

Over the past few years, local hunters and Montana Fish, Wildlife & Parks officials have been alarmed by a dramatic decline in elk calves in the Bitterroot watershed, long recognized as one of western Montana's premier elk regions. The number of young elk surviving from birth through their first winter has dropped especially low in the West Fork drainage—historically one of the region's top elk-producing areas and most popular hunting locations.

"I've never been anywhere where residents are more passionate about their elk herds and hunting opportunities," says Craig Jourdonnais, FWP wildlife biologist for the Bitterroot area. "People here are very concerned about the decline in elk calf survival."

A new three-year study of elk in the upper Bitterroot Valley—launched by FWP and the University of Montana—aims to find answers. FWP wildlife managers hope study results will help them pinpoint appropriate management tools for reducing elk calf losses. Though overall elk numbers throughout the entire Bitterroot Valley have not declined much in recent years, says Mike Thompson, FWP regional wildlife manager in Missoula, "if you look at the calf:cow ratios, you start to have concerns. We need to figure out what's going on."

Each spring, biologists evaluate elk herd health by conducting aerial surveys to assess how well the previous year's young survived the winter. The higher the ratio of calves to cows, the more likely a herd is growing. Low ratios indicate a poor "year-class" (also known as a "cohort") of elk and signal a declining population. "When you have a poor year-class, you not only don't have those animals becoming adults in a few years but you also lose a generation of both bulls and breeding cows," says Thompson. "Stack up two or more bad year-classes, like we've been seeing in the Bitterroot, and you don't have enough young elk replacing the ones lost to old age, disease, and predation. The population has nowhere to go but down."

Throughout the 1970s and '80s, the Bit-

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Where have all the elk calves gone?

A new study searches for answers in the Bitterroot watershed.

BY DARYL GADBOW

terroot Valley averaged roughly 40 to 60 calves per 100 cows and 30 per 100 in the 1990s. The 2009 and 2010 spring surveys revealed calf:cow ratios of only 14:100 and 16:100, respectively. "That's horrible," Thompson says. The ratio in the West Fork, which has declined steadily since 2004, dropped to 9:100 in 2009 and 11:100 in 2010. A modest bump in 2011 increased the ratio to 18:100, "but that's still much lower than where it should be," says Thompson.

Low calf survival in the West Fork has been accompanied by an overall decline in elk in that area. Numbers tumbled from a high of 1,914 counted in the 2005 spring survey to just 764 in 2010.

TOO MANY MOUTHS TO FEED?

Predation, weather, and habitat are the main factors affecting calf survival, or "recruitment." Historically, the Bitterroot contained mountain lions, black bears, grizzly bears, and wolves—all elk eaters. Grizzly bears and wolves disappeared by the mid-20th cen-

tury, but in recent years the wild canids have returned, restoring another predator to the equation. The U.S. Fish and Wildlife Service reintroduced gray wolves to Yellowstone National Park and central Idaho wilderness areas in 1995 and 1996. In December 2009, FWP biologists counted a minimum of 27 wolves in several packs in the West Fork and a minimum total of 72 wolves in the entire Bitterroot watershed.

Many local hunters and others blame wolf packs for the elk calf decline. "Wolf predation is definitely what people have on their minds," says Thompson. "They may well be right, but we need to know more. That's why we're doing the study. Managing predator numbers is one obvious part of the solution, but if there are other parts, we don't have enough elk calves to waste on trial and error."

In response to low calf recruitment, FWP has drastically curtailed elk hunting in the southern Bitterroot Valley. Cow hunting in the West Fork, Hunting District 250, has been eliminated to protect fe-

males so they can produce more calves to help offset the young that aren't surviving. "We have to factor in hunters as another significant cause of elk mortality," says Jourdonnais. "When poor calf recruitment

fails to replace the elk removed by hunters, we have to restrict harvest."

In addition, the department has increased mountain lion harvest quotas throughout the Bitterroot and lengthened the black bear

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OKAY, FOR NOW An elk calf flees after wildlife biologists tagged its ear with a radio transmitter. If it dies during the following year, a special signal will help researchers locate the body, where they can learn how the animal died.

hunting season in the upper valley. The FWP Commission also set a harvest quota for the 2011 hunting season of 18 wolves in the West Fork and another 36 wolves throughout the rest of the Bitterroot watershed.

Under the direction of Kelly Proffitt, an FWP research biologist in Bozeman, the Bitterroot elk study began last February when researchers captured 44 adult cow elk—18 from the West Fork and 26 from the East Fork. Biologists evaluated the cows' physical condition and determined how many were pregnant before fitting the animals with radio collars containing GPS units. By following radio signals, researchers can plot elk migration routes and locate winter range and calving grounds.

When cow elk began dropping their calves in May, Proffitt and other researchers raced to the sites, eventually placing ear tags with radio transmitters on 66 newborns. When any of the calves die over the next year, the tag will emit a signal that alerts biologists, who will quickly visit the site to determine what killed the young elk.

Proffitt says the study includes another essential component: evaluating the quality of habitat the collared elk use and how it affects the population and pregnancy rates. Once researchers identify summer and winter ranges through radio tracking, she says, they will use satellite imagery to measure crucial forage quality and quantity. The



NETS FROM ABOVE In February, a helicopter crew used net guns to capture 44 cow elk in the upper Bitterroot watershed. FWP wildlife biologists fitted the elk with radio GPS collars so they can monitor the animals' habitat use and locate newborn calves.



PERRY BACKUS

PINNING DOWN ANSWERS FWP research scientist Kelly Proffitt monitors a cow elk's physical condition with a portable ultrasound device while Bitterroot-area wildlife biologist Craig Jourdonnais clips an ear tag to the animal after fitting it with a radio GPS collar.

information will help Proffitt and others understand the relative importance of predators and habitat to elk survival.

A key part of the study will compare elk populations and habitat in the East and West Forks of the Bitterroot. The East Fork, encompassing Hunting District 270, is considered a better environment for elk, Proffitt says, because it contains less snowpack and more open winter range, as well as a lower wolf density. The steeper West Fork is more rugged and heavily timbered, and it contains a higher wolf density.

Proffitt adds that this year's initial elk captures will be replicated each of the next two years of the project.

FESCUE-ROOTS SUPPORT

The study is co-sponsored by the University of Montana under the guidance of Mark Hebblewhite, associate professor of ungulate habitat ecology at the university's College of Forestry and Conservation. Donations from local sportsmen and private landowners have ranged from \$25 to an anonymous gift of \$10,000, says Jourdonnais. "We're very fortunate to have that kind of broad-based support," he says. "A grassroots effort generated this study, and so far we've received funding from more than a dozen sources." The U.S. Forest Service, Ravalli County Fish and

Wildlife Association, Safari Club International and its Montana chapter, Hellgate Hunters and Anglers, Montana Bowhunters Association, and Rocky Mountain Elk Foundation also have contributed.

Jourdonnais says many local hunters have told him they want the study to prove that wolves are the main culprit behind the elk decline. "But mainly what people want is to know the reason, whatever it is," he says.

Tony Jones, president of the Ravalli County Fish and Wildlife Association, says he and other club members are concerned and curious. "I'm sure wolves are causing the decline, but I'm interested to see how it all works out," he says. "More than anything, what we hope to find out is what went wrong with calf recruitment and how to fix it before

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the demise of the Bitterroot elk herd.”

Thompson says the study couldn't have come soon enough. "The longer that calf:cow ratios stay low, the harder it will be for the population to rebound," he says. Thompson explains that even though reducing the number of predators may be one solution, "we don't know which species and how many to harvest to be most effective. And even though elk numbers might rebound from a reduction in wolves, bears, and lions, we still don't know what it will take to sustain the population in the long run. Is that where habitat plays a bigger role?"

Thompson points out that FWP is responsible for conserving all wildlife, including predators. "So even as we work to understand what's happening to the elk and find ways to fix the problem, we are also conserving the prey that supports a balanced system of large carnivores, which includes hunters," he says.

Thompson emphasizes that FWP isn't waiting for the study's findings before it takes steps to help the Bitterroot's elk population. "We are managing this situation now as best we can with the information that's available," he says. "But we're looking forward to the study results so we can be sure that what we do is the best possible approach." 🐾