HAPPY COWS, HAPPY TROUT

How a watershed coordinator, a rancher, and an FWP fisheries biologist found a way to conserve water and restore habitat on a Madison River tributary.

By John Grassy. Photos by Eliza Wiley

NOW AND THEN Sunni Heikes-Knapton, watershed coordinator for the Madison Conservation District, holds a photo showing what this same stretch of South Meadow Creek looked like in 2010 before restoration: trampled banks, denuded vegetation, and silt-filled stream gravel.

NO COMPLAINTS One of roughly 200 contented Red Angus and Herefords living the good life on the Endecott Ranch, near Ennis. A new stream restoration has made conditions even better.

Cows rule at the Endecott Ranch, near Ennis. From calving to weaning, and throughout the Madison Valley's long, harsh winters, the roughly 200 Red Angus and Herefords get the best of everything. "We've got this operation set up so it works just right for the cows," says Janet Endecott, who runs the livestock operation with her daughter, Rachel. "To keep them happy and healthy, you need good land and good water."

The nexus for happy and healthy on the Endecott Ranch is South Meadow Creek. Originating in the southern Tobacco Root Mountains, the stream meanders east through the ranch's main pastures on its way to the Madison River, one of Montana's most popular trout waters. On days of extreme heat, native willow thickets—a rancher's best friend, Endecott says—offer her cows shade, while in winter they shelter the livestock from frigid winds. In summer, water from the creek irrigates the lush pastures. And at all times, it provides thirsty cattle with an endless source of water.

As is the case on ranches across Montana, cows can enjoy a creek too much. Livestock often congregate at a particular stream stretch, trampling banks while wading in and out. As banks flatten, the stream channel grows wider and shallower, causing the water to warm in the summer sun to temperatures stressful for trout. As cow hooves stir up the stream bottom, silt washes downstream, suffocating fish eggs and filling in gravel where aquatic insects live. And cows can graze willows and other streamside vegetation down to the nubs.

For years, Endecott watched the stream degrade as she herded her cattle in late winter to an adjacent pasture. "When you've got more than 200 cows watering in one area, it can cause quite a bit of damage," she says. "I knew something needed to be done, but I didn't know exactly what."

GOOD TIMING

That was in 2010. At about that same time Sunni Heikes-Knapton, watershed coordinator for the Madison Conservation District, was launching a project on South Meadow Creek. Using a grant from the Montana Department of Natural Resources and Conservation, Heikes-Knapton worked with a team to assess eight of the stream's irrigation diversions. These three- to four-foot-tall dams, often just a few wooden planks blocking part of the stream, divert water into channels that irrigate surrounding pasture. During years of low mountain snowpack and little rain, diversions can draw off all the water in some stream sections, leaving none for trout or thirsty cattle.

"Some of the structures were primitive and highly inefficient," says Heikes-Knapton. "We thought if we could get new ones in a few places there might be a little more water left in the stream."

The conservation district also wanted to know if any irrigation structures impeded the stream's natural functions. Heikes-Knapton asked Pat Clancey, then a Montana Fish, Wildlife & Parks fisheries biologist in Ennis and a member of the irrigation-diversion assessment team, to identify any structures that created waterfalls blocking trout from swimming upstream. One was on the Endecott Ranch. "Only a few fish were large enough to get up and over it," says Clancey, who has since retired.

Clancey also assessed the creek as it meandered through the Endecotts' pasture. He immediately spotted the trampled banks and shallow water in the degraded stretch at the cows' favorite watering spot. "That's a classic problem for trout streams in cow pastures across western Montana," he says. He and Heikes-Knapton proposed improving the stream habitat during the irrigation dam upgrade. "The Endecott Ranch has soft, rich soils prone to damage from livestock," Clancey says. "But those same fertile soils also make it easy for vegetation to recover. It had been done before on other ranches, and I could see we had a great opportunity to turn a bad situation around."

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Heikes-Knapton met with Endecott to present their ideas for improving the stream. Janet recalls her initial response: "You want to do *what*?" The Madison Conservation District was proposing to install several hundred yards of fence on each side of the degraded stream stretch, creating an enclosed riparian recovery zone of about four acres. To allow vegetation to recover, cows would graze the pasture for only a few days each fall. Instead of getting water directly from the creek, the cows would drink from two tanks, filled from a new well.

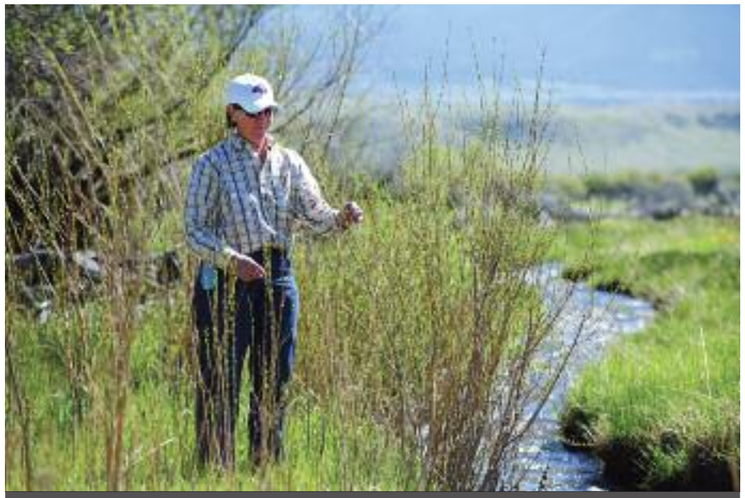
Looking back several years

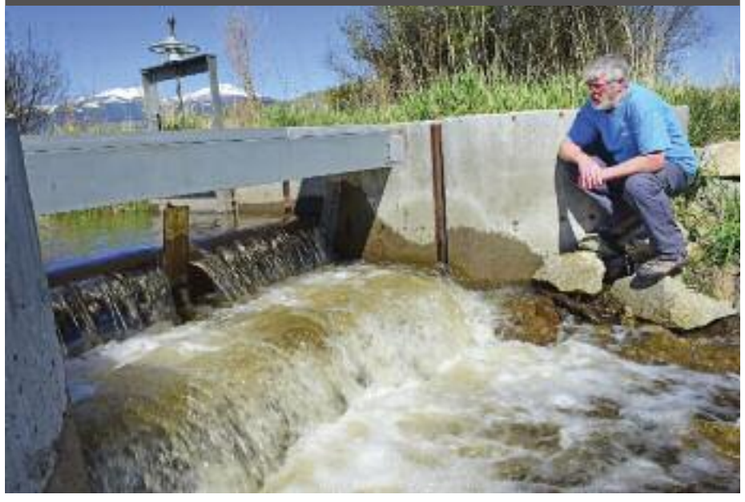
DREAM TEAM Madison Conservation District watershed coordinator Sunni Heikes-Knapton, rancher Janet Endecott, and FWP fisheries biologist Pat Clancey cross South Meadow Creek, a tributary of the Madison River that runs through the Endecott Ranch near Ennis.

later, Endecott says her first reaction to the stream-fencing proposal was not surprising. She was used to her livestock having year-round access to the stream. Fencing and water tanks would be an extra cost, she feared. Moving cattle was extra labor.

Yet she'd previously worked with Heikes-Knapton and trusted her. The plan would certainly change the way Endecott managed her cows, and she didn't know how it would turn out. But if the watershed coordinator believed the stream would benefit, she was willing to try.

Besides, Endecott was co-chair of the Madison Conservation District. She understood the need to lead by example. Yet even as she agreed to the proposal, "I was thinking I would get nothing out of it besides the off-stream water," she says. "I would be the nice person who made the stream better. But the ranch wouldn't actually benefit that much."





WORKING AS PLANNED Counterclockwise from above: Janet Endecott welcomes the return of stream-shading willows along the banks of South Meadow Creek; Pat Clancey examines the new irrigation diversion that was part of the creek restoration; an Endecott Ranch cow drinks from a new water tank situated several hundred feet away from the stream.

Also helping Endecott get to "yes" was learning she would need to pay only a small portion of the project's total cost for materials and labor. Heikes-Knapton and Clancey found state, federal, and corporate funding for the irrigation structure, well, water tanks, fencing, plumbing, and a creek-crossing structure.

RAPID RECOVERY

The work was finished in late 2012. By spring, "plants were coming in that I'd never seen before," Endecott says, referring to new grasses, forbs, and shrubs. Previously, her cows grazed off the new growth as soon as it emerged. But now, as the growing season continued, she watched grass and wildflowers grow thick and lush. Safe from cattle, plants matured and produced seeds, further enriching the land. Under the new plan, she put cows in the lush streamside pasture just once, for several days in November. Though short, it was one heck of a banquet.

Another pleasant surprise was the new watering system. Because cattle rarely stray far from water, they previously overgrazed the vegetation next to the creek while leaving other pasture untouched. But with water available any time in the tanks, situated several hundred feet from the stream, the cows began grazing elsewhere. "Grass and forbs need periodic grazing. It creates new growth," Endecott says.

> "This has helped especially in the really cold, nasty weather. There's water any time they want, so they water more regularly."

More cattle are able to access water, too, and more often. In the past, smaller and meeker cows would grow tired of waiting for a turn at the creek or get pushed to the back of the line. With the herd spread out and open water always available, every cow can drink whenever it wishes. "This has helped especially in the really cold, nasty weather. There's water any time they want, so they water more regularly," Endecott says.

The water tanks also eliminate some of the hard physical labor so common to ranch life. In the dead of the Madison Valley's notoriously brutal winters, Endecott no longer has to hike down to the iced-up creek with a spud bar to chop out places where cows can drink.

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FOUR-ACRE PARADISE Fenced off from cattle except for a few days each fall, South Meadow Creek has cleared and deepened, banks have stabilized, and grasses and forbs are lush. "It's hard to believe this is the same place it was in 2010," says Janet Endecott, the landowner.

WELCOME BACK, WILLOWS

Without constant pressure from cattle, South Meadow Creek is on the mend. The wide, shallow streambed has narrowed and deepened, while bends have created pools where trout overwinter or escape predators. The steady increase in plant growth has stabilized banks and halted erosion. After a couple of years, Janet was happy to see her friends, the willows, returning to the creek bottom. They'd been there all along, trying to grow, but the cows had always grazed them down. As willows and other streamside plants grow taller and lusher, they shade the water, keeping it cooler for trout.

The project has been a win for fish, for livestock, and for the Endecotts. It's also helping the environment miles downstream. "Restoration projects like these that improve tributaries are essential for keeping the Madison River system more resilient to warm temperatures and low flows," says Travis Horton, FWP regional fisheries manager in Bozeman.

The project is reverberating elsewhere, too. In 2015, Endecott persuaded her brother to launch a similar project on nearby Moore's Creek. Many of her neighbors have stopped by to see her restored pasture and new watering system. "I can gently nudge people into thinking about doing something similar," Endecott says. "And I really stress it doesn't have to be a huge project. If a lot of people each do one small thing to improve a stream where it flows through their place, it can make a huge difference."

Rancher Janet Endecott is featured in a new book, Montana Women, from the Ground Up: Passionate Voices in Agriculture and Land Conservation. *Written by Helena author Kris Ellis and published by The History Press, the book is scheduled for release in early May and will be available at local booksellers.*