PINT-SIZE PREDATOR
Standing just 12 inches at the shoulder and weighing only 5 pounds, the swift fox is the smallest canid in North America.
PHOTO BY CRAIG MILLER

SEARCHING FOR SWIFT FOXES

FWP biologists in eastern Montana look for a small carnivore making a big comeback in much of its historic range. ***BY MARLA PRELL***

On a chilly January night, Brandi Skone parks her truck on a moonlit, snow-crusted prairie in east-central Montana, miles from nowhere. The Montana Fish, Wildlife & Parks wildlife biologist climbs down from the pickup and begins adjusting dials on her telemetry receiver, straining to listen to the device.

"That's a beep," she says suddenly. "Did you hear it?"

The "beep" indicates that one of two radio-collared male swift foxes she has been seeking is nearby. Biologists haven't detected the fox in nearly three weeks.

Skone and volunteer John Kuntz hike through crusted snow to a knoll a few hundred yards away. On the way, they adjust antennae attached to their receivers to pick up a stronger signal. Like the other fox they were tracking earlier in the day, this one never appears. But Skone is pleased nonetheless. "We now have an idea of where both are hanging out and what type of habitat they are using," she says.

This is just one of many trips—by vehicle and airplane—that Skone, her colleagues, and volunteers will make over the next year to learn about this elusive predator. Their work is part of an FWP pilot project in southeastern Montana to study the canid's habitat, dispersal, and den locations. If the study succeeds, FWP may broaden it to cover more of eastern Montana. "But for now, swift fox densities in this part of the state are so low that we needed to see if we could even capture any to study," Skone says.

GONE THEN BACK

The swift fox is named for its lightning speed—nearly 40 miles an hour in a sprint. It's the smallest canid in North America, about the size of a house cat. It weighs just 5 pounds, about half the weight of a red fox, and stands only 12 inches at the shoulder.

Swift foxes were once abundant on the Great Plains, racing across short- and mixed-grass prairie in pursuit of prairie dogs and ground squirrels, their primary prey. But starting in the late 1800s, trappers began overharvesting the curious, easily captured animals. In the early 20th century, the federal government began widescale extermination campaigns that poisoned wolves and rodents. Swift foxes were inadvertently poisoned when they ate toxic bait. As wolves disappeared, coyote and red fox numbers grew, outcompeting the smaller swift foxes. Adding to the loss was the conversion of prairie habitat as grasslands were converted to cropland.

By 1969, Montana declared swift foxes extirpated (locally extinct). Canada made the same declaration 11 years later, and in 1996 the U.S. Fish & Wildlife Service announced that the swift fox was a candidate for federal protection under the Endangered Species Act.

Then swift foxes began showing up out of nowhere in northern Montana.

Or, more precisely, out of Canada.

Between 1983 and 1997, Alberta and Saskatchewan had released 942 captive-bred swift foxes, and some of the animals crossed the border. As early as 1996, a Montana State University graduate student documented a resident population of swift foxes in north-central Montana. That helped convince the federal government, in 2001, not to list the species. "The re-establishment of swift foxes in southern Canada and Montana is a huge success story recognized by conservationists across the continent," says FWP wildlife biologist Heather Harris, based in Glasgow.

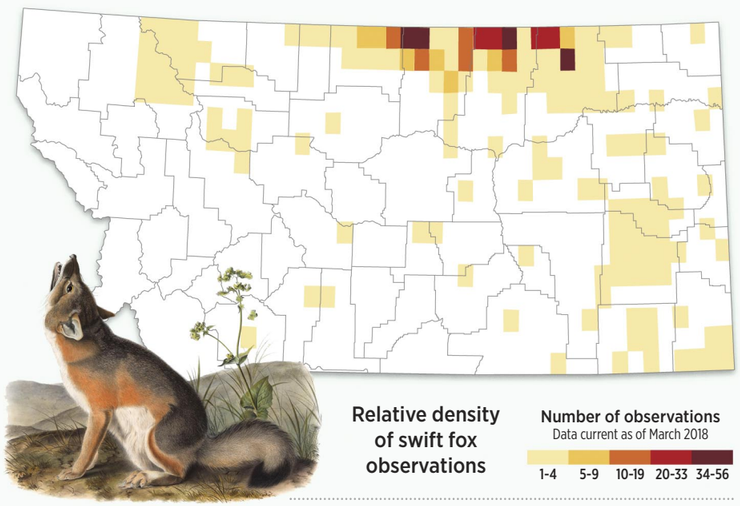
The last biological census, in 2014-15, estimated that 175-300 swift foxes lived in north-central and northeastern Montana, some in places they haven't inhabited for more than a century. In addition to those dispersing from Canada, some foxes may have spread east from the Blackfeet Indian Reservation, where the tribe released 123 of the small carnivores during the late 1990s through early 2000s. Other reasons for the increase may be the end of large-scale predator and rodent extermination, as well as an increase in abandoned farmsteads where the land has reverted to semi-native habitat.

Though swift fox numbers appear lower in southeastern Montana, the re-established, stable population in north-central Montana has allowed for a limited trapping season in some areas. "We get essential biological information from trappers by analyzing the jaws and pelts of foxes they capture," Harris says.

Marla Prell manages the FWP regional Information and Education Program in Miles City.

WHERE ARE SWIFT FOXES?

After releases of captive-bred swift foxes in southern Canada from 1983 to 1997, the predators spread south into Montana, where they had previously been declared locally extinct. As biologists broaden their search and people increasingly report sightings, swift foxes are showing up where they haven't been recorded in nearly a century.



DATA SOURCE: MONTANA NATURAL HERITAGE PROGRAM; FWP; SWIFT FOX PAINTING BY JOHN JAMES AUDUBON

ON THE MOVE One question researchers hope to answer is whether barriers such as large rivers and rugged terrain prevent swift foxes from dispersing more widely. "For instance, does Fort Peck Reservoir now block historical swift fox movement between Canada and southern Montana?" asks FWP wildlife biologist Heather Harris.

BARRIERS BLOCKING DISPERSAL?

The more that scientists learn about swift foxes, the better that agencies like FWP can help conserve the species and keep it from becoming listed as threatened or endangered. "One thing we're looking at is survival: when and where they die, and what they die from," says Ryan DeVore, an FWP wildlife biologist based in Broadus. DeVore says he and other biologists suspect that most are killed by coyotes, but deaths could result from unknown factors.

Skone, based in Miles City, is especially curious about where the relatively few swift foxes in southeastern Montana come from. "Did they move down from northern Montana or from core populations in South Dakota and Wyoming, or are they leftovers from a remnant population that's been here all along?" she asks. She and other FWP biologists take tissue samples from all swift foxes they livetrap or find killed along roadsides and compare the DNA to that of specimens from other areas. "If, for instance, they are from South Dakota, then we'd know that studies in that state would tell us more about our foxes than, say, studies in

CLOCKWISE FROM TOP: CRAIG MILLER; DAVID R. ARMER; DAWN Y. WILSON; DAVID R. ARMER

IS THAT A SWIFT FOX?

Swift foxes are distinctive looking canids that live in the central and eastern Montana plains. Weighing only 5 pounds, they are half the size of a red fox and substantially smaller than a coyote.

After its tiny stature, the next thing you notice about a swift fox is its luminous yellow, almond-shaped eyes, often set off by a dark, teardroplike pattern descending to the muzzle. The tip of the swift fox's bushy tail is black, and its coat is dark buff gray on top and orange tan on the sides and legs. Coyotes have similar coloring but are much larger, weighing 22 to 28 pounds. Red foxes, which weigh about 11 pounds, are red orange with white-tipped tails. ■

FWP needs help monitoring swift foxes. Report any sightings to Heather Harris, (406) 228-3725, heharris@mt.gov, or Brandi Skone, (406) 234-0928, BSKone@mt.gov.

BETTER THAN EXPECTED Swift fox family members greet the sunrise and each other at a den site. In southeastern Montana, researchers have recently captured 12 swift foxes and located six dens in a region where almost none had been reported in decades. "We weren't sure if we'd be able to capture even one," says FWP wildlife biologist Brandi Skone, who leads a pilot swift fox study in the region.

WORKING THE TRAPS Clockwise from above left: A swift fox sits in a live trap in Garfield County; FWP wildlife biologist Brandi Skone holds one of six foxes her team captured last November in Powder River County; checking a fox's age by tooth wear and coloration; attaching an ear tag to a juvenile swift fox (biologists also weigh the animals, check gender, take a tissue sample, and—on some—attach a radio or GPS collar); after being collared, a swift fox dashes off then stops just far enough away to inspect the biologists.

somewhere like Alberta," Skone says.

The southeastern Montana biologists also want to learn what type of habitat swift foxes use in their region. "North of Fort Peck [Reservoir], you have that ideal habitat of open, flat prairie," says Skone. "But here we have much less of that. It's hilly, mixed with sagebrush grassland, badlands, and breaks. Are the foxes using those areas too?"

In another swift fox study, done in cooperation with graduate student Andrew Butler of Clemson University, Harris and her colleagues in northeastern Montana are trying to see if swift foxes are occupying new territories, and if barriers such as Fort Peck Reservoir, the Milk River, or rough topography thwart the animals' movements. "We'd like to know why swift foxes aren't spreading out more from north-central Montana," Harris says. "Is it an issue of barriers we aren't aware of, or other reasons? And does our population connect with the foxes in southeastern Montana?" Harris says Butler and FWP workers have fitted 48 swift foxes with GPS collars over the past two years to monitor movement and mortality.

PUBLIC INVOLVEMENT

To study the elusive, nocturnal predators, biologists bait live-traps with meat to capture specimens they can examine and track. Some captured foxes are fitted with radio or GPS collars and others with ear tags for identification from a distance.

The southeastern Montana swift fox study focuses mainly on juveniles, which stick around their mother for a few months then range widely to find a mate and establish their own territories. Breeding season runs from late December to early March, and a single litter of three to six pups is born from late March to early May. Pups emerge from underground dens after about a month and disperse in late summer to early fall. Using game cameras and tracking devices, biologists hope to observe as much of this cycle as possible.

Another source of information is people who report seeing swift foxes. The biologists focus their trapping efforts on areas with multiple public sightings. "We encourage hunters, landowners, and others to report observations of live or dead swift foxes," DeVore says. To ensure that people report swift foxes and not red foxes or young coyotes, FWP has publicized information on distinguishing among the related canids (see "Is that a swift fox?" on page 29). DeVore says some swift foxes are killed each year by people mistaking them for young coyotes, which are legal to shoot anytime.

He and Skone think that if southeastern Montanas learn more about swift foxes, they'll be more inclined to help conserve them. "Swift foxes play their part in rodent and insect control and contribute to the natural cycle of prairies," Skone says. "They are amazing creatures."

To broaden knowledge of swift foxes and recruit volunteers, Skone and her colleagues recently applied for a National Geographic grant to start a two-year project with local high schools. The idea is for students to use trail cameras, collect habitat information, monitor fox movements, and survey landowners on public attitudes toward the species. "We have limited resources for our research, and the kids could be a big help," Skone says.

FIFTEEN MINUTES WITH A FOX

On a windy November morning in Garfield County, Harris, Skone, and FWP wildlife biologist Jesse Kolar approach a trap where a captured swift fox announces its displeasure. The animal spins, crouches, and occasionally growls and snaps, its yellow eyes never leaving the trio. They spread a blue bag around the cage opening and coax the animal inside. After weighing the fox in the bag, Harris positions the fabric so she can hold the animal's jaw and sit on the cage with the small bundle across her lap. "Foxes are calmer when gently restrained with their eyes covered," she says.

Skone checks the animal's gender, examines tooth condition for age, looks for fleas and ticks, and assesses its health and condition. She attaches a small red ear tag then takes a tissue sample for DNA testing. Finally, she fastens a radio tracking collar around the fox's neck while Harris records the device's identification number and frequency. Harris also notes the surrounding habitat: rolling hills of prairie, a few dirt roads, and miles of fence. The whole process takes about 15 minutes, slowed only by the numbing cold on bare fingers.

Once done, Harris places the bag on the ground and opens it. The swift fox lives up to its name by racing off in a flash. At about 75 yards away, it turns and drops to the dirt, scraping the offending collar along the ground before trotting away. "They always do that," Harris laughs, "letting you know they're not happy."

The fox isn't pleased, but the biologists are. Skone says she wondered at the start of the study if enough foxes existed in the vast sagebrush prairie badlands of southeastern Montana for her crew to catch even one. So far they have captured 12 and identified six dens. "It's really exciting that more are showing up here, and that we've had good success trapping," she says. "Every little bit of data we collect helps us understand this intriguing species and how we can effectively conserve populations."

TOP PHOTO: DAVID R. ARMER; INSET PHOTOS CLOCKWISE FROM ABOVE LEFT: BRANDI SKONE; MONTANA FWP; BRANDI SKONE; MARLA PRELL; JESSE KOLAR