

WHERE THE DESERT GHOST ROAMS

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ABSTRACT

The U.S.-Mexico border is a challenging place to survive for a Sonoran pronghorn. Nearly two decades ago, this endangered species faced near-extinction in its only home, an embroiled, increasingly shrinking habitat in Southwest Arizona. There in the Sonoran Desert, a passionate recovery team has dedicated significant efforts and investments to sustaining the approximately 200 remaining Sonoran pronghorns left in the U.S. The team faces two enormous obstacles that most endangered species rescue missions don't usually have to deal with. The first: a persistent drought that zaps water and plant life from the desert, making it hard for the animal to stay hydrated and fed. The second: Human disturbance in its range from off-road driving by U.S. border patrol agents monitoring migrants.

Its home happens to be one of the most concentrated areas of illegal activity at the border, and the off-road driving further dries out vital plant life and diverts waterflow in the desert. It's also not the only environmental impact of border activity, as the recovery team's research shows. For the Sonoran pronghorn – North America's fastest land mammal, an iconic creature seen on the landscape since prehistoric times – there is nowhere to go when the rain never comes during drought. The recovery team monitors the dire situation, chasing pronghorns that can sprint up to 60 miles per hour to deliver food and water when the Sonoran Desert is too dry to graze. As it becomes harder for the Sonoran pronghorn to escape increasingly inescapable human activity, it also becomes harder for the recovery team to ensure the Sonoran pronghorn survives its estimated nearly one in four chance of being extinct by the end of this century.

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A thousand feet above the Sonoran Desert in Southwest Arizona, John Hervert is a passenger in a fixed-wing plane.¹ He looks down on a small chunk of the most biodiverse desert on earth, home to 3,500 plant species.² A biologist with the Arizona Game and Fish Department (AGFD), he's been taking these flights weekly since 1994.³ He says the ride gets bumpy when it's windy and the spinning can play tricks on the ear, but he likes the flights. "It's a cool way to see the desert," he says. He's gone up hundreds of times,⁴ but he says every flight shows him something new.⁵

Each week, Hervert sees things most people never see, and he spends most of his time chasing a mysterious animal. Most Americans know that old Western anthem that goes "Home, home on the range / where the deer and the antelope play." Well, there are no antelope in the United States⁶ — the "American antelope" referred to in the song are actually pronghorns. These exotic-looking creatures with forked horns have been a fixture on prairies since prehistoric times.⁷ About the size of a goat, but with eyes almost as big as an elephant's,⁸ they can sprint up to 60 miles per hour. That makes them North America's fastest land mammal.⁹

Hervert tracks a very special pronghorn, one adapted to live in the Sonoran Desert. Because its survival depends on this harsh landscape, the Sonoran pronghorn is the most threatened sub-species of American pronghorn.¹⁰

Over more than 30 years tracking pronghorns, Hervert has been trying to answer a critical question: How do they survive in the desert? He goes up in the plane to find out. Because the herds move fast, he has to be quick to catch important details like what they're eating, or even which individual animals are where.¹¹ These elusive ungulates more than earn their nickname: the desert ghost.

¹ Hervert, John. Personal interview. January 22, 2020.

² "How Can We Prevent Biodiversity Loss in Arizona?" *Arizona Sustainability Alliance*, 3 Mar. 2020, www.azsustainabilityalliance.com/biodiversity-loss-in-arizona-what-we-can-do-about-it/.

³ Hervert, John. "Re: Follow-up questions/Fact-checking." Message to Ashley Belanger. 7 May 2020. E-mail.

⁴ Hervert, John. "Re: Follow-up questions/Fact-checking." Message to Ashley Belanger. 7 May 2020. E-mail.

⁵ Hervert, John. Personal interview. January 22, 2020.

⁶ Curry, Tierra. *Arizona's Sonoran Pronghorn Named One of Nation's Top 10 Species Threatened by Water Shortage*. Center for Biological Diversity, 2012, www.biologicaldiversity.org/news/press_releases/2012/sonoran-pronghorn-11-14-2012.html.

⁷ McCabe, Richard E., et al. *Prairie Ghost: Pronghorn and Human Interaction in Early America*. University Press of Colorado, 2004.

⁸ Curry, Tierra. *Arizona's Sonoran Pronghorn Named One of Nation's Top 10 Species Threatened by Water Shortage*. Center for Biological Diversity, 2012, www.biologicaldiversity.org/news/press_releases/2012/sonoran-pronghorn-11-14-2012.html.

⁹ "Sonoran Pronghorn - Kofa - U.S. Fish and Wildlife Service." *U.S. Fish & Wildlife Service*, 2014, www.fws.gov/refuge/Kofa/wildlife/pronghorn.html.

¹⁰ "Species Profile: Sonoran Pronghorn (*Antilocapra Americana Sonoriensis*)." *Environmental Conversation Online System*, U.S. Fish & Wildlife Service, ecos.fws.gov/ecp0/profile/speciesProfile?sId=4750.

¹¹ Hervert, John. Personal interview. January 22, 2020.

To capture as much information as possible, Hervert works with a research partner. Sitting closely in the plane, one person wields a telescope while tracking pronghorns wearing radio-collars. The other logs data.¹² Much of what is known about the Sonoran pronghorn has come from these flights, but curiosity isn't the only reason why Hervert keeps taking wing.

He's a key player in a small but passionate Sonoran pronghorn recovery team that works to preserve the highly endangered pronghorn in an environment being ravaged by both drought and dramatically increased human activity at the border.

The Sonoran Desert has only gotten drier since the pronghorns made it their home, and in a place where so many plant species grow, water has become a precious commodity. The most recent record drought stretched August 2009 to June 2019.¹³ It killed off plants that are so crucial to desert life, researchers say the loss has permanently altered the entire ecosystem.¹⁴

To make up for the loss, the recovery team follows pronghorns as they navigate the desert, delivering food and water when needed. This helps herds survive their unusual habitat – a difficult place that also happens to be one of the most concentrated areas of illegal activity along the U.S.-Mexico border.

Since 2016, U.S. President Donald Trump has cut back on environmental protections¹⁵ while making border security a priority,¹⁶ further ramping up federal activity at the border that has been increasing since the 1990s,¹⁷ menacing the sensitive pronghorn. Increasingly, the desert ghost finds itself caught in the crossfire of these policy goals, as the Trump administration waives environmental laws to move ahead with border construction through its already threatened habitat.

In some reports the Sonoran pronghorn is identified as the animal most threatened by rapid border militarization,¹⁸ and the drought is only expected to continue drying out the desert in coming years.¹⁹ This

¹² Hervert, John. Personal interview. January 22, 2020.

¹³ "Drought in Arizona." *Arizona | Drought.gov*, 20 Mar. 2020, www.drought.gov/drought/states/arizona.

¹⁴ Overpeck, Jonathan T., et al. "Past and Future Global Transformation of Terrestrial Ecosystems under Climate Change." *Science*, American Association for the Advancement of Science, 31 Aug. 2018, science.sciencemag.org/content/361/6405/920.

¹⁵ Sharrett, Luke. "A Running List of How President Trump Is Changing Environmental Policy." *National Geographic*, 3 May 2019, www.nationalgeographic.com/news/2017/03/how-trump-is-changing-science-environment/#close.

¹⁶ "Praise for President Trump's Commitment to Border Security." *The White House*, The United States Government, 2017, www.whitehouse.gov/briefings-statements/praise-president-trumps-commitment-border-security-2/.

¹⁷ 05-435, *Border Patrol: Available Data on Interior Checkpoints Suggest Differences in Sector Performance*. U.S. Government Accountability Office, 22 July 2005, www.gao.gov/htext/d05435.html.

¹⁸ "The U.S.-Mexico Border and Endangered Species." *Southwestern Desert Resources*, by William L. Halvorson et al., University of Arizona Press, 2010, p. 123.

¹⁹ Overpeck, Jonathan T., et al. "Past and Future Global Transformation of Terrestrial Ecosystems under Climate Change." *Science*, American Association for the Advancement of Science, 31 Aug. 2018, science.sciencemag.org/content/361/6405/920.

place is the pronghorns' only home, so the recovery team decided to get Customs and Border Patrol (CBP) to care about their impact on the animal's habitat.²⁰ "This is where it gets complicated," Hervert says.²¹

Biologists are doing all they can to save the pronghorn, but so much in the Sonoran Desert is out of their control. Meanwhile, political conflict at the border draws more and more people into their fragile habitat, where the exhausted pronghorn searches for sustenance under every lava rock to keep the drought from shriveling its stomach.

Unraveling the Mysteries of the Sonoran Pronghorn

Flying into Phoenix, I rent a car at the airport to get to my hotel. Waking up before sunrise, I drive down Arizona State Road 85 to get to pronghorn country. I'm about to become one of the few people to see a Sonoran pronghorn, not scared and fleeing, but completely at peace in its world.

"Their mode of getting away from danger is to see it and then run away faster than anything can chase it," Hervert says. "That actually doesn't work real well for them, because when they're near starvation because of a lack of rain or something, the last thing you want to do is run off in the heat."²²

Closely managing the threatened Sonoran pronghorns is a small group of about a dozen biologists scattered between AGFD, the U.S. Fish & Wildlife Service, the Marine Corps, the U.S. Air Force, and the National Park Service. Hervert helped draft the Sonoran pronghorn recovery plan in 1998. Over more than 300 pages, they outlined emergency conservation efforts to be implemented during drought periods, including installing waterholes and irrigating plots of land to grow the pronghorns' favorite foods.²³ Hervert says it took years before funds were diverted to act on the plan. "We tried to get people onboard with more active pronghorn recovery ideas in the '90s, and we were unsuccessful," he says.²⁴

Then the driest summer in southern Arizona history hit in 2002.

Measure the distance from the knuckle to the tip of your thumb – between June and mid-August, that's approximately how much rain fell in the Sonoran pronghorn's habitat. Typically summer rainfalls are five times heavier. In all, just 3.3 centimeters fell. Vegetation shriveled. Wildlife staggered. Hervert returned every week, observing the devastation, recording the effects, and willing the rain to come.²⁵

Hervert says that unlike past summers where drought conditions killed off fawns, that summer adults started dying too. And not just older adults, but the strongest in the herds, the young adults. None could bear it. "We were three weeks away from all of them dying," Hervert says. He knew better than almost anyone that the pronghorn has nowhere to go when the rain never comes, so he requested resources for the recovery

²⁰ *Sonoran Pronghorn Recovery Plan*. U.S. Fish & Wildlife Service, 2014, www.fws.gov/southwest/es/Documents/SpeciesDocs/SonoranPronghorn/SonoranPronghorn_DraftRecoveryPlan_Final_December2014.pdf.

²¹ Hervert, John. Personal interview November 20, 2019.

²² Hervert, John. Personal interview November 20, 2019.

²³ *Sonoran Pronghorn Recovery Plan*. U.S. Fish & Wildlife Service, 2014, www.fws.gov/southwest/es/Documents/SpeciesDocs/SonoranPronghorn/SonoranPronghorn_DraftRecoveryPlan_Final_December2014.pdf.

²⁴ Hervert, John. Personal interview November 20, 2019.

²⁵ Bright, Jill, and Hervert, John. "Adult and fawn mortality of Sonoran pronghorn." *The Wildlife Society*, 2005.

team to help the pronghorns survive. He was ignored.²⁶ That summer 83% of U.S. Sonoran pronghorns died due to the desert's near-complete and rapid dehydration. Only 21 Sonoran pronghorns were left in the U.S.²⁷

That near-extinction finally pushed people to move on the recovery plan. Calling upon a wide range of partners, U.S. and Mexican governments acted, each with its own pronghorn populations to protect. In the U.S., that involved biologists behind the recovery plan. They coordinated with the Bureau of Land Management and the Tohono O'odham tribe to manage pronghorn habitat enhancement efforts in borderlands territories these groups control. The plan also pulled in the Departments of Defense and Homeland Security, since military and CBP have active forces in the area. Their cooperation was needed to support pronghorn recovery efforts by offsetting some of the environmental impacts of border monitoring and military activities.²⁸

Heading south from Phoenix, S.R. 85 tracks Barry M. Goldwater Air Force Range before crossing over into the Cabeza Prieta, the third largest wildlife refuge in the contiguous U.S.²⁹ The pronghorn claim it all, but the expansiveness is a mirage. At 5,094 square miles, their current habitat is less than 12% of their historic range.³⁰

Some prefer foraging on the Air Force Range, where every day but Sunday, steel-gray military aircraft sail overhead. Live firing and bomb exercises occur there every week, but this activity doesn't drive the pronghorn out. In one way, it draws them in. Sometimes these exercises create craters that rains transform into temporary waterholes.³¹ Hervert marvels at this irony: all these endangered pronghorns choosing to live on a bombing range.³²

From the highway, I drive into the Cabeza Prieta visitors parking lot, where I meet Stephanie Doerries. Although the recovery plan is a binational effort with many partners, active management is primarily up to USFWS and AGFD biologists. Their effort is supported by many volunteers, as well as graduate researchers. Doerries first encountered the Sonoran pronghorn as a University of Arizona PhD student researching the animal, but last year, she became the USFWS Sonoran pronghorn recovery team leader.³³ She's been working with the animal for more than a decade,³⁴ and she invites me to jump in her truck to head into their protected range in a restricted area of the Cabeza Prieta.

Lighting the dirt road, her headlights slash the shrouded void of the slumbering desert. She slowly navigates the dips and bumps, not flinching when branches thwack her windows, but braking easily to let a jackrabbit

²⁶ Hervert, John. Personal interview November 20, 2019.

²⁷ Bright, Jill, and Hervert, John. "Adult and fawn mortality of Sonoran pronghorn." *The Wildlife Society*, 2005.

²⁸ *Sonoran Pronghorn Recovery Plan*. U.S. Fish & Wildlife Service, 2014, www.fws.gov/southwest/es/Documents/SpeciesDocs/SonoranPronghorn/SonoranPronghorn_DraftRecoveryPlan_Final_December2014.pdf.

²⁹ "Cabeza Prieta National Wildlife Refuge." *National Parks Service*, U.S. Department of the Interior, www.nps.gov/orpi/planyourvisit/cabeza-prieta-nwr.htm.

³⁰ *Sonoran Pronghorn Recovery Plan*. U.S. Fish & Wildlife Service, 2016.

³¹ Krausman, Paul. "Sonoran Pronghorn Habitat Use on Landscapes Disturbed by Military Activities." *The Wildlife Society*, 2005.

³² Hervert, John. Personal interview. January 22, 2020.

³³ Doerries, Stephanie. "Re: Follow-up questions/Fact-checking." Message to Ashley Belanger. 10 May 2020. E-mail.

³⁴ Doerries, Stephanie. Personal interview. January 2020.

hop back and forth, then off the path. It takes 45 minutes to wind our way to a certain small hill, arriving just before dawn.

The timing is important. We're right on schedule as the sun peeks over the mountains when we reach our destination. Doerries parks next to double rows of solar-powered electric fence, and we take a short hike up an increasingly steep incline to a tucked-away observation post atop South Hill. A cactus wren chattering is the only sound. Above us the sunrise announces the onslaught of the daily heat in the kindest way, sunrays curving around purple clouds, a light touch coloring their cheeks with warm tones, pinks and golds. Along the line of the hill, black cactus silhouettes cling to the dark, standing as the last vestiges of the night's cool shadows.

Doerries ducks under a camouflaged tent, and I follow her inside. She pulls out folding chairs, tripods, and telescopes for both of us. We're all set for a morning monitoring the Sonoran pronghorns stirring in the captive breeding pen below.

Located in Childs Valley, the 640-acre Cabeza Prieta pen was built in 2003.³⁵ To help start the managed population, Mexico provided two does.³⁶ Since then, it's become a central part of the recovery team's strategy to unravel the mysteries of the Sonoran pronghorn, and another smaller pen near Yuma has been added to the effort.³⁷

Today the Cabeza Prieta pen exists in a green-speckled sea of bland sand that stretches into the encircling mountains in the near beyond. Spiked posts at the corners of both exterior and interior electric fences keep bobcats from vaulting in. The pen houses 69 adult pronghorns and 35 fawns,³⁸ separated into two herds by a fence at the midline.

For the first hours of sunlight, Doerries watches the pronghorns rise and graze in the south pen, moving in a herd of about 24. She shows me how to gaze across the pen, scanning with just my eyes first and waiting to see white flashes against the tan sand when the herd turns and shows their round white rumps. I squint searching for their tails like she tells me, but it takes a frustratingly long time to finally see them. It's practically impossible to distinguish a Sonoran pronghorn from the light tan landscape that matches its fur. When I do see the herd, it's like first seeing a constellation in the sky. Once I know where to look, I can point the telescope and follow their movements across the valley.

My eyes fall on the fawns. After a few nibbles at the ground, they forget mealtime to play, chasing each other in brave spurts. From our post, Doerries notices much more than I do, logging moves of every individual and looking for worrying behavior like limping, appetite loss, and isolation. She says Sonoran

³⁵ *Cabeza Prieta National Wildlife Refuge Comprehensive Conservation Plan Wilderness Stewardship Plan and Environmental Impact Statement*. U.S. Fish & Wildlife Service, 2006, www.fws.gov/uploadedFiles/CPNWREIS.pdf.

³⁶ Final Environmental Impact Statement: Proposed Luke Air Force Base (AFB), Barry M. Goldwater Range East Range Enhancements, 2009.

³⁷ *Sonoran Pronghorn Recovery Plan*. U.S. Fish & Wildlife Service, 2014, www.fws.gov/southwest/es/Documents/SpeciesDocs/SonoranPronghorn/SonoranPronghorn_DraftRecoveryPlan_Final_December2014.pdf.

³⁸ Doerries, Stephanie. "Re: Follow-up questions/Fact-checking." Message to Ashley Belanger. 10 May 2020. E-mail.

pronghorns are social, and wandering off alone could be a sign of declining health. Today, though, she says nothing seems amiss. “All the pronghorns are doing as they should.”³⁹

Each side of the pen holds two artificial waterholes, equipped with cameras to give the recovery team a different view of pronghorn life. Between Doerries’ log from South Hill and the recorded footage, it’s clear that the pen serves an alternate purpose than most captive breeding associated with endangered species recovery. The effort does not aim to forever prop up the Sonoran pronghorn population, but by raising, releasing, and tracking pronghorns, the recovery team can make smarter decisions to help manage the wild population.⁴⁰ Once they learn enough, they hope to close the pens and focus resources on projects supporting wild herds, like irrigating plots of desert land and installing waterholes.⁴¹

But boosting Sonoran pronghorn numbers is a nice added bonus. Last year from the Cabeza Prieta pen, five pronghorns were released in Cabeza Prieta, 15 in the Air Force Range, and 10 in Organ Pipe.⁴² I visited Organ Pipe on my trip, too, and on my way, I pulled into a rest stop called the Why Not Travel Store. There, you can see a wildlife mural with the town name Why, Arizona, painted on the back of the bathrooms. Look to the right of the “Y,” and you’ll notice where the artist captured the Sonoran pronghorn’s distinct forked horns and zebra-like stripes along its neck. This is probably the only glimpse most people get of a Sonoran pronghorn in the area, but deep in the desert between Cabeza Prieta and Organ Pipe, the pronghorns have their own “rest stop.” After a few hours observing the pen, Doerries asks if I want to see the pronghorn sanctuary.

As part of emergency actions taken after the 2002 drought, the recovery team built an artificial oasis between the Childs Mountain and Cardigan Peak. It’s a commonly used pronghorn migration route known as Charlie Bell Pass.

“The knowledge that refuge is available, when and if needed, makes the silent inferno of the desert more easily bearable,” wrote environmentalist Edward Abbey in his masterpiece *Desert Solitaire*.⁴³ Abbey so loved the desert that his friends allegedly honored his final wishes and laid him to rest in a sleeping bag in the Cabeza Prieta. “I want my body to help fertilize the growth of a cactus or cliff rose or sagebrush or tree,” Abbey requested.⁴⁴ They reportedly drove down one⁴⁵ of only three bumpy dirt roads that lead into the Cabeza Prieta: Charlie Bell Road, Camino del Diablo, or the Christmas Pass Road.⁴⁶ It’s possible, then, that Abbey’s unmarked grave was accessed down Charlie Bell Road, the same road that leads to the Sonoran pronghorn rest stop.

³⁹ Doerries, Stephanie. Personal interview. January 2020.

⁴⁰ *Sonoran Pronghorn Recovery Plan*. U.S. Fish & Wildlife Service, 2014, www.fws.gov/southwest/es/Documents/SpeciesDocs/SonoranPronghorn/SonoranPronghorn_DraftRecoveryPlan_Final_December2014.pdf.

⁴¹ Hervert, John. Personal interview November 20, 2019.

⁴² Doerries, Stephanie. Personal interview. January 20, 2020.

⁴³ Abbey, Edward. *Desert Solitaire*, Ballantine Books, 1971.

⁴⁴ Sohn, Tim, et al. “End Run.” *Outside Online*, 1 Oct. 2003, www.outsideonline.com/1874171/end-run.

⁴⁵ Mongilio, John F. and Booth, Bibi. *Environmental Activists*. Greenwood, 2001. p. 4

⁴⁶ “Cabeza Prieta National Wildlife Refuge.” *National Parks Service*, U.S. Department of the Interior, www.nps.gov/orpi/planyourvisit/cabeza-prieta-nwr.htm.

In Charlie Bell Pass, the recovery team tends approximately 25 acres, what they call a forage enhancement plot.⁴⁷ It sticks out like a green thumb in the drought-stricken desert. To a passing Sonoran pronghorn, this flourishing vegetation could be attributed to a recent rain, but I immediately notice the white irrigation pipe that snakes up the terrain, and the feeder station with low wooden troughs, regularly restocked with broken-up bales of alfalfa. Thanks to the irrigation – a gravity-fed system that pulls from a water tank buried near the feeder station⁴⁸ – it can stay green in this corridor year-round. Cameras are also installed in forage plots and waterholes, giving the recovery team more ways to monitor pronghorns.⁴⁹

Hervert told me some environmental groups oppose the team’s interventions, because they don’t like anything that changes what they see as a natural balance in the desert. The recovery team knows that these trenches, which can be dug more than 200 feet long,⁵⁰ disturb the desert ecosystem and carry their own environmental impact. They strive to limit the impact by photographing the landscape prior to breaking ground so they can restage the scene once the digging is done. “Some of these water projects are grueling,” Doerries says,⁵¹ but ultimately, large water tanks reduce the number of trips wildlife officials have to make into the desert, so they’re the preferred strategy to sustain recovery efforts.⁵²

That work has produced results: Today, there are 215 Sonoran pronghorns in the U.S.⁵³ “That’s attributable to a lot of the on-the-ground, active management,” Hervert says.⁵⁴

So far in Cabeza Prieta and the Air Force Range, the recovery team has installed five plots, plus 19 waterholes, but only one plot apart from Charlie Bell Pass is still functioning. Maintenance stopped at two plots where wells no longer function and the only other one became inoperable due to the danger posed by smugglers passing through, creating unsafe work conditions for repair technicians.⁵⁵ The recovery team’s research shows pronghorns stopped going there anyway.⁵⁶

Even when they are functioning, the waterholes and forage plots don’t solve everything. “It does appear that waterholes are very effective at keeping adult pronghorns alive during drought, but they’re not so effective at keeping fawns alive,” Hervert says. His research shows pronghorns only go to water when they’re desperate, preferring to hydrate through their diet, like munching cactus fruit. So if a doe is spotted

⁴⁷ *Cabeza Prieta National Wildlife Refuge Comprehensive Conservation Plan Wilderness Stewardship Plan and Environmental Impact Statement*. U.S. Fish & Wildlife Service, 2006, www.fws.gov/uploadedFiles/CPNWREIS.pdf.

⁴⁸ Doerries, Stephanie. Personal interview. January 20, 2020.

⁴⁹ *Cabeza Prieta National Wildlife Refuge Comprehensive Conservation Plan Wilderness Stewardship Plan and Environmental Impact Statement*. U.S. Fish & Wildlife Service, 2006, www.fws.gov/uploadedFiles/CPNWREIS.pdf.

⁵⁰ Hervert, John. “Re: Follow-up questions/Fact-checking.” Message to Ashley Belanger. 7 May 2020. E-mail.

⁵¹ Doerries, Stephanie. Personal interview. January 2020.

⁵² Hervert, John. Personal interview November 20, 2019.

⁵³ Hervert, John. “Re: Follow-up questions/Fact-checking.” Message to Ashley Belanger. 7 May 2020. E-mail.

⁵⁴ Hervert, John. Personal interview November 20, 2019.

⁵⁵ Hervert, John. “Re: Follow-up questions/Fact-checking.” Message to Ashley Belanger. 7 May 2020. E-mail.

⁵⁶ *Sonoran Pronghorn Recovery Plan*. U.S. Fish & Wildlife Service, 2014, www.fws.gov/southwest/es/Documents/SpeciesDocs/SonoranPronghorn/SonoranPronghorn_DraftRecoveryPlan_Final_December2014.pdf.

at a waterhole, Hervert knows she likely failed to forage and her fawn has died.⁵⁷ If too many fawns die, it's harder to sustain population growth.

Irrigating the land is only useful when pronghorns graze there, but even when a desperate doe stumbles upon an ideal environment, she won't stick around long. She's adapted to chase the next thunderstorm, running off and seeking greener pastures that may not exist. "They're always looking. They're always moving about," Hervert says. "It's probably one of the reasons why they're endangered."⁵⁸

Today in the U.S., wild Sonoran pronghorns are only found in their historic habitat bounded by Interstate 8 to the north, Mexico to the south, S.R. 85 to the east, and the Copper and Cabeza Prieta Mountains to the west.⁵⁹ Their habitat used to extend along the entire Arizona-Mexico border. Backed into this shrunken territory, the pronghorn has been cut off by roads, fences, dams, canals, ranches, and farms from every continually existing natural water source in its homeland. On the other side of the border, another two populations exist in Mexican ranges with similarly diminished access to water.⁶⁰

Protecting the pronghorn is complicated because the effort is affected by both the animal's behaviors and behaviors of people involved in its recovery. Within the next 20 years, the total cost of all recovery efforts is projected to amount to \$27 million.⁶¹ The Sonoran pronghorn recovery team, funded in part by Border Patrol, invests millions in maintaining the captive breeding pens, supplemental feeding and waterholes that keep the population from dropping, and millions more monitoring range conditions and the impact of human disturbance, among other priorities necessary for delisting. As of 2016, the team spent \$800,000 documenting illegal off-road driving by CPB agents — an activity that dries out crucial vegetation — and \$500,000 to continue monitoring the problem of human disturbance at large. Because of this, the recovery plan provides an unexpected window into the environmental impacts of rapid border militarization, not just demonstrating how this activity threatens the desert ghost, but how it impacts everything in the Sonoran Desert.⁶² That includes other endangered species like the bighorn sheep, jaguars, and pygmy owls⁶³ and protected plants like the Saguaro cactus.⁶⁴

⁵⁷ Hervert, John. Personal interview November 20, 2019.

⁵⁸ Hervert, John. Personal interview November 20, 2019.

⁵⁹ "The U.S.-Mexico Border and Endangered Species." *Southwestern Desert Resources*, by William L. Halvorson et al., University of Arizona Press, 2010, p. 123.

⁶⁰ *Sonoran Pronghorn Recovery Plan*. U.S. Fish & Wildlife Service, 2014, www.fws.gov/southwest/es/Documents/SpeciesDocs/SonoranPronghorn/SonoranPronghorn_DraftRecoveryPlan_Final_December2014.pdf.

⁶¹ *Sonoran Pronghorn Recovery Plan*. U.S. Fish & Wildlife Service, 2016.

⁶² *Sonoran Pronghorn Recovery Plan*. U.S. Fish & Wildlife Service, 2014, www.fws.gov/southwest/es/Documents/SpeciesDocs/SonoranPronghorn/SonoranPronghorn_DraftRecoveryPlan_Final_December2014.pdf.

⁶³ *Sonoran Desert*. Center for Biological Diversity, www.biologicaldiversity.org/programs/public_lands/deserts/sonoran_desert/index.html.

⁶⁴ "Threats to the Saguaro." *National Parks Service*, U.S. Department of the Interior, 2015, www.nps.gov/sagu/learn/nature/saguaro_threats.htm.

Navigating the U.S.-Mexico Border

The recovery team meets three times a year to discuss shifting pronghorn priorities, like closing the smaller captive breeding pen to free up funds for new research or repairs.⁶⁵ But behind such routine adjustments, the pronghorn's advocates must also confront threats to the habitat that they cannot readily control.

Pronghorns live where no one else will, in a place where many migrants pass because they have no choice, and illegal traffickers smuggle drugs and people. This in turn has created a humanitarian crisis that draws even more people to the fragile landscape the desert ghost roams. Human disturbance caused by border activity in their range dries out the land, further constraining the threatened species' access to food and water in this limited space. It's also menacing, frightening the animal away from forage plots.

Border activity has long been a risk factor for the pronghorn. In 1993, CBP launched an operation called "Hold the Line."⁶⁶ Their plan was to install vehicle barriers and send 1,000 more agents to the most popular points of entry for migrants around El Paso, Texas, hoping to catch as many people as possible before they made it across. It worked. Their strategy reduced illegal border crossing in the area by 72% that year, from 300,000 arrests to fewer than 80,000.⁶⁷

It was soon discovered that stronger enforcement in El Paso and similar operations merely shifted the flow of migrants to the harshest regions of Arizona desert. As a result, the number of migrants moving through pronghorn country went up, and⁶⁸ so did the number of reported migrant deaths in the U.S.⁶⁹

This change in migration patterns persisted as CBP went on to change its organizational structure and policies. In 2001, CBP was folded into the Department of Homeland Security following terrorist attacks on 9/11.⁷⁰ The next year, the presence of CBP agents on the border intensified, as the department installed 33 new checkpoints.⁷¹ This happened in the midst of the 2002 drought, introducing more human activity in the range just as the pronghorn came back from the brink of extinction. Ever since the recovery plan has been in motion, hundreds of thousands of migrants have been detained by this influx of CBP agents, all moving throughout this fraught region.

⁶⁵ Doerries, Stephanie. Personal interview. January 20, 2020.

⁶⁶ "Operation Hold the Line 1993 - DIGIE." *Digie.org*, 2014, digie.org/media/14437.

⁶⁷ "Border Militarization Policy." *Border Militarization Policy | National Network for Immigrant and Refugee Rights*, nnirr.org/drupal/border-militarization.

⁶⁸ Cornelius, Wayne A., and Claudia E. Smith. "Putting People in Harm's Way." *Los Angeles Times*, 21 Sept. 1998, www.latimes.com/archives/la-xpm-1998-sep-21-me-24993-story.html.

⁶⁹ 05-435, *Border Patrol: Available Data on Interior Checkpoints Suggest Differences in Sector Performance*. U.S. Government Accountability Office, 22 July 2005, www.gao.gov/htext/d05435.html.

⁷⁰ "Border Patrol History." *Border Patrol History | U.S. Customs and Border Protection*, U.S. Customs and Border Protection, 2018, www.cbp.gov/border-security/along-us-borders/history.

⁷¹ 05-435, *Border Patrol: Available Data on Interior Checkpoints Suggest Differences in Sector Performance*. U.S. Government Accountability Office, 22 July 2005, www.gao.gov/htext/d05435.html.

So far, the recovery team says this border activity hasn't had a verifiable effect on the Sonoran pronghorn population size, but they caution that if human disturbance in this region remains chronic as drought conditions worsen, the combination could threaten survival.⁷²

"This is something that's always in the back of the minds of those of us on the Sonoran pronghorn recovery team," Doerries says, because minimizing human disturbance is a criteria for delisting the endangered species.⁷³

CBP is an official partner on the Sonoran pronghorn recovery plan. In this role, they work with the recovery team to mitigate the environmental impact of border activity by funding flights and research projects and training their agents to recognize their responsibility to protect the pronghorn.⁷⁴

"It was a struggle at first to explain to them that yes, we want you to train," Hervert says. "You have to mitigate for impacts that may be occurring to these animals." That usually means directing agents to avoid driving by herds when possible. "So that's kind of where we are today with Border Patrol," Hervert says.⁷⁵

By some accounts, CBP's participation in pronghorn recovery efforts is ambivalent at best.

"I worked in the little corner of Arizona where there were pronghorn," says Francisco Cantú,⁷⁶ a former CBP agent who documented his experiences in his 2018 book "The Line Becomes a River: Dispatches from the Border." From 2008 to 2012, he was stationed in Ajo, Arizona, where he monitored migrants in Organ Pipe and Cabeza Prieta, and only occasionally saw pronghorns in the wild.⁷⁷

When Cantú was stationed in the desert, he joined a wave of recruits that between 2000 and 2011 doubled the number of agents along the border, with peak recruitment numbering more than 21,000 agents. Four years later, Cantú left CBP, exiting in 2012 at the precise moment when recruits started dropping, dipping below 20,000 after five years of peak recruitment that has overall continued decreasing.⁷⁸

Last year, the Trump administration reported that CBP apprehended 977,000 migrants, a significant increase from 521,000 detained in 2018.⁷⁹ Since that outlier report, arrests have dipped back down by 75% and have mostly kept declining.⁸⁰ This didn't stop the Trump administration from ordering CBP to again

⁷² *Sonoran Pronghorn Recovery Plan*. U.S. Fish & Wildlife Service, 2014, www.fws.gov/southwest/es/Documents/SpeciesDocs/SonoranPronghorn/SonoranPronghorn_DraftRecoveryPlan_Final_December2014.pdf.

⁷³ Doerries, Stephanie. "Re: Follow-up questions/Fact-checking." Message to Ashley Belanger. 10 May 2020. E-mail.

⁷⁴ *Sonoran Pronghorn Recovery Plan*. U.S. Fish & Wildlife Service, 2014, www.fws.gov/southwest/es/Documents/SpeciesDocs/SonoranPronghorn/SonoranPronghorn_DraftRecoveryPlan_Final_December2014.pdf.

⁷⁵ Hervert, John. Personal interview November 20, 2019.

⁷⁶ Cantú, Francisco. Personal interview. February 2020.

⁷⁷ Cantú, Francisco. *The Line Becomes a River*. Riverhead Books, 2018.

⁷⁸ *Border Patrol Agent Nationwide Staffing by Fiscal Year*. United States Border Patrol, Mar. 2019, www.cbp.gov/sites/default/files/assets/documents/2019-Mar/Staffing%20FY1992-FY2018.pdf.

⁷⁹ "Southwest Border Migration FY 2020." *Southwest Border Migration FY 2020 | U.S. Customs and Border Protection*, www.cbp.gov/newsroom/stats/sw-border-migration.

⁸⁰ "Border Arrests Rise in February, Reversing 8-Month Decline." *U.S. News & World Report*, U.S. News & World Report, 2020, www.usnews.com/news/national-news/articles/2020-03-05/border-arrests-rise-in-february-reversing-8-month-decline.

increase recruits by 33%,⁸¹ planning to send even more troops into the desert without regard for the significant environmental impacts from increased human activity. CBP did not respond to a request for comment on this environmental impact.

Cantú witnessed a similar disregard for the environment. He spent years patrolling the desert on foot, detailing much of what he saw in his book. In one chapter, he joins other agents littering the desert, dumping out backpacks, pouring out water, and slashing up supplies discarded by fleeing border crossers. This was not erratic malevolence, he explains, but a sanctioned CBP strategy to detain migrants by driving them out of hiding, regardless of the environmental or humanitarian impact of their actions.⁸² He tells me that most CBP agents felt like, “Why is this place even protected? It's fucking ugly.”⁸³

Others in the desert want to know, why isn't this place being protected more? In 2017, the non-profit Center for Biological Diversity sued the Trump administration, calling for an in-depth investigation of the environmental impacts of border wall construction.⁸⁴ That litigation was put on hold, with DHS pointing to prior assessments and partnerships with agencies like USFWS as proof of their environmental stewardship.⁸⁵ However, the Center's borderlands campaigner Laiken Jordahl says they now have half a dozen lawsuits against border construction pending. They're hopeful the U.S. Supreme Court will hear their case.⁸⁶

The Sonoran pronghorn recovery plan details significant environmental impacts of border activity, including a breakdown of how off-road driving makes it harder for animals to forage in the desert. In 2008, the Department of Defense shared a map of unauthorized Border Patrol roads with the recovery team. It showed 8,000 miles of unauthorized vehicle routes in the refuge, made legal by an unprecedented provision of the Real ID Act of 2005 that grants the Secretary of DHS the right to waive all local, state, and federal laws (including the Endangered Species Act) in order to create roads and construct fences in the borderlands.⁸⁷

A recent press release announcing a decision to waive laws for border construction repeats a carefully-worded reassurance: “DHS remains committed to protection of the nation's important natural and cultural resources. DHS has been, and will continue coordinating and consulting with other federal, state, and local resource agencies and other interested stakeholders to ensure that potential impacts to the environment, wildlife, and cultural and historic resources are analyzed and minimized, to the greatest extent possible.”⁸⁸

⁸¹ Hesson, Ted, et al. “The Border Patrol's Recruiting Crisis.” *POLITICO*, 10 Feb. 2019, www.politico.com/story/2019/02/10/border-patrol-recruitment-crisis-1157171.

⁸² Cantú, Francisco. *The Line Becomes a River*. Riverhead Books, 2018.

⁸³ Cantú, Francisco. Personal interview. February 2020.

⁸⁴ *No Border Wall*. Center for Biological Diversity, www.biologicaldiversity.org/campaigns/border_wall/index.html.

⁸⁵ Jordahl, Laiken. Personal interview. October 18, 2019.

⁸⁶ Jordahl, Laiken. “Re: Sonoran Pronghorn inquiry.” Message to Ashley Belanger. 11 May 2020. E-mail.

⁸⁷ *Sonoran Pronghorn Recovery Plan*. U.S. Fish & Wildlife Service, 2014, www.fws.gov/southwest/es/Documents/SpeciesDocs/SonoranPronghorn/SonoranPronghorn_DraftRecoveryPlan_Final_December2014.pdf.

⁸⁸ “DHS Issues Environmental Waiver to Expedite New Border Wall System in Texas.” *DHS Issues Environmental Waiver to Expedite New Border Wall System in Texas | U.S. Customs and Border Protection*, www.cbp.gov/newsroom/national-media-release/dhs-issues-environmental-waiver-expedite-new-border-wall-system.

When asked for comment on how off-road driving threatens the Sonoran pronghorn, DHS did not respond. Cantú says if attitudes are the same, it's likely there are even more roads now. "The agents that I knew and worked with had very little regard for [Organ Pipe Cactus] National Monument rules, which dictated that you are not to drive off-road unless there was an emergency situation," Cantú says. "I saw plenty of agents in totally non-emergency situations still driving on those roads."⁸⁹ With many more agents in the desert since then, this leaves uncertain how many unauthorized roads have been created since 2008.

Each time CBP vehicles cut through desert land and intersect, their tires compact the soil, sending any rainwater that falls to slip off the surface faster than the land can absorb it. The tread also creates barriers that divert watershed. This means that what little water flows in the region gets randomly rerouted along the tire tracks, and any plants previously positioned downstream are often left high and dry. If these plants dry out, they frequently get replaced by less nutritious vegetation and if they get too scarce, desert animals like pronghorns can starve.⁹⁰

Even more water was lost in the desert when a \$1.4 billion budget fueled a border construction project to build 68 additional miles of border wall in Organ Pipe last year.⁹¹ CBP drilled a well, drawing desert groundwater for construction. Environmental impact laws were waived, construction crews drove in, protestors gathered, and⁹² CBP pumped 84,000 gallons of groundwater out of the desert ecosystem every day to mix with concrete.⁹³

Campaigning for the Center, Jordahl visits the border construction site twice a week,⁹⁴ tweeting photos of the destruction he sees, including felled and severed Saguaros.⁹⁵ Every day in Organ Pipe, he says more groundwater is drawn, potentially reducing the water table by more than a foot. "The water in these aquifers is thousands of years old," he says. "So it's not like it will replenish."⁹⁶

The Center also advocates for endangered species, including the Sonoran pronghorn. From their legal discovery to on-the-ground work of activists like Jordahl and additional drone footage documenting border devastation,⁹⁷ the Center's activity in the region provides additional glimpses into new habitat threats.

⁸⁹ Cantú, Francisco. Personal interview. February 2020.

⁹⁰ Hervert, John. Personal interview November 20, 2019.

⁹¹ "Position on Border Wall Construction at Organ Pipe." *National Parks Conservation Association*, www.npca.org/articles/2465-position-on-border-wall-construction-at-organ-pipe.

⁹² Devereaux, Ryan. "The Border Patrol Invited the Press to Watch It Blow Up a National Monument." *The Intercept*, 27 Feb. 2020, theintercept.com/2020/02/27/border-wall-construction-organ-pipe-explosion/.

⁹³ Brocious, Ariana. "New Border Wall Could Further Deplete Groundwater Supplies." *Arizona Public Media*, 4 Sept. 2019, news.azpm.org/p/news-topical-nature/2019/9/4/157554-new-border-wall-could-further-deplete-groundwater-supplies/.

⁹⁴ Jordahl, Laiken. "Re: Sonoran Pronghorn inquiry." Message to Ashley Belanger. 11 May 2020. E-mail.

⁹⁵ Jordahl, Laiken. "Laiken Jordahl (@LaikenJordahl)." *Twitter*, Twitter, 29 Apr. 2020, twitter.com/LaikenJordahl.

⁹⁶ Jordahl, Laiken. Personal interview. November 2019.

⁹⁷ Center for Biological Diversity. "New Drone Footage Shows Damage From Trump's Wall in Remote Arizona Wildlands." *Center for Biological Diversity*, Center for Biological Diversity, 28 Apr. 2020, biologicaldiversity.org/w/news/press-releases/new-drone-footage-shows-damage-from-trumps-wall-in-remote-arizona-wildlands-2020-04-28/.

Cantú slowly came to join these environmental and humanitarian movements converging in the desert. Raised in Tucson by his national park ranger mom – the daughter of a Mexican immigrant – he grew up staring at the border and appreciating the desert. He studied immigration policy in college, then joined Border Patrol to get a closer view of the conflict.

When Cantú told his Border Patrol supervisor that he was quitting to go back to graduate school to write, at first, he painted it as an opportunity that he couldn't turn down despite enjoying the job. When offered the chance to take a leave of absence, however, he admitted the lie. Clenching his teeth, he told his supervisor that Border Patrol was not the work for him. Later, he told a coworker in a coffee shop why he decided to leave the border behind to become a writer. "Writing seemed like a good way to make sense of what I'd seen," Cantú writes.

His book contains deeply appreciative descriptions of the landscape. Early, he gazes across a moonlit desert, living a pronghorn dream by watching three monsoons descend at once. "In the distance lightning appeared like a line of hot neon, illuminating the desert in a shuddering white light," he writes.

One chapter shows him, a fresh recruit at 23, helping to detain migrants who wandered 50 miles into the desert, past the pronghorn pen, all the way to the Air Force Range. His interactions detaining migrants wear on him as the book goes on, and ultimately his story pivots to follow his efforts to help a family divided by the border. Cantú was so affected by what he saw, he donated a portion of his book profits to humanitarian groups in the desert, including one called No More Deaths (NMD).⁹⁸ Founded in 2004, NMD resolved to end migrant deaths in the desert by dropping off water and searching for lost family members.⁹⁹

Between 1995 and 2005, the number of migrant deaths recorded in the U.S. more than doubled, reaching 472 in 2005, of which 75 percent were in Arizona.¹⁰⁰ Since 2001, the Arizona OpenGIS Initiative for Deceased Migrants reports finding the remains of at least 2,832 migrants, identifying only 60 percent.¹⁰¹ Declared by the U.S. government a humanitarian and public health crisis in 2006,¹⁰² migrant deaths led many activists into the desert, some protesting, some leaving water, some rescuing the lost, and some recovering the dead. The longer this crisis continues, it seems, the more people willingly walk into the pronghorn's habitat.

I meet NMD media coordinator Paige Corich-Kleim in Tucson to talk about what she sees navigating this terrain. "Over the years, we've had hundreds of people come out to the desert with us," says Corich-Kleim, describing volunteer support. She says sometimes during water drops, NMD deals with vandalism, suspecting CBP as culprit. "We see different types of vandalism," Corich-Kleim says. "Sometimes it's

⁹⁸ Cantú, Francisco. *The Line Becomes a River*. Riverhead Books, 2018.

⁹⁹ "About No More Deaths." *No More Deaths • No Más Muertes*, 16 Oct. 2019, nomoredeaths.org/about-no-more-deaths/.

¹⁰⁰ 05-435, *Border Patrol: Available Data on Interior Checkpoints Suggest Differences in Sector Performance*. U.S. Government Accountability Office, 22 July 2005, www.gao.gov/htext/d05435.html.

¹⁰¹ Gonzalez, Daniel. "Border Crossers, and the Desert That Claims Them." *USA Today*, Gannett Satellite Information Network, 2017, www.usatoday.com/border-wall/story/immigration-mexico-border-deaths-organ-pipe-cactus/608910001/.

¹⁰² Rubio-Goldsmith, Raquel, et al. *A Humanitarian Crisis at the Border: New Estimates of Deaths Among Unauthorized Immigrants*. Immigration Policy Center, 2007, web.archive.org/web/20130423113451/http://www.americanimmigrationcouncil.org/sites/default/files/docs/Crisis%20at%20the%20Border.pdf.

things have been cut with a knife. Other times, we'll see bullets in our drops.”¹⁰³ (DHS did not respond to a request for comment on the alleged vandalism.)

She tells me that many migrants get lost in the mountainous terrain near the border entry point in Nogales, east of pronghorn country.¹⁰⁴ I drive south from Tucson on Interstate 19 to see this part of the borderlands where pronghorns used to roam. The closer I get to the border wall, the more imposing it is on the landscape. A brown nearly impassable force, it casts a dark shadow on the rolling land it's fixed on. Amid the jagged mountains and sprawling ranches, it stands between pronghorns and the greatest expanse of the Sonoran Desert, over the border in Mexico.

In Nogales, two CBP agents wave me up to cross the border into Mexico. Rolling my window down, I ask to turn around instead. Pronghorns always turn around when they get to the wall, too. Hervert says the border wall and highways have long been a barrier between Sonoran pronghorn populations on both sides of the border wall.¹⁰⁵ Unable to meet, the remaining herds reproduce from a weakened gene pool.¹⁰⁶

Sand, thorns, bullets, and no shade, the Sonoran Desert can be a severe place, and it grows less habitable the more human disturbance occurs. Beyond trouble around the border, the Sonoran pronghorn recovery plan identifies military activities, mining, recreation, ranching and agricultural activities as impacting the animal. The recovery team monitors it all. But border activity is noted as the most widespread source of increased human activity in the area. In recent years, the Organ Pipe staff has estimated that Sonoran pronghorns experience some form of border-related disturbance every four hours.¹⁰⁷ As a partner in the recovery plan, CBP could help change that, but border monitoring, not the pronghorn, is their priority.

Waiting for Rain and Watching Over the Sonoran Pronghorn

Like the deer and the antelope at home on the range, the desert landscape has many icons, from the Saguaro cactus to the gila monster. Riding along in Doerries' truck, a roadrunner crosses our path. On another evening around sunset, I watch a coyote wander into Ajo. For the Tohono O'odham tribe, native to the Sonoran Desert, the Sonoran pronghorn is another such icon.

In her poem “It Is Going to Rain,” Tohono O'odham poet Ofelia Zepeda expresses the fundamental challenge for pronghorn survival: “Someone said it is going to rain. / I think it is not so. / Because I have not yet felt the earth and the way it holds still / in anticipation. / I think it is not so.”¹⁰⁸

It hasn't been so for the last couple years in pronghorn country. Hervert says some fawns have survived the dry summers, but it hasn't been enough to boost the population. That's because of the extra challenge posed by population growth: The more pronghorns there are in the habitat, the harder it is for everybody to find enough to eat and drink.¹⁰⁹

¹⁰³ Corich-Kliem, Paige. Personal interview. January 21, 2020.

¹⁰⁴ Corich-Kliem, Paige. Personal interview. January 21, 2020.

¹⁰⁵ Hervert, John. Personal interview November 20, 2019.

¹⁰⁶ *Sonoran Pronghorn Recovery Plan*. U.S. Fish & Wildlife Service, 2016.

¹⁰⁷ *Sonoran Pronghorn Recovery Plan*. U.S. Fish & Wildlife Service, 2014, www.fws.gov/southwest/es/Documents/SpeciesDocs/SonoranPronghorn/SonoranPronghorn_DraftRecoveryPlan_Final_December2014.pdf.

¹⁰⁸ Zepeda, Ofelia. “It Is Going to Rain.” *PoemHunter.com*, 26 Aug. 2016, www.poemhunter.com/poem/it-is-going-to-rain/.

¹⁰⁹ Hervert, John. Personal interview November 20, 2019.

“We do believe that the weather just hasn't been ideal or favorable enough to see the population increase,” Hervert says. “But we think it's a victory that it doesn't go the wrong way.”¹¹⁰ An early population viability model predicted a nearly one in four chance the Sonoran pronghorn would be extinct by the end of this century. That model pointed to fawn survival as the most sensitive aspect of population management,¹¹¹ and Hervert says that's still the case today.¹¹²

In particular, the timing of rain is important for fawn survival. Hervert's research shows that the number of fawns that survive each year is inversely related to the number of days between the last rain of winter and the first rain of summer. The less time between those rains, the more fawns will survive.¹¹³ “If it doesn't rain early enough in the summertime, they're doomed,” Hervert says.¹¹⁴ But if the last rain of winter comes too early, the doe won't produce milk in spring.

A newborn fawn is too weak to navigate the desert. Instead, it spends the first four to 12 weeks of its life nursing from its mother to survive the heat that daily hits above 100 degrees Fahrenheit.¹¹⁵ After the fawn's meal, the doe scrubs her baby until it's scentless, then, in the most intimate maternal act, she lowers her jaw and ingests the fawn's feces and urine. She must leave no trace if she wants her fawn to survive, because her very next move is abandoning the fawn for hours. Hidden in dense shrubs, the fawn cowers, camouflaging its body against the matching sand. Doerries says you could almost step on the fawn and it wouldn't move.

Foraging for two, the doe never forgets her fawn. She remains in a state of heightened vigilance as she grazes, ever aware of predators and humans approaching her baby. When she has time and space to focus, she nibbles leaves off spiky ocotillo trees, gulps prickly cactus fruit, and roots out strands of grass-like forbs fresh sprung from the soil.

She spends all spring and summer like this, bobbing along, lowering her head to graze, then raising her eyes to detect threats at great distances. This distracts her from eating and shrinks her mid-section until she looks like a walking puckered cactus, complete with thorns sticking out her sunken face.

After she's eaten, she returns, appearing like clockwork every three hours. Most times, the fawn is so relieved to see her, it leaps to its feet and hurls itself at her, ready to feed.

Other times, the fawn is gone. Not because she lost it, but because despite her effort she wasn't vigilant enough, and it was snatched by a predator. When this happens, the doe is so distressed that even if she sees her dead fawn, she'll return to the drop spot at dusk for the next two days, grieved and famished, scanning and calling for her missing baby.¹¹⁶

¹¹⁰ Hervert, John. Personal interview November 20, 2019.

¹¹¹ Hosack, Dennis, et al. "A population viability analysis for the endangered sonoran pronghorn, *Antilocapra americana sonoriensis*." *Mammalia*, 2002.

¹¹² Hervert, John. Personal interview November 20, 2019.

¹¹³ Bright, Jill, and Hervert, John. "Adult and fawn mortality of Sonoran pronghorn." *The Wildlife Society*, 2005.

¹¹⁴ Hervert, John. Personal interview. January 22, 2020.

¹¹⁵ “Cabeza Prieta National Wildlife Refuge.” *National Parks Service*, U.S. Department of the Interior, www.nps.gov/orpi/planyourvisit/cabeza-prieta-nwr.htm.

¹¹⁶ *Built for Speed: A Year in the Life of Pronghorn*, by John A. Byers, Harvard University Press, 2003.

Stakes are high in a desert rattled by climate change, where plant life is stamped out by border conflict. So far, ongoing efforts have been enough to ensure that the desert ghost continues roaming Southwest Arizona, which has been Hervert's priority since he first heard of the Sonoran pronghorn.

Hervert says not enough fawns have been surviving recent summers, but as the desert gets drier, the recovery team continues responding. Doerries increasingly monitors the impact of human activity, and Hervert keeps count of pronghorns from the plane. Despite the recovery team's achievements, the Sonoran pronghorn's survival depends on improving embroiled conditions of its home, so the pronghorn can use 90% of its remaining habitat. Hervert says every summer is a real struggle, especially for a mother doe, trying to raise a single fawn on which the future of the entire sub-species teeters. "If she can't feed the fawn, it simply starves."¹¹⁷

¹¹⁷ Hervert, John. Personal interview November 20, 2019.