New Mexico
Wildlife
Fall 2020 | volume 62, Number 4 |

Head south this season

Conservation in southern New Mexico

Inside:

- Saving the Gila trout family tree
- Restoring New Mexico's playas
- Managing habitat with fire in the southeast
- Kids Tracks: What is a herpetologist?
- Plus – Photographing oryx, New Mexico's exotic big game

State Game Commission meetings move online

With public health orders prohibiting gatherings of more than five people, the State Game Commission and Department decided to tap into the Zoom webinar platform to conduct commission meetings and ensure public participation.

Starting this past April, commission meetings have been held via live webcast on the Zoom platform. Prior to every meeting, the Department encourages members of the public interested in participating to pre-register to attend the meeting. Webcast participants are able to listen to the meeting using a desktop computer or mobile devices such as smartphones and tablets.

State Game Commission meetings are usually held several times per year in different cities and towns around our state. Most recently, meetings have been held in Albuquerque, Las Cruces, Roswell and Farmington.

"In response to the pandemic and required travel restrictions, the State Game Commission and Department officials quickly shifted gears and found an efficient solution that keeps our commissioners, staffers and members of the public safe and in compliance with our Governor's rules," said Director Michael Sloane. "By conducting our meetings via webinar, we are now reaching an even wider audience while allowing constituents to provide comments on meeting topics."

The Department expects to continue holding meetings via webinar until the Governor's restrictions are lifted.

To learn more about how to listen to future commission meetings on Zoom, or to listen to previous meetings, visit: http://www.wildlife.state.nm.us/commission/webcast/.

Conservation effort creates new recreation opportunity

In early 2020, the Department of Game and Fish partnered with the U.S. Army Corps of Engineers, Carson and Santa Fe National Forests, U.S. Bureau of Land Management, New Mexico State Land Office, Trout Unlimited and National Fish and Wildlife Foundation to improve aquatic habitat along two miles of the Rio Chama below Abiquiu Dam.

This project, originally intended to benefit fish and wildlife through improving habitat, has also created increased access for boaters and anglers, improved fishing opportunities and allowed for individuals who are drawn by the thrill created by the surf wave.

A gradient control structure was put in near the base of the spillway to prevent river head-cutting, control the elevation of the water and protect downstream habitat features. The grade control structure also had the unintended benefits of creating a standing wave that can be surfed and bringing a new form of outdoor recreation to the Rio Chama area.

For fish and wildlife, this project will improve overwintering habitat for wild trout at low flows, provide holding cover for stocked trout and improve habitat at all water levels for native fish species such as Rio Grande chub.

Spring 2020 Gila elk calf capture

Department wildlife biologists were dispatched to the Gila Mountains of southwestern New Mexico from June 5 until June 10 to contribute to a large research initiative in collaboration with New Mexico State University.

The multi-year project, which began fall 2018, is aimed at determining the impact of recovering Mexican grey wolf populations on elk herd productivity in the Gila Mountains. University researchers, in collaboration with the New Mexico Department of Game and Fish and Arizona Game and Fish, are investigating habitat use changes, predation risk and calf survival across a spectrum of high-to-low wolf use areas in both New Mexico and Arizona.

Last June, the Department aided university personnel in deploying an additional 191 collars across the study area, including Arizona. Nearly half of the calves were captured in New Mexico using a combination of on-the-ground and helicopter capture techniques. With funding provided by Rocky Mountain Elk Foundation grants, very high frequency (VHF) collars were replaced with Iridium Global Positioning System (GPS) collars containing better mortality detection sensors and capable of transmitting location data via satellite. These collars will better aid mortality investigations by providing more real-time data to researchers tasked with determining the cause of death.

To date, the New Mexico Department of Game and Fish and Arizona Game and Fish have captured 425 adult cow elk and 422 calves have been fitted with GPS collars which collect useful data regarding habitat use, movement patterns and survival rates.

"Learning more about cause-specific mortality amongst adult and calf elk will help biologists determine the impact the recovering wolf population has on elk within the Gila region; beneficial knowledge for the management of wolves and our understanding of the ecology between predator, prey and maintaining sustainable populations of both," said Travis Zaffarano, elk program manager with the Department.

A young elk calf looks to re-join its mother soon after being fitted with a GPS collar. Elk calves within the Greater Gila herd are being monitored to assess survival rates and to determine specific causes of mortality, like predation rates for different predators. Travis Zaffarano, New Mexico Department of Game and Fish.

New Mexico Department of Game and Fish
Conserving New Mexico's Wildlife for Future Generations

It is the mission of the New Mexico Department of Game and Fish to conserve, regulate, propagate and protect the wildlife and fish within the State of New Mexico, using a flexible management system that ensures sustainable use for public food supply, recreation and safety—and to provide for off-highway motor vehicle recreation that recognizes cultural, historic and resource values while ensuring public safety.

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Cover: An oryx at White Sands Missile Range, one of the few places in New Mexico home to this non-native species. Oryx are not only sought out by big-game hunters but also enjoyed by wildlife enthusiasts. Martin Perea, New Mexico Department of Game and Fish.

Contents

Support New Mexico's Wildlife

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A new Share with Wildlife license plate is available this fall. When you SHARE, $15 of the initial fee and $10 from each renewal go directly to wildlife.

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More News & Information

Special oryx hunts available for injured service members

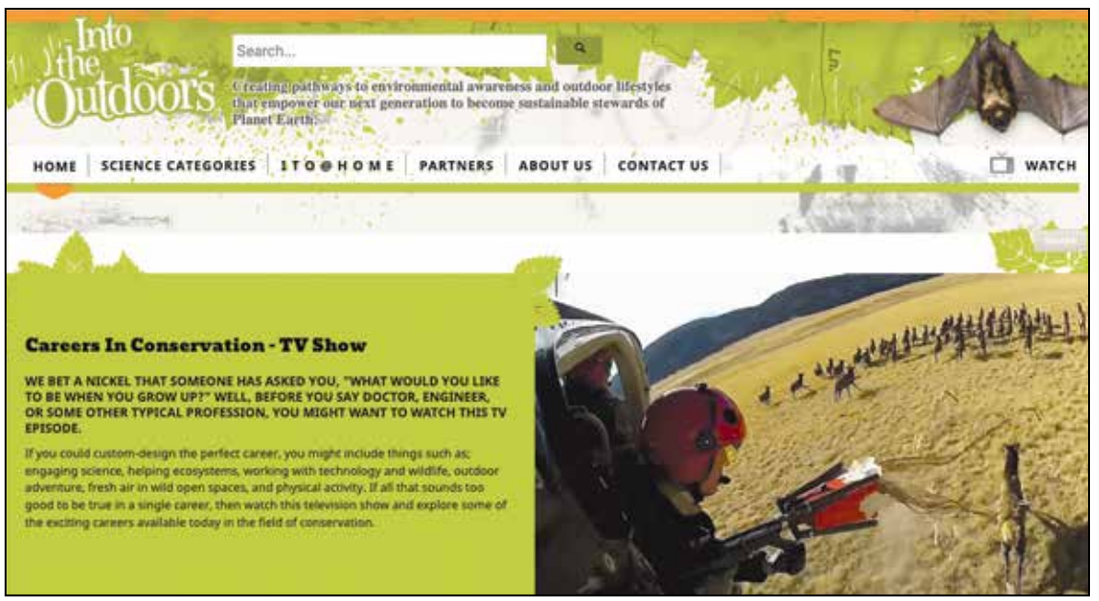
Every year, the Department of Game and Fish offers oryx hunts for injured veterans on White Sands Missile Range. Injured military service members are invited to apply online for the special drawing to award up to 10 special oryx authorizations for hunts on the missile range. In 2021, applications for this special hunt will be available starting June.

Applicants must be veterans of the U.S. military with a disability rating of 50 percent or greater in accordance with U.S. Veteran's Administration guidelines for receiving disabled veteran benefits. Significantly injured, active-duty military members who do not have a VA disability rating also may apply.

The drawing is open to resident and non-resident eligible applicants who do not hold a current-year oryx license.

The hunts are typically held between Sept. 1 and March 31 every hunting season, with dates and areas to be determined by the successful applicants in coordination with White Sands Missile Range. These hunts will not be considered once-in-a-lifetime.

For more information, contact the Department's Information Center at (888) 248-6866.



Top right: Into the Outdoors *featured the New Mexico Department of Game and Fish in a three-part video series highlighting careers in conservation.*

What do you want to be when you grow up?

If you ask us, some of the coolest jobs in the world are focused on wildlife conservation. From wildlife biologists to conservation officers, educators to information technology specialists, writers to financial specialists, it takes a wide variety of talented and specialized individuals to carry out the Department's mission to conserve New Mexico's wildlife for future generations.

During the fall of 2019, the Department partnered with Into the Outdoors for a three-part video series highlighting Careers in Conservation. Into the Outdoors is an education network that aims to "empower today's youth and adults to think critically about our planet." It also offers video resources for educators alongside lesson plans in various science categories, according to the website.

Check out the video series to ride in a helicopter with Dr. Nicole Tatman, big game program manager, as they fly elk surveys across the Valles Caldera and Northern New Mexico. Then join conservation officers Tyson Sanders and Ariel Perraglio as they talk about skills needed to be on the front line of wildlife management. Finally, wrap up with a review of the history and future of wildlife populations so you can either become a conservation professional or play a role in wildlife conservation.

Into the Outdoors has taken this one step further, creating lesson plans for all ages of students. Check it out at https://intotheoutdoors.org/topics/careers-in-conservation/.

The program followed Dr. Nicole Tatman, big game manager with the Department, on a helicopter survey.

Ephemeral waters

Department partners with conservation organization to restore critical habitat

By Alexa J. Henry

A slice of the Great Plains passes through eastern New Mexico, crosses the town of Raton a few miles south of Colorado, then bows west to Las Vegas. Where the elevation begins increasing at the foothills of the Rocky Mountains, the edge of the Plains draws back and follows the Pecos River Valley; a driver heading south through the seemingly arid prairie on U.S. 285 would pass through Roswell, Artesia and Carlsbad, then follow the landscape across the state border into Texas.

During New Mexico's monsoon season, which runs from July through September, hundreds of shallow, dry depressions in the earth fill with rainwater and runoff from surrounding uplands, revealing ephemeral wetlands that provide habitat for migrating birds and other wildlife. Some dry up within days, while others contain water for weeks or months.

There are more than 80,000 of these basins, or playas, scattered across the western Great Plains, with most of them overlaying the Ogallala aquifer. Playas are a primary source of recharge and contribute up to 95 percent of the water flowing to the aquifer and also improve the quality of that water.

To biologists, playas are so critical to the ecosystem that earlier this year, the Department of Game and Fish partnered with Playa Lakes Joint Venture (PLJV) to establish nearly $1 million in funding, including a substantial grant from the National Fish and Wildlife Foundation, dedicated to restoring playas in New Mexico.

Through the program, which covers 100 percent of the restoration costs, private landowners can receive financial and technical assistance to restore the hydrological function of and modify water flow to their playas. The one-time reimbursement payment for the restoration costs is administered through PLJV and Central Curry Soil and Water Conservation District. As part of the program, landowners agree that the playa will not be farmed for 20 years.

"Playas are a primary source of groundwater recharge and centers of biological diversity in the shortgrass prairie," said Christopher Rustay, conservation delivery leader with PLJV, who oversees playa conservation work in New Mexico and conducts site visits with landowners. "But as these wetlands become degraded, they lose the ability to recharge the aquifer and support plant and wildlife diversity."

Since February, about 200 acres of playas and surrounding grassland are in the process of being restored, with agreements being developed for an additional 200 acres in southeastern New Mexico, Rustay said.

Elise Goldstein, assistant chief of the Wildlife Management Division with the Department who also serves on the management board of PLJV, said playas are an incredibly important ecological feature that many folks know very little about.

"They have a pivotal role in recharging the aquifer, and since they are a temporary source of water in the arid grasslands, they are critical for wildlife," she said.

It is the "incredible value" that playas provide to wildlife driving the Department's commitment to this restoration partnership with PLJV, said Goldstein. The Department brought 75 percent of the total funding— $750,000— to the table, with PLJV providing the remaining $250,000 in nonfederal grants. The Department's contribution comes from the Pitman-Robertson Federal Aid in Wildlife Restoration Act explained Goldstein.

"There was an opportunity to bring $750,000 in Pitman-Robertson dollars to make the project substantially larger in scope and very meaningful to wildlife conservation," she said.

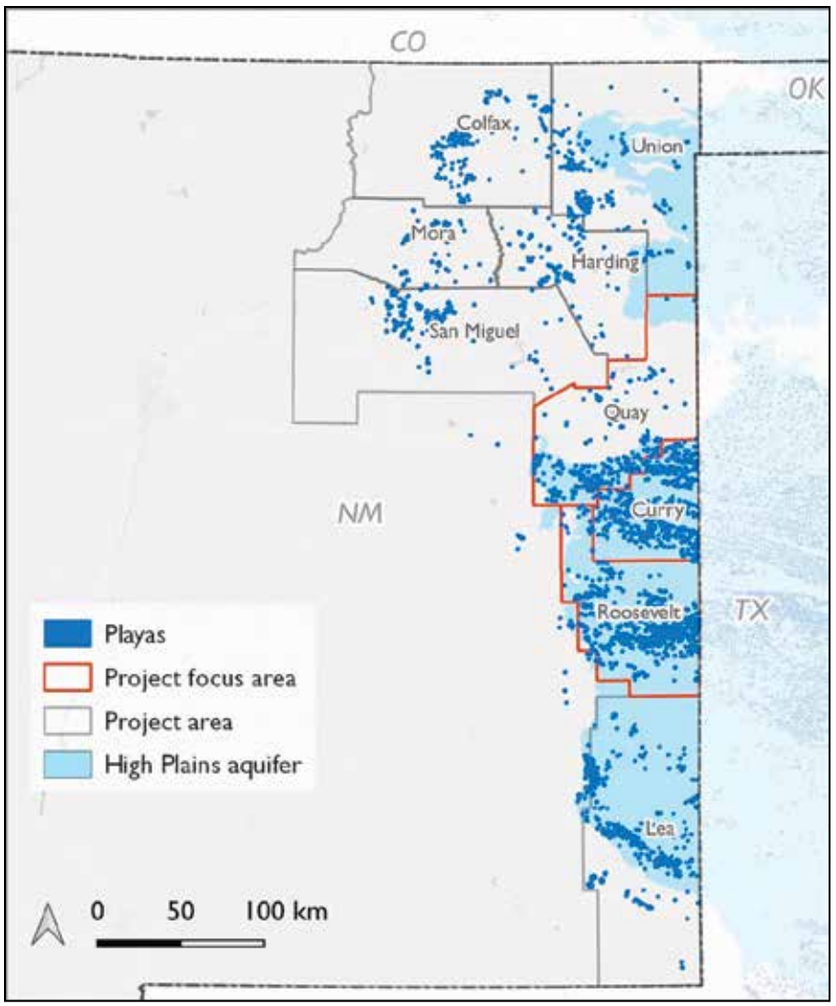
* * *

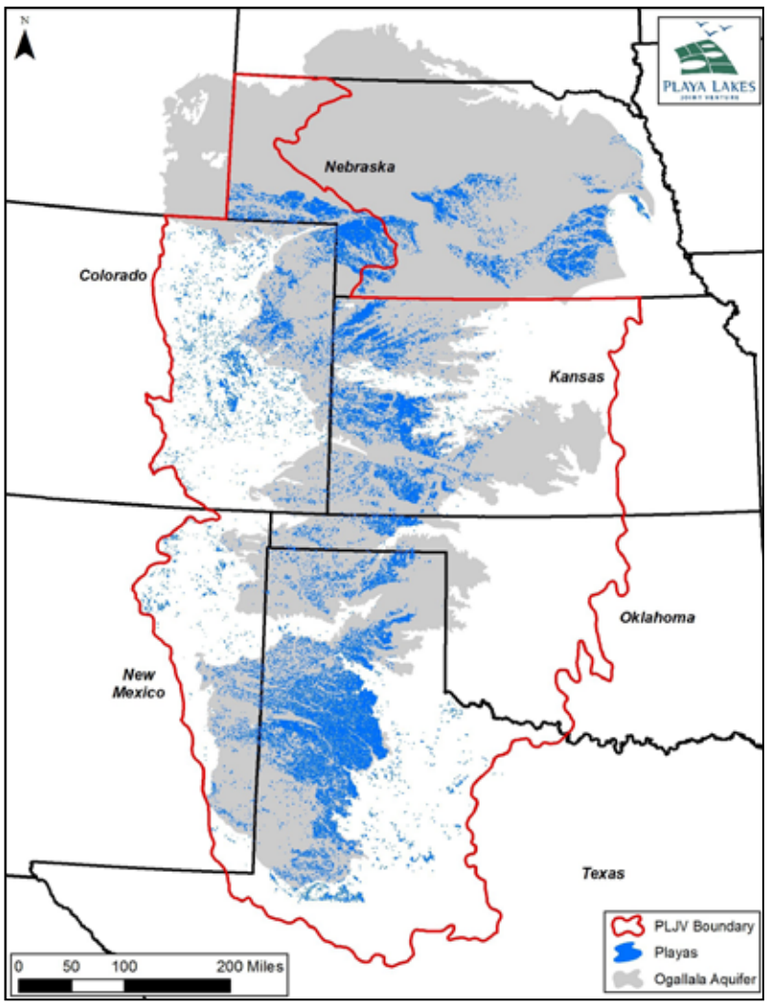
Known by a few different names—mud holes, buffalo wallows and lagoons, to name a few—the vast majority of playas are found mostly on the Great Plains in seven states: New Mexico, Texas, Oklahoma, Kansas, Nebraska, Colorado and Wyoming. They often occur in clusters, as they do in the southeastern quadrant of New Mexico and the Texas Panhandle.

Opposite: A playa surrounded by grass helps keep sediments from entering the playa. Photo courtesy of Christopher Rustay, Playa Lakes Joint Venture.

Inset: Christopher Rustay is the conservation delivery leader with PLJV, who oversees playa conservation work in New Mexico and conducts site visits with landowners. Photo courtesy of Playa Lakes Joint Venture.

Above: Black-necked stilts (top) and American avocets (bottom) are two examples of waterfowl that breed and nest in the great plains including on New Mexico playas. American avocet photo courtesy of Jim Stuart. Black-necked stilt photo courtesy of Mark Watson.





PLJV, a cooperative regional partnership of federal and state wildlife agencies, conservation groups and private industry, is aimed at conserving bird habitat in a six-state region, including eastern New Mexico where playas are located primarily on private land throughout the eastern half of the state. Over the last few decades, many playas throughout the Great Plains were altered by property owners to accommodate farming and ranching. The biggest threat to playas is sedimentation, or when rain or irrigation runoff carries loose soil from surrounding cropland into the playa basin, gradually filling it, according to PLJV. This reduces the amount of water a playa can hold—for wildlife use and for the aquifer.

Playas are filled when there are large rainstorms, and they lose water through recharge to the aquifer and evaporation, said Anne Bartuszevige, conservation science director with PLJV.

In New Mexico and Texas, there is another similar wetland sometimes mistaken for playas: salt lakes.

Salt lakes used to be filled by springs from the aquifer, explained Bartuszevige. "Today, many of those springs have dried up so salt lakes are often filled by runoff from rainstorms. However, because all the water is lost through evaporation, these wetlands get very, very salty." (It is important to note that the water in salt lakes does not percolate down and help recharge the aquifer.)

In addition, salt lakes also have different plants and insect species than playas. "You can tell the difference between a salt lake and a playa from the ground by the presence or absence of a salt crust," she said. "Salt lakes will have a white crust of salt remaining after the water evaporates. Dry playas do not have that."

Another unique aspect of playas: unlike other wetlands, playas are low spots on the landscape that don't connect to other outlets such as rivers, she explained. "They're not part of a larger wetland complex where water flows across the surface of the land," she said. "Really, they just gather water that runs downhill."

And when that rainwater gathers exposed soil or sediment, the playas get filled in. Removal of this sediment, as well as planting native grasses that act as buffers to sediment, would enable playas to function properly, hold more water, and provide critical wildlife habitat in this semi-arid landscape.

* * *

Top left: The majority of playas occur in Curry, Quay and Roosevelt counties in New Mexico. Map courtesy of Playa Lakes Joint Venture.

Top right: Playa Lakes Joint Venture is aimed at conserving bird habitat in a six-state region with playas that replenish the Ogallala Aquifer. Map courtesy of Playa Lakes Joint Venture.

Rustay has been an avid birder for as long as he can remember. His interest in playas began with his interest in birds. "Playas were a place to visit because of all of the birds there," he said, noting how his interest in birding eventually led to him pursuing a career in habitat conservation.

In the eastern plains, he noted, birds are used to not having much water. A bird such as the lesser prairie chicken can get moisture from insects and drinking dew early in the morning, he explained. However, having a playa wetland there with water can be helpful as they have shown they are important for egg production. Playas also provide food and shelter for migrating waterfowl such as ducks and sandhill cranes and shorebirds such as American avocets and black-necked stilts. Many of these birds roost as far north as Canada but use New Mexico's playas as stopovers on their journey south.

Austin Teague, southeast regional wildlife biologist with the Department, notes that playas are important for all wildlife on the plains. "Playas not only provide habitat for countless animals but are literally one of the only natural places where animals can get water from a source other than plants," he said. He noted that ranchers put out drinkers for their livestock that also draw wildlife even as artificial water sources.

In the end, playas are ultimately where animals get their water from and where other wildlife can thrive. "If there weren't playas, there would hardly be any amphibians in the shortgrass prairie ecosystems," he said.

Teague, who is also the Department's representative on the PLJV's breeding bird monitoring advisory committee, noted that if landowners want to restore their playas, recharging definitely benefits them because the aquifer is compartmentalized and water filtering into the aquifer beneath their property will remain there for their use. "Whoever is restoring a playa on their land will see direct benefits," he said. "If the aquifer dries up, no one would have water to irrigate their crops, or even live out there."

Pronghorn, in particular, visit playas frequently when they have water, said Anthony Opatz, pronghorn biologist with the Department. "Any time there's water on the landscape, pronghorn will find it," said Opatz. Although pronghorn often drink from stock tanks set out by ranchers because they are a more

consistent water source than playas, playas provide wildlife "good, clean water" and support surrounding buffers of nutritious forage.

The role playas have in sustaining life on the plains is best understood when viewed from above. Aerial photographs in the southeast reveal a view of a landscape filled with these water sources, that, according to biologists, are crucial to an ecosystem that will only thrive if there's a place for the rain to collect.

"Playas are ephemeral wetlands, and all wetland types together comprise only less than two percent of the landmass in New Mexico," said Rustay. "A lot of people who drive through the flat portions of the United States say there's nothing here. My comment is, you're just looking at them from the cars, driving at 75 miles per hour. You have to get out into the grasslands and the playas to see their beauty."

For more information

For more information about playas in New Mexico, as well as the playa restoration program, visit: https://playasworkfornewmexico.com/

Left: Austin Teague, southeast regional wildlife biologist with the Department of Game and Fish, is also the Department's representative for the PLJV advisory committee. Cody Johnston, New Mexico Department of Game and Fish.

Right: This photo was taken over east-central New Mexico during an aerial pronghorn survey. Playas are typically dry before the summer monsoon season arrives. Orrin Duvuvuei, New Mexico Department of Game and Fish.

Alexa J. Henry is the editor of New Mexico Wildlife *for the New Mexico Department of Game and Fish.*

Department staff navigates COVID-19 restrictions

Continues critical wildlife research and public outreach

Compiled by Alexa J. Henry with reports from Department staff

Donning masks in the field or teleworking from home offices, Department biologists, conservation officers and education and information staffers found new ways to study and conserve our state's fish and wildlife resources. Staffers got creative and found new ways to complete projects, or simply dreamed up innovative ways to promote outdoor education. Here are just a handful of our staff's accomplishments:

Left: Beatty's Cabin. Shawn Carrell, New Mexico Department of Game and Fish.

Right: Hatchery workers remain flexible adjusting to restrictions during the COVID pandemic. New Mexico Department of Game and Fish.

Conservation officers take to the trail

In April and May, the COVID-19 pandemic was ramping up and so were conservation officers. Horses and mules were saddled, packs loaded with supplies and officers headed off into the Pecos Wilderness.

Just above the heart of Beatty's Flats sits a cabin, rising above the headwaters of the Pecos River, the green meadows and just below tree line; the cabin has sat in this location since the 1950s. In the summer, officers use it as a base camp to check the health of, and bring salt to, the Rocky Mountain bighorn sheep and in the fall for checking high mountain hunters.

Loaded up at Jack's Creek Trailhead, officers worked in pairs to carry supplies in to make repairs to the cabin. Traveling in the wilderness, especially in early spring, can be a challenge. Trees that were blown down over the winter block the trail. Officers were required to dismount from their horses and use hand saws to cut the trees, clearing the trail for the pack string to safely make its way to their destination.

Over several months, officers, along with their horses and mules, rode hundreds of miles, helped to clear numerous trails allowing access to the high country for recreationists, hikers, other horsemen and hunters. They repaired chinking and applied a fresh coat of paint to the cabin, updated plumbing inside the cabin to ensure the cabin will endure the harsh winters and pass on the legacy it has generated for over a hundred years. This cabin was named after George Beatty, who built the original cabin and was one of the earliest settlers of what we now know as the Pecos Wilderness. (Check out Beatty's Cabin by Elliott S. Barker for more information on the wilderness and history of the cabin.)

Managing New Mexico's hatcheries

Despite fishing restrictions, hundreds of thousands of fish housed at the Department's six hatcheries still needed to find permanent homes in our state's lakes, rivers and streams. "Fish don't stop growing," said Roddy Gallegos, assistant chief of fisheries with the Department. "You can put them on a rationed diet but only for a limited amount of time before you begin to compromise their health. As fish grow, biomass or densities within the culture environment increase. If fish are not stocked before densities get to high, fish will begin to die."

In other words, too many fish, getting bigger and bigger, in one place. An increase in the population density of fish means higher mortalities and greater potential for disease outbreaks. To ensure the state's salmon, trout, walleye and bass thrive, hatchery personnel inventoried the number of fry and fingerlings that needed to be removed and pulled together a list of waters that were open for fishing.

Hatcheries also continued receiving quarterly and monthly egg shipments. The "revolving fish culture system" continued, Gallegos explained. "You can't just stop operations," he said, noting that Red River hatchery receives 210,000 trout eggs per month, while Los Ojos receives 270,000 rainbow trout eggs every quarter. "You have eggs coming in and you have to get fish out. If a hatchery receives 200,000 eggs every month, you have to move out 200,000 fish every month, or biomass will explode."

Gallegos also noted that hatcheries were—and still are— closed to the public. The Department limited access to hatcheries for non-hatchery staff such as biologists and administration. All outside individuals were required to request approval to access the hatcheries, and when these requests were granted, all visitors were required to abide by current health orders. "These measures were taken to protect staff and their families who reside on hatchery grounds," he said.

New messaging boards warn motorists of large game animals

Since 2014, at least nine Rocky Mountain bighorn sheep have been killed by vehicles on New Mexico State Highway 38 between Questa and Red River. In 2016, a motorcyclist died in a collision with bighorn, with multiple sheep being killed or injured. In late winter/early spring, bighorn sheep move down from snow-covered higher elevations to forage on grasses sprouting early within the highway right-of-way and are also attracted to salt that is applied to the road as a de-icing agent.

Based on research that demonstrates that variable messaging boards can reduce driver speeds and collisions with large game animals, in 2019 the Ecological and Environmental Planning Division purchased two of these signs to warn motorists at large game animal-vehicle collision hotspots.

In March 2020, these signboards were moved from a three-mile-long, high elk-vehicle collision corridor on U.S. Highway 70 at Bent (between Tularosa and Ruidoso) to New Mexico Highway 38 to warn motorists of bighorn sheep in the roadway. The signboards were retrieved in early June after bighorn had generally moved back up into the high country.

No sheep were known to have been involved with collisions during the period that the signboards were deployed. The Department will continue to deploy the signs to New Mexico Highway 38 in late winter/early spring to warn motorists to share the road with bighorn sheep!

Share with Wildlife, Audubon New Mexico offer activity books for kids

Last spring, Audubon New Mexico had plans to update their Outdoor Field Science curriculum to better align with the Public Education Department's STEM Ready! Science Standards. The organization expected to offer both classroom and field-based interactions with students to implement the updated science curriculum, which focuses on New Mexico wildlife; their habitats, biology, and conservation; and scientific observation.

However, the restrictions and closures associated with COVID-19 required that they quickly modify these plans. Audubon New Mexico usually gives students from Santa Fe Public Schools an opportunity to explore and make observations of wildlife habitat elements and wildlife signs in the piñon-juniper woodland at Randall Davey Audubon Center in northern Santa Fe.

Instead of postponing the in-person program, Audubon New Mexico tapped the Department's Share with Wildlife funds to produce workbooks that students could work through at home.

To ensure that students could still receive environmental education when they were sent home, Audubon New Mexico developed two workbooks in both English and Spanish. They worked with Santa Fe Public Schools to distribute them through

food pickup sites, thereby targeting students who lack internet access at home. They also distributed the workbooks digitally to teachers who originally scheduled field trips to Randall Davey Audubon Center for spring 2020 but had to cancel them.

To check out the workbooks, and for more educational resources, visit: https://nm.audubon.org/conservation/educational-resources.

Left: Bighorn sheep in the road near Questa. Mark Watson, New Mexico Department of Game and Fish.

Right: Audubon and Share with Wildlife partnered to provide environmental education materials for youth. Ginny Seamster, New Mexico Department of Game and Fish.

Department participates in surveys of New Mexico's curlew population

The long-billed curlew, Numenius americanus, is a Species of Greatest Conservation Need in New Mexico, meaning that it warrants heightened attention in our state.

In an effort to fill critical information gaps, the Department joined the United States Fish and Wildlife Service, Boise State University's Intermountain Bird Observatory, Rio Mora National Wildlife Refuge, Denver Zoological Foundation, Playa Lakes Joint Venture and other partners to collect data on curlews breeding in New Mexico.

Valuable data on migration routes and overwintering locations were collected from satellite transmitters deployed in 2019. After returning to New Mexico this spring, three of the curlews migrated back to the same non-breeding season locations used in Mexico last year. Additional transmitter deployment was planned for 2020, but capture efforts were not possible under COVID-19 social distancing requirements. Instead, standardized surveys were completed to increase knowledge of breeding season locations and habitat use; curlews were documented in Mora, San Miguel, Union, Harding, Roosevelt, Curry and Quay counties.

This project is part of a continent-wide migratory connectivity effort to determine conservation needs across this species' annual cycle; please visit https://www.boisestate.edu/ibo/curlews/curlew-locations/.

Turkey capture and survey conducted in the Peloncillos

The Department continued its study of Gould's turkeys this spring, trapping a total of nine in the Peloncillo Mountains in southwestern New Mexico and counting 224 during a survey conducted in partnership with the National Wild Turkey Foundation.

"Trapping was part of an ongoing effort to get Global Positioning Systems (GPS) out on birds for the last few years," said Casey Cardinal, resident game bird biologist with the Department. The first transmitters were deployed in May 2018.

GPS locations taken during the day are used to investigate several components of turkey life, said Cardinal. "Turkeys feed and loaf much of the day, so we can identify habitats that may be used for these activities. The daytime locations also help us identify nest sites, and give us insights into what habitats hens use with their chicks after the nest hatches.

Additionally, the day time locations, Cardinal explained, help biologists identify some of the pathways that turkeys follow when they make long-distance movements.

The night locations are used to identify roost sites. "Since turkeys primarily rely on their eyesight to avoid predators, they are very vulnerable at night," Cardinal said. "Roost trees are an important component of turkey habitat, as they provide turkeys a safe place to spend the night. Roost trees get the birds off the ground, away from many predators."

The spring survey is an annual effort to get the minimum population numbers of Gould's turkeys in the Peloncillo Mountains. Gould's turkeys are listed as state threatened species. The Department passed a recovery plan in 2017, and biologists have been working on assessing the population status since that time.

Biologists capture bighorn at Rio Grande Gorge, detect disease in population

In February 2020, some animals in the Rio Grande Gorge population tested positive for the bacteria Mycoplasma ovipneumoniae (M. ovi). Bighorn sheep may initially acquire M. ovi and similar disease-causing organisms from contact with domestic sheep or goats and consequently spread those pathogens within or between bighorn sheep populations.

The bacteria's presence is concerning because it has been identified as an important pathogen contributing to pneumonia in bighorn sheep. Pneumonia can be a serious disease in bighorn sheep that can result in all-age die-offs with detrimental impacts to the herds. Bighorn populations that have contracted M. ovi may remain healthy, or experience a pneumonia outbreak, with outcomes ranging from no mortalities to complete loss of the herd.

The Department has consequently increased monitoring of the Rio Grande Gorge bighorn population. In April and May, the Department, with assistance from Taos Pueblo, captured and collared 30 bighorn sheep using two-person ground darting teams (20 ewes and ten rams). Collared animals are being monitored and will provide valuable information regarding survival rates and lamb production in the context of M. ovi exposure. There have been no mortalities of collared sheep to this point.

Left: Department biologists survey curlews. Ron Kellemueller, New Mexico Department of Game and Fish.

Center: Gould's Turkey. Erin Duvuvuei, New Mexico Department of Game and Fish.

Right: Rio Grande bighorn sheep capture and survey. Ty Jackson, New Mexico Department of Game and Fish.

Biologists detect virus in wild rabbits

Last March, the Department and the New Mexico Livestock Board reported that Rabbit Hemorrhagic Disease Virus type 2 (RHDV-2), a new variant of Rabbit Hemorrhagic Disease (RHDV), was detected for the first time in the state's wild rabbit populations.

The Department began collecting carcasses for testing after reports of dead wild rabbits in early March. Mortalities in domestic rabbits also resulted in testing during this time.

Mortalities in wild populations have been reported from all of southern New Mexico, and areas surrounding Grants, Albuquerque, Santa Fe and Espanola.

RHDV-2 is expected to continue to spread and is transmitted among rabbits through direct contact, excrement, shared food sources and contaminated burrows. The disease, which has been found in both wild jackrabbit and cottontail populations as well as in domestic rabbit production facilities throughout the western United States, is highly contagious among rabbits; however, it is not known to be transmissible to humans or pets.

To be cautious, people should avoid handling dead rabbits without gloves, and pets should be kept from contact with rabbit carcasses they encounter. RHDV-2 is from a different viral family from the corona virus and is not related to COVID-19.

The Department has been testing wild rabbit carcasses for the virus since March; RHDV-2 was detected in the carcass of a black-tailed jackrabbit in Eddy County in April, said Dr. Kerry Mower, wildlife health specialist with the Department.

"Both jackrabbits and cottontails have been affected and are dying from this," said Mower. "Since RHDV had never been confirmed in wild rabbits, it was thought that indigenous North American rabbits weren't susceptible. With the discovery of this novel variant of RHDV, we have learned our assumption was incorrect." The United States first saw cases of RHDV in the 1980s among domestic rabbits, most severely in extensive commercial rabbit facilities, he noted.

The Department asks the members of the public to report large numbers of dead wild rabbits to their local conservation officer or the Department Information Center at (888) 248-6866.

Reaching out from home offices

Despite travel restrictions and the cancellation of several of the Department's popular hunter education events, the hunter education team still wanted to make sure students were prepared for their upcoming hunts.

Hunter education program manager Jennifer Morgan teamed up with Ross Morgan, the Department's northwest area public information officer, to produce fifteen instructional videos on topics including the basics of bowhunting and muzzleloading, zones of fire and safe firearm handling.

"While we're always excited to get out into the field and work with our students, we knew we had to shift gears and find another way to help everyone prepare for hunts and meet their goals," said Jennifer Morgan. "We hope everyone out there finds the videos helpful. We want to stay in touch with our students, and we hope to see everyone at future hunts and classes."

Morgan noted that the videos have been utilized in the Department's newly implemented virtual hunter education class and will continue to be made available to hunter education instructors when the program can resume in-person courses.

The video series can be found on the Department's YouTube channel at https://www.youtube.com/user/NMGameandFish.

Knowing that outdoor activities were limited, the Department's information team offered up fresh resources for kids and adults, from wildlife coloring sheets and lesson plans to extra e-newsletters

featuring wild game and fish recipes and an online summer camp for kids. The Department also held conservation essay writing and art contests. Check out page 28 to read some of the winning essays.

The Department's information center has remained open for calls from the public. Staff has been reduced to allow for safe COVID practices and information specialists have also been answering emails through the ispa@state.nm.us and on social media. Our staff is available Monday – Friday 8 a.m. – 5 p.m.; we are closed weekends and holidays.

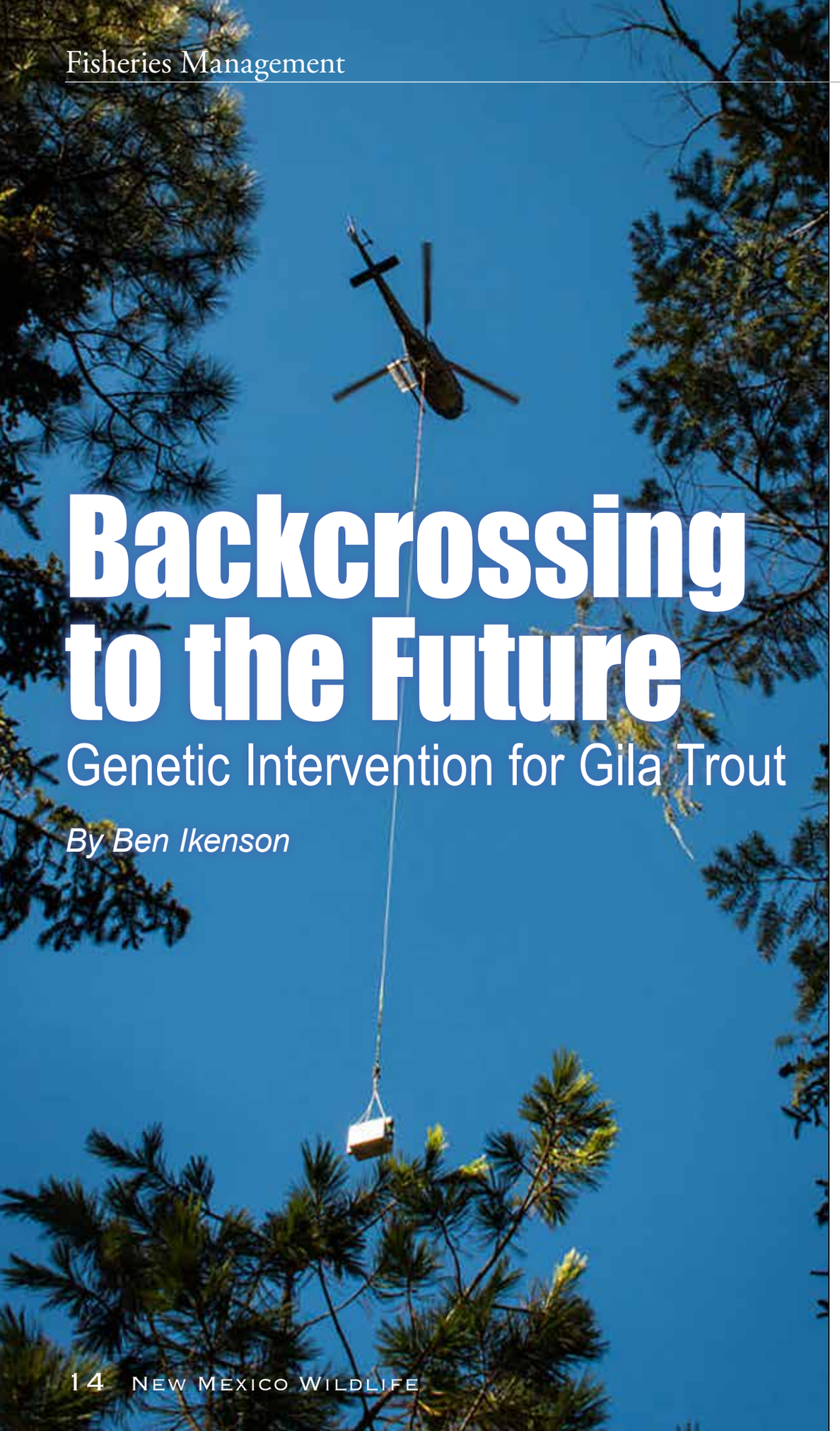
"All of us in the Information Center very much appreciate the public with their understanding that we are experiencing longer hold and email response times," said Lisa Brejcha, former information center supervisor.

Lastly, the Department has worked hard to ensure that business administration continues to run smoothly. Our fiscal section continues to develop purchase orders, pay bills and ensure that purchases go smoothly. While Department offices remained closed for extended periods, license sales are available through the online system and at licensing sales agents across the state.

Left: Jackrabbit. Ross Morgan, New Mexico Department of Game and Fish.

Right: Jennifer Morgan in one of the 15 YouTube videos highlighting firearm safety. New Mexico Department of Game and Fish.

Alexa J. Henry is the editor of New Mexico Wildlife *for the New Mexico Department of Game and Fish.*



Backcrossing to the Future

Genetic Intervention for Gila Trout

By Ben Ikenson

In the summer of 2018, a pair of fish biologists and a pair of horse packers embarked on an arduous 13-hour trek through a remote section of the 3.3 million-acre Gila National Forest in southwestern New Mexico, not far from the Arizona border.

"We rode mules the first five or so miles, but had to continue on foot for the last several miles, basically bushwhacking our way through because there was no trail," recalls Jill Wick, who manages the native fish program for the New Mexico Department of Game and Fish.

Eventually, Wick and company made their way to a primitive old Forest Service cabin on a ridge at the head of the deceptively-named Big Dry Creek, where they spent the night. At dawn, as the first rays of sunlight streamed through the forest canopy, they hiked down to the water and dispersed across the stream, sporting waders and electrofishing gear. Before long, fish, temporarily stunned, began to float sideways to the surface, exposing iridescent gold sides.

By late afternoon, the team had collected about 50 specimens in net pens. Eventually, a small helicopter arrived, descending onto a clearing near the creek. After being loaded into a 70-gallon aluminum tank attached to a 150-foot longline secured to the chopper, the fish were whisked off through the azure sky.

For those watching from the ground below, the hope was that some of these fish might help to genetically restore an original lineage of one of the rarest native trout species in the United States.

* * *

Left: A helicopter lowers a tank full of Gila trout headed for Mineral Creek in the Gila National Forest, reintroducing Gila trout to creek for the first time after the fire of 2012. Photo courtesy of Craig Springer, USFWS.

Listed as an endangered species in 1967, the Gila trout was one of the first fish to receive federal protections, before the Endangered Species Act was enacted in 1973. The fish inhabits mountain streams within the Gila River and San Francisco River drainages in New Mexico and Arizona, though the extent of its historical distribution is not known with certainty. By the 1950s, though, severe habitat degradation and displacement by non-native trout had reduced its range to just five streams in New Mexico.

Today, conservation of the fish is guided by the U.S. Fish and Wildlife Service's (USFWS) Gila Trout Recovery Plan, last revised in 2003, and by a recovery team with members from the Service, the New Mexico Department of Game and Fish, the Arizona Game and Fish Department, the U.S. Forest Service and the University of New Mexico. Collaboratively, the team makes recommendations for conservation and recovery that are carried out on the ground by biologists and many others from the various partner agencies.

In addition to an ongoing effort of maintaining and breeding captive populations of Gila trout at the Mora National Fish Hatchery, in northern New Mexico, the work includes an intensive regimen of stream restoration prescriptions in the wild. Measures include removing non-native species and constructing barriers to prevent them from reinvading before returning native Gila trout to their ancestral streams. Altogether, such efforts have helped to fortify five remnant, genetically distinct lineages of Gila trout populations in 17 streams in New Mexico and five in Arizona; these lineages have evolved to accumulate variations in their genomes that, collectively, help the species as a whole.

In the last decade especially, though, conservation approaches have had to adjust to some extreme circumstances. Recovery of the species hit a major setback with the 2012 Whitewater-Baldy Complex Fire. The largest wildfire in New Mexico state history consumed nearly 300,000 acres in the Gila National Forest and destroyed half of all existing Gila trout populations on the landscape, which necessitated a series of urgent fish collection and captive breeding efforts.

Prior to the 2012 fire, Mora had been maintaining two Gila trout lineages, says Trevor Luna, project leader at the Mora facility. "Since then, we've been maintaining fish from all five."

Of the five Gila trout lineages, one — "Spruce Creek" – was nearly wiped out completely by the fire, which especially exacerbated matters for these particular fish. When wildfire decimates a fish population, the genetic diversity of the remaining population is proportionally diminished. And of the Spruce Creek fish, biologists have noted that they've been "very difficult to maintain and rear in captivity," says Wick, adding that many have exhibited deformities, suggesting the lineage's genetic makeup may be less than ideal. "They don't look like high-quality fish."

That's part of the reason Wick endeavored to take some from Big Dry Creek two years ago, which was then the only stream containing the lineage. After the fish were airlifted out of the forest, some were translocated to their namesake waters in nearby Spruce Creek in order to repopulate it; others were delivered to Mora, to augment captive breeding efforts there – as well as to be included in an experiment intended to restore diversity to the strain.

Indeed, genetic analyses subsequently confirmed that these wild fish were no more diverse than the hatchery's brood-stock, which originated from fish taken just after the 2012 fire. The lineage was deemed "genetically depauperate" in ichthyological vernacular -- and in need of intervention.

* * *

Right: Gila trout. Photo courtesy of Craig Springer, USFWS.

Set on some 640 acres in the rural dairy farm country of the southeastern New Mexico plains, in the town of Dexter (population 1,239), the Fish and Wildlife Service's Southwestern Native Aquatic Resources and Recovery Center includes a fully functional fish culture facility, 76 fish culture ponds and more than a million fish representing 14 different threatened and endangered species. The facility also houses a suite of laboratories with state-of-the-art equipment such as a MiSeq Next Generation Sequencer, which performs small genome sequencing and targeted gene sequencing;

a bioanalyzer, used to analyze the quantity of RNA, DNA, and protein in a sample; and a real-time polymerase chain reaction system, which quantifies the number of DNA copies in a sample during replication.

Typically, the genetic project workflow starts when the lab receives tissue samples from a partner; in fish, this is typically a small fin clip preserved in 95 percent ethanol, explains Wade Wilson, a fish geneticist who serves as the deputy director for the Center.

"Before they get stored in upright freezers at -112 degrees Fahrenheit, fish samples are cataloged and given unique names to describe the species, whether the samples are wild or captive, year collected, and population name or facility name," explains Wilson. For example, the sample name 'OgigW12LGC_001' describes the first Oncorhynchus gilae (Gila trout) sample collected in the wild in 2012 from Langstroth Creek, he points out.

Wilson has made Gila trout work a priority. The fish's five lineages are important because their genetic distinction from each other makes them, collectively, better able to avoid extinction, he explains. Because the five lineages each evolved in different watersheds over hundreds to thousands of generations, they adapted to what's optimal for survival in their various areas. During this process, variations in their genomes accumulated. "These genetic variations may be associated with water flow, water temperature, spawning time, proteins to digest or absorb certain food sources or to fight disease, to name a few," he says. "Historically, there may have been a few individuals that could move from one population to another, but mostly the lineages were separate and evolved independently – with enough genetic differences to provide managers evidence that the lineages should be managed separately."

But desperate times call for desperate measures. In relation to the beleaguered Spruce Creek Lineage, the recovery team decided that, while still working to preserve the population's distinctness, it was necessary to inject a measure of diversity into the gene pool. They agreed, females from the Spruce Creek lineage would be spawned with males from the "Whiskey Creek" lineage, which was selected for both its genetic diversity and its genetic "middle-ground" proximity to Spruce Creek fish on the "family tree." And, to preserve the unique Spruce Creek lineage genetics going forward, the new, more diverse offspring would subsequently be spawned back with pure Spruce Creek individuals.

"This is called backcrossing," says Wilson. "Individuals from a mixed lineage are crossed back to one of the two pure parental lineages, in this case Spruce Creek and not Whiskey Creek."

A caveat: "Once you spawn one lineage with another, you cannot fully recover what was unique," Wilson says. "You can backcross to the lineage of interest, but the genomes will forever be combined to some degree."

In the meantime, the backcrossing effort will require patience. The first generation of backcrossed fish were hatched in spring; subsequent generations are expected once annually. And these fish will provide Wilson and his team with genetic samples to be catalogued and archived. According to Wilson, it will take some time to gauge the success of the backcrossing effort "since the genetic rescue of the lineage is expected to take several generations."

At the same time, adds Wilson, "we as a team are still gathering information about what is or was on the landscape in Arizona and New Mexico, what is currently at Mora, and what cryopreserved milt [semen] we have available to us." (The Fish and Wildlife Service's

Warm Springs Fish Technology Center, in Georgia, stores Gila trout milt in a cryopreservation lab.) "Each year we will take this information and adapt our original plan as needed to keep the lineage moving forward. Recovery of the species is a challenging and adaptive process."

Wick readily agrees that recovery work for the species has had to adapt. "We focused more on replicating single lineage populations in the past but as we learn more about these fish, as we lose more individuals and encounter difficulties propagating them and as we discover the loss of genetic diversity encountered after the fires, of all lineages, we're beginning to realize that mixing lineages may be a more appropriate way to conserve the species as a whole," she says.

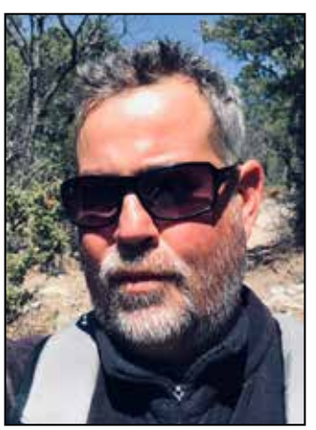
"Backcrossing is an experiment… and it has worked for other species." (The strategy has been used to help conservation of the Florida panther, among other species conservation efforts.)

Like Wick, Wilson is cautiously optimistic: "There are numerous talented, dedicated and passionate people involved in the process, so I'm hopeful recovery is moving forward in a positive way. It may not be the same path the species was on prior to the 2012 and subsequent fires, but it's a path forward."

As if mirroring nature itself, the work to conserve the species – from putting sample specimens through the automated DNA sequencing machine in Dexter, to maintaining and breeding fish at Mora to collecting wild fish from their diminished range in New Mexico's most far-flung streams – is likewise evolving.

"As we learn new things and encounter new obstacles, such as wildfire or loss of genetic diversity, we have to adapt how we manage and conserve the species," Wick says. "That is an ongoing lesson and, generally, the lesson of science."

Opposite: Biologist Andy Dean with USFWS stocks Gila trout into Mineral Creek in Gila National Forest. Photo courtesy of Craig Springer, USFWS.



Ben Ikenson is a freelance writer, independent journalist and former writer for the U.S. Fish and Wildlife Service.

A fishy community focused on the long game

By Tristanna Bickford

Fishing, especially fly-fishing, is often a solo activity. Even if you travel to a fishing site with a group of people, you park, grab your equipment and everyone quickly breaks off heading in their own direction.

A day on the water can be peaceful, you can hear the birds chirping and the water flowing at your feet. A relaxing day without cell phone reception, no Facebook, just you and the water. It can be educational as you gain new skills or more technical skills. It can be fun, as you strip the line in, feeling the fight of a fish on the other end. The water has a way of healing, allowing you to think or just letting your mind wander where it wants, the fresh air filling your lungs. Even if you don't catch a thing, being on the water is refreshing and can give a sense of freedom.

Imagine yourself fishing a small stream that runs from high mountain springs and fills in when the snow melts. The leaves are changing and showering the forest floors in brilliant orange and red. You find the perfect spot, you give a few short casts, readjust your aim and land your fly in just the right place.

Your line grows tight, you start reeling in your catch, a tug begins at the corner of your mouth as the golden-colored trout flash at the end of your line. You recognize the Gila trout's iridescent gold sides that blend to a darker shade of copper over the gills. After a quick picture with this native fish, you release it, your face lights up as it sails away.

Have you ever stopped to wonder just how that trout ended up in the stream? Realized that the process took many years, talented and creative biologists and partnerships to make it happen?

Gila trout are currently listed as threatened under the U.S. Fish and Wildlife Service's (FWS) Threatened and Endangered Species Act (ESA). This status is one that bears heavyweight and responsibility to those who manage them.

The New Mexico Department of Game and Fish and other state and federal agencies have the responsibility to seek out and grow habitats to help the endangered Gila trout reestablish its self in waters where it once was found. This is something that the Department takes very seriously and works tediously to find solutions that provide restoration for the Gila trout as well as recreational opportunities for anglers hoping to catch this native fish.

While fishing is often a solo activity, fish restoration is a community effort. State and federal agencies, non-profit organizations, landowners, anglers and other outdoor enthusiasts all join together, ensuring the outcome is a healthy fishery. Without all of these partners, this would not be possible.

On a late fall morning, partner agencies joined community members to make the trek to Whitewater Creek, in the Gila National Forest, near Glenwood, N.M. Donning jackets, with light gloves, a cup of hot cider or hot cocoa in hand, nearly 100 people watched as two large fish stocking trucks opened up their tops reveling the Gila trout held safe inside, unknowingly waiting to be stocked into their new home.

Biologists from the Mora National Fish Hatchery and the Department of Game and Fish grabbed fish nets and climbed onto the trucks. Anxiously, kids and adults alike held five-gallon buckets, waiting for their turn to fill their bucket with water and a few Gila trout. Awkwardly they carried their buckets to the nearby stream, tipping the buckets, emptying water and trout into Whitewater Creek. History was made as the threatened species retakes its place, returning to the creek known as their native range.

Left: A young girl released a Gila Trout into Whitewater Creek. Tristanna Bickford, New Mexico Department of Game and Fish.

Right: Community members gather on the Glenwood Catwalk, preparing to pack fish upstream. Tristanna Bickford, New Mexico Department of Game and Fish.

Tristanna Bickford is the Communications Director for the New Mexico Department of Game and Fish.

The San Juan River: An officer's perspective

By Shaler Wells

The San Juan River, located in the northwest corner of our state, has one of the best tail waters for trout fishing in New Mexico. The Special Trout Waters consist of 3.75 miles of river from Navajo Dam downstream to the Crusher Hole day use area. This section is located within Navajo Dam State Park and a day use pass or annual parks pass is required. The Special Trout Waters are managed through a cooperation of four agencies, including the New Mexico Department of Game and Fish, New Mexico State Parks, the Bureau of Land Management and the Bureau of Reclamation. This collaboration encompasses both state and federal agencies and regulations.

Special Trout Waters have very specific regulations including what types of hooks, how many flies can be used on a line and catch and release fishing only. All the specific rules for the Special Trout Waters can be located in the New Mexico Department of Game and Fish Rules and Information Booklet (pages 18-19). When you visit, be sure to look for the signs posted along with the Special Trout Waters as well, designating it as a "Red Chile Water."

The average number of fish per mile in the Special Trout Waters is approximately 24 thousand, with a combined 3.75 mile total of 90 thousand fish, according to Christopher Wethington, the Department's San Juan River trout fisheries biologist. Due to this unique habitat structure, trout enthusiasts and anglers travel from all over the world to enjoy the best fishing the state of New Mexico has to offer. High angler demand from both local and out of state anglers leads to a high average annual angler usage of 234,819 hours. That is a lot of hours spent fishing during the year.

This small section of the San Juan River supports a vast fly-fishing guide industry. Numerous fly shops specialize in fly fishing supplies and angling experiences. These businesses are located close to the Special Trout Waters in the town of Navajo Dam, allowing anglers to stop and get advice on flies that will work for the area, stock up on necessary angling supplies or purchase a current fishing license.

Law enforcement efforts by the Department's conservation officers are conducted primarily through foot patrol along the banks of the river. These patrols can also include wading the river to check individuals that are not accessible from the river bank. To check non-motorized boats on the river, officers often use kayaks. Officers can easily check licenses and tackle alongside the drift and other non-motorized boats with little interference from oars or the hassle of anchoring a larger boat. The view from a kayak allows officers to see anglers from a greater distance since the river offers an open viewing plane. Officers try to patrol from kayas as often as they can. It allows them to also look at habitat issues along the river such as beaver dams blocking water flow in back channels along the river.

If you are planning a trip to the Special Trout Waters on the San Juan River, read up on the specific rules and regulations. Stop in at one of the local fly shops for advice on the best flies for the area and local knowledge of the river.

If you want a guided fishing trip, you can look online or book through one of the local fly shops. You never know you might see a conservation officer on your trip. Enjoy the fishing.

Right: Some officers patrol the San Juan River by kayak. Shaler Wells, New Mexico Department of Game and Fish.

Shaler Wells is a corporal with the Navajo Dam District at the New Mexico Department of Game and Fish.

These symbols identify the three different types of Special Trout Waters found in New Mexico.

- *Red Chile Water (left): Artificial fly or lure with single, barbless hook and catch and release only.*
- *Green Chile Water (center): Artificial fly or lure with single, barbless hook. Bag limit two (2) trout only.*
- *Xmas Chile Water (right): Any legal tackle. Bag limit two (2) trout only.*

Fire as a management tool

Agencies and private landowners collaborate to provide benefit to prairie grasslands

By Cody Johnston

Fire . . . A word that when usually heard can lend itself to panic and alarm, and rightfully so in the setting of a cityscape or catastrophic wildfire.

But for a moment, let's stop to speculate: is fire always a bad thing? In regards to wildlife and habitat, fire has been a normal occurrence throughout history that has helped landscapes remain healthy by promoting new vigorous growth of vegetation and by removing dead, fallen debris.

Above: Wildland fire specialists using drip torches to set fire to grasses. Cody Johnston, New Mexico Department of Game and Fish.

For wildlife habitat biologists, fire is one of the major tools in their arsenal to bring about largescale and beneficial change to an environment in a swift and cost-effective manner.

One such prescribed burn for habitat management occurred in February at the Milnesand Prairie Chicken Wildlife Management Area on the eastern side of the state. This area is one of multiple properties the Department owns to aid in the conservation of lesser prairie chickens near Milnesand, New Mexico.

"The primary purpose of the Milnesand prescribed burn was to reintroduce periodic disturbance, in the form of prescribed fire, to the fire-adapted prairie near Milnesand to improve habitat for [the] lesser prairie chicken and other prairie wildlife," said Ryan Darr, lands program manager for the New Mexico Department of Game and Fish.

Modern land-use practices have deprived these prairies of periodic fire for decades, harming ecosystem health and leading to increased fuel loads and wildfire danger, Darr explained.

Historically, fire on the landscape brought about positive changes, such as removing invasive plant life, enhancing nutrient cycling, removing excessive debris (fuel loads) and improving forage for wildlife. Before European settlement, fires were a regular occurrence brought on by events such as lightning storms.

Since fires occurred more regularly when a fire burned, it would burn at a lower intensity due to the decreased fuel loads on the ground. In turn, these cooler fires would help to create a mosaic pattern of vegetation types across the landscape and thereby provide benefits for multiple wildlife species.

These mosaic patterns are what habitat biologists are trying to create when using fire as a management tool, so that "the landscape retains a diversity of food and cover types for the benefit of the greatest diversity of wildlife species possible," said Grant Beauprez, lesser prairie chicken biologist for the Department.

The Milnesand prescribed burn was also the inauguration of a cooperative agreement between the Department and U.S. Fish and Wildlife Service's Partners for Fish and Wildlife Program (PFW).

According to Gwen Kolb, State Coordinator for PFW, this cost-sharing agreement promotes prescribed fire on New Mexico Department of Game and Fish Wildlife Management Areas and adjacent private lands at a minimal cost by using available National Wildfire Coordinating Group (NWCG) certified wildland firefighters and equipment outside of the wildfire season. Such fires also help fulfill necessary off-season training requirements for the wildland firefighters.

With the weather cooperating, the team's ready wildland fire specialists from the U.S. Fish and Wildlife Service, Bureau of Land Management, U.S. Air Force Wildland Fire Management and the Department donned their fire protective gear and readied the fire trucks.

Conservation officers and volunteers from two local fire departments monitored roads to protect public safety and with everyone ready, the drip torches were lit and the fire commenced. Wildland fire specialists walked the area carrying large red cans labeled flammable liquid that were used to set fire to the grass and bushes as they walked. In a relatively short time the ground was ablaze, the dry wood and brush crackled as it burned and smoke filled the air. Fire specialists could just be seen through the haze of the heat and smoke, doing a job they knew well.

Containment lines had been cut days before to keep the fire contained to just the area meant to be burned, but firefighters on side-by-sides frequently checked the containment lines just to be sure. There were also constant checks of weather patterns and the back and forth on the radios, ensuring that firefighters stayed safe in the midst of the fire.

The fire crews continued until the evening to get all of the area burned, and crews from the Fish and Wildlife Service monitored into the night to make sure flare-ups didn't occur. In the end, fire specialists would safely burn 1,084 acres of State Game Commission Lands (Milnesand Prairie Chicken Wildlife Management Area), 551 acres of State Trust Land leased by the Department and approximately 320 acres of private land, effectively providing for largescale habitat improvement through fire.

With sufficient rain over the next few months, the area quickly recovered with new grasses, forbs and woody cover such as shinnery oak, delivering a "reset" to the landscape and providing new growth that will benefit wildlife with new food sources and habitat. The excessive fuel loads that had built up in the prairie landscape also have decreased, thereby reducing the chances of extreme wildfire dangers.

"Department staff have placed time-lapse cameras on-site to document the burn recovery and will be continuing long-term vegetation surveys being conducted on the site," says George Farmer, Southeast Habitat Biologist for the Department, further ensuring the success of the burn.

With the success of this project, Darr says the Department is looking forward to future collaborations to bring prescribed fire to other Department Wildlife Management Areas and participating private ranches in southeast New Mexico and across the state with the goal to "maximize [the] benefit to habitat and wildlife."

Top: Lesser Prairie Chicken in the fire area, photo courtesy of Grant Beauprez.

Bottom: Prescribed fire took place at one of the Department's Prairie Chicken Management Areas near Milnesand, N.M. Cody Johnston, New Mexico Department of Game and Fish.

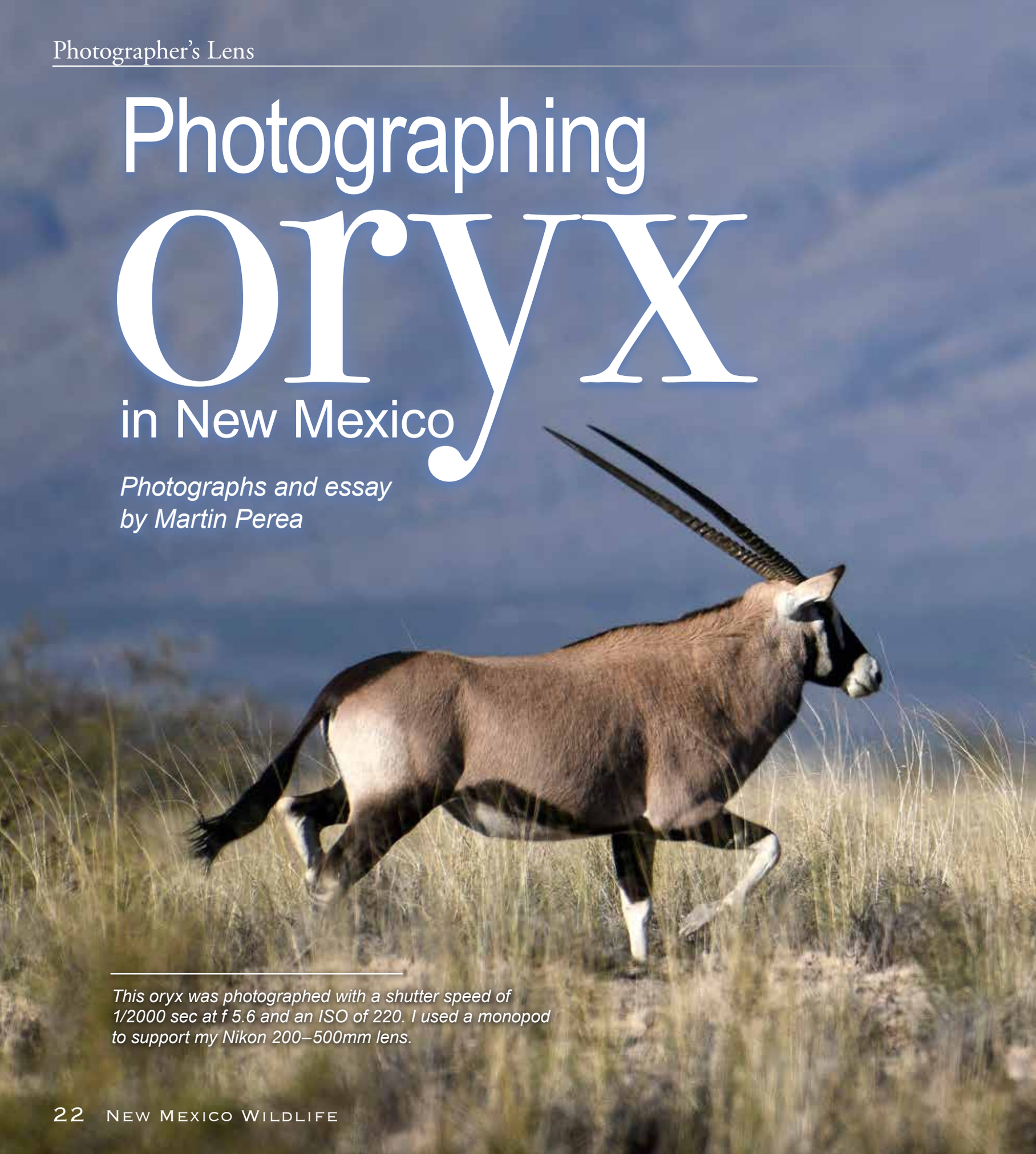
More about prairie chickens

- The lesser prairie chicken (Tympanuchus pallidicinctus) is a species of grouse that is found in the short grassland prairies which include areas in southeast New Mexico.
- The New Mexico Department of Game and Fish owns multiple properties that help aid in the conservation of prairie chickens as well as working with other agencies and landowners for best management practices, such as prescribed fire.
- Just days after the prescribed burn, the birds were seen setting up new leks, says Grant Beauprez, Prairie Chicken Biologist for the New Mexico Department of Game and Fish.
- A lek is a cleared area of ground where male prairie chickens go to dance, call and "boom" in order to try and attract a mate. These leks are essential for the species survival and it is encouraging to see they are using the recovered area to set up new leks.
- Along with new leks being established, Beauprez also stated, "it is hoped that the prescribed burn will improve nesting and brood-rearing habitat for the chickens in the coming years."
- As can be seen in the video, the birds have also been utilizing the new plant growth in the recovered burn area as a food source. (Video link https://www.youtube.com/watch?v=TJOgtYKv1Is)

Cody Johnston is the Public Information Officer in the Southeast Area for the New Mexico Department of Game and Fish.

Photographing oryx in New Mexico

Photographs and essay by Martin Perea



This oryx was photographed with a shutter speed of 1/2000 sec at f 5.6 and an ISO of 220. I used a monopod to support my Nikon 200–500mm lens.

Wildlife photographers will find an interesting variety of large mammals in New Mexico. Spend enough time in the field and you will find that each species comes with its own set of challenges.

One of the most rewarding and often frustrating to photograph are oryx, also known as gemsbok. These large antelope, native to Africa and the Middle East, have thrived in New Mexico ever since 93 captively bred oryx were released on White Sands Missile Range between 1969 and 1977.

Both male and female oryx have long black horns and a distinctive black and white pattern that adorns their primarily tan color. Their large bodies and long horns make them fairly easy to spot if they are in the area where you are looking. They are often found in herds but it is common to see lone oryx as well. Patrick Morrow, wildlife biologist for White Sands Missile Range, estimates there are 3,500 to 4,000 oryx on the missile range, based on aerial surveys by the New Mexico Department of Game and Fish and population modeling. Statewide, according to the Department, there are 5,000 to 6,000 oryx.

Herd animals instinctively stand in a position that allows them to watch for predators.

Most of New Mexico's oryx are not available for public viewing or photography since they live on White Sands Missile Range (WSMR). However, some can be found outside the missile range where, with patience and a bit of luck, you might find some to photograph. I gained official access to WSMR to photograph the oryx in this photo essay. With the help of Patrick's vast knowledge of the oryx and their habitat I was able locate these beautiful creatures and make the most of this rare opportunity to photograph them in this unique landscape.

Oryx can sometimes be seen on public land bordering White Sands Missile Range. Here are a few of those places:

– The area between the east boundary of Bosque del Apache National Wildlife Refuge and the west boundary of WSMR is a good place to look for off-range oryx. To get there, take US 380 east from I-25 then turn southward on County Road 153. Drive as far south as you can along the WSMR fence line. Be sure to stop along the way to observe.

- Another good spot in the same vicinity is accessible through the east side of the Bosque del Apache. To get there drive east on US 380 and turn right on San Pedro Road. Travel south and turn left on Guadalajara Road. Drive to the end of the road and park near the walk-through horse gate. You will have to hike in from there.

– Other areas include Bureau of Land Management property bordering WSMR on the north, west and east sides. It will take some scouting to find oryx in these areas.

It will take a fair amount of scouting to find oryx off-range but the reward can be well worth the effort. Look for sign such as tracks and scat. Fresh hoof prints or droppings indicate that oryx have been in the area and will likely return at some point.

As usual when photographing wildlife, good quality equipment will help you get the best photos. Oryx

are large animals but they tend to keep their distance when they are aware of humans, so use a long a telephoto lens. Use a camera support such as a sturdy tripod or a bean bag rest. Keep your bean bag on you driver side door in case you spot animals while driving slowly along the roadway.

You are not likely to encounter other vehicles on these remote roads so you can stop for a few photos before exiting your vehicle for more photos (if you get the chance). If they are standing still and your camera is well supported, you might get away with a shutter speed as slow as 1/250 of a second but I prefer 1/500 -1/1000 if light permits. A stationary animal still flicks their ears and swish their tails to swat flies. This movement results in blurred spots if your shutter speed is too slow. For running shots, you will need a much faster shutter speed of 1/2000 and up.

With some homework, scouting and a good combination of equipment, skill and luck, you can add some striking photos to your wildlife collection.

Above: Some oryx loose one of their horns, giving them an appearance of a unicorn.

While access to WSMR is restricted and requires special permission, there are a few places to view oryx in southern New Mexico including off of HWY 70 between White Sands National Park and the San Augustin Pass on both sides of the highway. Visitors may also spot them along Highway 54.

Viewing oryx in New Mexico

Sevilleta National Wildlife Refuge is home to multiple oryx herds. The refuge offers monthly guided tours for the public; opportunities to spot oryx are hit-or-miss. Due to COVID restrictions, the refuge has suspended offering tours until further notice. For more information, visit https://www.fws.gov/refuge/sevilleta/.

Top: Oryx calves are reddish-brown in color.

Left: Long black horns and a black and white mask make oryx striking photo subjects.

Martin Perea is the Videographer for the New Mexico Department of Game and Fish.

Smoked Duck Breast

By John Martsh

Ingredients:

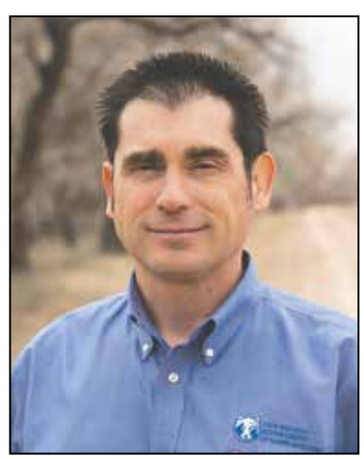
- duck breasts (possession limit of 36 if possible)
- butter
- extra virgin olive oil
- salt
- pepper
- garlic salt
- paprika
- cayenne pepper
- chile lime seasoning (optional)

Searing over an open flame. John Martsh, New Mexico Department of Game and Fish.

Preparation:

1. In a 12" skillet, heat 2 tablespoons butter and 2 tablespoons of olive oil on high heat. I recommend doing this step outdoors on a propane burner, as lots of smoke will be generated. You can severely upset your spouse by doing this inside the house.
2. Just as the mixture starts to smoke, add your duck breasts. You are looking for a golden-brown sear on each side, this takes approximately 1 minute and 30 seconds per side.
3. Apply a healthy dose of all spices to each side of the breast.
4. Continue to add oil/butter mixture until all duck breasts have been seared and spiced.
5. Heat smoker to 300 degrees Fahrenheit; high-temperature smoking is needed.
6. Load wood chips or pellets. I prefer apple wood, but any wood could be used.
7. Smoke the breasts until they are medium, an internal temperature of 165 degrees Fahrenheit. It generally takes 20 minutes for small duck breasts and 30 minutes for medium to large to reach this temperature.
8. Tent, or loosely cover, breasts with aluminum foil after removing from the smoker. After 10 minutes, they are ready to eat or freeze for later.

Top: Smoked duck breast. John Martsh, New Mexico Department of Game and Fish.



John Martsh is the Recruitment, Retention and Reactivation Program Manager for the New Mexico Department of Game and Fish.

10 tips for surviving a winter night in the wilderness

By John Martsh

Imagine you are duck hunting alone on a river in late December. It's a blustery, cloudy day, with snow on the ground, but you've already killed three ducks. The air temperature hovers in the high twenties. Every time you breathe, your breath lingers in a cloud surrounding your head.

Around 2 p.m., a winter storm starts to quickly dump snow and ice is building up around you. As you continue to hunt, the wind picks up and decreases the ambient temperature to the low twenties. The extremely low temperature kills your cell phone battery, which is stowed in a Ziploc bag inside your camouflage coat pocket.

Right before sunset, you manage to harvest two more ducks. As you wade through the water to retrieve the last one, you trip on an underwater branch and fall face-first into the freezing water. You make it back to dry land, but are worried that hypothermia will set in before you can walk the two miles back to the truck. It is getting dark, the snow has disoriented you and obliterated all walking trails.

You decide to spend the night and will try to hike out at first light in the morning. But are you prepared to spend the night? What equipment will you need to survive overnight in cold temperatures? What steps should you take and in what order?

Here are 10 tips that may help you make the best choices to get through the night safely.

1. Don't panic. Stay calm. Thinking methodically and critically can save your life in any emergency situation.
2. Wearing multiple layers, including gloves and a thermal base layer, is the best way to stay warm in winter. You can remove the outmost layer if it gets wet or you get too hot.
3. Make a shelter. Either use the existing snow or make a lean-to from dead branches and vegetation. Make sure the floor is dry and cleared of snow and you have adequate ventilation for a fire.
4. Always have two or three different fire starters with you. Examples of good fire starters include waterproof matches, a lighter, ferrocerium rod, a magnifying glass or magnesium flint striker blocks.
5. Start a fire. Find a dead tree and remove the lowest branches; these will be the driest. Also, carry some dry fire fuel in an empty Altoids tin, 35 mm film canister or prescription drug vial. Fuel tinder can include lint from the clothes dryer, Vaseline infused cotton balls or purchase TinderQuik Firestarting tabs. Absent fuel, find a dead log and use a knife to remove layers till you see dry wood. Then cut thin shavings for tinder.
6. Carry an emergency mylar thermal blanket; they are waterproof and will retain body heat.
7. Have a headlight or flashlight, and extra batteries, to see in the dark.
8. Before you go, tell someone exactly where you are going and when to expect you back. That way a search and rescue team will know where to begin the search if you go missing.
9. Always carry a high-fat content energy bar with you when hunting. Fats provide higher energy calories per ounce than carbohydrates do. You never know when you might have to spend an unplanned night outdoors with no food. In this situation, you could cook some duck breasts and legs over your fire.
10. A fixed blade bushcraft knife, survival knife or folding hunting knife would be perfect to field dress ducks and cut wood for a fire.

Top (left to right): Winter waterfowl hunting during a blizzard; Multiple clothing layers for the winter weather; Winter survival gear. John Martsh, New Mexico Department of Game and Fish.

John Martsh is the Recruitment, Retention and Reactivation Program Manager for the New Mexico Department of Game and Fish.

Cool Jobs at Game and Fish

Meet Leland Pierce,
Department of Game and Fish herpetologist

Herpetology is the study of reptiles and amphibians. In an interview with Kids Tracks, Department herpetologist Leland Pierce answers questions about his interest in reptiles and amphibians and the importance of these creatures to New Mexico's ecosystem.

Why do you like reptiles and amphibians sot much?

Amphibians and reptiles came onto my radar in my graduate school days. I had always been interested in wildlife and caught my fair share of garter snakes as a kid in New Mexico, but my initial interest was in research and sharks, the latter courtesy of the movie, "Jaws." Not having any sharks here in the state, I took a course in herpetology and the professor and I ended up working together for many years. I've always had a passion for helping poorly-represented species like snakes and toads, not to mention little mice and bats, so the position of herpetologist was attractive to me.

What does a typical month as state herpetologist look like?

Much of my job entails working with the U.S. Fish and Wildlife Service to recover species currently listed for protection under the Endangered Species Act, or working to make protection unnecessary for species proposed to be listed. The majority of field work surveying for reptile and amphibian species is contracted out to species-specific experts, although I do like to help when possible. As you might imagine, there are a lot of meetings, study designing and contract management. I also answer lots of questions and advise students interested in reptile and amphibian research.

Do you think reptiles and amphibians are misunderstood?

Yes, though it is getting better. Many species aren't as readily observed as birds or mammals, which can lead to misinformation and fear. Living in New Mexico means living with venomous reptiles, particularly rattlesnakes. Citizens should educate themselves about living with venomous animals and should maintain a healthy respect for all wildlife. Amphibians and reptiles are integral parts of an ecosystem.

I saw a pink snake on the road. What kind of snake was that?

Every year, I receive multiple reports from callers that they saw a "great big, bright pink snake." One of the most commonly seen snakes throughout the state is the non-venomous coachwhip, with one possible color morph being bright pink, particularly around Albuquerque and Santa Fe. Though beautiful, they are neither rare nor noteworthy.

Left: Leland Pierce, Department of Game and Fish herpetologist.

Right: Noah Lynn, Roswell, 8th grade, Sidney Gutierrez Middle School, 3rd place finisher in the Youth Essay Contest.

Why You Should Hunt or Fish?

By Noah Lynn

Hunting and especially fishing are a huge part of my life. I can't imagine how my life would be without them. I've been fishing since I was five, and hunting since I was 10. Reasons why you should join me in my next hunting or fishing trip is because it is awesome to get outside and see this wonderful world that we live in. A lot of times we take for granted what we have in this world. Hunting and fishing are a tremendous way to remember how beautiful our world is.

Secondly, in my opinion, there is nothing more satisfying than catching a beautiful fish or hunting an animal or shooting your first clay pigeon. It's these reasons I'm still hunting and fishing to this day. It never gets old to me. I can always trust that I can go catch a bass or trout and feel like I really accomplished something. Third, it is a great way to get physical activity with family and friends. You get to get out and walk around.

I also love fishing and hunting because you get to relive what your ancestors did. Sometimes we forget our ancestors and what they went through. Our ancestors have been hunting since the dawn of time, and even with modern firearms and fishing gear, we can still get outside and relive what our ancestors did for survival, while respecting the land, animals and fish. Finally, also why I love fishing and hunting is because of the strategy involved. There is a lot more to fishing and hunting than it may seem. You can walk into a tackle store and see hundreds of lures and bait and you have to pick what you think the fish will eat. This makes you especially satisfied when you can trick the fish into thinking that a bait or lure is something they would eat. These are only a few reasons why you should go fishing and hunting with me, so let's go!

Wildlife & Water

by Jeremy Lane

When you are thirsty, you head to your kitchen, a store or maybe a public water fountain for your hydration. If you're away from civilization, you carry your water with you. But what do animals across the state do when they need water?

There are two types of water intake for animals. The first of these is free-standing water. Many species will head to a known location of water for a drink multiple times throughout the day. This could be a lake, river, stream, spring, puddle or even smaller, less obvious sources. It is impressive how neighborhood birds learn where leaky pipes or yard irrigation drip systems pool and visit them daily. Some animals will even lick dew from wet vegetation in the mornings.

How much water they require can depend on their body size. It is estimated a mule deer needs half a gallon of water daily per 100 pounds of body weight, so an average-sized deer needs approximately 1.5 gallons per day.

All of our animal species need water to live, but in the arid southwest, water can be scarce. Much of southern New Mexico is the Chihuahuan Desert that only receives slightly over nine inches of precipitation per year, on average. So how do desert denizens get their water?

They rely on dietary or metabolic water, the second type of water intake in animals. Metabolic water means the water isn't from a free-standing source but instead derived from the things they eat. For example, kangaroo rats eat primarily seeds and get all the water they may ever need from them as they are broken down in the digestive process. They might not take a sip of water in their entire lives.

Texas horned lizards won't pass up a puddle for a drink if the uncommon opportunity presents itself, but finding free-standing water might be near impossible for them at certain times of the year. Instead, this ant-eating lizard collects water from dew or rain through a process called "rain harvesting." Micro-channels between the horned lizard's scales collect and channel water toward the corners of its mouth through capillary action. The horned lizard need only sense rain and position itself to be struck by the droplets or walk through dew-laden plants to get all the moisture it needs.

So, the next time you're feeling parched, think about how easy of a problem it is for you to remedy versus the struggle wildlife goes through to survive. It is important to provide and conserve wildlife water sources for this very reason.

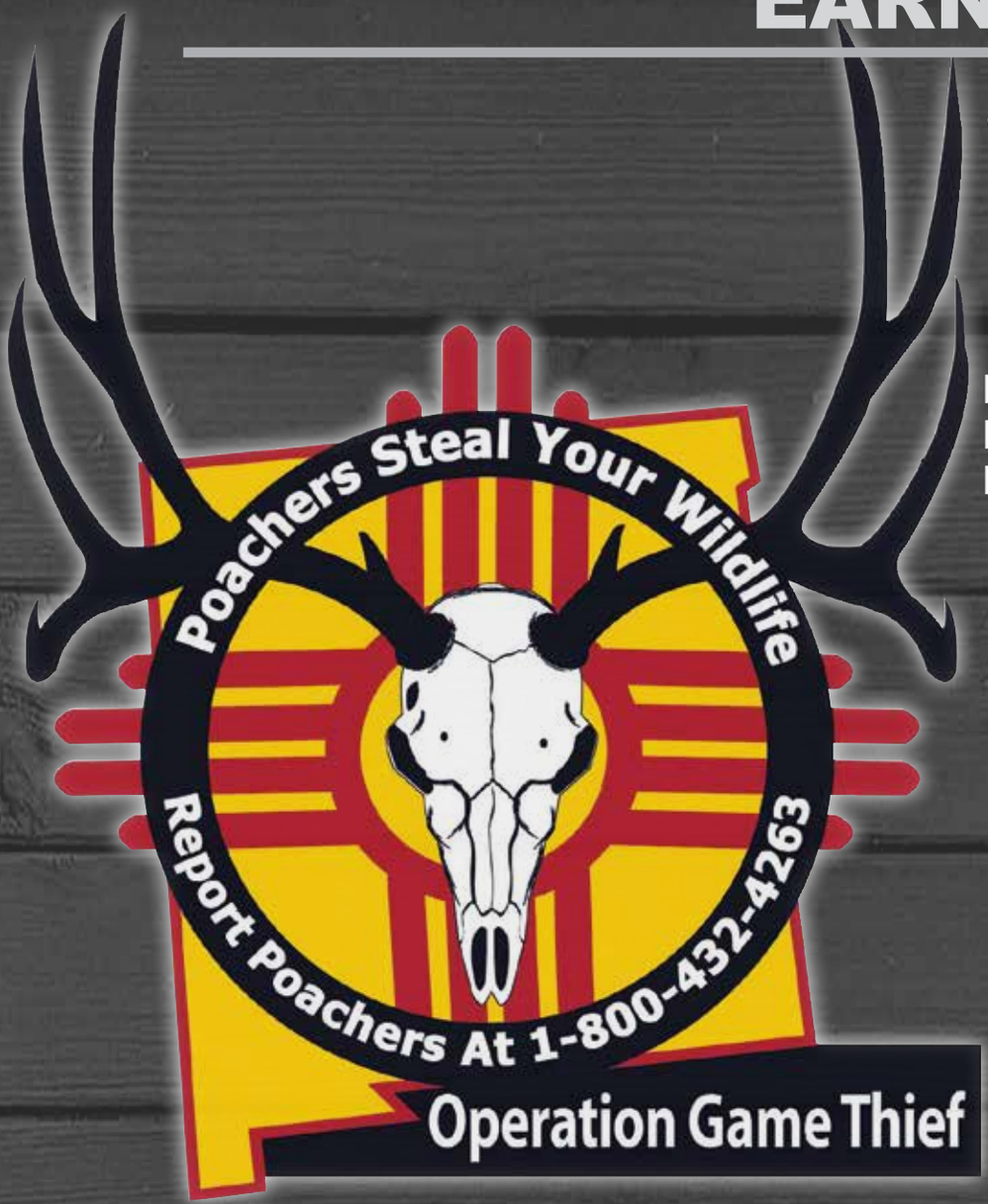
Above: Coues deer drinking. Ross Morgan, New Mexico Department of Game and Fish.

Inset: Jeremy Lane is the Southwest Public Information Officer for the Department of Game and Fish.

OPERATION GAME THIEF

WE NEED YOUR TIPS TO HELP CATCH THE POACHERS WHO STEAL YOUR WILDLIFE

REMAIN ANNOYNOMOUS, EARN CASH REWARDS



WE ARE ASKING THAT IF YOU SEE A WILDLIFE CRIME OCCURING, KNOW OF ONE THAT OCCURED OR EVEN IF YOU THINK IT MIGHT BE A WILDLIFE CRIME PLEASE CALL OUR HOTLINE OR A LOCAL CONSERVATION OFFICER TO INVESTIGATE.

PLEASE USE GOOD JUDGEMENT AND NEVER CONFRONT SOMEONE WHO MAY BE POACHING.

- ► RECORD THE DATE, TIME AND LOCATION.
- ► NOTE THE WILDLIFE SPECIES INVOLVED.
- ► GET LICENSE PLATE NUMBERS AND VEHICLE INFORMATION IF EASILY AND SAFELY OBTAINABLE.
- ► RECORD NAMES, ADDRESSES AND DESCRIPTIONS OF INDIVDUALS IF KNOWN.
- ► INCLUDE AS MANY OTHER DETAILS YOU CAN PROVIDE ABOUT THE CASE.
- ► IF YOU CAN EASILY AND SAFELY GET A PHOTO OR VIDEO, THIS CAN HELP OFFICERS INVESTIGATE.
- ► TIME CAN BE CRITICAL TO SOLVING A CASE, PLEASE REPORT AS SOON AS POSSIBLE.

CONSERVING NEW MEXICO'S WILDLIFE FOR FUTURE GENERATIONS

OPERATION GAME THIEF HOTLINE

1-800-432-4263

OR ONLINE AT:

WWW.WILDLIFE.STATE.NM.US