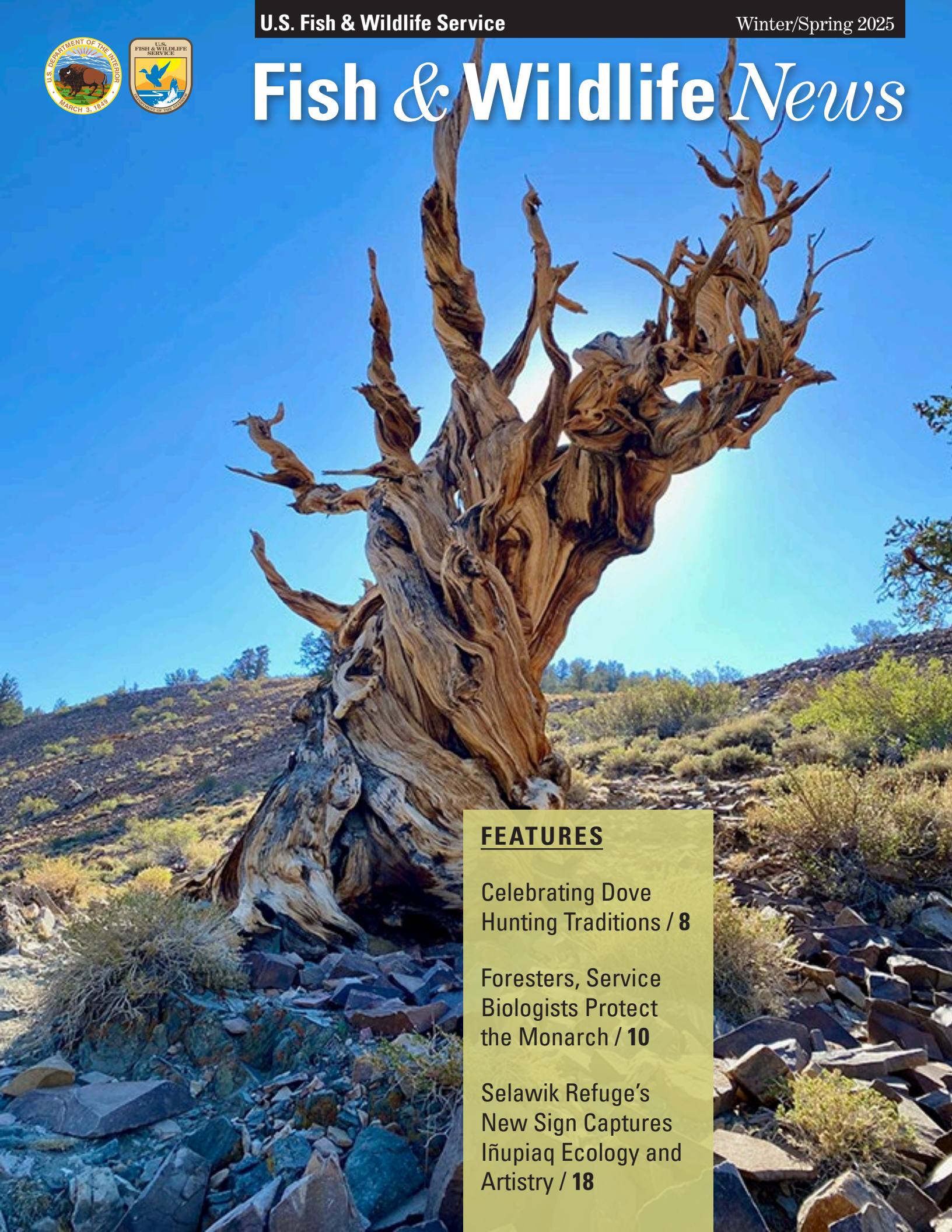
U.S. Fish & Wildlife Service Winter/Spring 2025

Fish & Wildlife News



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On the cover:
Great Basin bristlecone pine
(PHOTO BY SARAH KULPA/USFWS)

departments

Advancements for Black-Footed Ferret Conservation Continue with New Offspring from Cloned Ferret

The Service and conservation partners announced in November 2024 a groundbreaking achievement in endangered species research: the first-ever birth of black-footed ferrets produced by a cloned endangered animal. This historic event, a testament to the importance of conservation partnerships, occurred at the Smithsonian National Zoo and Conservation Biology Institute (NZCBI) in Front Royal, Virginia.

Antonia, a cloned black-footed ferret, has successfully given birth to two healthy offspring after mating with Urchin, a 3-year-old male black-footed ferret at Smithsonian's NZCBI. This marks the first time a cloned U.S. endangered species has produced offspring, showcasing a critical step forward in using cloning to enhance genetic diversity in conservation efforts. While one of the three kits passed away shortly after birth, two — one male and one female — are in good health and meeting developmental milestones under the care of NZCBI carnivore keepers. Antonia and her kits will remain at the facility for further research, with no plans to release them into the wild.

"The successful breeding and subsequent birth of Antonia's kits marks a major milestone in endangered species conservation," says Paul Marinari, senior curator at the Smithsonian's NZCBI. "The many partners in the Black-footed Ferret Recovery Program continue their innovative and inspirational efforts to save this species and be a model for other conservation programs across the globe."

Research partners cloned Antonia using tissue samples collected in 1988 from a black-footed ferret named Willa, whose genetic material was preserved in the Frozen Zoo at the San Diego Zoo Wildlife Alliance. Partners at Revive & Restore and ViaGen Pets & Equine have pioneered this technology. Willa's samples contain three times the genetic diversity seen in the current population of black-footed ferrets, all of which (except the three clones and new offspring) are descended from just seven surviving individuals. Introducing these previously unrepresented genes could play a key role in increasing the species' genetic diversity, vital to healthy, long-term recovery.

The successful reproduction of a cloned endangered species is a landmark in conservation genetic research, proving that cloning technology can not only help restore genetic diversity but also allow for future breeding, opening new possibilities for species recovery. This represents a significant step in safeguarding the future of black-footed ferrets and overcoming the genetic challenges that have hindered recovery efforts.

Antonia's kits at three-weeks old. (PHOTO BY SMITHSONIAN NATIONAL ZOO AND CONSERVATION BIOLOGY INSTITUTE)

This scientific achievement is the result of collaboration between the Service and partners such as the Smithsonian's NZCBI, Revive & Restore, San Diego Zoo Wildlife Alliance, ViaGen Pets & Equine, and the Association of Zoos and Aquariums. Cloning offers an important tool in addressing genetic bottlenecks and disease threats, such as sylvatic plague and canine distemper, that complicate recovery efforts for black-footed ferrets.

While this technology represents a promising new approach, it is one of many strategies being employed to aid species recovery. The Service continues to focus on habitat conservation, disease management, and the reintroduction of ferrets into the wild. Ongoing efforts include the development of disease resistance and habitat restoration across the Great Plains in collaboration with states, tribes, landowners, and other conservation partners. □

Service Signs 10-Year Agreement With Pheasants Forever and Quail Forever

In December 2024, the Service announced a 10-year partnership with Pheasants Forever and Quail Forever to accomplish shared goals in managing grassland and upland habitats and promoting workforce development, education, and outreach that support mutual conservation goals.

Under a Memorandum of Understanding, the organizations will collectively develop a work plan through 2034. The agreement focuses on habitat improvements that may be implemented on lands managed by the National Wildlife Refuge System, as well as on private lands under our Partners for Fish and Wildlife Program and other conservation programs affiliated with the Farm Bill. During this long-term partnership, the organizations also will collaborate to recruit, educate, train, and retain wildlife professionals who are imperative to successful conservation work across the country.

The partnership also commits the organizations to advancing monarch butterfly conservation through education, habitat restoration, increased seeding of plant species that are critical to monarchs, sharing data that support increased conservation efforts, and joint communications that encourage stakeholders to support and participate in monarch conservation.

"The U.S. Fish and Wildlife Service has been a key partner of our organization, and we're very excited to continue that relationship with this MOU," says Pheasants Forever and Quail Forever President and CEO Marilyn Vetter. "High-quality conservation cannot happen without meaningful partnerships. Our organizations have a proven track record for conservation collaboration at the highest levels—we're thrilled to take it another step forward in the decade to come."

Under the agreement, the partners also will support each other's efforts to improve collaboration across the land management community, with partners such as the U.S. Department of the Interior's Bureau of Land Management and National Park Service; U.S. Department of Agriculture's Natural Resources Conservation Service, Farm Service Agency, and U.S. Forest Service; U.S. Environmental Protection Agency; U.S. Department of Defense; and others that play a role in conservation.

Founded in 1982, Pheasants Forever and Quail Forever is a private, 501(c)3 nonprofit organization dedicated to conserving pheasants, quail, and other wildlife through habitat improvements, public access, education, and conservation advocacy by serving as the national voice for upland habitat conservation. The organization currently has 760 volunteer-led chapters embedded in communities across the United States and Canada who strive to make a difference for wildlife and people. The organization's vision is to endeavor to create a North American landscape of quality habitat supporting wild, sustainable populations of upland game birds and other wildlife that are accessible to generations of hunters and conservationists. □

Prairie blazing star, wild bergamot, and black-eyed Susan in bloom at Big Stone National Wildlife Refuge in Minnesota.
(PHOTO BY MIKE BUDD/USFWS)

TINA SHAW, Office of Communications, Midwest Region

At San Francisco Refuge, New Trail Connects Community

Something new is drawing visitors — cyclists, runners, and pedestrians — to the Ravenswood unit of Don Edwards San Francisco Bay National Wildlife Refuge: the Flyway Trail and Viewing Area, which opened in October 2024.

As trails go, it might not seem like much: just a half-mile strip of pavement between the refuge and Bedwell Bayfront Park, the only city-owned open space within Menlo Park. But as a connector, the new trail is a game changer.

The trail links to a footbridge that Meta (formerly Facebook) built two years ago across Interstate 84. The result is the first-ever walking path from congested East Palo Alto and the Belle Haven neighborhood of Menlo Park to the park and the refuge. "We're literally bringing the bay to people's footsteps," says Miguel Marquez, park ranger at San Francisco Bay National Wildlife Refuge Complex.

The trail also showcases a major effort to restore the bay and reduce area storm flooding. Trail users can see three types of wetlands managed by the refuge, as it returns former industrial salt ponds to tidal flow.

Shared Pride

Enthusiasm for the project abounds.

"It was a really great collaboration," says Ann Spainhower, refuge manager of San Francisco Bay Refuge. "It's nice to be able to assist local governments with storm water management, so they can alleviate some flooding problems they've had in the past … But my favorite part is we're opening this connection from the city to the refuge…. and putting up new interpretive signs. We've never had anything like that before."

Menlo Park Mayor Cecilia Taylor adds her praise, calling the trail "an example of inter-agency cooperation and working together to get big things done." She continues, "This Flyway Trail will benefit our current and future residents in Menlo Park and nearby cities by creating a healthier environment through open space, better access for the public, and most importantly additional resiliency to our beautiful shoreline."

The trail's opening day — October 19, 2024 — had a festival feel, with guided walks, demos, games, and the refuge's unveiling of colorful interpretive panels.

Cyclists and pedestrians use the Flyway Trail in the Ravenswood unit of Don Edwards San Francisco Bay National Wildlife Refuge. (PHOTO BY MIGUELINA PORTORREAL GARCIA/USFWS)

"There was tremendous turnout from the community," says Miguelina Portorreal, public affairs specialist for our Pacific Southwest Region. "More than 300 people came out. A lot of partners set up booths."

Partners Weigh In

Staffing the booth for Nuestra Casa de East Palo Alto, a nonprofit that partners with the refuge and advocates for area Latino families, was Jennifer Adams. The trail "is definitely going to be a huge benefit for the community," she says.

"I love that [trail planners] gave thought to the community the trail is serving," she adds. "Every sign they put up has a QR code that takes you to an interpretive sign fully in Spanish."

Also at the trail opening was Martin Cooper, a volunteer with the nonprofit environmental group Save the Bay. Some green slopes the group is planting to provide wildlife habitat and reduce flood risk are visible from the Flyway Trail.

"You read about all these big construction projects to help with sea level rise… and provide refuge and habitat for native species," he says. "But people can't really see what that means. With this trail, they have a viewing point to see what a horizontal levee looks like, how it will work to help with sea level rise. It's important to see that."

Adams looks forward to using the trail on the next annual bay shore cleanup, on which Nuestra Casa partners with the refuge. "We'll use that as an opportunity to tell people why restoring these places matter … and why returning some ponds to wetlands may reduce community flooding." □

SUSAN MORSE, National Wildlife Refuge System, Headquarters

Laxey Creek Sheep Ranch: Growing Community Is at the Heart of Sustainable Farming

For Jeremie Favre and Ellen Geisler, their farm is everything. "It's our heartbeat," Favre shares.

The Laxey Creek Sheep Ranch is a thriving example of sustainable farming in the southern Driftless Area in southwestern Wisconsin that prioritizes both the productivity of their livestock and the conservation of grasslands. With their prolific sheep lambing every eight months, they're doing something right. It may sound like a fable, two kids, three dogs, and 500 sheep, but with our help, this family is putting the grass back in grasslands.

Their commitment to sustainability shines through in every aspect of their operation, and we're supporting them in their mission.

Finding a Partnership

Mike Engel, a biologist in our Partners for Fish and Wildlife Program, works every day building relationships with landowners. "We provide hands-on assistance and equipment that landowners need," Engel says, "to plant productive pastures." Engel explains that the point of his role is to provide landowners with resources to make the best decisions for their farm and wildlife. This voluntary and collaborative approach to working with landowners, like Favre and Geisler, is key to our mission to protect our shared resources.

"I get along great with Mike," Favre explains, saying how he likes working with our agency because of the lack of bureaucracy and the practical advice he's receiving.

We prioritize working on lands that have the most benefit to the most species. Laxey Creek Sheep Ranch falls within an area that has a lot of potential for biodiversity. Working farms, like Laxey Creek Sheep Ranch, are critical to implementing the landscape conservation designs that benefit wildlife, economies, and people.

Putting the Grass in Grassland

Favre credits the success of the sheep ranch to the quality of the feed. With rolling hills and shallow soil, the land is well suited for his method of choice, rotation grazing. With a graduate degree in agronomy, Favre sees the role of grass both as a valuable crop and a natural resource.

Before rotational grazing on the ranch could begin, the family needed to seed their lands into pasture. To seed land, they needed a drill. Favre spoke with his county extension program who informed him that he could borrow—at no-cost—equipment supporting his conservation efforts from the Service.

We have been borrowing Favre a no-till seed drill every spring since, assisting his economic and environmental efforts. "That drill was significant for us," Favre notes, saying how it would be a huge barrier to find a drill every year for an acreage as small as his. This tool is allowing them to plant a diverse mix of native grasses, which keep their sheep healthy and productive.

Jeremie Favre speaks at an event on his ranch. (PHOTO BY MIKE ENGEL/USFWS)

Through their rotational grazing practices, Favre and Geisler are transforming their land into vibrant grasslands that benefit their sheep, the local wildlife, economy, and community.

Watering the Grassland

"Around here, every acre is a shoreline." Favre says, referencing how their watershed runs to larger lakes and ponds.

Laxey Creek, the namesake of the ranch, runs through the property, and it's one of the most productive streams in the watershed. According to the Wisconsin Department of Natural Resources, Laxey Creek is home to native brook trout so healthy they outstrip all other trout in the area in age and size class—making them an angler's favorite.

Engel points out that Favre and Geisler's farm plays an essential role in protecting Laxey Creek. Even during the winter, their fields stay covered with grass, which helps keep the soil in place and the water clean.

Community in Grasslands

The impact of Laxey Creek Sheep Ranch extends beyond ecological restoration, it positively influences the local economy, too. Giesler has been working hard to sell lamb directly to consumers, creating connections and boosting the local economy. "It's the best marriage of food production and environmental stewardship," says Favre.

In partnership with our agency and others, the family hosted a field day on the farm. About 65 attendees learned how the family started their commercial sheep farm from scratch.

"We really want this farm to benefit others by bringing people together and being a hub for sustainability," Favre says. They want to turn their ranch into a hub for education, community, and sustainability.

Laxey Creek Sheep Ranch serves as a prime example of how dedicated stewardship and strategic partnerships can yield remarkable environmental benefits and agricultural productivity. □

GIGI OTTEN, Office of Communications, Midwest Region

14-year-old Hunter Develops Own Hunting Method, Finds Success

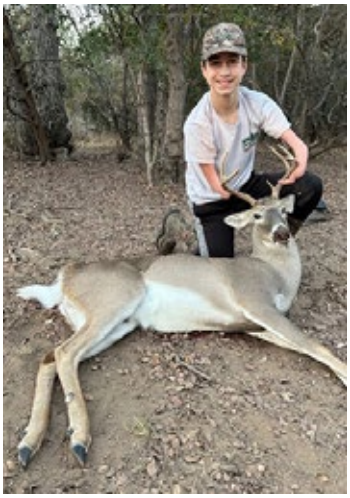
Fourteen-year-old Layton Horner started hunting "to see the animals and spend time with family—his brothers, dad, and grandfather," dad Chris says.

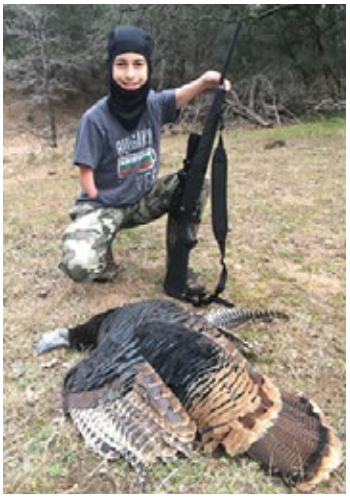
"He loves being outdoors and exploring the woods. He likes watching the animals and not knowing exactly what you might see (white-tail deer are currently his favorite), and embraces the challenge of trying something new," Chris wrote in an email after talking to his son.

For all those reasons, Layton is like many hunters. Matt Falteich, for instance, an administrative support assistant at Cherry Valley National Wildlife Refuge in Stroudsburg, Pennsylvania.

"To me, hunting is a way of life; I've chosen this lifestyle because … I'm able to provide meals for my family, connect with nature, spend time with friends and family, and I'm always able to challenge myself," says Falteich, who served as the Service liaison for the refuge's "Field to Fork" mentored archery deer hunt the weekend of November 14.

Layton definitely challenges himself. He developed his own way of shooting, his grandfather Thomas Horner says, as Layton does not have hands. His grandfather says that in the blind, Layton "sits in a chair and rests the rifle on the window ledge, like the rest of us." He then hands Layton the rifle "by resting it on the window ledge, and he takes over. He takes complete control, takes the safety off, and aims and shoots by himself."





(Top) Layton Horner practices shooting. (Bottom) Layton's own way of shooting has proven successful. (PHOTOS COURTESY OF THOMAS HORNER)

After taking Texas' hunter education course, Layton got a license and began hunting. In 2024, he harvested a seven-point buck, and a year earlier a Rio Grande turkey.

The 2022 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, coordinated by our Office of Conservation Investment, shows that 14.4 million U.S. residents over 16 hunted, spending $45.2 billion.

We'd like it to be higher. For many reasons.

All the ones that motivate Layton and Falteich, for sure. Another key reason: Hunting provides money for conservation.

Not only do the fees for hunting licenses go to fish and wildlife agencies in states and territories, but so does a tax paid on ammunition, firearms, and archery equipment by manufacturers.

That money funds the conservation of wildlife and their habitat, and more, including helping people access and enjoy the outdoors. Texas uses this Wildlife Restoration money to help fund the hunter education program Layton took. (Anglers and that industry pay similarly to support Sport Fish Restoration.)

Our Office of Conservation Investment disburses the money, and in 2024, it sent states and territories over $1.3 billion in Wildlife and Sport Fish Restoration money to fund conservation and connect people with nature. Since 1937, more than $28 billion has been distributed through annual apportionments for conservation and public access projects. □

MATT TROTT, Office of Communications, Headquarters

CELEBRATING SUCCESSES IN REDUCING BIRD COLLISIONS

Edited by VALERIE FELLOWS,
Migratory Bird Program,
Headquarters

Following the February 2024 Multi-Sector Summit to Address Light Pollution and Bird Collisions, we have been purposefully working toward voluntary implementation of the primary goal established at the summit: Intentional collaboration with a diverse group of partners to ensure bird-friendly practices are implemented at meaningful scales.

Since that time, our large collaborative partnership with industries, stakeholders, conservation organizations, academia, local and state agencies, and the public has been leading others to take voluntary actions at all scales to address light pollution and stop bird collisions. This movement has gained momentum across the country, from individual homeowners to city skyscrapers.

Here are just a few examples highlighting the partnerships and voluntary conservation work across the country:

University of Pittsburgh Medical Center

The University of Pittsburgh Medical Center Presbyterian Tower will be a destination for health and wellness, where people come to heal. It is the largest construction project ever undertaken at the University of Pittsburgh Medical Center and is full of firsts. Through partnerships with the Carnegie Museum of Natural History, and Hammel, Green and Abrahamson, a national firm specializing in commercial architecture, engineering, and interior design, the center has installed bird-safe glass on the new Presbyterian Tower. The installation features glass with vertical lines silkscreened on the outer surface at 4-inch intervals along the first three stories, extending from street level to the rooftop gardens, to help reduce bird-window collisions. The collaboration with the Carnegie Museum of Natural History to install bird-safe glass is just one example of the University of Pittsburgh Medical Center's commitment to make this project more than just a building.

(PHOTO BY UNIVERSITY OF PITTSBURGH MEDICAL CENTER)

Viking Expedition Ships Octantis and Polaris

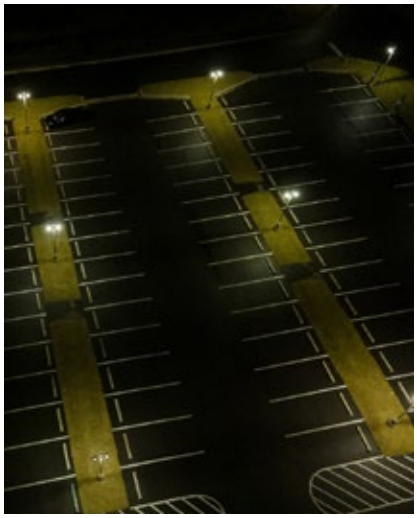
We have partners engaged in voluntary conservation efforts offshore, where birds are also impacted by light pollution and collisions with structures. Viking Cruises operates two expedition cruise ships in its fleet that implement proactive measures to reduce lighting and the risk of attracting and disorienting birds. "Bird mode" is activated during migration periods and when the ship is near sensitive bird areas. Ship operators dim lights on the decks, automatically close window blinds, and draw curtains in communal areas. Passengers are informed before the ship goes into "bird mode" and are provided educational information on the actions. Reducing lighting on ships and offshore structures presents a significant conservation opportunity for our partnership to pursue.

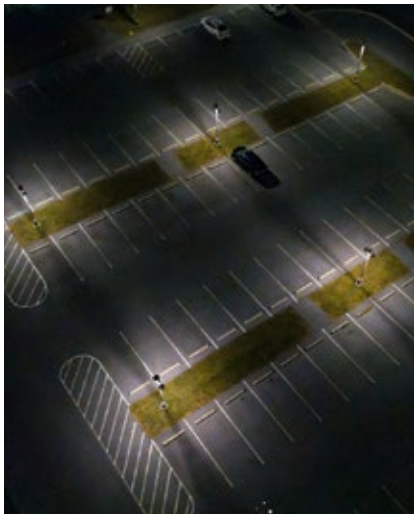
(PHOTO BY VALERIE FELLOWS/USFWS)

Petrified Forest National Park

Up until recently, instead of cleaning the Painted Desert Community Complex windows at Petrified Forest National Park, staff would leave soap on the windows to prevent bird strikes. The Petrified Forest was certified as a Dark Sky Park in 2018 and already turned off lights in the complex at night, but the glass surrounding the complex courtyard created a potentially lethal environment for birds during the day. The long-term solution will be to replace window glass with etched glass as part of a rehabilitation project at the complex. To reduce bird collisions during the interim years, the park applied a film to the windows that birds can see. Now the windows sparkle and birds avoid them, making the courtyard safer for birds and more enjoyable for visitors.

On the left, you can see how Petrified Forest National Park staff would leave soap on the windows to prevent bird strikes. Now the windows sparkle and birds avoid them because they've added new bird-safe film to make the glass visible to birds. (PHOTO BY DYLAN SCHNEIDER/NATIONAL PARK SERVICE)





National Conservation Training Center

Considered the "Home of the U.S. Fish and Wildlife Service," the National Conservation Training Center is our gathering place, and it is getting a bird-friendly makeover. We are working on both nighttime lighting and windows.

We are adjusting nighttime lighting schedules, using timers, and encouraging folks to turn their lights off when unnecessary. We're also switching to warmer, less harmful light for wildlife and people using lower correlated color temperatures/CCT of 3000 Kelvin degrees or less. And in December 2024, we added a shield to the outdoor lights on our parking lot to keep the light pointed to the ground where people need it, and prevent it from spilling into the sky. We will continue working around campus, including more parking lots and trail lamp posts as the weather allows.

To prevent birds from colliding with glass, we are encouraging folks to close their window blinds when they are away from their guest rooms, classrooms, or offices. We're also working on retrofitting our windows with various bird-friendly techniques using films or paracord curtains to create a 2" x 2" dot pattern on windows. Temperatures must be above 50 degrees F to apply the window films, so this work will begin in the spring of 2025.

Before and after the custom-made shields were installed on the parking lot lights.
(PHOTOS BY RYAN HAGERTY/USFWS)

Stewart Lee Udall Building in Washington, DC

After years of conversations and developing partnerships with the Department of the Interior's Facilities and Administrative Services, we were very excited to be offered to the opportunity to create two bird-safe window demonstration areas with window treatments to help make the glass visible to birds during the day in the historic Stewart Lee Udall Building in Washington, DC, home of the Department of the Interior. The building has also grown more bird-friendly with work to make sure the blinds are closed throughout the building to prevent light spillover during the night. This trial installation at the building is the first step toward making building windows safer for birds, with the potential to expand on these efforts and install more in the future.

A Service employee puts dots on the windows of one of the bird-safe demonstration doorways at the Stewart Lee Udall Building.
(PHOTO BY USFWS)

McCormick Place Lakeside Center in Chicago

After a collision event where nearly 1,000 migratory birds died during one night in October 2023, several conservation organizations provided a suite of recommendations to McCormick Place, the largest convention center in the United States, to reduce the risk of future similar events. Experts at the Service also reached out to offer technical assistance, and helped McCormick Place staff to clarify and prioritize actions to make their glass visible to birds and reduce light emanating from the facility that can attract and disorient birds McCormick Place leadership and board of directors expressed their commitment to implement lasting solutions to reduce and ideally prevent collisions at their facilities and have followed through on that commitment. They implemented a "curtains-closed-by-default" policy at the event center, which prevents light from escaping much more frequently than their previous approach. Additionally, and most impressive, during the summer of 2024 workers installed nearly 120,000 square feet of a 2" x 2" dot pattern developed by Feather Friendly, making nearly two football fields of glass bird-friendly! Preliminary monitoring results by the Chicago Field Museum illustrate that these actions worked very well during the 2024 fall migration. (PHOTO BY PAUL GROLEAU/FEATHER FRIENDLY)

Celebrating Dove Hunting Traditions

While some hunters have the good fortune to be able to access private dove fields, others rely on public land. | *By* LANIER CLEGG

The autumn season often elicits excitement. For some, that comes from the return of college football. For others, relief from the summer heat marks the season's change. For Laurel Barnhill, it signals the beginning of dove season.

Laurel has always had a passion for bird hunting. She grew up hunting with her parents and fondly recalls spending hours in the field, bonding over their shared love of the outdoors. Her father proudly wore an "NRA Safe Hunter" patch on his vest. Laurel learned the value of safe and ethical hunting from her parents.

These experiences in the field grew her love of the outdoors and ultimately led her to choose a career centered around wildlife conservation. She now serves as chief of staff for our Southeast Region.

This love of the hunting and the outdoors has also been a strong connection point for Laurel and her husband, Haven Barnhill. Haven, who also serves in our Southeast Region through his work as deputy regional forester, has been an avid dove hunter for most of his life. His lifelong dream was to own his own property and plant a dove field for friends and family to enjoy.

Together, they have turned this dream into reality.

For almost two decades, Laurel and Haven have cultivated a 12-acre dove field on their property just outside of Athens, Georgia. On the opening day of Georgia's dove season—typically the first Saturday of September—they invite family and friends to enjoy the fruits of their labor and participate in a dove hunt. ››

(Top) A mourning dove forages for seeds in the grass. (PHOTO BY COURTNEY CELLEY/USFWS) (Bottom) Mourning doves are one of the most abundant birds in North America. (PHOTO BY USFWS)

Continued from previous page.

Folks arrive around noon and share lunch before heading to their spot on the field. After a few hours of shooting, the men, women, and children reconvene for dinner and fellowship.

This opening day tradition means the world to Laurel. For her, bird hunting represents a time of tradition and togetherness.

"It's not about how many birds anybody kills," she says. "It's about sharing the experience of being together on a Saturday afternoon."

The hunt is the only time Laurel and Haven can spend quality, face-to-face time with some of their friends and family members.

Several of them have literally grown up hunting this field.

"I've watched my nephew grow from 4 feet tall when he started hunting here to now being taller than I am," Laurel laughs. "To pass these hunting traditions down is really poignant to me."

While Laurel is grateful she can provide a field for her friends and family, she recognizes that not everyone has the opportunity for private hunting.

"Having public lands available and multiple dove fields across the state is critical for people to enjoy a safe, quality hunt," she says.

Providing public hunting access requires people, gear, and money. Fortunately, Georgia's Wildlife Resources Division (WRD) has access to grant funds from our Wildlife Restoration Program.

Authorized by the Wildlife Restoration Act of 1937, the program apportions money generated from taxes on firearms, ammunition, and archery equipment to state wildlife agencies to pay for conservation projects. The Service administers the program and covers 75% of the costs, with the state responsible for the remaining 25%. These projects include habitat and species management, research, land acquisition, facility construction, and hunter education.

Wildlife Restoration funds are crucial for cultivating and maintaining dove fields. They help cover seed, equipment, and the many hours of labor spent tending the fields.

WRD currently maintains over 3,000 acres of managed dove fields scattered throughout the state, ensuring that most hunters have access to dove hunting opportunities within driving distance. Some public dove fields even exist on private land, made available through WRD's Voluntary Public Access (VPA) program.

The VPA program, partially funded by Wildlife Restoration funds, allows private landowners to lease property to WRD. With 93% of Georgia's land in private ownership, VPA significantly expands opportunities for public recreation.

Maintaining quality dove hunting also involves monitoring the species' population. Biologists and wildlife technicians spend countless hours trapping and banding birds, with Wildlife Restoration funds helping pay for labor costs.

First, biologists and technicians select a location. Then they bait the area, often with wheat or corn. As the birds grow accustomed to a baited spot, they lay down a cage with tunnels so the birds can reach the feed. Once inside, the birds cannot escape. Biologists and technicians then return to the cage to band, sex, and age the individual birds before releasing them.

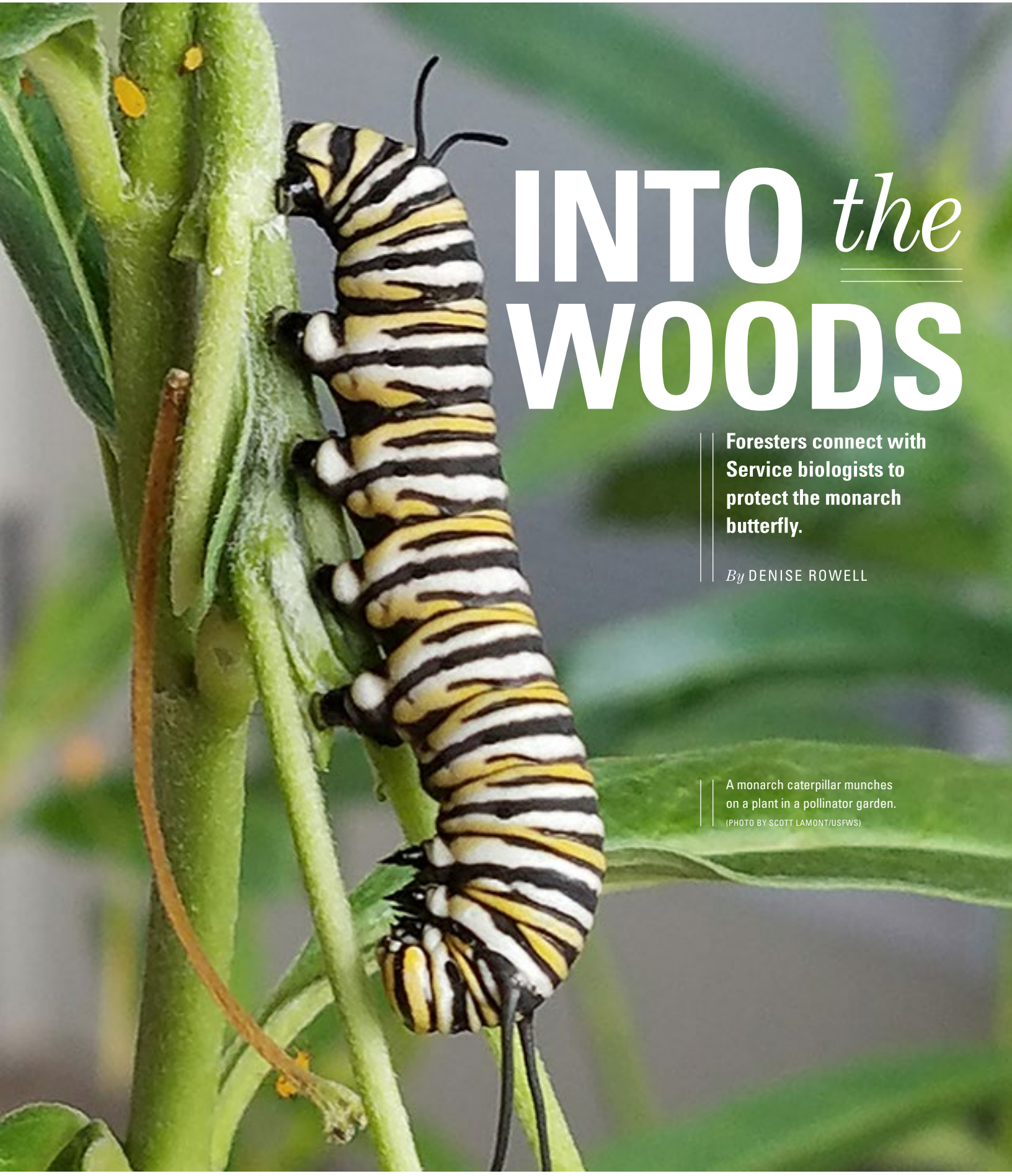
Bird banding involves placing a small, numbered, bracelet-like tag on each bird. If a hunter harvests the bird, he or she can report the identification number to <www.reportband.gov>. This data helps the Service learn about the birds' breeding and wintering homes, behavior, migration, survival, and reproduction. This information assists the Service in offering recommendations to state wildlife agencies regarding bag limits and season lengths for hunting, ensuring the maintenance of a healthy dove population.

These population surveys benefit both private and public land hunters. Without adequate monitoring, dove hunting as we know it wouldn't exist.

Like Laurel, many hunters use dove season as a way to spend time with family and friends and view it as a tradition to pass down. Wildlife Restoration funds play an important role in providing public access and managing wildlife and preserving the tradition for years to come. If you don't have an annual outdoor tradition in your family or friend group, perhaps it's time to look at the public land near you and start one! □

LANIER CLEGG, Office of Communications, Southeast Region

The mourning dove is the most hunted migratory game bird in North America. (PHOTO BY USFWS)



INTO *the* WOODS

Foresters connect with Service biologists to protect the monarch butterfly.

By DENISE ROWELL

A monarch caterpillar munches on a plant in a pollinator garden.
(PHOTO BY SCOTT LAMONT/USFWS)

Daphne, Alabama—In the heart of a small Alabama town, locals can explore Daphne Middle School's Butterfly Garden Exhibit. Principal Kerry Edwards knew the space—filled with stunning firewheels, yellow daisies, and milkweed—would be a huge success for students, teachers, and nature-lovers alike.

"Pollinators and monarch butterflies are an important part of our environment, and providing opportunities for our students to learn about how these incredible species play a role in our community and world is invaluable," says Edwards.

It's easy to see why the butterflies are called monarchs. Their large size and vibrant look give them a regal appearance. Their wings resemble majestic stained-glass windows, with bright hues of orange outlined with bold black veins and white spots.

"Seeing monarchs and other species in our school garden is a thrill—not only from a learning perspective but also as personal achievement, as the students are not only observing these species but have had an active role in encouraging them to thrive on our campus," Edwards says.

Some consider the butterflies superheroes of the insect world, with one superpower being their ability to gracefully migrate thousands of miles.

Meg Hedeen, a biologist and pollinator expert with the Service, says monarchs are tougher than they look. The insects embark on a trip of a lifetime with just their wings and fat stored from nectar sources.

"Encountering a monarch is akin to seeing an Olympic athlete to me," Hedeen says. "The skills and determination it takes to accomplish these amazing things always comes to mind when a monarch flutters by."

But even the monarch, which carries so much admiration, can face difficulties.

Monarch butterflies need a variety of habitats to breed, feed, and rest during migration. Urban development, habitat conversion, and exposure to insecticides all make the journey more challenging.

That's why in December 2024, we proposed to protect the monarch as threatened under the Endangered Species Act.

Still, Hedeen is optimistic.

One encouraging example is our collaboration with the National Alliance of Forest Owners (NAFO), a group of major private forest owners in the U.S.

"I'm thrilled to be part of this collaboration between NAFO and FWS. Together, we are integrating practices that not only sustain and expand working forests but also support our vital pollinators," says Hedeen.

Dave Tenny, president and CEO of NAFO, says his passion for the woods started during his childhood in Idaho.

"I found myself connected to those forests,"Tenny says. "I loved the beauty and the smell of the trees, the way they shaded rivers and streams where I fished, and the wildlife I often saw, especially where the forest met the meadow." ››

A monarch indulges in the nectar of goldenrod.
(PHOTO BY RENEE BODINE/USFWS)

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Tenny says wildlife conservation and forest health go hand-in-hand. That's why he's enthusiastic about collaborating with the Service.

"With modern forestry, we know that wildlife is the heartbeat of the forest," says Tenny. "When wildlife populations are healthy, the heartbeat is strong and our forests are healthy."

Tenny says NAFO's members implement forest management regimes that can help provide safeguards for monarchs.

For starters, monarchs rely on sun-loving plants, such as milkweed, for reproduction and growth. Tenny says foresters can help sunlight reach the forest floor through thinnings that create an open canopy.

"Private forest owners manage their lands in varied ways across the landscape. When managing for forest products, they also clear sections of the forest for harvests which also allows pollinator-supporting plants to get the sunlight they need," explains Tenny.

Foresters, like those at The Westervelt Company, a company based on land stewardship, are embracing collaborative conservation efforts for pollinators in their forests.

Jonathan Lowery, vice president of sustainability and government relations for Westervelt, says the company has a long history of teaming up with researchers to better understand how wildlife uses working forests.

"We recently collaborated with the National Council for Air and Stream Improvement, the University of Georgia, and Mississippi State University to establish research sites in our forests," says Lowery.

Dave Tenny is the founder and CEO of the National Alliance of Forest Owners. (PHOTO BY NAFO)

"We believe that working forests provide a tremendously beneficial habitat for pollinators, and through this research we will quantify just how effective these working, managed forests are at supporting such a crucial part of our ecosystem."

Says Hedeen: "I hope landowners, businesses, and conservation biologists continue to work together to find ways that help both businesses and families thrive while supporting monarch butterflies."

"All sectors can work together, and it makes me hopeful," Hedeen says.

Adds NAFO's Tenny, "We still have so many ideas to explore as we move ahead with the Service. One idea I'm particularly excited about is working together to develop seed mixes for roadside and construction areas that help grow plants friendly to pollinators.

"The best is yet to come!" Which means that hopefully Daphne Middle School's Butterfly Garden Exhibit won't lose its star attraction. □

DENISE ROWELL, Office of Communications, Southeast Region

A group of monarchs find food and habitat. (PHOTO BY RENEE BODINE/USFWS)

The Little Mouse & the Beach House

Protections offered to the Alabama beach mouse from the permitting process ensure that it can co-exist with people and defend against storms and hurricanes.

By DEBORAH KORNBLUT

(Photo) Thriving beach mouse populations are an indicator of healthy dune ecosystems that help protect coastal habitats, especially during hurricanes. (PHOTO BY USFWS)

If we were in a storybook, the final line of this tale might read: The little Alabama beach mouse and the people in the beach house lived happily ever after. Reality has more nuances: The lives of the people and the beach mouse are intertwined, in part through permitting.

Meet the Alabama Beach Mouse

Our story is set in the sand dunes along the Alabama coastline. The area appeals to a variety of people wanting to build a home or recreate on the beach. "One of the things that drew us to the area was that it was wild, and it wasn't over-built…," says Michelle Garmon, a local homeowner.

But people aren't the only ones with a home here.

Measuring only 4-5 inches (including tail), the Alabama beach mouse is an elusive neighbor with a light-colored coat that evolved over time to look like the sand. The mice live in the dunes on the beach and tend to stay out of human homes.

"It may be one of the tiniest creatures you've ever seen, but the role it plays is huge," says Garmon. The mice move seeds around, some of which are forgotten or lost. The uneaten seeds then grow into plants that stabilize the dunes and defend against storms and hurricanes.

To conserve the mouse and the critical role it plays in protecting this landscape, the Alabama beach mouse was protected under the Endangered Species Act. Activities or actions that impact the beach mouse therefore require a permit.

Balancing Construction and Conservation

Specifically, construction in beach mouse habitat requires an incidental take permit. (Learn more about take and permits.)

"The emphasis of our permit is to build in concert with nature," says Bill Lynn, a Service biologist. He adds: "The permit is a balance between the interests of private landowners and the wildlife. If it weren't for the permitting program, then the Alabama beach mouse would be extinct today."

For those seeking to build in this delicate landscape, the process kicks off with a pre-consultation meeting.

Potential applicants must submit a habitat conservation plan (HCP). The HCP is a planning document that outlines how to balance economic use and wildlife conservation by minimizing and mitigating the impacts of activities on the beach mouse. For example, applicants may propose using native plants in the landscaping or fencing that helps build sand dunes. Permittees also agree to prevent household cats from roaming free.

John Brett, with Brett/Robinson Real Estate, builds in the area and was first introduced to the beach mouse in the 1990s. For him, "The keyword is balance.

Alabama beach mice tend to stay out of human homes. (DRAWING BY KARINA BRANSON/CONVERSKETCH)

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There's a high probability that mouse habitat is there and that's something you have to address upfront. We planned for it… and our homeowners are going to love that additional 75 feet of beachfront that they get to use."

Documentation needed for the application can include historical surveys, a proposed site plan, and even a plan for landscaping, so it's important that potential applicants are prepared. The pre-consultation meeting is also significant because an application for the incidental take permit triggers a strict timeline.

Brett adds: "We work with U.S. Fish and Wildlife to preserve the natural resources that we have along this beautiful Gulf Coast. We know that the Service is not there to prohibit us."

Ready to Apply? Go online.

Applicants previously had to go through the process by mail, but in 2020, we launched ePermits, our online permitting website. The move to online was part of an effort to modernize and streamline permitting across the agency.

Paper applications are still available, but the online option helps the application process go more smoothly. The permit processor "opens" the online application in ePermits when a potential applicant is ready to submit the documentation and pay the associated fees.

In addition to being a homeowner in the area, Michelle Garmon is an independent consultant for several builders. She has applied for an incidental take permit many times.

In her experience, "Time is of the essence with these things. As you know, people want to get their houses built and get to their happy place. [The ePermits system] is so much above the old paper forms….

In 2020, we launched ePermits, our online permitting website. (DRAWING BY KARINA BRANSON/ CONVERSKETCH)

People were just so overwhelmed… and having it online, which you know the whole world is moving to, I just think it's made it more efficient."

She further shares: "I've been able to follow the process since the first rollout of ePermits, and you can tell that the government is trying to make it easier. With the online system, it tracks where your application is. It makes [the process] more transparent as to what's happening with your application. Before it was mail and wait. Now you have confirmation that your submission is in."

When all documentation is in order, Garmon can prepare an application in about 30 minutes from start to finish. "Going into this, I was told [applying for a permit] was the hardest process… and honestly, if you learn the parameters and stay within them, it's not hard at all," she adds.

Finding a Happy Ending

Processing of the incidental take permit can take time, but once issued, the permit is good for 50 years. "We're in a hurricane-prone environment, so at one point or another damage will come to their homes, and since our permits are done in 50-year increments, they won't have to consult again for getting the repairs they need," explains Lynn.

Similarly, the protections offered to the beach mouse from the permitting process ensure that it able to co-exist with many generations of people to come. "It's an investment to build a house so why not protect one of the species that helps protect your house during a storm," says Garmon.

Some final advice for new applicants:

- Start early and reach out to your local Service office for help.
- Plan smart, remember to build in the costs upfront, and be mindful of other requirements needed to build the home.
- Last but not least, those seeking to build aren't alone. "Sometimes a builder might make a mistake, and we'll work with folks to get the necessary corrections," says Lynn. There is also a Help Desk in ePermits to assist applicants and permittees with questions.

With the permit in place, the beach mouse and the people in the beach house can grow old together in their respective homes. □

DEBORAH KORNBLUT, Migratory Bird Program, Headquarters

The Alabama beach mouse makes its home in the dunes of coastal Alabama. (PHOTO BY USFWS)

SUNSETS & SHEEFISH

By LISA HUPP

A new sign for Selawik National Wildlife Refuge captures local culture. integrating Iñupiaq ecology and artistry.

(Above) An aerial view of the Selawik River as it winds across the tundra. The upper Selawik is designated as a Wild and Scenic River and is protected as an important spawning place for sheefish.
(PHOTO BY STEVE HILLEBRAND/USFWS)

Cloudberry plant.
(PHOTO BY STEVE HILLEBRAND/USFWS)

Refuge employee Sonny Berry holds up a sheefish caught from under the ice.
(PHOTO BY KATRINA LIEBICH/USFWS)

From Selawik, Alaska, Iñupiaq artist Norma Ballot shares some local wisdom: "You don't mess around during berry picking season."

In this small village north of the Arctic Circle, everyone tracks the ripening of the *aqpik* (cloudberry), from hard to just right, to make the most of the short few weeks for harvest. "People would be saying, 'Oh, how are our *aqpik*?'" Ballot explains. "We listen for word from the community, from people out on the tundra."

This intimate knowledge of seasonal rhythms—when berries ripen, how weather affects harvest, which colors signal peak ripeness—is now woven into an unexpected place: the new blue entrance sign outside Selawik National Wildlife Refuge headquarters in Kotzebue. A geometric motif runs along the base, with the center of each diamond in the design featuring a different berry color: the bright orange of *aqpik*, the deep hue of blueberries, crowberry black, and the rich red of cranberries.

Even the design's background captures a specific moment in time: The layered colors come from Ballot's photograph of a sunset, taken from her house. And if you look closer at the top of the sign, you'll notice a rolling, wave-like edge that is a silhouette outline of the hills visible from the village of Selawik.

Adding the *Qupak*

The sign represents a departure from the former standardized federal design—a flat brown rectangle with letters that had no connection to the place it signified. Integrating local design elements into the 2024 version emerged from a collaboration between refuge staff and community artists, sparked during a chance conversation at the Kotzebue airport between Ballot and Brittany Sweeney, assistant refuge manager for Selawik.

Sweeney knew the refuge sign needed replacing but felt a partnership on the design could result in something much more meaningful. The magic began to happen when Ballot, Sweeney, and Christina Nelson, former refuge educator and artist, discussed possible concepts.

For the distinctive pattern running along the sign's bottom, Ballot drew inspiration from a long cultural tradition and another artist's work: her daughter's parka creations. She based the geometric motif on the parka's *qupak*, a signature decorative trim added to many western and northwestern Alaska parkas.

"It's a unique form of art," Ballot explains, describing how a seamstress will layer and combine strips of bias tape to create intricate designs, with colors and patterns that often signify a specific region, community, or family. Before the introduction of bias tape, Iñupiaq and Yup'ik artisans crafted the *qupak* from a variety of natural materials, including fur scraps and reindeer pelts. Modern indigenous designers incorporate new materials while still evoking cultural style elements.

Inspiration From the Land

Selawik Refuge has often benefitted from collaboration with Ballot. As a longtime educator, Ballot often hosted refuge staff in her classroom for lessons on local flora and fauna. She has been a key part of the Selawik Science-Culture Camp—jointly hosted by the refuge and Native Village of Selawik Tribe—for most of its nearly 20-year span.

After teaching bilingual education for 27 years, Ballot now serves on the regional Elder Council and language commission. Her artistic practice spans multiple mediums—from ivory carving to skin sewing, from drawing to sculpture. She finds inspiration in materials gathered from the land: driftwood, feathers, old bones, anything that catches her eye while berry picking. "Art is kind of like a hobby to me," she says modestly, though her work helps preserve and evolve cultural traditions. Her camp, about two hours ››

Selawik Refuge staff install a new sign at the refuge headquarters building in Kotzebue, Alaska. (PHOTO BY USFWS)

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upriver from Selawik village, speaks to the deep history of the area. She's found both clay pot fragments and a traditional stone ulu there, suggesting it has been an important site for generations.

The Swimming Sheefish

Ballot generously hosts students at her Upingiivik campsite during the annual culture camp and other outings. Christina Nelson had worked with Ballot on education programs in the past, and Sweeney reconnected them to integrate local design. "And that was the synergy!" Sweeney remembers. Nelson translated Ballot's vision into digital form and helped bring a regional wildlife ambassador image to life.

At the top corner of the sign, a swimming sheefish pursues smaller prey, its mouth open in pursuit. This isn't just artistic flourish—it represents a species central to life in the northwest Arctic. The word "Selawik" comes from the Iñupiaq word for sheefish, *sii*. In addition to berry picking, harvesting sheefish is part of the strong food culture and a key to food security. One of the purposes of Selawik Refuge is to protect the spawning area of sheefish on the upper Selawik River. The impressive silver fish's presence on the sign acknowledges both its ecological and cultural significance.

'We Could See Our Culture in the Design'

For Ballot, the sign represents something larger than just marking a building. "Compared to that old sign—it was just like a piece of paper that didn't represent anything other than the printed letters on it. But this one, this one represents our people," she says. "We could see our culture in the design."

The project demonstrates how small changes in representation can make a big difference in how people see themselves reflected in public lands. "We wanted something that illustrated that this isn't just an empty place or just a home for wild creatures. It's also a homeland for people," explains Sweeney.

Ballot offers straightforward advice for similar projects: "If you want to come up with something beautiful, you contact the local people. They'll guide you through the way and come up with something awesome."

Sweeney hopes people see their culture, their seasons, and their way of life reflected every time they pass by. "We couldn't be happier with the outcome," she says. "That's why we're hosting an open house to show it off and tell the story so that when people come by on the street, they know that this is their refuge."

(Top) The old standard refuge sign, deteriorated and in need of replacement. (PHOTO BY USFWS)

(Bottom) An entrance sign for Selawik National Wildlife Refuge in Alaska incorporates local design elements and ecology to reflect the Iñupiaq culture. (PHOTO BY USFWS)

The finished artwork of the sign shows how federal lands and local communities can work together to create something that truly represents both mission and place—starting with something as simple as paying attention to when the berries ripen.

When asked what she hopes people see in the new sign, Ballot answers simply: "Life." ››

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Quyanaqpak (thank you very much) to Norma Ballot for taking the time to share her art and her perspectives.

Thank you to Brittany Sweeney for collaborating on this story, and to Christina Nelson for contributing her talents.

Selawik Refuge is grateful to Jenny Eberlein for her invaluable assistance throughout the sign design and replacement process.

We are also grateful to artist Sara Wolman for her initial work to create animal ambassador illustrations used in new refuge signs across the nation, and for the base illustration of the sheefish. □

LISA HUPP, National Wildlife Refuge System, Alaska Region

(Top) Children pick berries on the tundra during the annual Selawik Science-Culture Camp. (PHOTO BY CHRISTINA NELSON/USFWS) (Right) Norma Ballot and Christina Nelson at the 2022 Selawik Science-Culture Camp. (PHOTO BY USFWS)

Snow Lakes or Bust

Join Leavenworth National Fish hatchery staff on an age-old pilgrimage into the mountains for the benefit of salmon, habitat, and people.

By LENA CHANG

In 1938, teams of men and horses worked to build a 7-mile-long trail into the mountains near where Leavenworth National Fish Hatchery was sited. This access reached a water diversion project at Snow and Nada lakes, which were dammed to trap snowmelt in summer. (PHOTO BY USFWS)

Eighteen miles of hiking in the mountains with 5,000 feet of elevation gain in one day—yes, please?

When I first learned about the arduous Snow Lakes trek taken by Leavenworth National Fish Hatchery staff every year, multiple times a season, I wanted to know more—not only for the physical challenge, but I was also curious about why they do it.

My very basic understanding was that every year, a valve is opened in July and closed in October, somewhere up in the mountains, miles away from the hatchery. In between those months, hatchery staff and others hike up to the lakes and valves to adjust the amount of water flowing out of an outfall, which makes its way into Icicle Creek. Being someone who can't resist a little (a lot) of type II fun* in the wilderness, I joined them on one of their outings to learn more.

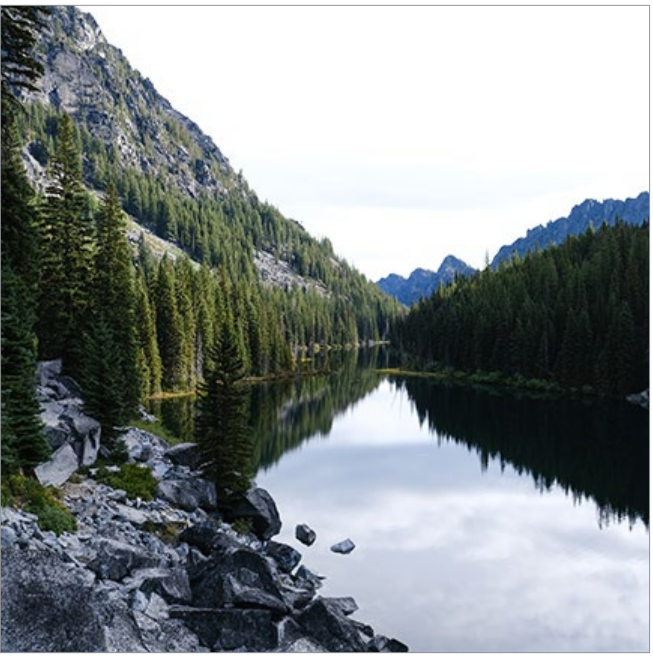
*Type II Fun = Difficult when it's happening but lots of fun when looking back.

This was my first time in Leavenworth, Washington, and at first glance, it was already living up to the hype I had heard from other outdoor enthusiasts. Leavenworth is a charming Bavarian-themed town tucked in on the east side of the Cascade Range, surrounded by steep mountains, running rivers, and vast and scenic wilderness that serves as the gateway to the Enchantments, a region in the Cascades known for its beauty and concentration of tall peaks and pristine alpine lakes.

Within this stunning landscape, historic Leavenworth National Fish Hatchery sits along Icicle Creek, with a backdrop of those big mountains to the west and the Wenatchee River to the east. Established in 1940, Leavenworth National Fish Hatchery was the first of a complex of hatcheries built to compensate for the effects of the Grand Coulee Dam, and at that time, it was the largest fish hatchery in the world.

Grand Coulee Dam was built on the Columbia River between 1933 and 1941 to provide water for irrigation, power generation, flood control, and more. But it blocked the movement of fish to the river above it. Leavenworth Fisheries Complex, including Leavenworth, Winthrop, and Entiat National Fish Hatcheries, was built in the early 1940s to offset the losses of fish above the dam, raising and releasing fish into the rivers to enhance wild populations and provide food for natural predators and fishing opportunities for tribal and sport anglers.

However, to establish a successful fish hatchery, reliable access to cold, clean water is necessary. In 1938, crews of horses and people built a trail that led to a water source high up in the mountains, establishing the water diversion from Snow Lakes for Leavenworth National Fish Hatchery, which is still used today. ››



(Top) Leavenworth National Fish Hatchery, Washington. (PHOTO BY LENA CHANG/USFWS)
(Above) An American pika over Nada Lake. (PHOTO BY LENA CHANG/USFWS)
(Left) Nada Lake. (PHOTO BY LENA CHANG/USFWS)

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That trail is well known today by hikers as the Snow Lakes Trail, accessed from the Snow Lakes Trailhead, just two and a half miles down Icicle Road from Leavenworth National Fish Hatchery. However, getting to the lakes themselves takes a substantial effort with a steep hike, roughly nine miles one way from the trailhead.

Making the Trek

On a recent September morning, I joined Leavenworth Hatchery manager Mat Maxey to learn for myself what the work and the journey involves. We started at the trailhead in pre-dawn darkness; Maxey was all smiles, equipped with a light pack, trekking poles, and a headlamp.

We filled out our day-use permit and set off toward the steep switchbacks in the dark Maxey explained some of the various pieces of infrastructure we passed along the way—an irrigation ditch, fish screen, and one of three stream gauges along this route, this one measuring the amount of water flowing from Snow Creek into Icicle Creek.

Maxey set a good pace, and we chatted much of the way up, stopping only to take off or put on an extra layer. It was a particularly humid day, with a chance of rain and highs of 60s in the forecast—nearly perfect hiking weather, save for the humidity.

The first two miles were very steep, akin to walking up an endless, rocky staircase. The benefit of being guided by seasoned hatchery staff meant frequent, well-planned, beautiful rest stops. They were always by water, with a nice fallen log to sit on and plenty of shade.

By our first stop, dawn had broken, and I could see the views of the mountains and the lovely forest glade that Maxey had promised. It was evident Maxey had done this hike many times; somewhere between 20 and 30 times was Maxey's best guess. ››

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After a quick break, we continued, gaining elevation up large and uneven granite steps, as the sounds of American pika calling became regular and louder. "MEEWP," they would squeak, and Maxey and I would occasionally stop to pinpoint where the sound was coming from. We'd find one of these adorably round, potato-sized, rabbit-related fur balls calling from the top of a log or a boulder, hiding in plain sight.

A little past mile five, we came upon Nada Lake with its glassy reflection of the surrounding terrain. Nada Lake's dam is the second stream gauge. This one measures and validates release values and the natural decreases in water between the lake and the output in Icicle Creek. From behind Nada Lake, I could see and hear water spilling down the canyon with a roar.

What would look like a powerful waterfall to an unknowing hiker is the water released out of the tunnel blasted out of the granite in the early 1940s. That water, sourced from upper Snow Lake where we were headed, is released every summer to supplement water in Icicle Creek as staff diverts water for hatchery operations.

The Icicle Creek Work Group, convened by the Washington Department of Ecology's Office of Columbia River and Chelan County, is a collaborative effort for water management in Icicle Creek, including local, state, and federal agencies, tribes, and agricultural and environmental groups. The workgroup carefully calculates the quantity of water released, measured in cubic feet per second, or CFS, to meet water demands and ensure the guiding principles of the Icicle Strategy are upheld, including enhancing and maintaining sustainable hatchery operations at Leavenworth.

The work conducted on this trek ensures that Leavenworth's staff regularly evaluate and offset the hatchery's water withdrawals during the lowest flow time of the year, resulting in minimal impacts to Icicle Creek from the hatchery.

As we approached Snow Lakes, we walked over a dam that separates the lower and upper lakes, holding the water for everything that happens downslope—through the tunnel, out the valves, into Icicle Creek, and eventually to the hatchery. ››

(Top) Leavenworth National Fish Hatchery manager Mat Maxey opens a door to a tunnel to access equipment to manage water releases out of Snow Lakes into Icicle Creek. (PHOTO BY LENA CHANG/USFWS)

(Above) Lena Chang and Mat Maxey on the Snow Lakes Trail and their day use permit for the Alpine Lakes Wilderness. (PHOTO BY LENA CHANG/USFWS)

A reststop along the Snow Lakes Trail, Washington.
(PHOTO BY LENA CHANG/USFWS)

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We took a proper break on a large boulder overlooking the upper lake and the surrounding landscape. We could hear the hoarse calls of Clark's nutcrackers reverberating off the rocks in the distance and occasionally see the white flashes of their wings as they flew from tree to tree. We gobbled down our lunches and shared some snacks. But after one strong gust of cold wind whipped through us, we hurriedly packed it up and took it as a sign to keep moving.

On that day, we did not need to go to the far side of the lake to the third stream gauge, which measures the input of snowmelt into upper Snow Lake. Consequently, I was spared another mile or so of hiking, and we started making our way back down the mountain.

Seeing the lake allowed Maxey to visually assess the water levels, which would also inform us of any valve adjustments we'd make the way down. Our next stop would be the outfall near Nada Lake, where the water was spilling out of the mountain, and the valves that control it all.

The Outfall

We skirted the main trail toward the outfall, and I was in awe. The volume of water—both in quantity and noise, is striking. Meanwhile, Maxey unlocked and propped open the doors of a small shed and tunnel and turned to welcome me into the mountain.

Inside the granite tunnel, the walls are crude and coarse. It is dark, damp, cold, and longer than I would have guessed. The tunnel opens into a large chamber where you find yourself standing on a metal grate platform, and below it, a large pipe runs deep into the walls, up to Snow Lakes in one direction and out of the mountain in the other. I marveled at the scale of effort it must have taken to move and establish this infrastructure nearly 85 years ago.

Maxey took note of some data from gauges, measuring the pounds per square inch, or PSI, of the water in the lake above. We then went back to the shed to adjust the amount of water spilling out of the outfall. On that day, the goal was to maintain a flow of 45 CFS. This required a specific but slight valve turn, which Maxey performed. With those important adjustments made, our work there was done, and it was time to lock up and make our way back down to the trailhead.

Work along this route can vary during the season. The following week, a hydrologist with a crew went up to maintain stream monitoring stations. They replaced batteries, made repairs, and collected data. In the first week of October, hatchery staff made the trek once again, and the valves were officially closed for the year until next summer when the cycle begins again. □

LENA CHANG, Office of Communications, Pacific Region

The Trek in Numbers

My watch, which tracked data over the day, gave these final numbers:

Total Distance: 17.09 miles

Total Ascent: 4,715 feet

Total Time: 10 hours and 15 minutes

It also indicated that I burned 2,317 calories, took 45,230 steps, and climbed (and descended) 469 floors. Yes, it was physically demanding, but like any good type II adventure, the difficulty was outshined by the beauty of that place, the learning opportunity, and great company. I look forward to going back, perhaps for the first hike of another season, to see the opening of the valves to balance water use in Icicle Creek with the important work of enhancing fisheries at Leavenworth National Fish Hatchery.

MUSEUM OBJECTS COME TO LIFE

In this series we highlight the "Treasures of the Service" from the museum collections of the U.S. Fish & Wildlife Service Museum and Archives, the Service's National Fish and Aquatic Conservation Archives, the National Wildlife Property Repository, and the collection at DeSoto National Wildlife Refuge, containing over 250,000 artifacts excavated from the 1865 wreck of the Steamboat Bertrand.

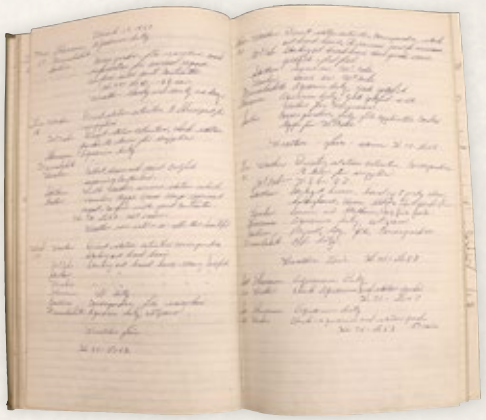
Egg-splaing Development

This Egg Development Display at the National Fish & Aquatic Conservation Archives, created at Spring Creek National Fish Hatchery by Cheri Anderson and Scott Zirjacks, shows fish development from eggs through smoltification. The range on display is from 0 up to 150 days.

The reproduction of various fish varies. For example, salmon lay a vast number of eggs into a spawning bed, known as a redd. Males fertilize the eggs. These are those small orange spheres on day 0. After fertilization and about 30 days, the eggs develop into "eyed eggs." These eggs are noticeable by their two dark spots, the eyes of the fish. The fish then begin to hatch. Most hatch within two to three days of the first hatching. After the fish hatch, they go through the fry stages, which you can observe on the display from 50 to 90 days. The sac-fry, or alevin stage, is about one to three weeks. This time frame depends entirely on the ambient water temperature. The warmer the water, the faster the development. After this phase, the yolk sac and its nutrients are absorbed. Once that happens, fish will eat and continue to grow until they develop into smolts. For salmon or trout, smoltification is where they change physically and physiologically to go from freshwater to saltwater.

(TAYLA BAHR, MUSEUM TECHNICIAN, NATIONAL FISH & AQUATIC CONSERVATION ARCHIVES

The Everyday of Natchitoches National Fish Hatchery



While we all may take notes throughout our week, fish hatcheries took notes every day! (Some still do.) This is a logbook from Natchitoches National Fish Hatchery. Natchitoches, a federal fish hatchery in Louisiana, was established in 1931. The hatchery remains operational today and continues to propagate various warm-water fish.

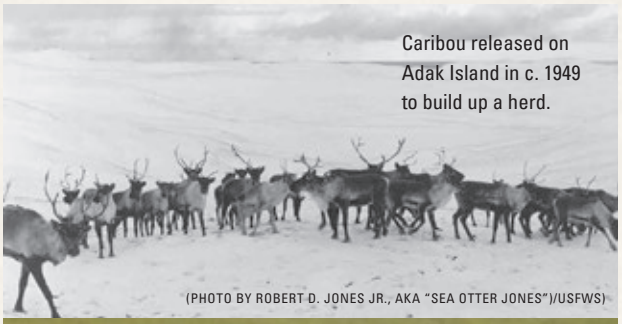
This logbook dates to 1969 and has notes from every day of the week. Many of these notations are of the work that each staff member was doing, such as taking care of the aquarium or cutting grass. Logbooks are extremely important in fisheries history because they reveal the fine details that may be missing from things like annual reports. For example, logbooks could potentially tell a researcher where certain fish were stocked and when, and this could help make sense of what is biologically happening in that area today.

(TAYLA BAHR, MUSEUM TECHNICIAN, NATIONAL FISH & AQUATIC CONSERVATION ARCHIVES)

Then and Now: Connecting Our Past to the Future

Caribou and reindeer were introduced to several Alaska Maritime National Wildlife Refuge islands during World War II and the Cold War to provide emergency food for military serving at isolated outposts.

(ANDY WHITE, U.S. FISH & WILDLIFE SERVICE MUSEUM AND ARCHIVES, AND DEB MARTIN, USFWS CONSERVATION LIBRARY)



Caribou released on Adak Island in c. 1949 to build up a herd.

(PHOTO BY ROBERT D. JONES JR., AKA "SEA OTTER JONES")/USFWS)

Two reindeer on Atka Island, part of the Aleutian Islands in western Alaska, in 2006.

(PHOTO BY STEVE HILLEBRAND/USFWS)

transitions

Headquarters

Elsa Haubold has been chosen as the Assistant Director for Science Applications. Haubold replaced Deb Rocque after Rocque's retirement in January. In her new position, Haubold leads critical collaborative efforts to bring partners together, identify shared conservation priorities, and fill critical science needs to achieve conservation goals.

Haubold's professional career includes experience in state, federal, and nongovernmental organizations. She joined the Service in 2013 and has served in several key positions including acting Assistant Director for International Affairs, Deputy Assistant Director for Science Applications, and the national Landscape Conservation Cooperative coordinator. She is an alumna of the fourth National Conservation Leadership Institute cohort and a graduate of the Department of the Interior's Senior Executive Service Candidate Development Program. Before joining the Service, Haubold worked for the Florida Fish and Wildlife Conservation Commission on many challenging wildlife and endangered species issues.

Haubold is passionate about working with others to find common ground and solutions to complex conservation challenges. In recognition of her collaborative efforts, the Association of Fish and Wildlife Agencies recognized Haubold's outstanding work with the 2022 Stephen Kellert Award for advancing connection between humans and the natural world. She is deeply committed to the Service's mission and exemplifies our core values of Stewardship, Integrity, Respect, Collaboration, and Innovation.

Haubold holds a Bachelor of Science in wildlife and fisheries science and a Master of Science in veterinary anatomy from Texas A&M University, a Ph.D. in pathology from University of Texas Medical Branch, and a Master of Business Administration from the University of Houston-Clear Lake. □

Pacific Region

Eric MacMillan has been named the Assistant Regional Director for the Fish and Aquatic Conservation Program (FAC) in the Pacific Region.

"The Pacific Region of the U.S. Fish and Wildlife Service spans Idaho, Washington, Oregon, and the Pacific Islands, and includes the Columbia and Snake rivers. We work closely with tribes, states, and a wide range of partners to manage culturally and economically important fish and aquatic resources," says Hugh Morrison, Regional Director for the Service's Pacific Region. "Eric MacMillan will bring a thoughtful, collaborative, and solution-oriented approach; an emphasis on partnerships; and a love of fish, fisheries, and the Northwest."

For the past six years, MacMillan has worked for FAC in headquarters in Falls Church, Virginia, first as the national aquatic habitat coordinator, and then as manager for the Branch of Aquatic Habitat Conservation. In this most recent role, he led a diverse portfolio for FAC, administering national programs focused on military lands and aquatic habitat conservation, including FAC's implementation of Bipartisan Infrastructure Law funding through the National Fish Passage Program.

MacMillan grew up in Twin Falls, Idaho, earned an undergraduate degree in biology from Willamette University in Oregon, and a master's degree in fisheries and wildlife at Michigan State University. MacMillan has been a technician with state agencies in Idaho, Oregon, and Wyoming; worked at a commercial rainbow trout hatchery; and had a short stint as a deckhand on a salmon fishing boat on the Oregon coast. Following graduate school, MacMillan worked for the National Oceanic and Atmospheric Administration Restoration Center focused on Great Lakes and Pacific salmon habitat restoration and supporting restoration planning efforts for the Deepwater Horizon oil spill. MacMillan then worked for the NOAA Fisheries Office of Protected Resources conducting Endangered Species Act section 7 consultations.

"I am beyond thrilled to come home to the Pacific Northwest to further the incredible work of the Fish and Aquatic Conservation Program in the Pacific Region. After spending numerous years supporting the program at a national level, I am looking forward to being closer to the staff in the field, supporting the science, restoration, partnerships, and management happening on the ground," says MacMillan.

In his new role, MacMillan oversees the cooperative management of 12 national fish hatcheries, four Fish and Wildlife Conservation Offices, Abernathy Fish Technology Center, the Pacific Region Fish Health Center, and the Lower Snake River Compensation Plan program office. These programs provide millions of steelhead and Pacific salmon each year to support the Pacific Salmon Treaty and commercial, recreational, and tribal harvest. □

Midwest Region

Naomi Baucom has been selected as the center director for the Prairie Wetlands Learning Center at Fergus Falls Wetland Management District.

Baucom's love of the outdoors began as a child growing up in Oregon, camping and fishing with her dad. She was introduced to the National Wildlife Refuge System while studying wildlife biology in Montana. After a few years working in temporary biology positions, Baucom was introduced to the Visitor Services program as seasonal park »

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ranger at Sacramento National Wildlife Refuge Complex. She has had the opportunity to work in various capacities for the Service on and off during the past 20 years.

In 2022, Baucom transferred from Morris Wetland Management District in Minnesota to Wichita Mountains Wildlife Refuge in Oklahoma as park ranger and volunteer coordinator. She notes that it was a great opportunity to be immersed in an extremely enthusiastic community with high visitor use.

Baucom is looking forward to the opportunity to be back in Minnesota to carry on the legacy at Prairie Wetlands Learning Center and continue sharing her passion for wildlife, conservation, and natural spaces. In her spare time, Baucom enjoys bird watching, camping, traveling, and spending time with her dogs.

The Prairie Wetlands Learning Center is part of Fergus Falls Wetland Management District. The district is responsible for the administration of federal lands within a five-county geographic area of Douglas, Grant, Otter Tail, Wadena, and Wilkin counties. □

in memoriam

Pacific Southwest Region

After a two-year battle with cancer, Tule Lake National Wildlife Refuge firefighter **Brian Wolgamott** passed away at the age of 42 on November 28, 2024.

Mr. Wolgamott started his wildland fire career in 2012, and like many federal government employees, he moved to various locations over the years. In 2022, after many years working with the USDA Forest Service as a firefighter, Mr. Wolgamott accepted a position with the Service wildland fire program at the Klamath Basin refuges in Tule Lake, California, as a fire engine operator and fire planner.

Shortly after accepting the position, he and his family found out he had cancer. He immediately began cancer treatments in Seattle, Washington, while continuing to work. Despite his diagnosis and many long days of travel to receive treatment, Mr. Wolgamott maintained a positive attitude and a hearty sense of humor.

Throughout his treatments, Mr. Wolgamott remained a dedicated employee.

"Brian's unwavering strength and dedication to his profession, even in the face of adversity, truly stands out," says Ken Griggs, project leader of the Klamath Basin National Wildlife Refuge Complex. "Despite the challenges posed by chemotherapy, Brian didn't take a back seat and maintained his fitness and fire qualifications for as long as possible."

When he was no longer able to staff a fire engine, Mr. Wolgamott stepped up to support the refuge in other ways. He took on tasks such as water quality monitoring, reprogramming radios, maintaining the local wildland fire supply cache, and serving as the station's safety officer. Last summer, Mr. Wolgamott continued to support operations on the many large wildfires in the northwest as a dispatcher. He completed his last fire assignment just a month before he passed.

"Brian's relentless work ethic shone through as he continually sought ways to make impactful contributions to the team," says Griggs.

When remembering Mr. Wolgamott, Troy Parrish, Klamath Basin Refuge Complex fire management officer, shares a story from the previous summer when, in the thick of receiving chemotherapy, Mr. Wolgamott was still the first to volunteer and help a co-worker unload a truck of firewood.

"Brian consistently proved to be a man of his word. Whenever I needed someone reliable to get a job done, Brian was undoubtedly my first choice," says Parrish.

To his friends and family, Mr. Wolgamott was charismatic and always extending a helping hand. He shared his love of adventure and athletics with his wife, Marie and their three children, Bryton, Maddox, and Elsie.

Service wildland fire leadership and an interagency Honor Guard supported the Wolgamott family in honoring Mr. Wolgamott's life. Mr. Wolgamott was brought home to his final resting place with dignified transport and under a 24-hour Honor Watch. The Honor Guard held a memorial service and burial with full honors for Mr. Wolgamott, and he was laid to rest in his service uniform.

Mr. Wolgamott's wishes are to spread awareness, especially to his brothers and sisters in wildland fire, to advocate for themselves and to get cancer screenings early and often.

The U.S. Department of Labor Office of Workers' Compensation Program deemed Mr. Wolgamott's cancer to be proximately caused by employment in federal fire protection activities under the Federal Employees' Compensation Act. As such, the Service determined Mr. Wolgamott's death qualified as a line of duty death.

The Federal Wildland Firefighter Health and Wellbeing program is working to better understand and mitigate the unique environmental and occupational hazards wildland firefighters experience. Learn more about the program and support available to wildland firefighters. □

For Justin Crow, Passion for Fish and Wildlife Started as a Kid

By KEVIN CODY

From countless hours spent outdoors to finding a passion for nature in a memorable moment, the staff of the Service all have varied paths that led us to our careers. Those unique stories make up the Service's heart and soul and help to inspire others to pursue a similar path. Each story is worthy of the spotlight.

Justin Crow, a fish biologist stationed at the San Marcos Aquatic Resources Center in Texas, is a prime example of someone whose passion for fish and wildlife started as a kid and led to a career with the Service.

"I have always been fascinated with animals," Crow says. "Like many, I grew up catching lizards, snakes, bugs, and fish just to observe them for a while before letting them go. I still catch lizards, snakes, bugs, and fish as an adult. Their biology is fun and fascinating. This interest led me to a bachelor's degree in marine and freshwater biology and then a master's in biology."

Having a passion for wildlife might have been the spark that fueled Crow to become a biologist, but equally as pivotal was the choice to pursue an internship with the Service.

"After finishing my undergraduate degree, I was selected for a Pathways internship with the Service, allowing me to work with three federally listed salamanders in central Texas," the Barton Springs salamander, Texas blind salamander, and San Marcos salamander, Crow says. "During this internship, I worked on salamander-related research with several partners from Texas State University, the City of Austin, and the City of San Marcos."

Justin Crow prepares to scuba dive in the San Marcos River. (PHOTO BY USFWS)

Crow's Pathways internship provided experience and learning opportunities, and revealed the need for amphibian research that would later define his master's research and future role with the Service.

"I quickly discovered that a lot of research and conservation work was being conducted for amphibians, and much more is still needed, specifically on salamanders," Crow says. "There were three federally listed salamanders at the time of my internship, with four under review for listing. Given the need, a significant effort was put toward gathering as much data as possible for these salamanders and their habitats. The experience led me to obtain my master's degree by conducting thermal and toxicity tolerance experiments to determine certain thresholds for these salamanders."

Crow's contributions are a vital part of the Service's efforts to preserve endangered and threatened species. One such species, the Houston toad, has become a clear favorite of Crow's after working with them daily for many years.

"I am the lead biologist for the federally endangered Houston toad and Barton Springs salamander conservation programs at the San Marcos Aquatic Resources Center," Crow says. "I also work with the Texas blind, Comal Springs, and San Marcos salamanders at our center. Each of these amphibians is highly endemic and unique to specific areas in Texas.

"Over the years, I have been able to study these species in the lab and the wild and learn fascinating things about their biology and interactions within their habitat. At our center, I get to provide husbandry and conduct research on the previously stated amphibians. One of the most rewarding parts of my job is when I get to breed our Houston toads and release the eggs into the wild."

Crow is passionate about helping to recover endangered and threatened species and the ecosystems they rely on. During the day-to-day of those efforts, one of Crow's many tasks is helping to conduct underwater surveys and other projects that require the donning of scuba gear. It's because of some of these experiences that scuba diving has become a favorite part of the job. ››

Continued from previous page.

"As a USFWS diver, I am able to use scuba to survey aquatic animals in the wild and conduct projects requiring scuba," Crow says. "My favorite dive was during a regional training exercise in Florida. As part of the training, we were able to dive several reefs off Destin, Florida, to survey for invasive lionfish."

Another aspect of the job is outreach. The need to communicate science and promote future generations to become stewards of the environment is a vital mission for the Service. Taking the time to help others follow their passion with the Service is a great step in that direction.

"One of the best ways to get involved and get your foot in the door early in your education is to volunteer or apply for internships," Crow says. "You will meet many people with a variety of experiences, but this will also allow you to work in the field you are interested in and potentially learn about new opportunities." □

KEVIN CODY, Office of Communications, Southwest Region

JOIN US

Get a foot in the door and find an internship.

(Top) Justin Crow does field work for Barton Springs salamanders (middle). (PHOTO BY USFWS)

(Below left) Justin Crow and a fellow biologist put a tracking tag in a Houston toad. (PHOTO BY USFWS)

(Below right) Justin Crow sewing and patching holes in the polypropylene tubing that is part of a large net capture device installed at the bottom of Spring Lake. The net was installed to sample the Texas blind salamander and other aquifer invertebrates. (PHOTO COURTESY OF JUSTIN CROW)

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parting shot

Becoming a Hunter

A mentee lines up his crossbow during archery practice at the Field to Fork mentored archery deer hunt at Cherry Valley National Wildlife Refuge in November 2024. (PHOTO BY JARED GREEN/USFWS)

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