

# Building confidence with science

BY TOM DICKSON

One afternoon last summer, I went fishing on the Missouri River near Craig. I didn't catch a single trout, didn't see one caught, or even see a rise.

If I hadn't known better, I'd have thought there were no fish in the river.

But I did know better.

I knew that the Missouri in that stretch was packed with 4,043 trout per mile. The information came courtesy of FWP fisheries biologists. Each spring they use standardized electroshocking protocol to make an objective, statistically valid estimate of trout populations on the Missouri and other Montana rivers.

Personal observation—also known as anecdotal evidence—only goes so far when it comes to figuring out what's up with Montana's fish and wildlife, much less how to manage them. One person sees a big herd of muleys where someone else doesn't see a single deer all day. An angler catches a dozen walleye on the Fort Peck Reservoir while another can't catch a fish to save his life. Such incidents might make for interesting stories at work on Monday morning, but what do they signify? And how could Montana manage mule deer and Fort Peck walleye fishery on such reports, which are often unverifiable and even contradictory?

Montanans recognized the limitations of anecdotal evidence long ago, when they created this department. At first the agency focused solely on catching poachers, trespassers, and other lawbreakers. Important work, to be sure, but Montanans and their elected officials soon realized they also

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needed help figuring out how many bighorn sheep could be harvested each year, when trout fishing seasons should open and close, and what could be done to restore waterfowl numbers. They also could see that opposing interest groups often offered contradictory anecdotal evidence, and that each group wanted the state to rely solely on *its* evidence.

So the state hired professional biologists, who use the scientific method. They start with an important question, like, "Why are elk numbers declining in the upper Bitterroot?" They next pose a hypothesis, such as, "Increasing numbers of wolves are causing the decline." Then they structure a detailed experiment that proves or disproves the hypothesis and often (though not always) answers the original question. (In this particular study, conducted during the early 2010s, it turned out that mountain lions, not wolves, were the leading cause of lower elk numbers in the upper Bitterroot.)

Information culled from such experiments, then rigorously analyzed for flaws and inconsistencies, is called empirical evidence. It's what FWP uses to manage the state's fish and wildlife—with pretty decent

results, too. Montana is home to some of the nation's healthiest, most abundant game and nongame populations and offers vast opportunities to experience that bounty.

Thank you, scientific method.

Not that anecdotal evidence lacks value in fish and wildlife management. It alerts biologists to possible problems and raises questions that trigger the scientific method.

It's also how the rest of us relate to and best understand the natural world. "The danger in scorning the anecdotal is that science gets too far removed from the actual experience of life, losing sight of the fact that mathematical averages and other such measures are always abstractions," writes Nicholas Carr, a best-selling author specializing in technology and culture.

Conservation agencies that dismiss the personal experiences of the people they serve risk losing credibility and public support.

FWP can't ignore the anecdotal, yet we can't manage the state's fish and wildlife on it, either. An anecdote is a story without proof. And FWP needs to prove that its recommendations and actions are trustworthy. Such proof comes only from objective scientific study that corrects for bias and one-time occurrences.

In the hands of experts, science builds confidence—that the chemotherapy your oncologist recommends is the right treatment, that the commercial jet you're flying in won't crash, and that the elk quota FWP biologists propose for your hunting district will sustain a healthy herd and plenty of hunting opportunities.

Fishing, wildlife photography, and hunting are largely about faith. You need to believe that the animals are there, that you're not just taking a walk with a rod, camera, or gun. Without faith, you'd call it quits. With it, you stick things out.

After getting skunked on the Missouri, I was tempted to hang it up for a while. Instead, I returned the next day, confident that more than 4,000 trout were swimming in each mile of that stretch of river.

I'm not the greatest angler, but I figured the odds were good enough that even I could catch a few. 🐟