Not long ago, both red and gray foxes were common in Illinois. Today, Illinois is a red state.

The Gray Fox Puzzle

Story By Joe McFarland
Photos By SIU Cooperative Wildlife Research Laboratory

Illinois has long been home to two different species of fox—the red and the gray—scientifically called *Vulpes vulpes* and *Urocyon cinereoargenteus* respectively. And, for as long as anyone can recall, populations of both species were roughly the same size. In various regions of the Prairie State, individual red or gray fox populations might fluctuate from one year (or decade) to the next—more reds or more grays. But, overall, balanced populations were typical.

A few numbers, for example: In the winter of 1977-78, Illinois hunters and trappers harvested 9,715 red foxes statewide. In the same season, furtakers harvested 9,086 gray foxes. The difference was statistically inconsequential.

But, about 25 years ago, something began to change. By 1983, harvest figures for red fox remained relatively unchanged at 9,780—but only 5,943 for gray foxes. And with each passing year, the decline of gray foxes continued.

Populations of gray foxes in Illinois have declined significantly during the past 25 years. In contrast, coyote populations statewide have increased.

Including today. Last winter, a mere 67 gray foxes were harvested by Illinois trappers, compared against 989 red foxes. While there are far fewer licensed trappers in Illinois than there used to be—and fur prices often have a direct influence on harvest totals—it became increasingly apparent, as years

(Photo courtesy U.S. Fish and Wildlife Service.)

(Photo courtesy Steve Wayne Rotsch/Painet Inc.)

Although the fur of the gray fox (above) includes a considerable amount of red color, the overall gray color distinguishes the species. The tree-climbing ability (right) separates foxes from coyotes.

passed, that fewer gray foxes were trotting around the fields and forests of the Prairie State.

For wildlife biologists, the reasons weren't immediately clear, based on what was known about fox ecology in Illinois. Harvest results weren't the only indicator used to monitor fox populations in Illinois; sightings reported by archery deer hunters in annual surveys by DNR also shed light on the overall status of fox populations. Yet more data were needed.

In response to the decline in gray fox populations, two research teams—one in northern Illinois, and one in southern Illinois—began collecting field data in 2005 in an effort to better understand the status of the gray fox in Illinois. Researchers at Max McGraw Wildlife Foundation and at Southern Illinois University's Cooperative Wildlife Research Laboratory developed strategies to live-trap, radio collar, then track and monitor as many gray foxes as they could to uncover the possible sources of a decline.

Aside from the obvious color variations, most people don't realize the differences between red and gray foxes.

"Gray foxes seem to prefer early succession forest habitat," explained Bob Bluett, furbearer program manager for the Department of Natural Resources.

"In comparison, red foxes are typically more of an open grassland species. You're more likely to find a gray fox in the woods, and red foxes in fields, hunting along fence rows—or almost anywhere else."

Those differing preferences: Could it be possible the necessary woodland habitat for gray foxes was shrinking? Or were other factors, such as disease or predation, involved? Bluett said habitat loss alone doesn't appear to be the sole culprit.

"Gray foxes are found in small numbers throughout Illinois," he said. "But since the habitat across the state is so varied, with gray foxes living in all of those habitats, we have to look in more than one place to find answers."

Diseases such as canine distemper (which can affect red foxes as well as gray) weren't significantly affecting foxes, so attention was focused on predators. In particular, one Illinois mammal which has increased and expanded its range in Illinois during the past 25 years deserved a closer look.

"The 70s is when the coyote populations in Illinois really took off," Bluett noted. To what extent predatory coyotes were connected to the decline of gray foxes soon became a study target, and the correlation seemed to make sense.

Researchers from the Cooperative Wildlife Research Laboratory at Southern Illinois University fit a radio-telemetry collar to a live gray fox.

Keeping handling stress to a minimum, SIU researchers masked their study subjects while preparing them for release.

Coyotes and foxes don't get along, and the larger coyotes often win out. Since red foxes have shown the ability to hide in suburban and even urban areas (places gray foxes appeared reluctant to visit), was it possible that coyotes were killing off gray foxes in their wild habitat?

Ohio State University wildlife biologist Stan Gehrt—one of the researchers involved in the study—said the investigation uncovered a twist.

As part of the field team for the Max McGraw efforts in northeastern Illinois, Gehrt documented coyotes tracking down and killing gray foxes in unbelievable locations.

"We identified a family of gray foxes living in a cemetery in an intensely urban area on the south side of Chicago," Gehrt said. "The amazing thing is, it was a place nobody would expect to find even a red fox. On top of that, coyotes still found their hiding spot and killed them."

Coyotes now live in all areas of Illinois, including the most urban areas of downtown Chicago. Yet, despite the coyote presence, there appears to be a measure of safety for foxes in the city and suburban areas (one family of foxes in the study took up residence under the deck of a suburban home—an unlikely home for coyotes—and the homeowners welcomed the visitors). Gehrt suggested the early adaptation of red foxes to live among humans—long before gray foxes made the switch—might have saved the overall red fox population, but crushed the population of "wild" gray foxes.

In terms of predator/prey adaptation, the increase in coyotes seemed to happen so fast, the wild population of gray foxes might have declined too far before some of them attempted to take refuge in the city.

Bluett said there is yet another factor out there in the country to consider. The rural areas of Illinois where gray foxes once lived have lost a primary predator of coyotes. A shift in agricultural lifestyles toward larger, unoccupied farms with fewer individual farmers removed one of the traditional coyote population controls in Illinois.

"There were a lot more people on the rural landscape 30 or 40 years ago, and more people hunted," Bluett said. "Farmers tended to do what was necessary to protect their interests, and coyotes would have been one of their targets."

With fewer coyote hunters, coyotes could expand their base. Plus, an increasing supply of food was suddenly everywhere.

"Years ago, we didn't have the deer population we have now," Bluett added. "Coyotes clearly have plenty to eat in Illinois today."

As researchers collect additional clues from the nearly 100 gray foxes they've observed statewide, the public is encouraged to join the effort. Anyone who's spotted a gray fox—including road-killed examples—is encouraged to report the sighting to either the Max McGraw Wildlife Foundation in northern Illinois at (847) 428-6331, or the SIU Cooperative Wildlife Research Lab in southern Illinois at (618) 536-7766.

For the foreseeable future, Gehrt said, both red and gray foxes—especially the gray—will have to somehow endure large coyote populations.

"They'll either have to figure out how to adjust to coyotes, or they're going to stay at very low levels for a number of years."

The previously undocumented details of gray fox behavior, including habitat use and preference, is detected through radio telemetry.