

Scientists Create Innovative Listening Device to Track Wolves

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Tracking the elusive wolves of Idaho is a costly and exhaustive endeavor. The shadowy animals inhabit some of Idaho's - and the country's - most rugged and isolated terrain. The average pack of seven animals ranges across about 300 square miles, and each pack member can easily crisscross that distance in a day or two.

These factors - along with their aversion to humans - make keeping an accurate count of the wolf population challenging at best.

Now University of Montana researchers are putting innovative new monitoring methods into practice to better estimate wolf populations. Their developments come as Idaho and Montana prepare to take the reins of wolf management from the federal government. Although the delisting of wolves remains tied up in court, states will eventually shoulder the responsibility of managing the animals.

"We are about to make this transition from an endangered species to a game animal overnight," said Mike Mitchell, unit leader of UM's Montana Cooperative Wildlife Research Unit.

The work of unit researchers is important right now because the delisting of wolves and the accompanying shift from federal to state management also means the end of federal funds to monitor the animals.

States with wolf populations such as Idaho and Montana are required to monitor and maintain a minimum number of breeding pairs for five

years after delisting. That means the cash-strapped states will be looking for the best and most efficient data collection methods.

Those involved in wolf research also recognize that ensuring the survival of the animals requires better monitoring methods. With that in mind, Mitchell and his team of researchers set out to develop the most cost-effective and reliable monitoring techniques, which will provide state agencies with at least the same level of information that federal agencies work with.

Among the promising new methods is the Howlbox, an invention that is the brainchild of Dave Ausband, research associate at the Montana Cooperative Wildlife Research Unit.

The Howlbox takes the passive listening device - a tool often used to study frogs, bats, whales, elephants and others creatures - one step further. Researchers know that wolves, especially young pups, will often respond to a howl they hear in the wild. Ausband came up with the idea to create a computerized device that emits a howl, then switches to “record mode” to capture any response.

“It’s really an unprecedented research and management tool,” Mitchell said.

Ausband dreamt up the Howlbox in 2007 and quickly put then-undergraduate researcher Teresa Loya to work creating a prototype. She created the first model in about four months.

“I have the luxury of having some computer programmers in my family,” Loya said. “My family members have played a huge role in developing the Howlbox.”

The device consists of a computer, speakers, microphone, battery pack

and case. Once mounted to a tree in the research area, the computer turns on twice a day - at dawn and dusk when wolves are most likely to howl. The computer broadcasts a “lonesome howl,” a real wolf howl that Loya and Ausband obtained permission to use from renowned researcher Fred Harrington of Nova Scotia. Then the computer switches to “listen” mode and records for two minutes. It repeats the broadcast-and-record sequence twice more, and then turns off.

Ausband wanted a device that could provide researchers with data about wolves living in remote areas that must otherwise be obtained using costly and labor-intensive methods such as tracking, DNA collection and genetic testing. By letting a computer collect data, the Howlbox could provide reliable information without the cost of sending crews into the wild for weeks at a time.

“We wanted to have it broadcast and record while I’m at home playing with my kid,” Ausband said.

With the prototype in hand in January 2008, Ausband and Loya skied two miles into the Bitterroot Mountains and mounted the first Howlbox in an area where a pair of collared wolves was known to frequent.

“We had no idea if it was going to work,” Ausband said.

Two days later they retrieved their invention and began the drive home to Missoula. Ausband was behind the wheel as Loya connected the device to her laptop. Within moments, the Howlbox played back its first recording of a wolf howl.

“I almost drove off the road,” Ausband said.

“That very first howl sent out, the very first recording, we had a duo,” Loya said. “It was unexpected. It was phenomenal.”

During the first 48 hours the Howlbox was in place, it recorded 14 responses from the nearby pair.

Last summer, Ausband and Loya put four Howlboxes to work in the wilds of Idaho and labored to resolve some of the kinks they found along the way. Trial and error taught them that the Howlbox microphone will pick up the closest sound: the rushing river, the rustling of aspen leaves or, in one case, National Public Radio news emitted from a nearby radio tower.

“There has been a lot of frustration, of course,” Loya said, “but that’s a part of it.”

Soon, the team hopes to have a user-friendly device so others can gather reliable data in the field. The goal is to keep the cost of the Howlbox at around \$1,500 so that managing agencies can afford it.

But the Howlbox is just one of the new methods that researchers at the Montana Cooperative Wildlife Research Unit are using. Through a new analytical framework called Patch Occupancy Modeling, researchers are combining various data streams to estimate wolf populations in a more efficient and precise manner than ever before.

Using information gleaned from the new tools such as the Howlbox and more traditional methods such as hunter surveys, public sightings, scat collection and radio collaring, researchers are creating what Ausband calls a “statistical stew pot” of information to estimate statewide wolf populations more accurately.

“If you use Patch Occupancy Modeling, you can take apples to oranges and turn them all into oranges,” Mitchell said.

Mitchell and Ausband began their work by estimating Idaho’s pack

numbers. But those involved with wolf management ultimately want to know how many individual wolves roam within Idaho's borders. So Mitchell and Ausband set their sights on gathering more detailed information on wolves inhabiting remote, rugged areas that are rarely visited by humans.

Another one of Ausband's successful ideas was to map wolf "rendezvous sites," where packs stash their pups for the summer as the adults come and go. Once researchers locate an active rendezvous site, they can glean a minefield of data by using all the research tools available.

Ausband used Geographic Information Systems to detect areas that looked like wet meadows, which wolves prefer for rendezvous sites, across Idaho's remote backcountry. In 2007 he sent workers out around those wet meadows to conduct population surveys. Other data told Ausband and Mitchell that there were nine litters in those areas. Using the GIS data, crews found seven of those nine litters.

"That's an exercise in finding needles in a haystack," Mitchell said.

Crews working during the summer of 2008 collected 200 scat samples from a rendezvous site in one week. That far exceeds the amount of data collected by simply driving forest roads looking for scat, a method used in the past.

"You could drive around for six months and not find 200 samples," Ausband said.

The foundation for the development of the Patch Occupancy Model was laid years ago by the Nez Perce Tribe in Idaho, Mitchell said. The tribe took a lead role in reintroducing wolves to Idaho in the mid-1990s, and they were visionary in anticipating the delisting of wolves a decade later. They have funded the bulk of the work, along with other contributing

agencies such as Idaho Fish and Game; Montana Fish, Wildlife and Parks; the U.S. Fish and Wildlife Service; and the U.S. Geological Survey.

The original grant that funds Mitchell and Ausband's research runs out in November, but both remain optimistic that additional funding will carry their projects forward.

"Graduate students are going to be doing this for years to come," Mitchell said.

For those who work with wolves, observing a mammal that had virtually disappeared in the Western U.S. two decades ago rebound to become a thriving species that will soon be managed as a game animal is nothing short of amazing. According to Mitchell and Ausband, that's what makes their work so meaningful.

"This is not a strictly academic exercise," Mitchell said. "From a researcher's point of view, this is an incredible opportunity."

In the end, Mitchell said, Montana Cooperative Wildlife Research Unit researchers will say, "We helped make a real contribution to help wolves stick around."

For Ausband, it was a moment in the field that really drove home the meaning of his research. Working in the Idaho backcountry, his crew trapped a wolf and began working to tag it as Ausband's young son toddled along behind them, seemingly unaware of the significance of encountering a wild wolf in its natural habitat.

"I was 22 before I saw my first wolf," Ausband said. "He wasn't even 22 months. He has no idea that there were no wolves in Idaho 10 to 12 years ago. It kind of blew me away."

Provided by University of Montana

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