



Why Montana Went Wild. An Interview with Dick Vincent

Montana Outdoors interviews the scientist whose research three decades ago helped revolutionize trout management, *Montana Outdoors*, May–June 2004

In 1974, Montana did something that stunned anglers across the state and the nation: It stopped stocking trout in streams and rivers that supported wild trout populations.

The move initially outraged many anglers, fishing businesses, and even some Montana Fish and Game Department staff. For decades, hatcheries had been credited with producing more and better fishing. Without stocking, many Montanans asked, what would happen to the state's famous trout waters and the businesses that relied on legions of anglers arriving from across the country each summer?

The answer, now well known, is that trout fishing improved dramatically. Once stocking was discontinued, wild trout numbers doubled, tripled, and more on many rivers.

On this 30th anniversary of Montana's discontinuation of stocking trout in rivers capable of sustaining wild trout, Montana Outdoors visited with fisheries biologist Dick Vincent, whose research on the Madison River in the late 1960s and early '70s led to that decision.

A Montana native who grew up in Norris and Garrison fishing the Madison and Clark Fork rivers, Vincent earned his B.S. and M.S. in biology at Montana State University and began working for the department in 1966. Nationally known in recent years for his studies on whirling disease, particularly on the Madison River, three decades ago Vincent and his crew showed that wild trout thrived in river reaches without stocked fish and suffered in heavily stocked stretches. It was research that was to revolutionize trout management in Montana and throughout the United States.

How did you get started looking at the effects of stocked trout on wild trout?

Actually, I was first hired by the department to develop new techniques for monitoring trout populations. Back then we didn't have accurate ways to track trout numbers. I helped develop new electroshocking equipment and techniques so we could sample a lot of fish and larger fish.

That's how you got started working on the Madison River?

Right. Once we developed the techniques, we started trying them out on rivers. We picked two stretches of the Madison—the Norris stretch, downstream of Ennis Lake, and the Varney Bridge stretch, about six miles upstream from Ennis—and started doing population monitoring. In 1968, we were able to convince the power company operating the two dams upstream to increase river flows. We began studying the effects of the increased flows on the Norris and Varney sections, figuring that both stretches would benefit. But that wasn't the case. The flows helped the Norris section, resulting in better recruitment and many more 10-inch-plus fish, but not Varney.

So you started looking for other factors?

We were so puzzled, because at the time we were sure flows were the big issue, and it didn't make sense that one stretch of the Madison was responding to improved flows and another wasn't. I made a list to see

what was similar and different about the stretches. The big factor that jumped out was that the Norris area wasn't stocked at all, but Varney was stocked with anywhere from 10,000 to 15,000 catchable trout per year. We asked ourselves: Could it be the stocking? We had no idea, but we wanted to find out.

That's when the famous study began?

Well, it didn't happen that easily. This was in 1969, and what we proposed was to not stock the Varney section for three years while stocking a tributary named O'Dell Creek, which was never stocked before but had some good trout numbers. We wanted to leave the Norris stretch alone and use it as a control.

Some people didn't think highly of your proposal, correct?

That's putting it mildly. I think people thought we had a goal of closing down all stocking, but that wasn't the case. We specifically wanted to learn if stocking catchable-sized rainbow trout was negatively affecting wild rainbow and brown trout populations. But Ennis businesses, the Fish and Game Commission, and lots of anglers didn't like the idea of us messing around with stocking in any way. They felt that the Varney stretch would crash during the three-year study. I heard many people say, "If we don't have stockers, what will fishermen catch?"

How heavily was Montana into stocking fish at the time?

That was really the peak of our river stocking program. We were stocking the Big Hole, Yellowstone, Gallatin, Madison—all the best rivers, which already had great trout fisheries—with an average of 2,000 catchable trout per mile. But the department was still getting complaints about how poor the fishing was, that it was getting worse each year. So the solution was to stock even more, and whoever hollered the loudest got the most fish in their favorite stretch of river. The idea then was that the stocked fish were an addition to the wild populations, that two plus two equaled four. But a few of us biologists wondered if maybe two plus two equaled three or even less.

Were you the only ones suspecting this?

Some anglers had a hunch that river stocking wasn't all it was made out to be. Bud Lilly, Dick McGuire, Tom Morgan, and a few others had been fishing these great rivers before the big stocking boom, and they told us the fishing was getting increasingly worse. And I'd seen that myself, having grown up fishing the Madison in the 1950s, when we'd catch 3-pounders. Then, in the 1960s, all we could catch were small hatchery fish. But no one knew why the fishing got worse on those rivers.

How did the study start?

First we had to get permission from the commission to not stock the Varney section for three years. That was a big deal. Art Whitney, the fisheries chief, made the case that we weren't out to end stocking but that we just wanted to learn something. That took courage. He could have made his life a lot simpler by not going against the flow. But Art was a scientist, and he successfully fought for the study. The three-year study actually began in 1970, but it included information for the years 1967–69. After just one year, we could see that the four-mile-long Varney section was improving by no longer being stocked and that most of the improvement was in the larger fish. By the fall of 1971, wild trout numbers had increased 153 percent from the 1967–69 average, from 1,500 trout to 3,800 trout. The improvement continued every year. By 1974 the total number of wild trout larger than 10 inches was 4,700, a 213 percent increase from the stocking years.

What happened to O'Dell, the creek you began stocking?

The wild trout population began declining. The 1967–69 average had been 515 brown trout in that 1.4-mile stretch, and it dropped to 380 in 1971 and then 280 in 1972. And the big fish numbers declined as well, dropping from 63 in 1967–69 to 14 in 1972.

Were you surprised by the results?

We'd suspected that stocking was having a negative effect, but when we saw large trout numbers in the Varney section triple and trout numbers in O'Dell cut in half, well, that just blew us away.

And that caused the agency to rethink its river stocking policy?

River stocking was already under some criticism because the return to the angler was so low. Within three months of being planted, 95 percent of stocked river trout are dead, either from being caught and kept by anglers, about 15 percent, or from other predators, about 80 percent. It's not cheap to raise fish to catchable size, and when anglers are only catching 15 percent of the stocked fish, those become pretty expensive trout. In 1972, the department figured that each hatchery-reared catchable trout caught by an angler in the upper Madison River cost about \$2.50. And that was back in 1972, when a fishing license cost about that much. It just didn't make sense.

The study then added weight to arguments against river and stream stocking?

Now there were two strikes against it: One, the department was raising all those fish with little return to the angler and, two, stocking was harming wild fish. Ordinarily you wouldn't change management policy based on just three years of data, but the numbers from the study were off the charts. The department had to decide what to do, but there was a huge fear that ending stocking would cause an economic disaster for the communities along the rivers. There were a bunch of hearings on changing the policy. But by the end of 1973, the department and the commission agreed that it didn't make sense. The following year, the department stopped stocking trout in rivers and streams.

What happened then?

Wild trout numbers increased, just as the study said they would. For example, in the upper Gallatin above Big Sky, trout numbers went from about 450 wild fish per mile to 2,500 once stocking ended. And after the department stopped stocking O'Dell Creek, the numbers went right back up to where they had been.

Did other states follow?

To a point, yes. We got calls from all over the country from fisheries departments and trout anglers. There was a ripple effect across the United States.

Some people thought the new policy would be the end of the hatchery system. But that didn't happen.

Not at all. In fact the department is now rearing and planting eight million trout per year. But instead of stocking rivers and streams, it plants lakes and reservoirs. And instead of stocking catchable-sized fish, the stocking has shifted to smaller trout that grow to be catchable size but have wilder traits. The hatchery program now is critical for lake management and also for helping propagate species of concern such as westslope cutthroat. It's really doing a great job.

Other than producing better wild trout fishing, what other effects did the study have?

I think the biggest thing was that people began to see wild trout as a valuable, limited resource, and that the state needs to protect habitat to conserve that resource. Back in the 1960s, anglers didn't care about stream flows and river habitat, because if the fishing was poor, you just tossed in more fish. But if you want to catch big wild fish, then you need to fight for water and for habitat, and that is what has happened. I don't know of a state where people have fought as hard for their rivers as they have here in Montana. 🐟

Follow up

(The following follow-up question was posed to Dick Vincent by Ken Hamlin, retired FWP research biologist, in 2015 and was published in The Gallatin History Museum Quarterly. Used with permission.)

Dick, I know you did not specifically study this, but do you have an explanation for why trout numbers per mile of river were lower in areas of hatchery stocking and why wild trout numbers doubled or tripled when stocking was discontinued?

Based on my observations over the years and the results of studies done in Pennsylvania, I believe that hatchery fish disrupted the natural behavior and feeding territories of wild trout. Wild trout have feeding territories and a social hierarchy based on size and behavior that efficiently makes use of available food and makes the fish less vulnerable to predation while feeding. Fish reared in hatcheries don't worry about predation while feeding and swarm to food fed at concentrated locations with regular timing. Those who get to the food first survive.

Thus, when hatchery fish are dumped in with wild trout, they are not used to finding their own food, and their nutrition and survival suffers at the same time that they are disrupting the feeding territories of wild trout. The behavior of hatchery trout also makes them more vulnerable to predation. The disruption of the behavior and territories of the wild trout both reduces their feeding efficiency and nutritional level and also makes them more vulnerable to predation than they previously were. Thus, both wild and hatchery fish have a lower survival rate when in the same stream area.

One example of stress changes due to stocking that we observed during our study was an increase in detectable movement of the resident wild trout after hatchery rainbow trout were stocked. Normally, wild trout in these streams show very little detectable movement (less than 5 percent), with most movement being very localized around feeding sites and cover. Release of hatchery trout in O'Dell Creek increased detectable movement by over 1,000 percent, which left the wild trout more vulnerable to predation (including by anglers) and reduced nutrition due to poor feeding sites.

<http://fwp.mt.gov/mtoutdoors/HTML/articles/2004/DickVincent.htm>

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The Montana Story, Forty Years of Success. Wild Fish Video Journal, Volume One. North Fork Studios Production, Wild Fish Conservancy Northwest 4.25 minutes

VIDEO. <https://vimeo.com/123030884>