A DAY IN THE LIFE OF A WOLF BIOLOGIST

Story by Bailey Dilgard | Photographs by George Andrejko

The annual helicopter count and capture operation aims to locate Mexican wolves and equip them with collars for tracking and future identification. Mexican wolf biologist and author of this article Bailey Dilgard was the mugger during the operation in January and responsible for retrieving wolves after they were immobilized.

I'm often asked what an average day of a wolf biologist is like. The short answer is: I don't know. There truly is no such thing as an average day. It's impossible to make plans, as the day is constantly changing and priorities are shifting. For instance, I can have the intention of having an office day to work on data entry, but halfway through my commute, I get a phone call from a co-worker who needs help with hazing wolves away from cattle. So I turn the truck around and head toward the work that needs my immediate attention.

The one constant is that every day I must be flexible and adapt to the work that the wolves demand of me. Although there is no average day, the aspect I can depend on being somewhat predictable and consistent is our major operational activities that occur every season throughout the year. These activities include conflict mitigation, genetic recovery through fostering and annual population counts, which are facilitated by routine collaring efforts.

SPRING

Throughout the months of March, April and May, our team is largely focused on the foster season. Fostering is the process of taking captive-born Mexican wolf pups that are less than two weeks of age and inserting them into wild litters to be raised as wild wolves. It is a proven and successful method of improving genetic diversity while minimizing conflict.

Early in the process, we monitor breeding females through data provided by GPS collars and in-person checks of certain areas to document denning behavior using the radio signals from the collared wolves in the pack. We must also select and rank wolf packs through a process that determines which packs will be most successful in receiving and raising additional pups. This involves evaluating the alpha female's experience as

a mother, if the pack has previously raised fostered pups successfully, and if the pack has enough members to assist with pup care.

Another important aspect is ensuring that the date of birth of captive-born and wild-born pups are within four to six (and no more than eight) days of each other. We also try to avoid fostering into packs that have been involved in moderate-to-high levels of wolf-livestock conflicts in the past year.

In the days leading up to a foster event, we gather, organize and remove scent from all the equipment we will be using, including our clothing, using descenting sprays and leaving equipment outdoors prior to operations. This is all in effort to minimize transmission of human scent on the pups and at the den site. We also ensure gloves are worn during the event and any long hair is tied up and covered to further reduce the potential of leaving human scent at the den site.

In May 2022, a co-worker and I made our way down a rocky outcrop on a hill while searching for the Rocky Prairie pack's den, which would be receiving the two foster pups that were waiting back at the truck with our team. Originally, these two pups were to be placed into the Panther Creek pack's den, but we discovered that the alpha female had relocated her pups the day before our arrival to an undiscovered location. Although this does not occur often, we are always prepared for it and have a list of backup dens that can be utilized instead.

We had a relatively good idea as to where the Rocky Prairie pack's den was, however, knowing the general location of a den and pinpointing it on the ground are two very different things. With a bit of searching, we eventually found it. It was a narrow hole between two large rocks. At the mouth of the den, hair that the alpha female had plucked from her belly to facilitate nursing, an act that takes place prior to whelping, was scattered about.

Once we determined that the den was safe to enter, I squeezed myself between the rocks and wiggled my way in. After a 10-foot belly crawl, I found two sleeping wolf pups curled up in the back of the den. I scooped them up, brought them out of the den and processing began. All pups, including the fosters, were given a wellness check to ensure they were healthy and absent of birth defects. A cheek swab for genetic analysis was taken and a passive integrated transponder (or PIT tag), which will later help us identify the individual if captured, was inserted just beneath the skin.

Once processed, the pups are placed into a pile and each are stimulated to cause elimination. This replicates what the mother wolf does to her pups when they are this young. We do this so the pups urinate on each other, causing them to all have the same smell. A little dirt from inside the den is also sprinkled on the puppy pile to help them all smell the same. The pups are then placed back into the den where they wait for the alpha female's return, which usually occurs quickly after the team leaves the den area. Once these pups are mobile and able to travel with the rest of the pack, the den will be abandoned.

All the work that goes into preparing and executing a successful fostering event is not only rewarding, but also incredibly important to the success of the project and genetic recovery within the Mexican wolf population.

Of all the foster success stories, that of wolf 1471 is exemplary. In 2016, 1471 was born at the Brookfield Zoo in Illinois. On April 26, 2016, he was fostered into the Elk Horn pack, one of Arizona's resident wolf packs. About a year later, 1471 dispersed from his natal pack, in search of his own territory and a mate. By the end of 2017, he had found a female and established his own pack, later to be named the Prime Canyon pack. In spring 2018, he and his mate, 1488, produced their first litter.

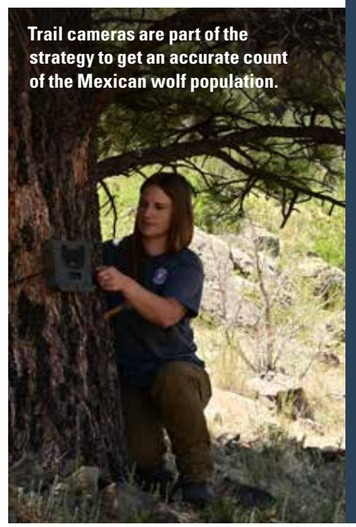
As of 2023, 1471 has produced six different litters of genetically diverse pups. Of those offspring, a minimum of six are currently alphas in new packs and producing offspring of their own. As the fostered Mexican wolves continue to reproduce in the wild, and their offspring in turn produce genetically diverse pups of their own, we move the needle of genetic recovery a little more each year.

SUMMER

Throughout the year, but especially during the summer months, we are primarily focused on conflict mitigation activities. Range riders, both seasonal and permanent, make up a part of our team and their sole focus is on mitigating wolf-livestock interactions. This is done by monitoring wolf activity in potential conflict areas, identifying historical "hotspots" (locations of livestock-wolf conflicts) through data analysis, and using a variety of tools to haze wolves away from livestock and human-occupied spaces.

Hazing uses deterrents to motivate an animal to leave a certain area and teaches it to keep its distance from humans and livestock alike. It's an incredibly effective tool that we use most often. This is typically done through the use of a shotgun and less-than-lethal munitions, such as rubber slugs or "bore," which emit a loud bang. Loud noise or the temporary pain inflicted by a rubber slug increases a wolf's fear of humans and aversion to being around cattle. Using these tools around cattle can prevent

Each year Mexican wolves are captured so they can be outfitted with a collar for tracking and monitoring. Wildlife veterinarians also administer vaccines and take blood samples for genetic analysis.



Trail cameras are part of the strategy to get an accurate count of the Mexican wolf population.

25TH ANNIVERSARY

The Mexican wolf is a rare subspecies of gray wolf in North America. It is listed separately from the gray wolf as an endangered subspecies under the federal Endangered Species Act. In 1977, the U.S. Fish and Wildlife Service and its partners initiated efforts to conserve the subspecies by developing a binational captive breeding program with the seven remaining Mexican wolves in existence. Mexican wolves were first reintroduced to the wild in 1998, marking the first time in 25 years Mexican wolves were known to exist in the wild in the United States.

In addition to the minimum wild population, there are approximately 380 Mexican wolves currently maintained in approximately 60 facilities throughout the United States and Mexico through the Mexican Wolf Species Survival Plan program.

Partners in Mexican wolf recovery in the United States include the U.S. Fish and Wildlife Service, Arizona Game and Fish Department, New Mexico Department of Game and Fish, U.S. Department of Agriculture Forest Service, USDA APHIS Wildlife Services, White Mountain Apache Tribe, Bureau of Land Management, National Park Service and the Association of Zoos and Aquariums SAFE (Saving Animals From Extinction) program — formerly the Species Survival Plan, which oversees the captive population of Mexican wolves.

wolves from killing livestock, an action called "depredation," the formation of hotspots and the possible removal of a chronically depredating wolf.

Outside of hazing techniques, we often work with partner agencies and livestock operators on diversionary projects, such as food caching, carcass removal, pasture rotations and the use of fladry — a temporary fence line we install with red flagging that's used to deter animals from entering a specific area like a pasture.

Of course, building and maintaining relationships with ranchers who have permits for livestock to graze on federal lands is a cornerstone to the success of managing wolf-livestock conflict. Through frequent communication, we keep each other apprised of any wolf activity in an area occupied by cattle, which in turn allows us, permittees included, to be proactive and minimize the potential for depredations.

Permittees can also request telemetry receivers so they are better equipped to listen for signals while monitoring their cattle. Likewise, permittees and the public can view the online wolf location map to get a general idea of where wolves are. Go to **www.azgfd.gov/wolf** to access the map.

Summertime also provides us with the opportunity to be diligent about outreach and education.

FALL

Each fall our team distributes flyers to local businesses and recreational areas, ensuring the efforts coincide with hunting seasons. We also provide flyers to hunters with tags in game management units where wolves are commonly found. Although we have been doing this for several years, 2022 was our biggest effort yet. We distributed more than 1,300 flyers, creating a broader footprint for wolf awareness as far west as Flagstaff.

By illustrating the differences between coyotes and wolves and increasing awareness and social tolerance, a decreasing trend in human-caused wolf mortalities has occurred the past three years. The most recent annual mortality of Mexican wolves in 2022 (12) was substantially lower than annual mortalities in 2021 (25) and 2020 (29), and was the lowest annual total of documented Mexican wolf mortalities since 2017 (12), when the population was significantly smaller (minimum of 114 wolves).

WINTER

Come November and December, we prioritize annual ground counts to get a consistent and repeatable count of the Mexican wolf population. To be successful at getting an accurate count, we strategically deploy trail cameras in core areas and travel corridors for each pack. However, we don't simply rely on cameras. We also get a visual or track count of each pack.

Using radio telemetry equipment, we locate collared wolves within a pack to pinpoint their current area. We approach the pack quietly, being mindful of the wind and try to position ourselves at a vantage point where we can get a full view of the pack. Once in position, we watch the pack and count all the individuals present. On occasion, not all members of the pack are present, so we may have to do this multiple times until we are confident that we have a full and accurate count. These ground counts set a foundation for the overall annual count and provide an expected count for the survey done via helicopter in late January and early February.

Starting in January, work kicks into high gear for the annual helicopter count and capture operation. The amount of gear and equipment needed for both ground and aerial teams is astounding, making preparations for two weeks of helicopter efforts quite stressful. That stress is inflated when you're the one in the helicopter.

Every morning of the operation, helicopter muggers and gunners suit up, fully equipped and weighed down with layers of fire-retardant clothing, vests packed with survival gear, helmets, communication devices and packs full of veterinarian supplies. Once we take off, we soar through the air in an open-door helicopter and experience the most amazing (and cold) views of the area we work in.

As we approach the target area, we again use radio telemetry signals from previously collared wolves to hone in on the location of the pack we are looking for. When we finally have eyes on wolves, we circle the pack to get a full count on all the individuals present and I, as the helicopter mugger that day, communicate to the gunner which wolf we need to catch. Then the exhilarating part begins, and we initiate a chase to capture a wolf.

The helicopter darts forward, making sharp turns and extraordinary maneuvers to safely get us and the animal in an ideal location together. Generally, we target an uncollared member of the pack so we can equip it with a collar, determine if it's an animal that we handled as a pup, and hopefully document another foster.

Once the wolf is darted by the gunner and is immobilized, the pilot carefully lowers the helicopter so I can jump out to retrieve the animal. I hand the wolf off to my partner, who safely secures it on his lap and then we lift off again, heading back to the landing zone where the ground crew will process the animal.

On the ground, the teams are ready and fully equipped to process a wolf. They first ensure that the wolf is stable and sufficiently immobilized. Ensuring the safety and welfare of every animal captured, as well as human safety, is our top concern. Fitting a collar on a wolf is the primary reason for the capture, as a collar helps us track and monitor the individual for years to come. The collar also greatly increases our capacity to prevent and mitigate wolf-livestock conflict.

Vaccines, fluids and other necessary drugs are administered, and blood samples are taken for genetic analysis and to check for possible illnesses and disease. If the wolf is not one that we've handled before, we insert a PIT tag and issue it a unique studbook number, which is used to identify individual Mexican wolves. After the wolf awakes from immobilization, another team transports it back to its territory where it is released to rejoin its pack.

So what's an average day of a wolf biologist like? The answer will always be: "I don't know." To be successful at this job, like so many other wildlife biology jobs, you must, in a way, become the animal you are working with. Wolves don't have a set schedule or predetermined plan for the day; nor do we. The one constant is that I know every day will bring its own challenges and stresses, and with that, the feeling of excitement and fulfillment.

▪ Bailey Dilgard has been a Mexican wolf biologist with the Arizona Game and Fish Department since November 2020.

For the first time since reintroduction into the wild in 1998, the Mexican wolf population in Arizona and New Mexico has surpassed 200, with a minimum of 242 wild wolves documented last year.

Radio telemetry allows biologists to locate collared wolves.

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WOLF FOSTERING

Partners in Mexican wolf conservation announced the successful fostering of 16 genetically valuable Mexican wolf pups in spring 2023. The pups traveled from four captive facilities across the country and were placed into six wild dens in eastern Arizona and western New Mexico. This is the eighth year of fostering into the wild population of Mexican wolves, bringing the total number of fostered captive-born pups to 99.

Fostering is a proven method used by the Mexican Wolf Interagency Field Team to increase genetic diversity in the wild Mexican wolf population. It begins with selective breeding by the Saving Animals From Extinction program to produce genetically diverse pups within the captive population. Within 14 days of being born, called "whelping," the captive-born pups are transported to the wild and mixed with similarly aged wild pups in the dens of wild Mexican wolf packs. These packs have been identified and selected by the Interagency Field Team to provide the greatest chance of survival of captive-born pups in the wild.