

UW researcher studies chemical neutering as means to control coyotes

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(from left) Marjorie MacGregor, a UW doctoral candidate in zoology and physiology; Elsey Perkins, a UW graduate student; and Liz Flaherty, a former UW faculty member, work with a coyote at a UW facility off campus in this 2012 photo. MacGregor heads a research project to control coyote populations through chemical neutering. Credit: Bethany Melton Photo

Marjorie MacGregor wants to manage coyotes through better chemistry. For the past four years, MacGregor, a University of Wyoming doctoral candidate in the Department of Zoology and Physiology, has headed a chemical castration or neutering research program using captive male coyotes. The hope is that the program can eventually be used in the wild to control coyote numbers and reduce depredation while, at the same

time, not alter the animal's natural behavior.

"Some ranchers just want to kill them. And some environmentalists say leave them alone," MacGregor says. "I'm trying to work the middle ground. We're trying to manage coyotes, both for a natural ecosystem and for wildlife-human conflicts. We have to find a balance. That's very difficult in Wyoming."

For years, ranchers and farmers here and in other states have killed coyotes that kill and feed upon their domestic sheep and lambs. In addition, "coyote contests" are organized for people to shoot the animals as a means to reduce the population.

In spite of these lethal control measures, the coyote population has continued to increase, if not thrive, across the United States. Their habitat range has expanded beyond just Western states to the entire continental United States, as well as Alaska and Canada, MacGregor says. Research has shown that coyotes have "compensatory mechanisms" for when they are under lethal attack. In effect, females increase their litter size and begin reproducing earlier.

"We don't know how they know, but there are a lot of studies that have shown it," MacGregor says.

Coyote testing

The 13 male coyotes used for UW research are kept at two undisclosed facilities off campus. Coyotes, ranging in age from one and a half to eight years, are divided into three groups. One group receives 47 milligrams of a drug called deslorelin acetate, which is available for use as a short-term contraceptive for domestic dogs, MacGregor says. The coyotes are injected with a contraceptive implant one time. The time-released implant is placed under the skin and between the shoulder

blades.

The second group receives the drug, but in a slightly different formulation. For coyotes in the first two groups, sperm counts hit zero after four months, MacGregor says. The third group, a control group, is left alone.

Every two months, MacGregor and her team of graduate students collect blood samples and semen counts from the coyotes. The drug has proven effective, with some male coyotes' sperm not having reproduced in three years, MacGregor says. In other cases, sperm counts in some coyotes returned to their prior levels within six months.

"We want to control reproduction, but not decrease the fitness of the animal," MacGregor says. "It's like if you take your dog to the vet. You want to know a drug given to it won't hurt it."

In this case, MacGregor says she doesn't want to alter the animal's behavior, only alter its ability to reproduce.

Coyotes, in the wild, only produce sperm approximately six months out of the year.

"They're seasonal breeders," MacGregor explains. "Then, they shut down for the rest of the year."

As part of her research, maintaining natural coyote behavior is crucial, she says, because a male and female coyote mate for life, stay together and maintain territories.

"Females mate once a year," MacGregor says. "We want her to think she has a fine functioning male. If we're changing the behavior of the male, we don't want that."

A behavior often overlooked by those who consider coyotes a nuisance animal is their predation habits, which include keeping rodent populations in check, she says. Coyotes feed on fox, rabbits and prairie dogs.

And, yes, sheep and lambs.

However, the percentage of sheep and lambs killed by coyotes—roughly 60 percent of sheep losses, according to the National Agricultural Statistics Service—has remained unchanged for many years, even with rising coyote populations, says Donal Skinner, professor and head of UW's Department of Zoology and Physiology.

A coyote calling

MacGregor's interest in coyotes started years ago in Jackson Hole. For three years there, she trained dogs for sled dog racing. While working the dogs out on the trails, she often spotted coyotes in the wild.

"That really started my fascination with coyotes," MacGregor says.

She began her study of coyote reproduction eight years ago under the tutelage of Steve Horn, a now-retired UW faculty member. For the past four years, Skinner has been MacGregor's adviser.

"She has turned herself into a very hard-working and inquiring scientist," Skinner says. "She's a real problem solver. I'm impressed with her."

For example, because the research receives little grant funding, MacGregor has had to be innovative to keep the study going. Each fall, she collects, from hunters, bones and meat that can be used to feed the coyotes.

Skinner says the application of contraception control of [coyotes](#) in the wild is still a way off, but he believes it's a promising solution.

"Realistically, it can become a choice. Nationally, as we become less comfortable with killing animals as a solution, finding alternative methods are especially critical," Skinner says. "Coyotes are moving into urban areas. You can't go in there and shoot them easily. I think, in some pockets, it (contraception control) will become viable."

The research also has provided a training ground for UW undergraduate students, with 14 participating during the project's duration. Students contribute to the project anywhere from six months to a year.

"I'm really proud of what I think is an extensive internship program," MacGregor says. "Students obtain an understanding of why we do science."

Future studies will focus on coyote behavior, says MacGregor, who will spend time conducting research at the U.S. Department of Agriculture's National Wildlife Research Center in Logan, Utah, beginning in October.

Provided by University of Wyoming

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